VMS Programming Master Index

Order Number: AA-LA56C-TE

November 1991

This index includes entries for all manuals in the VMS Programming Subkit.

Revision/Update Information: This manual supersedes the *VMS*

Programming Master Index, Version

5.4.

Software Version: VMS Version 5.5

November 1991

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation. Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

No responsibility is assumed for the use or reliability of software on equipment that is not supplied by Digital Equipment Corporation or its affiliated companies.

© Digital Equipment Corporation 1991.

All Rights Reserved.

The postpaid Reader's Comments forms at the end of this document request your critical evaluation to assist in preparing future documentation.

The following are trademarks of Digital Equipment Corporation: CMI, DDCMP, DEC, DECdtm, DECnet, DECtalk, DECwindows, DELUA, DEQNA, DEUNA, Digital, EDT, HSC, IAS, KDA, LAT, MASSBUS, MicroVAX, Q22-bus, RA, RB, RC, ReGIS, RK, RL, RM, RP, RQDX, RRD50, RSTS/E, RSX, RT-11, RX, SBI, TMSCP, TU, UDA, UNIBUS, VAX, VAX Ada, VAX APL, VAX BASIC, VAXBI, VAX C, VAXcluster, VAX COBOL, VAX DIBOL, VAX DOCUMENT, VAX FORTRAN, VAX LISP, VAX MACRO, VAX Pascal, VAX RMS, VAX SCAN, VAXstation, VMS, and the DIGITAL logo.

UNIX is a registered trademark of UNIX System Laboratories, Inc.

ZK4647

This document was prepared using VAX DOCUMENT, Version 2.0.

1 Introduction

The VMS Programming Master Index is an edited compilation of the individual indexes for books in the Version 5.5 VMS Programming Subkit.

Each main entry in the *VMS Programming Master Index* is followed by an abbreviated book title and a reference to the page where the topic appears in that book. For example, an entry in the master index might appear in the following way:

```
FAB$B_BKS field • File Applications, 3–24, 4–28, 7–19, 7–20; File Def Language, FDL–18; RMS, 5–3
```

This entry indicates that you can find information about the FAB\$B_BKS field in the following places:

- Pages 3-24, 4-28, 7-19, and 7-20 in the Guide to VMS File Applications
- Page FDL-18 in the VMS File Definition Language Facility Manual
- Page 5-3 in the VMS Record Management Services Manual

The subentries, if any, contain more specific information about the topic. For example, some subentries listed under *FAB\$B_BKS* field are as follows:

considerations for calculating default logic limitation for RMS performance considerations

The following table lists the abbreviated names used in the VMS Programming Master Index to reference each manual, the volume number of the binder that contains the manual, and the full manual title that corresponds to the abbreviated name:

Index Abbreviation	Volume	Title of Manual
Analyze/RMS_File	6A	VMS Analyze/RMS_File Utility Manual
Command Def	2B	VMS Command Definition Utility Manual
Convert	6A	VMS Convert and Convert/Reclaim Utility Manual
Debugger	2A	VMS Debugger Manual
$\mathrm{DECthreads}^1$		Guide to DECthreads
Delta/XDelta	7B	VMS Delta/XDelta Utility Manual
Device Support (A)	8A	VMS Device Support Manual
Device Support (B)	8B	VMS Device Support Reference Manual
File Applications	6A	Guide to VMS File Applications
File Def Language	6A	VMS File Definition Language Facility Manual
I/O User's I	7A	VMS I/O User's Reference Manual: Part I
I/O User's II	7A	VMS I/O User's Reference Manual: Part II
Librarian	2B	VMS Librarian Utility Manual
Linker	2B	VMS Linker Utility Manual
MACRO	9	VAX MACRO and Instruction Set Reference Manual

¹Perfect-bound 7x9 book

Index Abbreviation	Volume	Title of Manual
Message	2B	VMS Message Utility Manual
Modular Procedures	1	Guide to Creating VMS Modular Procedures
National Char Set	6A	VMS National Character Set Utility Manual
Patch	2B	VMS Patch Utility Manual
Programming Resources	1	Guide to VMS Programming Resources
RMS	6B	VMS Record Management Services Manual
Routines Intro	3	Introduction to VMS System Routines
RTL DECtalk	5 A	VMS RTL DECtalk (DTK\$) Manual
RTL General Purpose	5A	VMS RTL General Purpose (OTS\$) Manual
RTL Intro	5A	Introduction to the VMS Run-Time Library
RTL Library	5B	VMS RTL Library (LIB\$) Manual
RTL Math	$5\dot{A}$	VMS RTL Mathematics (MTH\$) Manual
RTL Parallel Processing	5A	VMS RTL Parallel Processing (PPL\$) Manual
RTL Screen Management	5C	VMS RTL Screen Management (SMG\$) Manual
RTL String Manipulation	5C	VMS RTL String Manipulation (STR\$) Manual
SUMSLP	2B	VMS SUMSLP Utility Manual
System Dump Analyzer	7B	VMS System Dump Analyzer Utility Manual
System Services Intro	4A	Introduction to VMS System Services
System Services Ref	4B	VMS System Services Reference Manual
Utility Routines	3	VMS Utility Routines Manual
VAXTPU	10	VAX Text Processing Utility Manual

Note _

System services, RMS services, and Run-Time Library routines are indexed by facility prefix. All system services and RMS services are now indexed under the prefix "SYS" (for example, the Create service is indexed under SYS\$CREATE).

Run-Time Library routines are organized into the following seven facilities:

DECtalk (DTK\$)

General purpose (OTS\$)

Library (LIB\$)

Math (MTH\$)

Parallel processing (PPL\$)

Screen management (SMG\$)

String manipulation (STR\$)

To reference Run-Time Library routines in this index, look under the corresponding facility prefix (for example, the library routine \$FIND_FILE is indexed under LIB\$FIND_FILE).

Index

A	ACBD (Add Compare and Branch D_floating) instruction, <i>MACRO</i> , 9–44
@ command, VAXTPU, 4-32	ACBF (Add Compare and Branch F_floating)
Abnormal termination of subordinate	instruction, MACRO, 9-44
notification of, RTL Parallel Processing, 2–3	ACBG (Add Compare and Branch G_floating)
Abort	instruction, MACRO, 9-44
kernel stack not valid, MACRO, E-10	ACBH (Add Compare and Branch H_floating)
resulting from exceeding virtual address space,	instruction, MACRO, 9-44
VAXTPU, 5–1	ACBL (Add Compare and Branch Long)
Abort function, Debugger, 2-7, 10-9, CD-38,	instruction, MACRO, 9-44
CD-121, CD-204	ACBW (Add Compare and Branch Word)
with DECwindows, Debugger, 1-20	instruction, MACRO, 9-44
Aborting an I/O request	Access See also Random access
See I/O request	file, Routines Intro, A-5t
Aborting a transaction, System Services Intro,	modes, File Applications, 1–2; RMS, 1–1
14-2; System Services, SYS-3, SYS-5, SYS-7	page, Routines Intro, A-10t
/ABORT qualifier, Debugger, CD-178	physical I/O, System Services Intro, 7–7
Abort reason codes, System Services Intro, 14-4,	random, File Applications, 1–2, 3–13
14-5; System Services, SYS-4, SYS-5,	run-time options, RMS, 1-2
SYS-197	sequential, File Applications, 1-2, 3-13
ABORT statement, <i>VAXTPU</i> , 3–26, 3–33, 7–16	shared, File Applications, 10-30
Absolute expression, MACRO, 3-9	in a VAXcluster, File Applications, 3–28
Absolute mode, MACRO, 5–14	system object, Routines Intro, A-11t
assembling relative mode as, MACRO, 6–22	to process-permanent files, File Applications,
/ABSOLUTE qualifier, Patch, PAT-27, PAT-30	6–20
Absolute queue, MACRO, 9–82	ACCESS attribute, File Def Language, FDL-2
manipulating, MACRO, 9–85	Access category, File Applications, 4–21
Absolute time, Programming Resources, 3–23;	Access control list
System Services Intro, 10–2 as input to SYS\$BINTIM, System Services,	See ACL
SYS-37	Access control list buffer field
converting to numeric, System Services,	See XAB\$L_ACLBUF field
SYS-455	Access control list buffer size field
in system format, System Services Intro, 10-3	See XAB\$W_ACLSIZ field
Absolute value, RTL Math, 1–4	Access control list context field
of complex number, RTL Math, MTH-23	See XAB\$L_ACLCTX field
/AC	Access Control List Editor routine
See /ASCIC qualifier	See ACL Editor routine
ACB\$V_QUOTA, Device Support (B), 3-7, 3-10	Access control list entry
ACB (AST control block), Device Support (A),	See ACE
4-20; Device Support (B), 1-38, 1-86, 3-2,	Access control list error status field
3–4	See XAB\$L_ACLSTS field
contents, Device Support (B), 3-6	Access control list length field
ACBB (Add Compare and Branch Byte)	See XAB\$W_ACLLEN field
instruction, MACRO, 9-44	Access entry, Routines Intro, 1–9; System Services Intro, 1–7

ACL Editor routine (cont'd) Accessibility of memory example of use in BLISS program, Utility See Buffer Routines, ACL-1 Access method, Routines Intro, 1-9; System introduction, Utility Routines, ACL-1 Services Intro, 1-7 options available, Utility Routines, ACL-3 Access mode, System Services Intro, 2-2 ACLEDT\$SECTION logical name See also Record access mode defined, Utility Routines, ACL-5 changing to executive, System Services, ACP (ancillary control process), I/O User's I, 1–1; SYS-75 System Dump Analyzer, SDA-99; Device changing to kernel, System Services, SYS-77 Support (B), 1-12, 1-39, 1-40, 1-74 effect on AST delivery, System Services Intro, See also XQP class, Device Support (B), 1-28 processor, Routines Intro, A-2 default, Device Support (B), 1-28 specifying, System Services Intro, 2-2 ACP function, I/O User's I, 1–2, 1–30 types of, System Services Intro, 2-2 arguments, I/O User's I, 1-2 vector, MACRO, 10-20, 10-43, 10-49 attributes, I/O User's I, 1-16 to 1-18 with AST, System Services Intro, 5-2 disk quotas, I/O User's I, 1–33 with logical names, System Services Intro, 6-7 IO\$_ACCESS, I/O User's I, 1-7, 1-10, 1-14, ACCESS primary secondary attributes, File Applications, 7-3 IO\$ ACPCONTROL, I/O User's I, 1-7, 1-30 Access rights block IO\$ CREATE, I/O User's I, 1-10, 1-11, 1-14, See ARB Access specification IO\$_DEACCESS, I/O User's I, 1-13, 1-14, list of mask values, RMS, 14-6 Access type, System Services Intro, 1–7 IO\$_DELETE, I/O User's I, 1-7, 1-29 Access violation, System Dump Analyzer, SDA-16, IO\$_MODIFY, I/O User's I, 1-7, 1-11, 1-13, SDA-19 1-14, 1-28 See also SS\$_ACCVIO IO\$_MOUNT, I/O User's I, 1–30 access_bit_names data type, Routines Intro, A-2 magnetic tape positioning, I/O User's I, 1–31 access_mode data type, Routines Intro, A-2 major, I/O User's I, 1–22 Accounting message miscellaneous disk, I/O User's I, 1–32 format of, System Services, SYS-108 quota file transfer block, I/O User's I, 1-33 ACE (access control list entry) ACP-QIO interface, I/O User's I, 1-1alarm, System Services Intro, 3-18 access file function, I/O User's I, 1-26 application, System Services Intro, 3-19 access subfunction, I/O User's I, 1–10 creating, System Services Intro, 3-17, 3-23 ACP function, I/O User's I, 1-30 default protection, System Services Intro, 3-20 ANSI standard, I/O User's I, 1-2, 1-32identifier, System Services Intro, 3-21 arguments, I/O User's I, 1–2 maintaining, System Services Intro, 3-17, 3-23 disk quota, I/O User's I, 1-33 translating, System Services Intro, 3-17, 3-23 attribute control block, I/O User's I, 1-14 types of, System Services Intro, 3-17 attributes, I/O User's I, 1-16 to 1-18 VMS RMS limitation, RMS, 14-2 attributes statistics block, I/O User's I, 1-21 ACF (configuration control block), Device Support BLISS-32 programming, I/O User's I, 1-2 (B), 1-2 to 1-4 create file function, I/O User's I, 1–22 ACL (access control list), Programming Resources, disk, I/O User's I, 1–24 6-1; System Services Intro, 3-2 magnetic tape, I/O User's I, 1-26 See also ACL Editor routine deaccess file function, I/O User's I, 1-28 delete file function, I/O User's I, 1–29 access rights, Device Support (B), 1-45 as protection basis, File Applications, 4-21 description, I/O User's I, 1–1 compared with UIC protection, File directory entries, I/O User's I, 1-9, 1-26 Applications, 1–10 FIB (file information block), I/OUser's I, 1–3 conversion methods, RMS, 14-2 See also FIB editing, Utility Routines, ACL-3 file characteristics, I/O User's I, 1–18 manipulating, Utility Routines, ACL-1 function codes. I/O User's I, A-1 use with VMS RMS control block, RMS, 14-2 function modifiers, I/O User's I, 1-2 ACLEDIT\$EDIT routine, Utility Routines, ACL-3 IOM_ACCESS$, I/O User's I, 1–10, 1–23, ACL Editor routine 1-25, 1-26

ACP-QIO interface	%ADAEXC_NAME, Debugger, 9-15, D-9
function modifiers (cont'd)	
IO\$M_CREATE, I/O User's I , 1–23, 1–24,	Adapter
1-25, 1-26	See I/O adapter
IO\$M_DELETE, I/O User's I , 1–23, 1–24,	Adapter control block
1–30	See ADP
IO\$M_DMOUNT, I/O User's I, 1–31, 1–32	Adapter dispatch table, Device Support (A),
I/O operations, I/O User's I, 1–1	14–27, 14–30; Device Support (B), 1–6, 1–7
I/O status block, I/O User's I, 1–35	address, Device Support (B), 1-7
record attributes area, I/O User's I, 1–19	examining, Device Support (A), 13-9
values, I/O User's I, 1–20	ADAWI (Add Aligned Word Interlocked)
serious exception (EOT), I/O User's I , 1–23, 1–27, 1–32	instruction, MACRO, 9-7 ADDB2 (Add Byte 2 Operand) instruction,
status returns, I/O User's I, A-1	MACRO, 9–8
VAX MACRO programming, I/O User's I, 1–1	ADDB3 (Add Byte 3 Operand) instruction,
XQP (extended QIO processor), I/O User's I,	MACRO, 9–8
1–1	ADD command, File Applications, 10-28; File
ACP queue block	Def Language, FDL-59
See AQB	ADDD2 (Add D_floating 2 Operand) instruction,
ACP subfunction, I/O User's I, 1-7	MACRO, 9-107
access, I/O User's I, 1-10	ADDD3 (Add D_floating 3 Operand) instruction,
directory lookup, I/O User's I, 1-7	MACRO, 9–107
extend, I/O User's I, 1-11, 1-35	ADDF2 (Add F_floating 2 Operand) instruction,
read/write attributes, I/O User's I , 1–14	MACRO, 9–107
truncate, I/O User's I, 1–13	ADDF3 (Add F_floating 3 Operand) instruction,
ACP_MULTIPLE parameter, Device Support (B),	MACRO, 9–107
1–28	ADDG2 (ADD G_floating 2 Operand) instruction
Action routine	MACRO, 9–107
See also FDT routine	ADDG3 (ADD G_floating 3 Operand) instruction, MACRO, 9–107
designating for client messages, VAXTPU, 7–357	ADDH2 (ADD H_floating 2 Operand) instruction
detached cursor	MACRO, 9–107
defining, VAXTPU, 7–367	ADDH3 (ADD H_floating 3 Operand) instruction
fetching, VAXTPU, 7–197	MACRO, 9-107
for handling client messages	Addition
fetching, VAXTPU, 7–197	of decimal strings, RTL String Manipulation
Action routine bit mask, Device Support (A), 4–12	STR-3
ACTIVATING qualifier, Debugger, 10-12, CD-17,	quadword times, RTL Library, LIB-5
CD-30, CD-125, CD-184	two's complement, RTL Library, LIB-7
Activation	Additional routines
predefined tracepoint, multiprocess program,	list of, RTL Math, 1-4 to 1-9
Debugger, 10-12	Addition operator (+), System Dump Analyzer,
Active area, VAXTPU, 7–350	SDA-12
determining location of, VAXTPU, 7–196	ADDL2 (Add Long 2 Operand) instruction,
Active editing point, VAXTPU, 2-4	MACRO, 9–8 ADDL3 (Add Long 3 Operand) instruction,
ACTIVE qualifier, Debugger, 12–10, 12–23,	MACRO, 9–8
CD-179	ADDP4 (Add Packed 4 Operand) instruction,
%ACTIVE_TASK, Debugger, 12–10, 12–14 Actual offset value	MACRO, 9–148
avoiding use of, RMS, 2–4	ADDP6 (Add Packed 6 Operand) instruction,
	MACRO, 9–148
/AD	%ADDR, Debugger, CD-10
See /ASCID qualifier	Address
Ada Soo WAY Ada	access type, MACRO, 8-17
See VAX Ada	definition of, Routines Intro, 2-3
Ada compiler generating reentrant code, DECthreads, 3-2	depositing into, Debugger, 4-23
generating reentrant code, DECinredus, 5-2	with DECwindows, Debugger, 1-25

Address (cont'd)	Addressing mode, MACRO, 5-1
examining, Debugger, 4-13; System Dump	absolute, MACRO, 5–14, 6–22
Analyzer, SDA-51	autodecrement, MACRO, 5-7
with DECwindows, Debugger, 1-25	autoincrement, MACRO, 5-5
instructions, MACRO, 9-33	autoincrement deferred, MACRO, 5–6
obtaining, Debugger, 3-12, 4-12	branch, MACRO, 5–18
with DECwindows, Debugger, 1-24	determining, MACRO, 6–68
on VAXBI, Device Support (A), 12-9	displacement, MACRO, 5-8
on XMI, Device Support (A), 12-11	
specifying breakpoint, Debugger, 3-11	displacement deferred, MACRO, 5-9
storage directive (.ADDRESS), MACRO, 6-4	forced-immediate, Patch, PAT-21
symbolizing, Debugger, 4–13	general, MACRO, 5-15
with DECwindows, Debugger, 1–25	general register, MACRO, 5-1
translation vector, MACRO, 10–47	summary, MACRO, 8–28
virtual, MACRO, 8–1	immediate, MACRO, 5–14
virtual memory, Programming Resources, 5–10	usage restricted in vector memory
address data type, Routines Intro, A-2t	instructions, <i>MACRO</i> , 10–51, 10–53
ADDRESS directive, MACRO, 6–4	index, MACRO, 5–16
count of, in map, Linker, 5–2, 5–5	literal, MACRO, 5-10, 5-15
effect on position independence, <i>Linker</i> , 4–5	operand specifier formats, MACRO, 8–18
effect on shareability, Linker, 1–10, 4–4	program counter, MACRO, 5-12
	summary, MACRO, 8–29
guidelines for use of, Linker, 4–5	register, MACRO, 5-4
image activator's processing of, Linker, 6–20	register deferred, MACRO, 5-5
linker's processing of, Linker, 6–20	relative, $MACRO$, 5–12, 6–19, 6–22
relation to fix-up image section, <i>Linker</i> , 6–20	relative deferred, MACRO, 5–13, 6–19
Address expression	summary, <i>MACRO</i> , 5–1, C–10
See also Address	Address location
code, Debugger, 3–10, 4–18, 6–4	changing the value, Delta/XDelta, DELTA-18
with DECwindows, Debugger, 1–22	closing current, Delta/XDelta, DELTA-22,
compared to language expression, Debugger,	DELTA-27
4–7	command strings in XDELTA, Delta/XDelta,
with DECwindows, Debugger, 1–22	DELTA-9, DELTA-38
composite, Debugger, 3–11	displaying contents of current, Delta/XDelta,
vector, Debugger, 11–16	DELTA-17
current entity, Debugger, 4-8, 4-13, D-5	displaying from other processes, Delta/XDelta,
with DECwindows, Debugger, 1–9	DELTA-17
DEPOSIT command, Debugger, 4-3, CD-58	displaying in ASCII, Delta/XDelta, DELTA-25
EVALUATE/ADDRESS command, Debugger,	displaying location pointed to by current
3–12, 4–12, CD–79	location, Delta/XDelta, DELTA-24
EXAMINE command, Debugger, 4-2, CD-81	displaying next, Delta/XDelta, DELTA-22
EXAMINE/SOURCE command, Debugger, 6-4	displaying previous, Delta/XDelta, DELTA-23
logical predecessor, Debugger, 4-8, 4-13, D-5	displaying range of, Delta/XDelta, DELTA-17
with DECwindows, Debugger, 1-9	listing for executive images, Delta/XDelta,
logical successor, Debugger, 4-8, 4-13, D-5	DELTA-44
with DECwindows, Debugger, 1-9	PCB, Delta/XDelta, DELTA-9
selecting from DECwindows window, Debugger,	referencing, Delta/XDelta, DELTA-10
1–22	using base address and offsets for,
SET BREAK command, Debugger, 3-8,	Delta/XDelta, DELTA-11
CD-124	/ADDRESS qualifier, Debugger, 8–6, CD–47,
SET TRACE command, Debugger, 3-9, CD-183	
SET WATCH command, Debugger, 3–15,	CD-79, CD-243; System Dump Analyzer,
CD-196	SDA-87, SDA-98, SDA-123
symbolic, Debugger, 4–4	Address space, Programming Resources, 10–1
	allocating by page, <i>Programming Resources</i> ,
with DECwindows, Debugger, 1–22	10–1, 10–3
SYMBOLIZE command, Debugger, 4–13, CD–263	allocating in zones, Programming Resources,
	10-1
type of, Debugger, 4-4	deallocating by page, <i>Programming Resources</i> , 10–1, 10–3

Address space (cont'd) ADP (adapter control block) (cont'd) zones, Programming Resources, 10-1 for MBA, Device Support (A), 15-4, 15-7 to Address storage directive (.ADDRESS), MACRO, 15-8 for VAXBI adapter, Device Support (A), 16-10 Address symbol map register allocation information, Device current, Delta/XDelta, DELTA-9 Support (B), 1-9 address_range data type, Routines Intro, A-2t map register wait queue, Device Support (B), ADDW2 (Add Word 2 Operand) instruction, 1-8 MACRO, 9-8size, Device Support (B), 1-4 ADDW3 (Add Word 3 Operand) instruction, ADPDISP macro, Device Support (A), 5-5 to 5-6; Device Support (B), 2-2 to 2-4 MACRO, 9-8ADD_KEY_MAP built-in procedure, VAXTPU, examples, Device Support (B), 2-4 7-17 to 7-18 ADWC (Add with Carry) instruction, MACRO, \$ADJSTK, System Services, SYS-14 9-9 ADJUST_WINDOW built-in procedure, VAXTPU, AEN (asynchronous event notification), Device Support (A), 17-2, 17-28 to 17-30; Device 7–19 to 7–23 \$ADJWSL, System Services, SYS-17 Support (B), 2-70, 2-73 to 2-90 ADP\$L AVECTOR. Device Support (A), 16-9 example. Device Support (A), 17-29 to 17-30 ADP\$L_BIMASTER, Device Support (A), 16–10, 16 - 17See Device affinity ADP\$L_BI_IDR, Device Support (A), 16-10, 16-15 /AFTER qualifier, Debugger, CD-125, CD-184, ADP\$L_CSR, Device Support (A), 16-9; Device CD-196 Support (B), 3-82 AGAIN command, File Applications, 10-12; ADP\$L_DPQFL, Device Support (A), E-14; Analyze/RMS_File, ARMS-22 Device Support (B), 3–87 Aggregate ADP\$L_MBASCB, Device Support (A), 16-10; DEPOSIT command, Debugger, 4-16, 4-17, Device Support (B), 1-7 11-6, 11-7, CD-58 ADP\$L_MBASPTE, Device Support (A), 16-10; EXAMINE command, Debugger, 4-16, 4-17, Device Support (B), 1–8 11-6, 11-7, CD-81 ADP\$L_MR2QFL, Device Support (A), E-14 SET WATCH command, Debugger, 3-17, 11-3 ADP\$L MRQFL, Device Support (A), E-14 AID (area identification number) ADP\$L VECTOR, Device Support (A), 14-30 program example, RMS, 4-8 ADP\$W_ADPTYPE, Device Support (A), 16-9; Alert Device Support (B), 2-3 asynchronous delivery and exception handlers, ADP\$W_BI_VECTOR, Device Support (A), 16-10, DECthreads, cma-7 16 - 15delivery, DECthreads, cma-93 ADP\$W DPBITMAP, Device Support (A), 14–17; disabling asynchronous, DECthreads, cma-3 Device Support (B), 3–96 disabling delivery of, DECthreads, cma-5 ADP\$W_TR, Device Support (A), 16-9, 16-18 enabling asynchronous delivery of, ADP\$W_XBIA_TR, Device Support (A), 16-17 DECthreads, cma-7 ADP (adapter control block), Device Support (A), enabling delivery of, DECthreads, cma-9 1-6, 14-15 to 14-16; Device Support (B), 1-4 requesting delivery of, DECthreads, cma-13 to 1-11 sending to a thread, DECthreads, cma-93 address, Device Support (A), 4-7, 14-17, 14-19, using asynchronous delivery with external 14-30; Device Support (B), 1-26, 1-36 routines, DECthreads, cma-3 alternate map register allocation information, Alertable Device Support (B), 1–10 definition of, DECthreads, cma-4 alternate map register wait queue, Device ensuring for matrix multiplication, Support (B), 1–10 DECthreads, cma-7 data path allocation information, Device Alert delivery state Support (A), 14-17; Device Support (B), restoring, DECthreads, cma-11 Alertsafe data path wait queue, Device Support (A), definition of, DECthreads, cma-4 14-17; Device Support (B), 1-7 Algorithm, RTL Math, 1-3 fields supporting ADPDISP macro, Device for memory allocation, RTL Library, 5-7 Support (B), 2–3 for naming buffer change journal file, VAXTPU, for generic VAXBI device, Device Support (A), 1 - 1216-9 to 16-10

/ALL qualifier (cont'd) ALIGN command, Patch, PAT-18, PAT-38, SHOW KEY command, Debugger, CD-218 **PAT-39** SHOW PROCESS command, Debugger, with /ABSOLUTE qualifier, Patch, PAT-27 CD-229.ALIGN directive, MACRO, 6-5 SHOW TASK command, Debugger, 12-13, Alignment 12-19, CD-246 data, Programming Resources, 8-4 SHOW WINDOW command, Debugger, Alignment attribute, RTL Library, 5-11 CD-255Alignment boundary type field Alternate index, File Applications, 3-19; File Def See XAB\$B ALN field Language, FDL-29 Alignment of data transfer, Device Support (A), Alternate index structure, Analyze/RMS File, 14 - 3ARMS-6 Alignment vector, MACRO, 10-29, 10-49 Alternate key, File Applications, 3-15, 3-16; ALL keyword Analyze/RMS_File, ARMS-7; File Def with EXPAND_NAME, VAXTPU, 7-135 Language, FDL-5, FDL-29 with REMOVE_KEY_MAP, VAXTPU, 7-313 Alternate map registers, Device Support (A), 14-3, with SET (BELL), VAXTPU, 7-355 14-6, 14-23; Device Support (B), 1-8, 1-26 to with SET (DEBUG), VAXTPU, 7-364 1-27, 2-3with UPDATE, VAXTPU, 7-538 See also Map registers ALLOCATE command allocating, Device Support (A), 14-19; Device debugging with two terminals, Debugger, 9-5 Support (B), 3-63 to 3-64 Allocation, File Applications, 3–23, 4–30, A–1 allocating permanent, Device Support (A), ALLOCATION attribute, File Def Language, 11-2, 14-20; Device Support (B), 1-26 FDL-6, FDL-17 loading, Device Support (A), 14-22; Device Allocation class, System Services, SYS-270; Support (B), 2-44, 3-74 to 3-75 Device Support (B), 1–28 number of active, Device Support (B), 1-10, Allocation control extended address block See XABALL block number of disabled, Device Support (B), 1-11 Allocation options field releasing, Device Support (A), 14-26; Device See XAB\$B_AOP field Support (B), 2-53, 3-84 to 3-85 Allocation quantity field requesting, Device Support (B), 2-58, 3-92 to See FAB\$L ALQ field Allocation-quantity option, File Applications, 4-30 Alternate map register wait queue, Device ALLOCATION secondary attribute, File Support (A), E-14; Device Support (B), 1-10, Applications, 3-24, 4-30 3 - 93/ALL qualifier, Debugger, CD-158; System Alternate NCS library, specifying Dump Analyzer, SDA-51, SDA-108, SDA-111, See /LIBRARY qualifier SDA-115, SDA-126, SDA-143, SDA-157, Alternate record, Analyze/RMS_File, ARMS-7 SDA-161 Alternate record structure, File Applications, CANCEL BREAK command, Debugger, CD-17 CANCEL DISPLAY command, Debugger, Alternate start I/O routine, Device Support (A), 7-5; Device Support (B), 3-17 CANCEL IMAGE command, Debugger, CD-22 address, Device Support (A), 6-4; Device CANCEL MODULE command, Debugger, Support (B), 1-30, 4-2 CD-24 context, Device Support (B), 4-2 CANCEL TRACE command, Debugger, CD-30 entry point, Device Support (B), 4-2 CANCEL WATCH command, Debugger, CD-34 exit method, Device Support (B), 4-2 CANCEL WINDOW command, Debugger, input, Device Support (B), 4-2 CD-35register usage, Device Support (B), 4-2 DELETE command, Debugger, CD-54 synchronization requirements, Device Support DELETE/KEY command, Debugger, CD-56 (B), 4-2EXTRACT command, Debugger, CD-97 Alternation SEARCH command, Debugger, CD-115 pattern (I), VAXTPU, 2-16 SET IMAGE command, Debugger, CD-138 ALTMODE key, I/O User's I, 8-21 SET MODULE command, Debugger, CD-152; ALWAYS keyword Patch, PAT-78 with GSMATCH option, Programming SET TASK command, Debugger, CD-179 Resources, 5-5 SHOW DISPLAY command, Debugger, CD-212

Analyze/RMS File Utility (ANALYZE/RMS FILE) /ANALYSIS qualifier, File Def Language, FDL-42, examples (cont'd) FDL-47 creating an FDL file from a remote file, Analysis section, File Applications, 4–4, 10–1, Analyze/RMS File, ARMS-36 10-29 exiting from, Analyze/RMS_File, ARMS-10 FDL, Analyze/RMS_File, ARMS-14 file optimizing, File Applications, 4-4 ANALYSIS_OF_AREA attribute, File invoking, Analyze/RMS_File, ARMS-10 Applications, 10-1, 10-25; File Def Language, list of functions, Analyze/RMS_File, ARMS-10 FDL-2, FDL-3 output file default name, Analyze/RMS_File, ANALYSIS_OF_KEY attribute, File Applications, ARMS-16 10-1, 10-25; File Def Language, FDL-2, restrictions, Analyze/RMS_File, ARMS-11 user response to errors, Analyze/RMS_File, ANALYZE command, System Dump Analyzer, ARMS-8 SDA-32using to obtain information about VAX RMS /CRASH_DUMP qualifier, System Dump Journaling, Analyze/RMS_File, ARMS-1 Analyzer, SDA-35 with DECnet-VAX, Analyze/RMS_File, /RELEASE qualifier, System Dump Analyzer, ARMS-7 with FDL files, File Applications, 4-2 /SYMBOL qualifier, System Dump Analyzer, ANALYZE/SYSTEM command, System Dump SDA-37 Analyzer, SDA-2, SDA-32 /SYSTEM qualifier, System Dump Analyzer, Analyzing SDA-38 crash dump ANALYZE/CRASH_DUMP command, System See also Crash dump Dump Analyzer, SDA-6, SDA-32 ANALYZE/CRASH_DUMP/RELEASE command, See also System failure System Dump Analyzer, SDA-3 privileges required, System Dump /ANALYZE qualifier, File Applications, 10-29 Analyzer, SDA-32 ANALYZE/RMS FILE requirements, System Dump Analyzer, SDA-6 See Analyze/RMS File Utility running system, System Dump Analyzer, ANALYZE/RMS_FILE command, Programming SDA-38 Resources, 8-55 See also System Analyze/RMS File Utility (ANALYZE/RMS FILE), privileges required, System Dump Programming Resources, 1-38; File Applications, 1-12, 10-1, 10-29; File Def Analyzer, SDA-8, SDA-32 Anchored search, VAXTPU, 7-24 Language, FDL-39 ANCHOR keyword, VAXTPU, 7-24 to 7-25 ANALYSIS_OF_AREA section, File Def with SEARCH, VAXTPU, 7-327, 7-328 Language, FDL-3 with SEARCH_QUIETLY, VAXTPU, 7-332 ANALYSIS_OF_KEY section, File Def Language, FDL-4 Ancillary control process analyzing file structure interactively, See ACP Analyze/RMS_File, ARMS-1 AND operator, System Dump Analyzer, SDA-12; creating FDL files, Analyze/RMS_File, MACRO, 3-16; VAXTPU, 3-7 ARMS-1; File Def Language, FDL-39, ANL file type, File Applications, 10-5; Analyze/RMS_File, ARMS-16 directing output from, Analyze/RMS File, ANSI escape sequence, I/O User's I, B-9ARMS-10 "Ansi crt" string constant parameter to GET_ duplicate key values, File Def Language, INFO, VAXTPU, 7-196 FDL-5 ANY built-in procedure, VAXTPU, 7-26 to 7-27 error conditions, Analyze/RMS_File, ARMS-7 ANY_CYLINDER option, File Applications, 4-31 examining prolog, File Applications, 3-16 AOBLEQ (Add One and Branch Less Than or examples Equal) instruction, MACRO, 9-46 analyzing a file interactively, AOBLSS (Add One and Branch Less Than) Analyze/RMS_File, ARMS-36 instruction, MACRO, 9-47 analyzing a remote file, Analyze/RMS_ %AP, Debugger, 4–22, D–3 File, ARMS-36 AP (argument pointer), System Dump Analyzer, creating an FDL file, Analyze/RMS_File, SDA-13 ARMS-36 APL See VAX APL

Apostrophe (') AREA DESCRIPTOR structure, File Applications, ASCII string delimiter, Debugger, 4-15 Area extension size, RTL Library, 5-9 instruction delimiter, Debugger, 4-21 /APPEND qualifier, Debugger, CD-97; Convert, Area identification number CONV-1, CONV-7 See AID APPEND_LINE built-in procedure, VAXTPU, Area identification number field 7-28 to 7-29 See XAB\$B_AID field Application AREA primary attribute. File Applications, 3-23 characteristics of parallel, RTL Parallel BEST_TRY_CONTIGUOUS secondary Processing, 1-3 attribute, File Applications, 4-31 creating, RTL Parallel Processing, 2-1 EXACT_POSITIONING secondary attribute, deleting, RTL Parallel Processing, 2-2 File Applications, 4-31 items to consider when developing, RTL POSITION secondary attribute, File Parallel Processing, 5-1 Applications, 4-31 naming, RTL Parallel Processing, 2-4 VOLUME secondary attribute, File use of DECwindows VAXTPU built-in Applications, 4–32 procedures in, VAXTPU, B-1 to B-33 Areas option, File Applications, 4-30 Application design, File Applications, 2-1, 2-24 Argument shared access consideration, File Applications, access mechanism, Modular Procedures, B-8 3-3 actual, MACRO, 4-1 space consideration, File Applications, 3-2 adding new, Modular Procedures, 6-3 speed consideration, File Applications, 3-1 characteristics of, Modular Procedures, B-1; Application programs System Services Intro, 2-3; RTL Intro, 3-3, connecting to LAT ports, I/O User's I, 8-48 Approximate key match, File Applications, 8-11 passing mechanism, System Services Intro, AQB (ACP queue block), System Dump Analyzer, SDA-99 delimiters, RMS, 3-10 ARB (access rights block), Device Support (A), device- or function-dependent, I/O User's I, 4-10; Device Support (B), 1-42 1-2ARB built-in procedure, VAXTPU, 7-30 to 7-31 explicit, Modular Procedures, 2-3 Arc cosine implicit, Modular Procedures, 2-3 in degrees, RTL Math, MTH-6, MTH-70 in a macro, MACRO, 4-1 in radians, RTL Math, MTH-3, MTH-68 initialization and control block store macros, Arc sine RMS, 3-8 in degrees, RTL Math, MTH-11, MTH-74 length, MACRO, 6-64 in radians, RTL Math, MTH-9, MTH-72 list, I/O User's I, A-1 to A-9; I/O User's II, Arc tangent A-1 to A-6 hyperbolic, RTL Math, MTH-21, MTH-84 LPA11-K subroutine, I/O User's I, 4-16 in degrees, RTL Math, MTH-15, MTH-19, mechanism array, System Services Intro, 11-10 MTH-78, MTH-82 number of, MACRO, 6-63 in radians, RTL Math, MTH-13, MTH-17, optional, Modular Procedures, 2-11, A-3 MTH-76, MTH-80 order, Modular Procedures, 2-11, A-2 Area, File Applications, 3-23; File Def Language, passing, RMS, 1-2 passing mechanism, Modular Procedures, B-8; multiple, File Applications, 3-6, 3-23, 3-25 RTL Intro, 2-21 defining in an FDL file, File Applications, separator, RMS, 3-6 3 - 24separator in VMS RMS coding, RMS, 3-6 on a volume set, File Applications, 3-23 signal array, System Services Intro, 11-10 multiple areas, File Def Language, FDL-6, specifying, System Services Intro, 2-7 FDL-28 specifying as run-time values, RMS, 3-9 Area allocation quantity field to FAB, RMS, 1-2 See XAB\$L_ALQ field to RAB, RMS, 1-4 AREA attribute, File Def Language, FDL-2, VMS data types, Modular Procedures, B-6 FDL-6, FDL-27, FDL-28, FDL-40 VMS usage, System Services Intro, 1-6 VMS Usage, Modular Procedures, B-1; RTL Area default extension quantity field Intro, 2-6 See XAB\$W_DEQ field

Argument blocks, Modular Procedures, 6-4 ARRAY data type, VAXTPU, 2-2 to 2-3 Argument data type, Routines Intro, 2-15; See also CREATE_ARRAY built-in procedure System Services Intro, 1–7 Array descriptor, Routines Intro, 2-25 Argument keyword Array type, Debugger, 4-16 delimiting for VMS RMS service, RMS, 3-10 vector register, Debugger, 11-6 Argument list, Routines Intro, 2-4; System ASB (asynchronous save block), System Dump Services Intro, 2-3 Analyzer, SDA-76 count field, RMS, 2-5 .ASCIC directive, MACRO, 6-8 creating, System Services Intro, 2-7 /ASCIC qualifier, Debugger, CD-58, CD-81 definition of, Routines Intro, 2-3 .ASCID directive, MACRO, 6-9 description, RMS, 2-4 effect on position independence, Linker, 4-5 error routine address field, RMS, 2-5 effect on shareability, Linker, 1-10, 4-4 evaluation, Routines Intro, 2-6 /ASCID qualifier, Debugger, CD-59, CD-81 for AST service routine, System Services Intro, ASCII character set, MACRO, A-1 for condition handler, System Services Intro, depositing string, Delta/XDelta, DELTA-37 displaying contents in, Delta/XDelta, format, Routines Intro, 2-4 DELTA-25 for system services, System Services Intro, 2-3 operator, MACRO, 3-12 interpreting, Routines Intro, 2-4 ASCII (8-bit) code, I/O User's I, 2-8 new FAB address field, RMS, 2-5 /ASCII-/NOASCII qualifier passing to service, RMS, 3-10 with DELETE command, Patch, PAT-53 passing to VMS RMS service, RMS, 3-10 with DEPOSIT command, Patch, PAT-56, success routine address field, RMS, 2-5 **PAT-57** using macros, System Services Intro, 2-5 with EVALUATE command, Patch, PAT-60 Argument passing mechanism, System Services with EXAMINE command, Patch, PAT-63 Intro, 1-8 with REPLACE command, Patch, PAT-72 Argument pointer with SET MODE command, Patch, PAT-76 with VERIFY command, Patch, PAT-91 See AP ASCII built-in procedure, VAXTPU, 7-32 to 7-34 Arguments heading, Routines Intro, 1-7; System ASCII character Services Intro, 1–6 delimiting in control block fields, RMS, 3-6, Argument substitution, RTL Screen Management, 3 - 75 - 15ASCII character set arg_list data type, Routines Intro, A-2t See DEC Multinational Character Set Arithmetic .ASCII directive, MACRO, 6-10 See also Condition handler ASCII-NOASCII mode, Patch, PAT-16 using system routines, Programming ASCII pad character, Convert, CONV-18 Resources, 1-24 /ASCII qualifier, Debugger, CD-59, CD-82 Arithmetic expression, VAXTPU, 3-9 ASCII space character evaluating, Patch, PAT-59 conversion function, Convert, CONV-3 special operators for, Patch, PAT-23 using as pad character, National Char Set, Arithmetic instruction NCS-10 decimal string, MACRO, 9-144 **ASCII** string floating-point, MACRO, 9-101 converting to binary, System Services, SYS-36 integer, MACRO, 9-5 entering, Patch, PAT-20 Arithmetic operations, RTL Screen Management, ASCII string storage directive, MACRO, 6-7 5 - 16counted (.ASCIC), MACRO, 6-8 Arithmetic operators, *Delta/XDelta*, DELTA-10; string (.ASCII), MACRO, 6-10 System Dump Analyzer, SDA-12 string-descriptor (.ASCID), MACRO, 6-9 Arithmetic shift, Delta/XDelta, DELTA-10 zero-terminated (.ASCIZ), MACRO, 6-11 Arithmetic shift operator (@), System Dump ASCII string type, Debugger, 4–15, 4–26, CD–58, Analyzer, SDA-13; MACRO, 3-16 CD-81, CD-191 Array ASCII time, System Services Intro, 10-7 conversion of, $RTL\ Math,\ MTH-63$ /ASCIW qualifier, Debugger, CD-59, CD-82 mechanism, System Services Intro, 11-10 .ASCIZ directive, MACRO, 6-11 signal, System Services Intro, 11-10 virtual address, System Services Intro, 12-4

/ASCIZ qualifier, Debugger, CD-59, CD-82 ASHL (Arithmetic Shift Long) instruction, MACRO, 9-10 ASHP (Arithmetic Shift and Round Packed) instruction, MACRO, 9-150 ASHQ (Arithmetic Shift Quad) instruction, MACRO, 9-10 Assembler, Programming Resources, 1-9 Assembler directives, summary, MACRO, C-1 Assembler notation, MACRO, 10-17 Assembly termination, MACRO, 6-25 Assembly termination directive (.END), MACRO, 6 - 25ASSIGN command, Linker, LINK-21; System Services Intro, 6-2; File Applications, 4-14 /TRANSLATION_ATTRIBUTES qualifier, File Applications, 5-7 Assignment statement, MACRO, 1-1, 3-17; VAXTPU, 3-21 AST (asynchronous system trap), Programming Resources, 4-7; Debugger, 9-16; RTL Library, 2-22; Device Support (B), 3-6 to 3-7 See also Attention AST See also Synchronization access mode, System Services Intro, 5-2 blocking, System Services Intro, 13-8, 13-14 CALL command, Debugger, 9-16, CD-10 condition handling at AST level, Modular Procedures, 3-26 control, Device Support (B), 1-86 declaring, System Services Intro, 5-3; System Services, SYS-133 definition, Modular Procedures, 3-19 delivering, Programming Resources, 4-8; Device Support (A), 3-4; Device Support (B), 3-2, 3-11 delivery, System Services Intro, 5-5 disabling, Debugger, CD-64; System Services, SYS-512; RTL Parallel Processing, 5-6 disabling interrupts, Modular Procedures, 3-24 displaying AST handling conditions, Debugger, CD-205 enabling, Debugger, CD-76; System Services, SYS-512 enabling an event, RTL Parallel Processing, 4-6example, System Services Intro, 5-5 execution, Programming Resources, 4-7 for aborted I/O request, Device Support (B), handler, Modular Procedures, 3-19, 3-21 I/O at AST level, Modular Procedures, 3-25, A - 5in target process, System Services Intro, 9-16 interrupt, Modular Procedures, 3-19 out of band, Device Support (A), 11-8; Device Support (B), 1-86

AST (asynchronous system trap) (cont'd) parameter, System Services Intro, 5-4 process-requested, Device Support (A), 4-20; Device Support (B), 3-7, 3-10, 3-73 process wait state, System Services Intro, 5-2 queuing, Device Support (A), 3-4; Device Support (B), 3-73 quota, System Services Intro, 7-3; I/O User's I, 3-24, 4-14, 6-13, 7-5, 8-43 reentrancy, Modular Procedures, 3-19, 3-20, A-5restrictions on use, DECthreads, B-1 service routine, Modular Procedures, 3–19; System Services Intro, 5-3 setting for power recovery, System Services, SYS-522 setting timer for, System Services, SYS-519 SHOW CALLS command, Debugger, 9-16 special kernel-mode, Device Support (A), 3-4, 3-5, 4-20, 7-8; Device Support (B), 1-12 system service, System Services Intro, 5-1 thread, Modular Procedures, 3-19 user specified, Device Support (B), 1-39 writing, Programming Resources, 4-7 writing AST-reentrant procedures, Modular Procedures, 3–20 AST control block See ACB AST-driven program debugging, Debugger, 9-16 Asterisk (*) HELP command, Debugger, CD-102 multiplication operator, Debugger, D-7 ASTLM (AST queue limit) quota effect of canceling wakeup on, System Services, SYS-54 ASTLVL (AST level) processor register, Device Support (A), 3-4 displaying, System Dump Analyzer, SDA-90 AST procedure (for connect to interrupt facility), Device Support (A), 19-19 /AST qualifier, Debugger, 9–16, CD–11 AST reentrant. RTL Screen Management, 4-1 **AST** routines global symbols, System Dump Analyzer, service routine for connect to interrupt facility, Device Support (A), 19-9, 19-11, 19-12 ast procedure data type, Routines Intro, A-2t ASYNCHRONOUS attribute, File Def Language, FDL-9 Asynchronous cancelability, DECthreads, 2-20 Asynchronous DDCMP driver, I/O User's II, 5-1 AST service routine address, I/O User's II, 5 - 10attention AST, I/O User's II, 5-10 capabilities, I/O User's II, 5-1 characteristics, I/O User's II, 5-7 to 5-8

Asynchronous DDCMP driver	Asynchronous DDCMP driver
characteristics (cont'd)	stopping (cont'd)
controller, I/O User's II , 5–7, 5–10	modem line, I/O User's II , 5–9
device, I/O User's II, 5-2	protocol, I/O User's II , 5-9
extended, I/O User's II , 5–8	tributary, I/O User's II , 5–9
modifying, I/O User's II, 5-7	supported device, I/O User's II , 5–1
tributary, I/O User's II , 5–10	SYS\$GETDVI, I/O User's II, 5-2
controller	tributary
mode, I/O User's II, 5-8	starting, I/O User's II, 5–8
starting, I/O User's II , 5–6	stopping, I/O User's II , 5–9
controller counter parameter IDs, I/O User's	tributary counter parameter IDs, I/O User's II
II, 5-11	5–13
device characteristics, I/O User's II , 5–2	unit and line status, I/O User's II , 5–3
duplex modes, I/O User's II , 5–7	write function, I/O User's II , 5–5
enable attention AST, I/O User's II, 5-9	Asynchronous event notification
enable modem, I/O User's II , 5–7	See AEN
errors, I/O User's II, 5-3	Asynchronous events, RTL Screen Management,
error summary bits, I/O User's II, 5-3	4–1
extended characteristics, I/O User's II, 5-8	Asynchronous I/O option
full-duplex mode, I/O User's II, 5-1	See FAB\$V_ASY option
function codes, I/O User's II, 5-4, A-4	See RAB\$V_ASY option
function modifiers, I/O User's II, 5-5, 5-6, 5-8	Asynchronous input/output, Programming
to 5–10	Resources, 7–47
I/O functions, I/O User's II, 5–5, 5–6, 5–10	Asynchronous memory management exception
I/O status block, I/O User's II, 5–14	handling, MACRO, 10-19, 10-30
message size, I/O User's II , 5–2, 5–5, 5–6	Asynchronous operation, File Applications, 8–17,
modem	8–18
disabling line, I/O User's II , 5–9 modifying characteristics, I/O User's II , 5–7	contrasted with synchronous operation, RMS,
parameter ID, I/O User's II, 5-7	2–7
point-to-point	performance, File Applications, 9-9
configuration, I/O User's II , 5–1	using R0, RMS, 2-5
privilege, I/O User's II, 5–5	Asynchronous programming techniques
protocol, I/O User's II, 5-7	using in a multithreaded program,
starting, I/O User's II , 5–8	DECthreads, A-6
stopping, I/O User's II , 5–9	Asynchronous save block
quotas, I/O User's II, 5–1	See ASB
read function, I/O User's II, 5-5	Asynchronous SCSI data transfer mode
read internal counters, I/O User's II, 5-10	enabling, I/O User's I, 11-7, 11-13; Device
sense mode function, I/O User's II , 5–10	Support (A), 17-13; Device Support (B),
set controller mode, I/O User's II, 5-6	2–88
characteristics, I/O User's II, 5-7 to 5-8	Asynchronous signals, DECthreads, A-4
message size, I/O User's II, 5-8	Asynchronous system service, System Services
P2 buffer, I/O User's II, 5-7	Intro,2–11
parameter ID, I/O User's II , 5–7	Asynchronous system trap
set mode function, I/O User's II, 5-6	See AST
set tributary mode, I/O User's II , 5–8	ASY option, File Def Language, FDL-9
extended characteristics, I/O User's II, 5–8	AT\$_GENBI, Device Support (B), 1-33
P2 buffer, I/O User's II, 5-8	AT\$_MBA, Device Support (B), 1–33
shutdown controller mode, I/O User's II , 5–9	AT\$_UBA, Device Support (B), 1-33
shutdown tributary mode, I/O User's II, 5–9	Atomic data type, Routines Intro, 2-15
starting	Atomic queue, DECthreads, 2-16
controller, I/O User's II, 5–7	At sign (@)
protocol, I/O User's II, 5–8	contents-of operator, Debugger, D-7
tributary, I/O User's II, 5–8	execute-procedure command, Debugger, 8-1,
status returns, I/O User's II, A-5	CD-7
stopping	SET ATSIGN command, Debugger, CD-123
controller, I/O User's II , 5–9	SHOW ATSIGN command. Debugger, CD-206

ATTACH built-in procedure, VAXTPU, 7–35 to	Attributes for TPU (cont'd)
7–36 ATTACH command, Debugger, 3–4, CD–9;	setting records, VAXTPU, 7-448
System Dump Analyzer, SDA-41	guardsize, DECthreads, 2–8
Attention AST	inherit scheduling, DECthreads, 2–8
See also AST	mutex type, DECthreads, 2–8
asynchronous DDCMP driver, I/O User's II,	program section
5–9	absolute, Linker, 6–4
blocking, Device Support (B), 1-82, 1-83	concatenated, Linker, 1–12, 6–4
delivering, Device Support (B), 3-2	executable, Linker, 6-5
disabling, Device Support (B), 3-6 to 3-7	global, <i>Linker</i> , 1–13, 6–5, 6–12 in image section generation, <i>Linker</i> , 6–15
DMC11/DMR11 driver, I/O User's II, 1–7	in shareable images, Linker, 4–3
DMP11/DMF32 driver, I/O User's II, 2–19	local, Linker, 1–13, 6–5
DR11-W/DRV11-WA driver, I/O User's II ,	modification of, Linker, 6–3
3–14	nonexecutable, Linker, 6-5
enabling, Device Support (B), 3-6 to 3-7	nonposition-independent, Linker, 1–13,
Ethernet/802 drivers, I/O User's II, 6–36 flushing, Device Support (B), 3–4	6–6
mailbox, I/O User's I, 7–9	nonshareable, Linker, 1-13, 6-6
terminal, I/O User's I , $8-42$	nonvector, Linker, 1-13, 6-6
Attention condition, Device Support (A), 15–9 to	nonwritability, Linker, 6–6
15–10	nonwritable, $Linker$, 1–13
See also MASSBUS	overlaid, $Linker$, 1–12, 6–4
See also MBA	position-independent, Linker, 1–13, 6–6
See also MBA\$L_AS	relocatable, Linker, 6-4
Attention summary register	shareable, <i>Linker</i> , 1–13, 6–6
See MBA\$L_AS	vector, Linker, 1–13, 6–6
Attribute	writability, <i>Linker</i> , 6–6 writable, <i>Linker</i> , 1–13
See also Attributes	scheduling policy, DECthreads, 2–6
display, Debugger, 7-3, 7-6, 7-9, 7-18,	scheduling priority, DECthreads, 2-7
CD-117, CD-238	stacksize, DECthreads, 2–8
enumerating, System Services, SYS-173	thread, DECthreads, 2-5
guardsize, DECthreads, cma-19, cma-31	window, VAXTPU, 7-78
modifying, System Services, SYS-176	Attributes object
obtaining mutex kind, DECthreads, cma-23	creating, DECthreads, 2-4, cma-15, pthread-3
obtaining queuesize, DECthreads, cmalib-7	definition of, DECthreads, 2-4
priority, <i>DECthreads</i> , cma-25, cma-37, pthread-9, pthread-17	deleting, $DECthreads$, 2–5, cma–17
reading, System Services, SYS-178	Audit trail
scheduling, DECthreads, cma-21, cma-33,	changing the value of, SUMSLP, SUM-12
pthread-7, pthread-15	Autoconfiguration
scheduling policy, DECthreads, cma-27,	See also System Generation Utility
cma-39, pthread-11, pthread-19	driver control of, Device Support (A), 12–21
setting mutex kind, DECthreads, cma-35	of SCSI device, I/O User's I, 11–9; Device
setting queuesize, DECthreads, cmalib-9	Support (A), 17–30
stacksize, DECthreads, cma-29, cma-41,	Autodecrement mode, MACRO, 5–7 operand specifier format, MACRO, 8–21
pthread–13, pthread–21	Autoincrement deferred mode, MACRO, 5–6
testing for one, System Services, SYS-181	operand specifier format, MACRO, 8-20
window	Autoincrement mode, MACRO, 5–5
with DECwindows, Debugger, 1–10	operand specifier format, MACRO, 8–19
Attributes, File Applications, 4–2, 4–9; File Def	Automatic initialization, RTL Parallel Processing
Language, FDL-1, FDL-46	2–1
See also Attribute	AUTO window, DECwindows, Debugger, 1-11
See also Attributes object	AUTO_REPEAT keyword, VAXTPU, 7-353
buffer, VAXTPU, 7-60	"Auto_repeat" string constant parameter to
condition variable, DECthreads, 2–9 for TPU	GET_INFO, VAXTPU, 7–196
101 11 0	

/AW	Barrier synchronization (cont'd)
See /ASCIW qualifier	advantages and disadvantages, RTL Parallel
/AZ	Processing, 5–7
See /ASCIZ qualifier	PPL\$ routines for, RTL Parallel Processing, 4-2 to 4-4
_	Base
В	of numeric constant
;B command, Delta/XDelta, DELTA-28	specifying, VAXTPU, 3–37
BACK command, Analyze/RMS_File, ARMS-23	Base address
Background scheduling, DECthreads, 2-6	cluster, Linker, 6–15 defaults for images, Linker, 1–7, 3–5
Backplane interconnect, Device Support (A), 1–11,	image section in map, Linker, 5-5
1–16, 14–2	specification of, <i>Linker</i> , 3–6
See also CMI	system image, Linker, 1-7, 3-5, LINK-19
See also Q22-bus	Based image
See also SBI See also VAXBI bus	creation of, Linker, 1-7, 3-5
Backplane interconnect interface chip	memory allocation for, Linker, 1-7, 3-5, 4-4
See BIIC	rules for upward compatibility, <i>Linker</i> , 1–11, 4–9
Backslash (\)	Base message number directive (.BASE)
current value, Debugger, 4-6	in message source file, Message, MSG-16
global-symbol specifier, Debugger, 5-10,	Base operand specifier, MACRO, 8–26
CD-166, D-7	Base register
path name delimiter, Debugger, 5-9, 6-4, D-7	loading, Delta/XDelta, DELTA-40
with DECwindows, Debugger, 1–10, 1–26	symbol for, Delta/XDelta, DELTA-9
BACKUP	BASIC
See Backup Utility BACKUP attribute, File Def Language, FDL-15	See VAX BASIC
Backup date and time field	BATCH clause for QUALIFIER clause, Command Def,
See XAB\$Q_BDT field	CDU-25, CDU-33
Backup Utility (BACKUP), File Applications,	Batch job, VAXTPU, 5-5
10–2	Batch job command procedure
copying system dump file, System Dump	using a card reader, I/O User's I , 2–2
$Analyzer,\mathrm{SDA-4}$	Batch-like editing, VAXTPU, 5–3
eliminating extents, File Applications, 9–8	Batch queue
making archive copies, File Applications, 10–31	default, File Def Language, FDL-24 Baud rate
Backward indexing, RTL Math, 2-6 BADDALRQSZ bugcheck, Device Support (B),	terminal, I/O User's I, 8–40
3-3, 3-19	BBC (Branch on Bit Clear) instruction, MACRO,
Bad page list	9–50
displaying, System Dump Analyzer, SDA-115	BBCC (Branch on Bit Clear and Clear) instruction,
/BAD qualifier, System Dump Analyzer, SDA-115	MACRO, 9–51
Balance set	BBCCI (Branch on Bit Clear and Clear Interlocked) instruction, MACRO, 9–52
swapping, System Services Intro, 12–6	BBCS (Branch on Bit Clear and Set) instruction,
Barrier adjusting a quorum for, RTL Parallel	MACRO, 9-51
Processing, 4–4	BBS (Branch on Bit Set) instruction, MACRO,
creating, RTL Parallel Processing, 4-2	9–50
definition of, RTL Parallel Processing, 4-2	BBSC (Branch on Bit Set and Clear) instruction,
deleting, RTL Parallel Processing, 4-3	MACRO, 9–51
reading, RTL Parallel Processing, 4-3	BBSS (Branch on Bit Set and Set) instruction,
setting a quorum for, RTL Parallel Processing,	MACRO, 9–51 BBSSI (Branch on Bit Set and Set Interlocked)
4-4 waiting at, RTL Parallel Processing, 4-3	instruction, MACRO, 9–52
Barrier synchronization	BCC (Branch on Carry Clear) instruction,
See also Parallel processing	MACRO, 9–48

BCS (Branch on Carry Set) instruction, MACRO, BDB (buffer descriptor block), System Dump Analyzer, SDA-76 BDB summary page (BDBSUM), System Dump Analyzer, SDA-76 /BEFORE qualifier, Librarian, LIB-14; National Char Set, NCS-23 BEGINNING_OF built-in procedure, VAXTPU, 7-37 to 7-38 BELL keyword, VAXTPU, 7-355 with SET (MESSAGE_ACTION_TYPE), VAXTPU, 7-426 "Bell" string constant parameter to GET_INFO, VAXTPU, 7-205 BEQL (Branch on Equal) instruction, MACRO, 9 - 48BEQLU (Branch on Equal Unsigned) instruction. MACRO, 9-48 BEST TRY CONTIGUOUS attribute, File Def Language, FDL-6, FDL-18 BEST_TRY_CONTIGUOUS secondary attribute, File Applications, 3–23, 4–31 "Beyond_eob" string constant parameter to GET INFO, VAXTPU, 7-185 "Beyond_eol" string constant parameter to GET_INFO, VAXTPU, 7-185, 7-220 BGEQ (Branch on Greater Than or Equal) instruction, MACRO, 9-48 BGEQU (Branch on Greater Than or Equal Unsigned) instruction, MACRO, 9-48 BGTR (Branch on Greater Than) instruction, MACRO, 9-48 BGTRU (Branch on Greater Than Unsigned) instruction, MACRO, 9-48 BISee VAXBI bus BICB2 (Bit Clear Byte 2 Operand) instruction, MACRO, 9-11BICB3 (Bit Clear Byte 3 Operand) instruction, MACRO, 9-11 BICL2 (Bit Clear Long 2 Operand) instruction, MACRO, 9-11 BICL3 (Bit Clear Long 3 Operand) instruction, MACRO, 9-11BICPSW (Bit Clear PSW) instruction, MACRO, BICW2 (Bit Clear Word 2 Operand) instruction, MACRO, 9-11BICW3 (Bit Clear Word 3 Operand) instruction, MACRO, 9-11 BID (block identifier) field, RMS, 2-1 BIIC\$L_BCICR, Device Support (A), 16-16, 16-28

BIIC\$L_BER, Device Support (A), 16-7, 16-15,

BIIC\$L_BICSR, Device Support (A), 16-13, 16-24

BIIC\$L_DTREG, Device Support (A), 16-7, 16-24 BIIC\$L_EAR, Device Support (A), 16-28 BIIC\$L_EICR, Device Support (A), 16-11, 16-15, 16-26 to 16-27 BIIC\$L_GPR0, Device Support (A), 16-30 BIIC\$L GPR1, Device Support (A), 16-30 BIIC\$L_GPR2, Device Support (A), 16-30 BIIC\$L_GPR3, Device Support (A), 16-30 BIIC\$L_IDR, Device Support (A), 16-15, 16-27 BIIC\$L_IPIDR, Device Support (A), 16-27 BIIC\$L IPIMR, Device Support (A), 16-27 BIIC\$L_IPISR, Device Support (A), 16-27 BIIC\$L IPISTPF, Device Support (A), 16-29 BIIC\$L_SAR, Device Support (A), 16-27 BIIC\$L_UICR, Device Support (A), 16-11, 16-15, 16-29 to 16-30 BIIC\$L_WSR, Device Support (A), 16-28 to 16-29 BIIC\$V ARBCNTRL, Device Support (A), 16-14 BIIC\$V_BROKE, Device Support (A), 16-13 BIIC\$V_SST, Device Support (A), 16-13, 16-14 BIIC\$V_STS, Device Support (A), 16-13, 16-14 BIIC (backplane interconnect interface chip), Device Support (A), 16-5 clearing error register, Device Support (A), 16-14, 16-15 CSR space, Device Support (A), 16-5 enabling error interrupts, Device Support (A), 16-16, 16-26 enabling options, Device Support (A), 16-16 initializing, Device Support (A), 11-2 self-test, Device Support (A), 16-13 to 16-14; Device Support (B), 2-5 setting interrupt vectors, Device Support (A), 16 - 15\$BIICDEF macro, Device Support (A), 16-5, 16 - 23BIIC registers accessing, Device Support (A), 16-5 symbolic names, Device Support (A), 16-23 to %BIN, Debugger, 4-11, D-5 BIN2 value, File Def Language, FDL-30 BIN4 value, File Def Language, FDL-30 BIN8 value, File Def Language, FDL-30 Binary data compression of, Utility Routines, DCX-1 Binary operator, Message, MSG-7; System Dump Analyzer, SDA-12 to SDA-13; MACRO, 3-15 summary, MACRO, C-8 /BINARY qualifier, Debugger, 4-11, CD-77, CD-79, CD-82 Binary semaphore, Programming Resources, 4-17; RTL Parallel Processing, 4-10 operations on, RTL Parallel Processing, 4-10 Binary value converting to ASCII string, System Services, SYS-221

16-16, 16-26

to 16-26

BLAS Level 1 (cont'd) BIOCNT (buffered I/O count), Convert, CONV-24; BLAS1\$VxSWAP, RTL Math, MTH-187 Device Support (A), 2-3 BLB (buffer lock block), System Dump Analyzer, BIOLM (buffered I/O count limit) SDA-76 adjusting, Device Support (A), 4-20 BLBC (Branch on Low Bit Clear) instruction, charging, Device Support (A), 4-9, 4-12 MACRO, 9-53 checking, Device Support (A), 4-9 BLBS (Branch on Low Bit Set) instruction, for mailbox, Device Support (B), 1-73 MACRO, 9-53BIOLM (buffered I/O count limit) quota, System BLEQ (Branch on Less Than or Equal) instruction, Services Intro, 7-3 MACRO, 9-48 BIO option, File Def Language, FDL-2, FDL-9 BLEQU (Branch on Less Than or Equal Unsigned) BIRQ level, Device Support (A), 14-33, 14-34 instruction, MACRO, 9-48 BISB2 (Bit Set Byte 2 Operand) instruction, BLINK keyword MACRO, 9-12with MARK, VAXTPU, 7-261 BISB3 (Bit Set Byte 3 Operand) instruction, with SELECT, VAXTPU, 7-337 MACRO, 9-12with SET (PROMPT_AREA), VAXTPU, 7-446 BISL2 (Bit Set Long 2 Operand) instruction, with SET (STATUS LINE), VAXTPU, 7-476 MACRO, 9-12 with SET (VIDEO), VAXTPU, 7-492 BISL3 (Bit Set Long 3 Operand) instruction, "Blink status" string constant parameter to MACRO, 9-12GET_INFO, VAXTPU, 7-221 BISPSW (Bit Set PSW) instruction, MACRO, "Blink_video" string constant parameter to 9-72GET_INFO, VAXTPU, 7-221 BISW2 (Bit Set Word 2 Operand) instruction, BLISS MACRO, 9-12 See VAX BLISS BISW3 (Bit Set Word 3 Operand) instruction, BLISS-32 MACRO, 9-12 See VAX BLISS-32 BITB (Bit Test Byte) instruction, MACRO, 9-13 BLK option, File Def Language, FDL-33 4-bit field, File Def Language, FDL-31 Bit field BLN (block length) field replace field, RTL Library, LIB-253 See NAM\$B BLN field return sign extended to longword, RTL Block, File Applications, 1-4, 3-6 Library, LIB-142 I/O, File Applications, 8–13 to 8–14 Bit field operator (<p,s,e>), Debugger, D-7 Block boundary option BITL (Bit Test Long) instruction, MACRO, 9-13 See FAB\$V_BLK option Bits per inch Block code field See bpi See XAB\$B COD field BITW (Bit Test Word) instruction, MACRO, 9-13 Blocked Bitwise AND operator, RTL Math, 1-5 definition of, RTL Parallel Processing, 1-2 Bitwise complement operator, RTL Math, 1-8 Block I/O Bitwise exclusive OR operator, RTL Math, 1-5 additional services that use, RMS, 4-23 Bitwise inclusive OR operator, RTL Math, 1-6 applicable services, RMS, 4-23 Bitwise shift. RTL Math. 1-9 description, RMS, 4-23 BI_NODE_RESET macro, Device Support (A), how implemented by VMS RMS services, RMS, 16–13; Device Support (B), 2–5 Black box testing, Modular Procedures, 4-2 how to execute, RMS, 4-24 BLANK_TABS keyword, VAXTPU, 7-483 how to specify for relative and indexed files, BLAS (Basic Linear Algebra Subroutine) RMS, 4-24definition of, RTL Math, 2-1 program example, RMS, 4-25 BLAS Level 1 requirements for mixing with record I/O, RMS, BLAS1\$VIxAMAX, RTL Math, MTH-149 BLAS1\$VxASUM, RTL Math, MTH-152 restrictions to, RMS, 4-23 BLAS1\$VxAXPY, RTL Math, MTH-155 services, RMS, 3-5 BLAS1\$VxCOPY, RTL Math, MTH-160 specifying, RMS, 4-23 BLAS1\$VxDOT, RTL Math, MTH-165 use of NBP for sequential files, RMS, 4-25 BLAS1\$VxNRM2, RTL Math, MTH-170 with multiple record streams, RMS, 4-25 BLAS1\$VxROT, RTL Math, MTH-173 with record I/O processing, RMS, 4-25 BLAS1\$VxROTG, RTL Math, MTH-178 Block I/O execution BLAS1\$VxSCAL, RTL Math, MTH-183

Block I/O execution (cont'd) BLOCK SPAN attribute. File Applications, 3–10; contrasted with record I/O execution, RMS, File Def Language, FDL-33 4-24 BLOCK_SPAN secondary attribute, File Block I/O option Applications, 4-29 See FAB\$V_BIO option BLSS (Branch on Less Than) instruction, See RAB\$V BIO option *MACRO*, 9–48 BLSSU (Branch on Less Than Unsigned) Block identifier field instruction, MACRO, 9-48 See BID field BMB summary page (BLBSUM), System Dump See FAB\$B_BID field Analyzer, SDA-76 See NAM\$B_BID field BNEQ (Branch on Not Equal) instruction, See RAB\$B_BID field MACRO, 9-48 Blocking AST BNEQU (Branch on Not Equal Unsigned) description, System Services Intro, 13-8 instruction, MACRO, 9-48 using, System Services Intro, 13-14 **BOLD** keyword Block length (BLN) field with MARK, VAXTPU, 7-261 See NAM\$B_BLN field with SELECT, VAXTPU, 7-337 Block length field in allocation XAB with SET (PROMPT_AREA), VAXTPU, 7-446 with SET (STATUS_LINE), VAXTPU, 7-476 See XAB\$B BLN field with SET (VIDEO), VAXTPU, 7-492 Block length field in date and time XAB "Bold_status" string constant parameter to See XAB\$B_BLN field GET INFO, VAXTPU, 7-221 Block length field in file access block "Bold video" string constant parameter to See FAB\$B BLN field GET_INFO, VAXTPU, 7-221 Block length field in file header characteristics boolean data type, Routines Intro, A-2t XAB Boolean expression, VAXTPU, 3-11 See XAB\$B_BLN field Boolean value flag, Routines Intro, A-2t Block length field in item list XAB BOOTED processor state, Device Support (B), See XAB\$B_BLN field 1 - 16Boot stack, Device Support (B), 1-15 Block length field in key XAB **Bootstrapping** See XAB\$B_BLN field with XDELTA, Device Support (A), 13-1 to Block length field in protection XAB 13 - 5See XAB\$B_BLN field Bootstrap procedures Block length field in record access block for XDELTA, Delta/XDelta, DELTA-2 to See RAB\$B_BLN field DELTA-8 Block length field in revision date and time XAB BOOT_REJECTED processor state, Device Support (B), 1-16 See XAB\$B_BLN field Border Block length field in summary XAB virtual display, Programming Resources, 7-10 See XAB\$B_BLN field Boss/worker model, DECthreads, 1-5 Block length field in terminal XAB work queue variation, DECthreads, 1-5 See XAB\$B BLN field BOT (beginning-of-tape) Block or record I/O option See Magnetic tape, BOT marker See FAB\$V_BRO option /BOTTOM qualifier, Debugger, CD-112 Block size, RTL Library, 5-10 Boundary tag, RTL Library, 5-8 Block-size option, File Applications, 4-28 Bound marker, VAXTPU, 2-9 to 2-10 Block spanning option, File Applications, 3–10 Bound procedure value, Modular Procedures, Block storage allocation directives (.BLKx), 3 - 12MACRO, 6-12 "Bound" string constant parameter to GET_INFO, BLOCK_COUNT attribute, File Def Language, VAXTPU, 7–171, 7–185, 7–221 bpi (bits per inch), File Applications, 1–8 BLOCK_IO attribute, File Def Language, FDL-2, BPT (Breakpoint) instruction, Device Support (A), 13-6; MACRO, 9-73 BLOCK_IO secondary attribute, File Applications, Branch access type, MACRO, 8-17 Branch instruction

calculating the location for, Patch, PAT-70

Branch instruction (cont'd) BREAKPOINTS parameter, Device Support (A), calculating the relative displacement for, 13-1, 13-5 Patch, PAT-70 "Breakpoint" string constant parameter to Branch mode, MACRO, 5-18 GET_INFO, VAXTPU, 7-179 operand specifier format. MACRO, 8-29 Brief image map, Linker, 1-12 /BRANCH qualifier, Debugger, CD-17, CD-30, Brief map, Linker, 5-1, LINK-3 CD-125, CD-184, CD-258 module information in, Linker, 5-2, 5-3 BRB (Branch Byte Displacement) instruction, sections in, Linker, 5-2 MACRO, 9-54 BRIEF prompt, File Def Language, FDL-55 BREAK built-in procedure, VAXTPU, 7-39 /BRIEF qualifier, Debugger, CD-218, CD-230; Breakpoint, Delta/XDelta, DELTA-28 to Linker, LINK-3 DELTA-31 BR level, Device Support (A), 14-33 canceling, Debugger, 3-15, CD-17 relation to SCB vectors, Device Support (B), clearing, Delta/XDelta, DELTA-28, 1 - 9DELTA-29; Device Support (A), 13-18 Broadcasting a wake-up, DECthreads, cma-43, complex, Delta/XDelta, DELTA-30; Device pthread-33 Support (A), 13–18 BROADCAST keyword defined, Debugger, 3-8 with SET (BELL), VAXTPU, 7-355 delayed triggering of, Debugger, 3-13, CD-125 Broadcast message, Programming Resources, displaying, Debugger, CD-207 7-43; I/O User's I, 8-18, 8-21, 8-23, 8-46 displaying XDELTA breakpoint list, Device alternate handler, Programming Resources, Support (A), 13–18 7 - 44DO clause, Debugger, 3-13 default handler, Programming Resources, 7-43 exception, Debugger, 9-10, CD-124 BRO option, File Def Language, FDL-3 initial, in XDELTA, Delta/XDelta, DELTA-7 BRW (Branch Word Displacement) instruction, initial, in XDELTA multiprocessing MACRO, 9-54 environment, Delta/XDelta, DELTA-8 BSBB (Branch to Subroutine Byte Displacement) in multiprocessing environment, Delta/XDelta, instruction, MACRO, 9-55 DELTA-13, DELTA-35 BSBW (Branch to Subroutine Word Displacement) in tasking (multithread) program, Debugger, instruction, MACRO, 9-55 12 - 24Bucket, File Applications, 3-6, 3-17; on activation (multiprocess program), Analyze/RMS_File, ARMS-2; File Def Debugger, 10-12 Language, FDL-5, FDL-27 on task event, Debugger, 12-27 defined, File Applications, 2-1 on termination (image exit), Debugger, 10-12 examining, Analyze/RMS_File, ARMS-6 on vector instruction, Debugger, 11-3 fill, File Def Language, FDL-28 predefined, Debugger, 9-9 fill percentage, Convert, CONV-14 predefined, tasking (multithread) program, list of free, Convert, CONV-4 Debugger, 12-29 reclaiming, File Applications, 3-17, 10-30; proceeding from, Delta/XDelta, DELTA-32; Convert, CONV-1 Device Support (A), 13-5, 13-18 reclaiming with CONV\$RECLAIM routine, proceeding from XDELTA initial, Delta/XDelta, Utility Routines, CONV-18 DELTA-8 reclamation statistics, Utility Routines, range for DELTA, Delta/XDelta, DELTA-28 CONV-18 range for XDELTA, Delta/XDelta, DELTA-28 size, File Applications, A-1 setting, Debugger, 3-8, CD-124; considering performance, File Applications, Delta/XDelta, DELTA-28, DELTA-29 3 - 25setting in driver code, Device Support (A), for indexed files, File Applications, 7-20 13-6, 13-10, 13-17 for relative files, File Applications, 7-19 showing, Delta/XDelta, DELTA-28 option, File Applications, 4-28 simple, Delta/XDelta, DELTA-28 relative to index depth, File Applications, source display at, Debugger, 6-7 3 - 24WHEN clause, Debugger, 3-13 with multiple areas, File Applications, with DECwindows, Debugger, 1-23 XDELTA restriction on breakpoint 1, split, Analyze/RMS_File, ARMS-6 Delta/XDelta, DELTA-7 Bucket boundary, File Applications, 3-19; File Breakpoint command, Delta/XDelta, DELTA-28 Def Language, FDL-35 file organization considerations, RMS, 5-4

Buffer (cont'd) Bucket code field locking, Device Support (A), 1-23, 6-7; Device See RAB\$L_BKT field Support (B), 1-42, 1-43, 3-31 to 3-33, 3-34 Bucket size, File Applications, A-1 to 3-36, 3-40 to 3-42, 3-45 to 3-47, 3-54 Bucket size field to 3-55, 3-58 to 3-60 See FAB\$B_BKS field locking multiple areas, Device Support (B), Bucket size field in allocation XAB 3-34, 3-45, 3-58 See XAB\$B_BKZ field margin action settings, VAXTPU, 7-414, 7-456 Bucket size field in file header characteristics XAB margin settings, VAXTPU, 7-412, 7-419, See XAB\$B_BKZ field 7 - 454Bucket split, File Applications, 3-6, 3-22, 9-13, moving data to from system to user, Device 10 - 31Support (B), 3-80 to 3-81 minimizing, File Applications, 3-26; RMS, moving data to from user to system, Device Support (B), 3-79 BUCKET_IO attribute, File Def Language, FDL-9 multiple, File Applications, 3-7; VAXTPU, BUCKET_SIZE attribute, File Def Language, 2-4, 7-59 FDL-6, FDL-18 number of, File Applications, 3-11, 3-26, 3-27 BUCKET_SIZE secondary attribute, File record header, File Applications, 9-17, 9-18, Applications, 4-28, 7-19, 7-20 9-20recovering contents of, VAXTPU, 7-307 See also Global buffer selecting for optimum performance, File allocating, Device Support (A), 1-23, 2-3, 7-6 Applications, 7-17 to 7-18 to 7-7, E-5; Device Support (B), 3-12 to sensing safe journaling, VAXTPU, 7-175 3-13, 3-14, 3-15, 3-22 to 3-23 sensing unmodifiable records erasable state, allocating a physically contiguous, Device VAXTPU, 7-169 Support (B), 3-16 size, Device Support (A), 7-6 attributes, VAXTPU, 7-60 storing address of, Device Support (A), 7-7 controlling modification indicator, VAXTPU, tab stops, VAXTPU, 7-481 7 - 431testing accessibility of, Device Support (A), 7-6; converting contents of to string format using Device Support (B), 2-39 to 2-40, 3-31 to STR, VAXTPU, 7-520 3-33, 3-34 to 3-36, 3-40 to 3-42, 3-43 to converting name to journal file name, 3-44, 3-45 to 3-47, 3-54 to 3-55, 3-56 to VAXTPU, 7-172 3-57, 3-58 to 3-60 current, VAXTPU, 7-59 unlocking, Device Support (B), 3-109 data area, Device Support (A), 7-7 user, File Applications, 9-17 deallocating, Device Support (A), 2-7, 4-20, variables, VAXTPU, 2-4 7-8; Device Support (B), 3-3, 3-19 visible, VAXTPU, 7-59 deleting, VAXTPU, 7-107 VMS RMS space allocation, File Applications, determining if unmodifiable records are present in, *VAXTPU*, 7–175 Buffer address register, Device Support (A), 14-23 direction Buffer area current, VAXTPU, 7-85 requirement for Get service, File Applications, setting, VAXTPU, 7-379 erasing, VAXTPU, 2-4, 7-117 Buffer cache, File Applications, 7-5, 7-18 erasing unmodifiable records from for storing index levels, File Applications, 7-20 preventing or allowing, VAXTPU, 7-375 types, File Applications, 7-20 format, Device Support (A), 7-7 using with multistreaming, File Applications, \$GETJPI using for multiple requests for information, Buffer change journaling, VAXTPU, 1-11 System Services, SYS-463 and keystroke journaling, VAXTPU, 7-307 getting file name of journal, VAXTPU, 7-172 converting buffer to journal file name, header area, Device Support (A), 7-7, 7-8 VAXTPU, 7-172 I/O, File Applications, 7–16 default file naming, VAXTPU, 1-12 size, File Applications, 3-2 enabling, VAXTPU, 7-405 journal file, VAXTPU, 1-11 getting file name of journal, VAXTPU, 7-172 key, File Applications, 9-13, 9-15, 9-18 getting information on journal file, VAXTPU, local, File Applications, 3-9, 3-27, 7-20 7 - 203recovery, VAXTPU, 7-307

Buffer change journaling (cont'd) Buffering mode, RTL Screen Management, 2-17 sensing safe state, VAXTPU, 7-175 Buffering technique, File Applications, 7-16 to sensing the enable, VAXTPU, 1-12, 5-10 7 - 22specifying file name, VAXTPU, 7-405 Buffer lock block BUFFER command See BLB for message buffer, VAXTPU, 4-18 Buffer names, VAXTPU, 2-4 BUFFER data type, VAXTPU, 2-3 to 2-4 Buffer overrun Buffer descriptor block with LPA11-K, I/O User's I, 4–12 "Buffer" string constant parameter to GET_INFO, See BDB Buffered data path, Device Support (A), 14-8; VAXTPU, 7-185, 7-193, 7-222 BUFFER_BEGIN keyword, VAXTPU, 7-69, 7-273 Device Support (B), 1-8 with POSITION, VAXTPU, 7-287 See also Data path with SEARCH, VAXTPU, 7-327 allocating permanent, Device Support (A), with SEARCH_QUIETLY, VAXTPU, 7-332 11-2, 14-18, E-12; Device Support (B), /BUFFER_COUNT qualifier, File Applications, 1 - 267-19, 7-20 flow of read operation using, Device Support BUFFER_END keyword, VAXTPU, 7-69, 7-273 (A), 14–12 to 14–13 with POSITION, VAXTPU, 7-287 flow of write operation using, Device Support with SEARCH, VAXTPU, 7-327 (A), 14–12 with SEARCH_QUIETLY, VAXTPU, 7-332 functions, Device Support (A), 14–11 Bugcheck, Device Support (A), 13-21 odd transfer, Device Support (B), 1-8 BADDALRQSZ, Device Support (B), 3-3, 3-19 purging, Device Support (A), 14-14, 14-19, code, System Dump Analyzer, SDA-15 14-24 to 14-25; Device Support (B), 3-82 examining information regarding, Device to 3-83 Support (A), 13-5 releasing, Device Support (A), 10-2, 14-19, fatal conditions, System Dump Analyzer, 14-25; Device Support (B), 2-55, 3-87 SDA-16 to SDA-20 requesting, Device Support (A), 14-11, 14-17 to halt/restart, System Dump Analyzer, SDA-7 14-18; Device Support (B), 2-60, 3-96 to handling routines 3 - 97global symbols, System Dump Analyzer, rules for using, Device Support (A), 14-11, SDA-60 14 - 15identifying, System Dump Analyzer, SDA-21 speed, Device Support (A), 14-15 ILLQBUSCFG, Device Support (B), 1-22 Buffered data path wait queue INCONSTATE, Device Support (B), 3-88, 3-97 See Data path wait queue information, Delta/XDelta, DELTA-8 Buffered function bit mask, Device Support (A), reason, System Dump Analyzer, SDA-94 4-11, 6-7 SPLACQERR, Device Support (A), 13-28, Buffered I/O, Device Support (A), 1-22, 1-23, 2-3, 13-30, E-18; Device Support (B), 3-111 4-11, 11-7, 16-19; Device Support (B), 1-40, SPLIPLHIGH, Device Support (A), 13–28, 1-41, 1-79 E-18; Device Support (B), 3-111, 3-113 chained, Device Support (B), 1-40 SPLIPLLOW, Device Support (A), 13–28, E–18; complex, Device Support (B), 1-40 Device Support (B), 3-114, 3-115, 3-116, FDT routines for, Device Support (A), 7-6 to SPLRELERR, Device Support (A), 13–29, functions, Device Support (A), 6-4 13-30, E-18; Device Support (B), 3-114, postprocessing, Device Support (A), 7-8; 3 - 115Device Support (B), 3-72 SPLRSTERR, Device Support (A), 13-29, reasons for using, Device Support (A), 1-22 to 13-30, E-18; Device Support (B), 3-116, 1-23, 6-7, 6-8 3 - 117Buffered I/O count UBMAPEXCED, Device Support (B), 3-74, See BIOCNT 3 - 78Buffered I/O count limit UNSUPRTCPU, Device Support (B), 2–10 See BIOLM BUGL (Bugcheck Longword Message Identifier) Buffered I/O operation, Programming Resources, instruction, MACRO, 9-197 BUGREBOOT parameter, Device Support (A), Buffered I/O quota, I/O User's I, 3-24, 6-13, 7-5 13-2, 13-5, 13-22 Buffered read function bit

See IRP\$V_FUNC

/BYTE qualifier (cont'd) BUGW (Bugcheck Word Message Identifier) with DELETE command, Patch, PAT-52 instruction, MACRO, 9-197 with DEPOSIT command, Patch, PAT-55, Building applications on EVE, VAXTPU, G-1 to PAT-57 G-12with EVALUATE command, Patch, PAT-59 Built-in definition with EXAMINE command, Patch, PAT-62 function of, National Char Set, NCS-7 with REPLACE command, Patch, PAT-71 _IDENTITY conversion function, National with SET MODE command, Patch, PAT-76 Char Set, NCS-8 with VERIFY command, Patch, PAT-90 _NATIVE collating sequence, National Char Byte storage directive (.BYTE), MACRO, 6-14 Set, NCS-7 byte_signed data type, Routines Intro, A-2t Built-in procedure BYTLM (buffered I/O byte count limit), File descriptions, VAXTPU, 7-15 to 7-548 Applications, 9-8; Device Support (A), 3-13 functions listed, VAXTPU, 7-1 to 7-15 checking, Device Support (A), E-5 name of as reserved word, VAXTPU, 3-12 crediting, Device Support (A), E-5; Device occluded, VAXTPU, 3-12 Support (B), 3-18 Built-in symbol, Debugger, D-2 debiting, Device Support (A), E-5; Device Built-in value type, Command Def, CDU-6, Support (B), 3-12, 3-20 to 3-21, 3-22 to CDU-24 3 - 23Bus BYTLM (buffered I/O byte count limit) quota, device assignments, Device Support (A), 12–10 System Services Intro, 7–3 Bus grant, Device Support (A), 14-33, 14-34 limiting size of user's ACL buffer, RMS, 14-3 Bus request using with \$GETJPI buffers, System Services, See BR level, BIRQ level SYS-463 Busy bit See UCB\$V BSY C Busy wait, Modular Procedures, 3-21 BVC (Branch on Overflow Clear) instruction, MACRO, 9-48 See VAX C BVS (Branch on Overflow Set) instruction, Cache MACRO, 9-48 buffer, File Applications, 7–4 BYPASS privilege. System Services Intro. 7-6 for file sharing, File Applications, 9-6 BYTCNT (byte count) quota, Device Support (A), global, File Applications, 7-21 3 - 13specifying as read-only, *File Applications*, checking, Device Support (A), E-5 7 - 22crediting, Device Support (A), E-5; Device with multiple buffers, File Applications, Support (B), 3–18 debiting, Device Support (A), E-5; Device memory, File Applications, 3-12, 3-15, 3-26 Support (B), 3-12, 3-20 to 3-21, 3-22 to for file sharing, File Applications, 3-14 for random processing, File Applications, system maximum, Device Support (B), 3-20, 3-143-22for storing index, File Applications, 3-25 verifying, Device Support (B), 3-20 to 3-21, process local, File Applications, 3–9 3-22 to 3-23 relative to bucket size, File Applications, Byte, File Applications, 1–1 3 - 25tape, I/O User's I, 6–8 Byte count quota write-back volatile, I/O User's I, 6-8 See BYTCNT Cache control block, Device Support (B), 1–83 Byte count register Caching, System Services Intro, 13–13: Device See MBA\$L_BCR Support (B), 1-75 Byte data type, MACRO, 8-1 Call .BYTE directive, MACRO, 6-14 testing for successful completion of, System Byte limit Services Intro, 2–14 See BYTLM Callable interface, VAXTPU, 4-1, 7-41 BYTE mode, Patch, PAT-16 /CALLABLE_EDT qualifier, Debugger, CD-134 Byte offset register, Device Support (A), 14-13 /CALLABLE_LSEDIT qualifier, Debugger, /BYTE qualifier, Debugger, CD-59, CD-82 CD-134 with ALIGN command, Patch, PAT-38

Call stack (cont'd) /CALLABLE_TPU qualifier, Debugger, CD-134 used to control source display, Debugger, 7-6, Callback data structure of widget with DECwindows, Debugger, 1-9, 1-21 using in VAXTPU, VAXTPU, 7-496 used to control symbol search, Debugger, 5-10, Callback routines CD-166 levels of, VAXTPU, 4-9 with DECwindows, Debugger, 1-9, 1-26 Callbacks, VAXTPU, 4-8 to 4-10 CALL_USER built-in procedure, VAXTPU, 7-40 handling in EVE, VAXTPU, 4-11 to 7-43 CALL command, Debugger, 8-10, CD-10 CAN\$C_CANCEL, Device Support (A), 11-8 and ASTs, Debugger, 9-16, CD-10 CAN\$C_DASSGN, Device Support (A), 11-8 multiprocess program, Debugger, 10-5 vectorized program, Debugger, 11-22 asynchronous delivery and exception handlers, with DECwindows, Debugger, 1-8 DECthreads, pthread-91 Caller access mode, RMS, 5-5 delivery, DECthreads, pthread-23 %CALLER_TASK, Debugger, 12–14 enabling and disabling asynchronous delivery Call frame, MACRO, 9-64 of, DECthreads, pthread-91 condition handler, Programming Resources, enabling and disabling delivery of, 9 - 13DECthreads, pthread-93 displaying in SDA, System Dump Analyzer, obtaining noncancelable versions of cancelable SDA-79 routines, DECthreads, pthread-93 field and buttons in main window possible dangers of disabling, DECthreads, with DECwindows, Debugger, 1-9, 1-21, pthread-93 requesting delivery of, DECthreads, following a chain, System Dump Analyzer, pthread-103 SDA-79 sending to a thread, DECthreads, pthread-23 removing from stack, System Services, Cancelability SYS-655 asynchronous, DECthreads, pthread-91 CALLG (Call Procedure with General Argument general, DECthreads, pthread-93 List) instruction, MACRO, 9-65 CANCEL ALL command, Debugger, CD-15 example, System Services Intro, 2-10 CANCEL BREAK command, Debugger, 3-15, RTL routine to access, RTL Library, LIB-23 CD-17 using MACRO, System Services Intro, 2-9 Cancel Ctrl/O option Calling convention, RTL Math, 1-2 See RAB\$V CCO option Calling sequence, Routines Intro, 2-4; RMS, 2-4 CANCEL DISPLAY command, Debugger, 7-12, Calling services, RMS, 1–1 CD-20 Calling standard, Routines Intro, 2-1; RTL Intro, Cancel I/O bit 1-1, 3-1 See UCB\$V CANCEL Call-in-progress count, Modular Procedures, 3-24 Cancel I/O routine, System Dump Analyzer, /CALL qualifier, Debugger, CD-17, CD-30, SDA-99; Device Support (A), 1-4, 9-8, 11-6 CD-125, CD-184, CD-258 to 11-9; Device Support (B), 1-30CALLS (Call Procedure with Stack Argument List) instruction, MACRO, 9-67 address, Device Support (A), 6-4, 11-1; Device argument, System Services Intro, 2-6 Support (B), 4-4 context, Device Support (A), 11-7 to 11-8; example, System Services Intro, 2-9 Device Support (B), 4-4 using MACRO, System Services Intro, 2-9 device dependent, Device Support (A), 11-9 /CALLS qualifier, Debugger, 12-27, CD-152, CD-246 device independent, Device Support (A), 11-8 to 11-9 Call stack entry point, Device Support (B), 4-4 See also Scope exit method, Device Support (B), 4-5 displaying, *Debugger*, 2-13, 9-12, CD-209, flushing ASTs in, Device Support (B), 3-4 for connect to interrupt facility, Device Support with DECwindows, Debugger, 1-23 (A), 19-8, 19-10, 19-18 to 19-19 removing frame from, System Services, input, Device Support (B), 4-5 SYS-655 unwinding. System Services Intro. 11–12 of CONINTERR.EXE, Device Support (A), used to control instruction display, Debugger, 19–12, 19–18 of SCSI third-party class driver, Device 7-9. CD-166 Support (A), 17-28 with DECwindows, Debugger, 1-9, 1-21

Cancel I/O routine (cont'd) Card reader (cont'd) register usage, Device Support (B), 4-4 function codes, I/O User's I, 2-5, A-2 synchronization requirements, Device Support function modifiers IO\$M_BINARY, I/O User's I, 2-1, 2-6 (B), 4-4when unneeded, Device Support (A), 11-8 IO\$M_PACKED, I/O User's I, 2-1, 2-6 CANCEL IMAGE command, Debugger, 5-14, I/O functions CD-22IO\$_READLBLK, I/O User's I, 2-6 IO\$_READPBLK, I/O User's I, 2-6 Canceling a thread IO\$_READVBLK, I/O User's I, 2-6 See Thread, canceling IO\$_SENSEMODE, I/O User's I, 2-7 CANCEL MODE command, Debugger, CD-23; IO\$_SETCHAR, I/O User's I, 2-10 Patch, PAT-40 IO\$_SETMODE, I/O User's I, 2-8 CANCEL MODULE command, Debugger, 5-7, I/O status block, I/O User's I, 2–11 CD-24; Patch, PAT-41 read function, I/O User's I, 2-6 CANCEL PATCH_AREA command, Patch, read modes, I/O User's I, 2-1 PAT-19, PAT-43 sense mode function, I/O User's I, 2-7 CANCEL RADIX command, Debugger, 4-11, set mode function, I/O User's I, 2-7 CD-26 set translation mode, I/O User's I, 2-2 CANCEL SCOPE command, Debugger, 5-11, status returns, I/O User's I, A-2 CD-27: Patch. PAT-44 supported device, I/O User's I, 2-1 CANCEL SOURCE command, Debugger, 6-3, SYS\$GETDVI returns, I/O User's I, 2-5 CD-28 Carriage control, Convert, CONV-2; Device CANCEL TRACE command, Debugger, 3-15, Support (B), 1-74 CD-30converting formats, Convert, CONV-2 CANCEL TYPE/OVERRIDE command, Debugger, effect of CARRIAGE_RETURN keyword, File 4-24, CD-33 Def Language, FDL-33 CANCEL WATCH command, Debugger, 3-15, formats listed, Convert, CONV-2 CD-34 line printer, I/O User's I, 5–6 CANCEL WINDOW command, Debugger, 7-14, terminal, I/O User's I, 8-36 CD-35 Carriage control device, File Def Language, \$CANDEF macro, Device Support (A), 11-8 FDL-33 Capability field, RTL Screen Management, 5-3 Carriage return option Boolean, RTL Screen Management, 5-4 characters with normal ASCII value. RTL See FAB\$V CR option CARRIAGE CONTROL attribute, File Def Screen Management, 5-15 Language, FDL-33 creating, RTL Screen Management, 5-17 delimiters, RTL Screen Management, 5-3 CARRIAGE_CONTROL secondary attribute, File nonprinting characters, RTL Screen Applications, 4-29 Management, 5-14CARRIAGE RETURN keyword. File Def Language, FDL-33 numeric, RTL Screen Management, 5-6 padding, RTL Screen Management, 5-15 Carry condition code (C), MACRO, 8-15 string, RTL Screen Management, 5-7 Case used by SMG, RTL Screen Management, 5-22 using upper and lower, Modular Procedures, user-defined renditions, RTL Screen Management, 5-13 CASEB (Case Byte) instruction, MACRO, 9-56 Card reader, Device Support (B), 1-76 CASEL (Case Long) instruction, MACRO, 9-56 card punch combinations, I/O User's I, 2-1 CASE macro, Device Support (B), 2-6 026 card reader code, I/O User's I, 2–2, 2–8 example, Device Support (B), 2-6 029 card reader code, I/O User's I, 2-2, 2-8 Case sensitivity, Debugger, 9-9 of widget names, VAXTPU, 7-74 code, I/O User's I, 2–8 CASE statement, VAXTPU, 3-23 to 3-25 device characteristics, I/O User's I, 2-5 device driver, Device Support (A), 9-6 to 9-8 Case-style error handler, VAXTPU, 3-28 to 3-31 driver, I/O User's I, 2-1CASEW (Case Word) instruction, MACRO, 9-56 end-of-file status, I/O User's I, 2-2 Catchall handler, Programming Resources, 9-5, error recovery, I/O User's I, 2-3 9-13; *Debugger*, 9-13 failure categories, I/O User's I, 2-4 CATCH exception, DECthreads, 4-5 features, I/O User's I, 2-1CATCH_ALL exception, DECthreads, 4-9 for batch job command procedures, I/O User's CBT option, File Def Language, FDL-6, FDL-18

I, 2-2

CCB\$B_AMOD, Device Support (B), 3-103 Channel wait queue CCB\$L_UCB, Device Support (A), 4-5 See Device controller data channel wait queue CCB (channel control block), Device Support (A), Character 1-6, 4-5; Device Support (B), 1-11 to 1-12 formatting on line printer, I/O User's I, 5-2 address, Device Support (B), 3-103 pad, Convert, CONV-18 displaying in SDA, System Dump Analyzer, terminal terminator, I/O User's I, 8-28 SDA-76 Character case, Librarian, LIB-2 C compiler Character-cell measuring system generating reentrant code, DECthreads, 3-2 converting to coordinate system, VAXTPU, CCO option, File Def Language, FDL-14 7 - 50CDDB (class driver data block), System Dump Characteristic Analyzer, SDA-99 See also Device characteristics **CDROM** getting information about See Disk asynchronously, System Services, SYS-323 CDRP (class driver request packet), System Dump synchronously, System Services, SYS-365 Characteristics of created condition variable Analyzer, SDA-87, SDA-148 CDT (connection descriptor table), System Dump specifying, DECthreads, pthread-29 Analyzer, SDA-87, SDA-148 Characteristics of created mutex specifying, DECthreads, pthread-70 CDT argument, RMS, B-16 Characteristics of created object CDU specifying, DECthreads, cma-15, pthread-3 See Command Definition Utility Character-oriented output, RTL Screen Cell, Analyze/RMS_File, ARMS-2; File Def Management, 2-8 Language, FDL-35 Character set, VAXTPU, 3-1 fixed-length, File Applications, 3–12 See also DEC Multinational Character Set CELL AND RECORD structure, File Applications, in source statement, MACRO, 3-1 10 - 16special characters, MACRO, C-6 CF keyword table, MACRO, A-1 description, National Char Set, NCS-15 terminal lowercase, I/O User's I, 8-21 Chaining, RTL Library, 2-5 vector instructions, MACRO, 10-22 Character string, Routines Intro, A-2t Change mode handler, System Services Intro, See also String 11 - 5data type, MACRO, 8-7 declaring, System Services, SYS-135 instructions, MACRO, 9-126 CHANGES attribute, File Def Language, FDL-26 length, MACRO, 6-64 CHANGE_CASE built-in procedure, VAXTPU, "Character" string constant parameter to 7-44 to 7-46 GET_INFO, VAXTPU, 7-171 Channel, RTL Library, 2-23; Device Support (A), Character string routine, RTL Library, 2–14 LIB\$CHAR, RTL Library, LIB-25 See also Process I/O channel Character string translation routine, RTL assigning I/O, System Services Intro, 7-12; Library, 2-14 System Services, SYS-31 Character_cell display, VAXTPU, 5-8 canceling I/O, System Services, SYS-48 char_string data type, Routines Intro, A-2t deassigning. System Services Intro, 7–18 CHECK ECO command, Patch, PAT-45, PAT-46 input/output, Programming Resources, 7-45 CHECK NOT ECO command, Patch, PAT-47 Channel access mode protection option, RMS, 5-5 /CHECK qualifier, File Applications, 10–1; $Analyze/RMS_File$, ARMS-13Channel access mode subfield limitation, Analyze/RMS_File, ARMS-14, See FAB\$V_CHAN_MODE option ARMS-20 Channel control block using with /OUTPUT qualifier, Analyze/RMS_ See CCB File, ARMS-16 channel data type, Routines Intro, A-2t with wildcard characters, Analyze/RMS_File, Channel index number, Device Support (A), 4-5, ARMS-10 11-8; Device Support (B), 3-68, 3-103, 4-5 Check report, File Applications, 10-1, 10-5 /CHANNEL qualifier, System Dump Analyzer, CHG (change) option SDA-131 in XAB\$B_FLG field, RMS, B-21 Channel request block Children See CRB of widget

Children

of widget (cont'd)

fetching in VAXTPU, VAXTPU, 7–210 "children" string constant parameter to GET_INFO, VAXTPU, 7–210

CHME (Change Mode to Executive) instruction, MACRO, 9-190

CHMK (Change Mode to Kernel) instruction, Device Support (A), 4-1; MACRO, 9-190

CHMS (Change Mode to Supervisor) instruction, MACRO, 9-190

CHMU (Change Mode to User) instruction, MACRO, 9-190

CIF option, File Def Language, FDL-19 \$CINDEF macro, Device Support (A), 19-10 Circumflex (^), Debugger, 4-8, 4-13, D-5 Class

of widget

fetching in VAXTPU, VAXTPU, 7-214 of widget resource

fetching in VAXTPU, VAXTPU, 7-215

Class driver, Device Support (A), 17–4
See also Terminal class driver

SCSI template, Device Support (A), 17-9 Class driver data block

See CDDB

Class driver entry vector table, Device Support (B), 1–34

Class driver request packet

See CDRP

Class driver vector table, Device Support (A), 18–5 to 18–6; Device Support (B), 1–89 address, Device Support (A), 18–9; Device Support (B), 2–8

relocating, Device Support (B), 2-7

"class" string constant parameter to GET_INFO, VAXTPU, 7-214

CLASS_CTRL_INIT macro, Device Support (A), 18-12; Device Support (B), 1-89, 2-7

CLASS_DDT vector table entry, Device Support
(A), 18-19

CLASS_DISCONNECT service routine, Device Support (A), 18-19

CLASS_DS_TRANS service routine, Device Support (A), 18-13, 18-20

CLASS_FORK service routine, Device Support (A), 18-14, 18-20

CLASS_GETNXT service routine, Device Support (A), 18-20, 18-21; Device Support (B), 1-89, 2-8

address, Device Support (A), 18-9

CLASS_POWERFAIL service routine, Device Support (A), 18-13, 18-22

CLASS_PUTNXT service routine, Device Support (A), 18–18, 18–21; Device Support (B), 1–89, 2–8

address, Device Support (A), 18-9

CLASS_READERROR service routine, Device Support (A), 18-18, 18-22

CLASS_SETUP_UCB service routine, Device Support (A), 18-12, 18-22

CLASS_SET_LINE service routine, Device Support (A), 18-13

CLASS_UNIT_INIT macro, Device Support (A), 18-9, 18-12, 18-19; Device Support (B), 2-8

summary of, Command Def, CDU-19 to CDU-22

Cleanup routine

establishing, *DECthreads*, pthread–27 executing, *DECthreads*, pthread–25

/CLEAR qualifier, Debugger, CD-67

CLI\$DCL_PARSE routine, Command Def, CDU-17, CDU-46; Utility Routines, CLI-6

CLI\$DISPATCH routine, Command Def, CDU-17, CDU-46; Utility Routines, CLI-9

CLI\$GET_VALUE routine, Command Def, CDU-17, CDU-45, CDU-46; Utility Routines, CLI-10

CLI\$PRESENT routine, Command Def, CDU-17, CDU-45, CDU-46; Utility Routines, CLI-13

CLI (command language interpreter), Command Def, CDU-1; RTL Library, 2-2

CLI access routine, RTL Library, 2-2

Client, DECthreads, 1-4

Client message

designating routine to handle, VAXTPU, 7-357 fetching action routine for handling, VAXTPU, 7-197

finding out type of, VAXTPU, 7-197 sending from VAXTPU, VAXTPU, 7-344 CLIENT MESSAGE

keyword parameter to SET built-in procedure, VAXTPU, 7-357

"client_message" string constant parameter to GET_INFO, VAXTPU, 7-197

"client_message_routine" string constant parameter to GET_INFO, VAXTPU, 7-197 Clipboard

fetching data from, *VAXTPU*, 7–149 overview of, *VAXTPU*, 7–149 reading data from, *VAXTPU*, 7–295 writing data to, *VAXTPU*, 7–540

CLI routines, Command Def, CDU-1

See also Command string example of use in FORTRAN program, *Utility Routines*, CLI-2

introduction, *Utility Routines*, CLI-1 list of, *Utility Routines*, CLI-1 types of, *Command Def*, CDU-17 use of, *Command Def*, CDU-45, CDU-46 when to use, *Utility Routines*, CLI-1

CLI symbol, RTL Library, LIB-343 deleting, RTL Library, LIB-116 getting value of, RTL Library, LIB-219

CLI symbol (cont'd) Cluster (cont'd) RTL routines, RTL Library, LIB-116, LIB-219 for transfer vector, Linker, 4-8 Clock in a based image, Linker, 1-7, 3-5 memory allocation for, Linker, 6-15 See also Interval clock order of processing, Linker, 6-9, 6-12 setting system, System Services Intro, 10-8 protection of, Linker, 1-8, 3-10 Clock rate with LPA11-K. I/O User's I, 4-10 shareable image, Linker, 6-7 Cloned UCB routine, Device Support (A), 11-12 to Cluster-based shareable image, Linker, 6-15 Cluster-based user, Linker, 6-15 11-13; Device Support (B), 1-78 address, Device Support (A), 6-4; Device Cluster block Support (B), 1-31, 4-6 See CLUB context, Device Support (B), 4-6 Cluster failover control block exit method, Device Support (A), 11-13; Device See CLUFCB Support (B), 4-7 Clustering algorithm, *Linker*, 6–8 input, Device Support (A), 11-12; Device Cluster management code Support (B), 4-6 global symbols, System Dump Analyzer, register usage, Device Support (A), 11-12; SDA-60 Device Support (B), 4-6 CLUSTER option, Programming Resources, 5-6 synchronization requirements, Device Support See also Linker Utility (B), 4-6Cluster quorum disk control block Close Current Location, Open Next command, See CLUDCB Delta/XDelta, DELTA-22 Cluster system block Close service See CSB condition values, RMS, RMS-5 Cluster system identification number See also Completion status code See CSID contrasted with Disconnect service, RMS, 4-5 CLUSTER_SIZE attribute, File Def Language, control block input fields, RMS, RMS-4 FDL-18 control block output fields, RMS, RMS-4 CLUSTRLOA.STB, System Dump Analyzer, function, RMS, 4-1 SDA-60 introduction, RMS, 4-1 CLUSTRLOA symbol, System Dump Analyzer, limitations with XABs, RMS, RMS-4 use restrictions, RMS, RMS-4 SDA-13 Closures, VAXTPU, 4-11 cma.h, DECthreads, B-2 cma_debug, DECthreads, cma-58, B-3 CLRB (Clear Byte) instruction, MACRO, 9-14 cma_t_once data structure, DECthreads, cma-87 CLRD (Clear D_floating) instruction, MACRO, **CMEXEC** privilege for analyzing VAX RMS Journaling files, CLRF (Clear F_floating) instruction, MACRO, Analyze/RMS_File, ARMS-11 9 - 108CMI (CPU-to-memory interconnect), Device CLRG (Clear G_floating) instruction, MACRO, Support (A), 1-11 9 - 108CMPB (Compare Byte) instruction, MACRO, 9-15 CLRH (Clear H_floating) instruction, MACRO, CMPC3 (Compare Characters 3 Operand) 9 - 108instruction, MACRO, 9-128 CLRL (Clear Long) instruction, MACRO, 9-14 CMPC5 (Compare Characters 5 Operand) CLRO (Clear Octa) instruction, MACRO, 9-14 instruction, MACRO, 9-128 CLRQ (Clear Quad) instruction, MACRO, 9-14 CMPD (Compare D_floating) instruction, CLRW (Clear Word) instruction, MACRO, 9-14 MACRO, 9-109 CLUB (cluster block), System Dump Analyzer, CMPF (Compare F_floating) instruction, MACRO, SDA-83 9 - 109CLUDCB (cluster quorum disk control block), CMPG (Compare G_floating) instruction, System Dump Analyzer, SDA-83 MACRO, 9-109 CLUFCB (cluster failover control block), System CMPH (Compare H_floating) instruction, Dump Analyzer, SDA-83 MACRO, 9-109 Cluster CMPL (Compare Long) instruction, MACRO, 9-15 See also VAXcluster CMPP3 (Compare Packed 3 Operand) instruction, creation of, Linker, 1-7, 1-8, 3-6, 6-8, 6-11 MACRO, 9-152 current, Linker, 6-12 default, Linker, 6-9

empty, Linker, 6-11

CMPP4 (Compare Packed 4 Operand) instruction, Collating sequence table field MACRO, 9-152 See XAB\$L_COLTBL field CMPV (Compare Field) instruction, MACRO, COLLATING_SEQUENCE attribute, File Def 9 - 38Language, FDL-27 CMPW (Compare Word) instruction, MACRO, Colon (:) 9 - 15in label field, MACRO, 2-2 CMPZV (Compare Zero Extended Field) range delimiter, Debugger, 4-16, 11-4, 11-6, instruction, MACRO, 9-38 11-7, CD-81 CMS (Code Management System) COLUMN_MOVE_VERTICAL keyword, VAXTPU, 7 - 359See VAX DEC/CMS "Column_move_vertical" string constant parameter Coarse granularity, RTL Parallel Processing, 5-1 to GET_INFO, VAXTPU, 7-206 COBOL COM\$DELATTNAST, Device Support (B), 3-2 See VAX COBOL COM\$DRVDEALMEM, Device Support (A), COBOL compiler 16-21; Device Support (B), 3-3 generating nonreentrant code, DECthreads, COM\$FLUSHATTNS, Device Support (B), 3-4, COBOL intermediate temporary data type, COM\$POST, Device Support (A), 7-5; Device Routines Intro, 2-20 Support (B), 3-5, 4-2 Code COM\$POST_NOCNT, Device Support (B), 3-5 See Instruction, Address expression COM\$SETATTNAST, Device Support (B), 3-6 to AST-reentrant, Modular Procedures, 3–19 fully reentrant. Modular Procedures, 3-19 Combination model, DECthreads, 1-7 maintaining readability, Modular Procedures, Command, System Dump Analyzer, SDA-10 to SDA-14 position-independent, Modular Procedures, 3-1 See also SCSI command writing AST-reentrant procedures, Modular ! command, Delta/XDelta, DELTA-20 Procedures, 3-20'command, Delta/XDelta, DELTA-37 Code Management System (CMS) = command, Delta/XDelta, DELTA-42 See VAX DEC/CMS [command, Delta/XDelta, DELTA-16 Coding conventions / command, Delta/XDelta, DELTA-17 See Device driver " command, Delta/XDelta, DELTA-25 Coding guidelines, Modular Procedures, 3–1 for Analyze/RMS_File Utility, File Collating key data type, RMS, 13-6 Applications, 10–11 Collating sequence for EDIT/FDL, File Applications, 4-3 creating interactive, Analyze/RMS_File, ARMS-21 limitation, National Char Set, NCS-9 list of commands, Delta/XDelta, DELTA-15 using appended, National Char Set, Command address register NCS-9 See MBA\$L_CAR using modified, National Char Set, NCS-9 Command chaining, I/O User's II, 4-2 using name of existing, National Char Set, Command definition file, Command Def, CDU-4 NCS-8 changing syntax, Command Def, CDU-5 to using reordered, National Char Set, NCS-10 creating, Command Def, CDU-4 to CDU-14 using reversed, National Char Set, defining verbs in, Command Def, CDU-8 to NCS-10 CDU-9 using series of expressions, National Char for sample program, Command Def, CDU-45, Set, NCS-8 CDU-46 expression forms listed. National Char Set. processing, Command Def, CDU-14 to CDU-16 NCS-8 statements in, Command Def, CDU-19 to MODIFICATIONS keyword clause formats CDU-37 listed, National Char Set, NCS-17 Command Definition Language statements, Collating sequence name field Command Def, CDU-5 See XAB\$L_COLNAM field Command Definition Utility (CDU), Command Collating sequence size field Def, CDU-1 See XAB\$L_COLSIZ field CDU command, Programming Resources, 1–16

Command Definition Utility (CDU) (cont'd)	Command procedure (cont'd)
creating command table, Programming	file specification, Patch, PAT-48
Resources, 1–17	invoking, Debugger, CD-7
defining commands, Programming Resources,	log file as, Debugger, 8–5
1–16	passing parameters to, Debugger, 8-2, CD-44
directing output from, Command Def, CDU-18 exiting, Command Def, CDU-18	processing selected patches in, Patch, PAT-33 to PAT-34
format, Command Def, CDU-18	recreating displays with, Debugger, 7-21,
invoking, Command Def, CDU-18	CD-97 using DEFINE command in, <i>Patch</i> , PAT-5
modifying command table, Programming Resources, 1–16	using symbolic references in, Patch, PAT-4 to
overview, Command Def, CDU-18	PAT-6
parsing commands, <i>Programming Resources</i> , 1–17	using user-defined symbols in, Patch, PAT-5 with DECwindows, Debugger, 1-28
Command descriptions, Patch, PAT-38 to PAT-91	Command processing, Linker, 6-8
Command file, VAXTPU, 4–29 to 4–31	See also DCL
debugging, VAXTPU, 4–34	/COMMAND qualifier, Debugger, 8-6, CD-47;
default, VAXTPU, 4-21	VAXTPU, 4-25, 5-3 to 5-4, 5-6 to 5-7
definition, VAXTPU, 1–10	Command string, Command Def, CDU-1 to
running SUMSLP from a, SUMSLP, SUM-12	CDU-2
sample, VAXTPU, 4–30	See also CLI routines
Command format debugger, Debugger, CD-3	action routine, Utility Routines, CLI-9
Command interface	checking for presence of command string
COMMAND box, DECwindows, Debugger,	entities, Utility Routines, CLI-13
1–19, 1–27	dispatching to action routine, <i>Utility Routines</i> , CLI-9
debugger, Debugger, 2–1	keyword path, <i>Utility Routines</i> , CLI–13
with DECwindows, Debugger, 1–27, 1–33	labels
debugger commands disabled in DECwindows,	list of label names, Utility Routines,
Debugger, 1–27	CLI-12
Command language interpreter	obtaining values of command string entities,
See CLI	Utility Routines, CLI-10
Command language routines	parsing a DCL command string, Utility
See CLI routines	$Routines, \mathrm{CLI-6}$
Command line	positional qualifiers, Utility Routines, CLI-14
DCL	processing with CLI routines, Utility Routines,
determining whether /RECOVER specified	CLI-1
on, <i>VAXTPU</i> , 7–408	prompting for input, Utility Routines, CLI-7
fetching values from, VAXTPU, 7-176, 7-177	symbol substitution, Utility Routines, CLI-6
/JOURNAL command qualifier, VAXTPU, 1-11,	"Command" string constant parameter to
1–12	GET_INFO, VAXTPU, 7–176
/NOJOURNAL command qualifier, <i>VAXTPU</i> , 1–12	Command synonyms, <i>VAXTPU</i> , G–5 to G–7 Command table
/RECOVER command qualifier, VAXTPU, 1–11, 7–307	adding commands to, Command Def, CDU-15, CDU-43
Command packet, I/O User's II, 4-4	creating a new, Command Def, CDU-16
Command procedure	creating an object module for, Command Def,
-	CDU-4
See also Initialization file, debugger creating	deleting commands from, Command Def, CDU-15, CDU-39
using CREATE command, Patch, PAT-4,	input, Command Def, CDU-44
PAT-48	listing file for, Command Def, CDU-40
creating using text editor, Patch, PAT-5	object module for, Command Def, CDU-16,
debugger, Debugger, 8-1	CDU-41
default directory for, Debugger, CD-123,	output file, Command Def, CDU-42
CD-206	process, Command Def, CDU-2
displaying commands in, <i>Debugger</i> , CD-155 exiting, <i>Debugger</i> , CD-7, CD-90, CD-106	system, Command Def, CDU-2

Command table (cont'd) Compiler (cont'd) with CLI routines, Utility Routines, CLI-1, generating nonreentrant code, DECthreads, CLI-7 Command verb generating reentrant code, DECthreads, 3-2 See DEFINE VERB statement /LIST qualifier, Debugger, 6–1 Command window /NOOPTIMIZE qualifier, Debugger, 5-2, 9-1 in EVE editor, VAXTPU, 4-16 with DECwindows, Debugger, 1-3 "Command file" string constant parameter to Compiler limits, VAXTPU, 7-47 GET_INFO, VAXTPU, 7-176 Compiling in a VAXTPU buffer, VAXTPU, 4-19 Comment block, Modular Procedures, 3-9, A-6 in EVE editor, VAXTPU, 4-19 programs, VAXTPU, 4-18 to 4-19 character, File Def Language, FDL-40 delimiters, Modular Procedures, 3-9 to create section file, VAXTPU, 4-24 entering a, Patch, PAT-23 Complement operator, MACRO, 3-14 format, Debugger, CD-4 Completion routine in FDL files, File Def Language, FDL-40 condition for AST execution, RMS, 3-11 Comment character, VAXTPU, 1-5 service macro arguments, RMS, 3-11 COMMENT keyword Completion status code with LOOK_UP_KEY, VAXTPU, 7-254 description, RMS, 2-5, A-9 to A-20 Comment lines errors for inaccessible control block condition, in help files, Librarian, LIB-6 RMS, 2-6Comment separator, RMS, 3-6 handling, RMS, 3-12 use in VMS RMS coding, RMS, 3-6 hexadecimal values, RMS, A-2 to A-9 Committing a transaction, System Services Intro, listing conditions when not returned, RMS, 14-2; System Services, SYS-196, SYS-198, SYS-201 severity codes, RMS, 2-6 Common block, Programming Resources, 3-6 testing, RMS, 2-5 aligning, Programming Resources, 8-4 Completion status code field installing as a shared image, Programming use with debugger, RMS, A-2 Resources, 5–13 Completion status code field in FAB interprocess, Programming Resources, 5-13 See FAB\$L STS field modifying, Programming Resources, 3-6 Completion status code field in RAB per-process, Programming Resources, 3-6 See RAB\$L STS field Common Data Dictionary, Programming Completion status code value field Resources, 1-8, 1-9, 1-10 use with debugger, RMS, A-2 Common event flag cluster, System Services Intro, Completion status field as alternative to use of R0. RMS, 2-4 permanent, Programming Resources, 4-5 for signaling errors, RMS, 2-6 temporary, Programming Resources, 4-4 Completion status value field, File Applications, Common source files, Modular Procedures, 3-7, 5 - 12A-6as alternative to use of R0, RMS, 2-4 declarations, Modular Procedures, 3-7 for signaling errors, RMS, 2-6 Communication Completion status value field in FAB intersystem, Programming Resources, 3-26 See FAB\$L_STV field Compact Disc Read-Only Memory (CDROM) Completion status value field in RAB See Disk See RAB\$L STV field Comparing two handles, *DECthreads*, cma-65 Complex breakpoint, Delta/XDelta, DELTA-30 Compatibility mode handler, System Services Complex number, RTL Math, 1-4, MTH-57, Intro, 11-5 MTH-59, MTH-110, MTH-120 declaring, System Services, SYS-135 absolute value of, RTL Math, MTH-23 Compilation conditional, VAXTPU, 3-36 complex exponential of, RTL Math, MTH-31, COMPILE built-in procedure, VAXTPU, 4-19, MTH-33conjugate of, RTL Math, MTH-44, MTH-45 7-47 to 7-49 cosine of, RTL Math, MTH-26, MTH-28 Compiler, Programming Resources, 1–5 to 1–11 division of, RTL General Purpose, OTS-40 compiler generated type, Debugger, 4-4 made from floating-point, RTL Math, MTH-40, /DEBUG qualifier, Debugger, 5-2, 6-1 MTH-42with DECwindows, Debugger, 1–3

Complex number (cont'd) Condition handler (cont'd) multiplication of, RTL General Purpose, argument list, System Services Intro, 11-7 arithmetic, Programming Resources, 9-26 natural logarithm of, RTL Math, MTH-35, call frame, Programming Resources, 9-13 MTH-37 catchall, Programming Resources, 9-13; RTL sine of, RTL Math, MTH-53, MTH-54 Library, 4-14 complex_number data type, Routines Intro, A-3t condition code, Programming Resources, 9-16 Component, Routines Intro, A-8t continuing execution of, RTL Library, 4-21 Composed input course of action, System Services Intro, 11-11 debugging, *Programming Resources*, 9–20; See also Key table Debugger, 9-10 terminating, Programming Resources, 7-28 declaring, DECthreads, B-1 Composition operations, RTL Screen Management, default, Routines Intro, 2-51; RTL Library, 4-13Compression, File Def Language, FDL-5, FDL-28 deleting, Routines Intro, 2-47 negative values, File Def Language, FDL-4 establishing. *Programming Resources*, 9–14: of data record, File Def Language, FDL-27 Routines Intro, 2–46; RTL Library, 4–20, within data record, File Def Language, FDL-4 LIB-140 within primary key, File Def Language, example, System Services Intro, 11–11 FDL-4, FDL-27 exceptions, Routines Intro, 1-12, 2-45 /COMPRESS qualifier, Librarian, LIB-15; exit, Routines Intro, A-5t National Char Set, NCS-24 exiting, Programming Resources, 9-17 See also /DATA qualifier interaction between default and user-supplied See also /SQUEEZE qualifier handlers, RTL Library, 4-15 using with /OUTPUT, Librarian, LIB-36 last-chance, RTL Library, 4-14 CONCATENATE clause last-chance exception vector, *Programming* for VALUE clause, Command Def, CDU-24, Resources, 9-13CDU-33 mechanism array, Programming Resources, Concatenating input files, Convert, CONV-5 9 - 15Concatenation memory pattern (+), VAXTPU, 2-15 use of, Routines Intro, 2-51 string, VAXTPU, 3-4 multiple active signals, Routines Intro, 2-54 Concealed logical name, File Applications, 5-7 operations involving, Routines Intro, 2-46 Condition options, Routines Intro, 2-45 for exception, System Services Intro, 11-1 parameters and invocation, Routines Intro, Conditional assembly block directive .ENDC, MACRO, 6-26 primary exception vector, Programming (.IF), MACRO, 6-40 Resources, 9-13 listing unsatisfied code, MACRO, 6-89 properties of, Routines Intro, 2-49 Conditional compilation, VAXTPU, 3-36 register values, Routines Intro, 2-53 Conditional statements, VAXTPU, 3-22 to 3-23 request to unwind, Routines Intro, 2-52 Condition code, *Programming Resources*, 9–1; resignaling, RTL Library, 4-21 MACRO, 8-14, 9-4 returning from, Routines Intro, 2-52 carry (C), MACRO, 8-15 searching for, Programming Resources, 9-12 chaining, Programming Resources, 9-23 secondary exception vector, Programming defining, Programming Resources, 9-7 Resources, 9-13 modifying, Programming Resources, 9-20 signal array, Programming Resources, 9-14 negative (N), MACRO, 8-15 software supplied, RTL Library, 4–13 overflow (V), MACRO, 8-15 specifying, System Services Intro, 11-6 signaling, Programming Resources, 9-5 stack usage, Routines Intro, 2-46 SS\$_EXQUOTA, Programming Resources, 9-3 traceback, Programming Resources, 9-13; SS\$_NOPRIV, Programming Resources, 9–3 RTL Library, 4–13 zero (Z), MACRO, 8-15 unwinding, RTL Library, 4-22 Condition code and message, *Programming* use of, Programming Resources, 9-13, 9-20 Resources, 9-1user-supplied, RTL Library, 4-13 Condition handler, Routines Intro, 1-12, 2-45; writing, Programming Resources, 9-14; RTL RTL Library, 4-12 Library, 4-20 See also Signal argument vector

Condition value (cont'd) Condition handling, RTL Math, 1-3; RTL registers Library, 4–2 use of, Routines Intro, 2-12 See also Condition handler returned, Routines Intro, 1-14 See also Condition Handling Facility in I/O status block, Routines Intro, 1-14 See also Condition value in mailbox, Routines Intro, 1-14 See also Exception in R0, Routines Intro, 1-5 See also Exception condition signaled in register, Routines Intro, 1-7, See also Message Utility 1 - 15at AST level, Modular Procedures, 3-26 severity, RTL Library, 4-6 continuing, RTL Library, 4-14 signaled, Routines Intro, 1-7, 1-15 default, Programming Resources, 9-5 symbols for, Routines Intro, 2-9 displaying messages, RTL Library, 4-16 testing, System Services Intro, 2-14 logging error messages, RTL Library, 4-4 use of, Routines Intro, 2-11 logging error messages to a file, RTL Library, Condition values returned heading, Routines 4 - 27Intro, 1-12 resignaling, Programming Resources, 9-18; Condition variable, DECthreads, 2-12 RTL Library, 4-14 comparing to mutex, DECthreads, 3-6 return status, Programming Resources, 9-3 creating, DECthreads, cma-45, pthread-37 signal, Programming Resources, 9-5 definition of, DECthreads, pthread-37 stack traceback, RTL Library, 4-3 definition of predicate, DECthreads, pthread-37 stack unwind, RTL Library, 4-4, 4-14 unwinding, Programming Resources, 9-18 deleting, DECthreads, cma-47, pthread-35 user-defined messages, RTL Library, 4-4 signaling, DECthreads, 3-8 vector processor, Routines Intro, 2-51 waiting for, DECthreads, cma-56, pthread-45 Condition Handling Facility, RTL Library, 4–19 waiting for a specified time, *DECthreads*, defined, RTL Library, 4-1 cma-53, pthread-42 Condition variable attributes, DECthreads, 2-9 function of, RTL Library, 4-2 Condition-handling routines Condition variable attributes object global symbols, System Dump Analyzer, creating, DECthreads, pthread-29 SDA-60 deleting, *DECthreads*, pthread-31 Condition-handling services, System Services /CONDITION_VALUE qualifier, Debugger, Intro, 1-2, 11-1 CD-77, CD-82; System Dump Analyzer, Condition Handling Standard, Routines Intro, SDA-48 2 - 44cond_value data type, Routines Intro, A-4t Condition value, Modular Procedures, 3-3; Configuration control block Routines Intro, A-4t; System Services Intro, See ACF 1-6, 1-9, 2-13; System Services, SYS-191; Configuration register RTL Intro, 3-6, 3-15; RTL Library, 4-5 to See CSR 4-7, 4-24, LIB-272 See MBA\$L CSR See also Completion status code CONFREGL array, Device Support (A), 16-7 definition of, Routines Intro, 2-3 CONINTERR.EXE, Device Support (A), 19-8, description of, Routines Intro, 2-8 19 - 13evaluating, System Dump Analyzer, SDA-48 cancel I/O routine of, Device Support (A), 19-12 examining, System Dump Analyzer, SDA-51 connecting to, Device Support (A), 19-9 field Conjugate of complex number, RTL Math, cntrl, Routines Intro, 2-9 MTH-44, MTH-45 condition identification, Routines Intro, CONNECT attribute, File Def Language, FDL-2, 2-8FDL-8 facility, Routines Intro, 2-9 CONNECT command, Debugger, 10-4, 10-13, message number, Routines Intro, 2-9 CD-36; I/O User's I, 8-17 severity code, Routines Intro, 2-9 See also System Generation Utility high-level language, System Services Intro, Connection, Device Support (A), 17-5, 17-9 2 - 17breaking, Device Support (B), 2-73 information provided by, System Services Intro, displaying SDA information, System Dump Analyzer, SDA-87, SDA-123, SDA-148 interpreting severity codes, Routines Intro, 2 - 10

obtaining characteristics of, Device Support (B), 2-75 to 2-76 requesting, Device Support (A), 17-26; Device Support (B), 2-70 to 2-71 setting characteristics of, Device Support (B), 2-88 to 2-89 Connection characteristics buffer, Device Support (B), 2–88 Connection descriptor table See CDT Connection manager displaying SDA information, System Dump Analyzer, SDA-82 /CONNECTION qualifier, System Dump Analyzer, SDA-148 CONNECT primary attribute ASYNCHRONOUS secondary attribute, File Applications, 9-9, 9-15, 9-18, 9-19, 9-20 DELETE_ON_CLOSE secondary attribute, File Applications, 9–12 END_OF_FILE secondary attribute, File Applications, 9-10 FAST_DELETE secondary attribute, File Applications, 9-9, 9-12, 9-20 FILL_BUCKETS secondary attribute, File Applications, 9-13, 9-18 GLOBAL_BUFFER_COUNT secondary attribute, File Applications, 9-9 KEY_GREATER_EQUAL attribute, File Applications, 8–9 KEY_GREATER_EQUAL secondary attribute, File Applications, 9-12, 9-15 KEY_GREATER_THAN attribute, File Applications, 8-9, 8-10KEY_GREATER_THAN secondary attribute, File Applications, 9–13, 9–15 KEY_LIMIT secondary attribute, File Applications, 9-13, 9-16 KEY_OF_REFERENCE secondary attribute, File Applications, 9–13, 9–15 LOCATE_MODE secondary attribute, File Applications, 9-9, 9-16 LOCK_ON_READ secondary attribute, File Applications, 7-11, 9-16 LOCK_ON_WRITE secondary attribute, File Applications, 7-11, 9-16, 9-18 MANUAL_LOCKING secondary attribute, File Applications, 9-16 MANUAL_UNLOCKING secondary attribute, File Applications, 7–15 MULTIBLOCK_COUNT secondary attribute, File Applications, 3-11, 7-18, 9-9 MULTIBUFFER_COUNT secondary attribute, File Applications, 3-11, 3-13, 3-26, 7-17, 7-18, 7-19, 7-20, 9-9

NOLOCK secondary attribute, File

Applications, 7-11, 9-15

Connection (cont'd)

CONNECT primary attribute (cont'd) NONEXISTENT_RECORD attribute, File Applications, 8-9 NONEXISTENT_RECORD secondary attribute, File Applications, 7–15, 9–16 READ_AHEAD secondary attribute, File Applications, 9-9, 9-16 READ_REGARDLESS secondary attribute, File Applications, 7-12, 9-16 TIMEOUT_PERIOD secondary attribute, File Applications, 7–12, 9–17, 9–19 TRUNCATE_ON_PUT secondary attribute, File Applications, 9–11, 9–19 UPDATE_IF attribute, File Applications, 8-8 UPDATE_IF secondary attribute, File Applications, 9-11, 9-19 WAIT_FOR_RECORD secondary attribute, File Applications, 7-12, 9-17 WRITE_BEHIND secondary attribute, File Applications, 9-10, 9-19 Connect service, File Applications, 8-5; RMS, RMS-6 and asynchronous operations, File Applications, 8-18 and next record, File Applications, 8-15, 8-16 comparing positioning for various file organizations, RMS, RMS-7 condition values, RMS, RMS-9 connecting record stream, RMS, 4-4 control block input fields, RMS, RMS-7 control block output fields, RMS, RMS-8 effect on next-record position, File Applications, 8-16 program example, RMS, 4-12 use with multiple keys, RMS, 4-12 Connect to interrupt driver See CONINTERR.EXE Connect to interrupt facility cancel I/O routine, Device Support (A), 19-18 to 19-19 condition values returned, Device Support (A), 19 - 11CONNECT command, Device Support (A), 19-9 example of A/D converter using, Device Support (A), 19-19, 19-21 to 19-23 example of time sampling using, Device Support (A), 19–19, 19–23 to 19–25 example of watchdog timer using, Device Support (A), 19-19, 19-20 to 19-21 interrupt service routine, Device Support (A), 19-16 to 19-18 mapping I/O address space, Device Support (A), 19-8 privileges required, Device Support (A), 19-12 programming language requirements, Device Support (A), 19-14 start I/O routine, Device Support (A), 19-15 to

19 - 16

Connect to interrupt facility (cont'd)	Control action
SYSGEN requirements, Device Support (A),	inhibiting, Programming Resources, 7–42
19-9 unit initialization routine, Device Support (A),	Control and status register
19–15	See CSR
user-specified routines, Device Support (A),	Control block, File Def Language, FDL-2
19–9, 19–13 to 19–19	See also Data structure
Console disk	See also VMS RMS dual purpose, <i>RMS</i> , 1–4
See RX01 console disk	field name conventions, RMS, 2-2
Console terminal, I/O User's I, 8-1 Constant, VAXTPU, 3-5 to 3-6	for extended attributes, RMS, 1–3
local, VAXTPU, 3–20	for file name operations, RMS, 1-3
predefined, VAXTPU, 3–13	for file services, RMS, 1–2
specifying radix of, VAXTPU, 3-37	formatting, System Dump Analyzer, SDA-56
TPU\$K_DISJOINT, VAXTPU, 7–198, 7–368	for record services, RMS, 1–4 macro names, RMS, 3–2
TPU\$K_INVISIBLE, VAXTPU, 7-198, 7-368	requirements for valid default values, RMS,
TPU\$K_OFF_LEFT, <i>VAXTPU</i> , 7–198, 7–368 TPU\$K_OFF_RIGHT, <i>VAXTPU</i> , 7–198, 7–368	1-4
TPU\$K_UNMAPPED, <i>VAXTPU</i> , 7–198, 7–368	symbolic bit offset, RMS, 2-4
CONSTANT declaration, VAXTPU, 3-35	symbolic constant (keyword) value, RMS, 2-4
Contents-of operator, Debugger, 4-6, 4-19, D-7	symbolic naming exceptions, RMS, 2–3
Context	symbolic offsets, RMS , 2–2 types of macros, RMS , 3–1
generating key value for, DECthreads, cma-69,	use restrictions, RMS , 2–1
pthread-65 obtaining, <i>DECthreads</i> , cma-71, pthread-61	use with VAX languages, RMS, 2-1
per-thread, DECthreads, 2–18	Control block store macro
SDA CPU, System Dump Analyzer, SDA-10	description, RMS, 3-1
SDA process, System Dump Analyzer, SDA-9	example, RMS, 3–9 placement guidelines, RMS, 3–8
setting, DECthreads, cma-73, pthread-101	requirement for number sign, RMS, 3-8
uses for, DECthreads, cma-69, pthread-65	use of R0, <i>RMS</i> , 3–8
CONTEXT attribute, File Def Language, FDL-10, FDL-18	Control character
context data type, Routines Intro, A-5t	entering, VAXTPU, 3-2
Context modes, Patch, PAT-15	list, I/O User's I, B-1
See also Entry and display modes	terminal, I/O User's I , 8–4 to 8–6, 8–9 translation
Context switch	example, VAXTPU, A-2
scalar, MACRO, 10–19, 10–20, 10–43	Control code
vector, MACRO, 10–32 Context variable	function key, VAXTPU, 7-241
use with DCX routines, <i>Utility Routines</i> ,	Control connection routines, I/O User's I, C-1
DCX-16	PTD\$CANCEL, I/O User's I, C-2
Contiguity, File Applications, 10–29	PTD\$CREATE, I/O User's I, C-3 PTD\$DELETE, I/O User's I, C-6
CONTIGUOUS attribute, File Def Language,	PTD\$READ, I/O User's I, C-7
FDL-7, FDL-18	PTD $\$$ SET_EVENT_NOTIFICATION, I/O
Contiguous-best-try option, File Applications, 4–30	User's I, C–9
See also FAB\$V_CBT option	PTD\$WRITE, I/O User's I, C-12
Contiguous option, File Applications, 4–30	Control instructions, MACRO, 9-42
See also FAB\$V_CTG option	Controller See Device controller
/CONTIGUOUS qualifier, Linker, LINK-4	Controller initialization routine, Device Support
CONTIGUOUS secondary attribute, File	(A), 1–3, 11–1 to 11–6, 12–4, 12–8
Applications, 3–23, 4–30	address, Device Support (A), 4-6, 6-3, 11-1,
Continuation character (-) in listing file, MACRO, 3-9	14–30; Device Support (B), 1–25, 2–26, 4–8
in source statement, MACRO, 2-1	allocating controller data channel in, Device
use in VMS RMS coding, RMS, 3–6	Support (A), 8-4 context, Device Support (A), 11-1; Device
	Support (B), 4–8

Controller initialization routine (cont'd) Conversion (cont'd) entry point, Device Support (B), 4-8 hexadecimal text to unsigned integer, RTL exit method, Device Support (B), 4-8 General Purpose, OTS-37 for generic VAXBI device, Device Support (A), integer to binary text, RTL General Purpose, 16-12 to 16-18 OTS-6 forking, Device Support (B), 1-21 integer to FORTRAN L format, RTL General forking in, Device Support (A), 3-24, 11-6 Purpose, OTS-9 for terminal port driver, Device Support (A), integer to hexadecimal, RTL General Purpose, 18-12; Device Support (B), 2-7 **OTS-16** numeric text to binary, RTL Library, LIB-76 functions, Device Support (A), 11-1; Device numeric text to floating-point, RTL General Support (B), 4–9 input, Device Support (A), 11-2; Device Purpose, OTS-31, OTS-35 Support (B), 4–8 of VFC records, Convert, CONV-15 register usage, Device Support (B), 4-8 unsigned decimal to integer, RTL General synchronization requirements, Device Support Purpose, OTS-28 (A), E-11 to E-12; Device Support (B), 4-8 unsigned octal to signed integer, RTL General Purpose, OTS-25 Control mask Conversion function See Device activation bit mask Control region, System Services Intro, 12-2; creating using inverted conversion function, System Dump Analyzer, SDA-14 National Char Set, NCS-12 adding page to, System Services, SYS-218 using modified conversion function, base register, System Dump Analyzer, SDA-14 National Char Set, NCS-11 deleting page from, System Services, SYS-147 using name of existing conversion function, examining, System Dump Analyzer, SDA-52 National Char Set, NCS-11 length register, System Dump Analyzer, using reordered conversion function, SDA-14 National Char Set, NCS-12 Control region operator (H), System Dump using series of conversion functions, Analyzer, SDA-12 National Char Set, NCS-11 Control region page table expression forms listed, National Char Set, displaying, System Dump Analyzer, SDA-127 NCS-11 Control region space prefix symbol, Delta/XDelta, MODIFICATIONS keyword clause format, DELTA-9 National Char Set, NCS-16 Control register processing order for multiple, National Char See CSR Set, NCS-11 See MBA\$L_CR using to create collating sequence, National Control routine, RMS, 4-27 Char Set, NCS-9 Control sequence Conversion of double to single floating-point value, function key, VAXTPU, 7-241 RTL Math, 1-9 terminal, I/O User's I, 8-8 Conversion to greatest floating-point integer, RTL CONTROL_C_INTERCEPTION package, Math, 1-6 Debugger, 12-32 CONVERT CONTROL_FIELD_SIZE attribute, File Def See Convert Utility Language, FDL-34, FDL-35 CONVERT built-in procedure, VAXTPU, 7-50 CONTROL FIELD SIZE secondary attribute, example of use, VAXTPU, B-1 to B-4 File Applications, 4-29 CONVERT command, RMS, 4-9 CONV\$CONVERT routine, Utility Routines, list of qualifiers, Utility Routines, CONV-14 CONV-8 passing options, *Utility Routines*, CONV-14 CONV\$PASS_FILES routine, Utility Routines, passing options in an array, Utility Routines, CONV-11 CONV-16 CONV\$PASS_OPTIONS routine, Utility Routines, setting qualifiers, Utility Routines, CONV-14 CONV-14 CONVERT/FDL command, Programming CONV\$RECLAIM routine, Utility Routines, Resources, 8-58 CONV-18; Convert, CONV-4 Converting audit event message, System Services, Conversion, Convert, CONV-3 SYS-262 binary text to unsigned integer, RTL General Convert option Purpose, OTS-18 floating-point to character string, RTL General See RAB\$V CVT option

Purpose, OTS-4

CONVERT/RECLAIM See Convert/Reclaim Utility Convert/Reclaim Utility (CONVERT/RECLAIM), Programming Resources, 1-39; File Applications, 1-14, 3-16; Convert, CONV-1, CONV-3 DCL qualifier, Convert, CONV-24 directing output from, Convert, CONV-5 reclaiming buckets, Convert, CONV-29 exiting, Convert, CONV-5 invoking, Convert, CONV-5 restrictions, Convert, CONV-5 with DECnet-VAX, Convert, CONV-3 with Prolog 3 files, File Applications, 3-17, 10 - 30Convert routines See CONV routines Convert Utility (CONVERT), Programming Resources, 1-39; File Applications, 1-13, 9-8; Convert, CONV-1; File Def Language, FDL-3 appending a remote file, Convert, CONV-30 converting a carriage control to stream, Convert, CONV-30 converting a remote file, Convert, CONV-29 converting carriage control formats, Convert, CONV-2 creating data files, File Applications, 4-17, 4-18; File Def Language, FDL-41 creating output files, Convert, CONV-1 DCL qualifiers, Convert, CONV-5 to CONV-28 directing output from, Convert, CONV-5 establishing RFAs, Convert, CONV-4 examples, Convert, CONV-28 to CONV-30 converting a carriage control file to variable length, Convert, CONV-30 converting fixed format to variable length, Convert, CONV-30 converting record formats, Convert, CONV-29 improving a file's performance, Convert, CONV-29 reorganizing a remote file, Convert, CONV-29 exception conditions, Convert, CONV-3 exiting, Convert, CONV-5 FDL output data file, File Def Language, FDL-41 invoking, Convert, CONV-5 library routine. File Def Language, FDL-41 loading output files, Convert, CONV-1 making a file contiguous, File Applications, 10-30 optimizing data files, File Applications, 10-29 populating a file, File Applications, 4-22 reorganizing files, File Applications, 10-31

reorganizing noncontiguous files, File

Applications, 3-26, 10-30

Convert Utility (CONVERT) (cont'd) restrictions, Convert, CONV-5 with corrupted files, File Applications, 10-1, with DECnet-VAX, Convert, CONV-3 with FDL files, File Applications, 4-2 with Prolog 1 and 2 files, File Applications, with Prolog 3 files, File Applications, 3–17 CONV routines examples, Utility Routines, CONV-1 to CONV-7 introduction, Utility Routines, CONV-1 list of, Utility Routines, CONV-1 using wildcard characters, Utility Routines, CONV-12 Coordinate measuring system converting to character-cell system, VAXTPU, COPY command, System Dump Analyzer, SDA-3, SDA-4, SDA-42 /CONTIGUOUS qualifier, File Applications, 9-8, 10-29 Copying vector. RTL Math, MTH-160 Copying a handle, DECthreads, cma-63 Copy string, RTL General Purpose, OTS-90 COPY_TEXT built-in procedure, VAXTPU, 7-53 to 7-54 Coroutine, *Device Support* (B), 3–35, 3–46, 3–59, 3 - 109Corrupted file, Analyze/RMS_File, ARMS-14 Corruption detecting, Device Support (A), 13-23 to 13-27 Cosine hyperbolic, RTL Math, MTH-51, MTH-88 in degrees, RTL Math, MTH-49, MTH-87, MTH-127 in radians, RTL Math, MTH-47, MTH-86, MTH-124 of complex number, RTL Math, MTH-26, MTH-28Counting semaphore, Programming Resources, 4-17; RTL Parallel Processing, 4-10 operations on, RTL Parallel Processing, 4-10 CPU\$L PHY CPUID, Device Support (B), 3-70 CPU\$Q_SWIQFL, Device Support (A), E-14; Device Support (B), 3-26, 3-30 CPU\$Q_WORK_IFQ, Device Support (B), 1-17 CPU (central processing unit) list, Device Support (A), 1-10 per-CPU database, Device Support (B), 1-12 to locating, Device Support (A), E-7; Device Support (B), 2-31 CPU context changing, System Dump Analyzer, SDA-68,

SDA-74, SDA-89, SDA-93, SDA-126

CPU context (cont'd) CRB (channel request block) (cont'd) displaying, System Dump Analyzer, SDA-89 secondary, Device Support (A), 15-13; Device CPUDISP macro, Device Support (A), 5-6; Device Support (B), 1–22 Support (B), 2–9 to 2–11 synchronizing access to, Device Support (A), CPU ID (CPU identification number), System 3 - 16Dump Analyzer, SDA-89; Device Support (B), CRC (Calculate Cyclic Redundancy Check) 1-17, 3-70 instruction, MACRO, 9-142 CPULOA.EXE CR character, File Def Language, FDL-35 global symbols, System Dump Analyzer, Create and Map Section, System Services, SDA-60 SYS-117 CPU time, Convert, CONV-24 CREATE command, Patch, PAT-4, PAT-48; File Crash dump Def Language, FDL-40, FDL-42; System Dump Analyzer, SDA-2 See also System failure Created local label, MACRO, 4-7 analysis, System Dump Analyzer, SDA-1 to range, MACRO, 3-7 SDA-165 incomplete, System Dump Analyzer, SDA-7 CREATE/FDL short, System Dump Analyzer, SDA-7 See Create/FDL Utility Crash dump file CREATE/FDL command, Programming Resources, header, System Dump Analyzer, SDA-106 8-57; RMS, 4-9 /CRASH_DUMP qualifier, System Dump Analyzer, Create/FDL Utility (CREATE/FDL), Programming Resources, 1-39; File Applications, 1-14, CRB\$B_MASK, Device Support (A), 4-6, 16-8 4-2, 4-17, 10-1; File Def Language, FDL-41, CRB\$L_DLCK, Device Support (A), 3-22 FDL-42 CRB\$L_INTD, Device Support (A), 4-6; Device creating a data file, Programming Resources, Support (B), 1–22 to 1–27 8-57; File Def Language, FDL-41 CRB\$L_INTD+VEC\$L_INITIAL, Device Support exiting, File Def Language, FDL-43 (A), 11–5 invoking, File Def Language, FDL-43 CRB\$L_INTD+VEC\$L_UNITINIT, Device restrictions, File Def Language, FDL-43 Support (A), 11-5 Create file function, I/O User's I, 1–22 CRB\$L_LINK, Device Support (A), 15-13 directory entry creation, I/O User's I, 1-26 CRB\$L_WQBL, Device Support (A), 16-8 Create-if option, File Applications, 4–17, 4–27, CRB\$L_WQFL, Device Support (A), 4-6, 16-8; 5-9; RMS, 4-1 Device Support (B), 3–86, 3–91 See also FAB\$V_CIF option CRB\$V_UNINIT, Device Support (A), 16-8 \$CREATE macro, RMS, 3-10 CRB (channel request block), System Dump Create Mailbox and Assign Channel (\$CREMBX), Analyzer, SDA-99; Device Support (A), 1-6, System Services Intro, 8-3, 8-20 4-6 to 4-7; Device Support (B), 1-19 to 1-27 /CREATE qualifier, Librarian, LIB-12, LIB-17; alternate map register allocation information, File Applications, 4-11; Convert, CONV-8, Device Support (A), 14–20 CONV-17; File Def Language, FDL-42; creation, Device Support (A), 12-4 National Char Set, NCS-24; VAXTPU, 5-7 data path allocation information, Device EDIT/FDL, File Def Language, FDL-48 Support (A), 14–17 to 14–18 Create service, File Applications, 4-17, 5-9; for generic VAXBI device, Device Support (A), RMS, RMS-10 condition values, RMS, RMS-19 fork block, Device Support (A), 3-24, 12-7; contrasted with Open service, RMS, 4–1 Device Support (B), 1-21 control block input fields, RMS, RMS-11 for MBA, Device Support (A), 15-4, 15-7 to control block output fields, RMS, RMS-15 15-8, 15-13, 15-15 for process-permanent files, File Applications, initializing, Device Support (A), 6-3; Device 6 - 21Support (B), 2-25 function, RMS, 4-1 map register allocation information, Device handling search list, RMS, RMS-11 Support (A), 14–20 invoking, RMS, 4-1 periodic wakeup of, Device Support (B), 1-22 program example, RMS, 4-2 primary, Device Support (A), 15-13; Device prolog level, RMS, RMS-18 Support (B), 1–73 using the create-if option, RMS, RMS-17 reinitializing, Device Support (A), 6-3; Device using the NAM block, RMS-16 Support (B), 2–25 using to create indexed files, RMS, RMS-18

XAB override in various fields, RMS, RMS-11

"Create" string constant parameter to GET_INFO, VAXTPU, 7-177 CREATE_ARRAY built-in procedure, VAXTPU, 7-55 to 7-57 CREATE_BUFFER built-in procedure, VAXTPU, 7-58 to 7-62, 7-203 CREATE_IF attribute, File Def Language, FDL-19 CREATE_IF secondary attribute, File Applications, 4-27 CREATE_KEY_MAP built-in procedure, VAXTPU, 7-63 to 7-64 CREATE_KEY_MAP_LIST built-in procedure, VAXTPU, 7-65 to 7-66 CREATE_PROCESS built-in procedure, VAXTPU, 7-67 to 7-68 CREATE_RANGE built-in procedure, VAXTPU, 7-69 to 7-71 \$CREATE_RDB, System Services, SYS-79 CREATE_WIDGET built-in procedure, VAXTPU, example of use, VAXTPU, B-4 to B-11 using to specify callback routine, VAXTPU, 4-9 using to specify resource values, VAXTPU, 4-12CREATE_WINDOW built-in procedure, VAXTPU, 2-26, 7-77 to 7-79 Creating attributes object, DECthreads, cma-15 condition variable attributes object, DECthreads, pthread-29 mutex attributes object, DECthreads, pthread-70 thread attributes object, DECthreads, pthread-3 Creating a condition variable, *DECthreads*, cma-45, pthread-37 Creating a mutex, DECthreads, cma-77, pthread-80 Creating a thread, DECthreads, cma-95, pthread-47 guardsize attribute, DECthreads, cma-19, cma-31 inherit scheduling attribute, DECthreads, cma-21, cma-33, pthread-7, pthread-15 priority attribute, DECthreads, cma-25, cma-37, pthread-9, pthread-17 scheduling policy attribute, DECthreads, cma-27, cma-39, pthread-11, pthread-19 stacksize attribute, DECthreads, cma-29, cma-41, pthread-13, pthread-21 Creating per-thread context key value, DECthreads, cma-69, pthread-65 CREATION attribute, File Def Language, FDL-16 Creation date and time field See XAB\$Q_CDT field

Creation-time option, File Applications, 3-9, 4-1, 4-2, 4-17, 4-27, 4-28 \$CRETVA, System Services, SYS-114 See also \$EXPREG \$CRFCTLTABLE macro, RTL Library, 8-1, 8-2 \$CRFFIELDEND macro, RTL Library, 8-1, 8-4 \$CRFFIELD macro, RTL Library, 8-1, 8-3 Critical section definition of, RTL Parallel Processing, 1-2 \$CRMPSC, System Services, SYS-117 .CROSS directive, MACRO, 6-16 Cross-reference directive .CROSS, MACRO, 6-16 .NOCROSS, MACRO, 6-16 (.NOCROSS), MACRO, 6-66 Cross-reference of symbols, *Linker*, 5–1, LINK–5 in map, Linker, 5-6 Cross-reference routines, RTL Library, 8-1 /CROSS_REFERENCE qualifier, Librarian, LIB-19; Linker, LINK-5 using with /ONLY, Librarian, LIB-35 using with /OUTPUT, Librarian, LIB-36 CROSS_WINDOW_BOUNDS keyword, VAXTPU, 7 - 361"Cross_window_bounds" string constant parameter to GET_INFO, VAXTPU, 7-197 CSB (cluster system block), System Dump Analyzer, SDA-82, SDA-87 CSID (cluster system identification number), System Dump Analyzer, SDA-82, SDA-144 /CSID qualifier, System Dump Analyzer, SDA-82 CS keyword description, National Char Set, NCS-13 CSR (control and status register), I/O User's II, 3-5; Device Support (A), 14-4, 14-23 See also Device registers address, Device Support (A), 4-7, 8-4, 14-23; Device Support (B), 1–36 bad address, Device Support (B), 1-36 bit assignment, I/O User's II, 3-16 displaying address, Device Support (A), 12-11 fixed space, Device Support (A), 12-14 floating space, Device Support (A), 12–14 loading, Device Support (A), 8-5 locating device registers from, Device Support (A), 14–23 of LP11 printer, Device Support (A), 2-5 specifying address, Device Support (A), 12-5 specifying offset for multiunit controller, Device Support (A), 12-6 CTDRIVER, I/O User's I, 8-11, 8-35 CTG option, File Def Language, FDL-7, FDL-19 CTL\$GL_CCBBASE, Device Support (B), 3-103 CTL\$GL_PCB, Device Support (A), E-6 Ctrl/C, Programming Resources, 7-33; Debugger, 2-7, 10-4, 10-9, CD-38; VAXTPU, 4-20 with case-style error handler, VAXTPU, 3-29, 3 - 30

Ctrl/C (cont'd) Current time, Programming Resources, 3-23; with procedural error handler, VAXTPU, 3-27, VAXTPU, 7-138, 7-268, 7-271 3 - 28Current window, VAXTPU, 2-27, 7-77 Ctrl/W, Debugger, CD-40, CD-69 CURRENT_BUFFER built-in procedure, VAXTPU, 7-80 See Terminal, control characters CURRENT_CHARACTER built-in procedure, Ctrl/Y, Programming Resources, 7-33; Debugger, VAXTPU, 7-81 to 7-82 2-7, 3-3, 3-4, 10-12, CD-41 CURRENT_COLUMN built-in procedure, interrupting tasks in debugger, Debugger, VAXTPU, 7-83 to 7-84 12 - 32"Current_column" string constant parameter to with DECwindows, Debugger, 1-31 GET_INFO, VAXTPU, 7-197, 7-222 Ctrl/Z, Programming Resources, 7-5, 7-54; CURRENT_DIRECTION built-in procedure, Debugger, 3-4, CD-40; File Applications, 4-4 VAXTPU, 7-85 using as end-of-file marker, RMS, RMS-49 CURRENT_LINE built-in procedure, VAXTPU, using to terminate Get service, RMS, RMS-49 7-86 to 7-87 %CURDISP, Debugger, C-6 CURRENT_OFFSET built-in procedure, VAXTPU, %CURLOC, Debugger, 4-8, 4-13, D-5 7-88 to 7-89 Current CURRENT_ROW built-in procedure, VAXTPU, display, Debugger, 7-3, 7-18, CD-117, CD-238 7-90 to 7-91 entity, Debugger, 4-8, 4-13, 4-19, D-5 "Current_row" string constant parameter to with DECwindows, Debugger, 1-9 GET_INFO, VAXTPU, 7-197, 7-222 image, Debugger, 5-14, CD-138, CD-217 %CURRENT_SCOPE_ENTRY, Debugger, D-10 language, Debugger, 4-10, CD-141, CD-220 CURRENT_WINDOW built-in procedure, location, Debugger, 2-10, 6-4, 6-5, 7-6, 7-9 VAXTPU, 7-92 to 7-93 with DECwindows, Debugger, 1-21 %CURSCROLL, Debugger, C-6 radix, Debugger, 4-10, CD-164, CD-234 Cursor scope, Debugger, 5-11, CD-166, CD-235 detached type, Debugger, 4-23, CD-191, CD-252 defining routine to handle, VAXTPU, value, Debugger, 4-6, D-5 7 - 367Current buffer, VAXTPU, 7-59 fetching action routine to handle, active editing point, VAXTPU, 2-4 VAXTPU, 7-197 definition, VAXTPU, 7-80 fetching reason for, VAXTPU, 7-198 Current buffer direction, VAXTPU, 7-85 moving, RTL Screen Management, 4-3 Current context turning on and off, RTL Screen Management, current-record position, File Applications, 8-15 SMG-347 listed for VMS RMS services, File Applications, Cursor movement, Programming Resources, 7-20; VAXTPU, 7-94, 7-96 next-record position, File Applications, 8-16 free, VAXTPU, 7-95 Current date, VAXTPU, 7-138, 7-268, 7-271 Cursor position Current entity compared to editing point, VAXTPU, 6-10 field and buttons in main window effect of scrolling on, VAXTPU, 7-324 with DECwindows, Debugger, 1-9 padding effects, VAXTPU, 6-11 to 6-12 Current location counter, MACRO, 3-17 CURSOR_HORIZONTAL built-in procedure, Current location symbol (.), System Dump *VAXTPU*, 7–94 Analyzer, SDA-13 CURSOR_VERTICAL built-in procedure, Current pointer position, VAXTPU, 7-252 VAXTPU, 7-96 to 7-98 Current position option %CURVAL, Debugger, 4-6, D-5 CVTBD (Convert Byte to D_floating) instruction, See FAB\$V POS option MACRO, 9-110 /CURRENT qualifier, Debugger, 5-11, CD-166 CVTBF (Convert Byte to F_floating) instruction, Current-record context, File Applications, 8-14 MACRO, 9-110 Current-record position, File Applications, 8-3, CVTBG (Convert Byte to G_floating) instruction, MACRO, 9-110 "Current" string constant parameter to GET_ CVTBH (Convert Byte to H_floating) instruction, INFO, VAXTPU, 7-166, 7-167, 7-169, 7-184, MACRO, 9-110 7-191, 7-218 CVTBL (Convert Byte to Long) instruction, MACRO, 9-16

- CVTBW (Convert Byte to Word) instruction, MACRO, 9-16
- CVTDB (Convert D_floating to Byte) instruction, *MACRO*, 9-110
- CVTDF (Convert D_floating to F_floating) instruction, *MACRO*, 9–110
- CVTDH (Convert D_floating to H_floating) instruction, *MACRO*, 9–110
- CVTDL (Convert D_floating to Long) instruction, MACRO, 9-110
- CVTDW (Convert D_floating to Word) instruction, MACRO, 9-110
- CVTFB (Convert F_floating to Byte) instruction, MACRO, 9-110
- CVTFD (Convert F_floating to D_floating) instruction, *MACRO*, 9–110
- CVTFG (Convert F_floating to G_floating) instruction, MACRO, 9-110
- CVTFH (Convert F_floating to H_floating) instruction, *MACRO*, 9–110
- CVTFL (Convert F_floating to Long) instruction, MACRO, 9-110
- CVTFW (Convert F_floating to Word) instruction, MACRO, 9-110
- CVTGB (Convert G_floating to Byte) instruction, MACRO, 9-110
- CVTGF (Convert G_floating to F_floating) instruction, *MACRO*, 9–110
- CVTGH (Convert G_floating to H_floating) instruction, MACRO, 9-110
- CVTGL (Convert G_floating to Long) instruction, MACRO, 9-110
- CVTGW (Convert G_floating to Word) instruction, MACRO, 9-110
- CVTHB (Convert H_floating to Byte) instruction, MACRO, 9-110
- CVTHD (Convert H_floating to D_floating) instruction, *MACRO*, 9–110
- CVTHF (Convert H_floating to F_floating) instruction, *MACRO*, 9–110
- CVTHG (Convert H_floating to G_floating) instruction, MACRO, 9-110
- CVTHL (Convert H_floating to Long) instruction, MACRO, 9-110
- CVTHW (Convert H_floating to Word) instruction, MACRO, 9-110
- CVTLB (Convert Long to Byte) instruction, *MACRO*, 9–16
- CVTLD (Convert Long to D_floating) instruction, *MACRO*, 9-110
- CVTLF (Convert Long to F_floating) instruction, *MACRO*, 9–110
- CVTLG (Convert Long to G_floating) instruction, MACRO, 9–110
- CVTLH (Convert Long to H_floating) instruction, MACRO, 9-110

- CVTLP (Convert Long to Packed) instruction, MACRO, 9-153
- CVTLW (Convert Long to Word) instruction, MACRO, 9-16
- CVT option, File Def Language, FDL-14 CVTPL (Convert Packed to Long) instruction,
- MACRO, 9-154
- CVTPS (Convert Packed to Leading Separate Numeric) instruction, MACRO, 9-155
- CVTPT (Convert Packed to Trailing Numeric) instruction, MACRO, 9-157
- CVTRDL (Convert Rounded D_floating to Long) instruction, MACRO, 9-110
- CVTRFL (Convert Rounded F_floating to Long) instruction, MACRO, 9-110
- CVTRGL (Convert Rounded G_floating to Long) instruction, *MACRO*, 9–110
- CVTRHL (Convert Rounded H_floating to Long) instruction, *MACRO*, 9-110
- CVTSP (Convert Leading Separate Numeric to Packed) instruction, MACRO, 9-159
- CVTTP (Convert Trailing Numeric to Packed) instruction, MACRO, 9–161
- CVTWB (Convert Word to Byte) instruction, MACRO, 9-16
- CVTWD (Convert Word to D_floating) instruction, *MACRO*, 9–110
- CVTWF (Convert Word to F_floating) instruction, MACRO, 9-110
- CVTWG (Convert Word to G_floating) instruction, MACRO, 9-110
- CVTWH (Convert Word to H_floating) instruction, *MACRO*, 9–110
- CVTWL (Convert Word to Long) instruction, MACRO, 9-16
- Cyclic redundancy check instruction, MACRO, 9-141
- Cyclic redundancy check table, RTL Library, LIB-33
- Cylinder, File Applications, 1-5 boundary, File Applications, 3-13 options, File Applications, 4-31

D

DAN (data bucket area number) program example, *RMS*, 4–8

DAP (data access protocol), RMS, 1-1 Data

aligning, Programming Resources, 8–4 corruption, Analyze/RMS_File, ARMS-14 interprocess, Programming Resources, 5–13 sharing, Programming Resources, 5–13 thread-specific, DECthreads, 2–18

Data access protocol

See DAP

Database

Database (cont'd) Data format in NCS library compressing, Programming Resources, 8-26 specifying with /DATA qualifier, National Char expanding, Programming Resources, 8-32 Set, NCS-26 record. Programming Resources, 8-10 Data level Data bucket, File Def Language, FDL-27 comparing for primary and alternate keys, reclaiming, Convert, CONV-24 RMS, 13-4 Data bucket area number Data path, Device Support (A), 1-22, 14-7 to See DAN 14-15, 14-17 to 14-19; Device Support (B), Data bucket area number field 1-25 to 1-26 See XAB\$B_DAN field See also Buffered data path Data bucket fill size See also Direct data path See DFL autopurging, Device Support (B), 1-8, 2-3 Data bucket fill size field buffered, Device Support (A), 14-3; Device See XAB\$W_DFL field Support (B), 1–8, 2–3 Data bucket size field direct, Device Support (B), 2-3 See XAB\$B DBS field mixed use of direct and buffered, Device DATA BUCKET structure, File Applications. Support (A), 14–19 purging, Device Support (A), 10-2, 14-14, 10-16, 10-20 Data buffer, LPA11-K, I/O User's I, 4-14 14-19, 14-24 to 14-25; Device Support (B), Data chaining, I/O User's II, 4-2, 6-26 2-51, 3-82 to 3-83 Data check speed, Device Support (A), 14-10, 14-11, 14-15 disk, I/O User's I, 3-15, 3-29, 3-30 Data path allocation bit map, Device Support (B), magnetic tape, I/O User's I, 6–8, 6–17, 6–18 Data compression, File Applications, 3–16 Data path register, Device Support (A), 14-8, 14 - 15See also DCX routines purge error, Device Support (B), 3-83 analysis preceding compression, *Utility* Data path wait queue, Device Support (A), 14-25, Routines, DCX-13 E-14; Device Support (B), 1-7, 3-88, 3-97 compression algorithm /DATA qualifier, Librarian, LIB-20; National submitting all data records, Utility Char Set, NCS-26 Routines, DCX-15 See also /COMPRESS qualifier size of data after compression, Utility Routines, using with /OUTPUT, Librarian, LIB-36 DCX-1 Data Compression/Expansion routines Data record, Analyze/RMS_File, ARMS-6; File Def Language, FDL-5 See DCX routines analysis, Utility Routines, DCX-11 Data compression facility, Programming compression, Utility Routines, DCX-1 Resources, 8-25 conversion, Utility Routines, CONV-1 Data dependence, RTL Parallel Processing, 5-2 to conversion statistics, Utility Routines, CONV-8 expansion, *Utility Routines*, DCX-1 antidependence, RTL Parallel Processing, 5-2 Data-reduced format control dependence, RTL Parallel Processing, using /DATA qualifier, National Char Set, 5-2, 5-3 NCS-26 output dependence, RTL Parallel Processing, Data reliability, File Applications, 9–11 5-2, 5-3 true dependence, RTL Parallel Processing, 5-2 Data security erase Data-expanded format See DSE using /DATA qualifier, National Char Set, Data storage, Device Support (A), 5-1 NCS-26 and file organization, File Applications, 3-2 Data expansion, Utility Routines, DCX-22 device specific, Device Support (A), 4-5, 11-3; See also DCX routines Device Support (B), 1-41, 1-68, 2-22 initializing, Utility Routines, DCX-25 Data storage directive Data file .ADDRESS, MACRO, 6-4 creating, File Applications, 4-17; Convert, .ASCIC, MACRO, 6-8 .ASCID, MACRO, 6-9 CONV-1; File Def Language, FDL-39 .ASCII, MACRO, 6-10 creating with FDL\$CREATE routine, File .ASCIZ, MACRO, 6-11 *Applications*, 4–15, 4–18 reorganizing, File Applications, 10-29 .BYTE, *MACRO*, 6-14 .D_FLOATING, MACRO, 6-20

Data storage directive (cont'd) Data transfer (cont'd) .F FLOATING, MACRO, 6-35 meaning of terms read and write, I/O User's .G_FLOATING, MACRO, 6-36 II. 3-5 .H_FLOATING, MACRO, 6-38 mixing read and write functions in, Device .LONG, MACRO, 6-56 Support (A), 14-10 .OCTA, MACRO, 6-70 negative byte count, Device Support (B), 3-32, .PACKED, MACRO, 6-74 3-35, 3-41, 3-43, 3-46, 3-55, 3-56, 3-59 .QUAD, MACRO, 6-82 overlapping with seek operation, Device Support (A), 8-2 .SIGNED_BYTE, MACRO, 6-91 performing, Device Support (A), 17-13 to 17-19 .SIGNED_WORD, MACRO, 6-92 .WORD, *MACRO*, 6–102 size, Device Support (A), 14-23 Data structure, Analyze/RMS_File, ARMS-1; speed, Device Support (A), 14-10, 14-11, 14-15 Device Support (B), 1–1 starting address, Device Support (A), 14-22 to 14-23; Device Support (B), 1-79 See also I/O database to randomly ordered addresses, Device Support cma_t_once, DECthreads, cma-87 (A), 14–10 defining bit field within, Device Support (B), unmapping local buffer, Device Support (A), 2-102 to 2-103 17-17, 17-28; Device Support (B), 2-91 defining field within, Device Support (B), 2-14, word aligned, Device Support (A), 14-3; Device 2-15, 2-16 Support (B), 3–78 FAB (file access block), Programming zero byte count, Device Support (B), 3-32, Resources, 1–36 3-41, 3-55 formatting, System Dump Analyzer, SDA-56 Data transfer command table global symbols, System Dump Analyzer, LPA11-K, I/O User's I, 4-11 SDA-60 Data transfer mode, I/O User's II, 3-4 initializing, Device Support (A), 6-1; Device as controlled by a third-party SCSI class driver, Support (B), 2-24 to 2-26 Device Support (A), 17–13; Device Support NAM (name block), Programming Resources, (B), 2–88 1 - 36as controlled by the generic SCSI class driver. pthread_once_t, DECthreads, pthread-88 I/O User's I, 11-7, 11-13 RAB (record access block), Programming asynchronous, I/O User's I, 11-7, 11-13; Resources, 1-36 Device Support (A), 17–13; Device Support stepping through a linked list, System Dump (B), 2-88Analyzer, SDA-64 determining setting of, Device Support (B), XAB (extended attribute block), Programming Resources, 1–36 synchronous, I/O User's I, 11-7, 11-13; Device Data transfer Support (A), 17–13; Device Support (B), See also DMA transfer, PIO transfer 2-88 alignment, Device Support (A), 14-3 Data transfer start command buffering mechanisms, Device Support (A), LPA11-K, I/O User's I, 4–12 17-15 Data transfer stop command byte aligned, Device Support (A), 14-3, 14-22; LPA11-K, I/O User's I, 4-14 Device Support (B), 2-3, 3-78 Data type, Modular Procedures, B-6; Routines byte count, Device Support (B), 1-79, 1-83 Intro, 2–15; File Applications, 3–16; byte offset, Device Support (A), 14-13, 14-18; MACRO, 8-1; VAXTPU, 1-6 to 1-7 Device Support (B), 1-79, 3-77 incomplete, Device Support (A), 17-19 See also Type Ada declaration, Routines Intro, A-13 in reverse direction, Device Support (A), 15-4, APL declaration, Routines Intro, A-15 longword-aligned 32-bit random-access, Device atomic, Routines Intro, 2-15 Support (A), 14-11 DSC\$K_DTYPE_B, Routines Intro, 2-16 mapping local buffer for, Device Support (A), DSC\$K DTYPE BU, Routines Intro, 2–16 DSC\$K_DTYPE_CIT, Routines Intro, 2-17 mapping local buffer for SCSI port, Device DSC\$K_DTYPE_D, Routines Intro, 2–16 DSC\$K_DTYPE_DC, Routines Intro, 2-17 Support (A), 17-16 to 17-17; Device DSC\$K_DTYPE_F, Routines Intro, 2-16 Support (B), 2–77 to 2–79 DSC\$K_DTYPE_FC, Routines Intro, 2-16 maximum size of, Device Support (A), 17-14, 17 - 19DSC\$K_DTYPE_G, Routines Intro, 2–16 DSC\$K_DTYPE_GC, Routines Intro, 2-17

Data type	Data type (cont'd)
atomic (cont'd)	packed decimal string, MACRO, 8-13
DSC\$K_DTYPE_H, Routines Intro, 2–16	Pascal declaration, Routines Intro, A-38
DSC\$K_DTYPE_HC, Routines Intro, 2-17	PL/I declaration, Routines Intro, A-42
DSC\$K_DTYPE_L, Routines Intro, 2–16	quadword, MACRO, 8-2
DSC\$K_DTYPE_LU, Routines Intro, 2-16	RPG II declaration, Routines Intro, A-48
DSC\$K_DTYPE_O, Routines Intro, 2–16	SCAN declaration, Routines Intro, A-51
DSC\$K_DTYPE_OU, Routines Intro, 2–16	string, Routines Intro, 2–17; MACRO, 8–7
DSC\$K_DTYPE_Q, Routines Intro, 2–16	DSC\$K_DTYPE_NL, Routines Intro, 2–18
DSC\$K_DTYPE_QU, Routines Intro, 2–16	DSC\$K_DTYPE_NLO, Routines Intro,
DSC\$K_DTYPE_W, Routines Intro, 2–16	2–18
DSC\$K_DTYPE_WU, Routines Intro, 2–16	DSC\$K_DTYPE_NR, Routines Intro, 2–18
DSC\$K_DTYPE_Z, Routines Intro, 2–16	DSC\$K_DTYPE_NRO, Routines Intro,
BASIC declaration, Routines Intro, A-18	2–18
BLISS declaration, Routines Intro, A-22	DSC\$K_DTYPE_NU, Routines Intro, 2–18
byte, MACRO, 8-1	DSC\$K_DTYPE_NZ, Routines Intro, 2–18
C declaration, Routines Intro, A-25	DSC\$K_DTYPE_P, Routines Intro, 2–18
character string, MACRO, 8–7	DSC\$K_DTYPE_T, Routines Intro, 2–17
checking, VAXTPU, 4–12, 7–432	DSC\$K_DTYPE_V, Routines Intro, 2–18
COBOL declaration, Routines Intro, A-28	DSC\$K_DTYPE_VT, Routines Intro, 2–17
COBOL intermediate temporary, Routines	2–21
Intro, 2–20	DSC\$K_DTYPE_VU, Routines Intro, 2–18
code, Routines Intro, 1–8	trailing numeric string, MACRO, 8–8
facility-specific, Routines Intro, 2–19	variable-length bit field, MACRO, 8–6
reserved, Routines Intro, 2–20	varying character string, Routines Intro, 2–21
definition, VAXTPU, 2–1	DSC\$K_DTYPE_VT, Routines Intro, 2–21
floating-point, MACRO, 8–3, 8–4, 8–5, 9–101	VAX standard, Routines Intro, 1–8
FORTRAN declaration, Routines Intro, A-31	VMS, Routines Intro, A-1
integer, MACRO, 8-1	access_bit_names, Routines Intro, A-2
keywords	access_mode, Routines Intro, A-2
ARRAY, VAXTPU, 2–2 to 2–3	address, Routines Intro, A-2t
BUFFER, <i>VAXTPU</i> , 2–3 to 2–4	address_range, Routines Intro, A-2t
INTEGER, VAXTPU, 2-5	arg_list, Routines Intro, A-2t
KEYWORD, VAXTPU, 2-5 to 2-7	ast_procedure, Routines Intro, A-2t
LEARN, <i>VAXTPU</i> , 2–7 to 2–8	boolean, Routines Intro, A-2t
MARK, VAXTPU, 2–8 to 2–10	
PATTERN, VAXTPU, 2-11 to 2-20	byte_signed, Routines Intro, A-2t
PROCESS, VAXTPU, 2–20 to 2–21	channel, Routines Intro, A-2t
PROGRAM, <i>VAXTPU</i> , 2–21	char_string, Routines Intro, A-2t complex_number, Routines Intro, A-3t
RANGE, <i>VAXTPU</i> , 2–21 to 2–22	
STRING, VAXTPU, 2–21 to 2–22	cond_value, Routines Intro, A-4t
UNSPECIFIED, VAXTPU, 2–24	context, Routines Intro, A-5t
WIDGET, <i>VAXTPU</i> , 2–24 to 2–25	date_time, Routines Intro, A-5t
WINDOW, <i>VAXTPU</i> , 2–25 to 2–29	device_name, Routines Intro, A-5t ef_cluster_name, Routines Intro, A-5t
leading separate numeric string, MACRO, 8–11	ef_number, Routines Intro, A=5t
longword, MACRO, 8-2	
MACRO declaration, Routines Intro, A-36	exit_handler_block, Routines Intro, A-5t fab, Routines Intro, A-5t
miscellaneous, Routines Intro, 2–18	file_protection, Routines Intro, A-5t
DSC\$K_DTYPE_ADT, Routines Intro,	floating_point, Routines Intro, A-6t
2–19	
	function_code, Routines Intro, A-7t
DSC\$K_DTYPE_BLV, Routines Intro, 2–19	identifier, Routines Intro, A-7t
DSC\$K_DTYPE_BPV, Routines Intro, 2–19	io_status_block, Routines Intro, A-7t
DSC\$K_DTYPE_DSC, Routines Intro,	item_list_2, Routines Intro, A-8t
2–19 DOCER DEVDE ZEM Poutings Intro	item_list_3, Routines Intro, A-8t
DSC\$K_DTYPE_ZEM, Routines Intro,	item_list_pair, Routines Intro, A-9t
2-19 DOCAL DEVDE ZI Poutings Intro 2 10	item_quota_list, Routines Intro, A-9t
DSC\$K_DTYPE_ZI, Routines Intro, 2–19	lock_id, Routines Intro, A-9t
octaword, MACRO, 8–3	lock_status_block, Routines Intro, A-9t

Data type DATA_FILL attribute, File Def Language, FDL-4, VMS (cont'd) FDL-27 lock_value_block, Routines Intro, A-10t logical_name, Routines Intro, A-10t longword_signed, Routines Intro, A-10t longword_unsigned, Routines Intro, A-10t mask_byte, Routines Intro, A-10t mask longword, Routines Intro, A-10t mask_word, Routines Intro, A-10t null_arg, Routines Intro, A-10t octaword_signed, Routines Intro, A-10t Date octaword_unsigned, Routines Intro, A-10t page_protection, Routines Intro, A-10t procedure, Routines Intro, A-11t process id, Routines Intro, A-11t process_name, Routines Intro, A-11t quadword_signed, Routines Intro, A-11t 7 - 271quadword_unsigned, Routines Intro, A-11t quad_longword, Routines Intro, A-10t rab, Routines Intro, A-12t rights_holder, Routines Intro, A-11t rights_id, Routines Intro, A-12t section_id, Routines Intro, A-12t FDL-15 section_name, Routines Intro, A-12t system_access_id, Routines Intro, A-12t time_name, Routines Intro, A-12t transaction_id, Routines Intro, A-12t uic, Routines Intro, A-12t user_arg, Routines Intro, A-13t varying_arg, Routines Intro, A-13t vector_byte_signed, Routines Intro, A-13t vector_byte_unsigned, Routines Intro, A-13t vector_longword signed, Routines Intro, vector_longword_unsigned, Routines Intro, A-13t vector_quadword_signed, Routines Intro, A-13t vector_quadword_unsigned, Routines Intro, vector_word_signed, Routines Intro, A-13t vector_word_unsigned, Routines Intro, A-13t word_signed, Routines Intro, A-13t 2-21word_unsigned, Routines Intro, A-13t VMS Usage, Routines Intro, 1-7 word, MACRO, 8-2 CDU-17 Data type of key field See XAB\$B_DTP field CDU-2 Data underrun/overrun with LPA11-K, I/O User's I, 4-12 DATA_AREA attribute, File Def Language,

DATA KEY COMPRESSION attribute, File Def Language, FDL-4, FDL-27 DATA RECORD COMPRESSION attribute, File Def Language, FDL-4, FDL-27 DATA_RECORD_COUNT attribute, File Def Language, FDL-5 DATA_SPACE_OCCUPIED attribute, File Def Language, FDL-5 getting current system, System Services Intro, inserting with FAO, VAXTPU, 7-138 inserting with MESSAGE, VAXTPU, 7-268 inserting with MESSAGE TEXT, VAXTPU, Smithsonian base, System Services Intro, 10-2 system format, System Services Intro. 10-2 Date and time extended address block See XABDAT block DATE attribute, File Def Language, FDL-2, Date-information option, File Applications, 4-28 DATE primary, File Applications, 4-28 Date/Time routine LIB\$DATE TIME, RTL Library, LIB-80 LIB\$DAY, RTL Library, LIB-82 LIB\$DAY_OF_WEEK, RTL Library, LIB-84 date_time data type, Routines Intro, A-5t /DATE_TIME qualifier, Debugger, CD-59, CD-82 DAT file type, Analyze/RMS_File, ARMS-10 DAT_NCMPR option, File Def Language, FDL-27 DBG\$DECW\$DISPLAY with DECwindows, Debugger, 1-32, 1-33, 1-34, D-1 DBG\$INIT, Debugger, 8-4, D-1 DBG\$INPUT, Debugger, 9-5, D-1 with DECwindows, Debugger, 1–33 DBG\$OUTPUT, Debugger, 9-5, D-1 with DECwindows, Debugger, 1-33 DBG\$PROCESS, Debugger, 2-6, 10-1, 10-9, D-1 with DECwindows, Debugger, 1-3, 1-29 \$DCDEF macro, Device Support (B), 1-76, 2-3, DCL (DIGITAL Command Language) command language routines, Command Def, command processing, Command Def, CDU-1 to \$DCLAST, System Services, SYS-133 DCL command line overriding /RECOVER qualifiers on. VAXTPU. 7 - 408DCL command procedure example, VAXTPU, A-5 DCL commands

FDL-27, FDL-28

Applications, 3-24

DATA_AREA secondary attribute, File

DDB (device data block) (cont'd) DCL commands (cont'd) ANALYZE/RMS_FILE, Programming reinitializing, Device Support (A), 6-3; Device Support (B), 2-25 Resources, 8-55 DDCMP (DIGITAL Data Communications Message ASSIGN, Linker, LINK-21 CONVERT/FDL, Programming Resources, 8-58 Protocol), I/O User's II, 1–1, 2–1 CREATE/FDL, Programming Resources, 8–57 DDI (DR32 device interconnect), I/O User's II, DEFINE, Linker, LINK-21 4-1, 4-2status returns, I/O User's II, 4-37 EDIT/FDL, Programming Resources, 8-55 LIBRARY, Linker, 2-3 DDT\$L_ALTSTART, Device Support (A), 7-5; Device Support (B), 4-2 RUN, Linker, 2-5 SET VERIFY, Linker, 3-4 DDT\$L_CANCEL, Device Support (B), 4-4 DDT\$L_CLONEDUCB, Device Support (B), 4-6 DCL command string DDT\$L_REGDUMP, Device Support (B), 4-15 See Command string DDT\$L START, Device Support (B), 4-17 DCLDEF.STB, System Dump Analyzer, SDA-60 DDT\$L_UNITINIT, Device Support (A), 11-5; DCL interpreter Device Support (B), 4-22 global symbols, System Dump Analyzer, DDT\$L_UNSOLINT, Device Support (B), 4-24 SDA-60 DDT\$W_ERRORBUF, Device Support (A), 11-9, DCX\$ANALYZE DATA routine, Utility Routines, 17 - 21DCX-11 DDT (driver dispatch table), System Dump DCX\$ANALYZE DONE routine, Utility Routines, Analyzer, SDA-99; Device Support (A), 1-2, DCX-13 11-1, 11-10; Device Support (B), 1-29 to DCX\$ANALYZE_INIT routine, Utility Routines, 1-31, 3-102 DCX-14 address, Device Support (A), 6-3; Device DCX\$COMPRESS_DATA routine, Utility Support (B), 1-28, 1-80, 2-25 Routines, DCX-17 creating, Device Support (A), 6-3 to 6-4, 11-4; DCX\$COMPRESS DONE routine, Utility Device Support (B), 2-12 to 2-13 Routines, DCX-19 of terminal class driver, Device Support (A), DCX\$COMPRESS_INIT routine, Utility Routines, 18 - 19DCX-20 relocating addresses specified in, Device DCX\$EXPAND_DATA routine, Utility Routines, Support (A), 11-4 DCX-22 DDTAB macro, Device Support (A), 11-9, 12-1; DCX\$EXPAND DONE routine. Utility Routines. Device Support (B), 2-12 to 2-13, 3-102 DCX-24 example, Device Support (B), 2-13 DCX\$EXPAND_INIT routine, Utility Routines, Deaccess file function, I/O User's I, 1-28 DCX-25Deadlock, Modular Procedures, 3-21; RTL DCX\$MAKE MAP routine, Utility Routines, Parallel Processing, 5-4 avoidance, RTL Parallel Processing, 5-5 DCX (Data/Expansion) routine, Programming debugging deadlocks, Debugger, 12-30 Resources, 8-25 detection and recovery, RTL Parallel DCX routines Processing, 5-5 examples, Utility Routines, DCX-2 to DCX-10 how to avoid, DECthreads, 3-7 introduction, Utility Routines, DCX-1 prevention, RTL Parallel Processing, 5-4 procedure for use, Utility Routines, DCX-1 Deadlock detection, System Services Intro, 13-5 when to use, *Utility Routines*, DCX-1 **DEBNA** driver with multiple streams of data records, Utility See Ethernet/802 drivers Routines, DCX-1 \$DEBUG\$INI\$ buffer, VAXTPU, 4-22 DDB\$L_LINK, Device Support (A), 11-5 DEBUG command, Debugger, 3-3, 10-12, CD-41; DDB\$L_UCB, Device Support (A), 11-5 VAXTPU, 4-35 DDB\$T_DRVNAME, Device Support (A), 4-8 with DECwindows, Debugger, 1-31 DDB\$T_NAME, Device Support (A), 4-8 .DEBUG directive, MACRO, 6-18 DDB (device data block), System Dump Analyzer, Debug directive (.DEBUG), MACRO, 6-18 SDA-99; Device Support (A), 1-5, 4-8, 11-5; Debugger, *Programming Resources*, 1–14 to 1–16; Device Support (B), 1-27 to 1-28 Debugger, 1-1 address, Device Support (B), 1-74 creation, Device Support (A), 12-4 See also Delta/XDelta Utility initializing, Device Support (A), 6-3; Device See also Symbolic debugger Support (B), 2-25 command interface, Debugger, 2-1

Debugger	Debugging (cont'd)
command interface (cont'd)	TPU command, VAXTPU, 4-37
with DECwindows, Debugger, 1-27, 1-33	user-mode programs, Delta/XDelta, DELTA-1
DECwindows interface, Debugger, 1-1	Debugging a multithreaded program,
displaying command interface on other	DECthreads, cma-58, cma-59
terminal, Debugger, 9-5	Debugging configuration
with DECwindows, Debugger, 1-33	See also Debugger
displaying DECwindows interface on other	default, Debugger, 2–6, 10–9
workstation, Debugger, 1–32	with DECwindows, Debugger, 1–3
including, Linker, LINK-6	multiprocess, Debugger, 10-1, 10-9
invoking, VAXTPU, 4-33	with DECwindows, Debugger, 1–29
invoking from DECwindows FileView window,	Debugging programs that use VM zones, RTL
Debugger, 1–31	Library, 6–1
invoking over DECnet link, Debugger, 3-1	Debugging threads
module name, MACRO, 6-23	on systems based on UNIX software,
routine name, MACRO, 6-23	DECthreads, A-8
symbol table, Linker, 6–18	on VMS systems, DECthreads, B-3
using with completion status codes, RMS, A-2	DEBUG keyword, VAXTPU, 7-362, 7-363, 7-364
Debugger command	DEBUGON procedure, VAXTPU, 4-35
dictionary, Debugger, CD-6	/DEBUG qualifier, <i>Debugger</i> , 3–1, 5–2, 5–4, 6–1;
format, Debugger, CD-3	Linker, LINK-6; VAXTPU, 4-33, 5-8
repeating, Debugger, CD-99, CD-109, CD-268	shareable image, Debugger, 5–12
summary, Debugger, 2–25	with DECwindows, Debugger, 1-3
with DECwindows, Debugger, 1–27, 1–33	Debug symbol table
Debugging, Debugger, 1–1; VAXTPU, 4–33 to	See DST
4–37	DEBUG_LINE built-in procedure, VAXTPU, 7–99
at elevated IPL, Delta/XDelta, DELTA-1	%DEC, Debugger, 4–11, D–5
at IPL 0, Delta/XDelta, DELTA-1	DEC026 card reader code, I/O User's I, 2-2, 2-8
ATTACH command, VAXTPU, 4–36	DEC029 card reader code, I/O User's I, 2-2, 2-8
CANCEL BREAKPOINT command, VAXTPU,	DECB (Decrement Byte) instruction, MACRO,
4–36	9–17
command files, VAXTPU, 4-34	DECdns call
condition handler, Programming Resources,	timeout in, System Services Intro, 6–23
9–20	DECdns name
DEPOSIT command, VAXTPU, 4–36	converting, System Services, SYS-176,
device driver, Device Support (A), 13-1 to	SYS-178, SYS-180
13–30	converting full name, System Services,
DISPLAY SOURCE command, VAXTPU, 4–36	SYS-176
EXAMINE command, VAXTPU, 4–36	defining logicals, System Services Intro, 6-34
exit handler, Programming Resources, 9–30	DECdns naming conventions
GO command, VAXTPU, 4–34, 4–36	logical names, System Services Intro, 6-34
HELP command, VAXTPU, 4–36	DECdns object
privileged code, Delta/XDelta, DELTA-1	creating, System Services, SYS-171
program, VAXTPU, 4–35	deleting, System Services, SYS-172
QUIT command, VAXTPU, 4–36	enumerating, System Services, SYS-174
SCROLL command, VAXTPU, 4–37	reading attributes of, System Services Intro,
section files, VAXTPU, 4–34	6-28
SET BREAKPOINT command, VAXTPU, 4–34, 4–37	DECdns string name
SET WINDOW command, VAXTPU, 4–37	converting to opaque, System Services,
SHIFT command, VAXTPU, 4–37	SYS-178
SHOW BREAKPOINTS command, VAXTPU,	DECdtm services, System Services Intro, 1-3,
4–37	14–1
source code, VAXTPU, 4–35	aborting a transaction, System Services Intro,
SPAWN command, VAXTPU, 4–37	14–2
STEP command, VAXTPU, 4–37 STEP command, VAXTPU, 4–35, 4–37	committing a transaction, System Services
to examine contents of local variable, VAXTPU,	$Intro,\ 142$
4–36	

```
DECdtm services (cont'd)
                                                    DECnet remote file access
  participant in a transaction, System Services
                                                      specifying maximum record size, RMS, 5-22
      Intro, 14-2
                                                    DECnet-VAX
  resource manager, System Services Intro, 14-2
                                                      using the Analyze/RMS File Utility with.
  starting a transaction, System Services Intro,
                                                          Analyze/RMS File, ARMS-7
      14-3
                                                      using the Convert/Reclaim Utility (CONVERT
  system services, System Services Intro, 14-1
                                                          /RECLAIM) with, Convert, CONV-3
      SYS$START_TRANS, System Services
                                                    Decomposition, RTL Parallel Processing, 5-1
          Intro, 14–3
                                                    DECtalk device
      SYS$START_TRANSW, System Services
                                                      checking hardware status, RTL DECtalk,
          Intro, 14-3
                                                          DTK-5
  transaction manager, System Services Intro,
                                                      connecting a terminal to, RTL DECtalk, 1-2 to
                                                          1-3
  transaction states, System Services Intro, 14-2
                                                      controlling the terminal, RTL DECtalk, 1-2 to
  two-phase commit protocol, System Services
      Intro, 14-4
                                                      initializing, RTL DECtalk, 1-1, DTK-10
Decimal/hexadecimal conversion, MACRO, B-2
                                                      mode of operation, RTL DECtalk, 1-1 to 1-2
  table, MACRO, B-1
                                                          setting terminal attributes, RTL DECtalk,
DECIMAL mode, Patch, PAT-17
                                                              1-3, DTK-25, DTK-29
Decimal number, File Def Language, FDL-2
                                                          setting terminal logging, RTL DECtalk,
Decimal overflow detection, RTL Library,
                                                              1-2 to 1-3, DTK-22
    LIB-104
                                                      specifying an output destination, RTL
Decimal overflow enable (DV), MACRO, 8-16
                                                          DECtalk, 1-1
/DECIMAL qualifier
                                                      voice characteristics, RTL DECtalk, 1-2,
  with DELETE command, Patch, PAT-52
                                                          DTK-31
  with DEPOSIT command, Patch, PAT-55
                                                      voice identifier, RTL DECtalk, 1-1
  with EXAMINE command, Patch, PAT-62
                                                    DECtalk dictionary, RTL DECtalk, 1-4
  with INSERT command, Patch, PAT-68
                                                      loading, RTL DECtalk, DTK-12
  with REPLACE command, Patch, PAT-72
                                                    DECtalk index, RTL DECtalk, 1-4
  with SET MODE command, Patch, PAT-76
                                                      returning last spoken, RTL DECtalk, 1-4,
  with VERIFY command, Patch, PAT-90
                                                          DTK-18
/DECIMAL qualifier, Debugger, 4-11, CD-77,
                                                      setting, RTL DECtalk, 1-4, DTK-19
    CD-79, CD-82
                                                    DECtalk routine, RTL DECtalk, 1-1
Decimal string descriptor, Routines Intro, 2-30
                                                      controlling the speech, RTL DECtalk, 1-4 to
Decimal string instructions, MACRO, 9-144
                                                          1-5, DTK-27
Decimal text
                                                          speaking phonemic text, RTL DECtalk,
  converting to binary, RTL Library, LIB-76
                                                              DTK-35
Decimal value
                                                          speaking text, RTL DECtalk, DTK-37
  of an expression, System Dump Analyzer,
                                                          speaking text in a file, RTL DECtalk,
      SDA-48
                                                              DTK-33
DECIMAL value, File Def Language, FDL-31
                                                          spelling text, RTL DECtalk, DTK-39
DECL (Decrement Long) instruction, MACRO,
                                                      initializing, RTL DECtalk, 1-1, DTK-10
                                                      overview of, RTL DECtalk, 1-1
DECLARE command, Debugger, 8-2, CD-44
                                                      terminating, RTL DECtalk, 1-4, DTK-41
Declaring a condition handler, DECthreads, B-1
                                                      using the telephone, RTL DECtalk, 1-5
DEC Multinational Character Set, National Char
                                                          answering the phone, RTL DECtalk, 1-5,
    Set, NCS-3; I/O User's I, B-1; VAXTPU, 3-1
                                                              DTK-3
    to 3-2, E-1 to E-8
                                                          dialing the phone, RTL DECtalk, 1-5,
  string comparison, RTL String Manipulation,
                                                              DTK-7
      STR-11, STR-17
                                                          hanging up the phone, RTL DECtalk, 1-5,
  string conversion, RTL String Manipulation,
                                                              DTK-9
      STR-89
                                                          recognizing the keypad, RTL DECtalk,
  using, RMS, 2–7
                                                              1-5, DTK-20
DECnet
                                                          using keypad for input, RTL DECtalk, 1-5,
  debugging over, Debugger, 3-1
                                                              DTK-14, DTK-16
DECnet data structures
                                                      writing an exit handler, RTL DECtalk, 1-6
  global symbols, System Dump Analyzer,
                                                    DECthreads
      SDA-60
                                                      See also Tasking (multithread) program
```

DECW (Decrement Word) instruction, MACRO, Default file specification string size field 9 - 17See FAB\$B_DNS field DECwindows Default file type, Librarian, LIB-1, LIB-11 debugger interface, Debugger, 1-1 for NCS definition files specified by /OUTPUT debugging DECwindows application, Debugger, qualifier, National Char Set, NCS-39 for NCS input files, National Char Set, VAXTPU NCS-21 determining if present, VAXTPU, 7-197 for NCS library, National Char Set, NCS-33 invoking with /DISPLAY, VAXTPU, 5-8 for NCS library listing output file, National sample uses of built-ins, VAXTPU, B-1 to Char Set, NCS-34 B - 33for NCS library specified by /COMPRESS %DECWINDOWS, Debugger, D-5 qualifier, National Char Set, NCS-39 **DECwindows** interface for output files created by /MACRO qualifier, debugger, Debugger, 1-1 National Char Set, NCS-28 displaying on other workstation, Debugger, for output files created by /OUTPUT qualifier, 1-32National Char Set, NCS-28 disabled debugger commands, Debugger, 1-27 Default form, System Services, SYS-581 DEC CRT2 mode, VAXTPU, C-3 Default global buffer count field "Dec_crt2" string constant parameter to GET See XAB\$W GBC field INFO. VAXTPU, 7-197 Default image map, Linker, 1-12 DEC_CRT mode, VAXTPU, C-2 Default insertion "Dec_crt" string constant parameter to GET_INFO, in lieu of module replacement, National Char VAXTPU, 7-197 Set, NCS-40 Default Default library file type, Librarian, LIB-11 condition handlers, Routines Intro, 2-51 Default logical name table **DEFAULT** clause group, System Services Intro, 6-5 for DEFINE TYPE statement, Command Def. job, System Services Intro, 6-5 CDU-28 process, System Services Intro, 6-4 for PARAMETER clause, Command Def. system, System Services Intro, 6-6 CDU-23, CDU-32 Default map, Linker, 5-1 for QUALIFIER clause, Command Def. module information in. Linker, 5-2, 5-3 CDU-25, CDU-33 sections in, Linker, 5-2 for VALUE clause, Command Def. CDU-24. symbols cross-referenced in, Linker, LINK-5 CDU-26, CDU-29, CDU-33, CDU-34 Default output file name .DEFAULT directive, MACRO, 6-19 ANALYZE/RMS_FILE, Analyze/RMS_File, Default directory ARMS-16 fetching in VAXTPU, VAXTPU, 7-206 Default patch area, Patch, PAT-18 setting in VAXTPU, VAXTPU, 7-366 Default protection, File Def Language, FDL-23 Default displacement length directive (.DEFAULT), Default protection ACE, System Services Intro, MACRO, 6-19 3 - 20Default-extension option, File Applications, 4-31 /DEFAULT qualifier, Debugger, CD-82 Default extension quantity, File Def Language, Default result FDL-20 vector arithmetic exceptions, MACRO, 10-6, Default extension quantity field 10-30, 10-68 See FAB\$W_DEQ field \$DEFAULTS\$ buffer, VAXTPU, 4-32 Default file extension quantity field in XABFHC Default system library See XAB\$W_DXQ field linker's search of, Linker, LINK-29 Default system macro library, System Services Default file naming algorithm buffer change journal, VAXTPU, 1-12 Intro, 2-4 Default file specification, File Applications, 5-4, Default user library 6-1 to 6-4, 9-7 definition of, Linker, LINK-21 linker's search of, Linker, LINK-21, LINK-22, See also File specification LINK-29 journal file, Patch, PAT-29 Default values output image file, Patch, PAT-32 AREA, File Def Language, FDL-6 Default file specification string address field DATE, File Def Language, FDL-15 See FAB\$L_DNA field FILE, File Def Language, FDL-16

Default values (cont'd) **DEFINE TYPE statement** key, File Def Language, FDL-26 acceptable keyword clauses, Command Def, overriding with /COMPRESS qualifier, CDU-28 National Char Set, NCS-24 acceptable type-clause, Command Def, CDU-28 RECORD, File Def Language, FDL-33 defining qualifier keywords, Command Def, SYSTEM, File Def Language, FDL-38 CDU-30 DEFAULT_DIRECTORY parameter to SET format, Command Def, CDU-7 built-in procedure, VAXTPU, 7-366 keywords referenced by VALUE, Command "default_directory" string constant parameter to Def, CDU-28 GET_INFO, VAXTPU, 7-206 with DEFAULT clause, Command Def, DEFAULT_NAME attribute, File Def Language, CDU-28 FDL-19 with DEFINE VERB statement, Command \$DEFEND macro, Device Support (B), 1-70, 2-15 Def, CDU-7 example, Device Support (B), 2-16 with LABEL clause, Command Def, CDU-28 Deferred write option with NEGATABLE and NONNEGATABLE See FAB\$V_DFW option clauses, Command Def, CDU-28 with SYNTAX clause, Command Def, CDU-28 Deferred-write processing, File Applications, 9-9 DEFERRED_WRITE attribute, File Def with VALUE clause, Command Def, CDU-7 Language, FDL-19 **DEFINE VERB statement** example, Command Def, CDU-7, CDU-8 DEFERRED_WRITE secondary attribute, File Applications, 7-19, 7-20 format, Command Def, CDU-8 DEFINE command, Debugger, 8-6, CD-47; with DEFAULT clause, Command Def, Linker, LINK-21; Patch, PAT-50; System CDU-30 Services Intro, 6-2; File Applications, 4-14, with DEFINE SYNTAX statement, Command 6-15; System Dump Analyzer, SDA-43 Def, CDU-6 with DISALLOW and NODISALLOWS clauses, creating user-defined symbols, Patch, PAT-5 Command Def, CDU-31 displaying default qualifiers for, Debugger, CD-211 with IMAGE clause, Command Def, CDU-31 examples, Patch, PAT-51 with PARAMETER and NOPARAMETERS setting default qualifiers for, Debugger, clauses, Command Def, CDU-32 CD-133 with QUALIFIER and NOQUALIFIERS symbols defined, Patch, PAT-11 clauses, Command Def, CDU-33 /TRANSLATION_ATTRIBUTES qualifier, File with ROUTINE clause, Command Def, Applications, 5–7 CDU-35 /DEFINED qualifier, Debugger, CD-243 with SYNONYM clause, Command Def, "Defined" string constant parameter to GET_INFO, CDU-35 VAXTPU, 7-190 DEFINE_KEY built-in procedure, VAXTPU, DEFINE/KEY command, Debugger, 8-8, CD-49 7-100 to 7-104 DEFINE/PROCESS_GROUP command, Debugger, DEFINE_WIDGET_CLASS built-in procedure, 10-12, CD-52 VAXTPU, 7-105 example of use, VAXTPU, B-4 to B-11 **DEFINE SYNTAX statement** example, Command Def, CDU-5, CDU-27 \$DEFINI macro, Device Support (B), 1-70, 2-16 format, Command Def, CDU-5 example, Device Support (B), 2-16 table of syntax changes, Command Def, Definition CDU-20 to CDU-22 built-in, National Char Set, NCS-7 with DISALLOW and NODISALLOWS clauses, Definition file Command Def, CDU-22 characteristics, National Char Set, NCS-4 with IMAGE clause, Command Def, CDU-23 example, National Char Set, NCS-5 with PARAMETER and NOPARAMETER format, National Char Set, NCS-4 clauses, Command Def, CDU-23 generated by /OUTPUT qualifier, National with PARAMETER clause, Command Def, Char Set, NCS-39 CDU-21 how to build, National Char Set, NCS-4 with QUALIFIER and NOQUALIFIERS language notation, National Char Set, NCS-6 clauses, Command Def, CDU-24 naming, National Char Set, NCS-4 with ROUTINE clause, Command Def, output from NCS library See /OUTPUT qualifier with SYNTAX keyword, Command Def, structure, National Char Set, NCS-4

CDU-28

Definition module DELETE_ON_CLOSE attribute, File Def deleting from NCS library Language, FDL-19, FDL-24 Deleting See /DELETE qualifier attributes object, DECthreads, cma-17 extracting from NCS library condition variable attributes object, See /EXTRACT qualifier DECthreads, pthread-31 inserting in NCS library mutex attributes object, DECthreads, See /INSERT qualifier pthread-72 replacing thread attributes object, DECthreads, pthread-5 See /REPLACE qualifier Deleting a condition variable, *DECthreads*, specifying name length, National Char Set, cma-47, pthread-35 NCS-24 Deleting a mutex, DECthreads, cma-79, Definition path, Command Def, CDU-12 pthread-78 Definition statements, Message, MSG-3 Deleting a PPL\$ application, RTL Parallel \$DEF macro, Device Support (B), 1-70, 2-14 Processing, 2-1, 2-2 example, Device Support (B), 2-16 Deleting a subordinate, RTL Parallel Processing, Delaying execution of a thread, *DECthreads*, cma-61, pthread-50 Deleting a thread, DECthreads, cma-98, DELETE access, File Def Language, FDL-23 pthread-52 DELETE attribute, File Def Language, FDL-3, Deleting records, VAXTPU, 6-5 FDL-37 Deletion DELETE built-in procedure, VAXTPU, 7-107 to buffer, VAXTPU, 2-4 7 - 110line terminator, VAXTPU, 7-28 DELETE command, Debugger, 8-6, CD-54; marker, VAXTPU, 2-10 Patch, PAT-52; File Applications, 10-28; File operations, RTL Screen Management, 2-7 Def Language, FDL-60 range, VAXTPU, 2-22, 7-70 Delete file function, I/O User's I, 1–29 subprocess, VAXTPU, 7-67 DELETE key, I/O User's I, 8-4 VAXTPU structure, VAXTPU, 7-109 DELETE/KEY command, Debugger, 8-8, CD-56 window, VAXTPU, 2-28 Delete on close option Delimiters, Patch, PAT-20, PAT-23 See FAB\$V_DLT option ASCII data entry, Patch, PAT-16 /DELETE qualifier, Command Def, CDU-39; for specifying multiple definition modules, Librarian, LIB-21 National Char Set, NCS-27, NCS-28, for deleting definition modules from NCS NCS-32, NCS-38 library, National Char Set, NCS-27 for specifying multiple input files, National LIBRARY command, Programming Resources, Char Set, NCS-21 5-2string argument, MACRO, 4-3 DELETE secondary attribute, File Applications, using in control block arguments, RMS, 3-5, 3-6.3-7Delete service, File Applications, 8-2, 8-5; RMS, Delivery of alert RMS-21 disabling, DECthreads, cma-5 condition values, RMS, RMS-22 disabling asynchronous, *DECthreads*, cma-3 See also Completion status code enabling, DECthreads, cma-9 control block input fields, RMS, RMS-22 enabling asynchronous, *DECthreads*, cma-7 control block output fields, RMS, RMS-22 requesting, DECthreads, cma-13 high-level language equivalents, File Delivery of cancel Applications, 8-2 enabling and disabling, DECthreads, program example, RMS, 4-19 pthread-93 requirements, RMS, RMS-22 enabling and disabling asynchronous, run-time options, File Applications, 9-20 DECthreads, pthread-91 use restrictions, RMS, RMS-21 requesting, *DECthreads*, pthread-103 Delete service option DEL option, File Def Language, FDL-3, FDL-37 See FAB\$V_DEL option DELQA driver Delete sharing option See Ethernet/802 drivers See FAB\$V_SHRDEL option **DELTA** See Delta/XDelta Utility

Delta/XDelta Utility (DELTA/XDELTA) (cont'd) Delta time, *Programming Resources*, 3–23; values, Device Support (A), 13-12 System Services Intro, 10–2 \$DELTVA, System Services, SYS-147 as input to SYS\$BINTIM, System Services, SYS-37 DELUA driver converting to numeric, System Services, See Ethernet/802 drivers SYS-455 Demand-zero compression example, System Services Intro, 10-3 cessation of, Linker, 3-10 in system format, System Services Intro, 10-3 conditions for, Linker, 6-19 control of by option, Linker, 1-8, 3-7 DELTA/XDELTA definition of, Linker, 1-8, 3-7 See Delta/XDelta Utility Demand-zero image section, Linker, 1-8, 3-7 Delta/XDelta Utility (DELTA/XDELTA), Dependences Programming Resources, 1-15; Device Support (A), 13-1 to 13-22 vector results, MACRO, 10-24 Deposit base register, Device Support (A), 13-13 predefined, Device Support (A), 13-13 DEPOSIT command, Debugger, 4-3, CD-58 instruction, Debugger, 4-21, 11-12 X4, Device Support (A), 13-13 with DECwindows, Debugger, 1-24 X5, Device Support (A), 13-13 into address, Debugger, 4-23 XE, Device Support (A), 13-13 XF, Device Support (A), 13-13 with DECwindows, Debugger, 1-25 into register, Debugger, 4-22, 11-4 changing contents of location using, Device with DECwindows, Debugger, 1–25 Support (A), 13-15, 13-16 into variable, Debugger, 4-3, 4-14 closing location using, Device Support (A), with DECwindows, Debugger, 1-24 13 - 16into vector register, Debugger, 11-4 commands vector instruction, Debugger, 11-12 executing string, Device Support (A), Deposit ASCII String command, Delta/XDelta, 13-19, 13-20 DELTA-37 indirect, Device Support (A), 13-17 DEPOSIT command, Debugger, 4-3, CD-58; predefined in XE and XF, Device Support Patch, PAT-55 (A), 13–13 patch area operations, Patch, PAT-18 summary, Device Support (A), 13-10 to /PATCH_AREA, Patch, PAT-57 13 - 12with VERIFY command, Patch, PAT-91 depositing command string in system patch DEPTH attribute, File Def Language, FDL-5 space for use by, Device Support (A), 13-20 displaying contents of address range using, **DEQNA** driver Device Support (A), 13-16 See Ethernet/802 drivers displaying contents of location using, Device Dequeue, DECthreads, 2-16 Support (A), 13-16 %DESCR, Debugger, CD-10 exiting from DELTA, Delta/XDelta, DELTA-2 Descriptor, RTL String Manipulation, 2-7 exiting from XDELTA, Delta/XDelta, DELTA-8 analysis of, RTL String Manipulation, 2-4 expressions, Device Support (A), 13-12 array, Routines Intro, 2-25 formats class and data type, RTL Intro, 3-10 address display, Device Support (A), 13-15 class codes, Routines Intro, 1-11 instruction display, Device Support (A), facility-specific, Routines Intro, 2-43 reserved, Routines Intro, 2-44 guidelines, Device Support (A), 13-21 to 13-22 decimal string, Routines Intro, 2-30 invoking DELTA, Delta/XDelta, DELTA-1 dynamic string, Routines Intro, 2-24 invoking XDELTA, Delta/XDelta, DELTA-2 fields of, RTL Intro, 3-7 prefixes fixed-length, Routines Intro, 2-23 G, Device Support (A), 13-13 format, Routines Intro, 2-21 H, Device Support (A), 13–13 DSC\$A_POINTER, Routines Intro, 2-23 setting PC with, Device Support (A), 13-18 DSC\$B_CLASS, Routines Intro, 2-23 stepping through code with, Device Support DSC\$B_DTYPE, Routines Intro, 2-23 (A), 13–19 DSC\$K_CLASS_A, Routines Intro, 2-25 symbols $DSC\$K_CLASS_D,\ \textit{Routines Intro},\, 2\text{--}24$ period (.), Device Support (A), 13-13 DSC\$K_CLASS_J, Routines Intro, 2-29 Q, Device Support (A), 13–13, 13–16, 13–17 DSC\$K_CLASS_NCA, Routines Intro, 2-31 using in multiprocessing environment, Device DSC\$K_CLASS_P, Routines Intro, 2-29 Support (A), 13-7, E-20

Descriptor	Device
format (cont'd)	See also Device unit
DSC\$K_CLASS_S, Routines Intro, 2–23	allocating, System Services Intro, 7–20;
DSC\$K_CLASS_SB, Routines Intro, 2-41	System Services, SYS-19
DSC\$K_CLASS_SD, Routines Intro, 2–30	allocation class, Device Support (B), 1–28
DSC\$K_CLASS_UBA, Routines Intro, 2–38	associated mailbox, Device Support (B), 1–77
DSC\$K_CLASS_UBS, Routines Intro, 2–37	bus, Device Support (B), 1-76
DSCK_CLASS_UBSB$, Routines Intro,	byte-addressable, Device Support (A), 14-22
2–42	card reader, Device Support (B), 1-76
DSC\$K_CLASS_V, Routines Intro, 2–25	cluster accessible, Device Support (B), 1-73
DSC\$K_CLASS_VS, Routines Intro, 2–34	cluster available, Device Support (B), 1-75
DSC\$K_CLASS_VSA, Routines Intro, 2–35	deallocating, System Services Intro, 7-21;
DSC\$W_LENGTH, Routines Intro, 2–23	System Services, SYS-129
prototype, Routines Intro, 2–22	default name, System Services Intro, 7–27
label, Routines Intro, 2–29	Digital-supplied, Device Support (A), 12–15
noncontiguous array, Routines Intro, 2–31 patch area, Patch, PAT-18	directory structured, Device Support (B), 1-74
procedure, Routines Intro, 2–29	disk, Device Support (B), 1–76, 3–51, 3–95
string with bounds, Routines Intro, 2–41	displaying SDA information, System Dump
unaligned bit array, Routines Intro, 2–38	Analyzer, SDA-98
unaligned bit string, Routines Intro, 2–37	dual-pathed, System Services, SYS-270
unaligned bit string with bounds, Routines	dual ported, Device Support (B), 1–75
Intro, 2-42	dual-ported, Device Support (B), 1–74 file structured, Device Support (A), 2–3, 4–10;
variable buffer, Routines Intro, 2-25	Device Support (B), 1–28, 1–74
varying string, Routines Intro, 2–34	getting information about, System Services
varying string array, Routines Intro, 2-35	Intro, 7–28
Design graphics mode, File Applications, 4-11	asynchronously, System Services, SYS-266
Design mnemonic, File Applications, 4–14	synchronously, System Services, SYS-285
Design stage, Modular Procedures, 2–1	implicit allocation, System Services Intro, 7-21
Destination file specification	input, Device Support (B), 1–75
requirement, National Char Set, NCS-36	line printer, Device Support (B), 1-76
DESVA driver	lock name, System Services, SYS-274
See Ethernet/802 drivers	mailbox, Device Support (B), 1–75, 1–76
Detached cursor	mounted, Device Support (B), 1-75, 1-78
defining routine to handle, VAXTPU, 7–367	mounted foreign, Device Support (B), 1-75
fetching action routine to handle, VAXTPU,	name, System Services Intro, 7–26
7-197	network, Device Support (B), 1-74
fetching reason for, VAXTPU, 7–198 Detached process, System Services Intro, 8–2, 8–6;	offsettable, Device Support (A), 16–10
System Services, SYS-111	on VAXBI bus, Device Support (A), 16-2
creating, Programming Resources, 2–7	output, Device Support (B), 1-75
definition of, RTL Parallel Processing, 1–2	protection, System Services Intro, 7–5
DETACHED_ACTION parameter to SET built-in,	random access, Device Support (B), 1–75 real time, Device Support (B), 1–75, 1–76
VAXTPU, 7–367	record oriented, Device Support (B), 1–76, 1–76 record oriented, Device Support (B), 1–74
"detached_action" string constant parameter to	reference count, Device Support (B), 1–79
GET_INFO, VAXTPU, 7–197	scanning of across the cluster, System Services,
"detached_reason" string constant parameter to	SYS-154
GET_INFO, VAXTPU, 7–198	SCSI, Device Support (A), 16–30
DEUNA driver	sequential block-oriented, Device Support (B),
See Ethernet/802 drivers	1–74
DEV\$V_AVL, Device Support (A), 18-22	served, System Services, SYS-278
DEV\$V_ELG, Device Support (A), 11-9; Device	shareable, Device Support (B), 1–75
Support (B), 3–8	spooled, Device Support (B), 1–74
DEV\$V_NET, Device Support (A), 18–13	synchronous communications, Device Support
DEV\$V_RED, Device Support (A), 18–22	(B), 1-76
\$DEVDEF macro, Device Support (B), 1–74, 1–75	tape, Device Support (B), 1-76, 3-95
source of DEV field bit definitions, RMS, 5-7	terminal, Device Support (B), 1–74, 1–76
	timed out. Device Support (B), 1-78

Device (cont'd) Device controller data channel, Device Support word-aligned, Device Support (A), 14-18 (A), 4-6 to 4-7, 15-14, 15-15 workstation, Device Support (B), 1-76 See also Secondary controller data channel Device access obtaining ownership of, Device Support (A), controlling through access control lists. Utility 3-26, 4-6, 8-2 to 8-4; Device Support (B), Routines, ACL-1 1-36, 2-62, 3-100 to 3-101 Device activation bit mask, Device Support (A), owner, Device Support (A), 4-7 releasing, *Device Support* (A), 3-27, 8-6, 10-2; Device affinity, Device Support (B), 1-75, 3-71 Device Support (B), 2-54, 3-86 Device allocation lock, Device Support (B), 1-73 releasing before waiting for interrupt, Device DEVICE attribute, File Def Language, FDL-38 Support (B), 3–105 Device characteristics, Device Support (A), 7-9; relinquishing ownership, Device Support (B), Device Support (B), 1-74 to 1-75 2 - 104asynchronous DDCMP driver, I/O User's II, requesting, Device Support (A), 8-2 5-2retaining ownership, Device Support (B), 2-104 card reader, I/O User's I, 2-5 retaining while waiting for interrupt, Device disk, I/O User's I, 3–22 Support (B), 3–105 DMC11/DMR11 driver, I/O User's II, 1-3 unavailability, Device Support (A), 8-3 DMP11/DMF32 driver. I/O User's II, 2-3 Device controller data channel wait queue, Device DR11-W/DRV11-WA driver, I/O User's II, 3-8 Support (A), 3-27, 8-3; Device Support (B), DR32 driver, I/O User's II, 4-3 1-21, 3-86, 3-91, 3-101 Ethernet/802 drivers, I/O User's II, 6-14 Device database, Device Support (A), 3-6, 3-16, line printer, I/O User's I, 5–3 LPA11-K device, I/O User's I, 4-5 synchronizing access to, Device Support (A), magnetic tape, I/O User's I, 6–11 3-22; Device Support (B), 2-17 to 2-18 mailbox, I/O User's I, 7-4 Device data block pseudoterminal, I/O User's I, 9-3 See DDB retrieving, Device Support (B), 3-49 Device driver, Device Support (A), 1-1 setting, Device Support (B), 3-50 to 3-51 assembling with SYS\$LIBRARY:LIB.MLB, specifying, Device Support (A), 6-3; Device Device Support (A), 12-1, E-7 Support (B), 2–25 asynchronous nature, Device Support (A), 1-1, terminal, I/O User's I, 8-20 1-9, 5-1Device characteristics field base address of driver prologue table (DPT), See FAB\$L_DEV field System Dump Analyzer, SDA-13 Device class, Device Support (B), 1-76 branching on adapter characteristics. Device specifying, Device Support (A), 6-3; Device Support (B), 2–2 to 2–4 Support (B), 2–25 branching on processor type, Device Support Device controller, Device Support (A), 1-5, 1-6; (B), 2–9 to 2–11 Device Support (B), 1–19 calculating base address, Device Support (A), See also Controller initialization routine 13 - 7See also MBA coding conventions, Device Support (A), 5-1 to initializing, Device Support (A), 11-1 5-3, 12-1, 13-22 to 13-23 intelligent, Device Support (A), 1-22 components, Device Support (A), 1-2 to 1-4, multiunit, Device Support (A), 3-26, 4-6, 4-16, 5-18-2, 8-6, 9-8; Device Support (B), 1-36, context, Device Support (A), 1-7 to 1-9 1-74, 1-77 converting uniprocessing to multiprocessing, number of units created for, Device Support Device Support (A), E-8 to E-20 (A), 12-6; Device Support (B), 2-22 debugging, Device Support (A), 13-1 to 13-22 number of units supported by, Device Support displaying address of, Device Support (A), (B), 1-34, 1-36, 1-37, 2-22 12 - 12reinitializing, Device Support (B), 2-22 entry points, Device Support (A), 1-2, 6-3 to single unit, Device Support (A), 4-7, 10-2, 6-4; Device Support (B), 1-29, 4-1 to 4-24 11-2, 11-3, 12-2; Device Support (B), 1-36 example, Device Support (A), C-1 to C-29, D-1 single-unit, Device Support (A), 3-26 to D-26 status, Device Support (B), 1-21 flow, Device Support (A), 1-9, 1-23 to 1-25 synchronizing access to, Device Support (A), for generic VAXBI device, Device Support (A), 3 - 1616-1 to 16-30; Device Support (B), 3-107

Device driver (cont'd) for MASSBUS device, Device Support (A), 15-1 to 15-17 for Q22-bus device, Device Support (A), 14-1 to for UNIBUS device, Device Support (A), 14-1 to 14-36 functions, Device Support (A), 1–2 hardware considerations, Device Support (A), 1-10 to 1-20 implementing a conditional wait, Device Support (B), 2-92, 2-94 linking with SYS\$SYSTEM:SYS.STB, Device Support (A), 12-1, 13-7, E-8 loading, Device Support (A), 6-1, 11-3 to 11-5, 12-1 to 12-23, 13-5, 15-7 to 15-8; Device Support (B), 1–33 locating, System Dump Analyzer, SDA-13 locating a failing instruction, System Dump Analyzer, SDA-24 machine independence, Device Support (A), 1-10, 5-5 to 5-6, 14-16; Device Support (B), 2-2 to 2-4, 2-9 to 2-11 maximum number of supported units, Device Support (A), 6-2 multiprocessor, Device Support (A), 12-13, E-1, E-3name, Device Support (A), 4-8, 6-2, 12-3, 12-6, 12-7, 12-12; Device Support (B), 1-28, 1-34, 2-22 program sections, Device Support (A), 6-4, 12-1, 13-7; Device Support (B), 2-13, 2-21 reloading, Device Support (A), 12-7 to 12-8 size, Device Support (A), 5-1; Device Support (B), 1-33storing data from, Device Support (A), 5-1 suspending, Device Support (A), 2-6, 8-6 to 8-7, 14-24; Device Support (B), 1-73 synchronization flow, Device Support (A), 3-17 to 3-21 synchronization methods used by, Device Support (A), 1-7, 3-1 to 3-27 template for, Device Support (A), A-1 to A-10 uniprocessor, Device Support (A), 12-13, E-1, E-3unloading, Device Support (B), 1-33, 2-22 updating old code, Device Support (A), E-1 Device driver image, Patch, PAT-3, PAT-19 Device driver routine address, System Dump Analyzer, SDA-99 Device identification field See NAM\$T DVI field Device interrupt, Device Support (A), 1-6, 3-6, 4-16, 9-1 to 9-8, 14-26 to 14-34 See also Interrupt service routine destination for VAXBI node, Device Support

Device interrupt (cont'd) direct-vector, Device Support (A), 14-3, 14-27, 14-29, 14-31; Device Support (B), 1-7, 1-8, 1-25, 2-3disabling, Device Support (A), 5-4, 10-4 enabling, Device Support (A), 2-5, 11-2 expected, Device Support (A), 8-7, 9-3 to 9-4; Device Support (B), 1-77, 3-105 multilevel Q22-bus, Device Support (A), 14-31, 14-33 to 14-36; Device Support (B), 1-22 non-direct-vector, Device Support (A), 14-3, 14-28, 14-29, 14-31; Device Support (B), 1-7, 1-25on MASSBUS, Device Support (A), 15-9 servicing, Device Support (A), 2-6 to 2-7 unsolicited, Device Support (A), 9-4 to 9-8; Device Support (B), 1–30 waiting for, Device Support (A), 2-5 to 2-6, 4-16, 8-6 to 8-7, 14-24; Device Support (B), 2–105, 3–104 to 3–106 Device interrupt vector, Device Support (A), 14-26, 16-9, 16-10 to 16-11 connecting to, Device Support (A), 19-7 to 19 - 25for generic VAXBI device, Device Support (A), 16 - 15multiple, Device Support (A), 14-31, 16-9 specifying address, Device Support (A), 12-6 specifying multiple, Device Support (A), 12-6 Device IPL, Device Support (A), 3-6, 9-1; Device Support (B), 1-77, 2-17 to 2-18 specifying, Device Support (A), 6-2; Device Support (B), 2-25 DEVICE keyword with FILE_PARSE, VAXTPU, 7-140 with FILE_SEARCH, VAXTPU, 7-143 Device lock, *Device Support* (A), 3-6, 3-13, 3-16 to 3-17, 8-5; Device Support (B), 1-68, 1-77, 3 - 105See also Spin lock acquisition IPL, Device Support (B), 3-113 address, Device Support (A), 3-22; Device Support (B), 1-22, 1-36, 1-74 multiple acquisition of, Device Support (B), 2-19, 3-117 obtaining, Device Support (A), 3-10; Device Support (B), 2-17 to 2-18, 3-110, 3-113 ownership, Device Support (A), 3-17 rank, Device Support (A), 3-17 releasing, Device Support (A), 3-10; Device Support (B), 2-19 to 2-20, 3-115 restoring, Device Support (B), 2-19, 3-117 DEVICELOCK macro, Device Support (A), 3-9, 3-10, E-4, E-9, E-10, E-11; Device Support (B), 2–17 to 2–18, 2–66, 2–104, 3–110, 3–113 example, Device Support (B), 2-18, 2-20, 2-66 used by interrupt service routine, Device Support (A), 9–3

(A), 16–10

Device unit (cont'd) Device mode, Device Support (A), 7-9 number, Device Support (B), 1-77 Device name, Device Support (A), 1-5; Device operations count, Device Support (B), 3-95 Support (B), 1–28 reference count, Device Support (A), 11-7; Device name address descriptor Device Support (B), 4-4 See NAM\$L_DEV descriptor reinitializing, Device Support (B), 2-22 Device name address field status, Device Support (A), 4-5; Device See NAM\$L_DEV field Support (B), 1-77 to 1-79 Device name length field vector address, Device Support (A), 12-11 See NAM\$B_DEV field DEVICEUNLOCK macro, Device Support (A), 3-10, E-4, E-10, E-11; Device Support (B), Device name size descriptor 2-19 to 2-20, 2-66, 3-115, 3-117 See NAM\$B_DEV descriptor example, Device Support (B), 2-18, 2-20, 2-66 Device registers, Device Support (A), 1-6, 1-21 to issued by IOC\$WFIKPCH and IOC\$WFIRLCH, 1-22, 14-23Device Support (B), 3-105 accessing, Device Support (A), 2-5, 4-7, 13-21 device_name data type, Routines Intro, A-5t to 13-22, 14-4, 14-23, 16-5, 19-1; Device DFL (data bucket fill size) Support (B), 1-25, 1-36, 2-17 to 2-18 program example, RMS, 4-8 clearing error status. Device Support (A), 11-2 DFW option, File Def Language, FDL-19 modification by power failure, Device Support \$DGBLSC, System Services, SYS-158 (A), 8-5 DHU11 device, I/O User's I, 8-1 modifying, Device Support (A), 5-4 DHV11 device, I/O User's I, 8-1 of LP11 printer, Device Support (A), 2-5 Diagnostic buffer, Device Support (A), 4-20; rules for referencing, Device Support (A), 5-3 Device Support (B), 1-40, 1-42, 1-79, 1-83, to 5-5, 14-4 saving the value of, Device Support (A), 11–11; copied to process space, Device Support (B), Device Support (B), 4-16 3 - 73synchronizing access to, Device Support (A), filling, Device Support (B), 3-69 3-6, 3-16, 8-5 size, Device Support (B), 1-30 Device timeout specifying, Device Support (A), 4-10, 6-4 See Timeout Diagnostic register Device timeout bit See MBA\$L_DR See UCB\$V_TIMOUT Dialup line, I/O User's I, 8–13 Device types, *Programming Resources*, 7–50; Device Support (B), 1–76 See VAX DIBOL specifying, Device Support (A), 6-3; Device DIFFERENCES/SLP DCL command, SUMSLP, Support (B), 2-25 Device unit, Device Support (A), 1-5; Device SUM₋₃ Support (B), 1–68 DIGITAL Command Language See also UCB See DCL See also Unit initialization routine Digital-private escape sequence, I/O User's I, B-9 activating, Device Support (A), 2-5, 8-4 to 8-5, Digital Storage Architecture disks, I/O User's I, 14 - 23allocating, Device Support (B), 1-74, 1-75, DIOLM (direct I/O count limit) 1 - 77adjusting, Device Support (A), 4-20 autoconfiguring, Device Support (A), 12-22 to charging, Device Support (A), 4-9, 4-12 12–23; Device Support (B), 2–22 checking, Device Support (A), 4-9 busy indicator, Device Support (B), 1-78 DIOLM (direct I/O count limit) quota, System CSR address, Device Support (A), 12-11 Services Intro, 7–3 Direct assignment statement, MACRO, 1-1, 3-17 deaccessing, Device Support (B), 1-12 deallocating, Device Support (B), 1-78 Direct data path, Device Support (A), 14-7, 14-10 description, Device Support (A), 4-5 See also Data path error retry count, Device Support (B), 1-79 functions, Device Support (A), 14-10 initializing, Device Support (A), 11-1 odd transfer, Device Support (B), 1-8 marking available, Device Support (B), 1-75 purging, Device Support (A), 14-19, 14-24 to marking on line, Device Support (A), 11-2; 14 - 25Device Support (B), 1-78 requesting, Device Support (A), 14-18 name, Device Support (A), 4-8 speed, Device Support (A), 14–10

Direct I/O, Device Support (A), 1-22, 1-23, 7-4, Directory logical name table 16-19; Device Support (B), 1-40, 1-79 process, System Services Intro, 6-3 additional buffer regions for, Device Support system, System Services Intro, 6-3 (B), 1–42 to 1–44 Directory lookup subfunction, I/O User's I, 1-7 checking accessibility of process buffer for, directory entry protection, I/O User's I, 1-9 Device Support (B), 3-43 to 3-44, 3-56 to Directory name length address field See NAM\$L_DIR field FDT routines for, Device Support (A), 7-6, 7-9 Directory name length field locking a process buffer for, Device Support (B), See NAM\$B_DIR field 3-31 to 3-33, 3-34 to 3-36, 3-40 to 3-42, /DIRECTORY qualifier, Debugger, CD-218 3-45 to 3-47, 3-54 to 3-55, 3-58 to 3-60 Directory sequence number, Device Support (B), postprocessing, Device Support (B), 3-72 1-82, 1-83 reasons for using, Device Support (A), 1-22 to Directory size descriptor 1-23, 6-7, 6-8 unlocking process buffer, Device Support (B), See NAM\$B_DIR descriptor 3 - 109Directory specification Direct I/O count, Convert, CONV-24 normal, File Applications, 6-12 to 6-14 Direct I/O quota, I/O User's I, 3-24, 6-13 rooted, File Applications, 6-15 to 6-20 Direct input/output operation, Programming Directory tree, File Applications, 6-12 Resources, 3-20 DIRECTORY_ENTRY attribute, File Def Direction Language, FDL-19, FDL-20 of buffer, VAXTPU, 7-85 DIRECTORY_ENTRY secondary attribute, File setting, VAXTPU, 7-379 Applications, 4-28 "Direction" string constant parameter to /DIRECT qualifier, Debugger, CD-243 GET_INFO, VAXTPU, 7-171 Direct-vector interrupt, Device Support (A), 13-9, Directive, Message, MSG-2; MACRO, 1-1, 6-1 14-3, 14-27, 14-29, 14-31; Device Support (B), 1-7, 1-8, 1-25, 2-3 See also Message Utility Disable assembler functions directive (.DISABLE), as operator, MACRO, 2-3 MACRO, 6-21 .END, Programming Resources, 9-8 DISABLE AST command, Debugger, 9-16, CD-64 .FACILITY, Programming Resources, 9-7 Disabled fault general assembler, MACRO, 1-1, 6-1 vector processor, MACRO, 10-31, 10-32 macro, MACRO, 1-1, 6-1, 6-3 .DISABLE directive, MACRO, 6-21 .SEVERITY, Programming Resources, 9-8 Disabling asynchronous delivery of alerts, summary, MACRO, C-1 DECthreads, cma-3 SYS\$FAO, System Services, SYS-223 Disabling asynchronous delivery of cancels, .TITLE, Programming Resources, 9-9 DECthreads, pthread-91 Direct memory access transfer DISALLOW clause, Command Def, CDU-9 to See DMA transfer CDU-13 Directory, File Applications, 6-12 definition path, Command Def, CDU-12 creating, RTL Library, LIB-36 for DEFINE SYNTAX statement, Command default Def. CDU-22 fetching in VAXTPU, VAXTPU, 7-206 for DEFINE VERB statement, Command Def, setting in VAXTPU, VAXTPU, 7-366 CDU-31 Directory address descriptor keyword path, Command Def, CDU-11 See NAM\$L_DIR descriptor operators for, Command Def, CDU-13 Directory entry DISCONNECT command, I/O User's I, 8-17 creation, I/O User's I, 1-26 Disconnect feature protection, I/O User's I, 1–9 determining setting of, Device Support (B), Directory identification field 2 - 75enabling, I/O User's I, 11-13; Device Support See NAM\$W_DID field (A), 17–14; Device Support (B), 2–88 Directory in DNS Disconnect service, File Applications, 8-5; RMS, enumerating, System Services, SYS-173 RMS-23DIRECTORY keyword condition values, RMS, RMS-24 with FILE_PARSE, VAXTPU, 7-140 with FILE_SEARCH, VAXTPU, 7-143 See also Completion status code control block input fields, RMS, RMS-24 control block output fields, RMS, RMS-24

Disconnect service (cont'd)	Disk (cont'd)
program example, RMS, 4-12	I/O status block, I/O User's I, 3-36
using with multiple RABs, RMS, RMS-24	initializing from within a program, System
Disk	Services Intro, 7–24; System Services,
See also DSA disk	SYS-407
ACP function, I/O User's I, 1–32	example, System Services Intro, 7–24
ACP operation	KDA50 controller, I/O User's I, 3-3
creating file, I/O User's I , 1–24	KDB50 controller, I/O User's I , $3-3$
deaccessing file, I/O User's I , 1–28	KFQSA adapter, I/O User's I, 3-5
available function, I/O User's I , 3–33	offset recovery, I/O User's I, 3-16
Backup Utility, I/O User's I , 3–21	pack acknowledge function, I/O User's I, 3-32
compact disc, I/O User's I, 3-8	port access mode, I/O User's I, 3-12
data check, I/O User's I, 3-15, 3-29, 3-30	port selection, I/O User's I, 3-12
device characteristics, I/O User's I, 3-22	programming example, I/O User's I , 3–37
driver, I/O User's I, 3-1	quotas, $I/O\ User's\ I$, 1–33 to 1–34, 3–24
SCSI, I/O User's I, 3-22	RA60, I/O User's I, 3-5
VAXstation 2000 and MicroVAX 2000, I/O	RA70, I/O User's I, 3-5
User's I, 3–21	RA90, I/O User's I, 3-5
dual-pathed, I/O User's I , 3–11	RB02, I/O User's I, 3-6
DSA disks, I/O User's I, 3-14	RC25, I/O User's I, 3-6
dual-porting, I/O User's I, 3-12	RCT (replacement and caching table), I/O
DSA disks, I/O User's I, 3-14	User's I, 3–20
HSC disks, I/O User's I, 3-15	RD53, I/O User's I , 3–6
restrictions for use, I/O User's I , 3–13	RD54, I/O User's I, 3-6
error recovery, I/O User's I, 3-17	read function, I/O User's I , 3–29
features, I/O User's I, 3-11	RF30, I/O User's I, 3-7
file attributes, I/O User's I , 3–16	RF31
function codes, I/O User's I , 3-24, 3-25, A-2	failover, I/O User's I , 3–15
function modifiers	RF70
IO\$M_DATACHECK, I/O User's I, 3-15,	failover, I/O User's I , 3–15
3-29, 3-30	RF71, I/O User's I, 3-7
IO\$M_DELDATA, I/O User's I, 3-30	RM03, I/O User's I, 3-7
IOM_ERASE$, I/O User's I , 3–27, 3–31	RM05, I/O User's I , 3–7
IO\$M_INHRETRY, I/O User's I , 3–17,	RP05, I/O User's I, 3–7
3-29, 3-30	RP06, I/O User's I, 3–7
HSC40 controller, I/O User's I, 3-3	RP07, I/O User's I, 3–7
HSC50 controller, I/O User's I, 3-3	RQDX3 controller, I/O User's I, 3-5
HSC70 controller, I/O User's I, 3-3	RRD40 CDROM, I/O User's I , 3–8
I/O functions, I/O User's I , $3-24$	RRD50 CDROM, I/O User's I, 3-8
See also ACP-QIO interface	RX02, I/O User's I, 3–8
arguments, I/O User's I , 3-26 to 3-29	RX06 cartridge, I/O User's I, 3-7
IO\$_ACPCONTROL, I/O User's I, 1–32	RX07 cartridge, I/O User's I, 3-7
IO\$_AVAILABLE, I/O User's I, 3-33	RX23 flexible, $I/O User$'s I , 3–9
IO $_{\text{TORMAT}}$, I/O User's I , 3–31	RX33 flexible, $I/O User$'s I , 3–10
IO\$_PACKACK, I/O User's I, 3-32	RX50 flexible, I/O User's I , 3–10
IO\$_READLBLK, I/O User's I, 3-29	RZ22, I/O User's I, 3-10
IO\$_READPBLK, I/O User's I, 3-29	RZ23, I/O User's I , 3–10
IO\$_READVBLK, I/O User's I, 3-29	RZ55, I/O User's I , $3-10$
IO\$_SEARCH, I/O User's I, 3-31	SDI, I/O User's I , 3–5
$IO\$_SEEK, I/O User$'s $I, 3-33$	search function, I/O User's I , 3–31
IO\$_SENSECHAR, I/O User's I, 3-31	sector translation, I/O User's I , 3–18
IO $\$$ _SENSEMODE, I/O User's I , 3–31	seek operations, I/O User's I , 3–16, 3–33
IO\$_SETPRFPTH, I/O User's I, 3-34	sense mode function, I/O User's I , 3–31
$IO\$_UNLOAD$, I/O User's I , 3–32	set density function, I/O User's I, 3-31
IO\$_WRITECHECK, I/O User's I, 3-33	set preferred path function, I/O User's I, 3-34
IO\$_WRITELBLK, I/O User's I, 3–30	SII integral adapter, I/O User's I, 3–4
IO\$_WRITEPBLK, I/O User's I, 3-30	skip sectoring, I/O User's I , 3–17
IO\$_WRITEVBLK, I/O User's I, 3-30	status returns, I/O User's I , A-3

Disk (cont'd) Displacement mode, MACRO, 5-8 supported devices, I/O User's I, 3-1 to 3-11 operand specifier formats, MACRO, 8-21 SYS\$GETDVI returns, I/O User's I, 3-22 Display TU58 magnetic tape, I/O User's I, 3-10, 3-16, VAXTPU definition, VAXTPU, 4-16 3-29, 3-30, 3-31, 3-33 Display, debugger, screen mode UDA50 disk adapter, I/O User's I, 3-3 See also Source display, Instruction, Window unload function, I/O User's I, 3-32 attribute, Debugger, 7-3, 7-18, CD-117, use with Verify Utility, I/O User's I, 3-19, CD-238 3 - 21canceling, Debugger, 7-12, CD-20 VAX station 2000 and MicroVAX 2000 driver, contracting, Debugger, 7-12, CD-94 I/O User's I, 3-21 creating, Debugger, 7-12, CD-65 write check function, I/O User's I, 3-33 current, *Debugger*, 7-3, 7-18, CD-117 write function, I/O User's I, 3-30 default configuration, Debugger, 7-2, 7-4 Disk block, File Applications, 3-6 defined, Debugger, 7-2 Disk class driver DO display, Debugger, 7-15, 11-23 disabling the loading of, I/O User's I, 11–10; expanding, Debugger, 7-12, CD-94 Device Support (A), 17–31 extracting, Debugger, 7-21, CD-97 Disk cluster boundary hiding, Debugger, 7-11, CD-67 determining allocation quantity, RMS, 5-3 identifying, Debugger, 7-12, CD-212 Disk cylinder, File Applications, 3-6 instruction display (INST), Debugger, 7-7, Disk drive 7 - 16compatibility for volume shadowing, I/O User's kind, Debugger, 7-3, 7-14, C-1 I, 10-3list, Debugger, 7-3, CD-212, C-6 Disk driver, Device Support (A), 7-9, 8-2, 8-6, moving, Debugger, 7-12, CD-104 9-5; Device Support (B), 1-78, 1-79 output display (OUT), Debugger, 7-6, 7-16 See also MASSBUS pasteboard, Debugger, 7-3, CD-70 See also MBA predefined, Debugger, 7-4, C-3 ECC correction routine for, Device Support (B), process specific, Debugger, 10-14 3-67prompt display (PROMPT), Debugger, 7-7 pack acknowledgment in, Device Support (A), register display (REG), Debugger, 7-9, 7-17, 11 - 23recording disk geometry in, Device Support (A), removing, Debugger, 7-12, CD-69 saving, Debugger, 7-21, CD-110 removing a disk volume in, Device Support (A), scrolling, Debugger, 7-11, CD-112 selecting, Debugger, 7-18, CD-117 using local disk UCB extension, Device Support showing, Debugger, 7-12, CD-65 (B), 1-69, 1-82 to 1-84 window, Debugger, 7-2, 7-13, C-7 waiting for disk unit spinup in, Device Support DISPLAY command, Debugger, 7-11, 7-12, (A), 11–3 CD-65 Disk file Displaying version number, VAXTPU, 4-2 opening, System Services Intro, 12-8 Display modes Disk model, File Def Language, FDL-38 See also Entry and display modes Disk quota, File Applications, 3-5; I/O User's I, how to set, *Delta/XDelta*, DELTA-16 1 - 33/DISPLAY qualifier, File Def Language, FDL-42, Disk space FDL-49; *VAXTPU*, 5-8 efficiency See also /NODISPLAY See /DATA qualifier Display service, RMS, RMS-25 recovering condition values, RMS, RMS-28 See /COMPRESS qualifier control block input fields, RMS, RMS-26 Disk volume, File Applications, 3-6 control block output fields, RMS, RMS-26 mounting, System Services Intro, 7-22 requirements, RMS, RMS-26 "Display" string constant parameter to GET_INFO, transfer, File Def Language, FDL-23 DISMOUNT command, I/O User's I, 1-32 VAXTPU, 7-177, 7-206 Dispatcher Display value exception, System Services Intro, 11-6 fetching, VAXTPU, 7-222 Displacement deferred mode, MACRO, 5-9 setting for window, VAXTPU, 7-370 operand specifier formats, MACRO, 8-22 setting records, VAXTPU, 7-448

DMA transfer (cont'd) Display Value of Expression command, for modify operation, Device Support (B), 3-31 Delta/XDelta, DELTA-42 to 3-33, 3-34 to 3-36 DISPLAY_VALUE parameter to SET built-in for read operation, Device Support (B), 3-40 to procedure, VAXTPU, 7-370 3-42, 3-45 to 3-47 "display_value" string constant parameter to for write operation, Device Support (B), 3-54 to GET_INFO, VAXTPU, 7-186, 7-222 3-55, 3-58 to 3-60 Distributed system longword-aligned 32-bit random-access, Device using threads in, DECthreads, 1-4 Support (A), 14-12, 14-14 to 14-15 DIVB2 (Divide Byte 2 Operand) instruction, on Q22-bus, Device Support (A), 14-15 to *MACRO*, 9–18 14-16, 14-19 to 14-26 DIVB3 (Divide Byte 3 Operand) instruction, on UNIBUS, Device Support (A), 14-15 to MACRO, 9-18 14 - 26DIVD2 (Divide D_floating 2 Operand) instruction, on VAXBI bus, Device Support (A), 16-18 to MACRO, 9-113 16 - 22DIVD3 (Divide D_floating 3 Operand) instruction, postprocessing, Device Support (A), 14-16, MACRO, 9-113 14-24 to 14-26 DIVF2 (Divide F_floating 2 Operand) instruction, start I/O routine, Device Support (A), 8-1 to MACRO, 9-113 DIVF3 (Divide F_floating 3 Operand) instruction, using direct data path in, Device Support (A), MACRO, 9-113 DIVG2 (Divide G_floating 2 Operand) instruction, using direct I/O in, Device Support (A), 6-8 MACRO, 9-113 using I/O adapter resources in, Device Support DIVG3 (Divide G_floating 3 Operand) instruction, (A), 14-2 to 14-15 MACRO, 9-113 DMB32 asynchronous/synchronous multiplexer, DIVH2 (Divide H_floating 2 Operand) instruction, Device Support (A), 16–20 MACRO, 9-113 DMB32 device, I/O User's I, 8-1 DIVH3 (Divide H_floating 3 Operand) instruction, DMC11/DMR11 driver MACRO, 9-113 attention AST, I/O User's II, 1-9 Divide-by-zero trap, MACRO, 8-16 enabling, I/O User's II, 1-7 Division data complex number, RTL General Purpose, message size, I/O User's II, 1-3, 1-6, 1-9 DDCMP (DIGITAL Data Communications extended precision, RTL Library, LIB-126 Message Protocol), I/O User's II, 1-1 packed decimal, RTL General Purpose, device characteristics, I/O User's II, 1-3, 1-8 OTS-44, OTS-47 driver, I/O User's II, 1-1 Division operator (/), System Dump Analyzer, capabilities, I/O User's II, 1-2 SDA-13 error summary bits, I/O User's II, 1-5 DIVL2 (Divide Long 2 Operand) instruction, function codes, I/O User's II, 1-5, A-1 MACRO, 9-18 function modifiers, I/O User's II, 1-6, 1-8 DIVL3 (Divide Long 3 Operand) instruction, I/O functions, I/O User's II, 1-5 to 1-7 MACRO, 9-18 I/O status block, I/O User's II, 1-9 DIVP (Divide Packed) instruction, MACRO, 9-163 mailbox DIVW2 (Divide Word 2 Operand) instruction, disabling, I/O User's II, 1-6 MACRO, 9-18enabling, I/O User's II, 1-6 DIVW3 (Divide Word 3 Operand) instruction, message, I/O User's II, 1-9 MACRO, 9-18format, I/O User's II, 1-2 DLDRIVER.MAR, Device Support (A), C-1 to type, I/O User's II, 1-2 usage, I/O User's II, 1-2 DLT option, File Def Language, FDL-20 programming example, I/O User's II, 1-10 DMA transfer, Device Support (A), 1–22, 5–5 quota, I/O User's II, 1-3, 1-9 See also Data path read function, I/O User's II, 1-5 See also Map registers receive-message blocks, I/O User's II, 1-8, 1-9 byte-aligned, Device Support (A), 14–11 set characteristics function, I/O User's II, 1-7 detecting memory error during, Device Support set mode and shut down unit, I/O User's II, (A), 14–25 flow, Device Support (A), 1-23 to 1-25, 14-8 set mode and start unit, I/O User's II, 1-8 set mode function, I/O User's II, 1-6, 1-7

DMC11/DMR11 driver (cont'd)	DMP11/DMF32 driver (cont'd)
start unit, I/O User's II , 1–8 status returns, I/O User's II , A–1	HDLC bit stuff mode, I/O User's II, 2-3, 2-12, 2-15
supported DMC11 options, I/O User's II, 1-1 SYS\$GETDVI, I/O User's II, 1-3	I/O functions, I/O User's II, 2-7 to 2-9, 2-15, 2-19
unit and line status, I/O User's II, 1–4	I/O status block, I/O User's II, 2–25
unit characteristics, I/O User's II, 1-4	LAPB controller counter parameter IDs, I/O
write function, I/O User's II, 1–6	User's II, 2–22
DMF32 device, I/O User's I, 8-1	message size, I/O User's II, 2-3, 2-8, 2-10
DMP11/DMF32 driver	modem
AST service routine address, I/O User's II,	disabling line, I/O User's II, 2–18
2–19	status, I/O User's II , 2–24
attention AST, I/O User's II, 2-19	modifying characteristics, I/O User's II, 2–9
characteristics	multipoint
controller, I/O User's II, 2-9, 2-19	configuration, I/O User's II , 2–1
device, I/O User's II, 2-3	control station, I/O User's II , 2–1
extended, I/O User's II , 2-11 to 2-12, 2-16	parameter ID, I/O User's II, 2-10, 2-11, 2-12
to 2–17	point-to-point
modifying, I/O User's II , 2–9	configuration, I/O User's II , 2–1
tributary, I/O User's II , 2–16, 2–19	station, I/O User's II , 2–1
character-oriented protocol, I/O User's II , 2–3,	polling time, I/O User's II , 2-12, 2-17
2–12, 2–13	privilege, I/O User's II, 2-7
controller	programming example, I/O User's II, 2-26
mode, I/O User's II, 2–12	protocol, I/O User's II, 2-1, 2-3, 2-11, 2-12,
starting, I/O User's II, 2-9	2–13
DDCMP (DIGITAL Data Communications	starting, I/O User's II, 2-15
Message Protocol), I/O User's II , 2–1 DDCMP controller counter parameter IDs, I/O	stopping, I/O User's II , 2–18 quotas, I/O User's II , 2–3
User's II, 2–22	read device status slot, I/O User's II , 2–25
device characteristics, I/O User's II, 2–3	read function, I/O User's II , 2–20
diagnostic support, I/O User's II, 2–23	read internal counters, I/O User's II, 2–20
read device status slot, I/O User's II, 2-25	read line unit modem status, I/O User's II,
read line unit modem status, I/O User's II ,	2–24
2–24	sense mode function, I/O User's II, 2-19
set line unit modem status, I/O User's II ,	set controller mode, I/O User's II, 2-9
2–24	characteristics, I/O User's II, 2–10
DMC11-compatible operating mode, I/O User's	extended characteristics, I/O User's II,
II, 2–1	2–11 to 2–12
DMF32 driver, I/O User's II , 2–1	message size, I/O User's II , 2-10, 2-12,
control, I/O User's II , 2–12	2–13
transmitter interface, I/O User's II, 2-14	P1 buffer, I/O User's II, 2-10
DMF32 driver transmitter interface, I/O	P2 buffer, I/O User's II, 2-11
User's II, 2–14	parameter ID, I/O User's II, 2–10
DMP11 driver, I/O User's II, 2–1	receive message blocks, I/O User's II, 2–10
driver capabilities, I/O User's II, 2–1	set line unit modem status, I/O User's II ,
duplex modes, I/O User's II, 2-1, 2-2, 2-11,	2–23, 2–24
2-12 enable attention AST, I/O User's II , $2-19$	set mode function, <i>I/O User's II</i> , 2–9 set tributary mode, <i>I/O User's II</i> , 2–15
enable modem, I/O User's II, 2–13	characteristics, I/O User's II, 2–16
errors, I/O User's II, 2-5	extended characteristics, I/O User's II ,
error summary bits, I/O User's II, 2–5	2–16 to 2–17
extended characteristics, I/O User's II , 2–11 to	P1 buffer, I/O User's II, 2–16
2–12, 2–16 to 2–17	P2 buffer, I/O User's II, 2–16
framing routine interface, I/O User's II, 2–13	parameter ID, I/O User's II, 2–16
function codes, I/O User's II, 2–6, A–2	shutdown controller mode, I/O User's II, 2–18
function modifiers, I/O User's II, 2-8 to 2-9,	shutdown tributary mode, I/O User's II, 2–18
2-15, 2-18 to 2-19, 2-24 to 2-25	starting
	controller, I/O User's II, 2-9

DMP11/DMF32 driver	DNS object
starting (cont'd)	creating, System Services Intro, 6-22
protocol, I/O User's II , 2–15	\$DNS system service, System Services, SYS-167
tributary, I/O User's II, 2-15	arguments, System Services, SYS-167
status, DMF32 driver, I/O User's II, 2-14	building item list, System Services, SYS-168
status returns, I/O User's II, A-3	description, System Services, SYS-190
stopping	- · · · ·
controller, I/O User's II, 2–18	format, System Services, SYS-167, SYS-190
modem line, I/O User's II, 2-18	function codes, System Services, SYS-167
protocol, I/O User's II, 2–18	item code identifiers, System Services, SYS-190
	qualifying status, System Services, SYS-169
tributary, I/O User's II, 2–18	returns, System Services, SYS-167
supported devices, I/O User's II, 2-1	status block, System Services, SYS-167
sync characters, I/O User's II, 2–12, 2–13	\$DNSW system service, System Services,
SYS\$GETDVI, I/O User's II, 2-3	SYS-195
timeout, I/O User's II, 2-13	DO clause
tributary, I/O User's II, 2-1	example, Debugger, 3–13
address, I/O User's II, 2-1, 2-18	exiting, Debugger, CD-90, CD-106
mode, I/O User's II , $2-1$	format, Debugger, CD-4
starting, I/O User's II , 2–15	DO command, <i>Debugger</i> , 10-5, 10-6, CD-72
station, I/O User's II, 2–1	Documentation
stopping, I/O User's II , 2–18	module description, Modular Procedures, 2-19,
tributary counter parameter IDs, I/O User's II ,	A-6
2–22	procedure description, Modular Procedures,
unit and line status, I/O User's II , 2–5	2–20, A–6
unit characteristics, I/O User's II, 2-4	Documentation format
write function, I/O User's II , 2–8	See System routine documentation
DMZ32 device, I/O User's I, 8-1	DO display, Debugger, 7–15, C–1
DNA (default name address) argument, RMS,	DOUBLE directive, MACRO, 6-20
B-5	Double-precision value
DNM (default name) argument, RMS, B-3	converting, RTL Math, MTH-62
DNM (default name) field, RMS, 4-3	converting an array of, RTL Math, MTH-63
DNM (default name) keyword	Double-width characters
specifying FAB\$L_DNA and FAB\$B_DNS fields	
from VAX MACRO, RMS, 5-9	See also Screen management
DNS (default name size) argument, RMS, B-5	See also Virtual display
DNS call	specifying, Programming Resources, 7–20
timeout in, System Services Intro, 6-24	DOWN command, File Applications, 10–12;
\$DNS function code, System Services, SYS-170	$Analyze/RMS_File, ARMS_24$
converting from opaque, System Services,	/DOWN qualifier, Debugger, CD-94, CD-104,
SYS-176	CD-112
converting opaque name, System Services,	DPT\$V_NOUNLOAD, Device Support (A), 12-7
SYS-180	DPT\$V_NO_IDB_DISPATCH, Device Support (A),
converting string name, System Services,	17–25
SYS-178	DPT\$V_SMPMOD, Device Support (A), 12–13,
creating an object, System Services, SYS-171	E-3
deleting an object, System Services, SYS-172	DPT\$V_SUBCNTRL, Device Support (A), 15–15
enumerating attributes, System Services,	DPT\$V_SVP, Device Support (B), 1-79, 2-21,
SYS-173	3–79, 3–80
enumerating child directories, System Services,	DPT\$W_DEFUNITS, Device Support (A), 12-21
SYS-173	DPT\$W_DELIVER, Device Support (B), 4-21
enumerating objects, System Services, SYS-174	DPT\$W_UNLOAD, Device Support (B), 4-10
enumerating soft links, System Services,	DPT (driver prologue table), System Dump
	Analyzer, SDA-99; Device Support (A), 1-2,
SYS-175 modifying attribute. System Sarvices, SYS-176	3-6, 11-1, 13-7; Device Support (B), 1-31 to
modifying attribute, System Services, SYS-176 reading attribute, System Services, SYS-178	1–35, 1–74, 1–76
resolving soft link, System Services, SYS-180	creating, Device Support (A), 6-1 to 6-3;
testing a group, System Services, SYS-180	Device Support (B), 2-21 to 2-26
testing a group, System Services, S1S-182 testing for attribute, System Services, SYS-181	
resume for autifucte, bystem beforces, 515–161	

DPT (driver prologue table) (cont'd)	DR11-W/DRV11-WA driver
initialization table, Device Support (A), 6-2,	I/O status block (cont'd)
12-4; Device Support (B), 1-33, 2-25 to	byte count, I/O User's II , 3–15
2–26	IDR (input data register), I/O User's II, 3-6,
linked into system DPT list, Device Support	3–11, 3–14
(A), 12–3, 12–7, 12–8	interrupts, I/O User's II, 3-4, 3-6, 3-7, 3-8,
of third-party SCSI class driver, Device	3–11, 3–14
Support (A), $17-25$	link mode, I/O User's II, 3-6, 3-7, 3-11
reinitialization table, Device Support (A), 6-3,	NPR transfers, I/O User's II , 3–7
12-4, 12-8; Device Support (B), 2-25 to	ODR (output data register), I/O User's II, 3-6,
2–26	3–11
DPTAB macro, Device Support (A), 6-1, 11-1,	programming example, I/O User's II, 3-16
12–1, 16–11; Device Support (B), 1–69, 2–21	read function, I/O User's II, 3-13
to 2–23	set characteristics function, I/O User's II, 3-13
controlling autoconfiguration with, Device	set mode function, I/O User's II, 3–13
Support (A) , 12–21	SS\$_BADPARAM, I/O User's II, 3–11
example, Device Support (B), 2–23	status returns, I/O User's II, A-3
used by MASSBUS drivers, Device Support (A), 15-15	SYS\$CANCEL, <i>I/O User's II</i> , 3–14, 3–15 SYS\$GETDVI, <i>I/O User's II</i> , 3–8
DPT base address, System Dump Analyzer,	transfer mode, I/O User's II , 3–4
SDA-24	word mode, I/O User's II, 3-4, 3-11
DPT_STORE macro, Device Support (A), 3-6, 6-2	write function, I/O User's II, 3–13
to 6-3, 11-9; Device Support (B), 2-24 to 2-26	DR32 device interconnect
example, Device Support (B), 2–23	See DDI
DR11-W driver, Device Support (A), D-1 to D-26	DR32 driver
DR11-W/DRV11-WA driver	action routines, I/O User's II , 4–23, 4–28,
attention AST, I/O User's II, 3-14	4-30, 4-34, 4-39
BDP (buffered data path), I/O User's II, 3-11,	AST routine, <i>I/O User's II</i> , 4–15, 4–20, 4–21,
3–15	4–26, 4–33
block mode, I/O User's II, 3-4, 3-11, 3-15	buffer block, I/O User's II, 4-5, 4-13, 4-15,
CSR (control and status register)	4-21, 4-22, 4-25, 4-36
ATTN bit, I/O User's II , 3–6, 3–11	byte count field, I/O User's II, 4-15
bit assignment, I/O User's II , 3–16	command and data chaining, I/O User's II, 4-2
CYCLE bit, I/O User's II, 3-5, 3-11	command block, I/O User's II, 4–5, 4–21, 4–22,
ERROR bit, I/O User's II, 3–6	4–36
FNCT and STATUS bits, I/O User's II,	command chaining, I/O User's II , 4–2, 4–14,
3–5, 3–7, 3–11, 3–14	4–29
function, I/O User's II, 3-5	command control, I/O User's II, 4-14
data registers, I/O User's II, 3-6	command packets, I/O User's II, 4-2, 4-4 to
data transfer mode, I/O User's II, 3-4	4-7, 4-25 to 4-28, 4-31, 4-33 to 4-40
data transfers read and write, I/O User's II, 3–5	command sequences
through BDP, I/O User's II, 3–15	device-initiated, I/O User's II, 4-7
DDP (direct data path), I/O User's II, 3–11,	initiating, I/O User's II, 4-7
3–15	control (command) messages, I/O User's II, 4-3, 4-7, 4-11, 4-12, 4-18, 4-29, 4-38
device characteristics, I/O User's II, 3–8	control select field, I/O User's II, 4–13
driver, I/O User's II, 3-1	data chaining, I/O User's II, 4–19
EIR (error information register), I/O User's II,	data rate, I/O User's II, 4-4, 4-20, 4-22, 4-27
3–6	data transfer command table, I/O User's II,
bit assignment, I/O User's II, 3–16	4–21
enable attention AST, I/O User's II, 3-14	data transfers, I/O User's II, 4-2, 4-3, 4-5,
error reporting, I/O User's II, 3-6	4-11, 4-13, 4-14 to 4-16, 4-20, 4-25, 4-26,
function codes, I/O User's II, 3-9, A-3	4-29, 4-38
function modifiers, I/O User's II , 3-7, 3-11 to	DDI (DR32 device interconnect), I/O User's II,
3–12, 3–14 to 3–15	4–2
hardware errors, I/O User's II, 3-7, 3-8	device
I/O functions, I/O User's II, 3–13	characteristics, I/O User's II, 4–3
I/O status block, I/O User's II , 3–15	control code, I/O User's II , 4–10, 4–28

DR32 driver	DR32 driver
device (cont'd)	programming (cont'd)
message, I/O User's II, 4-7, 4-9, 4-11,	interface, I/O User's II, 4-4
4-14, 4-18, 4-25, 4-27, 4-29, 4-32	queue
diagnostic tests, I/O User's II, 4-10 to 4-13,	headers, I/O User's II , $4-5$, $4-21$
4-29, 4-39	processing, I/O User's II, 4-5
DR device definition, I/O User's II, 4-2	retry, I/O User's II, 4-6, 4-39, 4-47
driver, I/O User's II, 4-1	random access, I/O User's II, 4-3, 4-13
DSL (DR32 status longword), I/O User's II,	REMQHI instruction, I/O User's II, 4–5
4-9, 4-16, 4-24, 4-39	residual DDI byte count field, I/O User's II ,
error checking, I/O User's II , 4–39	4–16
event flags, $I/O \ User's \ II, 4-15, 4-20, 4-22,$	residual memory byte count field, I/O User's
4-26, 4-28, 4-30, 4-32, 4-33, 4-40	II, 4–16
far-end DR device, I/O User's II, 4-2, 4-3, 4-5,	start data transfer function (IO\$_STARTDATA),
4-7, 4-11, 4-13, 4-18, 4-27	I/O User's II, 4-4, 4-7, 4-20
far-end DR device transfers, I/O User's II, 4–3	status returns, I/O User's II, 4-32, A-4
FREEQ (free queue), I/O User's II, 4-5, 4-13,	DDI status, I/O User's II, 4–37
4–18, 4–24, 4–27, 4–36	device-dependent, I/O User's II, 4–36
function codes, I/O User's II, A-4	suppress length error field, I/O User's II, 4–14
function modifier, I/O User's II, 4–20	symbolic definitions, I/O User's II, 4–24
GO bit, I/O User's II, 4-7, 4-22 high-level language interface, I/O User's II,	SYS\$GETDVI, I/O User's II, 4-3 TERMQ (termination queue), I/O User's II,
4-4, 4-23	4-3, 4-5, 4-13, 4-15 to 4-16, 4-21, 4-24,
support routines, I/O User's II , 4–23	4-30, 4-31, 4-33, 4-40
synchronization, I/O User's II, 4–33	VAX FORTRAN programming, I/O User's II,
I/O function codes, I/O User's II, 4–20	4–23, 4–24
I/O status block, I/O User's II, 4–23, 4–32,	VAX MACRO programming, I/O User's II,
4–34, 4–39	4–23
INPTQ (input queue), I/O User's II, 4-5, 4-11,	virtual address of buffer field, I/O User's II,
4-13, 4-22, 4-24, 4-28, 4-30, 4-38	4–15
INSQTI instruction, I/O User's II , 4–5	XF\$CLEANUP, I/O User's II, 4–33
interrupt	XF\$FREESET, I/O User's II, 4-27
See also DR32 driver, action routines	XF\$GETPKT, I/O User's II , 4–31
See also DR32 driver, event flags	XF\$PKTBLD, I/O User's II , 4–28
AST, I/O User's II, 4-3, 4-28, 4-30, 4-32,	XF\$STARTDEV, I/O User's II, 4–26
4-33, 4-34, 4-40	XFSETUP, I/O User's II , 4–24
command packet, I/O User's II , 4–13,	DR32 status longword
4-20, 4-21, 4-22, 4-26, 4-28, 4-33,	See DSL
4–38	Drag operation
reasons, I/O User's II, 4-3	determining where started, VAXTPU, 7–188
interrupt control argument (XF\$FREESET),	Drawing characters, RTL Screen Management,
I/O User's II, 4–28	2–11
interrupt control field, I/O User's II, 4–15,	Drawing lines, RTL Screen Management, 2–11
4–26, 4–40	Driver
length of device message field, I/O User's II,	See also Device driver
4-9 length of log area field, I/O User's II , $4-10$	asynchronous DDCMP, I/O User's II, 5–1 card reader, I/O User's I, 2–1
load microcode function (IO\$_LOADMCODE),	disk, I/O User's I, 3-1
I/O User's II, 4–20	DMC11/DMR11, I/O User's II, 1–1
log area field, I/O User's II, 4–19	DMP11/DMF32, I/O User's II, 2–1
log message, I/O User's II , 4–30, 4–32	DR11–W/DRV11–WA, I/O User's II, 3–1
microcode loader (XFLOADER), I/O User's II,	DR32, I/O User's II, 4–1
4–19	Ethernet/802, I/O User's II, 6–1
NOP command packet, I/O User's II, 4-40	LAT port, I/O User's I, 8–1
prefetch command packets, I/O User's II, 4-38	line printer, I/O User's I, 5-1
programming	LPA11-K device, I/O User's I, 4-1
examples, I/O User's II , 4–40	magnetic tape, I/O User's I , $6-1$
hints, I/O User's II , 4–37	mailbox, I/O User's I, 7-1

Driver (cont'd) DTK\$CHECK_HDWR_STATUS, RTL DECtalk, pseudoterminal, I/O User's I, 9-1 DTK-5 SCSI, I/O User's I, 3-22 DTK\$DIAL_PHONE, RTL DECtalk, 1-5, DTK-7 shadow set virtual unit, I/O User's I, 10-1 DTK\$HANGUP_PHONE, RTL DECtalk, 1-5, terminal, I/O User's I, 8–1 VAXstation 2000 and MicroVAX 2000 disk, I/O DTK\$INITIALIZE. RTL DECtalk. 1-1. DTK-10 User's I, 3-21 DTK\$LOAD_DICTIONARY, RTL DECtalk, 1-4, Driver dispatch table DTK-12 See DDT DTK\$READ_KEYSTROKE, RTL DECtalk, 1-5, **DTK-14** Driver prologue table DTK\$READ_STRING, RTL DECtalk, 1-5, See DPT DTK-16 Driver unloading routine, Device Support (A), 6-3, DTK\$RETURN LAST INDEX, RTL DECtalk, 11-4, 12-7 to 12-8, 16-21; Device Support 1-4. DTK-18 (B), 2-22, 2-26 DTK\$SET_INDEX, RTL DECtalk, 1-4, DTK-19 address, Device Support (A), 6-2; Device DTK\$SET_KEYPAD_MODE, RTL DECtalk, 1-5, Support (B), 1-34, 4-10 DTK-20context, Device Support (B), 4-10 DTK\$SET LOGGING MODE, RTL DECtalk, 1-2 exit method, Device Support (B), 4-10 to 1-3, DTK-22 functions, Device Support (B), 4-10 DTK\$SET_MODE, RTL DECtalk, DTK-25 input, Device Support (B), 4-10 DTK\$SET_SPEECH_MODE, RTL DECtalk, register usage, Device Support (B), 4-10 DTK-27 synchronization requirements, Device Support DTK\$SET TERMINAL MODE, RTL DECtalk, (B), 4-101-3, DTK-29 DRV11-WA driver, Device Support (A), D-1 to DTK\$SET_VOICE, RTL DECtalk, DTK-31 D-26DTK\$SPEAK_FILE, RTL DECtalk, DTK-33 See also DR11-W/DRV11-WA driver DTK\$SPEAK_PHONEMIC_TEXT, RTL DECtalk, DSA (Digital Storage Architecture) **DTK-35** See DSA disk DTK\$SPEAK_TEXT, RTL DECtalk, 1-4, DTK-37 DSA32 device, I/O User's I, 8-1 DTK\$SPELL_TEXT, RTL DECtalk, DTK-39 DSA disk, I/O User's I, 3-1, 3-14, 3-19 DTK\$TERMINATE, RTL DECtalk, 1-4, DTK-41 See also Disk \$DTKDEF library, RTL DECtalk, 1-5 bad block, I/O User's I, 3-19, 3-21 Dual host bad block replacement, I/O User's I, 3-20, definition of, I/O User's I, 3-4 Dual path forced error, I/O User's I, 3-20 definition of, I/O User's I, 3-11 forced error flag, I/O User's I, 3-21 Dual-pathed disk, I/O User's I, 3-11 use with Verify Utility, I/O User's I, 3–19, DSA disk, I/O User's I, 3-14 Dual-path UCB extension, Device Support (B), DSBINT macro, Device Support (A), 3-9, 3-10, 8-5, 8-6, E-4, E-9, E-10; Device Support (B), Dual-ported device, Device Support (B), 1-74 2 - 27Dual-ported disk, I/O User's I, 3-12 replacing with spin lock synchronization macro, DSA disk, I/O User's I, 3-14 Device Support (A), E-13 HSC disk, I/O User's I, 3-15 DSC\$K_DTYPE_BPV, Modular Procedures, 3-12 restrictions for use, I/O User's I, 3–13 See also User-action routine Dump DSC\$K_DTYPE_ZEM, Modular Procedures, 3-11 hexadecimal, Analyze/RMS_File, ARMS-25 See also User-action routine **DUMP** DSE (data security erase) subset, System Dump Analyzer, SDA-4 magnetic tape, I/O User's I, 6-27 DUMPBUG parameter, System Dump Analyzer, DST (debug symbol table) SDA-2, SDA-28 creating, Debugger, 5-4 DUMP command, File Applications, 10-12; shareable image, Debugger, 5-13 Analyze/RMS_File, ARMS-25 source line correlation, Debugger, 6-1 Dump file DTK\$ANSWER_PHONE, RTL DECtalk, 1-5, See also SDA DTK-3 analyzing, Programming Resources, 1-21; System Dump Analyzer, SDA-32

Dump file (cont'd) DZ32 device, I/O User's I, 8-1; Device Support copying the contents, System Dump Analyzer, (B), 1-21SDA-42 DZV11 device, I/O User's I, 8-1 DUMPSTYLE parameter, System Dump Analyzer, D_floating data type, MACRO, 8-4, 9-102 SDA-4 .D_FLOATING directive, MACRO, 6-20 DUP (duplicate) option /D_FLOAT qualifier, Debugger, CD-59, CD-82 in XAB\$B_FLG field, RMS, B-21 Duplex mode Ε See also Half-duplex mode terminal, I/O User's I, 8-10 E command, Delta/XDelta, DELTA-38 Duplicate key, File Def Language, FDL-27 ECC error correction, Device Support (B), 1-78, examples, RMS, 7-8 1-79, 1-83, 2-21, 3-67 incompatibility between VMS RMS and ECC position register, Device Support (B), 1–83 RMS-11, RMS, 13-9 Echo insertion order, RMS, RMS-72 terminal, Programming Resources, 7-40 terminator, Programming Resources, 7-24 null key processing, File Applications, 3–19 retrieving records, RMS, 7-8 ECHO qualifier, Debugger, CD-50; System Duplicate key values, File Def Language, FDL-5 Dump Analyzer, SDA-44 ECO level, Patch, PAT-2 DUPLICATES attribute, File Def Language, FDL-27 See also PATCH commands DUPLICATES_PER_SIDR attribute, File Def checking, Patch, PAT-45, PAT-46, PAT-47 Language, FDL-5 setting, Patch, PAT-33, PAT-35, PAT-75 DWBUA (VAXBI-to-UNIBUS adapter), Device ECRB (Ethernet controller data block), Device Support (A), 1-13, 16-10, 19-4 Support (B), 2-2 See also UNIBUS adapter EDF\$MAKE_FDL logical name, File Applications, DWMBA (XMI-to-VAXBI adapter) Edit See Memory interconnect to VAXBI adapter instruction, MACRO, 9-169 DWMUA (VAXBI-to-UNIBUS adapter), Device vector, MACRO, 10-83 Support (A), 1-13, 16-10 pattern operator, MACRO, 9-170, 9-172 See also UNIBUS adapter EDIT/ACL command, File Applications, 4-22 DYN\$C_BUFIO, Device Support (B), 3-12, 3-22 EDIT built-in procedure, VAXTPU, 7-111 to 7-114 DYN\$C_IRP, Device Support (B), 3-12 EDIT command, Debugger, CD-74 DYNAMIC attribute, System Services Intro, 3-4 EDIT/FDL Dynamic length string, RTL String Manipulation, See Edit/FDL Utility 2-1, 2-2, 2-3, STR-68 EDIT/FDL command, Programming Resources, allocation of, RTL String Manipulation, 8-55 **STR-46** Edit/FDL Utility (EDIT/FDL), Programming deallocation of, RTL String Manipulation, Resources, 1–39; File Applications, 1–14; File STR-45 Def Language, FDL-39, FDL-40, FDL-42 Dynamic memory, DECthreads, 3-4 ANALYSIS_OF_KEY section, File Def Dynamic memory allocation, RTL Library, 5-1 Language, FDL-4 Dynamic mode, Debugger, CD-148 calculating bucket size, File Applications, 3-13, image setting, Debugger, 5-14 3 - 25module setting, Debugger, 5-7 calculating extension size, File Applications, with DECwindows, Debugger, 1-26 3-5, 9-8 Dynamic process setting, Debugger, 10-7, CD-158 commands, File Applications, 4-3; File Def Dynamic prompt setting, Debugger, 10-2, CD-161 Language, FDL-58 /DYNAMIC qualifier, Debugger, CD-67, CD-158, contiguous files, File Applications, 3-4 CD-230 creating areas for index structures, File Dynamic selection Applications, 3-23 in EVE editor, VAXTPU, 4-16 to 4-17 creating FDL files, File Applications, 4-2, 4-5; Dynamic spin lock, Device Support (A), 3-13 File Def Language, FDL-39 Dynamic string, RTL General Purpose, OTS-95 default value, File Applications, 4-11 Dynamic string descriptor, Routines Intro, 2-24 editor, Programming Resources, 8-55 DZ11 device, I/O User's I, 8-1; Device Support exiting, File Def Language, FDL-43 (B), 1-21invoking, File Def Language, FDL-43

Edit/FDL Utility (EDIT/FDL) (cont'd)	Editor (cont'd)
invoking a script, File Applications, 4-5	VAXTPU (VAX Text Processing Utility),
modifying a data file, Programming Resources,	Programming Resources, 1–4
8–58	EDITPC (Edit Packed to Character String)
optimization algorithms, File Applications, A-1	instruction, MACRO, 9-170
Optimize script, File Applications, 10-1, 10-25;	/EDIT qualifier, Debugger, CD-28, CD-172,
File Def Language, FDL-39	CD-239
prompt, File Applications, 4-11	EDIT/SUM command, SUMSLP, SUM-2,
restrictions, File Def Language, FDL-43	SUM-14
scripts, File Def Language, FDL-63	EDIT/TPU command, VAXTPU, 1-9, 5-1 to 5-20
specifying run-time options, File Applications,	parameter, VAXTPU, 5–19
9–1 to 9–5	qualifiers, VAXTPU, 1–9 to 1–10, 5–5 to 5–20
Editing commands	/COMMAND, VAXTPU, 5–6 to 5–7
adding lines, SUMSLP, SUM-7, SUM-9	/CREATE, VAXTPU, 5–7
changing audit trail text, SUMSLP, SUM-12	/DEBUG, VAXTPU, 4–33, 5–8
deleting lines, SUMSLP, SUM-9, SUM-10,	/DISPLAY, VAXTPU, 5–8
SUM-11	/INITIALIZATION, VAXTPU, 5–9 to 5–10
format of, SUMSLP, SUM-4	/INTERFACE, VAXTPU, 5–10
replacing lines, SUMSLP, SUM-11	/JOURNAL, VAXTPU, 5–10
specifying, SUMSLP, SUM-3	/MODIFY, VAXTPU, 5–12
using command parameters, SUMSLP, SUM-4	OUTPUT, VAXTPU, 5-12
using locator field parameters, SUMSLP,	/READ_ONLY, VAXTPU, 5-13
SUM-4	/RECOVER, VAXTPU, 5–14, 7–408
using operators, SUMSLP, SUM-3 Editing context status	/SECTION, <i>VAXTPU</i> , 5–16 /START_POSITION, <i>VAXTPU</i> , 5–17
•	/WRITE, VAXTPU, 5–17
built-in procedures CURRENT_BUFFER, VAXTPU, 7–80	"Edit_mode" string constant parameter to
CURRENT_CHARACTER, VAXTPU, 7-81	GET_INFO, VAXTPU, 7–198
CURRENT_COLUMN, VAXTPU, 7–81	EDIV (Extended Divide) instruction, MACRO,
CURRENT_DIRECTION, VAXTPU, 7–85	9–19
CURRENT_LINE, VAXTPU, 7–86	RTL routine to access, RTL Library, LIB-126
CURRENT_OFFSET, VAXTPU, 7–88	EDT\$EDIT routine, <i>Utility Routines</i> , EDT–3
CURRENT_ROW, VAXTPU, 7–90	EDT argument, RMS, B–16
CURRENT_WINDOW, VAXTPU, 7–92	EDT editor
DEBUG_LINE, VAXTPU, 7–99	mode
ERROR, VAXTPU, 7–123	keypad, Programming Resources, 1–3
ERROR_LINE, VAXTPU, 7–125	line, Programming Resources, 1–3
ERROR_TEXT, VAXTPU, 7–127	nokeypad, Programming Resources, 1–4
built-in procedures for defining	EDT routines
SET, VAXTPU, 7–347	examples, <i>Utility Routines</i> , EDT-1 to EDT-2
SHOW, VAXTPU, 7–505	introduction, <i>Utility Routines</i> , EDT-1
Editing interface	user-written
See EVE editor	FILEIO, Utility Routines, EDT-7
Editing point	WORKIO, Utility Routines, EDT-11
built-in procedures for moving	XLATE, Utility Routines, EDT-13
MARK, VAXTPU, 7–261	EDT text editor
MOVE_HORIZONTAL, VAXTPU, 7–278	See EDT editor
MOVE_VERTICAL, VAXTPU, 7–282	ef_cluster_name data type, Routines Intro, A-5t
POSITION, VAXTPU, 7–287	ef_number data type, Routines Intro, A–5t
compared to cursor position, VAXTPU, 6–10	EH? error message, Delta/XDelta, DELTA-13
effect of scrolling on, VAXTPU, 7–324	"Eightbit" string constant parameter to GET_
Editor	INFO, VAXTPU, 7–198
See also Text processing	EIR (error information register), I/O User's II,
EDT, Programming Resources, 1–3	3–6
EVE, Programming Resources, 1–5	bit assignment, I/O User's II, 3-16
FDL, File Def Language, FDL-42	Elapsed time, Convert, CONV-24
SUMSLP, SUMSLP, SUM-14	Element
text, File Def Language, FDL-42	definition of, RTL Parallel Processing, 1-2
, <u> </u>	

Element (cont'd) End conditional assembly directive (.END), retrieving information about, RTL Parallel MACRO, 6-26 Processing, 4-1.END directive, Programming Resources, 9-8; synchronization, RTL Parallel Processing, 4-1 MACRO, 6-25Element identifier in message source file, Message, MSG-17 sharing, RTL Parallel Processing, 5-9 %ENDIF lexical keyword, VAXTPU, 3-36 ELSE clause, VAXTPU, 3-22 ENDIF statement, VAXTPU, 3-22 to 3-23 %ELSE lexical keyword, VAXTPU, 3-36 ENDLOOP statement, VAXTPU, 3-21 to 3-22 $EMB\$C_DA,\ \textit{Device Support (A)},\ 11\text{--}10$ End macro definition directive (.ENDM), MACRO, EMB\$C_DE, Device Support (A), 11-10 EMB\$C DT, Device Support (A), 11-10 .ENDM directive, MACRO, 6-27 EMB\$L_DV_REGSAV, Device Support (A), 11-9 ENDMODULE statement, VAXTPU, 3-14 to 3-15 EMB\$W_DV_STS, Device Support (B), 3-94 End-of-file \$EMBDEF macro, Device Support (A), 11-9 See EOF EMB spin lock, Device Support (A), 3-14; Device End-of-file field in XABFHC Support (B), 3–8 See XAB\$L EBK field EMODD (Extended Multiply and Integerize End-of-file mark D floating) instruction, MACRO, 9-115 positioning for user file open option, RMS, RTL routine to access. RTL Library, LIB-128 5 - 18EMODF (Extended Multiply and Integerize End-of-file option F_floating) instruction, MACRO, 9-115 See RAB\$V_EOF option RTL routine to access, RTL Library, LIB-130 End-of-file positioning, RMS, RMS-7 EMODG (Extended Multiply and Integerize End-of-tape G_floating) instruction, MACRO, 9-115 RTL routine to access, RTL Library, LIB-132 See EOT EMODH (Extended Multiply and Integerize End-of-volume H_floating) instruction, MACRO, 9-115 detection on magnetic tape, I/O User's I, 6-20 ENDON_ERROR statement, VAXTPU, 3-25 to RTL routine to access, RTL Library, LIB-134 EMPHASIS qualifier, File Def Language, 3 - 31ENDPROCEDURE statement, VAXTPU, 3-15 to FDL-42, FDL-50 EMUL (Extended Multiply) instruction, MACRO, 3-21.ENDR directive. MACRO, 6-28 9 - 20END_OF built-in procedure, VAXTPU, 7-115 to RTL routine to access, RTL Library, LIB-136 **Emulated instructions** END_OF_FILE attribute, File Def Language, in device driver, Device Support (A), 5-3 FDL-10 Enable assembler functions, MACRO, 6-22 ENABLE AST command, Debugger, 9-16, CD-76 Engineering change order (ECO) level Enable attention AST function See ECO level asynchronous DDCMP driver, I/O User's II, Enqueue, DECthreads, 2-16 5 - 9Entering control characters, VAXTPU, 3-2 DMC11/DMR11 driver, I/O User's II, 1-7 Enter service, RMS, RMS-29 DMP11/DMF32 driver, I/O User's II, 2-19 condition values, RMS, RMS-31 DR11-W/DRV11-WA driver, I/O User's II, control block input fields, RMS, RMS-30 3 - 14control block output fields, RMS, RMS-30 Ethernet/802 drivers, I/O User's II, 6-36 requirement for NAM block fields, RMS, .ENABLE directive, MACRO, 6-22, 6-34 RMS-30Enabling asynchronous delivery of alerts, Entry and display modes, Patch, PAT-14 DECthreads, cma-7 ASCII-NOASCII mode, Patch, PAT-16 Enabling asynchronous delivery of cancels, BYTE mode, Patch, PAT-16 DECthreads, pthread-91 canceling, Patch, PAT-40 ENBINT macro, Device Support (A), 3-9, 3-10, DECIMAL mode, Patch, PAT-17 E-4; Device Support (B), 2-28 displaying location contents, Patch, PAT-62 replacing with spin lock synchronization macro, displaying mode, Patch, PAT-85 Device Support (A), E-13 GLOBALS-NOGLOBALS mode. Patch, PAT-17 Encryption key, Device Support (B), 1-42 HEXADECIMAL mode, Patch, PAT-17 .ENDC directive, MACRO, 6-26 INSTRUCTION-NOINSTRUCTION mode, Patch, PAT-15 length modes, Patch, PAT-16

Entry and display modes (cont'd) EO\$REPLACE_SIGN (Replace Sign when Zero) LONG mode. Patch, PAT-16 pattern operator, MACRO, 9-184 mode qualifier, PATCH command, Patch, EO\$SET SIGNIF (Set Significance) pattern PAT-15 operator, MACRO, 9-185 OCTAL mode, Patch, PAT-17 EO\$STORE_SIGN (Store Sign) pattern operator, radix modes, Patch, PAT-17 MACRO, 9-186 SCOPE-NOSCOPE mode, Patch, PAT-17 EOB_TEXT keyword, VAXTPU, 7-374 setting the mode, Patch, PAT-76 "Eob_text" string constant parameter to GET_ symbol search mode, Patch, PAT-17 INFO, VAXTPU, 7-171 SYMBOLS-NOSYMBOLS mode, Patch, PAT-16 EOF (end-of-file), Programming Resources, 7-5 WORD mode, Patch, PAT-16 status .ENTRY directive, MACRO, 6-29 card reader, I/O User's I, 2-2 Entry mask, MACRO, 9-63 magnetic tape, I/O User's I, 6-17 Entry mask procedure, Routines Intro, A-11t write mailbox message, I/O User's I, 7–9 Entry point, RTL Intro, 3-4 EOF (end-of-file) option, File Def Language, See also JSB entry points FDL-10 CALL entry point, RTL Intro, 3-3; RTL EOJ command String Manipulation, 2-9 in card reader batch job, I/O User's I, 2-2 defining, MACRO, 6-29 EOT (end-of-tape) JSB entry point, RTL Intro, 3-5; RTL String status Manipulation, 2-9 magnetic tape, I/O User's I, 6–17, 6–19, specifying in driver tables, Device Support (B), 6-21EQUAL keyword Entry point directive (.ENTRY), MACRO, 6-29 with GSMATCH option, Programming Entry point name, RTL Math, 1-1 Resources, 5-5 Enumerate call Equal-or-next key option, File Applications, 8-9 attributes, System Services, SYS-173 Equivalence name directories, System Services, SYS-173 defining, System Services Intro, 6-2 objects, System Services, SYS-174 format convention, System Services Intro, 6-10 soft links, System Services, SYS-175 specifying, System Services, SYS-81 EO\$ADJUST INPUT (Adjust Input Length) EQUIVALENCE statement, VAXTPU, 3-33 to pattern operator, MACRO, 9-175 3 - 34EO\$BLANK_ZERO (Blank Backwards when Zero) Equivalence string, File Applications, 6-4 pattern operator, MACRO, 9-176 \$EQULST macro, Device Support (B), 2-29 to EO\$CLEAR SIGNIF (Clear Significance) pattern operator, MACRO, 9-185 example, Device Support (B), 2-30, 2-103 EO\$END (End Edit) pattern operator, MACRO, ERASE built-in procedure, VAXTPU, 7-117 to 9 - 1777 - 118EO\$END_FLOAT (End Floating Sign) pattern Erase service, File Applications, 5-9; RMS, operator, MACRO, 9-178 RMS-32EO\$FILL (Store Fill) pattern operator, MACRO, alternative, RMS, RMS-33 9 - 179condition values, RMS, RMS-34 EO\$FLOAT (Float Sign) pattern operator, See also Completion status code MACRO, 9-180 control block input fields, RMS, RMS-33 EO\$INSERT (Insert Character) pattern operator, control block output fields, RMS, RMS-33 MACRO, 9-181 requirements for using, RMS, RMS-33 EO\$LOAD_FILL (Load Fill Register) pattern use restriction, RMS, RMS-33 operator, MACRO, 9-182 ERASE_CHARACTER built-in procedure, EO\$LOAD_MINUS (Load Sign Register If Minus) *VAXTPU*, 7–119 to 7–120 pattern operator, MACRO, 9-182 ERASE_LINE built-in procedure, VAXTPU, 7-121 EO\$LOAD PLUS (Load Sign Register If Plus) to 7-122pattern operator, MACRO, 9-182 ERASE UNMODIFIABLE EO\$LOAD_SIGN (Load Sign Register) pattern keyword parameter to SET built-in procedure, operator, MACRO, 9-182 VAXTPU, 7-375 EO\$MOVE (Move Digits) pattern operator, ERASE_UNMODIFIABLE mode MACRO, 9-183 and APPEND_LINE, VAXTPU, 7-376 and CHANGE_CASE, VAXTPU, 7-376

and COPY_TEXT, VAXTPU, 7-376

ERASE_UNMODIFIABLE mode (cont'd) ERRORLOG.EXE, System Dump Analyzer, and EDIT, VAXTPU, 7-376 SDA-60 and ERASE (buffer), VAXTPU, 7-376 Error log allocation buffer, Device Support (A), and ERASE (range), VAXTPU, 7-376 11–10; Device Support (B), 3–8 and ERASE_CHARACTER, VAXTPU, 7-376 ERRORLOGBUFFERS parameter, System Dump and ERASE_LINE, VAXTPU, 7-376 Analyzer, SDA-3 and FILL, VAXTPU, 7-376 Error log entry and MOVE_TEXT, $V\!AXTPU$, 7–376 examining the contents of, Device Support (A), and SPLIT_LINE, VAXTPU, 7-376 17-33 to 17-43 and TRANSLATE, VAXTPU, 7-377 Error logger "Erase_unmodifiable" string constant parameter to sending message to, System Services, SYS-556 GET_INFO, VAXTPU, 7-169, 7-171 Error logging, Device Support (B), 1-79 to 1-80, Erasing unmodifiable records, VAXTPU, 7-375 3-8 to 3-9 Erasure operations, RTL Screen Management, 2-7 driver prerequisites, Device Support (A), 11-9 ERL\$DEVICEATTN, Device Support (A), 11–10; enabling, Device Support (B), 1-75 Device Support (B), 3-8 to 3-9, 4-15 error log sequence number, Device Support (B), ERL\$DEVICERR, Device Support (A), 11–10; Device Support (B), 1-30, 1-80, 1-81, 3-8 to final error count, Device Support (A), 10-3 3-9, 4-15inhibiting. Device Support (B), 3-8 ERL\$DEVICTMO, Device Support (A), 10-6, in progress, Device Support (B), 1-77 11-10; Device Support (B), 1-30, 1-80, 1-81, performed by IOC\$REQCOM, Device Support 3-8 to 3-9, 4-15 (B), 3–95 ERL\$RELEASEMB, Device Support (A), 10-3; Error logging enable bit Device Support (B), 3–95 See UCB\$V ERLOGIP Error, RTL Intro, 3-14 Error logging routine, Device Support (A), 1-4, See also Error logging 11-9 to 11-10; Device Support (B), 1-30 associated with I/O request, Device Support See also Register dumping routine (A), 11–10 address, Device Support (A), 11-1 in file structure, Analyze/RMS_File, ARMS-13 global symbols, System Dump Analyzer, not associated with I/O request, Device Support SDA-60 (A), 11–10 in SCSI third-party class driver. Device recommended method for signaling, RMS, 2-6 Support (A), 17-20 to 17-22 resulting from exceeding virtual address space, Error log in progress bit VAXTPU, 5–1 See UCB\$V_ERLOGIP returning condition value, RTL Intro, 3-15 servicing within driver, Device Support (A), Error log UCB extension, Device Support (B), 1-4, 8-5; Device Support (B), 3-82 to 3-83 1-69, 1-80 to 1-81 signaling condition value, RTL Intro, 3-15 Error message warning, Convert, CONV-3 signaling of, RTL Library, 4-3 Error check, System Services Intro, 2-14; File Error message buffer, Device Support (A), 3-14, Applications, 10-1 10-3; Device Support (B), 1-81, 1-83, 3-82 in FOLR routines, RTL Math, 2-7 allocating, Device Support (A), 11-10; Device Error completion routine, RMS, 2-5 Support (B), 3-8 Error condition, Analyze/RMS_File, ARMS-7 filling, Device Support (B), 3-9 Error creating shared memory initializing, Device Support (A), 11-10 reasons for, RTL Parallel Processing, 3-2 of third-party SCSI device driver, Device .ERROR directive, MACRO, 6-31 Support (A), 17-20 to 17-21 releasing, Device Support (A), 10-3; Device Error handler case-style, VAXTPU, 3-28 to 3-31 Support (B), 3-95 procedural, VAXTPU, 3-26 to 3-28 size, Device Support (B), 3-8 Error handling, *Programming Resources*, 9–1; specifying size, Device Support (A), 6-4, 11-9, VAXTPU, 3-25 to 3-31, 4-38 11-10; Device Support (B), 1-30 written into by IOC\$REQCOM, Device Support See also Condition handling (B), 3–95 Error information register Error PPL\$_INSVIRMEM See EIR reasons for, RTL Parallel Processing, PPL-11 ERROR lexical element, VAXTPU, 3-25 /ERROR qualifier, Debugger, 7-19, CD-117 in message definition, Message, MSG-23

Error recovery, System Services Intro, 7–12	Ethernet/802 drivers
disk, I/O User's I , 3–17	characteristics (cont'd)
line printer, I/O User's I , 5–3	extended, I/O User's II , 6–23 to 6–34,
magnetic tape, I/O User's I , 6–9	6–38
shadow set virtual unit driver, I/O User's I ,	controller mode, I/O User's II , 6–24
10–9	CRC generation, I/O User's II , 6–25
ERROR statement, VAXTPU, 7-123 to 7-124	data chaining, I/O User's II , 6–26
Error status	device characteristics, I/O User's II, 6-14,
clearing, Device Support (A), 11–2	6–37
Error status code, RMS, 2–6	See also Ethernet/802 drivers, extended
from invalid control blocks, RMS, 2–6	characteristics
Error termination of a thread, DECthreads,	drivers, I/O User's II, 6-1
cma-95, cma-100, pthread-47	initializing, I/O User's II, 6-2
ERROR_LINE lexical element, VAXTPU, 3–26	operating, I/O User's II, 6-2
ERROR_LINE statement, VAXTPU, 7–125 to	driver service (802 format), I/O User's II, 6-34
7-126	echo mode (DEUNA only), I/O User's II, 6-27
	error summary bits, I/O User's II, 6-15
ERROR_TEXT lexical element, VAXTPU, 3–26	Ethernet, I/O User's II , 6-1, 6-2, 6-7
ERROR_TEXT statement, VAXTPU, 7–127 to	Ethernet addresses, I/O User's II, 6–2
7–128	Ethernet packet format, I/O User's II , 6–6
ESA (expanded string area address)	Ethernet packet padding, I/O User's II, 6–8
program example, RMS, 4–12	Ethernet programming example, I/O User's II,
Escape sequence	6–41
ANSI, I/O User's I, B-9	exclusive mode, I/O User's II, 6–9
Digital-private, I/O User's I, B-9	extended characteristics, I/O User's II , 6–23 to
read, Programming Resources, 7–53	6-34, 6-37
terminal, I/O User's I, 8-7, 8-21	function codes, I/O User's II , 6–16, A–6
using from terminal devices, RMS, RMS-49	function modifiers, I/O User's II , 6–19, 6–21,
ESC command, Delta/XDelta, DELTA-23	
ESC key equivalent, Delta/XDelta, DELTA-23	6–22, 6–36 to 6–37
ESP symbol, System Dump Analyzer, SDA-13	hardware buffer size, I/O User's II, 6–23
Ethernet	hardware interface, I/O User's II, 6-2
device drivers, I/O User's II, 6–1	I/O functions, I/O User's II, 6–17, 6–19, 6–21,
Ethernet/802 drivers	6–37
address	I/O status block, I/O User's II, 6–39
destination, I/O User's II , 6–17, 6–20	IEEE 802
Ethernet, I/O User's II , 6–2 to 6–5	Class I service packet format, I/O User's
hardware, I/O User's II, 6–38	II, 6–10, 6–27
loopback assistance, I/O User's II, 6-4	driver service parameter, I/O User's II ,
multicast, I/O User's II, 6-4, 6-17, 6-29,	6–34
6–30	extended packet format, I/O User's II ,
node, I/O User's II , 6–2	6–13, 6–27
physical, I/O User's II, 6-2, 6-4, 6-17,	802 format SAP parameter, I/O User's II,
6-31, 6-38	6–33
port, I/O User's II , 6–31	group SAP parameter, I/O User's II, 6-28
shared protocol destination, I/O User's II,	programming example, I/O User's II, 6-47
6–26	read function, I/O User's II , 6–17
source, I/O User's II, 6–17	SAP use and restrictions, I/O User's II ,
AST access mode, I/O User's II, 6–36	6–12
AST service routine address, I/O User's II,	support, I/O User's II , 6–5
6–36	user-supplied service packet format, I/O
attention AST, I/O User's II, 6–36	User's II , 6–11, 6–27
buffer	write function, I/O User's II, 6–19
hardware, I/O User's II, 6–23	internal loopback mode (DELUA only), I/O
receive, I/O User's II , 6–23	User's II, 6–29
	loopback mode, I/O User's II, 6–24
channel assignment, I/O User's II, 6–2	message size, I/O User's II, 6–15, 6–17, 6–19,
characteristics	6–20, 6–24
device, I/O User's II , 6–14, 6–37	modify characteristics, I/O User's II, 6–22
	1110411, 0114140001100100, 1/0 0001 011, 0 44

Ethernet/802 drivers (cont'd)	ETO (extended terminal operation) option, RMS
multicast address state, I/O User's II, 6-30	RMS-49
packet format, I/O User's II, 6-6	See also RAB\$V_ETO option
Ethernet, I/O User's II, 6-6	
extended 802, I/O User's II, 6-13	ETYPE, <i>MACRO</i> , 10–6, 10–69
IEEE 802, I/O User's II, 6–10	Euclidean norm
set mode parameters, I/O User's II, 6–34	of a vector, RTL Math, MTH-170
	Evaluate
SNAP SAP value, I/O User's II, 6–14	%CURVAL built-in symbol, Debugger, 4–6,
user-supplied service, I/O User's II, 6–11	CD-78, D-5
padding	expression, Debugger, 4-3, 4-5, CD-77
message size, I/O User's II , 6–15, 6–19	with DECwindows, Debugger, 1–25
transmit messages, I/O User's II, 6–30	memory address, Debugger, 4-12, CD-79
parameter ID, I/O User's II , 6–22	with DECwindows, Debugger, 1–24
packet format, I/O User's II , 6–34	task, Debugger, 12–12
parameter validation, I/O User's II , 6–35	EVALUATE/ADDRESS command, Debugger,
port, I/O User's II , 6–1	3–12, 3–17, 4–12, CD–79
address, I/O User's II, 6-23	EVALUATE command, Debugger, 4–5, CD–77;
start, I/O User's II , 6–22	Patch, PAT-59 to PAT-61; System Dump
privilege, I/O User's II, 6-17	
programming example, I/O User's II, 6–41,	Analyzer, SDA-48
6–47	EVALUATE/PSL command, System Dump
programming notes, I/O User's II, 6–40	Analyzer, SDA-22
promiscuous mode, I/O User's II, 6–32, 6–40	Evaluation precedence, Delta/XDelta, DELTA-9
	EVE editor
rules for, I/O User's II, 6-41	building applications on, VAXTPU, G-1 to
protocol type, I/O User's II, 6-1, 6-17, 6-20,	G-12
6–32	command window, VAXTPU, 4-16
access mode, I/O User's II, 6-23	\$DEFAULTS\$ buffer, VAXTPU, 4–32
cross-company, I/O User's II , 6–7	initialization files, VAXTPU, 4-31 to 4-33,
Digital, I/O User's II , 6–7	5–10
Ethernet, I/O User's II , 6–7	during a session, VAXTPU, 4-32
sharing, I/O User's II, 6–9	effects on buffer settings, VAXTPU, 4–32
protocol type sharing, I/O User's II, 6–9	input files, VAXTPU, 5–20
read function, I/O User's II, 6-17	keypad emulation
restart, I/O User's II, 6-33	EDT, Programming Resources, 1–5
sense mode function, I/O User's II, 6-37	
Service Access Point (SAP), I/O User's II, 6-12	numeric, Programming Resources, 1–5
set controller mode, I/O User's II, 6–22	VT100, Programming Resources, 1–5
extended characteristics, I/O User's II,	WPS, Programming Resources, 1–5
6–23 to 6–34	message buffer, VAXTPU, 4–18
P2 buffer, I/O User's II, 6–22	message window, VAXTPU, 4–16
parameter ID, I/O User's II, 6–22	order of initialization, VAXTPU, G-4
	output file, VAXTPU, 5–13, 5–20
protocol type sharing, I/O User's II, 6–9	restriction on defining GOLD key, VAXTPU,
set mode function, I/O User's II, 6-21	7-472
shared default mode, I/O User's II, 6-9	sample procedures, VAXTPU, B-1 to B-33
shared with destination mode, I/O User's II ,	source files, VAXTPU, 4–3
6–9	status line, VAXTPU, G-7
shutdown controller mode, I/O User's II , 6–36	use of EDIT/TPU command qualifiers,
shutdown port, I/O User's II , 6–36	<i>VAXTPU</i> , 5–18
software interface, I/O User's II , $6-2$	user window, VAXTPU, 4-16
status returns, I/O User's II , A-6	wildcard characters in file specifications,
supported devices, I/O User's II, 6-1	VAXTPU, 5–20
SYS\$ASSIGN, I/O User's II, 6–2	wildcards in file names, VAXTPU, 5–20
SYS\$DASSGN, I/O User's II, 6-2	
SYS\$GETDVI, I/O User's II, 6–14	EVE editor\$BUILD, VAXTPU, G-1 to G-12
transmit/receive buffer size, I/O User's II,	exit and quit handlers, VAXTPU, G-8
6–23	initialization modules, VAXTPU, G-4 to G-5
unit and line status, I/O User's II , 6–15	invoking, VAXTPU, G-10 to G-11
	output, VAXTPU, G-11 to G-12
write function, I/O User's II , 6–19	status line field, VAXTPU, G-7 to G-8

Event flag (cont'd) EVE editor\$BUILD (cont'd) synonym creation, VAXTPU, G-5 to G-7 waiting for entire set of, System Services, using parsing routines with, VAXTPU, G-3 to SYS-668 waiting for one of set, System Services, EVE editor\$GET_STATUS_FIELDS procedure, SYS-670 VAXTPU, G-8 waiting for setting of, System Services, EVE editor\$INIT logical name, VAXTPU, 4-31 SYS-663 EVE editor\$PARSER_DISPATCH procedure, Event flag cluster, System Services Intro, 4–2 VAXTPU, G-3 associating with a process, System Services, **EVE** editor\$SELECTION procedure SYS-22using to obtain EVE's current selection, deleting, System Services Intro, 4-5; System VAXTPU, 4-17 Services, SYS-165 EVE editor default settings, VAXTPU, 4-32 to disassociating, System Services Intro, 4-5; System Services, SYS-127 .EVEN directive, MACRO, 6-33 getting current status, System Services, Event SYS-489 awaiting, RTL Parallel Processing, 4-7 number, System Services Intro, 4-2 breakpoint or tracepoint on, Debugger, 3-14 specifying name for, System Services Intro, 4-7 creating, RTL Parallel Processing, 4-5 Event flag number, System Services Intro, 4-2 definition of, RTL Parallel Processing, 4-5 Event flag routines deleting, RTL Parallel Processing, 4-6 global symbols, System Dump Analyzer, disabling, RTL Parallel Processing, 4-7 SDA-60 notification for abnormal exit, RTL Parallel Event flag service Processing, 4-9 example using, System Services Intro, 4-8 notification for normal exit, RTL Parallel **Event notification** Processing, 4-9 pseudoterminal, I/O User's I, 9-6 predefined, RTL Parallel Processing, 4-9 Eventpoint reading, RTL Parallel Processing, 4-8 See Breakpoint, Tracepoint, Watchpoint resetting, RTL Parallel Processing, 4-8 /EVENT qualifier, Debugger, 3-14, 12-27, 12-29, tasking (multithread) program, Debugger, CD-17, CD-30, CD-125, CD-184 12 - 27Event synchronization triggering, RTL Parallel Processing, 4-8 See also Synchronization Event facility, Debugger, 12-27, CD-136, CD-215 advantages and disadvantages, RTL Parallel Event flag, Programming Resources, 4-1; Processing, 5-7 Modular Procedures, 2-16; System Services, PPL\$ routines for, RTL Parallel Processing, SYS-167; Device Support (B), 1-39 4-5 to 4-8 See also Synchronization EVENT_FLAGS_AND_ASTS.EXE allocation of, RTL Library, 2-17 global symbols, System Dump Analyzer, clearing, System Services Intro, 4-4; System SDA-60 Services, SYS-74 EVE source files, VAXTPU, 1-11 cluster, *Programming Resources*, 4–1; Exact key match, File Applications, 8-11 Routines Intro, A-5t **EXACT** keyword common, Programming Resources, 4–1 with LEARN_BEGIN, VAXTPU, 7-244 for interprocess communication, System with SEARCH, VAXTPU, 7-328 Services Intro, 8-10 with SEARCH_QUIETLY, VAXTPU, 7-333 for synchronous operations, RMS, 2-7 EXACT_POSITIONING attribute, File Def getting current status, System Services, Language, FDL-7 SYS-489 EXACT_POSITIONING secondary attribute, File handling for aborted I/O request, Device Applications, 4-31 Support (B), 3–11 Examine local, Programming Resources, 3-2, 4-1 address, Debugger, 4-23 number, Routines Intro, A-5t with DECwindows, Debugger, 1-25 posting, Device Support (A), 4-20 EXAMINE command, Debugger, 4-2, CD-81 RTL routine to free, RTL Library, LIB-174 instruction, Debugger, 4-19, 11-9 setting, System Services Intro, 4-4; System with DECwindows, Debugger, 1-24 Services, SYS-514; Device Support (A), 2-7 register, Debugger, 4-22, 11-4 specifying, System Services Intro, 4-2 with DECwindows, Debugger, 1-25

wait, System Services Intro, 4-3

Examine (cont'd) Examples (cont'd) task, Debugger, 12-12, 12-26 modifying an FDL file, File Def Language, using vector mask, Debugger, 11-13 FDL-68 variable, Debugger, 4-2, 4-14 modifying an FDL file noninteractively, File with DECwindows, Debugger, 1-24 Def Language, FDL-68 vector address expression, Debugger, 11–16 reclaiming buckets, Convert, CONV-29 vector instruction, Debugger, 11-9 reorganizing a remote file, Convert, CONV-29 vector register, Debugger, 11-4 tuning a file, File Def Language, FDL-68 Examine button Examples of DECwindows VAXTPU built-in with DECwindows, Debugger, 1-9 procedures, VAXTPU, B-1 to B-33 EXAMINE command, Debugger, 4–2, CD–81; Examples of VAXTPU procedures Patch, PAT-62 to PAT-64; System Dump ADJUST_HELP, VAXTPU, 7-23 Analyzer, SDA-16, SDA-24, SDA-51 ANCHOR, VAXTPU, 7-25 EXAMINE/INSTRUCTION command, Debugger, ANY, VAXTPU, 7-27 4-19, 7-9, C-5; System Dump Analyzer, APPEND_LINE, VAXTPU, 7–29 SDA-23ARB, VAXTPU, 7-31 EXAMINE/OPERANDS command, Debugger, ASCII. VAXTPU, 7-33, 7-34 4-19, 11-9 BEGINNING_OF, VAXTPU, 7–38 EXAMINE/SOURCE command, Debugger, 6-4, BREAK, VAXTPU, 7-39 7-6, C-4CALL_USER, VAXTPU, 7-42 "Examine" string constant parameter to GET_ CHANGE_CASE, VAXTPU, 7-46 INFO, VAXTPU, 7-179 COPY_TEXT, VAXTPU, 7-54 Example program CREATE BUFFER, VAXTPU, 7–62 in VAX BLISS-32, RTL Parallel Processing, CREATE_KEY_MAP, VAXTPU, 7-64 CREATE_KEY_MAP_LIST, VAXTPU, 7-66 in VAX C, RTL Parallel Processing, 6-14 CREATE_PROCESS, VAXTPU, 7-68 in VAX FORTRAN, RTL Parallel Processing, CREATE_RANGE, VAXTPU, 7-71 CREATE_WINDOW, VAXTPU, 7-79 prime number search, DECthreads, 5-1 CURRENT_BUFFER, VAXTPU, 7–80 Examples, SUMSLP, SUM-21 CURRENT CHARCTER, VAXTPU, 7-82 CURRENT_COLUMN, VAXTPU, 7-84 See also PATCH command, qualifiers CURRENT_DIRECTION, VAXTPU, 7-85 See also PATCH commands CURRENT_LINE, VAXTPU, 7-87 See also Using symbols CURRENT_OFFSET, VAXTPU, 7-89 adding lines, SUMSLP, SUM-8, SUM-9 CURRENT_ROW, VAXTPU, 7-91 analyzing a file interactively, Analyze/RMS_ CURRENT_WINDOW, VAXTPU, 7-93 File, ARMS-36 CURRSOR_HORIZONTAL, VAXTPU, 7-95 analyzing a remote file, Analyze/RMS_File, CURSOR_VERTICAL, VAXTPU, 7-98 ARMS-36 DEFINE_KEY, VAXTPU, 7-103 appending a remote file, Convert, CONV-30 DELETE, VAXTPU, 7-109 audit trail text, SUMSLP, SUM-12 EDIT, VAXTPU, 7-114 converting a carriage control file to stream, END OF, VAXTPU, 7–116 Convert, CONV-30 ERASE, VAXTPU, 7-118 converting a carriage control file to variable ERASE CHARACTER, VAXTPU, 7-120 length, Convert, CONV-30 ERROR, VAXTPU, 7-124 converting a remote file, Convert, CONV-29 ERROR_LINE, VAXTPU, 7-126 converting fixed format to variable length, ERROR_TEXT, VAXTPU, 7-128 Convert, CONV-30 EXECUTE, *VAXTPU*, 7–131, 7–132 converting record formats, Convert, CONV-29 EXPAND_NAME, VAXTPU, 7-137 creating an FDL file, Analyze/RMS_File, FAO, VAXTPU, 7-139 ARMS-36 FILE_PARSE, VAXTPU, 7-142 creating an FDL file from a remote file, FILE_SEARCH, VAXTPU, 7-145 Analyze/RMS_File, ARMS-36 GET_INFO, VAXTPU, 7-160 to 7-161 deleting lines, SUMSLP, SUM-9 HELP_TEXT, VAXTPU, 7-229 improving a file's performance, Convert, INDEX, VAXTPU, 7–231 CONV-29 INT, VAXTPU, 7-233 interactive patch session, Patch, PAT-92 KEY_NAME, VAXTPU, 7-240 listing file, SUMSLP, SUM-6 LENGTH, VAXTPU, 7-248

Examples of VAXTPU procedures (cont'd) Exception (cont'd) LINE_BEGIN, VAXTPU, 7-250 change mode, MACRO, E-8 LINE_END, VAXTPU, 7-251 compatibility mode, MACRO, E-7 LOCATE_MOUSE, VAXTPU, 7-253 type code, MACRO, E-7 LOOKUP_KEY, VAXTPU, 7-256 to 7-257 condition handler causing to fail, DECthreads, MAP, *VAXTPU*, 7–260 control, MACRO, 8-14 MARK, VAXTPU, 7-263 MATCH. VAXTPU. 7-265 customer reserved opcode, MACRO, E-6 MESSAGE, VAXTPU, 7-269 debugging, Debugger, 9-10 MOVE_HORIZONTAL, VAXTPU, 7-279 decimal MOVE_TEXT, VAXTPU, 7-281 string overflow, MACRO, E-3 MOVE VERTICAL, VAXTPU, 7-283 declaring and initializating, DECthreads, 4–3 NOTANY, VAXTPU, 7-285 defining a region of code to catch, DECthreads, PAGE_BREAK, VAXTPU, 7-286 POSITION, VAXTPU, 7-290 defining epilogue actions, DECthreads, 4-6 QUIT, VAXTPU, 7-292 definition, RTL Library, 4-2; DECthreads, READ_CHAR, VAXTPU, 7-294 4-2READ_FILE, VAXTPU, 7–298 determining current, DECthreads, 4-7 READ KEY, VAXTPU, 7-302 dispatcher, System Services Intro, 11-6 REFRESH, VAXTPU, 7-311 ENDTRY, DECthreads, 4-4 REMAIN, VAXTPU, 7-312 exc_get_status, DECthreads, 4-8 RETURN, VAXTPU, 7-315 exc matches, DECthreads, 4-9 SAVE, VAXTPU, 7-318 exc_report, DECthreads, 4-8 SCAN, VAXTPU, 7-320 to 7-321 exc_set_status, DECthreads, 4-7 SCANL, VAXTPU, 7-323 exporting error status, *DECthreads*, 4–8 SCROLL, VAXTPU, 7-326 fatal, System Dump Analyzer, SDA-16 SEARCH, VAXTPU, 7-330 to 7-331 FINALLY, DECthreads, 4-7, 4-12 SEARCH_QUIETLY, VAXTPU, 7-335 to 7-336 floating SELECT, VAXTPU, 7-339 divide-by-zero, MACRO, E-2, E-3 overflow, MACRO, E-2, E-3 SELECT_RANGE, VAXTPU, 7-341 SEND, VAXTPU, 7-343 underflow, MACRO, E-3, E-4 SET (AUTO_REPEAT), VAXTPU, 7-354 floating-point underflow, RTL Library, 4-31 generating, Device Support (A), 5-4 SET (BELL), VAXTPU, 7-356 SET (DEBUG), VAXTPU, 7-365 how handled by Run-Time Library, RTL SET (LINE_NUMBER), VAXTPU, 7-417 Library, 4–30 SET (SELF_INSERT), VAXTPU, 7-471 identifying causes of, System Dump Analyzer, SET (TEXT), VAXTPU, 7-485 SDA-21 importing error status, DECthreads, 4-7 SET (TRACEBACK), VAXTPU, 7-489 SLEEP, VAXTPU, 7-509 instruction SPANL, VAXTPU, 7-514 emulation, MACRO, E-6 SPLIT_LINE, VAXTPU, 7-519 execution, MACRO, E-6 STR, VAXTPU, 7-522 integer SUBSTR, VAXTPU, 7-524 divide-by-zero, MACRO, E-2 TRANSLATE, VAXTPU, 7–528 overflow, MACRO, E-2 UNANCHOR, VAXTPU, 7-531 introduction to, DECthreads, 4-2 UNDEFINE_KEY, VAXTPU, 7-533 invoking the exception-returning interface, UNMAP, VAXTPU, 7-537 DECthreads, 4-1 UPDATE, VAXTPU, 7-539 kernel stack not valid, MACRO, E-10 WRITE_FILE, VAXTPU, 7-545 machine check, MACRO, E-11 Exception, MACRO, E-1; DECthreads, A-6 matching, DECthreads, 4-9 memory managment, MACRO, E-4 See also Vector exception multiple, System Services Intro, 11-15 access control violation, MACRO, E-4 naming convention for, DECthreads, 4-11 arithmetic, MACRO, E-1 operand reference, MACRO, E-4 arithmetic type code, MACRO, E-1 raising, DECthreads, 4-4 breakpoint, MACRO, E-8 recovering from, RTL Math, 2-8 CATCH, DECthreads, 4-5 catching, DECthreads, 4-5 reporting, DECthreads, 4-8 RERAISE, *DECthreads*, 4–6, 4–9, 4–13 CATCH_ALL, DECthreads, 4-9

Exclamation point (!) (cont'd) Exception (cont'd) reraising, DECthreads, 4-6 comment delimiter, Debugger, CD-4 log file, Debugger, 8-5 reserved Exclusive OR operator, MACRO, 3-16 addressing mode, MACRO, E-4 %EXC_FACILITY, Debugger, 9-15, D-9 operand, MACRO, E-4 rules for modular use of, DECthreads, 4-11 %EXC NAME, Debugger, 9-15, D-9 signals reported as, DECthreads, A-7 %EXC_NUMBER, Debugger, 9-15, D-9 %EXC SEVERITY, Debugger, 9-15, D-9 subscript-range, MACRO, E-3 table listing pthread exceptions and meanings, EXE\$ABORTIO, Device Support (A), 7-5, 18-14; Device Support (B), 1-40, 3-7, 3-10 to 3-11, DECthreads, 4-133-33, 3-42, 3-44, 3-46, 3-50, 3-51, 3-55, THIS_CATCH, DECthreads, 4-7 trace, MACRO, E-8 3-57, 3-59, 4-12 trace operation. MACRO, E-9 EXE\$ALLOCBUF, Device Support (A), 7-6, 16-19; Device Support (B), 3-12 to 3-13 translation not valid, MACRO, E-4 TRY, DECthreads, 4-4 EXE\$ALLOCIRP, Device Support (B), 1-42, 1-44, type, System Services Intro, 11-1 3-12 to 3-13 EXE\$ALONONPAGED, Device Support (B), 3-13, vector processor, MACRO, 10-12, 10-28, 10-35 arithmetic, MACRO, 10-6, 10-22, 10-28, 3-14, 3-61 10-30, 10-68 EXE\$ALONPAGVAR, Device Support (B), 3-15 floating-point, MACRO, 10-68 EXE\$ALOPHYCNTG, Device Support (A), 16-21; Device Support (B), 3-16 memory management, MACRO, 10-28 **EXCEPTION.EXE** EXE\$ALTQUEPKT, Device Support (A), 7-5; global symbols, System Dump Analyzer, Device Support (B), 1-30, 3-5, 3-17, 4-2, 4-12 SDA-60 EXE\$ASSIGN, Device Support (A), 11-12; Device Exception breakpoint or tracepoint Support (B), 1-11, 1-12, 4-6 canceling, Debugger, 9-11, CD-17, CD-30 **EXE\$BUFFRQUOTA** qualifying, Debugger, 9-15, D-9 replaced in VMS Version 5.0, Device Support resuming execution at, Debugger, 9-11 (A), E-5setting, Debugger, 9-10, CD-125, CD-184 EXE\$BUFQUOPRC Exception condition, Routines Intro, 1-12, 2-3, replaced in VMS Version 5.0, Device Support 2-44; RTL Library, 4-2, 4-4; Convert, (A), E-5CONV-3 EXE\$CANCEL, Device Support (A), 11-7 to 11-8; handler, Routines Intro, 1-12, 2-45 Device Support (B), 3-68 EXE\$CREDIT_BYTCNT, Device Support (A), 7-8, indicating occurrence of, Routines Intro, 2-47 returning condition value, RTL Library, 4-4 E-5; Device Support (B), 3-18 signaling, RTL Library, 4-3, 4-5, 4-7, 4-16, EXE\$CREDIT_BYTCNT_BYTLM, Device Support 4-18, 4-23, 4-31 (A), E-5; Device Support (B), 3-18 signaling an, Routines Intro, 2-47 EXE\$DASSGN, Device Support (B), 1–12 EXE\$DEANONPAGED, Device Support (B), 3-3, **Exception Condition Type** 3-13, 3-19 See ETYPE EXE\$DEBIT_BYTCNT, Device Support (A), E-5; Exception handler Device Support (B), 3-20 to 3-21 debugger as, Debugger, 3-20 EXE\$DEBIT_BYTCNT_ALO, Device Support (A), debugging, Debugger, 9-10 7-6, 16-19, E-6; Device Support (B), 3-22 to Exception handling routines global symbols, System Dump Analyzer, EXE\$DEBIT_BYTCNT_BYTLM, Device Support SDA-60 (A), 7-6, E-5; Device Support (B), 3-20 to /EXCEPTION qualifier, Debugger, 9-10, CD-17, CD-30, CD-125, CD-184, CD-258 EXE\$DEBIT_BYTCNT_BYTLM_ALO, Device Exception record, Convert, CONV-3 Support (A), 7-6, 16-19, E-6; Device Support Exceptions file, Convert, CONV-3 (B), 3-22 to 3-23 /EXCEPTIONS_FILE qualifier, Convert, CONV-9, EXE\$DEBIT_BYTCNT_BYTLM_NW, Device CONV-26 Support (A), E-6; Device Support (B), 3-20 to **Exception** vector setting, System Services, SYS-515 EXE\$DEBIT_BYTCNT_NW, Device Support (A), EXC file type, Convert, CONV-3 E-5; Device Support (B), 3-20 to 3-21 Exclamation point (!)

as comment delimiter, File Def Language,

FDL-40

```
EXE$FINISHIO, Device Support (A), 7-4, 7-9, 18-14; Device Support (B), 1-41, 3-24 to 3-25, 3-49, 3-50, 3-51, 4-12
```

EXE\$FINISHIOC, Device Support (A), 7–4; Device Support (B), 1–41, 3–24 to 3–25, 4–12

EXE\$FORK, Device Support (A), 11-6; Device Support (B), 1-21, 2-32, 3-26

EXE\$FORKDSPTH, Device Support (A), 3-5, 3-24; Device Support (B), 1-73

EXE\$GB_CPUTYPE, Device Support (B), 2–10 EXE\$GL_ABSTIM, Device Support (B), 1–22

EXE\$GL_CONFREGL, Device Support (A), 16–7 EXE\$GL_INTSTK

replaced by CPU\$L_INTSTK, Device Support
(B), 1-12

EXE\$GQ_1ST_TIME, Device Support (A), 3-8, 3-9, 3-13, 3-14; Device Support (B), 3-29

EXE\$GQ_SYSTIME, Device Support (A), 3–8, 3–9, 3–14; Device Support (B), 2–52, 3–69 reading, Device Support (A), E–15

EXE\$HWCLKINT, Device Support (A), 3-8

EXE\$INSERTIRP, Device Support (A), 4–13; Device Support (B), 1–38, 1–39, 1–76, 3–27, 3–28, 3–38

EXE\$INSIOQ, Device Support (A), 3–23, 4–13, 7–4, 8–1; Device Support (B), 1–77, 3–28, 3–38

returning control to, Device Support (A), 4-16

EXE\$INSIOQC, Device Support (B), 3–28

EXE\$INSTIMQ, Device Support (B), 3–29

EXE\$IOFORK, Device Support (A), 9-4, 10-1 to 10-2, 14-24; Device Support (B), 1-72, 1-73, 3-30

EXE\$MODIFY, Device Support (A), 7-9; Device Support (B), 3-31 to 3-33

EXE\$MODIFYLOCK, Device Support (B), 3–32, 3–34 to 3–36

EXE\$MODIFYLOCKR, Device Support (B), 1–43, 3–32, 3–34 to 3–36, 3–109

EXE\$ONEPARM, Device Support (A), 7–9; Device Support (B), 1–41, 3–37

EXE\$QIO, Device Support (A), 4–1 to 4–13; Device Support (B), 1–12, 1–30, 1–37 to 1–40, 1–42

EXE\$QIOACPPKT, Device Support (B), 1–74 EXE\$QIODRVPKT, Device Support (A), 4–13, 7–4, 7–9, 8–1; Device Support (B), 3–32, 3–33, 3–37, 3–38, 3–41, 3–51, 3–55, 3–62, 4–12

EXE\$QIORETURN, Device Support (A), 18–14; Device Support (B), 3–39

EXE\$READ, Device Support (A), 7–9; Device Support (B), 1–41, 3–40 to 3–42

EXE\$READCHK, Device Support (A), 7-6; Device Support (B), 3-43 to 3-44

EXE\$READCHKR, Device Support (B), 3–32, 3–35, 3–41, 3–43 to 3–44, 3–46

EXE\$READLOCK, Device Support (B), 3-41, 3-45 to 3-47

EXE\$READLOCKR, Device Support (B), 1–43, 3–41, 3–45 to 3–47, 3–109

 ${\tt EXE\$RMVTIMQ},\ \ Device\ Support\ (B),\ 3\text{--}48$

EXE\$SENSEMODE, Device Support (A), 7–9; Device Support (B), 3–49

EXE\$SETCHAR, Device Support (A), 7-9; Device Support (B), 3-50 to 3-51

EXE\$SETMODE, Device Support (A), 7-9; Device Support (B), 3-50 to 3-51

EXE\$SNDEVMSG, *Device Support* (A), 9–7 to 9–8, 10–7, E–7; *Device Support* (B), 3–52 to 3–53

EXE\$SWTIMINT, Device Support (A), 3–8 EXE\$TIMEOUT, Device Support (B), 1–74, 1–77, 1–79

EXE\$WRITE, Device Support (A), 7-9; Device Support (B), 1-41, 3-54 to 3-55

EXE\$WRITECHK, Device Support (A), 7–6; Device Support (B), 3–56 to 3–57

EXE\$WRITECHKR, Device Support (B), 3–55, 3–56 to 3–57, 3–59

EXE\$WRITELOCK, Device Support (B), 3–55, 3–58 to 3–60

EXE\$WRITELOCKR, Device Support (B), 1–43, 3–55, 3–58 to 3–60, 3–109

EXE\$WRTMAILBOX, Device Support (B), 3–52, 3–61

EXE\$ZEROPARM, Device Support (A), 7–9; Device Support (B), 1–41, 3–62

Executable image, *Linker*, 6–1; *Patch*, PAT–3 linker parameters for creating, *Linker*, 1–1 output of linker, *Linker*, 2–5

/EXECUTABLE qualifier, Linker, 1–5, 2–5, LINK-7

EXECUTE access, File Def Language, FDL-23 EXECUTE built-in procedure, VAXTPU, 4-19 Execute Command String command, Delta/XDelta, DELTA-38

Execute procedure, System Dump Analyzer, SDA-40

Execution

as controlled by debugger, Debugger, 3–20 discrepancies caused by debugger, Debugger, 3–21

interrupting with Ctrl/C, Debugger, 2–7 interrupting with Ctrl/Y, Debugger, 3–3 with DECwindows, Debugger, 1–31

interrupting with Stop button

with DEC windows, $\ Debugger,\ 1–9,\ 1–20$ monitoring with SHOW CALLS command,

Debugger, 2–13, CD–209

monitoring with tracepoint, Debugger, 3–9, CD–183

with DECwindows, *Debugger*, 1–23 multiprocess program, *Debugger*, 10–5,

nultiprocess program, *Debugger*, 10-CD-149

Exit handler (cont'd) Execution (cont'd) resuming after exception break, Debugger, control block, System Services, SYS-137 9 - 11deleting, System Services, SYS-50 starting or resuming with CALL command, debugging, Programming Resources, 9-30; Debugger, 9-15, CD-90 Debugger, 8-10, 11-22, CD-10 starting or resuming with GO command, declaring, System Services, SYS-137 Debugger, 2-12, CD-100 establishing, Programming Resources, 9-27 executing, Debugger, 3-4, CD-90 with DECwindows, Debugger, 1–23 with DECwindows, Debugger, 1-20 starting or resuming with STEP command, execution sequence of, Debugger, 9-15 Debugger, 3-6, CD-258 with DECwindows, Debugger, 1-23 identifying, Debugger, 9-16, CD-216 suspending with breakpoint, Debugger, 3-8, writing, Programming Resources, 9-29 CD-124 EXITIF statement, VAXTPU, 3-21 to 3-22 with DECwindows, Debugger, 1-23 Exiting suspending with exception breakpoint, from ANALYZE/RMS_FILE, Analyze/RMS_ Debugger, 9-10, CD-125 File, ARMS-10 suspending with watchpoint, Debugger, 3-15, from CONVERT, Convert, CONV-5 from CONVERT/RECLAIM, Convert, CONV-5 10-15, CD-196 from CREATE/FDL, File Def Language, with DECwindows, Debugger, 1-24 vectorized program, Debugger, 11-2 FDL-43 from DELTA, Delta/XDelta, DELTA-2, Execution context, System Services Intro, 8-2 DELTA-45 Execution model from EDIT/FDL, File Def Language, FDL-43 vector processor, MACRO, 10-18 from SDA, System Dump Analyzer, SDA-55 Executive image from XDELTA. Delta/XDelta, DELTA-8 contents, System Dump Analyzer, SDA-60, SDA-104 EXITLOOP command, Debugger, 8-10, CD-93 listing names and addresses, Delta/XDelta, /EXIT qualifier, Debugger, CD-74; Convert, DELTA-44 CONV-10 Executive mode exit_handler_block data type, Routines Intro, changing to, System Services, SYS-75 A-5tExecutive-mode (PSL\$C EXEC) constant EXPAND command, Debugger, 7-12, CD-94 for FAB\$V CHAN MODE, RMS, 5-5 Expanded string, File Applications, 6-4, 6-5 requesting, RMS, 6-2 /EXECUTIVE qualifier, System Dump Analyzer, SDA-59, SDA-157 Expanded string area address Executive stack pointer, System Dump Analyzer, See ESA SDA-13 Expanded string area address field Exit See NAM\$L ESA field See also Exit handler Expanded string length field abnormal, RTL Parallel Processing, 4-9 See NAM\$B_ESL field forced, System Services Intro, 8-15 Expanded string size field image, Programming Resources, 9-26; System Services Intro, 8–13 See NAM\$B ESS field normal, RTL Parallel Processing, 4-9 EXPAND keyword \$EXIT, Debugger, 9-15 for /DATA qualifier, National Char Set, EXIT built-in procedure, VAXTPU, 7-133 to NCS-26 7 - 134EXPAND_NAME built-in procedure, VAXTPU, EXIT command, Debugger, 3-4, 9-15, CD-90; 7-135 to 7-137 Patch, PAT-2, PAT-65; File Applications, Expected interrupt 10–12; Analyze/RMS File, ARMS–26; See Device interrupt Delta/XDelta, DELTA-45; System Dump EXPIRATION attribute, File Def Language, Analyzer, SDA-55 FDL-16 EDIT/FDL, File Def Language, FDL-61 Expiration date field multiprocess program, Debugger, 10-8, 10-9 See also XAB\$Q_EDT field with DECwindows, Debugger, 1-20 Expiration time Exit handler, Programming Resources, 7–53, obtaining, DECthreads, cma-114, pthread-55 9-26; System Services Intro, 8-14; RTL Explanatory text, Routines Intro, 1-4, 1-11 Screen Management, 4-3

canceling, System Services, SYS-50

Extend service (cont'd) Exponential, RTL Math, MTH-65, MTH-90 XAB overrides, RMS, RMS-36 of complex number, RTL Math, MTH-31, Extend subfunction, I/O User's I, 1-11 MTH-33/EXTEND_QUANTITY qualifier, File Exponentiation Applications, 9-8 complex base to complex exponent, RTL Extensible VAX Editor General Purpose, OTS-56 See EVE editor complex base to signed integer exponent, RTL EXTENSION attribute, File Def Language, General Purpose, OTS-59 FDL-7, FDL-20 D-floating base, RTL General Purpose, EXTENSION secondary attribute, File OTS-61, OTS-63, OTS-65 Applications, 4-31 F-floating base, RTL General Purpose, OTS-81, OTS-84, OTS-86 Extension size, File Applications, A-1 calculating, File Applications, 9-8 G-floating base, RTL General Purpose, performance, File Applications, 9-8, 9-9 OTS-67, OTS-70 Extent, File Applications, 1-4, 9-8 H-floating base, RTL General Purpose, defining section, System Services Intro, 12-9 OTS-72, OTS-74 syntax, MACRO, 7-1 signed longword base, RTL General Purpose, .EXTERNAL directive, MACRO, 6-34 OTS-77 word base to word exponent, RTL General External expression, MACRO, 3-9 Purpose, OTS-76 External register base \$EXPREG, System Services, SYS-218 See MBA\$L_ERB Expression, System Dump Analyzer, SDA-11 to External symbol, MACRO, 6-101 SDA-14; MACRO, 3-9; VAXTPU, 3-8 to attribute directive (.EXTERNAL), MACRO, 3 - 126 - 34See Address expression, Language expression defining, MACRO, 6-22, 6-34 See also Numeric expression EXTRACT command, Debugger, 7-21, CD-97 %EXTRACT operator, MACRO, 4-10 absolute, MACRO, 3-9 arithmetic, VAXTPU, 3-9 /EXTRACT qualifier, Librarian, LIB-12, LIB-22 for extracting definition modules from NCS Boolean, VAXTPU, 3-11 evaluating, System Dump Analyzer, SDA-48 library, National Char Set, NCS-28 evaluation by compiler, VAXTPU, 3-9 LIBRARY command, Programming Resources, evaluation of, MACRO, 3-9 example of, MACRO, 3-10 using with /OUTPUT, Librarian, LIB-36 external, MACRO, 3-9 EXTV (Extract Field) instruction, MACRO, 9-39 global, MACRO, 3-9 EXTZV (Extract Zero Extended Field) instruction, in message source file, Message, MSG-7 MACRO, 9-39pattern, VAXTPU, 3-11 precedence in, Delta/XDelta, DELTA-9 relational, VAXTPU, 3-10 F\$SEARCH lexical function, Device Support (A), relocatable, MACRO, 3-9, 3-18 13 - 24types of, VAXTPU, 3-9 FAB\$B_ACMODES Extended attribute block See FAB\$V_CHAN_MODE option and See XAB block FAB\$V_LNM_MODE option Extended attribute block address field FAB\$B BID field, RMS, 5-3 See FAB\$L_XAB field FAB\$B_BKS field, File Applications, 3-24, 4-28, See RAB\$L_XAB field 7-19, 7-20; File Def Language, FDL-18; Extended QIO processor RMS, 5–3 See XQP considerations for calculating, RMS, 5-4 Extended terminal operation option default logic, RMS, 5-4 See ETO option limitation for RMS-11, RMS, 5-3 Extend service, RMS, RMS-35 performance considerations, RMS, 5-4 condition values, RMS, RMS-37 requirements for RMS-11 compatibility, RMS, control block input fields, RMS, RMS-36 control block output fields, RMS, RMS-36 selecting default size for indexed files, RMS, invoking, RMS, 5-11 requirements, RMS, RMS-36 variations for XABs, RMS, 5-4 use restriction, RMS, RMS-36

FAB\$L_ALQ field (cont'd) FAB\$B_BLN field, RMS, 5-4 use with Open service, RMS, 5-3 FAB\$B_BLS field, File Applications, 4–28 FAB\$L CTX field, File Def Language, FDL-18; FAB\$B_DEQ field, File Applications, 9–8 RMS, 5–6 FAB\$B DNS field, File Applications, 9–7; File FAB\$L_DEV field, RMS, 5-7 Def Language, FDL-19; RMS, 5-9, B-3 bits listed, RMS, 5-7 specifying default file specification, RMS, 5-2 FAB\$L_DNA field, File Applications, 6-4, 9-7; FAB\$B_FAC field, File Applications, 9-6; File File Def Language, FDL-19; RMS, 5-8, 5-9, Def Language, FDL-2, FDL-3; RMS, 5-9 comparing with FAB\$B_SHR field, RMS, 5-9 components listed, RMS, 5-9 for specifying sharing options, RMS, 4-1 specifying default file specification, RMS, 5-2 interdependency with FAB\$B_SHR field, RMS, FAB\$L_FNA field, File Applications, 6-4, 6-5, 9-7; File Def Language, FDL-22; RMS, 5-11 list of options, File Applications, 7-3; RMS, specifying primary file specification, RMS, 5-2 5-10FAB\$L_FOP field, File Applications, 4–27; File use with FAB\$B_SHR, RMS, 5-10 Def Language, FDL-18, FDL-19, FDL-20, FAB\$B_FNS field, File Applications, 6-5, 9-7; FDL-21, FDL-22, FDL-23, FDL-24, FDL-25; File Def Language, FDL-22; RMS, 5-12 RMS, 5-12 specifying primary file specification, RMS, 5-2 FAB\$V_CBT option, File Applications, 4-31 FAB\$B FSZ field, File Applications, 4-29; File FAB\$V_CTG option, File Applications, 4–30 Def Language, FDL-34; RMS, 5-18 FAB\$V_DFW option, File Applications, 3–14, FAB\$B_ORG field, File Applications, 4–28; File 3-15, 3-27, 7-19, 7-20, 9-9 Def Language, FDL-22; RMS, 5-23 FAB\$V_MXV option, File Applications, 4-27 FAB\$B RAT field, File Applications, 4–29; File FAB\$V_NAM option, File Applications, 6-5 Def Language, FDL-33, FDL-34; RMS, 5-23 FAB\$V_NEF option, File Applications, 8-15, FAB\$B RFM field, File Applications, 4-30; File 8 - 16Def Language, FDL-35; RMS, 5-25 FAB\$V_OFP option, File Applications, 6-9, FAB\$B_RTV field, File Applications, 9-8, 9-10; 6 - 10File Def Language, FDL-25; RMS, 5-26 FAB\$V_PPF option, File Applications, 6-20 FAB\$B_SHR field, File Applications, 9-6; File FAB\$V_RCK option, File Applications, 9–11 Def Language, FDL-37; RMS, 5-27 FAB\$V_SQO option, File Applications, 9-10 comparing option names with file access option FAB\$V_TMP option, File Applications, 4-28 names, RMS, 5-27 FAB\$V_UFO option, File Applications, 7-4, conflict with FAB\$B_FAC field, RMS, 5-27 9 - 14default logic, RMS, 5-27 FAB\$V_WCK option, File Applications, 9-11 FAB\$V_MSE option, File Applications, 7–22 list of options, File Applications, 9-14; RMS, FAB\$V_SHRGET option, File Applications, FAB\$L_MRN field, File Applications, 4-29; File FAB\$V_UPI option, File Applications, 7-7 Def Language, FDL-20; RMS, 5-21 for specifying sharing options, RMS, 4-1 FAB\$L_MRS field, File Applications, 4-29 interdependency with FAB\$B_FAC field, RMS, FAB\$L_NAM field, File Applications, 6–9, 9–7; 5-27RMS, 5-23list of options, File Applications, 7-4; RMS, FAB\$L_SDC field, RMS, 5-27 5-28FAB\$L_STS field, RMS, 5-29 option naming convention, RMS, 5-27 handling for ACL error status, RMS, 14-3 FAB\$C FIX option, RMS, 5-25 FAB\$L_STV field, File Applications, 9-14; RMS, FAB\$C_STMCR option, RMS, 5-25 5-29FAB\$C_STMLF option, RMS, 5-26 examples of using, RMS, 3-12 FAB\$C STM option, RMS, 5-25 for invoking SYS\$QIO, RMS, 5-18 FAB\$C_UDF option, RMS, 5-26 for total number of blocks allocated, RMS, FAB\$C_VAR option, RMS, 5-26 RMS-36 FAB\$C_VFC option, RMS, 5-26 with I/O channel, RMS, RMS-16 FAB\$L_ALQ field, File Applications, 4-30; File FAB\$L_XAB field, RMS, 5-29 Def Language, FDL-17; RMS, 5-3 FAB\$V_ASY option, RMS, 5-14 as output field, RMS, 5-3 FAB\$V_BIO option, RMS, 5-10 functional variations for XABs, RMS, 5-3 how used to specify I/O type, RMS, 4-24 setting at run time, RMS, 3-5 FAB\$V_BLK option, RMS, 5-23 use with Create service, RMS, 5-3

use with Extend service, RMS, 5-3

FAB\$V_BRO option use for sharing files, RMS, 5–28 FAB\$V_CBT option, RMS, 5-13 precedence over FAB\$V_CTG option, RMS, 5 - 14FAB\$V_CHAN_MODE option list of values, RMS, 5-5 setting from MACRO, RMS, 5-6 FAB\$V_CIF option, RMS, 5-15 precedence over FAB\$V_SUP option, RMS, 5 - 15FAB\$V_CR option, RMS, 5-24 restriction against use with FAB\$V_FTN and FAB\$V_PRN options, RMS, 5-23 FAB\$V_CTG option, RMS, 5-14 FAB\$V_DEL option, RMS, 5-10 for enabling Delete service, RMS, 4-20 FAB\$V_DFW option, RMS, 5-14 exception to use of global buffers, RMS, 5-19 FAB\$V_DLT option, RMS, 5-16 qualified use by Close service, RMS, RMS-4 FAB\$V_FTN option, RMS, 5-24 restriction against use with FAB\$V_CR and FAB\$V_PRN options, RMS, 5-23 FAB\$V_GET option, RMS, 5-10, 5-28 use with block I/O operations, RMS, 5-10, 5-11 FAB\$V LNM MODE option values listed. RMS, 5–20 FAB\$V_LNM_MODE subfield, RMS, 5-20 FAB\$V_MSE option, RMS, 5-28 enabling multiple RABs, RMS-7 for overriding the FAB\$V_UPI option, RMS, requirement for read-only buffer cache, RMS, 5-20, 5-28use with other options, RMS, 5-28 FAB\$V_MXV option, RMS, 5-15 FAB\$V_NAM option, RMS, 5-16 FAB\$V_NEF option, RMS, 5-17 FAB\$V NFS option, RMS, 5-18 relationship to CHAN_MODE subfield, RMS, 5-5 FAB\$V_NIL option, RMS, 5-28 effect on specifying user file open option, RMS, 5-18requirement for block I/O, RMS, 4-23 FAB\$V_OFP option, RMS, 5-16 FAB\$V_POS option, RMS, 5-17 subordinate to FAB\$V_RWO option, RMS, 5-17, 5-18 FAB\$V_PRN option, RMS, 5-24 restriction against use with FAB\$V_FTN and FAB\$V CR options, RMS, 5-23 FAB\$V PUT option, RMS, 5-11, 5-28 use with block I/O operations, RMS, 5-10

FAB\$V_RWO option, RMS, 5-17 precedence over FAB\$V_POS option, RMS, 5-17, 5-18 FAB\$V_SCF option, RMS, 5-16 qualified use by Close service, RMS, RMS-4 FAB\$V_SHRDEL option, RMS, 5-28 FAB\$V_SHRGET option requirement for read-only buffer cache, RMS, 5-20, 5-28 FAB\$V_SPL option, RMS, 5-16 qualified use by Close service, RMS, RMS-4 FAB\$V_SQO option, RMS, 5-14 prohibiting random access, RMS, RMS-48 FAB\$V SUP option, RMS, 5-16 subordinate to FAB\$V_CIF option, RMS, 5-15 FAB\$V_SYNCSTS option, RMS, 5-15 FAB\$V_TEF option, RMS, 5-14 FAB\$V_TMD option, RMS, 5-17 inhibiting automatic Create, RMS, RMS-29 FAB\$V_TMP option, RMS, 5-17 inhibiting automatic Create, RMS, RMS-29 FAB\$V_TRN option in file access field, RMS, 5-11 requirement for truncate-on-put operation, RMS, 7-17 FAB\$V_UFO option, RMS, 5-18 effect on internal structures, RMS, 5-20 relationship to CHAN MODE subfield, RMS, FAB\$V_UPD option, RMS, 5-11, 5-28 requirement for implementing update-if option, RMS. 7-17requirement for Update service, RMS, 4-22 FAB\$V_UPI option, RMS, 5-28 reqirement for setting, RMS, 5-29 requirement for block I/O, RMS, 4-23 requirement for user file open option, RMS, 5 - 18FAB\$V_WCK option, RMS, 5-15 FAB\$W BLS field, File Def Language, FDL-21; RMS. 5-5FAB\$W_DEQ field, File Applications, 4–31, 9–9; File Def Language, FDL-20; RMS, 5-4, 5-6 default logic, RMS, 5-6 overriding default, RMS, 5-7 FAB\$W_GBC field, File Applications, 7–17, 7–22, 9-9; File Def Language, FDL-20; RMS, 5-19 FAB\$W_IFI field, RMS, 5-20 FAB\$W_MRS field, File Def Language, FDL-35; RMS, 5-21as output, RMS, 5–22 program example, RMS, 4-4 summary, RMS, 5-22 use with fixed-length records, RMS, 5-21 use with variable-length records, RMS, 5-21

FAB\$V_RCK option, RMS, 5-15 FAB\$V_RWC option, RMS, 5-17

Fast mutex, DECthreads, 2-10, cma-35, FAB (file access block), Programming Resources, 1-36, 8-58; File Applications, 1-11, 4-1; pthread-76 FAST_DELETE attribute, File Def Language, RMS, 5–1 argument categories, RMS, 1-2 FDL-10 description, RMS, 1-2 /FAST_LOAD option compared with /NOFAST_LOAD option, requirements for, RMS, 5-2 summary of fields, RMS, 5-1 Convert, CONV-11 /FAST_LOAD qualifier, Convert, CONV-11 FAB (file attributes block), System Dump Fatal exception, System Dump Analyzer, SDA-16 Analyzer, SDA-76 fab data type, Routines Intro, A-5t FATALEXCPT bugcheck, System Dump Analyzer, \$FABDEF, File Applications, 5-10 SDA-16 \$FAB macro, RMS, B-2 Fatal internal error resulting from exceeding virtual address space, argument categories, RMS, B-3 \$FAB_STORE macro, RMS, B-4 *VAXTPU*, 5–1 argument categories, RMS, B-5 /FATAL qualifier in message definition, Message, MSG-23 FAB argument requirement, RMS, B-5 run-time arguments, RMS, B-5 access control violation, MACRO, E-4 FAC field arithmetic, MACRO, E-1 See FAB\$B FAC field arithmetic type code, MACRO, E-1 Facility breakpoint, MACRO, E-8 creation, Modular Procedures, 5-1 customer reserved opcode, MACRO, E-6 library, Modular Procedures, 3-2 fix floating reserved operand, RTL Library, naming, Modular Procedures, 5-1 LIB-165 naming conventions, Modular Procedures, 3-2 floating number, Modular Procedures, 3-3 divide-by-zero, MACRO, E-3 prefix, Modular Procedures, 3-2, 5-1 overflow, MACRO, E-2, E-3 .FACILITY directive, Programming Resources, underflow, MACRO, E-4 instruction execution, MACRO, E-6 in message source file, Message, MSG-18 memory management, MACRO, E-4 qualifiers, Message, MSG-18 privileged instruction, MACRO, E-6 Facility name reserved in .FACILITY directive, Message, MSG-18 addressing mode, MACRO, E-4 Facility number opcode, MACRO, E-6 in .FACILITY directive, Message, MSG-18 trace, MACRO, E-8 Facility object module, Message, MSG-4 translation not valid, MACRO, E-4 Facility-specific data type code, Routines Intro, FCB (file control block), System Dump Analyzer, 2-19SDA-76 Facility-specific descriptor class codes, Routines FDL\$CREATE routine, Programming Resources, Intro, 2-43 8–57; Utility Routines, FDL-6; File Def FACILITY_NAME keyword, VAXTPU, 7-378 Language, FDL-41 "Facility_name" string constant parameter to FDL\$GENERATE routine, Programming GET_INFO, VAXTPU, 7-206 Resources, 8–55; Utility Routines, FDL-11; FALSE logical value, File Def Language, FDL-2 File Def Language, FDL-41 FAO argument, Message, MSG-1, MSG-22, FDL\$PARSE routine, Utility Routines, FDL-14; MSG-23File Applications, 9–1; File Def Language, signaling, Programming Resources, 9-12 FDL-41; *RMS*, 4-9 FAO built-in procedure, VAXTPU, 7-138 to 7-139 FDL\$RELEASE routine, Utility Routines, FAO directives FDL-17; RMS, 4-9 with MESSAGE, VAXTPU, 7-267 FDL (File Definition Language), Programming with MESSAGE_TEXT, VAXTPU, 7-270 Resources, 1–39, 8–54; File Applications, FAO parameter 1-11, 3-13, 4-2; File Def Language, FDL-1, specifying, Programming Resources, 9-12 FDL-42 /FAO_COUNT qualifier See also FDL file in message definition, Message, MSG-22 ACCESS attribute, File Def Language, FDL-2 Message Utility, Programming Resources, 9-9 applying source, Programming Resources, 8-57 Fast-delete option, File Applications, 8–5, 9–9 attributes, File Applications, 4-2; File Def See also RAB\$V_FDL option Language, FDL-1, FDL-46

FDL (File Definition Language) (cont'd) FDL routine (cont'd) editor, Programming Resources, 8-55; File Def FDL\$GENERATE routine, File Applications, Language, FDL-42 4 - 15file type, Analyze/RMS_File, ARMS-16 FDL\$PARSE routine, File Applications, 4-15, generating source, Programming Resources, 6-3, 9-1example, File Applications, 9-20 to 9-22 library routine, File Def Language, FDL-41 FDL\$RELEASE routine, File Applications, scripts, File Applications, 4-2 4-15, 6-3, 9-1 syntax, File Applications, 4-2; File Def example, File Applications, 9-20 to 9-22 Language, FDL-39 introduction, Utility Routines, FDL-1 FDL attribute FDL specification predefined See also FDL routine using FDL\$PARSE routine, File creating, Utility Routines, FDL-6 Applications, 9-1 default attributes, Utility Routines, FDL-15 FDL Editor, File Applications, 1-14 generating, Utility Routines, FDL-11 See also Edit/FDL Utility in character string, *Utility Routines*, FDL-8 use of semicolons as delimiters, Utility as alternative to multiple XABs in example. RMS. 4-9Routines, FDL-1 FDL file, Programming Resources, 1–39, 8–55; parsing, Utility Routines, FDL-14 with CONV routines, Utility Routines, File Def Language, FDL-41, FDL-42, FDL-54 ANALYSIS_OF_AREA section, File Def CONV-15 FDT (function decision table), Device Support (A), Language, FDL-3 ANALYZE/RMS FILE, Analyze/RMS File. 1-2, 4-10ARMS-14 address, Device Support (A), 4-8, 6-4; Device comment in, File Def Language, FDL-40 Support (B), 1–30 created with ANALYZE/RMS_FILE, File Def as used by EXE\$QIO, Device Support (A), 4-8 creating, Device Support (A), 6-4 to 6-8, 11-4; Language, FDL-39 *Device Support* (B), 2–37 to 2–38 creating, Programming Resources, 8-55; File Applications, 4-2; Analyze/RMS_File, dispatching to FDT routines from, Device ARMS-10, ARMS-14; File Def Language, Support (A), 4–13 relocating addresses specified in, Device FDL-39 creating data files, File Applications, 4-17 Support (A), 11-4 creating with FDL\$GENERATE routine, File size, Device Support (B), 1-31 specifying buffered functions in, Device Applications, 4–15 designing, File Applications, 4-11 Support (A), 4–11 examining with ANALYZE/RMS FILE, File specifying legal functions in, Device Support (A), 4-11Applications, 10–1 FDT routine, Device Support (A), 1-3, 1-22 to generating from a data file, File Applications, 10 - 241-23, 2-3 to 2-4 using existing, Programming Resources, 8-55 adjusting process quotas in, Device Support with CONVERT, Convert, CONV-1 (B), 3–12 with EDIT/FDL, File Def Language, FDL-42, allocating IRPE in, Device Support (B), 1-42 FDL-47 allocating system buffer in. Device Support (A). FDL option, File Def Language, FDL-10 7-6 to 7-7 /FDL qualifier, File Applications, 10-24 calling sequence, Device Support (A), 7-2 limitation, Analyze/RMS_File, ARMS-10, completing an I/O operation in, Device Support ARMS-13, ARMS-20 (B), 3-24 to 3-25 overview, Analyze/RMS_File, ARMS-14 context, Device Support (A), 4-13, 7-1; Device using with /OUTPUT qualifier, Analyze/RMS Support (B), 4-11 File, ARMS-16 creating, Device Support (A), 7-1 to 7-5 with CONVERT, Convert, CONV-1, CONV-13 dispatched to from EXE\$QIO, Device Support FDL routine (A), 4–12 See also FDL specification ensuring an even byte count in, Device Support creating data files, File Def Language, FDL-41 (A), 14–23 examples, Utility Routines, FDL-1 to FDL-5 entry point, Device Support (B), 4-11 FDL\$CREATE routine, File Applications, 4-15, exit method, Device Support (A), 7-2 to 7-5; 4-18, 6-3 Device Support (B), 4–12

for buffered I/O, Device Support (A), 7-6 to 7-8

FDT routine (cont'd)	File (cont'd)
for direct I/O, Device Support (A), 7-6, 7-9;	See also File structure
Device Support (B), 3-31 to 3-33, 3-40 to	access in a VAXcluster, File Applications, 3-29
3–42, 3–54 to 3–55	access strategies, Programming Resources, 8-1
provided by VMS, Device Support (A), 7-8 to	adding lines to a, SUMSLP, SUM-7
7–9	aligning, File Applications, 3–13
register usage, Device Support (A), 5-3, 7-1;	analysis, Analyze/RMS_File, ARMS-10
$Device\ Support\ (B),\ 4-11$	attributes, Programming Resources, 8-1, 8-3;
returning to the system service dispatcher,	$File\ Def\ Language,\ { m FDL-1}$
Device Support (B), 3-39	characteristics argument for FAB, RMS, 1–2
setting attention ASTs in, Device Support (B),	compressing, Programming Resources, 8–26
3–6	contiguity, File Applications, 3-4, 3-24
specifying, Device Support (B), 4-11	corrupted, File Applications, 10–1;
synchronization requirements, Device Support	Analyze/RMS_File, ARMS-14
(B), 4–11	creating, File Def Language, FDL-39
unlocking process buffers in, Device Support	creating FDL, Analyze/RMS_File, ARMS-10
(B), 3–109	default name for journaling, VAXTPU, 1–12
FFC (Find First Clear) instruction, MACRO, 9–40	exceptions, Convert, CONV-3
F-floating conversion, RTL Math, 1-5	expanding, Programming Resources, 8–32
FFS (Find First Set) instruction, MACRO, 9–40	extension, File Applications, 3–23
FFx instruction	extension size, File Applications, 3–5
RTL routine to access, RTL Library, LIB-147	FDL, File Applications, 4–2, 4–17, 10–1, 10–24
FIB (file information block), I/O User's I, 1–3	File Def Language, FDL-42
See also ACP function	getting information about
access control, I/O User's I, 1–10	asynchronously, System Services, SYS-323 synchronously, System Services, SYS-365
contents, I/O User's I, 1–5 to 1–7	header, File Applications, 3–9, 3–12, 3–15,
descriptor, I/O User's I, 1-2, 1-3	10–11
directory lookup, I/O User's I , 1–8 disk quota, I/O User's I , 1–33 to 1–34	how CONVERT processes, Convert, CONV-11
extend control, I/O User's I, 1–33 to 1–34	indexed, File Applications, 10–28, 10–30
format, I/O User's I , $1-11$	initial allocation, File Applications, 3–4
IO\$_ACCESS, I/O User's I, 1–26	input source, SUMSLP, SUM-1
IO\$_ACPCONTROL, I/O User's I, 1–31 to	insertion of, Librarian, LIB-27
1–34	integrity, Analyze/RMS_File, ARMS-13
IO \CREATE , I/O User's I , 1–23	internal structure, File Applications, 10-1;
IO\$_DEACCESS, I/O User's I, 1–28	$Analyze/RMS_File, ARMS-1$
IO $_D$ ELETE, I/O User's I , 1–30	listing, SUMSLP, SUM-3, SUM-6
IO\$_MODIFY, I/O User's I , 1–29	locking in a VAXcluster, File Applications,
truncate control, I/O User's I, 1–13	3–29
Field, File Applications, 1–1; MACRO, 2–1	magnetic tape, File Applications, 1-9
comment, <i>MACRO</i> , 2–1, 2–3	mapping, Programming Resources, 8-4
label, MACRO, 2-1, 2-2	merging, Programming Resources, 8–19
must be zero (MBZ), MACRO, 7-1	modifying, Programming Resources, 8-58
operand, MACRO, 2–3	organization, Analyze/RMS_File, ARMS-1;
operator, MACRO, 2-3	Convert, CONV -1 ; RMS, $1-1$
read as zero (RAZ), MACRO, 7–2	output, SUMSLP, SUM-3
should be zero (SBZ), MACRO, 7-2	Prolog 3 indexed files, Utility Routines,
variable-length bit, MACRO, 8–6	CONV-1, CONV-18
Field length	reorganization, Convert, CONV-4
identifier in symbolic name, RMS, 2–3	sequential, Programming Resources, 8-10
FIFO ("first in, first out") scheduling,	sorting, Programming Resources, 8-15
DECthreads, 2-6	specification argument for FAB, RMS, 1–2
File, File Applications, 1–1	specifying one or many, File Applications, 5–16
See also Command procedure, Log file,	structure of, Analyze/RMS_File, ARMS_1
Initialization file, Source file	temporary, Convert, CONV-27; File Def
See also File characteristic	Language, FDL-19
See also File protection	transferring to and from remote node, Convert, CONV-3
See also File sharing	OOM A-O

File (cont'd) File name address field update, SUMSLP, SUM-1 See NAM\$L_NAME field produced by DIFFERENCES/SLP DCL File name length field command, SUMSLP, SUM-3 See NAM\$B NAME field File access File name size descriptor category summary, File Applications, 4-21 See NAM\$B_NAME descriptor controlling through access control lists, Utility File name status field Routines, ACL-1 See NAM\$L_FNB field defaults, File Applications, 7–5 options, File Applications, 4–21 File name string protection, Routines Intro, A-5t component parts, RMS, 4-9 File access block, Routines Intro, A-5t File name string address (FAB\$L_FNA) field how used to specify file name string, RMS, 4-9 See FAB File name string size (FAB\$B_FNS) field File access block address field how used to specify file name size, RMS, 4-9 See RAB\$L FAB field File-opening option File access field See also Creation-time option See FAB\$B_FAC field adding records, File Applications, 9-10 to 9-11 FILE attribute, File Def Language, FDL-2, data reliability, File Applications, 9-11 FDL-16 file access and sharing, File Applications, 9-6 FILE ATTRIBUTES structure, File Applications, to 9-7 10-12, 10-16, 10-19 file disposition, File Applications, 9–12 File characteristic, File Applications, 4–14, 4–27, file performance, File Applications, 9-7 to 9-10 file specification, File Applications, 9-7 ACP-QIO attributes, I/O User's I, 1–18 for indexed files, File Applications, 9-12 to File component descriptor 9 - 13address field, RMS, 6-3 for magnetic tape processing, File Applications, example, RMS, 6-4 9-13 to 9-14 field value logic, RMS, 6-3 for nonstandard file processing, File list of, RMS, 6-3 Applications, 9-14 size field, RMS, 6-3 record access, File Applications, 9-10 suggested use of, RMS, 6-4 File organization, File Applications, 1-2, 2-13; File control block VAXTPU, F-1 See FCB changing with CONV routines, Utility File Definition Language Routines, CONV-1 See FDL selecting, File Applications, 2–1 File Definition Language Editor File organization and record format field See FDL Editor See XAB\$B_RFO field File Definition Language routine File organization field See FDL routine See FAB\$B_ORG field File design File organization option, File Applications, 4-28 attributes, File Applications, 3-4 File owner group number field File disposition, File Applications, 9–12 See also XAB\$W_GRP field File extension in XABPRO field, RMS, 14-4 using Extend service, RMS, RMS-36 File owner member number field File header, File Applications, 1–7; Analyze/RMS_File, ARMS-1 See XAB\$W MBM field File positioning, File Applications, 4–30 File header characteristic extended address block effect on shared files, RMS, RMS-7 See XABFHC block FILE primary attribute FILE HEADER structure, File Applications, ALLOCATION secondary attribute, File 10-12, 10-16, 10-19 Applications, 3-4, 3-24, 4-30 File identification field BEST_TRY_CONTIGUOUS secondary See NAM\$W_FID field attribute. File Applications, 3-4, 4-31 File management, Programming Resources, 1-23 BUCKET SIZE secondary attribute. File File name address descriptor Applications, 3–13, 3–24, 4–28, 7–19, 7–20 See NAM\$L_NAME descriptor CONTIGUOUS secondary attribute, File Applications, 3-4, 3-24, 4-30

FILE primary attribute (cont'd) FILE primary attribute (cont'd) CONTROL_FIELD_SIZE secondary attribute, WINDOW_SIZE secondary attribute, File File Applications, 4-29 Applications, 9-8, 9-10 WRITE_CHECK secondary attribute, File CREATE_IF secondary attribute, File Applications, 4–27 Applications, 9–11 DEFAULT_NAME secondary attribute, File File processing, SUMSLP, SUM-7 Applications, 6-4, 9-7 many files, File Applications, 5-15 to 5-16 DEFERRED_WRITE secondary attribute, File nonstandard file, File Applications, 9-14 Applications, 3-14, 3-27, 7-19, 7-20, 9-9 services listed, RMS, 3-3 DIRECTORY_ENTRY secondary attribute, File single file, File Applications, 5-14 to 5-15 Applications, 4–28 File-processing option EXTENSION secondary attribute, File as service output, RMS, 5-12 Applications, 3-5, 4-31, 9-8, 9-9 categories listed, RMS, 5-12 GLOBAL BUFFER COUNT secondary naming convention, RMS, 5-12 attribute, File Applications, 3-9, 7-17, File-processing options field See FAB\$L_FOP field MAXIMIZE_VERSION secondary attribute, File protection, File Applications, 4-28; File Def File Applications, 4–27 Language, FDL-23 MAX_RECORD_NUMBER secondary attribute, File protection extended address block File Applications, 4–29 See XABPRO block MT_BLOCK_SIZE secondary attribute, File File protection field Applications, 4–28 See XAB\$W_PRO field MT_CLOSE_REWIND secondary attribute, File protection option field File Applications, 9-14 MT_CURRENT_POSITION secondary attribute, See XAB\$B PROT OPT field File Applications, 9–14 File qualifier MT_NOT_EOF secondary attribute, File OPTIONS, Linker, 1–5 Applications, 9-14 Files-11 On-Disk Structure, File Applications, MT_OPEN_REWIND secondary attribute, File Applications, 9-14 file headers, File Applications, 1-7 MT_PROTECTION secondary attribute, File home block, File Applications, 1-7 Applications, 4-28index file, File Applications, 1-7 NAME secondary attribute, File Applications, File section 6-4, 9-7defining in context of multiple volumes, RMS, NON_FILE_STRUCTURED secondary RMS-56 attribute, File Applications, 9-14 File sharing, File Applications, 3-8, 9-6 ORGANIZATION secondary attribute, File compatibility with subsequent record access, Applications, 4–28 File Applications, 7–5 to 7–6 OWNER secondary attribute, File Applications, defaults, File Applications, 7-5 features, RMS, 1-1 PRINT_ON_CLOSE secondary attribute, File interlocked interprocess, File Applications, 7-2, Applications, 9-12 7-5 to 7-6 PROTECTION secondary attribute, File multistreaming, File Applications, 7-2, 7-4 Applications, 4-28 no-access function, File Applications, 7-4 READ_CHECK secondary attribute, File options, File Applications, 7-4 Applications, 9–11 user-interlocked interprocess, File Applications, REVISION secondary attribute, File 7-2, 7-4, 7-7 Applications, 4-28 File-sharing field SEQUENTIAL_ONLY secondary attribute, File See FAB\$B SHR field Applications, 9-10 File specification, File Applications, 6-3; Convert, SUBMIT_ON_CLOSE secondary attribute, File CONV-5; File Def Language, FDL-19 Applications, 9-12 See also Default file specification SUPERSEDE secondary attribute, File applicable services and routines, File Applications, 4-27 Applications, 5-8 to 5-14 TEMPORARY secondary attribute, File component descriptors, RMS, 6-2 Applications, 4-27 components, File Applications, 5-1 to 5-2 USER_FILE_OPEN secondary attribute, File default Applications, 7-4, 9-14

File specification File structure (cont'd) default (cont'd) examining, Analyze/RMS_File, ARMS-15 See Default file specification File structured device, Device Support (B), 1-74 default requirements, RMS, 4-9 File system directory, File Applications, 6-12 to 6-20 synchronizing access to, Device Support (A), for a command procedure. Patch, PAT-48 3 - 13File system ACP, I/O User's I, 1-1 format, File Applications, 5-1 to 5-4, 6-5 to File terminator, Programming Resources, 7-54 for remote files, File Applications, 5-2 to 5-4, File tuning 5 - 8See Tuning how handled by Search service, RMS, 4-9 File type, Convert, CONV-5 input, File Applications, 6-10 ANL, File Applications, 10-5; Analyze/RMS_ maximum length, File Applications, 5-2 File, ARMS-16 output, File Applications, 6-10 DAT, Analyze/RMS_File, ARMS-10 parsing, RMS, RMS-66 default for command definition file, Command parsing components of, System Services, Def, CDU-4 SYS-236 default for input files, National Char Set, partial, File Def Language, FDL-19 NCS-21 preprocessing, File Applications, 5-8 EXC, Convert, CONV-3 primary, File Applications, 5-4, 6-1 to 6-4, FDL, Analyze/RMS_File, ARMS-16 used for linker input, Linker, 1-4 process default, File Applications, 5-4 File type address descriptor program-supplied, File Applications, 5-4, 6-1 See NAM\$L_TYPE descriptor to 6-4 File type address field related, File Applications, 5-4, 6-1 to 6-4, 6-9, See NAM\$L_TYPE field searching string for, System Services, SYS-236 File type length field using, File Applications, 5-1 See NAM\$B_TYPE field using logical name, File Applications, 6-5 to File type size descriptor 6 - 7See NAM\$B TYPE descriptor using name block, File Applications, 5–8 File version address descriptor using search lists, File Applications, 5-8 to See NAM\$L_VER descriptor 5-16, 6-7 to 6-8 using SYS\$DISK, File Applications, 6-2 File version address field using wildcard characters, File Applications, See NAM\$L_VER field 5-8 to 5-16 File version length field with CONV routines, Utility Routines, See NAM\$B_VER field CONV-12 File version limit field File specification address See XAB\$W_VERLIMIT field See FAB\$L_FNA field File version size descriptor File specification parsing, File Applications, 5–7 See NAM\$B_VER descriptor to 5-8, 6-4 to 6-12 File work area conventions used by VMS RMS, File See FWA Applications, 6-4 to 6-12 $FILE_ID$ option, File Applications, 4–31 for input file, File Applications, 6–10 FILE_MONITORING attribute, File Def for output file, File Applications, 6-10 Language, FDL-20 for related file, File Applications, 6-9 FILE_NAME option, File Applications, 4-31 logical name, File Applications, 6-5 to 6-7 /FILE_NAME qualifier, Message, MSG-10 search list, File Applications, 6-7 to 6-8 "File_name" string constant parameter to File specification size GET_INFO, VAXTPU, 7-171, 7-177 See FAB\$B_FNS field FILE_PARSE built-in procedure, VAXTPU, 7-140 File specification string address, RMS, 4-9 to 7-142File specification string size, RMS, 4-9 file_protection data type, Routines Intro, A-5t File structure, File Applications, 10–11; FILE_SEARCH built-in procedure, VAXTPU, Analyze/RMS_File, ARMS-1 7-143 to 7-145 analyzing interactively, *Analyze/RMS_File*, FILL built-in procedure, VAXTPU, 7-146 to 7-148 ARMS-1

Fill factor, File Applications, 3-26; File Def "First_range" string constant parameter to Language, FDL-5, FDL-28 GET_INFO, VAXTPU, 7–172 Fill level Fixed control, File Def Language, FDL-34, comparing primary key and alternate keys, FDL-35 FIXED format, File Def Language, FDL-35 RMS, 13-10 FILL_BUCKETS attribute, File Def Language, Fixed-length cell, File Applications, 3–12 FDL-10 Fixed-length control area size field /FILL_BUCKETS qualifier, Convert, CONV-14; See FAB\$B FSZ field File Def Language, FDL-27, FDL-28 Fixed-length control field, File Applications, 3–12 FILSYS spin lock, Device Support (A), 3-13 size option, File Applications, 4-28 Final handler, Debugger, 9-13 Fixed-length descriptor, Routines Intro, 2-23 FINALLY exception, DECthreads, 4-7, 4-12 Fixed-length header control size field Find service, File Applications, 8-1, 8-2 to 8-3; See XAB\$B HSZ field RMS, RMS-38 Fixed-length record, Convert, CONV-18, and key matches, File Applications, 8–10 CONV-26; File Def Language, FDL-35 capabilities, RMS, RMS-39 Fixed-length record format option compared with Get service, File Applications, 8 - 2See FAB\$C FIX option condition values, RMS, RMS-41 Fixed-length string, RTL String Manipulation, control block input fields, RMS, RMS-39 control block output fields, RMS, RMS-41 /FIXED_CONTROL qualifier, Convert, CONV-15 effect on next-record position, File Applications, Fix-up image section 8 - 16condition for insertion of, Linker, 6-20 high-level language equivalents, File creation of, Linker, 6-20 Applications, 8-1 in relation to code reference, Linker, 6-21 purpose of, *Linker*, 6–20, 6–21 improved performance, File Applications, 8-3 requirement for end-of-file test, File Flag Applications, 8–3 See Event flag run-time options, File Applications, 9-14 to Flag word, Routines Intro, A-10t 9 - 17FLG=CHG option, File Def Language, FDL-26 "Find_buffer" string constant parameter to FLG=DUP option, File Def Language, FDL-28 GET INFO, VAXTPU, 7-169 FLG=NUL option, File Def Language, FDL-29 FIND_CPU_DATA macro, Device Support (A), .FLOAT directive, MACRO, 6-35 E-6; Device Support (B), 2-31 Floating address, Device Support (A), 12-14 example, Device Support (B), 2-31 Floating CSR space Fine granularity, RTL Parallel Processing, 5-2 assigning to device, Device Support (A), 12-22 "first" string parameter to ADD_KEY_MAP, current base, Device Support (A), 12-22 VAXTPU, 7-17 Floating overflow fault, MACRO, 8-16 FIRST command, File Applications, 10–12; Floating-point Analyze/RMS_File, ARMS-27 accuracy, MACRO, 9-103 First data bucket start virtual block number field rounding, MACRO, 9-104 See XAB\$L_DVB field zero, MACRO, 9-102 First free byte field Floating-point constants (.D_FLOATING), MACRO, 6-20 See XAB\$W_FFB field Floating-point conversion to nearest value, RTL First in first out (FIFO) queue, RTL Parallel Math, 1-8 Processing, 4-16, 4-18 Floating-point data type, MACRO, 8-3, 9-101 First Order Linear Recurrence, RTL Math, D_floating, MACRO, 8-4 MTH-192, MTH-197, MTH-201, MTH-205 G_floating, MACRO, 8-4 See also FOLR routine H_floating, MACRO, 8-5 "First" string constant parameter to GET_INFO, Floating-point emulation code VAXTPU, 7-166, 7-167, 7-169, 7-181, 7-183, base address, System Dump Analyzer, SDA-13 7-184, 7-191, 7-218 Floating-point instructions, MACRO, 9-101 First-time flag in device driver, Device Support (A), 5-3 testing and setting, Modular Procedures, 3-14 vector, MACRO, 10-68 "First_marker" string constant parameter to Floating-point multiplication, RTL Math, 1-8 GET_INFO, VAXTPU, 7–172

Floating-point number, MACRO, 9-101 Foreign device, System Services Intro, 7-6 D_floating complex, Routines Intro, A-3t Foreign terminal D_floating standard, Routines Intro, A-6t definition, RTL Screen Management, 5-1 format, MACRO, 3-3 input support, RTL Screen Management, 5-23 .F_FLOATING, MACRO, 6-35 Foreign volume, System Services Intro, 7-4, 7-7 F_floating complex, Routines Intro, A-3t Fork block, Device Support (A), 1-5, 1-8, 3-24, F_floating standard, Routines Intro, A-6t 3-27, 4-16, 8-7, 10-1; Device Support (B), .G_FLOATING, MACRO, 6-36 2-104, 3-26, 3-30, 3-104 to 3-106 G_floating complex, Routines Intro, A-4t dequeuing, Device Support (A), 3-5 G_floating standard, Routines Intro, A-7t in CRB, Device Support (A), 12-7; Device .H_FLOATING, MACRO, 6-38 Support (B), 1-21 H_floating standard, Routines Intro, A-7t in extended UCB, Device Support (A), 11-6 in source statement, MACRO, 3-3 in UCB, Device Support (B), 1-72 to 1-73 rounding, MACRO, 6-23 Fork context, Device Support (A), 1-8, 3-22 to storage, MACRO, 6-20 3-23, 4-16 storing, MACRO, 6-35, 6-36, 6-38 Fork database, Device Support (A), 3-5 truncating, MACRO, 6-23 accessing, Device Support (B), 2-33 to 2-34 synchronizing access to, Device Support (A), Floating-point operator, MACRO, 3-14 Floating-point positive difference, RTL Math, 1-5 3-22 to 3-25 Floating-point sign function, RTL Math, 1-9 Fork dispatcher, Device Support (A), 2-6, 3-3, Floating-point storage directive 3-5, 3-8, 3-24; Device Support (B), 2-33 .D_FLOATING, MACRO, 6-20 functions, Device Support (A), 4–18 (.F_FLOATING), MACRO, 6-35 Forking, *Device Support* (A), 3–16, 3–23, E–9; (.G_FLOATING), MACRO, 6-36 Device Support (B), 2-32, 2-43, 3-26, 3-30 Floating-point underflow, RTL Library, 4-31 avoiding multiple, Device Support (A), 11-6 Floating underflow enable (FU), MACRO, 8-16 from controller initialization routine, Device Floating vector space Support (A), 11-6; Device Support (B), 4-8 assigning to device, Device Support (A), 12-22 from driver unloading routine, Device Support current base, Device Support (A), 12-22 (B), 4-10floating_point data type, Routines Intro, A-6t from interrupt service routine, Device Support /FLOAT qualifier, Debugger, CD-59, CD-82 (A), 9-5from unit initialization routine, Device Support Floppy disk (A), 11-6; Device Support (B), 4-22 See Diskette in terminal port driver, Device Support (A), Flush service, File Applications, 7-7, 8-5; RMS, 18–14, 18–20 RMS-43, RMS-44 Fork IPL, Device Support (A), 2-4, 3-2, 3-5, 3-16, condition values, RMS, RMS-44 3-22, 4-18; Device Support (B), 1-73, 2-33 to See also Completion status code control block input fields, RMS, RMS-44 Fork lock, Device Support (A), 2-4, 3-6, 3-8, 3-13, control block output fields, RMS, RMS-44 3-16, 3-22, 11-7, 14-16; Device Support (B), /FMASK qualifier, Debugger, 11-13, CD-84 1-21, 1-68 FNA argument, RMS, B-5 See also Spin lock FNM argument, RMS, B-3 acquisition IPL, Device Support (B), 3-111 FNM keyword multiple acquisition of, Device Support (B), for specifying FAB\$L_FNA and FAB\$B_FNS 2-35, 3-116 fields from VAX MACRO, RMS, 5-11 obtained by fork dispatcher, Device Support FNS argument, RMS, B-5 (A), 3-5 FOLR routine, RTL Math, MTH-192, MTH-197, obtaining, Device Support (A), 3-10; Device MTH-201, MTH-205 Support (B), 2-33 to 2-34, 3-111 to 3-112 definition of, RTL Math, 2-7 ownership, Device Support (A), 13-30 error checking, RTL Math, 2-7 rank, Device Support (A), 3-13 to 3-14 naming conventions, RTL Math, 2-7 releasing, Device Support (A), 3-10; Device Forced exit, System Services Intro, 8-15 Support (B), 2-35 to 2-36, 3-114 FOR command, Debugger, 8-9, CD-99 restoring, Device Support (B), 2-35, 3-116 Foreign command, RTL Library, 2-3 Fork lock index, Device Support (A), 3-13 to 3-14; Foreign command name Device Support (B), 1–73 use of dollar sign, RTL Library, 2-4 list, Device Support (A), E-8

Fork lock index (cont'd) Format (cont'd) placing in UCB\$B_FLCK, Device Support (A), of message source file statements, Message, 6-2, E-8; Device Support (B), 2-25 MSG-3 FORKLOCK macro, Device Support (A), 3-9, FORMAT attribute, File Def Language, FDL-35 3-10, E-4; Device Support (B), 2-33 to 2-34, FORMAT command, System Dump Analyzer, SDA-26, SDA-56, SDA-64 3 - 111example, Device Support (B), 2-34 Format heading, Routines Intro, 1-2 FORK macro, Device Support (A), 3-12, 3-24, See also System routine documentation 14-18, 14-20; Device Support (B), 2-32, 3-26 /FORMAT qualifier, National Char Set, NCS-29 See also IOFORK macro FORMAT secondary attribute, File Applications, Fork process, Device Support (A), 1-8, 3-22 to 4 - 303-25, 8-1Form feed line printer, I/O User's I, 5-4 context, Device Support (A), 4-15, 4-16, 4-17, 8-1 to 8-2 mechanical, I/O User's I, 5-4 creating, Device Support (B), 2-32, 2-43, 3-26, terminal, I/O User's I, 8-21 3 - 30FORTRAN creation by driver, Device Support (A), 2-6, See VAX FORTRAN 4-17, 10-1 to 10-2 FORTRAN carriage control, Convert, CONV-2 creation by IOC\$INITIATE, Device Support FORTRAN carriage control option (A), 4-13 to 4-15, 8-1, 10-3; Device See FAB\$V_FTN option Support (B), 3-70 to 3-71 FORTRAN carriage control option list, RMS, 5-24 reactivating, Device Support (A), 4-18 Forward indexing, RTL Math, 2-6 rules, Device Support (A), 3-24 FORWARD keyword, VAXTPU, 7-85, 7-379 suspending, Device Support (A), 4-16, 8-6 to with SEARCH, VAXTPU, 7-328 8-7; Device Support (B), 2-104, 3-104 to with SEARCH_QUIETLY, VAXTPU, 7-333 3 - 106Found range selection Fork queue, *Device Support* (A), 3-24, 4-17, 4-18, in EVE editor, VAXTPU, 4-18 E-14; Device Support (B), 1-17, 1-72, 3-26, %FP, Debugger, 4-22, D-3 FPEMUL symbol, System Dump Analyzer, FORKUNLOCK macro, Device Support (A), 3-10, SDA-13 E-4; Device Support (B), 2-35 to 2-36, 3-114, FP symbol, System Dump Analyzer, SDA-13 3 - 116Frame example, Device Support (B), 2-34 call, MACRO, 9-64 Form stack, MACRO, 9-64 getting information about Frame pointer, System Dump Analyzer, SDA-13 asynchronously, System Services, SYS-323 Free bucket list, Convert, CONV-4 synchronously, System Services, SYS-365 Free cursor movement, VAXTPU, 7-95, 7-96 Formal argument, MACRO, 4-1 Free marker, VAXTPU, 2-9 to 2-10, 7-70 Format Free page list for DEFINE SYNTAX statement, Command displaying, System Dump Analyzer, SDA-115 Def, CDU-5 /FREE qualifier, System Dump Analyzer, for DEFINE TYPE statement, Command Def, SDA-115, SDA-118 CDU-7 Free queue for DEFINE VERB statement, Command Def, See DR32 driver, FREEQ CDU-8 Free service, File Applications, 8-5; RMS, for definition path, Command Def, CDU-12 **RMS-45** for DISALLOW verb clause, Command Def, condition values, RMS, RMS-46 control block input and output fields, RMS, for IDENT statement, Command Def, CDU-14 for LINK command, Linker, 1-2 RMS-46 for MODULE statement, Command Def, FREE_CURSOR keyword with MARK, VAXTPU, 7-261 CDU-14 for SET COMMAND command, Command Def, Full callable interface **CDU-18** See VAXTPU routines Full-checking synchronization image, Device of fixed-length record, Convert, CONV-18 of hexadecimal dump, Analyze/RMS_File, Support (A), 13-28, E-17 to E-18 ARMS-25 loading, Device Support (A), E-2

of LIBRARY command, Librarian, LIB-11

Function code (cont'd) Full-duplex device driver, Device Support (A), 7–5; IO\$_REWIND, I/O User's I, 6–19 Device Support (B), 4-2 IO\$_REWINDOFF, I/O User's I, 6–21 I/O completion for, Device Support (B), 3-5 IO\$_SEARCH, I/O User's I, 3–31 Full-duplex mode, I/O User's I, 8-10 IO\$_SEEK, I/O User's I, 3-33 Full image map, Linker, 1-12 IO\$_SENSECHAR, I/O User's I, 3-31, 8-53, Full map, Linker, 5-1, LINK-8 10 - 8module information in, Linker, 5-2, 5-3 IO\$_SENSEMODE, I/O User's I, 2-7, 3-31, sections in, Linker, 5-2 5-9, 6-22, 8-53; I/O User's II, 2-19, 5-10, symbols cross-referenced in, Linker, LINK-5 Full name IO\$_SETCHAR, I/O User's I, 2–10, 5–9, 6–23, converting to opaque, System Services, 8-38; I/O User's II, 1-7, 2-9, 3-13, 5-6, SYS-178 converting to string, System Services, SYS-176 IO\$_SETCLOCK, I/O User's I, 4-10 FULL prompt, File Def Language, FDL-55 IO\$_SETMODE, I/O User's I, 2-8, 5-9, 6-23, /FULL qualifier, Debugger, CD-230, CD-246; 8-38; I/O User's II, 1-7, 2-9, 3-13, 5-6, Librarian, LIB-23; Linker, LINK-8; National Char Set, NCS-30 IO\$_SETPRFPTH, I/O User's I, 3–34 used with /LIST and /HISTORY qualifiers, IO\$_SKIPFILE, I/O User's I, 6-19 National Char Set, NCS-31 IO\$_SKIPRECORD, I/O User's I, 6–20 using with /HISTORY, Librarian, LIB-26 IO $_STARTDATA$, I/O User's I, 4–11; I/O Full-reentrancy, Modular Procedures, 3-19 User's II, 4-4, 4-7, 4-20 FUNCTAB macro, Device Support (A), 6-7; IO\$_UNLOAD, I/O User's I, 3-32, 6-22 Device Support (B), 2-37 to 2-38 IO\$_WRITECHECK, I/O User's I, 3-33 example, Device Support (B), 2-38 IO\$_WRITELBLK, I/O User's I, 3-30, 5-5, **Function** 6-18, 7-6, 8-34; I/O User's II, 1-6, 2-8, definition of, Routines Intro, 2-3; RTL Intro, 3-13, 5-5, 6-19 IO\$_WRITEOF, I/O User's I, 6-21 Function code, System Services Intro, 7-11; I/O IO\$_WRITEPBLK, I/O User's I, 3-30, 5-5, User's II, A-1 to A-6 6-18, 7-6, 8-34; I/O User's II, 1-6, 2-8, See also I/O function 3-13, 5-5, 6-19 IO\$_ACCESS, I/O User's I, 1–26 IO\$_WRITEVBLK, I/O User's I, 3–30, 5–5, IO\$_ACPCONTROL, I/O User's I, 1-30, 6-15 6-18, 7-6, 8-34; I/O User's II, 1-6, 2-8, IO\$_ADDSHAD, I/O User's I, 10-53-13, 5-5, 6-19 IO\$_AVAILABLE, I/O User's I, 3-33, 6-27, list of, I/O User's I, A-1 to A-910 - 8Function decision table IO\$_COPYSHAD, I/O User's I, 10-6 See FDT IO\$ CREATE, I/O User's I, 1-22 Function keys IO\$_CRESHAD, I/O User's I, 10-4 control code, VAXTPU, 7-241 IO\$_DEACCESS, I/O User's I, 1-28 control sequence, VAXTPU, 7-241 IO\$_DELETE, I/O User's I, 1-29 Function modifier, System Services Intro, 7–12; IO\$_DSE, I/O User's I, 6-27 I/O User's II, A-1 to A-6 IO\$_FORMAT, I/O User's I, 3–31 for DR11-W/DRV11-WA driver, I/O User's II, IO\$_INITIALIZE, I/O User's I, 4-9 IO\$_LOADMCODE, I/O User's I, 4-8; I/O for DR11-W/DRV11-WA driver, I/O User's II, User's II, 4-20 IO\$_MODIFY, I/O User's I, 1–28 for asynchronous DDCMP driver, I/O User's IO\$_PACKACK, I/O User's I, 3-32 II, 5-5IO\$_READLBLK, I/O User's I, 2-6, 3-29, for DMC11/DMR11 driver, I/O User's II, 1-6 6-17, 7-5, 8-26; I/O User's II, 1-5, 2-7, for DMP11/DMF32 driver, I/O User's II, 2-8 3-13, 5-5, 6-17 for Ethernet/802 driver, I/O User's II, 6-19 IO\$_READPBLK, I/O User's I, 2-6, 3-29, IO\$M_ACCESS, I/O User's I, 1-23, 1-26, 6-13 6-17, 7-5; I/O User's II, 1-5, 2-7, 3-13, IO\$M_ATTNAST, I/O User's II, 1-8, 2-19, 5-5, 6-173-14, 5-10, 6-36 IO\$_READPROMPT, I/O User's I, 8-26 IO\$M_BINARY, I/O User's I, 2-6 IO\$_READVBLK, I/O User's I, 2-6, 3-29, IO\$M_BRDCST, I/O User's I, 8-46, 8-55 6-17, 7-5, 8-26; I/O User's II, 1-5, 2-7, IO\$M BREAKTHRU, I/O User's I, 8-10, 8-35 3-13, 5-5, 6-17 IO\$M_CANCTRLO, I/O User's I, 8-5, 8-35 IO\$_REMSHAD, I/O User's I, 10-7

Function modifier (cont'd) Function modifier (cont'd) IO\$M_CLR_COUNTS, I/O User's II, 2-20, IO\$M_TIMED, I/O User's I, 8-27; I/O User's II, 3-11IO\$M_CREATE, I/O User's I, 1-23, 1-26, 6-13 IO\$M_TRMNOECHO, I/O User's I, 8-28 IO\$M_CTRL, I/O User's II, 2-9, 2-18 to 2-20, IO\$M_TT_ABORT, I/O User's I, 8-46 IO\$M_TYPEAHDCNT, I/O User's I, 8-54 2-25, 5-6, 5-9 to 5-11, 6-22, 6-36, 6-37 IO\$M_UNLOOP, I/O User's I, 8-45 IO\$M_CTRLCAST, I/O User's I, 8-42 IO\$M_CTRLYAST, I/O User's I, 8-5, 8-42 IO\$M_WORD, I/O User's II, 3-11 IO\$M_CVTLOW, I/O User's I, 8-27 list of, I/O User's I, A-1 to A-9IO\$M_CYCLE, I/O User's II, 3-5, 3-11 types of IO\$M_DATACHECK, I/O User's I, 3-15, 3-29, IO\$M_DATACHECK, System Services 3-30, 6-8, 6-17, 6-18 Intro, 7-12IO\$M_DATAPATH, I/O User's II, 3-15 IO\$M_INHERLOG, System Services Intro, IO\$M_DELDATA, I/O User's I, 3-30 IO\$M_DELETE, I/O User's I, 1-23, 1-30 IO\$M_INHRETRY, System Services Intro, IO\$M_DMOUNT, I/O User's I, 1-31 7 - 12IO\$M_DSABLMBX, I/O User's I, 8-27; I/O Function procedures, VAXTPU, 3-19 User's II, 1-6 Function return value, RTL Intro, 3-5; RTL IO\$M_ENABLMBX, I/O User's I, 8-35; I/O String Manipulation, 2-6 User's II, 1-6 returned in output argument, RTL String IO\$M_ERASE, I/O User's I, 3-27, 3-31, 6-18 Manipulation, 2–6 IO\$M_ESCAPE, I/O User's I, 8-7, 8-27 returned in R0/R1, RTL String Manipulation, IO\$M_EXTEND, I/O User's I, 8-27, 8-29 IO\$M_HANGUP, I/O User's I, 8-42 Function value, Routines Intro, 2-7 IO\$M_INCLUDE, I/O User's I, 8-43, 8-46 registers, Routines Intro, 2-12 IO\$M_INHEXTGAP, I/O User's I, 6-10 Function value returned IO\$M_INHRETRY, I/O User's I, 3-29, 6-9 in registers, Routines Intro, 2-7 IO\$M_MAINT, I/O User's I, 8-44, 8-45 function_code data type, Routines Intro, A-7t IO\$M_NOECHO, I/O User's I, 8-10, 8-24, FWA (file work area), System Dump Analyzer, 8 - 27SDA-77 IO\$M_NOFILTR, I/O User's I, 8-27 F_floating data type, MACRO, 8-3, 9-102 IO\$M_NOFORMAT, I/O User's I, 8-11, 8-35 .F_FLOATING directive, MACRO, 6-35 IO\$M_NORSWAIT, I/O User's I, 7-7 IO\$M_NOW, I/O User's I, 7-6, 7-7; I/O G User's II, 1-6, 2-8, 5-5, 6-19 IO\$M NOWAIT, I/O User's I, 6-19, 6-21, 6-22 G symbol, Delta/XDelta, DELTA-9; System IO\$M_OUTBAND, I/O User's I, 8-46 Dump Analyzer, SDA-14 :G command, Delta/XDelta, DELTA-33 IO\$M_PACKED, I/O User's I, 2-6 IO\$M_PURGE, I/O User's I, 8-27 Gadget. VAXTPU. 2-25 IO\$M_RD_COUNTS, I/O User's II, 2-20, 5-11 GBD (global buffer descriptor), System Dump Analyzer, SDA-77 IO\$M_RD_MEM, I/O User's II, 2-25 IO\$M_RD_MODEM, I/O User's I, 8-54; I/O GBD (global buffer descriptor) summary page, User's II, 2-24 System Dump Analyzer, SDA-77 GBH (global buffer header), System Dump IO\$M_READATTN, I/O User's I, 7-9 IO\$M_REFRESH, I/O User's I, 8-36 Analyzer, SDA-77 IO\$M_RESET, I/O User's II, 3-12 GBLPAGES system parameter, File Applications, IOM_RESPONSE$, I/O User's II, 6–21 1 - 16IO\$M_REVERSE, I/O User's I, 6-17 GBLPAGFIL system parameter, File Applications, IO\$M_SETEVF, I/O User's I, 4-11; I/O User's II, 4-20, 4-22 GBLSECTIONS system parameter, File IO\$M_SETFNCT, I/O User's II, 3-5, 3-11 Applications, 1–16 GBSB (global buffer synchronization block), IO\$M_SETPROT, I/O User's I, 7-11 System Dump Analyzer, SDA-77 IO\$M_SET_MODEM, I/O User's I, 8-44; I/O General cancelability, DECthreads, 2-19 User's II, 2-24 General mode, MACRO, 5-15 IO\$M_SHUTDOWN, I/O User's II, 1-8, 2-18, General-purpose registers 5-9, 6-36 IO\$M_STARTUP, I/O User's II, 1-8, 2-9, rules for using in driver code, Device Support

(A), 5-3

2-15, 5-6, 5-8, 6-22

Get service (cont'd) General register control block output fields, RMS, RMS-53 See also Register effect on next-record position, File Applications, General register mode, MACRO, 5-1 summary, MACRO, 8-28 high-level language equivalents, File General register symbol, Delta/XDelta, DELTA-9, Applications, 8-1 DELTA-13 requirement for end-of-file test, File /GENERATE qualifier, Debugger, CD-67 Applications, 8-3 Generic key match, File Applications, 8-11 requirement for user record area, RMS, Generic SCSI class driver, I/O User's I, 11-1 to RMS-5011 - 16returning terminator character for terminal assigning a channel to, I/O User's I, 11-10 input, RMS, RMS-49 flow of, I/O User's I, 11-4 to 11-6return status for various file access methods, I/O status block returned by, I/O User's I, RMS, RMS-7 11 - 11run-time options, File Applications, 9-14 to loading, I/O User's I, 11–9 9-17obtaining device information from, I/O User's using input from mailbox devices, RMS, I, 11-14 RMS-50programming example, I/O User's I, 11-15 to using stream input, RMS, RMS-48 11 - 16using terminal input, RMS, RMS-48 QIO system service format for, I/O User's I, using the RAB\$L_STV field for additional 11-11 to 11-14 status information, RMS, RMS-50 security considerations, I/O User's I, 11-6 Get sharing option Generic SCSI descriptor See FAB\$V GET option format of, I/O User's I, 11-12 to 11-14GET_CLIPBOARD built-in procedure, VAXTPU, Generic VAXBI device, Device Support (A), 11-2, 7 - 14916-1 to 16-30 example of use, *VAXTPU*, B-11 to B-13 See also VAXBI node GET DEFAULT built-in procedure, VAXTPU, initialized by driver, Device Support (A), 16-11 7 - 151to 16-18 GET GLOBAL SELECT built-in procedure, initialized by VMS, Device Support (A), 16-7 to VAXTPU, 7-153 16 - 11example of use, VAXTPU, B-13 to B-15 interrupt destination, Device Support (A), GET INFO built-in procedure, VAXTPU, 7-156 to 16 - 107 - 161Geometric model of performance, RTL Parallel buffer variable parameter Processing, 5-10 to 5-13 "read_routine", VAXTPU, 7–174, 7–201 GET attribute, File Def Language, FDL-3, COMMAND LINE keyword parameter FDL-37 "line", VAXTPU, 7-176, 7-177 \$GETDVI, System Services, SYS-266 \$GETJPI key_name parameter "key_modifiers", VAXTPU, 7–162 item-specific flags, System Services Intro, 9-6 marker_variable parameter \$GET macro "record number", VAXTPU, 7-186 program example, RMS, 4-16 mouse_event_keyword parameter GET option, File Def Language, FDL-3, FDL-37 "mouse_button", VAXTPU, 7-188 See also FAB\$V_GET option "window", VAXTPU, 7-188 \$GETQUI function codes, System Services, SCREEN keyword parameter SYS-326 "active_area", VAXTPU, 7–196 "decwindows", VAXTPU, 7–197 GET secondary attribute, File Applications, 7-4, 7 - 22"event", *VAXTPU*, 7–199 Get service, File Applications, 8-1, 8-2; RMS, "global_select", VAXTPU, 7–199 RMS-47, RMS-53 "grab_routine", VAXTPU, 7-199 and current record, File Applications, 8-15 "icon_name", VAXTPU, 7-199 applicable access modes, RMS, RMS-48 "input_focus", VAXTPU, 7-199 compared with Find service, File Applications, "length", VAXTPU, 7-199 8-2 "new_length", VAXTPU, 7-200 condition values, RMS, RMS-53 "new width", VAXTPU, 7-200 See also Completion status code "old_length", VAXTPU, 7-200 control block input fields, RMS, RMS-50

"old_width", VAXTPU, 7-200

GET_INFO built-in procedure GET_INFO built-in procedure SCREEN keyword parameter (cont'd) string constant parameter (cont'd) "original_length", VAXTPU, 7-200 "find_buffer", VAXTPU, 7-169 "first", VAXTPU, 7-166, 7-167, 7-169, "read_routine", VAXTPU, 7-201 "screen_limits", VAXTPU, 7-201 7-181, 7-183, 7-184, 7-191, 7-218 "time", VAXTPU, 7-202 "first_marker", VAXTPU, 7-172 "first_range", VAXTPU, 7-172 "ungrab_routine", VAXTPU, 7-202 "global_select", VAXTPU, 7–199
"grab_routine", VAXTPU, 7–199
"high_index", VAXTPU, 7–167
"icon_name", VAXTPU, 7–199 string constant parameter "active_area", VAXTPU, 7-196 "Ansi_crt", VAXTPU, 7-196 "auto_repeat", VAXTPU, 7-196 "bell", VAXTPU, 7-205 "informational", $V\!AXTPU$, 7–206 "initialization", $V\!AXTPU$, 7–177 "beyond_eob", VAXTPU, 7–185 "beyond_eol", VAXTPU, 7–185, 7–220 "initialization_file", VAXTPU, 7-177 "blink_status", $V\!AXTPU$, 7–221 "init_file", VAXTPU, 7-177 "blink_video", $V\!AXTPU$, 7–221 "input_focus", VAXTPU, 7-199 "bold_status", $V\!AXTPU$, 7–221 "is_managed", VAXTPU, 7-214 "bold_video", VAXTPU, 7-221 "is_subclass", VAXTPU, 7-214 "bottom", VAXTPU, 7-222 "journal", VAXTPU, 7-177, 7-203 "bound", VAXTPU, 7-171, 7-185, 7-221 "journaling", VAXTPU, 1-12, 5-10, 7-172 "breakpoint", VAXTPU, 7-179 "journaling_frequency", VAXTPU, 7-206 "buffer", VAXTPU, 7-185, 7-193, 7-222 "journal_file", VAXTPU, 1-12, 5-11, 7-172, "callback_parameters", VAXTPU, 7-209 7-177, 7-206 "journal_name", VAXTPU, 7–172
"key_map_list", VAXTPU, 7–172
"key_map_list", VAXTPU, 7–222
"key_modifiers", VAXTPU, 7–162 "callback_routine", VAXTPU, 7-214 "character", VAXTPU, 7–171 "children", VAXTPU, 7–210 "class", VAXTPU, 7-214 "client_message", VAXTPU, 7-197 "key_type", VAXTPU, 7-162 "client_message_routine", VAXTPU, 7–197 "column_move_vertical", VAXTPU, 7–206 "last", VAXTPU, 7-166, 7-167, 7-169, 7-181, 7-183, 7-184, 7-191, 7-218 "command", VAXTPU, 7-176 "left", *VAXTPU*, 7–222 "command file", VAXTPU, 7-176 "left_margin", VAXTPU, 7-172, 7-186 "create", VAXTPU, 7-177 "left_margin_action", VAXTPU, 7-172 "length", VAXTPU, 7-199, 7-223 "cross_window_bounds", VAXTPU, 7-197 "current", VAXTPU, 7-166, 7-167, 7-169, "line", *VAXTPU*, 7–172 "line", VAXTPU, 7-176, 7-177 7-184, 7-191, 7-218 "line_editing", $V\!AXTPU$, 7–199 "line_number", $V\!AXTPU$, 7–179, 7–206 "current_column", VAXTPU, 7-197, 7-222 "current_row", VAXTPU, 7–197, 7–222
"decwindows", VAXTPU, 7–197 "local", VAXTPU, 7-179 "dec_crt", VAXTPU, 7-197 "map_count", VAXTPU, 7-173 "dec_crt2", VAXTPU, 7-197 "maximum_parameters", VAXTPU, 7-190 "default_directory", VAXTPU, 7-206 "max_lines", VAXTPU, 7-173 "defined", VAXTPU, 7-190 "menu_position", VAXTPU, 7-210 "detached_action", VAXTPU, 7-197 "message_action_level", VAXTPU, 7-206 "detached_reason", VAXTPU, 7-198 "message_action_type", VAXTPU, 7-206 "direction", VAXTPU, 7-171 "message_flags", VAXTPU, 7-207 "display", VAXTPU, 7-177, 7-206 "middle_of_tab", VAXTPU, 7-223 "display_value", VAXTPU, 7-186, 7-222 "minimum_parameters", VAXTPU, 7-190 "edit_mode", VAXTPU, 7–198 "mode", VAXTPU, 7-173 "eightbit", VAXTPU, 7-198 "modifiable", VAXTPU, 7-173 "modified", VAXTPU, 7–173 "modify", VAXTPU, 7–177 "mouse", VAXTPU, 7–200 "enable_resize", VAXTPU, 7-206 "eob_text", VAXTPU, 7-171 "erase_unmodifiable", VAXTPU, 7-169, 7-171 "mouse_button", VAXTPU, 7-188 "name", VAXTPU, 7-164, 7-173, 7-182 "event", *VAXTPU*, 7–199 "examine", VAXTPU, 7-179 "name", VAXTPU, 7-215 "facility_name", VAXTPU, 7-206 "new_length", VAXTPU, 7-200 "file_name", VAXTPU, 7-171, 7-177 "new_width", VAXTPU, 7-200

GET_INFO built-in procedure GET_INFO built-in procedure string constant parameter (cont'd) string constant parameter (cont'd) "next", VAXTPU, 7-166, 7-168, 7-169, "scroll_bottom", VAXTPU, 7-224 7-180, 7-181, 7-183, 7-184, 7-191, "scroll_top", VAXTPU, 7-225 7-218, 7-223 "section", VAXTPU, 7-178 "section_file", VAXTPU, 7-178, 7-207 "self_insert", VAXTPU, 7-204 "next_marker", VAXTPU, 7-173 "next_range", VAXTPU, 7-173 "nomodify", VAXTPU, 7-177
"no_video", VAXTPU, 7-223 "shift_amount", VAXTPU, 7-225 "shift_key", *VAXTPU*, 7–204, 7–207 "no_video_status", VAXTPU, 7-223 "special_graphics_status", VAXTPU, 7-225 "no_write", VAXTPU, 7-174 "start_character", VAXTPU, 7-178 "offset", VAXTPU, 7-174, 7-186 "start_record", VAXTPU, 7-178 "offset_column", VAXTPU, 7-174, 7-186 "status_line", VAXTPU, 7-225 "old_length", VAXTPU, 7-200 "status_video", VAXTPU, 7-225 "old_width", VAXTPU, 7-200 "success", VAXTPU, 7–207 "original_bottom", VAXTPU, 7-223 "system", VAXTPU, 7-175 "original_length", VAXTPU, 7-223 "tab_stops", VAXTPU, 7-175 "original_length", VAXTPU, 7-200 "text", VAXTPU, 7-225 "original_top", VAXTPU, 7-223
"original_width", VAXTPU, 7-200
"output", VAXTPU, 7-177 "text", VAXTPU, 7–215
"time", VAXTPU, 7–202 "timed_message", VAXTPU, 7–207 "output_file", VAXTPU, 7-174, 7-178 "timer", *VAXTPU*, 7–207 "pad", VAXTPU, 7-223 "top", VAXTPU, 7-225 "pad_overstruck_tabs", VAXTPU, 7-207 "traceback", VAXTPU, 7-207 "type", *VAXTPU*, 7–165 "parameter", VAXTPU, 7–180 "parent", VAXTPU, 7-215 "undefined_key", VAXTPU, 7-204 "underline_status", VAXTPU, 7–225 "permanent", VAXTPU, 7-174 "pid", VAXTPU, 7-192 "underline_video", VAXTPU, 7-225 "post_key_procedure", VAXTPU, 7-204 "ungrab_routine", VAXTPU, 7-202 "previous", VAXTPU, 7-166, 7-168, 7-169, "unmodifiable_records", VAXTPU, 7-175, 7-180, 7-181, 7-183, 7-184, 7-191, 7-186, 7-193 "update", VAXTPU, 7-208
"version", VAXTPU, 7-208
"video", VAXTPU, 7-187, 7-193, 7-226
"visible", VAXTPU, 7-226
"wisible bettern", VAXTPU, 7-226 7-218, 7-223 "pre_key_procedure", VAXTPU, 7-204 "procedure", VAXTPU, 7–180 "prompt_length", VAXTPU, 7-200 "visible_bottom", VAXTPU, 7–226 "visible_length", VAXTPU, 7–202, 7–226 "prompt_row", VAXTPU, 7-201 "read_only", VAXTPU, 7-178 "read_routine", VAXTPU, 7-174, 7-201 "visible_top", VAXTPU, 7-226 "record_count", VAXTPU, 7-175 "vk100", VAXTPU, 7–202 "record_number", VAXTPU, 7-175 "vt100", *VAXTPU*, 7–202 "vt200", VAXTPU, 7-202 "record number", VAXTPU, 7-186 "record_size", VAXTPU, 7-175 "vt300". VAXTPU. 7-202 "recover", VAXTPU, 7–178 "widget_id", VAXTPU, 7-209 "recover", VAXTPU, 7-207 "widget_info", VAXTPU, 7-216 "width", VAXTPU, 7–202 "width", VAXTPU, 7–226 "resize_action", VAXTPU, 7-207 "resources", VAXTPU, 7-215 "window", VAXTPU, 7-188 "reverse_status", VAXTPU, 7–224 "reverse_video", VAXTPU, 7–224 "within_range", VAXTPU, 7-187 "right", VAXTPU, 7-224 "write", *VAXTPU*, 7–178 "right_margin", VAXTPU, 7-175, 7-186 SYSTEM keyword parameter "enable_resize", VAXTPU, 7-206 "right_margin_action", VAXTPU, 7-175 "recover", VAXTPU, 7–207 "safe_for_journaling", VAXTPU, 7-175 "screen_limits", VAXTPU, 7-201 "resize_action", VAXTPU, 7-207 "screen update", VAXTPU, 7-201 "timer", VAXTPU, 7–207 "scroll", VAXTPU, 7-201, 7-224 WIDGET keyword parameter "scroll_amount", VAXTPU, 7-224 "callback_parameters", VAXTPU, 4-11, "scroll_bar", VAXTPU, 7-224 7 - 209"scroll_bar_auto_thumb", VAXTPU, 7-224 "widget_id", VAXTPU, 7-209

GET_INFO built-in procedure (cont'd) Global lock, DECthreads, 3-3 widget variable parameter using to avoid nonreentrant software, "name", *VAXTPU*, 7–215 DECthreads, 3-3 "text", VAXTPU, 7-215 Global mutex "widget_info", VAXTPU, 7-216 locking, DECthreads, cma-75, pthread-68 widget_variable parameter unlocking, DECthreads, cma-116, pthread-104 "callback_routine", VAXTPU, 7–214 Global page-file section, File Applications, 1–16 window variable parameter Global page table, File Applications, 1–16 "left", VAXTPU, 7-222 displaying, System Dump Analyzer, SDA-111 "length", VAXTPU, 7–223 /GLOBAL qualifier, System Dump Analyzer, "right", VAXTPU, 7-224 SDA-111 "scroll_bar", VAXTPU, 7-224 /GLOBALS-/NOGLOBALS qualifier "scroll_bar_auto_thumb", VAXTPU, 7-224 with DELETE command, Patch, PAT-53 "top", VAXTPU, 7-225 with DEPOSIT command, Patch, PAT-56 "width", VAXTPU, 7-226 with EXAMINE command, Patch, PAT-63 window_variable parameter with INSERT command, Patch, PAT-68 "bottom", VAXTPU, 7-222 with REPLACE command, Patch, PAT-72 example of use, VAXTPU, B-16 to B-22 with SET MODE command, Patch, PAT-77 "key_map_list", VAXTPU, 7-222 with VERIFY command, Patch, PAT-91 Givens plane rotation Global section, Programming Resources, 5-15; applying to a vector, RTL Math, MTH-173 Routines Intro, A-12t; System Services Intro, generating the elements for, RTL Math, 12–10; RTL Parallel Processing, 3–1; File MTH-178 Applications, 1–16 Global buffer, File Applications, 1-16, 3-8, 3-27; characteristic, System Services Intro, 12-10 File Def Language, FDL-20; RMS, 5-19 controlling access through access control lists, determining number of, RMS, 5-20 Utility Routines, ACL-1 number, File Applications, 7–17 creating, System Services, SYS-117 performance, File Applications, 9-9 defining, System Services Intro, 12-7 restricted use, File Applications, 7-21 deleting, System Services, SYS-158 with deferred-write option, File Applications, for interprocess communication, System Services Intro, 8-10 with indexed file, File Applications, 7-21 linker-assigned name of, Linker, 5-6 with relative file, File Applications, 7–21 mapping, System Services Intro, 12-13; with shared file, File Applications, 7-20 to System Services, SYS-117, SYS-425 multiprocessing, Programming Resources, 4-18 with shared sequential file, File Applications, name, System Services Intro, 12-11 3 - 12paging file, System Services Intro, 12-14 Global buffer count permanent, Programming Resources, 5-19 example of run-time specification, File processing of by image activator, Linker, 4-12 Applications, 5-10 to 5-12temporary, Programming Resources, 5-19 Global buffer count field writable, Programming Resources, 4-18 See FAB\$W_GBC field Global section watchpoint, Debugger, 10-15 Global selection Global buffer descriptor determining ownership of, VAXTPU, 7-199 See GBD fetching grab routine for, VAXTPU, 7-199 Global buffer header fetching information about, VAXTPU, 7-153 See GBH fetching read request for, VAXTPU, 7-199 Global buffer synchronization block fetching read routine for, VAXTPU, 7-174, See GBSB 7 - 201GLOBAL clause fetching ungrab routine for, VAXTPU, 7-202 for PLACEMENT clause, Command Def. fetching wait time for, VAXTPU, 7-202 CDU-25, CDU-34 obtaining data from, VAXTPU, 7-300 .GLOBAL directive, MACRO, 6-37 reading information about, VAXTPU, 7-299 Global expression, MACRO, 3-9 requesting ownership of, $V\!AXTPU$, 7–380 Global label, MACRO, 2-2 sending information about to an application, use with NCS routines, National Char Set, VAXTPU, 7-546 NCS-36 specifying expiration period for, VAXTPU, 7 - 387

Global selection (cont'd) Group logical name table, System Services Intro, specifying grab routine for, VAXTPU, 7-382 specifying read routine for, VAXTPU, 7-385 Group number, File Def Language, FDL-22 specifying ungrab routine for, VAXTPU, 7-389 GROUP protection code, File Def Language, support for, VAXTPU, 4-6 to 4-8 FDL-23 GLOBALS-NOGLOBALS mode. Patch, PAT-17 GSMATCH option, Programming Resources, 5-6 /GLOBALS qualifier, Librarian, LIB-24 See also Linker Utility Global symbol, *Programming Resources*, 5–11; GSMATCH processing, Linker, 3-8 Linker, 2-8; Patch, PAT-7; MACRO, 3-6, GST (global symbol table), Librarian, LIB-2; 6 - 101Linker, 1-6, 2-7, 6-13 See also Message symbol building of in Pass 1, Linker, 6-11 See also Symbol creating, Debugger, 5-4 absolute, Linker, 1-9, 3-11 limiting symbols in, Linker, LINK-29 attribute directive (.GLOBAL), MACRO, 6-37 shareable image, Debugger, 5-13 conversion of to universal, Linker, 3-12 Guardsize attribute, *DECthreads*, 2-8, cma-19, defining, MACRO, 6-22, 6-34, 6-37 cma-31 defining by option, Linker, 1-9, 3-11 G_floating data type, MACRO, 8-4, 9-102 defining for shareable image, MACRO, 6-96 .G_FLOATING directive, MACRO, 6-36 designation of, Linker, 2-8 /G FLOAT qualifier, Debugger, CD-59, CD-82 resolving, Programming Resources, 5-11 signaling with, Programming Resources, 9-11 Н strong definition of, Linker, 2-10 strong reference to, Linker, 2-9 H operator, System Dump Analyzer, SDA-12 weak definition of, Linker, 2-10 H symbol, Delta/XDelta, DELTA-9; System weak reference to, Linker, 2-10 Dump Analyzer, SDA-14 Global symbol table Half-duplex mode, I/O User's I, 8-10, 8-21 See GST See also Duplex mode Global variable, VAXTPU, 3-4 HALT (Halt) instruction, MACRO, 9-74, 10-43 /GLOBAL_BUFFERS qualifier, File Applications, interrupt stack not valid, MACRO, E-10 synchronizing vector memory before, MACRO, GLOBAL_BUFFER_COUNT attribute, File Def 10 - 43Language, FDL-20 Handle, DECthreads, 2-4 GLOBAL_BUFFER_COUNT secondary attribute, assigning to an object, DECthreads, cma-63 File Applications, 7–17, 7–22 comparing, DECthreads, cma-65 Go button copying, DECthreads, cma-63 with DECwindows, Debugger, 1-9 obtaining for thread, DECthreads, cma-106 GO command, Debugger, 2-12, CD-100; Handler Delta/XDelta, DELTA-33 change and compatibility mode, System multiprocess program, Debugger, 10-5 Services Intro, 11-5 with DECwindows, Debugger, 1-23 condition, Debugger, 9-13 GOLD key declaring a condition handler, DECthreads, restriction on defining in EVE, VAXTPU, 7-472 B-1G operator, System Dump Analyzer, SDA-12 Hang up Grab routine function modifier, I/O User's I, 8-42 fetching event in, VAXTPU, 7-199 terminal, I/O User's I, 8-18, 8-24 global selection Hardcopy terminal output, File Def Language, fetching, VAXTPU, 7-199 FDL-55 specifying, VAXTPU, 7-382 Hard-positioning option, File Applications, 4-31 input focus, VAXTPU, 7-398 Hardware clock fetching, VAXTPU, 7-199 See Interval clock specifying, VAXTPU, 7-400 Hardware error, File Applications, 10-1 Granularity, RTL Parallel Processing, 5-1 vector, MACRO, 10-31, 10-47 in lock, System Services Intro, 13-2 Hashing passwords, System Services, SYS-399 /GRANULARITY qualifier, File Def Language, HDR1 labels FDL-42, FDL-51 accessing from XAB\$B_MTACC field, RMS, GRAPHIC_TABS keyword, VAXTPU, 7-483 14-5

Header /HEXADECIMAL qualifier, Debugger, 4-11, crash dump, System Dump Analyzer, SDA-106 CD-77, CD-79, CD-83 library, Programming Resources, 8-50 Hexadecimal text library module, Programming Resources, 8-48 converting to binary, RTL Library, LIB-76 Header files, DECthreads, B-2 Hexadecimal value of an expression, System /HEADER qualifier, Linker, LINK-10; SUMSLP, Dump Analyzer, SDA-48 SUM-18; System Dump Analyzer, SDA-118 Hibernation, System Services Intro. 8-10 Heap storage, RTL String Manipulation, 2-3 alternate method, System Services Intro, 8-12 HEIGHT parameter to SET built-in procedure, and AST, System Services Intro, 5-3 VAXTPU, 7-391 compared with suspension, System Services Help Intro, 8-11LIB\$WAIT, RTL Library, LIB-465 online, Debugger, 2-7, CD-102 for debugger messages, Debugger, 2-7, HIBER system service use of, RTL Parallel Processing, 5-5 CD-5with DECwindows, Debugger, 1-18 /HIDE qualifier, Debugger, CD-67 Hierarchical structure, Analyze/RMS_File, HELP command, Debugger, 2-7, CD-102; Patch, PAT-67; File Applications, 10-12; ARMS-1 Analyze/RMS_File, ARMS-28; System Dump Highest virtual block field Analyzer, SDA-58 See XAB\$L_HBK field Edit/FDL, File Def Language, FDL-62 High-level language recording output, System Dump Analyzer, argument evaluation, Routines Intro, 2-6 SDA-71 argument transmission, Routines Intro, 2-6 Help files call from, System Services Intro, 2-15 comment lines in, Librarian, LIB-6 mapped into argument lists, Routines Intro, creating, Librarian, LIB-4 to LIB-5 formatting, Librarian, LIB-5 High-speed terminal output, File Def Language, qualifier lines in, Librarian, LIB-6 FDL-55 restrictions in, Librarian, LIB-4 "High index" string constant parameter to Help library, Programming Resources, 1-18; GET INFO. VAXTPU, 7-167 Librarian, LIB-1, LIB-4 /HISTORY qualifier, Librarian, LIB-26 character case in, Librarian, LIB-2 used to limit listing output, National Char Set, displaying text, Programming Resources, 8-52 NCS-31 index keywords in, Librarian, LIB-4 Holder record, System Services Intro, 3-5 key names in, Librarian, LIB-4 to LIB-5 adding, System Services Intro, 3-8 HELP LIBRARY command display, Librarian, format of, System Services Intro, 3-5 LIB-8 to LIB-10 modifying, System Services Intro, 3-12 /HELP qualifier, Librarian, LIB-25 removing, System Services Intro, 3-14 Help text /HOLD qualifier, *Debugger*, 10–3, 10–6, 12–15, example of, Librarian, LIB-6 to LIB-8 12-19, 12-23, CD-158, CD-179, CD-230, retrieving, Librarian, LIB-8 to LIB-10 CD-247 HELP_TEXT built-in procedure, VAXTPU, 7-228 Home block, File Applications, 1-7 to 7-229 Host, System Services, SYS-270 %HEX, Debugger, 4-11, D-5 HRD option, File Def Language, FDL-7 Hexadecimal/decimal conversion, MACRO, B-1 HSC40 disk controller, I/O User's I, 3-3 table, MACRO, B-1 HSC50 disk controller, I/O User's I, 3-3 Hexadecimal dump, Analyze/RMS_File, HSC70 disk controller, I/O User's I, 3-3 ARMS-25 HSC disk, I/O User's I, 3-15 HEXADECIMAL mode, Patch, PAT-17 HWCLK spin lock, Device Support (A), 3-8, 3-9, /HEXADECIMAL qualifier 3-14, E-13, E-15; Device Support (B), 3-29, with DELETE command, Patch, PAT-53 with DEPOSIT command, Patch, PAT-56 Hyperbolic arc tangent, RTL Math, MTH-21, with EVALUATE command, Patch, PAT-59 MTH-84 with EXAMINE command, Patch, PAT-63 Hyperbolic cosine, RTL Math, MTH-51, MTH-88 with INSERT command, Patch, PAT-68 Hyperbolic sine, RTL Math, MTH-100, MTH-133 with REPLACE command, Patch, PAT-72 Hyperbolic tangent, RTL Math, MTH-108, with SET MODE command, Patch, PAT-76 MTH-143 with VERIFY command, Patch, PAT-91

Hyphen (-)	I/O completion
line-continuation character, Debugger, CD-4	See also I/O postprocessing
H_floating data type, MACRO, 8-5	recommended test, System Services Intro, 7–15
.H_FLOATING directive, MACRO, 6-38	status, System Services Intro, 7-17
H_floating-point storage directive (.H_FLOATING),	synchronizing, System Services Intro, 7-13
MACRO, 6–38	I/O counts, Convert, CONV-24
/H_FLOAT qualifier, Debugger, CD-59, CD-83	I/O database, Device Support (A), 1-4 to 1-7;
	Device Support (B), 1–1, 1–2
	creation, Device Support (A), 6-1, 6-3, 11-4,
	12–3 to 12–7, 12–14, 15–7; Device Support
I/O, Modular Procedures, 2–16, A–4	(B), 1-33, 2-25
See also Input/output	displaying SDA information, System Dump
asynchronous, Modular Procedures, 3-25	Analyzer, SDA-98
at AST level, Modular Procedures, 3–25 file, Modular Procedures, 2–18	examining with XDELTA, Device Support (A),
synchronous, Modular Procedures, 3–25	13–10
I/O adapter, Device Support (A), 1-6, 1-10 to	for MASSBUS configuration, Device Support (A), 15-7 to 15-8, 15-13
1–16, 1–22	for two-controller configuration, Device Support
See also MBA	(A), 4–7
See also Q22-bus	global symbols, System Dump Analyzer,
See also UNIBUS adapter	SDA-60
configuration register, Device Support (B), 1–6	initializing, Device Support (A), 11-4, 12-14
data path register, Device Support (B), 2–51	locating, Device Support (A), 12–12
displaying nexus value, Device Support (A),	referencing fields in, Device Support (A), 5-2
12–8, 12–11	reinitializing, Device Support (A), 11-4
number of address bits, Device Support (B),	I/O device
1-8, 2-3	getting information about
on VAXBI bus, Device Support (A), 16-2	asynchronously, System Services, SYS-266
type, Device Support (A), 16-9; Device Support	synchronously, System Services, SYS-285
(B), 1-7, 1-33, 2-3, 2-21	I/O driver
I/O adapter registers	card reader, I/O User's I, 2-1
See Byte count register	disk, I/O User's I, 3–1
See Data path register	DMC11/DMR11, I/O User's II, 1–1 DR11–W/DRV11–WA, I/O User's II, 3–1
See Map registers	DR32, I/O User's II, 4-1
See MBA	Ethernet/802 drivers, I/O User's II, 6-1
See Vector register	line printer, I/O User's I, 5–1
I/O address space, Device Support (A), 19-1 to	magnetic tape, I/O User's I , $6-1$
19–7	mailbox, I/O User's I, 7-1
access to during bus power failure, Device	I/O function
Support (A), 19-7	See also Function code
error in mapping, Device Support (A), 19-7	See also Function modifier
mapping to process address space, Device	ACP-QIO interface, I/O User's I , 1–2
Support (A), 19-4, 19-5 to 19-7, 19-8	analyzing, Device Support (A), 8–2
of SCU/XMI bus, Device Support (A), 16-5	arguments, I/O User's II , A-1 to A-6
of VAXBI bus, Device Support (A), 16-2	card reader, I/O User's I, 2-5
rules for referencing, Device Support (A), 19-7	code, System Services Intro, 7–11, 7–13; I/O
I/O and performance, File Applications, 3-1	User's I, A-1; I/O User's II, A-1 to A-6
I/O buffers	disk, I/O User's I, 1–2, 3–24
pseudoterminal, I/O User's I, 9–4	for DR11-W/DRV11-WA driver, I/O User's II,
I/O channel, System Services Intro, 7–12	3–9 for asymphyonous DDCMP driver I/O Hear's
See also Process I/O channel	for asynchronous DDCMP driver, I/O User's
assigning, System Services, SYS-31	II, 5–4 for DMC11/DMR11 driver, I/O User's II, 1–5
deassigning, System Services Intro, 7–18;	for DMP11/DMF32 driver, I/O User's II, 2-6
System Services, SYS-131	for DR32 driver, I/O User's II, 4–20
index, Routines Intro, A-2t	for Ethernet/802 driver, I/O User's II, 6–16
	· · · · · · · · · · · · · · · · · · ·

I/O function (cont'd) I/O preprocessing (cont'd) device-dependent, Device Support (A), 2-3 to indicating a buffered, Device Support (A), 4-11, 2-4, 4-10 to 4-13, 7-1 to 7-9 indicating as legal to a device, Device Support device-independent, Device Support (A), 2-3, (A), 4–11, 6–4 4-4 to 4-10 line printer, I/O User's I, 5-5 IPL requirements, Device Support (A), 3-4 list of, I/O User's I, A-1 to A-9 I/O request aborting, Device Support (A), 7-5, 10-6; LPA11-K device, I/O User's I, 4-8 Device Support (B), 3-10 to 3-11 magnetic tape, I/O User's I, 1-2, 6-13 as serviced by SCSI class and port drivers, mailbox, I/O User's I, 7-5 modifier, System Services Intro, 7-12; I/O Device Support (A), 17-22 to 17-24 User's II, A-1 to A-6 canceling, System Services Intro, 7-19; Device preprocessing, Device Support (A), 4-12 Support (A), 11-6 to 11-9; Device Support terminal, I/O User's I, 8-26 (B), 1-30, 1-78, 3-68 I/O function code, Device Support (A), 4-11; canceling on channel, System Services, SYS-48 completing, Device Support (B), 3-94 to 3-95 Device Support (B), 1-39 converting to device-specific function code, example, Device Support (A), 2-1 to 2-7 outstanding on channel, Device Support (B), Device Support (A), 8-4 defined by VMS, Device Support (A), 6-5 to 6-7 defining device-specific, Device Support (A), 6-8 queuing, System Services Intro, 7-13 I/O function modifier, Device Support (A), 4-11 asynchronously, System Services, SYS-483 I/O mode synchronously, System Services, SYS-488 how to switch for sequential files, RMS, 4-24 restarting after power failure, Device Support procedure for delaying decision until stream (A), 8–5 connection, RMS, 4-24 retrying, Device Support (A), 10-5 to 10-6 when mode switching allowed, RMS, 4-24 returning completion status of to process, I/O operation Device Support (A), 2-7, 4-20, 7-4, 10-2, logical, System Services Intro, 7-7 10 - 3physical, System Services Intro, 7-6 status, Device Support (B), 1-40 quotas, privileges, and protection, System synchronizing simultaneous processing of multiple, Device Support (A), 7-5 Services Intro, 7-2 summary of, System Services Intro, 7-6 validating device-dependent arguments, Device virtual, System Services Intro, 7-7 Support (A), 2-3 validating device-independent arguments, I/O postprocessing, Device Support (A), 3-5, 10-1 to 10-4; Device Support (B), 1-41 Device Support (A), 2-2 to 2-3, 4-8 to 4-9 device-dependent, Device Support (A), 2-7, with no parameters, Device Support (A), 7-9; Device Support (B), 3-62 4-19 to 4-20, 7-8, 10-2 to 10-4 device-independent, Device Support (A), 2-7, with one parameter, Device Support (A), 7-9; 4-20, 7-8; Device Support (B), 3-72 to Device Support (B), 3-37 3 - 73I/O request packet for aborted I/O request, Device Support (B), See IRP 3 - 10I/O segment, *Linker*, 1–6, 2–11 for buffered I/O, Device Support (A), 7-8, 14-25 I/O service for DMA transfer, Device Support (A), 14-16, synchronous version, System Services Intro, 14-24 to 14-26 7 - 16for full-duplex device driver, Device Support I/O space (B), 3-5of MASSBUS, Device Support (A), 15-4 for I/O request involving no device activity, of Q22-bus, Device Support (A), 14-4 Device Support (B), 3-24 to 3-25 of UNIBUS, Device Support (A), 14-4 synchronization flow, Device Support (A), 3-4 rules for referencing, Device Support (A), 5-3, I/O postprocessing queue, Device Support (A), 5-5 10-3, 11-7, E-14; Device Support (B), 1-17, writing to, Device Support (A), 5-4 1-79, 3-5, 3-95 I/O space references I/O preprocessing vector, MACRO, 10-29, 10-42, 10-43, 10-47 See also FDT routine I/O status block See also SYS\$QIO See IOSB completing, Device Support (A), 4-13, 6-4

I/O unit, File Applications, 3-6, 3-7, 3-11 IAN (index bucket area number) program example, RMS, 4-8 IAS, File Def Language, FDL-38 ICCS register displaying, System Dump Analyzer, SDA-90 Icon fetching text of, VAXTPU, 7-199 implementing in DECwindows VAXTPU, VAXTPU, 7-393, 7-395 specifying text for, $V\!AXTPU$, 7–392 ICONIFY PIXMAP parameter to SET built-in, VAXTPU, 7-395 ICON_PIXMAP parameter to SET built-in, VAXTPU, 7-393 IDB\$L_ADP, Device Support (A), 4-7 IDB\$L_CSR, Device Support (A), 4-7, 15-4, 15-5, 15–13, 16–9 IDB\$L_OWNER, Device Support (A), 3-26, 4-6, 4-7, 8-4, 8-7, 9-3, 11-2; Device Support (B), 3-86, 3-100 IDB\$V_NO_CSR, Device Support (B), 1-36 IDB\$W_UNITS, Device Support (A), 12-6, 16-9 IDB (interrupt dispatch block), System Dump Analyzer, SDA-99; Device Support (A), 1-6, 4-7 to 4-8, 14-23; Device Support (B), 1-35 to 1-37 address, Device Support (A), 4-6, 8-4, 14-30, 14 - 32creation, Device Support (A), 12-4; Device Support (B), 2-22 for generic VAXBI device, Device Support (A), 16-9 for MBA, Device Support (A), 15-4, 15-7 to 15-8, 15-13, 15-15 size, Device Support (B), 2-22 IDENT attribute, File Def Language, FDL-2, FDL-39 .IDENT directive, MACRO, 6-39 Identification directive (.IDENT), MACRO, 6-39 in message source file, Message, MSG-20 /IDENTIFICATION qualifier in message definition, Message, MSG-22 Identifier, System Services Intro, 3-2; VAXTPU, 3-4adding to rights database, System Services Intro, 3-8 attributes, System Services Intro, 3-4 defining, System Services Intro, 3-2 description, Programming Resources, 6-1 determining holders of, System Services Intro, format of, System Services Intro, 3-2, 3-3 general, System Services Intro, 3-4 global section, Routines Intro, A-12t removing from rights database, System Services Intro, 3-14

Identifier (cont'd) search string, Debugger, 6-6 sharing, RTL Parallel Processing, 5-9 system-defined. System Services Intro, 3-3 UIC format, System Services Intro, 3-3 user, Routines Intro, A-11t, A-12t Identifier ACE, System Services Intro, 3-21 identifier data type, Routines Intro, A-7t Identifier name, System Services Intro, 3-3 translating, System Services Intro, 3–7 /IDENTIFIER qualifier, Debugger, 6-6, CD-115 Identifier record, System Services Intro, 3-5 adding to rights database, System Services Intro, 3-8 format of, System Services Intro, 3-5 modifying, System Services Intro, 3-12 removing from rights database, System Services Intro, 3–14 Identifier value translating, System Services Intro, 3-7 IDENT keyword using to identify conversion function, National Char Set, NCS-14, NCS-16 Ident produced by EVE\$BUILD, VAXTPU, G-2 IDENT statement, Command Def, CDU-14, CDU-36; *VAXTPU*, 3-14 to 3-15 IDX (index descriptor), System Dump Analyzer, SDA-77 IDX_NCMPR option, File Def Language, FDL-28 IFAB (internal file access block), System Dump Analyzer, SDA-77 IF command, Debugger, 8-9, CD-103 %IFDEF lexical keyword, VAXTPU, 3-36 .IF directive, MACRO, 6-40 IFI (internal file identifier), System Dump Analyzer, SDA-76 removing, System Services Intro, 6-10 IFL (index bucket fill size) program example, RMS, 4-8 %IF lexical keyword, VAXTPU, 3-36 IFNORD macro, Device Support (B), 2-39 to 2-40 IFNOWRT macro, Device Support (B), 2-39 to IFRD macro, Device Support (B), 2-39 to 2-40 example, Device Support (B), 2-40 If state, RTL Screen Management, 3-3 composed input, Programming Resources, 7-28 IF statement, VAXTPU, 3-22 to 3-23 IFWRT macro, Device Support (B), 2-39 to 2-40 .IF_FALSE directive, MACRO, 6-43 /IF_STATE qualifier, Debugger, 8-8, CD-50; System Dump Analyzer, SDA-44 .IF_TRUE directive, MACRO, 6-43 .IF_TRUE_FALSE directive, MACRO, 6-43 .IIF directive, MACRO, 6-46 ILLQBUSCFG bugcheck, Device Support (B), 1 - 22

rights database, Routines Intro, A-12t

Image	Image map (cont d)
See also Shareable image	type of, $Linker$, 1–12, 5–1
base address of, in map, Linker, 5-8	Image name field
compression of, Utility Routines, DCX-1	setting, $Linker$, 1–8, 3–10
exit, System Services Intro, 8-13	/IMAGE qualifier, System Dump Analyzer,
exiting, Programming Resources, 9-26	SDA-159
for subprocess, System Services Intro, 8–3	Image rundown, Programming Resources, 9–26
length of, in map, Linker, 5-8	effect on logical names, System Services Intro,
loading site-specific, System Services Intro, C-1	6–5
privileged, Programming Resources, 6–2	forcing, System Services, SYS-249
privileged, securing, Debugger, 5-5	Images
rundown activity, System Services Intro, 8–13	linking to VMS, DECthreads, B-2
shareable, <i>Programming Resources</i> , 5–3	Image section, System Services Intro, 12-17
shareable, debugging, Debugger, 5–12	copy-on-reference, Linker, 4-3, 5-6
with DECwindows, Debugger, 1–28	demand-zero, Linker, 1-8, 3-7, 5-6, 6-19
types of, Linker, 6–1	fix-up, <i>Linker</i> , 6–20, 6–21
Image activation, Linker, 1-6, 2-11; File	generation of, Linker, 6-3, 6-15
Applications, 5–5	initialization of, Linker, 6–18
Image activator	length of, in map, Linker, 5-5
description, Linker, 1–6	maximum number of, Linker, 3-10
global symbols, System Dump Analyzer,	order of, in cluster, Linker, 6-17
SDA-60	placement of program sections in, Linker, 6-15
GSMATCH processing, Linker, 3–8, 4–12	promotion of to global section, Linker, 4-1
locating a shareable image, Linker, 4–12	protection of, Linker, 5-6
mapping of shareable image, Linker, 4–12	relocation of, Linker, 6–18
memory allocation, Linker, 6-7	type of, Linker, 2-11
processing of .ADDRESS, Linker, 6–20	Image section descriptor
IMAGE clause	See ISD
for DEFINE SYNTAX statement, Command	Image specification
Def, CDU-23	effect of version number delimiter on overhead,
for DEFINE VERB statement, Command Def,	File Applications, 5–5
CDU-31	Image termination, Device Support (A), 11–7;
	Device Support (B), 4-4
Image exit, System Services, SYS-217 Image file	IMAGE_MANAGEMENT.EXE
linker's writing of, Linker, 6–21	global symbols, System Dump Analyzer,
Image header, Linker, 2–3, 2–11, LINK–10	SDA-60
ID field, Linker, 1–8, 3–9	
image name field, <i>Linker</i> , 1–8, 3–10	IMGDEF.STB, System Dump Analyzer, SDA-60 Immediate conditional assembly block directive
Image I/O segment, Linker, 1-8, 3-9	(.IIF), MACRO, 6–46
Image I/O structures, System Dump Analyzer,	Immediate mode, MACRO, 5–14
SDA-77	contrasted with literal mode, MACRO, 5–15
Image-id field	Immediate mode addressing
setting, Linker, 1–8, 3–9	usage restricted in vector memory instructions,
Image initialization, Linker, 1-6, 2-11, 6-18	MACRO, 10-51, 10-53
_ , , , , ,	Immediate value, Routines Intro, 2–3
IMAGELIB.OLB	
See SYS\$LIBRARY:IMAGELIB.OLB	Implementation table VAX Ada, Routines Intro, A-13
Image map, Linker, LINK-11	VAX APL, Routines Intro, A-15
See also Linker Utility	
brief, Linker, LINK–3	VAX BASIC, Routines Intro, A–18 VAX BLISS, Routines Intro, A–22
full, Linker, LINK–8	
linker's output, Linker, 2–6	VAX C, Routines Intro, A-25
linker's writing of, Linker, 6–22	VAX COBOL, Routines Intro, A-28
linker output, Linker, 1–5	VAX FORTRAN, Routines Intro, A-31
module information in, <i>Linker</i> , 5–2, 5–3	VAX MACRO, Routines Intro, A-36
sections in, <i>Linker</i> , 1–5, 2–6, 5–2	VAX Pascal, Routines Intro, A-38
specification of, Linker, 1–12, 5–1	VAX PL/I, Routines Intro, A-42
symbol cross-referenced in, Linker, LINK-5	VAX RPG II, Routines Intro, A-48 VAX SCAN, Routines Intro, A-51
	VAA DUAIN. ROUUINES INTO, A-DI

Implementation table (cont'd) Indexed file (cont'd) VMS Usage, Routines Intro, A-1 creating, RMS, RMS-18 creating with multiple key, RMS, 4-5 INCB (Increment Byte) instruction, MACRO, default bucket size, RMS, 5-3 deferred-write option with, File Applications, INCL (Increment Long) instruction, MACRO, /INCLUDE positional qualifier, Linker, LINK-24 designing, File Applications, 3-15 to 3-28 determining keys and areas, RMS, 17-1 /INCLUDE qualifier, Linker, 2-4, 2-10 Inclusive OR operator, MACRO, 3-16 determining key size, RMS, 7-4 determining key value, RMS, RMS-48 INCONSTATE bugcheck, Device Support (B), determining maximum record size, RMS, 5-21 3-88, 3-97 INCW (Increment Word) instruction, MACRO, determining number of buffers, RMS, 7-6 duplicate keys, File Def Language, FDL-27 9 - 21establishing index, RMS, RMS-7 Indefinite repeat argument directive (.IRP), MACRO, 6-47 examining, File Applications, 10-19 Indefinite repeat character directive (.IRPC), example of processing duplicate keys, RMS, 7 - 8MACRO, 6-49 example of specifying, RMS, 3-5 Index of a vector, RTL Math, MTH-149 fast delete option, RMS, 7-15 INDEX (Compute Index) instruction, MACRO, fill factor, File Applications, 3-6 9 - 75global buffers, File Applications, 7-21 Index bucket identifying data area, RMS, 13-4 reclaiming, Convert, CONV-24 inhibiting index update, RMS, 13-12 initial extent quantity, RMS, 5-3 Index bucket area number inserting records with Put service, RMS, See IAN RMS-71 Index bucket area number field invoking Get and Find services for, RMS, 7-4 See XAB\$B_IAN field key of reference, RMS, 7-3 Index bucket fill size key type, File Applications, 2-19 See IFL Level 1 index, File Def Language, FDL-28 Index bucket fill size field loading, Convert, CONV-11 See XAB\$W IFL field making contiguous, File Applications, 10-30 Index bucket size field methods of accessing records, RMS, 7-5 See XAB\$B IBS field optimizing performance, File Applications, INDEX BUCKET structure, File Applications, 3-15 to 3-28 10 - 20options, RMS, 7-10 INDEX built-in procedure, VAXTPU, 7-230 to positioning area, RMS, 8-7 7 - 231primary key, File Applications, 2-19 Index compression Prolog 1 and Prolog 2 type, File Applications, prohibition against using, File Applications, 3-163-3, 3-16, 3-25, 4-9 Prolog 3. Convert. CONV-1 Index depth, File Applications, A-2 PROLOG selection, RMS, RMS-19 Index descriptor reclaiming buckets in, File Applications, 10-30 See IDX record access, File Applications, 8-9 to 8-13 INDEXED attribute, File Def Language, FDL-22 redesigning, File Applications, 10-28 Indexed file, File Applications, 2–18, 3–15 reformatting, Convert, CONV-1 advantages and disadvantages of using, File restriction against VFC format, RMS, 5-18 Applications, 2-24 restriction to changing primary key, RMS, allocating, File Applications, A-1 RMS-100 alternate key, File Applications, 2-19 run-time options, File Applications, 9-12 to block allocation, RMS, 8-3 9 - 13bucket size, File Applications, 3-6, 3-24, 7-20, separating index levels, RMS, 13-11 A - 1setting bucket size, RMS, 5-4 bucket size for multiple areas, RMS, RMS-15 size of data bucket, RMS, 13-4 buffering, File Applications, 7-20 specifying bucket size, RMS, 8-5 composition, RMS, RMS-18 specifying index area, RMS, 13-10 compression, File Applications, 3-16, 3-25; specifying index bucket size, RMS, 13–10 File Def Language, FDL-28 string key options, RMS, 13-8

Indexed file (cont'd) Inherit scheduling attribute, DECthreads, 2-8, structure, Analyze/RMS_File, ARMS-1 tuning, File Applications, 3–15 to 3–28 obtaining, DECthreads, pthread-7 update-if option, RMS, 7-17 usefulness, DECthreads, cma-33, pthread-15 use of areas in. RMS, 4-8 INI\$BRK, Delta/XDelta, DELTA-7, DELTA-29; use of end-of-file option, RMS, RMS-7 Device Support (A), 13-6 verifying sort order, RMS, RMS-7 Initial breakpoint in XDELTA, Delta/XDelta, with allocation options, RMS, 5-14 DELTA-7 with collating sequences, RMS, 13-3 Initialization, Modular Procedures, 3-12, A-4 with deferred-write option, RMS, RMS-12 at run time, Modular Procedures, 3-17 with Get service, RMS, RMS-48 automatic, RTL Parallel Processing, 2-1 with global buffers, File Applications, 3-27 debugging session, Debugger, 3-1, 9-7 with XABKEY, RMS, 13-1 with DECwindows, Debugger, 1-5 Indexed file compression, File Applications, 3-3 of modular procedures, Modular Procedures, Indexed file organization, File Applications, 1–2 3 - 12reorganizing, File Applications, 10-31 of storage, Modular Procedures, 3-14 /INDEXED qualifier, File Applications, 7–20 one-time, DECthreads, cma-87, pthread-88 Indexing using LIB\$INITIALIZE, Modular Procedures, backward, RTL Math, 2-6 3-17, A-4 forward, RTL Math, 2-6 Initialization code, Debugger, 9-9 Index keywords with DECwindows, Debugger, 1-5 in help libraries, Librarian, LIB-4 Initialization file Index levels, File Def Language, FDL-5 See also Command procedure, debugger comparing primary key and alternate keys, debugger, Debugger, 8-4, D-1 RMS, 13-10 with DECwindows, Debugger, 1-28 Index mode, MACRO, 5-16 default handling, $V\!AXTPU$, 4–22 operand specifier format, MACRO, 8-26 definition, VAXTPU, 1-11 /INDEX qualifier, System Dump Analyzer, during a session, VAXTPU, 4-32 SDA-73, SDA-126 effects on buffer settings, VAXTPU, 4-32 Index records, File Def Language, FDL-5 EVE editor, VAXTPU, 4-31 to 4-33 Index structure, File Applications, 3–15, 3–24 Initialization macro Level 0, File Applications, 3–17 advantages described, RMS, 3-7 Level 1, File Applications, 3-17 example, RMS, 3–5 primary, File Applications, 3-17 functions, RMS, 3–1 INDEX_AREA attribute, File Def Language, multiple bit field, RMS, 3-5 FDL-27, FDL-28 placement guidelines, RMS, 3-7 INDEX AREA secondary attribute, File using, RMS, 3-6 Applications, 3-24 /INITIALIZATION qualifier, VAXTPU, 5-9 to INDEX COMPRESSION attribute. File Def 5-10 Language, FDL-5, FDL-28 Initialization routine INDEX_FILL attribute, File Def Language, See also Controller initialization routine FDL-5, FDL-28 See also Unit initialization routine INDEX_SPACE_OCCUPIED attribute, File Def one-time, DECthreads, 2-17 Language, FDL-5 "Initialization" string constant parameter to Indirection operator GET_INFO, VAXTPU, 7-177 See Contents-of operator Initialization table, Device Support (A), 6-2; Device Support (B), 1-34, 2-25 Information retrieving about subordinate, RTL Parallel "Initialization_file" string constant parameter to GET INFO, VAXTPU, 7-177 Processing, 2-4 INFORMATIONAL keyword, VAXTPU, 7-397 INITIALIZE command, I/O User's I, 6-27 /INFORMATIONAL qualifier and window size, File Applications, 9-8 in message definition, Message, MSG-23 Initialize command table "Informational" string constant parameter to LPA11-K device, I/O User's I, 4-9 GET_INFO, VAXTPU, 7-206 /INITIALIZE qualifier, Patch, PAT-19 INFO_WINDOW identifier, VAXTPU, 7-506 with SET PATCH_AREA command, Patch, INFO_WINDOW variable, VAXTPU, 4-29 PAT-79

Initializing a condition variable, *DECthreads*, Input image file, Patch, PAT-3 cma-45, pthread-37 device driver image, Patch, PAT-3, PAT-19 Initializing a volume executable, Patch, PAT-3 from within a program, System Services Intro, shareable, Patch, PAT-3 7–24; System Services, SYS–407 Input/output example. System Services Intro, 7-24 See also I/O Initializing threads routines, DECthreads, asynchronous, Programming Resources, 7-47 cma-67 channel, Programming Resources, 7-45 Initializing variables, VAXTPU, 2-24 checking device type, Programming Resources, Initiator, Device Support (A), 17-2 7 - 50completing an operation (in AEN mode), Device complex, Programming Resources, 7-2 Support (B), 2-74 device, Programming Resources, 1-23 enabling selection of, Device Support (A), 17-28 echo, Programming Resources, 7-40 to 17-30; Device Support (B), 2-70, 2-73 to exit handler, *Programming Resources*, 7–53 file, Programming Resources, 1–23 receiving data from target (in AEN mode), lowercase, Programming Resources, 7-42 Device Support (B), 2–80 reading a single line, Programming Resources, sending bytes to target (in AEN mode), Device Support (B), 2–83 reading several lines, Programming Resources, INIT processor state, Device Support (B), 1–16 "Init_file" string constant parameter to GET_ screen updates, Programming Resources, 7-31 INFO, VAXTPU, 7-177 simple, Programming Resources, 7-1 \$INIT_VOL, System Services Intro, 7-24 status of, Programming Resources, 7-49 example, System Services Intro, 7-24 synchronous, Programming Resources, 7-46 Inner product terminator, Programming Resources, 7-4 of a vector, RTL Math, MTH-165 record, Programming Resources, 7-53 Input, debugger timeout, Programming Resources, 7-41 DBG\$DECW\$DISPLAY unsolicited input, Programming Resources, with DECwindows, Debugger, 1-32, D-1 DBG\$INPUT, Debugger, 9-5, D-1 uppercase, Programming Resources, 7-42 with DECwindows, Debugger, 1-33 using SYS\$QIO, Programming Resources, Input/output 7-45, 7-49 terminator using SYS\$QIOW, Programming Resources, end-of-file, Programming Resources, 7-54 7-45, 7-49 Input address array, System Services Intro, 12-4 writing simple character data, Programming Input data register Resources, 7-6 /INPUT qualifier, Debugger, 7-19, CD-117, See DR11-W/DRV11-WA driver, IDR CD-164, CD-256; System Dump Analyzer, Input device, Device Support (B), 1-75 SDA-162 Input file, VAXTPU, 1-9, 5-19 concatenating, Convert, CONV-5 Input queue default file type for, National Char Set, See DR32 driver, INPTQ NCS-21 Input source file, SUMSLP, SUM-1 restriction to using shareable image, Linker, INRANGE case constant, VAXTPU, 3-24 1 - 1INSERT command, Patch, PAT-68 with /ABSOLUTE qualifier, Patch, PAT-27 specifying for NCS command, National Char Set, NCS-21 with /INSTRUCTION qualifier, Patch, PAT-69 Inserted records, VAXTPU, 6-5 Input file specification, Librarian, LIB-11 Inserting date, VAXTPU, 7-138, 7-268, 7-271 default file type, Librarian, LIB-12 Input focus Inserting record determining ownership of, VAXTPU, 7-199 program example, RMS, 4-16 fetching grab routine for, VAXTPU, 7-199 Inserting time, VAXTPU, 7-138, 7-268, 7-271 fetching ungrab routine for, VAXTPU, 7-202 Insertion of files/modules, Librarian, LIB-27 requesting, VAXTPU, 7-398 See also /REPLACE qualifier specifying grab routine for, VAXTPU, 7-400 Insertion operations, RTL Screen Management, specifying ungrab routine for, VAXTPU, 7-402 support for, VAXTPU, 4-5 to 4-6 INSERT keyword, VAXTPU, 7-404

Instruction (cont'd) Insert mode selecting from DECwindows window, Debugger, COPY_TEXT, VAXTPU, 7-53 1 - 22MOVE_TEXT, VAXTPU, 7-280 set, MACRO, 9-1 /INSERT qualifier, Librarian, LIB-12, LIB-27; SET SCOPE/CURRENT command, Debugger, National Char Set, NCS-32 7-9, CD-166 INSQHI (Insert Entry into Queue at Head, string, MACRO, 9-126, 9-144 Interlocked) instruction. MACRO, 9-89 variable-length bit field, MACRO, 9-36 INSQTI (Insert Entry into Queue at Tail, vector, MACRO, 10-9, 10-18, 10-21 Interlocked) instruction, MACRO, 9-91 window (INST), DECwindows, Debugger, 1-11, INSQUE (Insert Entry in Queue) instruction, 1 - 21MACRO, 9-93 /INSTRUCTION-/NOINSTRUCTION qualifier Installation with DELETE command, Patch, PAT-53 of privileged image. Programming Resources, with DEPOSIT command, Patch, PAT-56, PAT-57 of shareable image, Linker, 4-1, 4-12 with EVALUATE command, Patch, PAT-60 requirement for sharing, Linker, 4-2 with EXAMINE command, Patch, PAT-63 /SHARE, Linker, 4–12 with INSERT command, Patch, PAT-68 Install Utility (INSTALL) with REPLACE command, Patch, PAT-72 benefits of using for shareable image, Linker, with SET MODE command, Patch, PAT-76 1-9 with VERIFY command, Patch, PAT-91 Instruction, MACRO, 1-1, 9-1 INSTRUCTION-NOINSTRUCTION mode, Patch, See also Vector instruction PAT-15 address, MACRO, 9-33 Instruction notation arithmetic, MACRO, 9-5, 9-101, 9-144 operand specifier, MACRO, 9-2 as operator, MACRO, 2-3 operation description, MACRO, 9-3 character string, MACRO, 9-126 /INSTRUCTION qualifier, Debugger, 7-9, 7-19, control, MACRO, 9-42 CD-17, CD-30, CD-60, CD-83, CD-118, decimal string, MACRO, 9-144 CD-126, CD-185, CD-258; System Dump depositing, Debugger, 4-18, 4-21 Analyzer, SDA-51 with DECwindows. Debugger, 1-24 %INST_SCOPE, Debugger, 7-16, C-5 display (INST), Debugger, 4-18, 7-7, 10-14, Insufficient virtual memory error reasons for, RTL Parallel Processing, PPL-11 for routine on call stack, *Debugger*, 7–9, INSV (Insert Field) instruction, MACRO, 9-41 CD-166 INT2 value, File Def Language, FDL-32 with DECwindows, Debugger, 1-9, 1-11, INT4 value, File Def Language, FDL-32 1-21INT8 value, File Def Language, FDL-32 display kind, Debugger, 7-16, C-1 INT built-in procedure, VAXTPU, 7-232 to 7-233 EXAMINE/INSTRUCTION command, Integer Debugger, 4-19, 7-9, C-5 data type, MACRO, 8-1 EXAMINE/OPERANDS command, Debugger, in source statement, MACRO, 3-3 4 - 19unsigned, MACRO, 8-1, 8-2 examining, Debugger, 4-18, 4-19, 7-7 Integer and floating-point routine, RTL Library, with DECwindows, Debugger, 1-21, 1-24 2 - 12floating-point, MACRO, 9-101 Integer constants, VAXTPU, 3-5 format, MACRO, 8-16 INTEGER data type, VAXTPU, 2-5 how to display instructions, *Delta/XDelta*, Integer instructions, MACRO, 9-5 DELTA-20 vector, MACRO, 10-57 integer, MACRO, 9-5 Integer overflow, RTL Library, LIB-255 interlocked, Programming Resources, 4-18 Integer overflow enable (IV), MACRO, 8-15 logical, MACRO, 9-5 Integer to floating-point conversion, RTL Math, operand, Debugger, 4-19, CD-83, CD-150 optimized code, Debugger, 7-7, 9-1 Integer type, *Debugger*, 4–14, 4–23, 4–25 with DECwindows, Debugger, 1-11, 1-21 Integration stage, Modular Procedures, 5-1 packed decimal, MACRO, 9-144 Integration testing. Modular Procedures, 4-1, 4-5 procedure call, MACRO, 9-63 Integrity of file, Analyze/RMS_File, ARMS-13 queue, Programming Resources, 4-19; MACRO, 9-82

Interactive command, Analyze/RMS_File, Interprocessor interrupt, Device Support (A), 3-4, ARMS-21 3-14; Device Support (B), 1-16 Interactive mode, Analyze/RMS_File, ARMS-1, Interrecord gap ARMS-10, ARMS-15, ARMS-21 See IRG Interactive processing of selective patches, *Patch*, Interrupt, Device Support (A), 3-3; MACRO, 10-43; DECthreads, cma-51 /INTERACTIVE qualifier, File Applications, See also Device interrupt 10-11; Analyze/RMS_File, ARMS-1, blocking, Device Support (B), 2-27, 2-65 ARMS-15 debugging session, Debugger, 3–4 limitation, Analyze/RMS_File, ARMS-10, dismissing, Device Support (A), 10-1 ARMS-13, ARMS-14, ARMS-20 execution of command, Debugger, 2-7, CD-38 using with /OUTPUT qualifier, Analyze/RMS_ with DECwindows, Debugger, 1-20 File, ARMS-16 execution of program, Debugger, 2-7, 3-3, Interface 10-5, 10-9, 10-12, CD-36, CD-38, CD-41, See Command interface, DECwindows interface CD-149 /INTERFACE qualifier, VAXTPU, 5-10 with DECwindows, Debugger, 1-20 Interlocked instructions, Programming Resources, interprocessor, Device Support (A), 3-4, 3-14; 4-18; MACRO, 10-43 Device Support (B), 1-16 using in multiprocessing environment, Device reasons for DR32, I/O User's II, 4-3 Support (A), E-13 to E-14requesting an XDELTA, Device Support (A), Interlocked queue 13-7 to 13-8 validating, System Dump Analyzer, SDA-164 requesting a software, Device Support (A), Internal buffer, File Applications, 8-3 3-10; Device Support (B), 2-67 Internal file access block Interrupt context, Device Support (A), 1-8, 9-3 See IFAB Interrupt dispatch block Internal file identifier See IDB See IFI Interrupt dispatcher, Device Support (A), 3-6, Internal file identifier field 14-24, 16-9, 16-11; Device Support (B), 1-7, See FAB\$W IFI field Internal processor register for MASSBUS, Device Support (A), 15-8 to See IPR 15-12, 15-15 to 15-16; Device Support (B), See Processor register symbol Internal record access block for Q22-bus, Device Support (A), 14-26 to See IRAB Internal stream identifier field for UNIBUS, Device Support (A), 14-26 to 14-34; Device Support (B), 1-25 See RAB\$W ISI field Interrupt enable bit, Device Support (A), 8-4 Internal structure of file, Analyze/RMS_File, ARMS-1 Interrupt expected bit Interpreters See UCB\$V INT VAX APL, Programming Resources, 1–6 Interrupt handler VAX BASIC. Programming Resources, 1-6 inserting a queue element from, DECthreads, VAX LISP, Programming Resources, 1–8 cmalib-27 Interprocess communication, Programming Interruption Resources, 3-7; System Services Intro, 8-7, of program, VAXTPU, 4-20 Interrupt priority level using event flags for, System Services Intro, See IPL /INTERRUPT qualifier, System Dump Analyzer, using global sections for, System Services Intro. SDA-157 Interrupt request for XDELTA, Delta/XDelta, using lock management services for, System DELTA-6 to DELTA-7 Services Intro, 8–10 Interrupt service routine, Device Support (A), 1-3, using logical names for, System Services Intro, 3-3, 3-15, 9-1 to 9-8, 14-24; Device Support (B), 1-73using mailboxes for, Programming Resources, address, *Device Support* (A), 6-3, 14-32, E-5; 3-7; System Services Intro, 8-10 Device Support (B), 1-25, 2-26, 4-13

Interprocess control, System Services Intro, 8-7

Interrupt service routine (cont'd) INT suffix on DECthreads routines, DECthreads, context, Device Support (A), 9-3; Device Support (B), 4-13 INVALIDATE spin lock, Device Support (A), 3-14 entry point, Device Support (A), 4-16; Device INVALIDATE TB macro. Device Support (A). Support (B), 4-13 E-15; Device Support (B), 2-41 to 2-42 example, Device Support (A), 9-6 to 9-8 INVALID macro exit method, Device Support (B), 4-14 replaced by INVALIDATE_TB macro, Device for connect to interrupt facility, Device Support Support (A), E-15 (A), 19-10, 19-16 to 19-18 INVEXCEPTN bugcheck, System Dump Analyzer, for LP11 printer, Device Support (A), 2-6 to SDA-16 Invisible record, VAXTPU, 7-448 for MASSBUS device, Device Support (A), INVOKE command, File Applications, 4-5; File 15-12, 15-17; Device Support (B), 4-13 Def Language, FDL-57, FDL-63 for solicited interrupt, Device Support (A), 9-3 Invoking to 9-4 See also Bootstrap procedures for XDELTA for terminal port driver, Device Support (A), See also Interrupt request for XDELTA 18 - 18ANALYZE/RMS_FILE, Analyze/RMS_File, for unsolicited interrupt, Device Support (A), ARMS-10 9-4 to 9-8; Device Support (B), 4-24 CONVERT, Convert, CONV-5 functions, Device Support (A), 4–16, 9–1; CONVERT/RECLAIM, Convert, CONV-5 Device Support (B), 4-14 CREATE/FDL, File Def Language, FDL-43 input, Device Support (B), 4-14 debugger, Debugger, 2-4, 2-6, 3-1, 10-1, of CONINTERR.EXE, Device Support (A), 10-12, CD-41 19-13 with DECwindows, Debugger, 1-2, 1-4, of UNIBUS adapter, Device Support (A), 14-29 1 - 31preemption of device timeout handling, Device DELTA, Delta/XDelta, DELTA-1 Support (A), 10-5 EDIT/FDL, File Def Language, FDL-43 register usage, Device Support (A), 8-7; Device VAXTPU, VAXTPU, 1-9, 5-1 Support (B), 4-14 from a batch job, VAXTPU, 5-5 specifying more than one, Device Support (B), from DCL command procedure, VAXTPU, 5-2synchronization requirements, Device Support interactively, VAXTPU, 5-1 (A), 3-6, 3-22, 9-3, E-11; Device Support restriction, VAXTPU, 5-1 (B), 4-13XDELTA, Delta/XDelta, DELTA-2 Interrupt stack, Device Support (A), 8-1 IO\$M_NOW modifier address, Device Support (B), 1-16 for Get and Put services, RMS, 7-14 displaying contents, System Dump Analyzer, IO\$V_INHERLOG, Device Support (B), 3-8 SDA-157 IO\$_AVAILABLE function, Device Support (A), Interrupt transfer routine, Device Support (A), 14 - 31IO\$_CONINTREAD function, Device Support (A), Interrupt transfer vector 19-9, 19-10 See VEC IO\$_CONINTWRITE function, Device Support Interrupt vector, Device Support (A), 12–11 (A), 19–9, 19–10 See also Device interrupt vector IO\$_PACKACK function, Device Support (A), 7-9 number, Device Support (A), 12-6 IO\$_SENSECHAR function Intersystem communication, Programming servicing, Device Support (B), 3-49 Resources, 3-26 IO\$ SENSEMODE function Interval clock, Device Support (A), 3-6, 3-8, 3-14 servicing, Device Support (B), 3-49 interrupt service routine, Device Support (A), IO\$_SETCHAR function, Device Support (A), 11-9 3-8, 3-9servicing, Device Support (B), 3-50 to 3-51 role in device timeouts, Device Support (A), 1-4 IO\$_SETMODE function, Device Support (A), /INTO qualifier, Debugger, CD-126, CD-185, 18 - 15CD-196, CD-258 servicing, Device Support (B), 3-50 to 3-51 Intraprocess communication, Programming IO\$_TTY_PORT function, Device Support (A), Resources, 3-1common blocks, Programming Resources, 3-6 IO\$_UNLOAD function, Device Support (A), 7-9

global symbols, Programming Resources, 3–6

```
$IO650DEF macro, Device Support (A), 19-1
$IO730DEF macro, Device Support (A), 19-1
$IO750DEF macro, Device Support (A), 19-1
$IO780DEF macro, Device Support (A), 19-1
$IO790DEF macro, Device Support (A), 19-1
$IO8NNDEF macro, Device Support (A), 16-17,
    19 - 1
$IO8PSDEF macro, Device Support (A), 16-17
$IO8SSDEF macro, Device Support (A), 16-16,
$IO9AQDEF macro, Device Support (A), 16-17
$IO9CCDEF macro, Device Support (A), 16-17,
IOC$ALLOSPT
  replaced by LDR$ALLOC_PT, Device Support
      (A), E-7
IOC$ALOALTMAP, Device Support (B), 1-10,
    3-63 to 3-64, 3-93
IOC$ALOALTMAPN, Device Support (A), 14-20;
    Device Support (B), 3-63 to 3-64
IOC$ALOALTMAPSP, Device Support (B), 3-63
    to 3-64
IOC$ALOUBAMAP, Device Support (B), 3-65 to
    3-66, 3-90, 3-99
IOC$ALOUBAMAPN, Device Support (A), 14–20;
    Device Support (B), 3-65 to 3-66
IOC$APPLYECC, Device Support (B), 1-83, 3-67
IOC$CANCELIO, Device Support (A), 11-8 to
    11-9; Device Support (B), 1-77, 3-68, 4-4
IOC$DIAGBUFILL, Device Support (B), 1-30,
    1-42, 3-69
IOC$GL_CRBTMOUT, Device Support (B), 1-22
IOC$GL_DEVLIST, Device Support (A), 11-5;
    Device Support (B), 1-27
IOC$GL_DPTLIST, Device Support (A), 12-3,
    12-8
IOC$GL_IRPFL
  replaced in VMS Version 5.0, Device Support
```

replaced in VMS Version 5.0, Device Support

replaced by IOC\$GQ_POSTIQ, Device Support

replaced in VMS Version 5.0, Device Support

IOC\$GL_MUTEX, Device Support (A), 11-12;

(A), E-14

(A), E-14

(A), E-14

(A), E-14

Device Support (B), 4-6

IOC\$GL_LRPFL

IOC\$GL_PSFL

IOC\$GL_SRPFL

IOC\$MOVFRUSER2, Device Support (B), 3-79 IOC\$MOVTOUSER, Device Support (A), 16-22; Device Support (B), 2-21, 3-80 to 3-81 IOC\$MOVTOUSER2, Device Support (B), 3-80 to IOC\$PURGDATAP, Device Support (A), 14-24 to 14-25; Device Support (B), 1-26, 2-51, 3-82 to 3-83 IOC\$RELALTMAP, Device Support (A), 14-26; Device Support (B), 1-10, 1-73, 2-53, 3-84 to IOC\$RELCHAN, Device Support (A), 10-2; Device Support (B), 1-21, 1-36, 1-73, 2-54, 3-86, 3-95 called by IOC\$WFIRLCH, Device Support (B), 3 - 106IOC\$RELDATAP, Device Support (A), 14-25; Device Support (B), 1-7, 1-9, 1-73, 2-55, 3-87 IOC\$RELMAPREG, Device Support (A), 14-26; Device Support (B), 1-8, 1-9, 1-25, 1-26, 1-73, 2-56, 3-89 to 3-90 IOC\$RELSCHAN, Device Support (B), 1-21, 1-22, 1-36, 2-57, 3-91 IOC\$REQALTMAP, Device Support (A), 14–19; Device Support (B), 1-10, 1-73, 2-58, 3-92 to IOC\$REQCOM, Device Support (A), 3-5, 3-23, 8-1, 10-3 to 10-4; Device Support (B), 1-30, 1-38, 1-41, 1-76, 1-77, 1-79, 1-81, 2-59, 3-13, 3-94 to 3-95, 4-17 error logging activities, Device Support (A), IOC\$REQDATAP, Device Support (A), 14-17; Device Support (B), 1-7, 1-9, 1-26, 1-73, 2-60, 3-96 to 3-97 Device Support (B), 3-96 to 3-97

IOC\$INITIATE, Device Support (A), 3-23, 4-13

1-40, 1-41, 1-77, 1-79, 3-28, 3-38, 3-69,

Support (B), 1-41, 1-42, 1-43, 3-72 to 3-73

unlocking process buffers, Device Support (B),

IOC\$LOADALTMAP, Device Support (A), 14–22; Device Support (B), 2-44, 3-74 to 3-75

IOC\$LOADMBAMAP, Device Support (A), 15-3 to

to 14-22; Device Support (B), 1-26, 2-46,

14-22; Device Support (B), 3-77 to 3-78

IOC\$MOVFRUSER, Device Support (A), 16-22;

15-4; Device Support (B), 2-45, 3-76 IOC\$LOADUBAMAP, Device Support (A), 14-21

IOC\$LOADUBAMAPA, Device Support (A),

IOC\$MNTVER. Device Support (B), 1-30

Device Support (B), 2-21, 3-79

IOC\$IOPOST, Device Support (A), 3-5; Device

3-70 to 3-71, 3-95, 4-17

3 - 109

3-77 to 3-78

to 4-15, 8-1, 10-3; Device Support (B), 1-30,

```
IOC$REQMAPREG, Device Support (A), 14–19
                                                     $IOUV1DEF macro, Device Support (A), 19-1
    to 14-20; Device Support (B), 1-8, 1-9, 1-25,
                                                     $IOUV2DEF macro, Device Support (A), 19-1
    1-26, 1-73, 2-61, 3-98 to 3-99
                                                     IO_ROUTINES.EXE
IOC$REQPCHANH, Device Support (B), 1-21,
                                                        global symbols, System Dump Analyzer,
    1-36, 1-73, 2-62, 3-100 to 3-101
                                                            SDA-60
IOC$REQPCHANL. Device Support (A), 8-2 to
                                                     io_status_block data type, Routines Intro, A-7t
    8-4; Device Support (B), 1-21, 1-36, 1-73,
                                                     IPL$_ASTDEL, Device Support (A), 3-2, 3-4,
    2-62, 3-100 to 3-101
                                                          3-19, 4-9; Device Support (B), 3-10, 3-12,
IOC$REQSCHANH, Device Support (B), 1-21,
                                                          3-31, 3-34, 3-37, 3-38, 3-40, 3-43, 3-49,
    1-22, 1-36, 2-63, 3-100 to 3-101
                                                          3-50, 3-56, 3-62, 3-73, 3-103, 3-114, 3-116,
IOC$REQSCHANL, Device Support (B), 1-21,
                                                          3-117, 4-6, 4-11
    1-22, 1-36, 1-73, 2-63, 3-100 to 3-101
                                                        PGFIPLHI bugcheck, System Dump Analyzer,
IOC$RETURN, Device Support (A), 11-8; Device
                                                            SDA-19
    Support (B), 2-13, 3-102
                                                     IPL$_EMB, Device Support (B), 3-8
IOC$SEARCHDEV, Device Support (B), 1-74
                                                     IPL$_FILSYS, Device Support (A), 3-13
IOC$VERIFYCHAN, Device Support (B), 3-103
                                                     IPL$_IOLOCK8, Device Support (A), 3-13
IOC$WFIKPCH, Device Support (A), 4-16, 8-7;
                                                     IPL$_IOPOST, Device Support (A), 2-7, 3-2, 3-5,
    Device Support (B), 1-73, 1-77, 1-79, 3-104 to
                                                          4-20, 10-3, 11-7; Device Support (B), 3-5,
                                                          3-10, 3-25, 3-73, 3-95
IOC$WFIRLCH, Device Support (A), 4-16;
                                                     IPL$ JIB, Device Support (A), 3-13
    Device Support (B), 1-77, 1-79, 3-104 to
                                                     IPL$_MAILBOX, Device Support (A), 3-2, 3-8,
    3-106
                                                          3-14, 9-7, 10-7; Device Support (B), 3-52,
$IODEF macro, Device Support (A), 6-5
IOFORK macro, Device Support (A), 3-12, 3-24,
                                                     IPL$_MMG, Device Support (A), 3-13
    4-17, 9-4, 10-1, 14-24; Device Support (B),
                                                     IPL$ POOL, Device Support (A), 3-2; Device
    2-43, 3-30
                                                          Support (B), 3-14, 3-15
IOLOCK10 fork lock, Device Support (A), 3-14
                                                     IPL$_POWER, Device Support (A), 3-7, 8-5 to
IOLOCK11 fork lock, Device Support (A), 3-14
                                                          8-6, 11-4, 12-4; Device Support (B), 4-8,
IOLOCK8 fork lock, Device Support (A), 3-8, 3-13
IOLOCK9 fork lock, Device Support (A), 3-14
                                                     IPL$_QUEUEAST, Device Support (A), 3-2, 3-7,
IOSB (I/O status block), Routines Intro, A-7t;
                                                          3-13, 19-15, 19-18; Device Support (B), 3-2,
    Device Support (A), 7-4, 10-2, 10-3; Device
    Support (B), 1-39, 1-41, 3-5, 3-10, 3-73, 3-95
                                                     IPL$_RESCHED, Device Support (A), 3-2, 3-5,
   ACP-QIO interface, I/O User's I, 1-35
                                                          3-7; Device Support (B), 2-31, 3-111, 3-113
   asynchronous DDCMP driver, I/O User's II,
                                                     IPL$_SCHED, Device Support (A), 3-13
                                                     IPL$_SYNCH, Device Support (A), 3-2, 3-7, 3-8
      5 - 14
                                                     IPL$_TIMER, Device Support (A), 3-13; Device
  card reader, I/O User's I, 2-11
   disk, I/O User's I, 3-36
                                                         Support (B), 3-29, 3-48
  DMC11/DMR11 driver, I/O User's II, 1-9
                                                     IPL$_TIMERFORK, Device Support (A), 3-2, 3-8,
  DMP11/DMF32 driver, I/O User's II, 2-25
                                                          10-4, 10-5
  DR11-WDRV11-WA driver, I/O User's II, 3-15
                                                     IPL (interrupt priority level), Device Support (A),
  DR32 driver, I/O User's II, 4-34
                                                          1-7, 3-1 to 3-12
  Ethernet/802 drivers, I/O User's II, 6-39
                                                        See also Device IPL
  in synchronization, System Services Intro, 7-13
                                                        See also Fork IPL
  LAT port driver, I/O User's I, 8-56
                                                        hardware, Device Support (A), 3-1
  line printer, I/O User's I, 5-10
                                                        lowering, Device Support (A), 3-9 to 3-12,
  LPA11-K device, I/O User's I, 4-33
                                                            3-23, 8-7; Device Support (B), 2-97, 3-26,
  magnetic tape, I/O User's I, 6-28
  mailbox, I/O User's I, 7-12
                                                        modifying, Device Support (B), 2-17 to 2-18,
  return condition value field, System Services
                                                            2-19 to 2-20, 2-27, 2-28, 2-33 to 2-34,
      Intro, 7-17
                                                            2-35 to 2-36, 2-47 to 2-48, 2-65, 2-96
  returned by generic SCSI class driver, I/O
                                                        raising, Device Support (A), 3–9 to 3–12, 3–15;
      User's I, 11-11
                                                            Device Support (B), 2-49, 2-65
  terminal, I/O User's I, 8-56
                                                        relation to spin lock, Device Support (A), 3-15
  validating access to, Device Support (A), 4-9
                                                        saving, Device Support (A), 3-10: Device
IOTA (Generate Compressed Iota Vector)
                                                            Support (B), 2-17, 2-33, 2-47, 2-64
    instruction, MACRO, 10-86
                                                        software, Device Support (A), 3-2
```

IPR (internal processor register) vector, MACRO, 10-3, 10-9 IRAB (internal record access block), System Dump Analyzer, SDA-77 IRG (interrecord gap), File Applications, 1-8 IRP\$B_CARCON, Device Support (B), 1-41, 3-32, 3-41, 3-55IRP\$B_PRI, Device Support (B), 3-27 IRP\$L_BCNT, Device Support (A), 8-2; Device Support (B), 3-32, 3-35, 3-41, 3-43, 3-46, 3-55, 3-56, 3-59, 3-70, 3-71, 3-72 writing, Device Support (A), 7-6 IRP\$L_DIAGBUF, Device Support (B), 3-69, 3-70, 3-71IRP\$L_IOST2, Device Support (B), 3-32, 3-41, IRP\$L_KEYDESC, Device Support (B), 3-72 IRP\$L_MEDIA, Device Support (A), 7-4, 10-3, 11-7; Device Support (B), 1-41, 3-37, 3-51, 3 - 62IRP\$L_PID, Device Support (A), 11-8; Device Support (B), 3-68, 4-5 IRP\$L_SVAPTE, Device Support (A), 8-2; Device Support (B), 3-33, 3-35, 3-41, 3-46, 3-55, 3-59, 3-70, 3-71 for buffered I/O, Device Support (A), 7-7, 7-8 IRP\$V_BUFIO, Device Support (B), 3-72 IRP\$V_DIAGBUF, Device Support (B), 3-69, 3-70, 3-71, 3-72 IRP\$V EXTEND. Device Support (B), 3-72 IRP\$V FUNC, Device Support (A), 7-6, 7-8, 11-7; Device Support (B), 3-32, 3-35, 3-41, 3-43, IRP\$V_KEY, Device Support (B), 3-72 IRP\$V_MBXIO, Device Support (B), 3-72 IRP\$V PHYSIO, Device Support (B), 3-72 IRP\$W BOFF, Device Support (A), 7-7, 7-8, 8-2; Device Support (B), 3-33, 3-35, 3-41, 3-46, 3-55, 3-59, 3-70, 3-71, 3-72 IRP\$W_CHAN, Device Support (A), 11-8; Device Support (B), 3-68, 4-5 IRP\$W FUNC, Device Support (A), 8-4 IRP\$W STS for read function, Device Support (A), 7-6, 7-8 for write function, Device Support (A), 7-8 IRP (I/O request packet), System Dump Analyzer, SDA-99, SDA-118; Device Support (A), 1-6 to 1-7; Device Support (B), 1-37 to 1-42 allocating, Device Support (A), 4-9 copying to UCB, Device Support (A), 8-2 creation, Device Support (A), 2-3, 4-9 current, Device Support (B), 1-77 deallocation, Device Support (A), 2-7; Device Support (B), 3–73 dequeuing from UCB, Device Support (B), 1-38 device-independent portion of, Device Support (A), 4–9 to 4–10

IRP (I/O request packet) (cont'd) insertion in pending-I/O queue, Device Support (A), 2-4, 4-13, 7-4, 8-1; Device Support (B), 3–27, 3–28 insertion in postprocessing queue, Device Support (A), 2-7 removal from pending-I/O queue, Device Support (A), 2-7, 4-13, 10-3 size, Device Support (B), 1-37 storing data in, Device Support (A), 5-2, E-16 unlocking buffers specified in, Device Support (B), 3–109 .IRPC directive, MACRO, 6-49 .IRP directive, MACRO, 6-47 IRPE (I/O request packet extension), Device Support (B), 1-40, 1-42 to 1-44, 3-72 address, Device Support (B), 1-42 allocating, Device Support (B), 1-42 deallocating, Device Support (B), 1-43, 3-73, 3 - 109unlocking buffers specified in, Device Support (B), 3–73, 3–109 IRP lookaside list displaying contents, System Dump Analyzer, SDA-118 /IRP qualifier, System Dump Analyzer, SDA-118 ISD (image section descriptor), Linker, 2-11 in GSMATCH processing, Linker, 3-7 "is_managed" string constant parameter to GET_INFO, VAXTPU, 7-214 "is_subclass" string constant parameter to GET_INFO, VAXTPU, 7-214 Item list, RMS, 18-1 guidelines for supplying, RMS, 18-1 with ACL Editor routine, Utility Routines, ACL-3 with TPU routines, Utility Routines, TPU-49 Item list address field See XAB\$L ITEMLIST field See XAB\$L_ITMLST field Item list extended address block See XABITM block Item list length field See XAB\$W_ITMLST_LEN field Itemlist read operations, I/O User's I, 8-29 item_list_2 data type, Routines Intro, A-8t item_list_3 data type, Routines Intro, A-8t item_list_pair data type, Routines Intro, A-9t item_quota_list data type, Routines Intro, A-9t

Jacket routine, RTL Library, 2–1 compiling code with, DECthreads, A–3 macro definitions file, DECthreads, A–1 Jacket routine for UNIX services, DECthreads, A–1

Journaling (cont'd) JFB (journaling file block), System Dump getting file name of buffer change journal, Analyzer, SDA-77 VAXTPU, 7-172 JIB\$L_BYTCNT, Device Support (A), 3-13, 7-6, getting journal file information, VAXTPU, 7-8, E-5; Device Support (B), 3-12, 3-18, 7 - 2033-20, 3-22keystroke JIB\$L_BYTLM, Device Support (A), 3-13, E-5; enabling and disabling, VAXTPU, 7-408 Device Support (B), 3-12, 3-18, 3-20, 3-22 layered application control, VAXTPU, 1-12 JIB\$V_BYTCNT_WAITERS, Device Support (B), recovery of buffer contents, VAXTPU, 7-307 3-18role of source file, VAXTPU, 7-308 JIB (job information block), System Dump sensing a safe buffer, VAXTPU, 7-175 Analyzer, SDA-128; Device Support (A), 3-13 sensing the enable of buffer change journaling, JIB spin lock, Device Support (A), 3-13; Device VAXTPU, 1-12, 5-10 Support (B), 3-18, 3-20, 3-23 sensing the enable of keystroke journaling, JMP (Jump) instruction, MACRO, 9-58 VAXTPU, 1-12, 5-11 using both keystroke and buffer change getting information about journaling, VAXTPU, 1-12 asynchronously, System Services, SYS-286, Journaling extended address block SYS-323 synchronously, System Services, SYS-305, See XABJNL block SYS-365 Journaling file block Job attached bit See JFB See UCB\$V_JOB JOURNALING keyword, VAXTPU, 7-405 JOB command Journaling not supported in card reader batch job. I/O User's I, 2-2 error message, Analyze/RMS_File, ARMS-8 Job controller, Device Support (B), 1-78 JOURNALING parameter function, Utility Routines, PSM-4 SET built-in procedure, VAXTPU, 7-405 major interface "journaling" string constant parameter asynchronous, System Services, SYS-558 GET_INFO built-in, VAXTPU, 1-12, 5-10 synchronous, System Services, SYS-614 "Journaling" string constant parameter to request to symbiont, Utility Routines, SMB-5 GET_INFO, VAXTPU, 7-172 sending a message to. Device Support (A), 9-7 "Journaling_frequency" string constant parameter to 9-8; Device Support (B), 3-53, 3-61 to GET_INFO, VAXTPU, 7-206 /JOURNAL qualifier, Patch, PAT-29; VAXTPU, Job information block See JIB 5 - 10Job logical name table, System Services Intro, 6-5 "journal" string constant parameter Job quota, Device Support (A), E-5 GET_INFO built-in, VAXTPU, 7-203 byte count, Device Support (A), 2-3, 3-13; "Journal" string constant parameter to GET_ Device Support (B), 3-12, 3-18, 3-20 to INFO, VAXTPU, 7-177 3-21, 3-22 to 3-23 JOURNAL_CLOSE built-in procedure, VAXTPU, byte limit, Device Support (A), 3-13; Device 7 - 234Support (B), 3-12, 3-18, 3-20 to 3-21, 3-22 "Journal_file" GET_INFO request_string, VAXTPU, 7-177 /JOURNAL command qualifier, VAXTPU, 1-11, "journal_file" string constant parameter GET_INFO built-in, VAXTPU, 1-12, 5-11, Journal file, Patch, PAT-6; VAXTPU, 7-307 default name, VAXTPU, 1-12 "Journal_file" string constant parameter to getting characteristics of, VAXTPU, 7-203 GET_INFO, VAXTPU, 7-206 getting name of, VAXTPU, 1-12, 5-11 "journal_name" string constant parameter recovering buffer contents, VAXTPU, 7-307 GET_INFO built-in, VAXTPU, 7-172 security caution, VAXTPU, 1-12, 7-59, 7-234, JOURNAL_OPEN built-in procedure, VAXTPU, 7–235, 7–406 1-12, 5-11, 7-235 to 7-237 **Journaling** controlling errors related to, VAXTPU, 7-408 buffer change, VAXTPU, 1-11 JSB (Jump to Subroutine) instruction, MACRO, converting buffer to journal file name, 9 - 59VAXTPU, 7-172 JSB call format, Routines Intro, 1-4 default file name, VAXTPU, 1-12

EVE default behavior, VAXTPU, 1-12

Key (cont'd) JSB entry point, Modular Procedures, 2-12, A-2; size restriction for string type, RMS, 13-15 RTL Math, 1-2 type, File Def Language, FDL-30 /JSB qualifier, Debugger, 3-12, CD-126, CD-185, types of matches, RMS, 7-5 CD-258use of to store indexed records sequentially, File Applications, 2-5 K Key 0, File Applications, 3-17 KEY attribute, File Def Language, FDL-2, KDA50 disk controller, I/O User's I, 3-3 FDL-26, FDL-40 KDB50 disk controller, I/O User's I, 3-3 Keyboard control character, I/O User's I, 8-4 to Kernel mode 8-6, 8-9 changing to, System Services, SYS-77 Key buffer, File Applications, 8-3, 9-13, 9-18 Kernel-mode requirements, Device Support (A), Kev buffer address field /KERNEL qualifier, System Dump Analyzer, See RAB\$L KBF field SDA-157 Key-characteristics option, File Applications, 4-29 Kernel stack, Device Support (A), 8-1 Key compression displaying contents, System Dump Analyzer, front, File Applications, 3-16 SDA-157 prohibition against using, File Applications, Kernel stack pointer, System Dump Analyzer, 3-3, 3-16, 3-25, 4-9 SDA-14 rear, File Applications, 3-16 Key, Librarian, LIB-2, LIB-4, LIB-5 Key definition See also Key map creating, Debugger, 8-8, CD-49 debugger predefined, Debugger, B-1 See also Library key with DECwindows, Debugger, 1-29 See also Sort/Merge Utility debugger predefined, multiprocess, Debugger, alternate, File Def Language, FDL-5 10 - 14duplicate values, File Applications, 3-22 deleting, Debugger, 8-8, CD-56 performance of, File Applications, 3-22 displaying, Debugger, 8-8, CD-218 built-in procedures for defining Key definition extended address block DEFINE KEY, VAXTPU, 7-100 LAST_KEY, VAXTPU, 7-242 See XABKEY block LOOKUP_KEY, VAXTPU, 7-254 KEY DESCRIPTOR SET (POST_KEY_PROCEDURE), how updated by CONVERT, Convert, CONV-11 VAXTPU, 7-442 KEY DESCRIPTOR structure, File Applications, SET (PRE_KEY_PROCEDURE), VAXTPU, 10 - 19Key greater than SET (SELF_INSERT), VAXTPU, 7-470 See RAB\$V_NXT option SET (UNDEFINED_KEY), VAXTPU, Key-greater-than option See Next-key option UNDEFINE_KEY, VAXTPU, 7-532 Key greater than or equal creating a name for, VAXTPU, 7-238 See RAB\$V_EQNXT option defining as simple or segmented, RMS, 13-13 defining for SDA, System Dump Analyzer, Key-greater-than-or-equal option SDA-43 See Equal-or-next key option determining match method, RMS, 7-5 Key line duplicate values, File Applications, 2-20 formatting, Librarian, LIB-5 example of finding and deleting a record, RMS, Key map built-in procedures example of updating a record, RMS, 4-21 ADD_KEY_MAP, VAXTPU, 7-17 for Prolog 1 and 2 files, File Applications, 3-16 CREATE_KEY_MAP, VAXTPU, 7-63 length, File Def Language, FDL-28 REMOVE_KEY_MAP, VAXTPU, 7-313 null value, File Applications, 2-20 SHOW (KEY_MAP), VAXTPU, 7-505 number of, File Applications, 3-23 SHOW (KEY_MAPS), VAXTPU, 7-505 primary, File Applications, 3-16, 3-22 Key map list segmented, File Applications, 3-16 See also Key segment length, File Def Language, FDL-30 built-in procedures selecting path, RMS, 4-12 CREATE_KEY_MAP_LIST, VAXTPU, 7-65 size, File Applications, 9-13, 9-15, 9-18

SET (KEY_MAP_LIST), VAXTPU, 7-410

Key map list	KEY PROLOG attribute, Convert, CONV-19;
built-in procedures (cont'd)	File Def Language, FDL-27, FDL-28
SHOW (KEY_MAP_LIST), VAXTPU,	/KEY qualifier, Convert, CONV-16; System
7–505	$Dump\ Analyzer,\ \mathrm{SDA-44}$
SHOW (KEY_MAP_LISTS), VAXTPU, 7-505	Key size field
example of fetching, <i>VAXTPU</i> , B–19 to B–22	See RAB\$B_KSZ field
Key match	See XAB\$B_SIZ0 through XAB\$B_SIZ7 field
approximate, File Applications, 8–11	Key state, <i>Debugger</i> , 8–8, CD–49, CD–218, B–1
exact, File Applications, 8-11	Key string buffer
generic, File Applications, 8-11	program example, RMS, 4-16
generic and approximate, File Applications,	Key string descriptor
8–12	program example, RMS , 4–16 Key string length
Key name	program example, RMS, 4-16
character restrictions in, Librarian, LIB-4	Keystroke journaling
in help libraries, Librarian, LIB-4 to LIB-5, LIB-9	and buffer change journaling, VAXTPU, 7-307
table, VAXTPU, 2–6	comparative to buffer change journaling,
Key name buffer address field	VAXTPU, 1–11
See XAB\$L_KNM field	enabling and disabling, VAXTPU, 7-408
KEY NULL_VALUE attribute, File Def Language,	sensing the enable, VAXTPU, 1-12, 5-11
FDL-29	KEYSTROKE_RECOVERY keyword, VAXTPU,
Key number, Librarian, LIB-5	7–408
See also Module	KEYSTROKE_RECOVERY parameter SET built-in procedure, VAXTPU, 7-408
Key of reference, File Applications, 2-5; Convert,	Key table
CONV-16	reading from, Programming Resources, 7–28
establishing, RMS, RMS-48	Key value
Key of reference field	generating for per-thread context, DECthreads,
See RAB\$B_KRF field	cma-69, pthread-65
See XAB\$_REF field	obtaining per-thread context for, DECthreads,
Key option	cma-71, pthread-61
comparing primary and alternate keys, RMS,	setting per-thread context for, DECthreads,
13–8	cma-73, pthread-101
Key options flag field	Key value clause, Command Def, CDU-28
See XAB\$B_FLG field	Keyword, Command Def, CDU-2; Librarian, LIB-4; File Def Language, FDL-2; VAXTPU,
Keypad	3–12
reading from, Programming Resources, 7–25	See also DEFINE TYPE statement
Keypad mode, Debugger, 8-7, CD-49, CD-149,	abbreviating, File Def Language, FDL-40
CD-218, B-1	ALL
Key position field	with EXPAND_NAME, VAXTPU, 7-135
See XAB\$W_POS0 through XAB\$W_POS7 field	with REMOVE_KEY_MAP, VAXTPU,
KEY primary attribute, File Applications, 4–29	7–313
DATA_AREA secondary attribute, File Applications, 3-24	with SET (BELL), VAXTPU, 7–355
DATA_FILL secondary attribute, File	with SET (DEBUG), VAXTPU, 7–364
Applications, 3–26	with UPDATE, VAXTPU, 7–538
INDEX_AREA secondary attribute, File	ANCHOR, <i>VAXTPU</i> , 7–24 to 7–25 with SEARCH, <i>VAXTPU</i> , 7–327, 7–328
Applications,3-24	with SEARCH_QUIETLY, VAXTPU, 7–332
INDEX_FILL secondary attribute, File	BELL, VAXTPU, 7–355
Applications,3–26	with SET (MESSAGE_ACTION_TYPE),
LEVEL1_INDEX_AREA secondary attribute,	VAXTPU, 7–426
File Applications, 3–24	BLANK_TABS, VAXTPU, 7–483
TYPE secondary attribute, File Applications,	BLINK
3–22	with SELECT, VAXTPU, 7–337
	with SET (PROMPT_AREA), VAXTPU,
	7-446

Keyword	Keyword (cont'd)
BLINK (cont'd)	LEFT_MARGIN_ACTION, VAXTPU, 7-414
with SET (STATUS_LINE), VAXTPU,	lexical, VAXTPU, 3–36
7–476	LINE_BEGIN, VAXTPU, 7-249 to 7-250
with SET (VIDEO), VAXTPU, 7-492	with POSITION, VAXTPU, 7–288
BOLD	with SEARCH, VAXTPU, 7-327
with SELECT, VAXTPU, 7-337	with SEARCH_QUIETLY, VAXTPU, 7–332
with SET (PROMPT_AREA), VAXTPU,	LINE_END, VAXTPU, 7–251
7–446	with POSITION, VAXTPU, 7–288
with SET (STATUS_LINE), VAXTPU,	with SEARCH, VAXTPU, 7-327
7–476	with SEARCH_QUIETLY, VAXTPU, 7-332
with SET (VIDEO), VAXTPU, 7-492	LINE_NUMBER, VAXTPU, 7–416
BROADCAST	MARGINS, VAXTPU, 7-419
with SET (BELL), VAXTPU, 7–355	MAX_LINES, VAXTPU, 7-421
BUFFER_BEGIN	MESSAGE_FLAGS, VAXTPU, 7-427
with POSITION, VAXTPU, 7–287	MODIFIABLE, VAXTPU, 7–429
with SEARCH, VAXTPU, 7-327	MOUSE
with SEARCH_QUIETLY, VAXTPU, 7–332	with POSITION, VAXTPU, 7–288, 7–289
BUFFER_END	NAME
with POSITION, VAXTPU, 7–287	with FILE_PARSE, VAXTPU, 7–141
with SEARCH, VAXTPU, 7–327	with FILE_SEARCH, VAXTPU, 7-144
with SEARCH_QUIETLY, VAXTPU, 7–332	NODE
COMMENT	with FILE_PARSE, VAXTPU, 7-140
with LOOK_UP_KEY, VAXTPU, 7–254	with FILE_SEARCH, VAXTPU, 7–143
CROSS_WINDOW_BOUNDS, VAXTPU, 7–361	NONE
DEBUG, VAXTPU, 7-362, 7-363, 7-364	with SELECT, VAXTPU, 7-337
DEVICE	with SET (MESSAGE_ACTION_TYPE),
with FILE_PARSE, VAXTPU, 7–140	$V\!AXTPU$, 7–426
with FILE_SEARCH, VAXTPU, 7–143	with SET (PROMPT_AREA), VAXTPU,
DIRECTORY	7-446
with FILE_PARSE, VAXTPU, 7–140	with SET (STATUS_LINE), VAXTPU,
with FILE_SEARCH, VAXTPU, 7–143	7-476
EOB_TEXT, VAXTPU, 7-374	with SET (VIDEO), VAXTPU, 7-492
EXACT	NO_EXACT
with LEARN_BEGIN, VAXTPU, 7-244	with LEARN_BEGIN, VAXTPU, 7–244
with SEARCH, VAXTPU, 7–328	with SEARCH, VAXTPU, 7–328
with SEARCH_QUIETLY, VAXTPU, 7-333	with SEARCH_QUIETLY, VAXTPU, 7–333
FACILITY_NAME, VAXTPU, 7–378	NO_TRANSLATE, VAXTPU, 7–483
for /FORMAT qualifier, National Char Set,	NO_WRITE, VAXTPU, 7–434
NCS-29	occluded, $VAXTPU$, 3–12
FORWARD, <i>VAXTPU</i> , 7–85, 7–379	OFF
with SEARCH, VAXTPU, 7–328	with CREATE_WINDOW, VAXTPU, 7–77
with SEARCH_QUIETLY, VAXTPU, 7–333	with HELP_TEXT, VAXTPU, 7–228
GRAPHIC_TABS, VAXTPU, 7–483	with QUIT, VAXTPU, 7–291
how to define, Command Def, CDU-7 to	with SET (AUTO_REPEAT), VAXTPU,
CDU-8, CDU-30	7–353
INFORMATIONAL, VAXTPU, 7–397	with SET (BELL), VAXTPU, 7–355
in keyword table, RTL Library, LIB-261	with SET (COLUMN_MOVE_VERTICAL),
INSERT, VAXTPU, 7–404	$V\!AXTPU$, 7–359
JOURNALING, VAXTPU, 7–405	with SET (CROSS_WINDOW_BOUNDS),
key name, VAXTPU, 2–6	VAXTPU, 7–361
KEYSTROKE_RECOVERY, VAXTPU, 7–408	with SET (DEBUG), VAXTPU, 7-363,
KEYWORDS	7–364
with EXPAND_NAME, VAXTPU, 7–135	with SET (INFORMATIONAL), VAXTPU,
KEY_MAP	7–397
with LOOK_UP_KEY, VAXTPU, 7–254	with SET (LINE_NUMBER), VAXTPU,
KEY_MAP_LIST, VAXTPU, 7-410	7–416
LEFT_MARGIN, VAXTPU, 7–412	

Keyword	Keyword (cont'd)
OFF (cont'd)	PERMANENT, VAXTPU, 7-441
with SET (MODIFIABLE), VAXTPU,	POST_KEY_PROCEDURE, VAXTPU, 7-442
7–429	PROCEDURES
with SET (MOUSE), VAXTPU, 7-432	with EXPAND_NAME, VAXTPU, 7–135
with SET (NO_WRITE), VAXTPU, 7–434	PROGRAM, VAXTPU, 7–362
with SET (PAD), VAXTPU, 7–437	with LOOK_UP_KEY, VAXTPU, 7–254
with SET (PAD_OVERSTRUCK_TABS),	PROMPT_AREA, VAXTPU, 7–446
VAXTPU, 7-439	REMAIN, VAXTPU, 7-312
with SET (SCREEN_UPDATE), VAXTPU,	with SEARCH, VAXTPU, 7–327
7–460	with SEARCH_QUIETLY, VAXTPU, 7–332
with SET (SCROLLING), VAXTPU, 7–467	returned by CURRENT_DIRECTION,
with SET (SELF_INSERT), VAXTPU,	VAXTPU, 7–85
7–470	returned by READ_KEY, VAXTPU, 7–301
with SET (SUCCESS), VAXTPU, 7–479	REVERSE, <i>VAXTPU</i> , 7–85, 7–453
with SET (TIMER), VAXTPU, 7–486	with SEARCH, VAXTPU, 7–328
with SET (TRACEBACK), VAXTPU, 7-488	with SEARCH_QUIETLY, VAXTPU, 7–333
with SPAWN, VAXTPU, 7–515	with SELECT, VAXTPU, 7–337
ON	with SET (MESSAGE_ACTION_TYPE),
with CREATE WINDOW, VAXTPU, 7–77	$V\!AXTPU,7\!-\!426$
with CREATE_WINDOW, VAXTPU, 7–77	with SET (PROMPT_AREA), VAXTPU,
with HELP_TEXT, VAXTPU, 7–228	7–446
with QUIT, VAXTPU, 7–291	with SET (STATUS_LINE), VAXTPU,
with SET (AUTO_REPEAT), VAXTPU,	7–476
7–353	with SET (VIDEO), VAXTPU, 7-492
with SET (BELL), VAXTPU, 7–355	RIGHT_MARGIN, VAXTPU, 7–454
with SET (COLUMN_MOVE_VERTICAL),	RIGHT_MARGIN_ACTION, VAXTPU, 7-456
VAXTPU, 7–359	SCREEN_UPDATE, VAXTPU, 7-460
with SET (CROSS_WINDOW_BOUNDS),	SCROLLING, VAXTPU, 7-467
VAXTPU, 7–361	SELF_INSERT, VAXTPU, 7-470
with SET (DEBUG), VAXTPU, 7-363	SHIFT_KEY, VAXTPU, 7–472
with SET (INFORMATIONAL), VAXTPU,	SPECIAL_GRAPHICS
7–397	with SET (STATUS_LINE), VAXTPU,
with SET (LINE_NUMBER), VAXTPU,	7–476
7–416	STATUS_LINE, VAXTPU, 7-476
with SET (MODIFIABLE), VAXTPU,	SUCCESS, VAXTPU, 7-479
7–429	SYSTEM, VAXTPU, 7-480
with SET (MOUSE), VAXTPU, 7–432	TEXT, <i>VAXTPU</i> , 7–483
with SET (NO_WRITE), VAXTPU, 7–434	TIMER, VAXTPU, 7–486
with SET (PAD), VAXTPU, 7–437	TRACEBACK, VAXTPU, 7–488
with SET (PAD_OVERSTRUCK_TABS),	TYPE
VAXTPU, 7–439	with FILE_PARSE, VAXTPU, 7–141
with SET (SCREEN_UPDATE), VAXTPU,	with FILE_SEARCH, VAXTPU, 7–144
7–460	UNANCHOR, <i>VAXTPU</i> , 7–530 to 7–531
with SET (SCROLLING), VAXTPU, 7–467	with SEARCH_QUIETLY, VAXTPU, 7–333
with SET (SELF_INSERT), VAXTPU,	UNDEFINED_KEY, VAXTPU, 7–490
7–470	UNDERLINE
with SET (SUCCESS), VAXTPU, 7–479	with SELECT, VAXTPU, 7–337
with SET (SIGCOESS), VAXII 6, 1–413 with SET (TIMER), VAXIPU, 7–486	with SET (PROMPT_AREA), VAXTPU,
with SET (TRACEBACK), VAXTPU, 7–488	7–446
with SPAWN, VAXTPU, 7–515	
OUTPUT_FILE, VAXTPU, 7–435	with SET (STATUS_LINE), VAXTPU,
	7–476
OVERSTRIKE, VAXTPU, 7-436	with SET (VIDEO), VAXTPU, 7–492
PAD, VAXTPU, 7–437	VARIABLES
PAD_OVERSTRUCK_TABS, VAXTPU, 7–439	with EXPAND_NAME, VAXTPU, 7–135
PAGE_BREAK, VAXTPU, 7–286	VERSION
with SEARCH, VAXTPU, 7–327	with FILE_PARSE, VAXTPU, 7-141
with SEARCH_QUIETLY, VAXTPU, 7–332	with FILE_SEARCH, VAXTPU, 7–144

Keyword (cont'd) Label (cont'd) VIDEO, VAXTPU, 7-492 user-defined local, MACRO, 3-7, 4-7 with SET, VAXTPU, 7-347 to 7-348 %LABEL, Debugger, 3-10, D-7 with SHOW, VAXTPU, 7-505 to 7-506 LABEL clause Keyword argument, MACRO, 4-3 for DEFINE TYPE statement, Command Def. Keyword clause CDU-28 for PARAMETER clause, Command Def. types used in collating sequence expression, CDU-23, CDU-32 National Char Set, NCS-13 types used in conversion function expressions, for QUALIFIER clause, Command Def. National Char Set, NCS-15 CDU-25, CDU-34 Keyword constants, VAXTPU, 3-5 Label descriptor, Routines Intro, 2-29 KEYWORD data type, VAXTPU, 2-5 to 2-7 Laboratory Peripheral Accelerator Keyword path, Command Def, CDU-11 See LPA11-K device obtaining values of command string keywords, Language Utility Routines, CLI-10 current, Debugger, 4-10, CD-141 referencing command string keywords, *Utility* identifying, Debugger, CD-220 Routines, CLI-13 multilanguage program, Debugger, 9-6 KEYWORDS keyword with DECwindows, Debugger, 1-28 with EXPAND NAME, VAXTPU, 7-135 native to VMS, File Def Language, FDL-41 KEY_GREATER_EQUAL attribute, File Def setting, Debugger, 4-10, CD-141 Language, FDL-10 support by debugger, Debugger, E-1 KEY_GREATER_EQUAL secondary attribute. with DECwindows, Debugger, 1-2 File Applications, 8–9 Language expression KEY_GREATER THAN attribute, File Def compared to address expression, Debugger, 4-7 Language, FDL-10 with DECwindows, Debugger, 1-22 KEY_GREATER_THAN secondary attribute, File DEPOSIT command, Debugger, 4-3, CD-58 Applications, 8-9, 8-10 EVALUATE command, Debugger, 4-5, CD-77 KEY_LIMIT attribute, File Def Language, evaluating, Debugger, 4-5 FDL-11 with DECwindows, Debugger, 1-25 KEY_MAP keyword FOR command, Debugger, 8-9, CD-99 with LOOK UP KEY, VAXTPU, 7-254 IF command, Debugger, 8-9, CD-103 KEY_MAP_LIST keyword, VAXTPU, 7-410 REPEAT command, Debugger, 8-10, CD-109 "Key_map_list" string constant parameter to WHEN clause, Debugger, 3-13 GET_INFO, VAXTPU, 7-172 WHILE command, Debugger, 8-10, CD-268 KEY_NAME built-in procedure, VAXTPU, 7-238 Language extension, Routines Intro, 2-6 to 7-241 Language independence KEY_NCMPR option, File Def Language, FDL-27 testing for, Modular Procedures, 4-1, 4-4 KEY_OF_REFERENCE attribute, File Def Language-Sensitive Editor, Modular Procedures, Language, FDL-11 1-12; Debugger, CD-74 "Key_type" string constant parameter to Language support procedure, Routines Intro, 2-4 GET_INFO, VAXTPU, 7-162 Large request packet KFQSA adapter, I/O User's I, 3-5 See LRP KGE option, File Def Language, FDL-10, FDL-11 "last" string parameter to ADD_KEY_MAP, KILL_SELECTION client message, VAXTPU, VAXTPU, 7-17 7 - 344Last-chance exception vector, *Programming* Known file list Resources, 9-13 image lookup, File Applications, 5-5 Last-chance handler, Debugger, 9-13 KSP symbol, System Dump Analyzer, SDA-14 "Last" string constant parameter to GET_INFO, VAXTPU, 7-166, 7-167, 7-169, 7-181, 7-183, 7–184, 7–191, 7–218 LAST_KEY built-in procedure, VAXTPU, 7–242 L command LAT port driver (LTDRIVER), I/O User's I, 8-1 privileges required for, Delta/XDelta, LAT terminal DELTA-14 debugging using two, Debugger, 9-6 ;L command, Delta/XDelta, DELTA-44 LBR\$CLOSE routine, Programming Resources, Label 8-36; Utility Routines, LBR-20 created local, MACRO, 4-7

global, MACRO, 2-2

LBR routines LBR\$DELETE DATA routine, Programming examples (cont'd) Resources, 8–42; Utility Routines, LBR–21 creating a new library, Utility Routines, LBR\$DELETE KEY routine, Programming LBR-7 to LBR-10 Resources, 8-42; Utility Routines, LBR-23 deleting a module from a library, Utility LBR\$FIND routine, Utility Routines, LBR-25 Routines, LBR-16 to LBR-19 LBR\$FLUSH routine, Utility Routines, LBR-27 extracting a module from a library, Utility LBR\$GET HEADER routine. Programming Routines, LBR-14 to LBR-16 Resources, 8-50; Utility Routines, LBR-29 inserting a module into a library, Utility LBR\$GET_HELP routine, Utility Routines, Routines, LBR-10 to LBR-14 LBR-31 header, Utility Routines, LBR-2 LBR\$GET_HISTORY routine, Utility Routines, help text LBR-34 outputting, Utility Routines, LBR-50 LBR\$GET INDEX routine, Programming retrieving, Utility Routines, LBR-31 Resources, 8-53; Utility Routines, LBR-36 index, Utility Routines, LBR-2 LBR\$GET_RECORD routine, Programming searching, Utility Routines, LBR-63 Resources, 8-43; Utility Routines, LBR-38 introduction, Utility Routines, LBR-1 to LBR\$INI_CONTROL routine, Programming LBR-19 Resources, 8-36; Utility Routines, LBR-40 library LBR\$INSERT_KEY routine, Programming closing, Utility Routines, LBR-20 Resources, 8-40; Utility Routines, LBR-42 creating, Utility Routines, LBR-46 LBR\$LOOKUP_KEY routine, Programming opening, Utility Routines, LBR-46 Resources, 8-40, 8-42, 8-43, 8-48; Utility shareable image, Utility Routines, LBR-1 Routines, LBR-44 structure, Utility Routines, LBR-2 to LBR\$OPEN routine, Programming Resources, LBR-5 8–36; Utility Routines, LBR–46 types, Utility Routines, LBR-1 LBR\$OUTPUT_HELP routine, Programming user-developed, *Utility Routines*, LBR-1 Resources, 8–52; Utility Routines, LBR–50 library file LBR\$PUT_END routine, Programming Resources, flushing, Utility Routines, LBR-27 8-40; Utility Routines, LBR-55 library header information LBR\$PUT_HISTORY routine, Utility Routines, reading, Utility Routines, LBR-29 LBR-56retrieving, Utility Routines, LBR-29 LBR\$PUT_RECORD routine, Programming library index Resources, 8–40; Utility Routines, LBR–58 getting contents, Utility Routines, LBR-36 LBR\$REPLACE_KEY routine, Programming initializing, Utility Routines, LBR-40 Resources, 8–40; Utility Routines, LBR-60 searching for key, Utility Routines, LBR\$RET_RMSSTV routine, Utility Routines, LBR-36 LBR-62 library key, Utility Routines, LBR-2 LBR\$SEARCH routine, Utility Routines, LBR-63 creating ASCII or binary, Utility Routines, LBR\$SET_INDEX routine, Utility Routines, LBR-47 LBR-65 deleting, Utility Routines, LBR-23 LBR\$SET_LOCATE routine, Utility Routines, finding, Utility Routines, LBR-25 LBR-67 inserting, Utility Routines, LBR-42 LBR\$SET_MODULE routine, Programming looking up, Utility Routines, LBR-44 Resources, 8-48; Utility Routines, LBR-68 replacing, Utility Routines, LBR-60 LBR\$SET_MOVE routine, Utility Routines, library update history record LBR-70 retrieving, Utility Routines, LBR-34 LBR\$_KEYNOTFND routine, Programming locate mode Resources, 8-40 setting record access mode to, Utility LBR routines Routines, LBR-67 control index, Utility Routines, LBR-7 module, Utility Routines, LBR-2 current index number accessing with RFA, Utility Routines, setting, Utility Routines, LBR-65 LBR-25data record deleting data records, Utility Routines, reading, Utility Routines, LBR-38 LBR-21 writing, Utility Routines, LBR-58 deleting header, Utility Routines, LBR-21 end-of-module record module header writing, Utility Routines, LBR-55 reading, Utility Routines, LBR-68 examples, Utility Routines, LBR-7 to LBR-19

LBR routines %LENGTH operator, MACRO, 4-8 module header (cont'd) LEQUAL keyword setting, Utility Routines, LBR-68 with GSMATCH option, Programming updating, Utility Routines, LBR-68 Resources, 5-5 move mode Level setting record access to, Utility Routines, number of, File Applications, A-2 LBR-70 LEVEL1_INDEX_AREA attribute, File Def summary, Utility Routines, LBR-5 to LBR-6 Language, FDL-27, FDL-28 update history records LEVEL1_INDEX_AREA secondary attribute, File writing, Utility Routines, LBR-56 Applications, 3-24 virtual memory LEVEL1_RECORD_COUNT attribute, File Def recovering, Utility Routines, LBR-27 Language, FDL-5 VMS RMS status value Level of prompting, File Def Language, FDL-55 returning, Utility Routines, LBR-62 Level of root bucket field \$LCKPAG, System Services, SYS-420 See XAB\$B_LVL field LDPCTX (Load Process Context) instruction, Levels of abstraction, Modular Procedures, 2-2 MACRO, 9-193, 10-47 Lexical element, VAXTPU, 3-1 LDR\$ALLOC_PT, Device Support (A), 16-18, E-7; Lexical function Device Support (B), 3-107 See also Built-in symbol LDR\$DEALLOC_PT, Device Support (B), 3–108 F\$SEARCH, Device Support (A), 13-24 LDR\$GL_FREE_PT, Device Support (B), 3-107, Lexical keywords, VAXTPU, 3-36 to 3-38 3 - 108LF character, File Def Language, FDL-35 LDR\$GL_SPTBASE, Device Support (B), 3–107, LIB\$ADAWI, RTL Library, LIB-3 3 - 108LIB\$ADDX, Programming Resources, 3-24; RTL Leading separate numeric string Library, LIB-7 data type, MACRO, 8-11 LIB\$ADD_TIME, Programming Resources, 3-24 LEARN data type, VAXTPU, 2-7 to 2-8 LIB\$ADD_TIMES, RTL Library, LIB-5 LEARN_ABORT built-in procedure, VAXTPU, LIB\$ANALYZE_SDESC, RTL Library, LIB-10; RTL String Manipulation, 2-4 LEARN_BEGIN built-in procedure, VAXTPU, LIB\$ASN_WTH_MBX, RTL Library, 2-23, 7-244 to 7-246 LIB-12 LEARN END built-in procedure, VAXTPU, 7-244 LIB\$AST_IN_PROG, RTL Library, 2–22, LIB–15 to 7-246 LIB\$ATTACH, RTL Library, 2-9, LIB-17 Left margin LIB\$BBCCI, RTL Library, LIB-19 setting records, VAXTPU, 7-448 LIB\$BBSSI, $RTL\ Library$, LIB-21/LEFT qualifier, Debugger, CD-94, CD-104, LIB\$CALLG, RTL Library, 2–16, LIB–23 CD-112 LIB\$CHAR, RTL Library, LIB-25 LEFT_MARGIN keyword, VAXTPU, 7-412 LIB\$CONVERT DATE STRING, RTL Library, "Left margin" string constant parameter to LIB-27 GET_INFO, VAXTPU, 7-172, 7-186 LIB\$CRC, RTL Library, 2–16, LIB–31 LEFT_MARGIN_ACTION keyword, VAXTPU, LIB\$CRC_TABLE, RTL Library, 2–16, LIB-33 7-414 LIB\$CREATE_DIR, RTL Library, 2-24, LIB-36 "Left_margin_action" string constant parameter to LIB\$CREATE_USER_VM_ZONE, RTL Library, GET_INFO, VAXTPU, 7-172 5-12, 5-17, LIB-40 Legal function bit mask, Device Support (A), 4-11 LIB\$CREATE_VM_ZONE, Programming LENGTH attribute, File Def Language, FDL-28, Resources, 10-1; RTL Library, 5-6, 5-16, FDL-29 LIB-44 LENGTH built-in procedure, VAXTPU, 7-247 to LIB\$CRF_INS_KEY, RTL Library, 8-1, LIB-50 7 - 248LIB\$CRF_INS_REF, RTL Library, 8-1, LIB-52 Length field LIB\$CRF_OUTPUT, RTL Library, 8-1, LIB-55 using to indicate constant (keyword) value, LIB\$CURRENCY, RTL Library, LIB-59 RMS, 2-4LIB\$CVTF_FROM_INTERNAL_TIME, RTL using to indicate mask or bit offset, RMS, 2-3 Library, LIB-70 Length modes, Patch, PAT-16 LIB\$CVTF_TO_INTERNAL_TIME, RTL Library, See also Entry and display modes LIB-74 Length of key segment, File Def Language, LIB\$CVT_DTB, RTL Library, LIB-76 FDL-30

```
LIB$CVT_DX_DX, RTL Library, LIB-61
LIB$CVT_FROM_INTERNAL_TIME, RTL
   Library, LIB-67
LIB$CVT_HTB, RTL Library, LIB-76
LIB$CVT OTB, RTL Library, LIB-76
LIB$CVT_TO_INTERNAL_TIME, RTL Library,
   LIB-72
LIB$CVT VECTIM, RTL Library, LIB-78
LIB$DATE_TIME, Programming Resources, 3-23;
   RTL Library, LIB-80
LIB$DAY, Programming Resources, 3-25; RTL
   Library, LIB-82
LIB$DAY_OF_WEEK, RTL Library, LIB-84
LIB$DECODE_FAULT, RTL Library, 4-30,
   LIB-86
LIB$DEC_OVER, Programming Resources, 9-26;
   RTL Library, 4-32, LIB-104
LIB$DELETE FILE, RTL Library, LIB-106
LIB$DELETE_LOGICAL, RTL Library, 2-8,
   LIB-114
LIB$DELETE_SYMBOL, RTL Library, 2-8,
   LIB-116
LIB$DELETE_VM_ZONE, RTL Library, 5-6,
   LIB-118
LIB$DIGIT SEP, RTL Library, LIB-120
LIB$DISABLE_CTRL, RTL Library, 2-9,
   LIB-122
LIB$DO_COMMAND, RTL Library, 2-6, LIB-124
LIB$EDIV, RTL Library, LIB-126
LIB$EMODD, RTL Library, LIB-128
LIB$EMODF, RTL Library, LIB-130
LIB$EMODG, RTL Library, LIB-132
LIB$EMODH, RTL Library, LIB-134
LIB$EMUL, RTL Library, LIB-136
LIB$ENABLE_CTRL, RTL Library, 2-9, LIB-138
LIB$ESTABLISH, RTL Library, 4-3, 4-13, 4-20,
   LIB-140
LIB$EXTV, RTL Library, LIB-142
LIB$EXTZV, RTL Library, LIB-145
LIB$FFC, RTL Library, LIB-147
LIB$FFS, RTL Library, LIB-147
LIB$FID_TO_NAME, RTL Library, LIB-149
LIB$FILE_SCAN, RTL Library, LIB-151
LIB$FILE_SCAN_END, RTL Library, LIB-153
LIB$FIND_FILE routine, RTL Library, LIB-155;
   File Applications, 5–8 to 5–12
LIB$FIND_FILE_END, RTL Library, LIB-159
LIB$FIND_IMAGE_SYMBOL, RTL Library,
   LIB-160
LIB$FIND_VM_ZONE, RTL Library, 5-6,
   LIB-163
LIB$FIXUP_FLT, RTL Library, 4-30, LIB-165
LIB$FLT_UNDER, Programming Resources,
   9-26; RTL Intro, 3-7; RTL Library, 4-32,
   LIB-167
LIB$FORMAT_DATE_TIME, RTL Library,
```

LIB-169

```
LIB$FREE_DATE_TIME_CONTEXT, RTL
   Library, LIB-172
LIB$FREE_EF, RTL Library, LIB-174
LIB$FREE_LUN, RTL Library, LIB-175
LIB$FREE TIMER, Programming Resources,
   3-21: RTL Library, LIB-176
LIB$FREE VM, RTL Library, 5-3, LIB-177
LIB\$FREE\_VM\_PAGE,\ \mathit{RTL\ Library},\ 5-3,
   LIB-179
LIB$GETDVI, RTL Library, LIB-181
LIB$GETJPI, RTL Library, LIB-186
LIB$GETQUI, Programming Resources, 3-22;
   RTL Library, LIB-191
LIB$GETSYI, RTL Library, LIB-196
LIB$GET_COMMAND, RTL Library, LIB-199
LIB$GET_COMMON, RTL Library, 2-5, 2-35,
   LIB-202
LIB$GET DATE FORMAT, RTL Library,
   LIB-204
LIB$GET EF, RTL Library, LIB-206
LIB$GET_FOREIGN, RTL Library, 2-3, LIB-208
LIB$GET_INPUT, Programming Resources, 7-3;
   RTL Intro, 3-3; RTL Library, LIB-212; RTL
   String Manipulation, 2-8
  example, Programming Resources, 7-4; RMS,
      4 - 12
  obtaining several lines of input with,
      Programming Resources, 7–5
  obtaining single line of input with,
      Programming Resources, 7-4
  prompt, Programming Resources, 7-4
LIB$GET_LUN, Programming Resources, 7-3;
   RTL Library, LIB-215
LIB$GET_MAXIMUM_DATE_LENGTH, RTL
   Library, LIB-216
LIB$GET_SYMBOL, RTL Library, 2-8, LIB-219
LIB$GET_USERS_LANGUAGE, RTL Library,
   LIB-222
LIB$GET_VM, RTL Library, 5-3, LIB-223; RTL
   String Manipulation, 2-3
LIB$GET_VM_PAGE, Programming Resources,
   10-1; RTL Library, 5-3, LIB-225
LIB$ICHAR, RTL Library, LIB-227
LIB$INDEX, RTL Library, LIB-229
LIB$INITIALIZE, Modular Procedures, 3–17;
   Debugger, 9-9; RTL Library, 7-1
  See also Initialization
LIB$INIT_DATE_TIME_CONTEXT, RTL
   Library, LIB-231
LIB$INIT_TIMER, Programming Resources,
   3-20; RTL Library, LIB-235
LIB$INSERT_KEY, Programming Resources,
LIB$INSERT_TREE, RTL Library, 2-31,
   LIB-237
LIB$INSQHI, RTL Library, LIB-248
```

LIB\$INSQTI, RTL Library, LIB-251 LIB\$SHOW VM ZONE, RTL Library, 5-6, LIB\$INSV, RTL Library, LIB-253 LIB-359 LIB\$INT_OVER, Programming Resources, 9-26; LIB\$SIGNAL, RTL Intro, 3-1; RTL Library, 4-2, 4-3, 4-7, 4-10, 4-11, 4-12, 4-14, 4-16, 4-22, RTL Library, 4–32, LIB–255 LIB\$LEN, RTL Library, LIB-257 4-23 to 4-26, 4-31, LIB-365 LIB\$LOCC, RTL Library, LIB-258 invoking, Programming Resources, 9-5 LIB\$LOOKUP KEY, RTL Library, LIB-261 LIB\$SIGNAL (or LIB\$STOP) LIB\$LOOKUP_TREE, RTL Library, 2-31, using to signal errors, RMS, 2-6 using to signal VMS RMS errors, RMS, 2-6 LIB-265 LIB\$LP_LINES, RTL Library, LIB-267 LIB\$SIG_TO_RET, RTL Library, 4-29, LIB-369 LIB\$MATCHC, RTL Library, LIB-270 establishing, Programming Resources, 9-6 LIB\$SIG TO_STOP, RTL Library, 4-29, LIB-372 LIB\$MATCH COND, Programming Resources, 9-16; RTL Library, 4-10, 4-30, LIB-272 LIB\$SIM_TRAP, RTL Library, 4-21, 4-29, LIB\$MOVC3, RTL Library, LIB-275 LIB-374 LIB\$SKPC, RTL Library, LIB-376 LIB\$MOVC5, RTL Library, LIB-276 LIB\$MOVTC, RTL Library, LIB-278 LIB\$SPANC, RTL Library, LIB-378 LIB\$SPAWN, RTL Library, 2–9, LIB-382 LIB\$MOVTUC, RTL Library, LIB-295 LIB\$MULTF_DELTA_TIME, RTL Library, LIB\$STAT_TIMER, Programming Resources, 3-21; RTL Library, LIB-388 LIB-298 LIB\$MULT_DELTA_TIME, Programming LIB\$STAT_VM, RTL Library, LIB-392 Resources, 3-24; RTL Library, LIB-297 LIB\$STOP, RTL Library, 4-2, 4-3, 4-4, 4-7, 4-10, 4-12, 4-14, 4-16, 4-21, 4-22, 4-23 to LIB\$PAUSE, RTL Library, LIB-299 4-26, LIB-394 LIB\$POLYD, RTL Library, LIB-300 LIB\$POLYF, RTL Library, LIB-302 LIB\$STOP routine, File Applications, 5-12 LIB\$POLYG, RTL Library, LIB-305 LIB\$SUBX, Programming Resources, 3-24; RTL LIB\$POLYH, RTL Library, LIB-307 Library, LIB-399 LIB\$PUT COMMON, RTL Library, 2-5, 2-35, LIB\$SUB_TIME, Programming Resources, 3-24 LIB-309 LIB\$SUB_TIMES, RTL Library, LIB-397 LIB\$PUT_OUTPUT, Programming Resources, LIB\$SYS_ASCTIM, RTL Library, LIB-401 LIB\$SYS_FAO, RTL Library, LIB-404 7-3; RTL Library, LIB-311 example, Programming Resources, 7-7; RMS, LIB\$SYS_FAOL, RTL Library, LIB-406 LIB\$SYS_GETMSG, RTL Library, LIB-408 4-12writing simple output with, Programming LIB\$TPARSE, RTL Library, LIB-411 LIB\$TRAVERSE_TREE, RTL Library, 2-31, Resources, 7-6 LIB\$RADIX_POINT, RTL Library, LIB-313 LIB-459 LIB\$REMQHI, RTL Library, LIB-315 LIB\$TRA_ASC_EBC, RTL Library, LIB-453 LIB\$REMQTI, RTL Library, LIB-317 LIB\$TRA_EBC_ASC, RTL Library, LIB-457 LIB\$RENAME_FILE, RTL Library, LIB-319 LIB\$TRIM_FILESPEC, RTL Library, LIB-461 LIB\$RESERVE_EF, RTL Library, LIB-327 LIB\$VERIFY_VM_ZONE, RTL Library, 5-6, LIB\$RESET_VM_ZONE, RTL Library, 5-13, LIB-464 5-14, LIB-329 LIB\$WAIT, RTL Library, LIB-465 LIB\$REVERT, RTL Library, 4-3, 4-20, LIB-331 LIBRARIAN LIB\$RUN_PROGRAM, RTL Library, 2-5, See Librarian Utility LIB-332 Librarian routines LIB\$SCANC, RTL Library, LIB-334 See LBR routines LIB\$SCOPY_DXDX, RTL Library, LIB-336; LIBRARIAN routines, Librarian, LIB-10 RTL String Manipulation, 2-7 Librarian Utility (LIBRARIAN) LIB\$SCOPY_R_DX, RTL Library, LIB-338 See also LIBRARY command LIB\$SET_INDEX, Programming Resources, 8-45 character case of library keys, Librarian, LIB\$SET_LOGICAL, RTL Library, 2-8, LIB-340 LIB-2 LIB\$SET_SYMBOL, RTL Library, 2-8, LIB-343 command qualifiers, Librarian, LIB-13 to LIB\$SFREE1_DD, RTL Library, LIB-347 **LIB-45** LIB\$SFREEN_DD, RTL Library, LIB-348 creating libraries, Programming Resources, LIB\$SGET1_DD, RTL Library, LIB-350 1 - 17LIB\$SHOW_TIMER, Programming Resources, DCL command LIBRARY, Librarian, LIB-11 3-20; RTL Intro, 3-1; RTL Library, LIB-352 DCL qualifiers, Librarian, LIB-14 to LIB-45 LIB\$SHOW_VM, RTL Library, LIB-356

Librarian Utility (LIBRARIAN) (cont'd) Library (cont'd) default logical names, Programming Resources, input to linker, *Linker*, 1-5, 2-3, 6-3 1 - 18inserting module with LBR routine, directing output from, Librarian, LIB-12 Programming Resources, 8-40 listing index entries, *Programming Resources*, See also /LIST qualifier See also /OUTPUT qualifier macro, Programming Resources, 5-3, 5-13 exiting, Librarian, LIB-12 message object module, Programming format, Librarian, LIB-11 Resources, 9-9 global symbol table (GST), Librarian, LIB-2 module header, Programming Resources, 8-48 help files, Librarian, LIB-4 to LIB-5 multiple indexes, Programming Resources, help libraries, Librarian, LIB-1, LIB-4 to 8 - 45LIB-5 multiple keys, Programming Resources, 8-45 HELP LIBRARY command display, Librarian, object, Programming Resources, 5-1, 5-12 LIB-8 to LIB-10 adding modules, Programming Resources, help text example, Librarian, LIB-6 to LIB-8 5-2input file specification, Librarian, LIB-11 creating, Programming Resources, 5-2 input_file_spec type, Librarian, LIB-12 deleting a module. Programming invoking, Librarian, LIB-12 Resources, 5-2 key lines in help files, Librarian, LIB-5 to extracting a module, Programming LIB-6 Resources, 5-2LIBRARIAN routines, Librarian, LIB-10 listing modules, *Programming Resources*, library types of, Programming Resources, 1-18 replacing modules, Programming LIBRARY command, Programming Resources, Resources, 5-2 system default, Programming Resources, library file specification, Librarian, LIB-11 library-file-spec type, Librarian, LIB-11 user default, Programming Resources, 5-2 library header, Librarian, LIB-2 opening with LBR routine, Programming library index, Librarian, LIB-2 Resources, 8-36 macro libraries, Librarian, LIB-1 processing index entries, Programming module header, Librarian, LIB-2 Resources, 8-53 module name table (MNT), Librarian, LIB-2 processing index entry with LBR routine, object libraries, Librarian, LIB-1 Programming Resources, 8-53 overview, Librarian, LIB-10 processing of default, Linker, 6-14 restrictions, Librarian, LIB-12 reformatting, Librarian, LIB-15, LIB-20 retrieval of help text, Librarian, LIB-8 to replacing module, Programming Resources, LIB-10 shareable image libraries, Librarian, LIB-1, shareable image, Programming Resources, 5-8 LIB-3 adding, Programming Resources, 5-8 text libraries, Librarian, LIB-1 deleting, Programming Resources, 5-8 types of libraries, Librarian, LIB-1 listing, Programming Resources, 5-8 Library, Message, MSG-5 replacing, Programming Resources, 5-8 adding module with LBR routine, symbol table, Linker, 2-10 Programming Resources, 8-40 system default, Programming Resources, 5-12; closing with LBR\$ routine, Programming Linker, 1-5, 2-4, 6-14 Resources, 8-36 system default object library, Linker, LINK-17, compressing, Programming Resources, 8-25 LINK-18 creating with LBR routine, Programming text, Programming Resources, 5-3 Resources, 8-36 type of, Librarian, LIB-1; Linker, 2-3 creation of, Linker, 1-5, 2-4 updating, Modular Procedures, 6-5 default object, Programming Resources, 5-1 user, Linker, 2-4 default user, Linker, LINK-21 user default, Programming Resources, 5-12 deleting module with LBR routine, user-default shareable image, Linker, 6-14 Programming Resources, 8-42 LIBRARY command, Programming Resources, expanding, Programming Resources, 8-25 1-19; Librarian, LIB-11; Linker, 2-3 identification of, Linker, LINK-24, LINK-25 /CREATE qualifier, Programming Resources, initializing with LBR routine, Programming 5-2Resources, 8-36

LIBRARY command (cont'd)	%LINE (cont'd)
creating a new library using	STEP command, Debugger, 3-6
/CREATE, Librarian, LIB-17	Linear recurrence
cross-referencing	definition of, RTL Math, 2-7
/CROSS_REFERENCE qualifier,	Line break
$Librarian, ext{LIB-19}$	in data from global selection, VAXTPU, 7–300
DELETE qualifier, Programming Resources,	LINE command, VAXTPU, 4–18
5–2	Line composition, RTL Screen Management, 3-2
directing output, Librarian, LIB-12	Line editing
exiting, Librarian, LIB-12	inhibit, Programming Resources, 7–42
/EXTRACT qualifier, Programming Resources, 5-2	Line feed, File Def Language, FDL-33 LINEFEED key command, Delta/XDelta,
format of, Librarian, LIB-11	DELTA-22
input file specification, <i>Librarian</i> , LIB–11	LINEFEED key equivalent, Delta/XDelta,
default file type, Librarian, LIB-12	DELTA-22
invoking, Librarian, LIB-12	Line mode, Debugger, CD-149
library file specification, Librarian, LIB-11	Line-mode editing, VAXTPU, C-3
library-file-specification	example, VAXTPU, A-1
default file type, Librarian, LIB-11	Line number
/LIST qualifier, Programming Resources, 5–2	See also %LINE
qualifiers for, Librarian, LIB-13 to LIB-45	selecting from DECwindows window, Debugger
REPLACE qualifier, Programming Resources,	1–22
5–2	source display, Debugger, 6-1, 6-3, 6-4
restrictions on, Librarian, LIB-12	with DECwindows, Debugger, 1–10
specifying time in, Librarian, LIB-14	traceback information, Debugger, 2–13, 5–3
LIBRARY directive, MACRO, 6–51 Library facility, Modular Procedures, 3–2	treated as symbol, <i>Debugger</i> , 5–9 Line-oriented output, <i>RTL Screen Management</i> ,
Library file	2–9
processing of, Linker, 6–9, 6–13	Line printer
used as linker input, Linker, 1–5	carriage control, I/O User's I, 5-6, 5-8
Library file specification, Librarian, LIB-11	character case, I/O User's I, 5-4
Library header, Librarian, LIB-2	character formatting, I/O User's I, 5-2
Library index, Librarian, LIB-2	device characteristics, I/O User's I, 5-3
Library key, Librarian, LIB-2	driver, I/O User's I, 5-1
Library module	error recovery, I/O User's I, 5-3
extracting with LBR routine, Programming	form feed, I/O User's I , 5–4
Resources, 8–43	function codes, I/O User's I, 5-5, A-5
LIBRARY positional qualifier, Linker, LINK-25	I/O functions
Library procedure, Routines Intro, 2-4	IO\$_SENSEMODE, I/O User's I, 5–9
'LIBRARY qualifier, Linker, 2–4; National Char Set, NCS–33	IO\$_SETCHAR, I/O User's I, 5–9 IO\$_SETMODE, I/O User's I, 5–9
Library routine, Convert, CONV-1; File Def	IO\$_WRITELBLK, I/O User's I, 5–5
Language, FDL-41, FDL-42	IO\$_WRITEPBLK, I/O User's I, 5-5
Library size	IO\$_WRITEVBLK, I/O User's I, 5–5
See /COMPRESS qualifier	I/O status block, I/O User's I, 5–10
and the control of th	printall mode, I/O User's I, 5-4
See /CREATE qualifier Lifetime	programming example, I/O User's I, 5-11
definition of, DECthreads, 3–4	sense mode function, I/O User's I, 5-9
	set characteristics, I/O User's I , 5–9
Limit option	set mode function, I/O User's I, 5–9
See RAB\$V_LIM option	status returns, I/O User's I , $A-5$
LIM option, File Def Language, FDL–11 %LINE, Debugger, D–7	supported devices, I/O User's I, 5-1
EXAMINE command, Debugger, 4–19	SYS\$GETDVI returns, I/O User's I, 5-3
EXAMINE/SOURCE command, Debugger, 6–4	write function, I/O User's I, 5–5
GO command, Debugger, CD-100	carriage control, I/O User's I, 5-6 /LINE qualifier, Debugger, 3-12, CD-18, CD-31,
SET BREAK command, Debugger, 3–10	CD-83, CD-127, CD-185, CD-259
SET TRACE command, Debugger, 3-10	32 33, 32 121, 32 100, 32 200

"Line" string constant parameter to GET_INFO,	Linker Utility (LINK) (cont'd)
VAXTPU, 7–172	object language, Programming Resources, 1-13
Line terminator	options file, Programming Resources, 1-13;
deleting, VAXTPU, 7–28	Linker, 1–6, 3–1
terminal, I/O User's I, 8-9	creating, Modular Procedures, 5–8
LINE_BEGIN keyword, VAXTPU, 7-69, 7-249 to	descriptions, Linker, 1–7 to 1–9
7–250, 7–273	how to build, Linker, 1-7
with POSITION, VAXTPU, 7–288	updating, Modular Procedures, 6-6
with SEARCH, VAXTPU, 7-327	output, Programming Resources, 1–12
with SEARCH_QUIETLY, VAXTPU, 7-332	brief description, Linker, 1-5
"Line_editing" string constant parameter to	qualifiers used to direct, Linker, 1-5
GET_INFO, VAXTPU, 7–199	overview, Linker, 2–1
LINE_END keyword, VAXTPU, 7-69, 7-251,	parameter
7–273	for creating executable image, Linker, 1-1
with POSITION, VAXTPU, 7–288	primary functions, Linker, 1–6
with SEARCH, VAXTPU, 7-327	qualifiers for directing output, Linker, 1-2
with SEARCH_QUIETLY, VAXTPU, 7-332	searching object libraries, Programming
LINE_NUMBER keyword, VAXTPU, 7-416	Resources, 5-2
"Line_number" string constant parameter to	shareable image, Linker, 1–9, 4–1
GET_INFO, VAXTPU, 7-179, 7-206	UNIVERSAL option, Programming Resources,
Line_Plot graph, File Applications, 4-12, A-2	5–5
LINK command, Debugger, 3-1, 5-4, 6-1	VAX object language, Linker, 7-1
in command procedure, Linker, 3-5	Linking to VMS Images, DECthreads, B-2
invoking linker, Linker, 1-2	Link options
qualifiers, Linker, 1–3	See Options
incompatibility among, Linker, LINK-1	LINK/SHAREABLE command, Programming
shareable image, Debugger, 5-12	Resources, 5–14
with DECwindows, Debugger, 1–3	LINK_CACHE_ENABLE attribute, File Def
.LINK directive, MACRO, 6-52	Language, FDL-32
/INCLUDE qualifier, MACRO, 6-52	LINK_TIMEOUT attribute, File Def Language,
/LIBRARY qualifier, MACRO, 6-52	FDL-32
/SELECTIVE_SEARCH qualifier, MACRO,	LIS file, Delta/XDelta, DELTA-10, DELTA-11,
6–53	DELTA-12
/SHAREABLE qualifier, MACRO, 6-53	LISP
Linker Utility (LINK), Programming Resources,	See VAX LISP
1–11 to 1–13; <i>Librarian</i> , LIB–1, LIB–3	List
additional controls, Linker, 1–12	specifying as a resource value, VAXTPU, 4–13
CLUSTER option, Programming Resources,	LIST clause
5–6	for VALUE clause, Command Def, CDU-34
cluster processing order, Linker, 1-13	with keywords, Command Def, CDU-29
command qualifier summary, Programming	with parameters, Command Def, CDU-24
Resources, 1–13	with qualifiers, Command Def, CDU-26
DCL qualifiers, Linker, LINK-1 to LINK-28	.LIST directive, MACRO, 6-55
directing output, Linker, 1-1	See also .SHOW directive
examples, Linker, LINK–31	Listing
exiting, Linker, 1–1	obtaining
GSMATCH option, Programming Resources,	See /LIST qualifier
5–5, 5–6	Listing control directive
how to invoke, Linker, 1–1	.IDENT, MACRO, 6–39
image map, Programming Resources, 1–13;	LIST, MACRO, 6–55
Linker, 1–12, 5–1	.NLIST, MACRO, 6–65
input, Programming Resources, 1–12	.NOSHOW, <i>MACRO</i> , 6–67, 6–89
file types, Linker, 1-4	.PAGE, <i>MACRO</i> , 6–75
introduction, Linker, 1-1	.SHOW, <i>MACRO</i> , 6–89
linker operations, Linker, 6–1	Listing directives, Message, MSG-25, MSG-28
map	Listing level count, MACRO, 6-90
use in crash dump analysis, <i>System Dump Analyzer</i> , SDA–15	, , , , , , , , , , , , , , , , , , , ,

/LISTING qualifier, Command Def, CDU-40; SUMSLP, SUM-16 Listing table of contents, MACRO, 6-94 List Names and Addresses of Loaded Executive Images command, Delta/XDelta, DELTA-44 /LIST qualifier, Debugger, 6-1; Librarian, LIB-12, LIB-28; Message, MSG-11 default output destination, National Char Set, NCS-34 for obtaining listing of NCS library, National Char Set, NCS-34 information provided by, National Char Set, NCS-34 LIBRARY command, Programming Resources, specifying output file, National Char Set, NCS-34 using with /BEFORE, Librarian, LIB-14; National Char Set, NCS-23 using with /FULL, Librarian, LIB-23; National Char Set, NCS-30 using with /HISTORY, Librarian, LIB-26; National Char Set, NCS-31 using with /NAMES, Librarian, LIB-33 using with /ONLY, Librarian, LIB-35; National Char Set, NCS-38 using with other qualifiers, National Char Set, NCS-34 using with /SINCE, Librarian, LIB-42; National Char Set. NCS-41 Literal directive (.LITERAL) in message source file, Message, MSG-21 Literal mode, MACRO, 5-10 contrasted with immediate mode, MACRO, operand specifier format, MACRO, 8-23 LKB (lock block), System Dump Analyzer, SDA-108 \$LKWSET, System Services, SYS-422 LMF\$GROUP_TABLE.EXE global symbols, System Dump Analyzer, SDA-60 LNK\$LIBRARY, Programming Resources, 5-1; Linker, LINK-22 See also Library See also Linker Utility LOADALT macro, Device Support (A), 14-10, 14-22; Device Support (B), 2-44, 3-74 Load Base Register command, Delta/XDelta, DELTA-40 LOADER\$_PTE_NOT_EMPTY status, Device Support (B), 3–108 LOADMBA macro, Device Support (A), 15-3, 15-13, 15-14 to 15-15; Device Support (B),

LOADUBA macro, Device Support (A), 14-10, 14-11, 14-21; Device Support (B), 2-46, 3-77 LOA option. File Def Language, FDL-10, FDL-11 \$LOCAL\$INI\$ buffer, VAXTPU, 4-22 Local buffer caching with lock management service, System Services Intro, 13-13 LOCAL clause for PLACEMENT clause, Command Def. CDU-25, CDU-34 LOCAL declaration, VAXTPU, 3-34 to 3-35 Local disk UCB extension, Device Support (B), 1-69, 1-82 to 1-84 required for error logging, Device Support (A), 11-9; Device Support (B), 3-9 required for IOC\$APPLYECC routine, Device Support (B), 3-67 Local label saving, MACRO, 6-87 user-defined, MACRO, 3-7 Local label block ending, MACRO, 6-22 starting, MACRO, 6-22 Local processor, Device Support (A), 1-7 /LOCAL qualifier, Debugger, 8-6, CD-47, CD-54, CD-243 "Local" string constant parameter to GET_INFO, *VAXTPU*, 7–179 Local symbol, *Programming Resources*, 5–11; Linker, 2-8; Patch, PAT-8; MACRO, 3-6 See also Symbol signaling with, Programming Resources, 9-11 Local tape UCB extension, Device Support (B), 1-69, 1-81 to 1-82 required for error logging, Device Support (A), 11-9; Device Support (B), 3-9 Local variable, VAXTPU, 3-4, 3-20, 3-34 Locate mode and record retrieval. File Applications, 8-2 comparing with move mode for buffer handling, RMS, 7-15 Locate mode option See RAB\$V LOC option %LOCATE operator, MACRO, 4-9 LOCATE_MODE attribute, File Def Language, FDL–11 LOCATE MOUSE built-in procedure, VAXTPU, 7-252 to 7-253 Location examining, System Dump Analyzer, SDA-51 SDA default, System Dump Analyzer, SDA-51 translating to VAX MACRO instruction, System Dump Analyzer, SDA-51 Location control directive .ALIGN, MACRO, 6-5 .BLKx, MACRO, 6-12

Load option

2-45, 3-76

See RAB\$V_LOA option

Location counter alignment directive Lock mode, System Dump Analyzer, SDA-144 (.ODD), MACRO, 6-71 Lock record for read option Location counter control directive See RAB\$V_REA option (.EVEN), MACRO, 6-33 Lock record for write option Location field in XABALL See RAB\$V_RLK option See XAB\$L LOC field Lock request LOCC (Locate Character) instruction. MACRO. dequeuing, System Services, SYS-149 9 - 130queuing, System Services Intro, 13-4 Lock asynchronously, System Services, SYS-202 See also Spin lock synchronously, System Services, SYS-213 choice of mode, System Services Intro, 13-3 synchronizing, System Services Intro, 13–7 concept of, System Services Intro, 13-1 /LOCKS qualifier, System Dump Analyzer, conversion, System Services Intro, 13-5, 13-9 SDA-127 deadlock detection, System Services Intro, 13-5 Lock status block, System Services Intro, 13-8; dequeuing, System Services Intro, 13-12 System Services, SYS-204 displaying SDA information, System Dump Lock value block, System Services, SYS-204 Analyzer, SDA-143 description, System Services Intro, 13-11 getting information about using, System Services Intro, 13–14 asynchronously, System Services, SYS-306 Lock values, Routines Intro, A-9t synchronously, System Services, SYS-318 lock_id data type, Routines Intro, A-9t global, DECthreads, 3-3 LOCK_ON_READ attribute, File Def Language, level, System Services Intro, 13-3 FDL-11 mode, System Services Intro, 13-3 LOCK_ON_READ secondary attribute, File root, File Applications, 3-29 Applications, 7–11 Lock block LOCK_ON_WRITE attribute, File Def Language, See LKB FDL-11 Lock database LOCK_ON_WRITE secondary attribute, File in a VAXcluster, System Services, SYS-315 Applications, 7-11 Lockdown (poor man's), Device Support (A), E-16 /LOCK_STATE qualifier, Debugger, CD-50 to E-17; Device Support (B), 2-49 to 2-50, lock_status_block data type, Routines Intro, A-9t 2 - 97LOCK_SYSTEM_PAGES macro, Device Support Lock ID, Device Support (B), 1-73 (B), 2-49/LOCKID qualifier, System Dump Analyzer, lock_value_block data type, Routines Intro, A-10t Logarithm LOCKING.EXE, System Dump Analyzer, SDA-60 base 2, RTL Math, MTH-94, MTH-114 Locking a global mutex, *DECthreads*, cma-75, common, RTL Math, MTH-96, MTH-116 pthread-68 natural, RTL Math, MTH-92, MTH-112 Locking a mutex, *DECthreads*, cma-81, cma-83, natural complex, RTL Math, MTH-35, pthread-82, pthread-84 MTH-37LOCK macro, Device Support (A), 3-9, 3-10, E-4; Log file Device Support (B), 2-47 to 2-48, 3-111 as command procedure, Debugger, 8-5 Lock management routines debugger, Debugger, 8-5, CD-155 global symbols, System Dump Analyzer, with DECwindows, Debugger, 1-27 SDA-60 name of, Debugger, 8-5, CD-143, CD-221 Lock management service, System Services Intro, Logical AND operator See AND operator for interprocess communication, System Logical-block-position option, File Applications, Services Intro, 8–10 4-31 Lock manager, Programming Resources, 4-13; Logical exclusive OR operator Modular Procedures, 3-21; Routines Intro, See Exclusive OR operator A-9t; Device Support (B), 1-73 Logical functions, vector, MACRO, 10-64 See also Synchronization Logical I/O displaying SDA information, System Dump operations, System Services Intro, 7-7 Analyzer, SDA-108 privilege, System Services Intro, 7-4, 7-6, 7-7 queueing a lock request, Programming Logical I/O function Resources, 4-14 translation from virtual function to, Device Support (A), 2–3

Logical I/O function (cont'd) Logical name table (cont'd) translation to physical function, Device Support deleting, System Services, SYS-139 (B), 3–31, 3–40, 3–54 directory, System Services Intro, 6-3 group, System Services Intro, 6-5 Logical inclusive OR operator job, System Services Intro, 6-5 See Inclusive OR operator predefined logical names, System Services Logical instruction, MACRO, 9-5 Intro, 6-2 Logical name, System Services Intro, 6-34, 7-26; process, System Services Intro, 6-4 RTL Library, LIB-340 process-private, System Services Intro, 6-6 advantages, File Applications, 5-4 quotas, System Services Intro, 6-8 attributes, System Services Intro, 6-7 search list, System Services Intro, 6-11 concealed attribute, File Applications, 5-7 modifying, System Services Intro, 6-11 concealed-device, File Applications, 6-15 shareable, System Services Intro, 6-6, 6-15 creating, System Services Intro, 6-11; System system, System Services Intro, 6-6 Services, SYS-81 types of, System Services Intro, 6–2 debugger, Debugger, D-1 user-defined, System Services Intro, 6-6 defining, System Services Intro, 6-2 Logical name translation deleting, System Services Intro, 6-15; System requirements for parsing, RMS, 4-9 Services, SYS-139 Logical name translation access mode subfield duplicating, System Services Intro, 6-12 EVE\$INIT, VAXTPU, 4-31 See FAB\$V_LNM_MODE subfield example program, File Applications, 5-5 to 5-6 Logical NOT operator (#), System Dump for interprocess communication, System Analyzer, SDA-12 Services Intro, 8-10 Logical operators, System Dump Analyzer, format convention, System Services Intro, 6-10 SDA-12 getting information about, System Services, AND operator, VAXTPU, 3-7 NOT operator, VAXTPU, 3-7 SYS-645 image rundown, System Services Intro, 6-5 OR operator, VAXTPU, 3-7 multivalued, System Services Intro, 6-2 XOR operator, VAXTPU, 3-7 parsing, File Applications, 5-7 LOGICAL option, File Applications, 4-31 rooted-device, File Applications, 6-15 Logical OR operator (|), System Dump Analyzer, RTL routines, RTL Library, LIB-114 SDA-12search list, File Applications, 5-7, 6-7 to 6-8 Logical predecessor, Debugger, 4-8, 4-13, 4-19, supersession, System Services Intro, 6-14 D-5system services, System Services Intro, 6-1 with DECwindows, Debugger, 1-9 TPU\$COMMAND, VAXTPU, 5-6 Logical successor, Debugger, 4-8, 4-13, 4-19, D-5 TPU\$DEBUG, VAXTPU, 5-8 with DECwindows, Debugger, 1-9 TPU\$SECTION, VAXTPU, 5-16 Logical unit number (LUN), Modular Procedures, translating, System Services Intro, 6-16; 2-16; Device Support (A), 17-2 System Services, SYS-645 allocating, RTL Library, 2-17 translation of, File Applications, 5-7, 6-5 to RTL routine to free, RTL Library, LIB-175 Logical value, File Def Language, FDL-2 types of, File Applications, 5-6 to 5-7 Logical XOR operator (\), System Dump Logical name system service call Analyzer, SDA-13 example of logical_name data type, Routines Intro, A-10t SYS\$CRELNM, System Services Intro, LOGICAL_NAMES.EXE global symbols, System Dump Analyzer, SYS\$CRELNT, System Services Intro, SDA-60 /LOG qualifier, Debugger, CD-50, CD-56; 6 - 15SYS\$DELLNM, System Services Intro, Librarian, LIB-30 See also /DELETE qualifier SYS\$TRNLNM, System Services Intro, See also /REPLACE qualifier 6 - 16CREATE/FDL, File Def Language, FDL-45 Logical name table for verifying NCS library operations, National controlling access through access control lists, Char Set, NCS-35 Utility Routines, ACL-1 .LONG directive, MACRO, 6-56 creating, System Services Intro, 6-14; System Longest record length field Services, SYS-87 See XAB\$W_LRL field default, System Services Intro, 6-3

LONG mode, Patch, PAT-16	LPA11-K device (cont'd)
/LONG qualifier	data underrun/overrun, I/O User's I, 4–12
with ALIGN command, Patch, PAT-38	device characteristics, I/O User's I, 4-5 to 4-8
with DELETE command, Patch, PAT-52	device configuration, I/O User's I , 4–2, 4–10,
with DEPOSIT command, Patch, PAT-55	4–34
with EVALUATE command, Patch, PAT-59	device initialization, I/O User's I , 4-4, 4-8 to
with EXAMINE command, Patch, PAT-62	4-9, 4-32, 4-34
with REPLACE command, Patch, PAT-71	driver, I/O User's I, 4-1
with SET MODE command, Patch, PAT-76	errors, I/O User's I, 4-2
with VERIFY command, Patch, PAT-90	features, I/O User's I , 4–3
Longword, System Services Intro, 2–4	function codes, I/O User's I , 4–8, A–4
to convert with FAO, VAXTPU, 7–138	function modifier
to convert with MESSAGE, VAXTPU, 7–268	IO\$M_SETEVF, I/O User's I , 4–11, 4–14
to convert with MESSAGE_TEXT, VAXTPU,	high-level language support routines, I/O
7–271	User's I, 4–15
Longword access enable bit	I/O functions
See VEC\$V_LWAE	IO $_INITIALIZE$, I/O User's I , 4–9
Longword-aligned random-access mode, Device	IO $_LOADMCODE$, I/O User's I, 4–8
Support (A), 14–3, 14–11, 14–14 to 14–15;	IO $_{\rm SETCLOCK}$, I/O User's I, 4–10
Device Support (B), 1–26	IO $_{STARTDATA}$, I/O User's I , 4–11
Longword condition value, System Services Intro,	IO $\$$ _STARTMPROC, I/O User's I , 4–9
1–6	I/O status block, I/O User's I , 4–33
Longword data type, MACRO, 8-2	initialize command table, I/O User's I , 4–9
/LONGWORD qualifier, Debugger, CD-60, CD-83	initialize function, I/O User's I , 4–9
Longword storage directive (.LONG), MACRO,	load microcode function, I/O User's I, 4-8
6–56	maintenance status register, I/O User's I ,
longword_signed data type, Routines Intro, A-10t	4–10, 4–33
longword_unsigned data type, Routines Intro,	microcode loading, I/O User's I, 4-4, 4-8,
A10t	4–32, 4–34
Lookaside list	modes of operation, I/O User's I, 4-1
See also Nonpaged pool	operator process, I/O User's I, 4–35
displaying contents, System Dump Analyzer,	programming examples, I/O User's I, 4-37,
SDA-118	4–39, 4–44
LOOKUP_KEY built-in procedure, VAXTPU,	RSX-11M/M-PLUS and VMS differences, I/O
7–254 to 7–257	User's I , 4–35 set clock function, I/O User's I , 4–10
Loopback mode, Device Support (B), 1-91	start data transfer request function, I/O User's
LOOP statement, VAXTPU, 3-21 to 3-22	I, 4–11
Lowest level of index area number field	start microprocessor function, I/O User's I , 4–9
See XAB\$B_LAN field	status returns, I/O User's I, 4–9, 4–10, 4–11,
"Low_index" string constant parameter to	4–14, 4–33, A–5
GET_INFO, VAXTPU, 7–167	stop command, I/O User's I , 4–14
LPA11-K device	subroutines
AST	argument usage, I/O User's I, 4–16 to
address, I/O User's I , 4–12, 4–14	4–19
quota, I/O User's I , 4–14	list, I/O User's I , 4–15
synchronization, I/O User's I , 4–14	supported device, I/O User's I, 4-1
buffer management, I/O User's I , 4–16	supporting software, I/O User's I , 4–3
buffer overrun, I/O User's I , 4–12, 4–14, 4–31	SYS\$CANCEL, I/O User's I, 4-14
buffer queue control, I/O User's I , 4–16	SYS\$GETDVI returns, I/O User's I, 4-5
clock rate, I/O User's I , $4-10$	timeout error, I/O User's I , $4-2$
data buffer, I/O User's I, 4-14	LRP (large request packet), System Dump
data sampling, I/O User's I, 4-1	Analyzer, SDA-118
data transfer command table, $I/O User's I$,	LRP lookaside list
4–11	displaying, System Dump Analyzer, SDA-118
data transfer start command, I/O User's I ,	/LRP qualifier, System Dump Analyzer, SDA-118
4-12	LUN
data transfer stop command, I/O User's I ,	See Logical unit number

MACRO (cont'd) LWAE (longword access enable) bit system services, System Services Intro, 2-1, See VEC\$V LWAE 2-5MACRO-32 file format, from NCS library See /FORMAT qualifier M command MACRO-32 output, from NCS library privileges required for, Delta/XDelta, See /MACRO qualifier DELTA-14 Macro argument, MACRO, 4-1 ;M command, Delta/XDelta, DELTA-43 actual, MACRO, 4-1 MA780 (multiport shared memory) concatenated, MACRO, 4-5 configuring a dump file for, System Dump delimited, MACRO, 4-3, 4-5 Analyzer, SDA-3 formal, MACRO, 4-1 Machine check, Device Support (A), 3-14, 13-22, keyword, MACRO, 4-3 19-7; MACRO, 10-43, 10-47 positional, MACRO, 4-3 condition handler, Device Support (A), 19-7 string, MACRO, 4-3 Machine check code Macro call, MACRO, 4-1 base address, System Dump Analyzer, SDA-14 as operator, MACRO, 2-3 Machine check protection block, Device Support listing, MACRO, 6-89 (A), 16–13, 16–14 number of arguments, MACRO, 6-63 Macro, File Def Language, FDL-41; MACRO, Macro call directive (.MCALL), MACRO, 6-60 4-1Macro definition, MACRO, 4-1 applicable VAX MACRO syntax rules, RMS, default value, MACRO, 4-2 end, MACRO, 6-27 arguments for service completion routines, labeling in, MACRO, 4-7 RMS, 3-11 listing, MACRO, 6-89 capabilities listed, RMS, 4-1 Macro definition directive control block initialization, RMS, 3-1 (.MACRO), *MACRO*, 6–57 for defining VMS RMS symbol, RMS, 3-1 Macro deletion directive (.MDELETE), MACRO, for initializing VMS RMS control blocks, RMS, 6-61 .MACRO directive, MACRO, 6-57 for invoking VMS RMS at run time, RMS, 3-1 Macro exit directive (.MEXIT), MACRO, 6-62 format, Device Support (B), 2-1 Macro expansion for VMS RMS control block store, RMS, 3-1 listing, MACRO, 6-89 library location, RMS, 3-2 printing, MACRO, 4-1 names and control blocks, RMS, 3-2 terminating, MACRO, 6-62 naming conventions, RMS, 3-2 Macro field nested, MACRO, 4-4 example of initializing, RMS, 3-5 passing numeric value to, MACRO, 4-6 setting at run time, RMS, 3-5 rules applicable to programming, RMS, 3-6 Macroinstruction service, RMS, 3-1 See Macro syntax applicable to VMS RMS, RMS, 3-1 Macro library, Programming Resources, 1–18, using, RMS, 3-6 5-13; Librarian, LIB-1 VMS RMS types, RMS, 3-1 adding a name to, MACRO, 6-51 with the same name as an opcode, MACRO, character case in, Librarian, LIB-2 6 - 58Macro library directive (.LIBRARY), MACRO, MACRO See also Instructions Macro link directive (.LINK), MACRO, 6-52 See also VAX MACRO Macro name, MACRO, 3-6 See also VAX MACRO instruction Macro operator CALLG (Call Procedure with General Argument %EXTRACT, MACRO, 4-10 List) instruction, System Services Intro, %LENGTH, MACRO, 4-8 %LOCATE, MACRO, 4-9 calling system services using, System Services string, MACRO, 4–8 Intro, 2-8 /MACRO qualifier, Librarian, LIB-31; National CALLS (Call Procedure with Stack Argument Char Set, NCS-36

Macro string operator

summary, MACRO, C-8

List) instruction, System Services Intro,

expansion, System Services Intro, 2-7

Magnetic tape	Magnetic tape
ACP create file operation, I/O User's I , 1–26	I/O functions (cont'd)
ACP function, I/O User's I, 1–30, 6–15	IO\$_SKIPRECORD, I/O User's I, 6–20
	$IO\$_UNLOAD$, $I/O\ User$'s I , 6–22
available function, I/O User's I, 6–27	IO\$_WRITELBLK, I/O User's I, 6–18
BOT marker, I/O User's I, 6-19, 6-20	IO\$_WRITEOF, I/O User's I, 6–21
byte count	IO\$_WRITEPBLK, I/O User's I, 6–18
read, I/O User's I , 6–17	IO\$_WRITEVBLK, I/O User's I, 6–18
write, I/O User's I , $6-19$	
data check, $I/O User$'s $I, 6-8, 6-17, 6-18$	I/O status block, I/O User's I, 6–28
data security erase function, I/O User's I, 6–27	initializing from within a program, System
density, I/O User's I , 6–26	Services Intro, 7–24; System Services,
device characteristics, I/O User's I, 6-11 to	SYS-407
6–12	example, System Services Intro, 7–24
driver, I/O User's I, 6-1	master adapters, I/O User's I , 6–8
end-of-volume detection, I/O User's I, 6-20	pack acknowledge function, I/O User's I , 6–27
EOF status, I/O User's I , 6–17	parity, I/O User's I, 6–26
EOT	positioning, I/O User's I , 1–31
marker, I/O User's I, 6-20 to 6-21	programming example, I/O User's I, 6-28
	quotas, I/O User's I, 6–13
status, I/O User's I, 6–17, 6–19, 6–21	read function, I/O User's I, 6-17
error recovery, I/O User's I, 6-9	read reverse function, I/O User's I , 6–17, 6–18
extended characteristics, I/O User's I, 6–12	rewind function, I/O User's I , 6–19
features, I/O User's I, 6-6	rewind offline function, I/O User's I, 6-21
file, File Def Language, FDL-21	sense mode function, I/O User's I, 6–22
file attributes, I/O User's I , 6–9	
file expiration, File Def Language, FDL-16	set characteristics function, I/O User's I, 6-23
file protection, File Def Language, FDL-22	set mode function, I/O User's I, 6–23
function codes, I/O User's I , 6–13, A–6	characteristics, I/O User's I, 6-25
function modifiers	skip file function, I/O User's I , 6–19
IO\$M_DATACHECK, I/O User's I, 6-8,	skip record function, I/O User's I , 6–20
6-17, 6-18	slave formatter, I/O User's I , 6–8
IO\$M_ERASE, I/O User's I, 6–18	starting position, File Def Language, FDL-21
IO\$M_INHEXTGAP, I/O User's I, 6–10	status returns, I/O User's I , A-7
IO\$M_INHRETRY, I/O User's I, 6-9	streaming tape systems, I/O User's I , 6–10
IO\$M_NOWAIT, I/O User's I, 6–19, 6–21,	supported devices, I/O User's I , 6–1
6-22	SYS\$GETDVI returns, I/O User's I, 6-11
IO\$M_REVERSE, I/O User's I, 6–17	tape controllers, I/O User's I, 6-3
	tape mark, I/O User's I , 6–17, 6–20
I/O functions, I/O User's I, 6–13	thrashing, I/O User's I, 6–10
See also ACP-QIO interface	TMSCP magnetic tapes, I/O User's I, 6-1
arguments, I/O User's I , 6–15	
IO $_ACCESS$, I/O User's I , 6–13	TU58 magnetic tape
IO $_ACPCONTROL$, I/O User's I , 1–31,	See Disk, TU58
6–15	unload function, I/O User's I , 6–22
IO $_AVAILABLE$, $I/O\ User's\ I$, 6–27	write end-of-file function, I/O User's I , 6–21
IO $_$ CREATE, I/O User's I , 6–13	write function, I/O User's I , 6–18
IO\$_DEACCESS, I/O User's I, 6–13	Magnetic tape accessibility field
IO\$_DSE, $I/O User$'s $I, 6-13, 6-27$	See XAB\$B_MTACC field
IO\$_FLUSH, I/O User's I, 6–13	Magnetic tape processing
IO\$_MODIFY, I/O User's I, 6-13	run-time options, <i>File Applications</i> , 9–13 to
IO\$_PACKACK, I/O User's I, 6–27	9–14
IO\$_READLBLK, I/O User's I, 6–17	
IO\$_READPBLK, I/O User's I, 6–17	MAIL
IO\$_READVBLK, I/O User's I , $6-17$	See MAIL Utility
· · · · · · · · · · · · · · · · · · ·	MAIL\$MAILFILE_BEGIN, Utility Routines,
IO\$_REWINDOFF I/O User's I, 6–19	MAIL-34
IO\$_REWINDOFF, I/O User's I, 6–21	MAIL\$MAILFILE_CLOSE, Utility Routines,
IO\$_SENSEMODE, I/O User's I, 6–22	MAIL-38
IO\$_SETCHAR, I/O User's I, 6–23	
IO\$_SETMODE, I/O User's I, 6–23	
IO $_SKIPFILE$, I/O User's I , 6–19	

MAIL\$MAILFILE_COMPRESS, Utility Routines, MAIL-41 MAIL\$MAILFILE_END, Utility Routines, MAIL-44 MAIL\$MAILFILE_INFO_FILE, Utility Routines, MAIL-46 MAIL\$MAILFILE_MODIFY, Utility Routines, MAIL-49 MAIL\$MAILFILE_OPEN, Utility Routines, MAIL-52 MAIL\$MAILFILE_PURGE_WASTE, Utility Routines, MAIL-55 MAIL\$MESSAGE_BEGIN, Utility Routines, MAIL-58 MAIL\$MESSAGE_COPY, Utility Routines, MAIL-62 MAIL\$MESSAGE DELETE, Utility Routines, MAIL-67 MAIL\$MESSAGE_END, Utility Routines, MAIL-69 MAIL\$MESSAGE_GET, Utility Routines, MAIL-71 MAIL\$MESSAGE_INFO, Utility Routines, MAIL-76 MAIL\$MESSAGE_MODIFY, Utility Routines, MAIL-80 MAIL\$MESSAGE_SELECT, Utility Routines, MAIL-83 MAIL\$SEND_ABORT, Utility Routines, MAIL-87 MAIL\$SEND_ADD_ADDRESS, Utility Routines, MAIL-89 MAIL\$SEND ADD ATTRIBUTE, Utility Routines, MAIL-91 MAIL\$SEND_ADD_BODYPART, Utility Routines, MAIL-98 MAIL\$SEND_BEGIN, Utility Routines, MAIL-94 MAIL\$SEND_END, Utility Routines, MAIL-101 MAIL\$SEND_MESSAGE, Utility Routines, MAIL-103 MAIL\$USER_BEGIN, Utility Routines, MAIL-105 MAIL\$USER_DELETE_INFO, Utility Routines, MAIL-110 MAIL\$USER_END, Utility Routines, MAIL-112 MAIL\$USER GET INFO, Utility Routines, MAIL-114 MAIL\$USER_SET_INFO, Utility Routines, MAIL-118 Mailbox, Programming Resources, 3-7; System Services Intro, 2-1, 7-30; RTL Library, 2-23, LIB-12; Device Support (B), 1-75, 1-76, 1-77 See also Terminal assigning channel to, System Services, SYS-93 associated with device, Device Support (B), 1 - 77buffered I/O quota for, Device Support (B),

controlling access through access control lists, Utility Routines, ACL-1 creating, Programming Resources, 3-8; System Services, SYS-93; I/O User's I, 7-1 deleting, I/O User's I, 7-2 permanent, System Services, SYS-96, SYS-142 temporary, System Services, SYS-96 device characteristics, I/O User's I, 7-4 disable terminal, I/O User's I, 8-21 driver, I/O User's I, 7-1 for interprocess communication, System Services Intro, 8-10 function codes, I/O User's I, 7-5, A-7 function modifiers IO\$M_NORSWAIT, I/O User's I, 7-7 IO\$M_NOW, I/O User's I, 7-2, 7-6, 7-7, 7-9, 7-10 IO\$M_READATTN, I/O User's I, 7-9 IO\$M_SETPROT, I/O User's I, 7-11 I/O function, Device Support (B), 1-40 IO\$_READLBLK, I/O User's I, 7–5 IO\$_READPBLK, I/O User's I, 7–5 IO\$_READVBLK, I/O User's I, 7-5 IO\$_WRITELBLK, I/O User's I, 7-6 IO\$_WRITEOF, I/O User's I, 7-9 IO\$_WRITEPBLK, I/O User's I, 7-6 IO\$_WRITEVBLK, I/O User's I, 7-6 I/O status block, I/O User's I, 7-12 input/output asynchronous, Programming Resources, immediate, Programming Resources, 3-9 synchronous, Programming Resources, 3-9 using SYS\$QIO, Programming Resources, 3 - 9using SYS\$QIOW, Programming Resources, 3-9 in shared memory, Device Support (B), 1-78 list of operations, I/O User's I, 7-1marked for deletion, Device Support (B), 1-78 message format, I/O User's I, 7-3; I/O User's II, 1-3 terminal, I/O User's I, 8-18 message size, I/O User's I, 7-2multiport memory, I/O User's I, 7-1 name, System Services Intro, 7-33 of job controller, Device Support (A), 9-7, E-7 of OPCOM process, Device Support (A), 10-7, permanent, Programming Resources, 3-8; I/O User's I, 7-2, 7-3, 7-4; Device Support (B), programming example, I/O User's I, 7-14 protection, System Services Intro, 7-4; I/O User's I, 7-2, 7-4, 7-11

read attention AST function, I/O User's I, 7-9

Mailbox (cont'd)

1 - 73

Mailbox (cont'd)	MAIL routines (cont'd)
read function, I/O User's $I, 7-5$	item code, Utility Routines, MAIL-8
reading data from, Programming Resources,	Boolean, Utility Routines, MAIL-8
3–9	input, Utility Routines, MAIL-8, MAIL-21
sending a message to, Device Support (B), 3-52	output, Utility Routines, MAIL-8,
to 3–53, 3–61	MAIL-23
set attention AST function, I/O User's I, 7-9	item descriptor
set protection function, I/O User's I, 7-11	declaring, Utility Routines, MAIL-8
status returns, I/O User's I, A-7	null, Utility Routines, MAIL-8
synchronizing access to, Device Support (A),	item list, Utility Routines, MAIL-6
3–8, 3–14	declaring, Utility Routines, MAIL-8
SYS\$GETDVI returns, I/O User's I, 7-4	terminating, Utility Routines, MAIL-8
system, System Services Intro, 7–33	mail file, Utility Routines, MAIL-3
messages, System Services Intro, 7-34	alternate, Utility Routines, MAIL-10
temporary, Programming Resources, 3-8; I/O	closing, Utility Routines, MAIL-10
User's I, 7-2, 7-4	compressing, Utility Routines, MAIL-12
terminal/mailbox interaction, I/O User's I,	creating, Utility Routines, MAIL-15
8–17	default, Utility Routines, MAIL-10
termination, System Services Intro, 8-18	opening, Utility Routines, MAIL-10
volume protection, I/O User's I, 7-11	purging, Utility Routines, MAIL-12
write attention AST function, I/O User's I, 7-9	specifying, Utility Routines, MAIL-10 to
write end-of-file message function, I/O User's	MAIL-11
I, 7–9	wastebasket, Utility Routines, MAIL-12
write function, I/O User's I, 7-6	mail file context
writing data to, Programming Resources, 3-9	initiating, Utility Routines, MAIL-9
Mailbox driver, Device Support (A), 12-5	terminating, Utility Routines, MAIL-9
MAILBOX spin lock, Device Support (A), 3-14;	message, Utility Routines, MAIL-1
Device Support (B), 3-52, 3-61	attribute, Utility Routines, MAIL-17
MAIL routines	copying, Utility Routines, MAIL-15
action routine, Utility Routines, MAIL-8	creating, Utility Routines, MAIL-17
calling sequence, Utility Routines, MAIL-9	deleting, Utility Routines, MAIL-16
folder, Utility Routines, MAIL-11,	displaying, Utility Routines, MAIL-14
MAIL-15	marking, Utility Routines, MAIL-14
mail file, Utility Routines, MAIL-15	modifying, Utility Routines, MAIL-14
send, Utility Routines, MAIL–18	moving, Utility Routines, MAIL-15
address list, Utility Routines, MAIL-17	printing, Utility Routines, MAIL-14
creating, Utility Routines, MAIL-17	reading, Utility Routines, MAIL-14
username type, Utility Routines, MAIL-17	selecting, Utility Routines, MAIL-13
bodypart	sending, Utility Routines, MAIL-17,
creating, Utility Routines, MAIL-17	MAIL-18
condition handling, Utility Routines, MAIL-6	message attribute
context, Utility Routines, MAIL-4	creating, Utility Routines, MAIL-17
initiating, Utility Routines, MAIL-4	message context
mail file, Utility Routines, MAIL-9	initiating, Utility Routines, MAIL-13
message, Utility Routines, MAIL-12	terminating, Utility Routines, MAIL-13
send, Utility Routines, MAIL-16	message format
terminating, Utility Routines, MAIL-4	standard, Utility Routines, MAIL-1
user profile, Utility Routines, MAIL-19	message header
deleted bytes threshold, Utility Routines,	creating, Utility Routines, MAIL-17
MAIL–12	message ID
disk space	external, Utility Routines, MAIL-2
reclaim, Utility Routines, MAIL-12	null item list, Utility Routines, MAIL-8
folder, Utility Routines, MAIL-2	programming examples, Utility Routines,
creating, Utility Routines, MAIL-15	MAIL-25
deleting, Utility Routines, MAIL-15	send context
folder names	initiating, Utility Routines, MAIL-16
displaying, Utility Routines, MAIL-11	terminating, Utility Routines, MAIL-16
introduction, Utility Routines, MAIL-1	signaling error, Utility Routines, MAIL-6

MAIL routines Map register base register signaling error (cont'd) See MBA\$L_MAP disabling, Utility Routines, MAIL-6 Map registers, Device Support (A), 1-22, 14-3, thread, Utility Routines, MAIL-5 to MAIL-6 14-4 to 14-7, 14-15, 14-19 to 14-22; Device user common database, Utility Routines, Support (B), 1-8, 1-25, 1-26, 2-3 MAIL-3, MAIL-19 allocating, Device Support (B), 3-65 to 3-66 user context allocating permanent, Device Support (A). initiating, Utility Routines, MAIL-19 11-2, 14-20 to 14-21, E-12; Device terminating, Utility Routines, MAIL-19 Support (B), 1-25 byte offset bit, Device Support (B), 3-77 flags, Utility Routines, MAIL-20 calculating the number needed, Device Support form, Utility Routines, MAIL-20 (A), 14–19 forward addressing, Utility Routines, format, Device Support (A), 14-6 to 14-7, MAIL-20 14 - 21personal name, Utility Routines, MAIL-20 invalidating, Device Support (A), 14-7, 14-13, queue name, Utility Routines, MAIL-20 14 - 22user profile entry, Utility Routines, MAIL-3, loading, Device Support (A), 14-21 to 14-22; MAIL-19 Device Support (B), 2-46, 3-77 to 3-78 adding, Utility Routines, MAIL-20 number of active, Device Support (B), 1-9, deleting, Utility Routines, MAIL-20 modifying, Utility Routines, MAIL-20 number of disabled, Device Support (B), 1-10 Mail Utility (MAIL), Utility Routines, MAIL-1 of MBA, Device Support (A), 15-3; Device Main headings, Routines Intro, 1–1 Support (B), 2-45, 3-76 Maintenance function, Device Support (A), 18-15 of Q22-bus, Device Support (A), 14-6 Main window widget, VAXTPU, 4-16 of UBA, Device Support (A), 14-6 Major ID, Linker, 3-7 operation, Device Support (A), 14-6 to 14-7 of shareable image in map, Linker, 5-6 releasing, Device Support (A), 10-2, 14-26; MANAGE CHILDREN routine Device Support (B), 2-56, 3-89 to 3-90 See MANAGE_WIDGET built-in procedure requesting, Device Support (A), 14-19 to 14-21; MANAGE CHILD routine Device Support (B), 2-61, 3-98 to 3-99 See MANAGE_WIDGET built-in procedure Map register valid bit, Device Support (A), 14-21 MANAGE_WIDGET built-in procedure, VAXTPU, Map register wait queue, Device Support (A), 14-19, 14-26, E-14; Device Support (B), 1-8, example of use, VAXTPU, B-4 to B-11 3-90, 3-99 Managing widget "Map_count" string constant parameter to controlling mapping, VAXTPU, 7-418 GET_INFO, VAXTPU, 7-173 Margin Manual unlock option default, VAXTPU, 7-412, 7-419, 7-454 See RAB\$V_ULK option MANUAL_UNLOCKING attribute, File Def setting records, VAXTPU, 7-448 Language, FDL-11 setting, VAXTPU, 7-412, 7-419, 7-454 MANUAL_UNLOCKING secondary attribute, source display, Debugger, 6-8, CD-144, File Applications, 7–15 CD-222 Map Margin action See Image map default, VAXTPU, 7-414, 7-456 MAP built-in procedure, VAXTPU, 7-259 to 7-260 setting, VAXTPU, 7-414, 7-456 MAP file, Delta/XDelta, DELTA-10, DELTA-11, MARGINS keyword, VAXTPU, 7-419 DELTA-12 MARK built-in procedure, VAXTPU, 7-261 to Mapped file. Programming Resources, 8-4 7 - 263closing, Programming Resources, 8-9 MARK data type, VAXTPU, 2-8 to 2-10 saving, Programming Resources, 8-9 Marker MAPPED_WHEN_MANAGED parameter to SET deleting, VAXTPU, 2-10, 7-108 built-in procedure, VAXTPU, 7-418 determining if record containing is Mapping unmodifiable, VAXTPU, 7-186 controlling in relation to widget, VAXTPU, fetching display value of record containing, 7 - 418VAXTPU, 7-186 /MAP qualifier, Linker, 1-5, 2-6, LINK-11 padding effects, VAXTPU, 2-10 video attributes, VAXTPU, 2-9, 7-261

/MARK_CHANGE qualifier, Debugger, CD-67 Mathematics routine additional routines, RTL Math, A-1 to A-16 entry, MACRO, 9-63 MAXBUF system parameter EXAMINE/FMASK command, Debugger, 11-13 limiting size of user's ACL buffer, RMS, 14-3 EXAMINE/TMASK command, Debugger, 11-13 Maximize-version option, File Applications, 4-27 masked vector operation, Debugger, 11-5, 11-9, MAXIMIZE_VERSION attribute, File Def 11 - 13Language, FDL-20 register, MACRO, 3-13 MAXIMIZE_VERSION secondary attribute, File register, VMR, Debugger, 11-5, 11-9, 11-13 Applications, 4-27 register save, MACRO, 6-29, 6-59 Maximum number of history records .MASK directive, MACRO, 6-59 NCS library, specifying, National Char Set, Masked vector operations, MACRO, 10-12 NCS-24, NCS-25 mask_byte data type, Routines Intro, A-10t Maximum record number field mask_longword data type, Routines Intro, A-10t See FAB\$L_MRN field mask quadword data type, Routines Intro, A-10t Maximum record number option, File mask_word data type, Routines Intro, A-10t Applications, 4-29 MASSBUS Maximum record size configuration, Device Support (A), 15-1, 15-5 default value for remote file access, RMS, 5-22 I/O address space, Device Support (A), 19-1 indexed file, File Applications, 3-22 I/O database, Device Support (A), 15-4, 15-7 to Maximum record size field 15 - 8See FAB\$W MRS field servicing multiunit controller on, Device Maximum record size field in XABFHC Support (A), 15-2, 15-6, 15-8, 15-12, See XAB\$W_MRZ field 15-14, 15-16 Maximum-record-size option, File Applications, servicing single-unit controller on, Device 4-29Support (A), 15-6 to 15-8, 15-11, 15-12, Maximum value, RTL Math, 1-7 15–13, 15–16 Maximum version option MASSBUS adapter See FAB\$V_MXV option See MBA "Maximum_parameters" string constant parameter MASSBUS driver to GET_INFO, VAXTPU, 7-190 DPT for, Device Support (A), 15-15 MAX_LINES keyword, VAXTPU, 7-421 interrupt service routine, Device Support (A), "Max_lines" string constant parameter to GET_INFO, VAXTPU, 7-173 start I/O routine, Device Support (A), 15-13 MAX_RECORD_NUMBER attribute, File Def unit initialization routine, Device Support (A), Language, FDL-20 15 - 12MAX_RECORD_NUMBER secondary attribute, unsolicited interrupt service routine, Device File Applications, 4-29 Support (A), 15–16 MBA\$INT, Device Support (A), 15–15 to 15–16; Master adapter, I/O User's I, 6-8 Device Support (B), 4-24 Master/slave model MBA\$L_AS, Device Support (A), 15-5, 15-9 to See Boss/worker model 15-10, 15-11 Master/slave software model, RTL Parallel MBA\$L_BCR, Device Support (A), 15-4, 15-5, Processing, 1-3 to 1-4 15-14; Device Support (B), 3-76 characteristics of, RTL Parallel Processing, 1-3 MBA\$L_CAR, Device Support (A), 15-5 queuing model, RTL Parallel Processing, 1-3 MBA\$L_CR, Device Support (A), 15-5 self-scheduling model, RTL Parallel Processing, MBA\$L_CSR, Device Support (A), 15-5, 15-14 1-3, 1-4MBA\$L_DR, Device Support (A), 15-5 true model. RTL Parallel Processing, 1-3, 1-4 MBA\$L_ERB, Device Support (A), 15-5, 15-12 MATCH built-in procedure, VAXTPU, 7-264 to MBA\$L_MAP, Device Support (A), 15-5; Device 7 - 265Support (B), 3-76 MATCHC (Match Characters) instruction, MBA\$L_SMR, Device Support (A), 15-5 MACRO, 9-131 MBA\$L_SR, Device Support (A), 15-5, 15-11, RTL routine to access, RTL Library, LIB-270 15 - 13Match operations, Librarian, LIB-2 MBA\$L_VAR, Device Support (A), 15-4, 15-5, Mathematical functions 15-14, 15-15; Device Support (B), 3-76 using system routines, Programming

Resources, 1-24

Memory (cont'd) MBA (MASSBUS adapter), Device Support (A), See also Vector memory address space, Device Support (A), 15-4 to See also Virtual memory zone allocating and freeing blocks of, RTL Library, data path, Device Support (A), 15-3 functions, Device Support (A), 15-1, 15-9 to allocating and freeing pages of, RTL Library, 15 - 10nexus value of, Device Support (A), 12-5 allocating strings, RTL String Manipulation, obtaining ownership, Device Support (A), 15-2, STR-46 allocation algorithms, RTL Library, 5-7 15-3, 15-6 to 15-11, 15-14 deallocating strings, RTL String Manipulation, registers, Device Support (A), 15-1 to 15-6 device, Device Support (A), 15-5, 15-12 to STR-45 detecting corruption in, Device Support (A), external, Device Support (A), 15-2 13-23 to 13-27 internal, Device Support (A), 15-3 detecting parity errors in, Device Support (A), map, Device Support (A), 15-3 to 15-6; 14-25; Device Support (B), 2-51 dynamic, DECthreads, 3-4 Device Support (B), 2-45, 3-76 effect of debugger, Debugger, 3-21 releasing secondary data channel, Device Support (B), 3-91 error resulting from exceeding, VAXTPU, 5-1 subunit number, Device Support (A), 15-1 examining, System Dump Analyzer, SDA-51 unit number, Device Support (A), 12-6, 15-1, formatting, System Dump Analyzer, SDA-56 15-12 to 15-13 locking page into, System Services Intro, 12-7; \$MBADEF macro, Device Support (A), 15-4 to System Services, SYS-420 15-6nonpaged system dynamic, File Applications, MBZ field, MACRO, 7-1 .MCALL directive, MACRO, 6-60 reasons for insufficient virtual memory error, MCHECK spin lock, Device Support (A), 3-14 RTL Parallel Processing, PPL-11 releasing with the FDL\$RELEASE routine, \$MCHKDEF macro, Device Support (A), 16-13, File Applications, 4–15 MCHK symbol, System Dump Analyzer, SDA-14 setting for a thread's stack, DECthreads, 2-8 MCOMB (Move Complemented Byte) instruction, stack, DECthreads, 3-4 MACRO, 9-22static, DECthreads, 3-4 MCOML (Move Complemented Long) instruction, testing accessibility of, Device Support (B), MACRO, 9-222-39 to 2-40 MCOMW (Move Complemented Word) instruction, types of, DECthreads, 3-3 MACRO, 9-22 unlocking page from, System Services, .MDELETE directive, MACRO, 6-61 SYS-651 MEAN_DATA_LENGTH attribute, File Def Memory allocation, Linker, 1-6, 2-10 Language, FDL-5 absolute program section, Linker, 6-4 MEAN_INDEX_LENGTH attribute, File Def algorithm for, Linker, 6-15 Language, FDL-5 based image, Linker, 1-7, 3-5 Measurement cluster, Linker, 6-17 converting units of, VAXTPU, 7-50 information about, in map, Linker, 5-8 relocatable program section, Linker, 6-4 Mechanism argument vector, RTL Library, 4-7, 4-11, 4-20 shareable image, *Linker*, 6–7 Mechanism array, *Programming Resources*, 9–15: steps in, Linker, 6-15 System Dump Analyzer, SDA-17, SDA-22 system image, Linker, 6-2 Mechanism array argument, System Services Memory cache, File Applications, 3-12, 3-14 Intro, 11-10 Memory fragmentation, RTL Library, 5-5 Memory interconnect to VAXBI adapter, Device Mechanism entry, Routines Intro, 1–10; System Support (A), 16-1, 16-7, 16-10 Services Intro, 1–8 Media ID, Device Support (B), 1–80 ADP address, Device Support (A), 16–10 MEGA spin lock, Device Support (A), 3-14 Memory location Memory decoding, System Dump Analyzer, SDA-53 examining, System Dump Analyzer, SDA-52 See also Buffer Memory management, Programming Resources, See also Nonpaged pool 10-1See also Shared memory exception, MACRO, E-4

Memory management (cont'd)	Message
fault, MACRO, E-4	debugger (cont'd)
using system routines, Programming	with DECwindows, Debugger, 1-20
Resources, 1-23	definition of, Message, MSG-22
vector, MACRO, 10-47	displaying, Programming Resources, 9–22
memory management disabled, MACRO,	example of, Message, MSG-1
10–47	format of, Message, MSG-1
TB, MACRO, 10-7, 10-8, 10-20, 10-32, 10-34, 10-41, 10-47	formatting and outputting, System Services, SYS-475
virtual memory, Programming Resources, 1-23	logging, Programming Resources, 9-24
Memory management exceptions	obtaining text of, System Services, SYS-319
vector, MACRO, 10-28	sending to error logger, System Services,
asynchronous MME handling, MACRO,	SYS-556
10–30	sending to operator, System Services, SYS-615
fault parameter, MACRO, 10–28	system, System Services Intro, 2–14
PTE bit, MACRO, 10-29	writing to terminal, System Services, SYS-39,
VAL bit, <i>MACRO</i> , 10–29	SYS-47 MESSAGE
VAS bit, <i>MACRO</i> , 10–29 VIO bit, <i>MACRO</i> , 10–29	
fault stack frame, MACRO, 10-28	See Message Utility Message buffer, VAXTPU, 4–18
synchronous MME handling, MACRO,	MESSAGE built-in procedure, VAXTPU, 7–266 to
10–30	7–269
system control block (SCB), MACRO,	Message code, Message, MSG-2
10–28	MESSAGE command, Message, MSG-4, MSG-9,
Memory management resources	MSG-15
synchronizing access to, Device Support (A),	format of, Message, MSG-8
3–13	parameter for, Message, MSG-8
Memory management services, System Services	qualifiers, Message, MSG-8 to MSG-14
Intro, 1–2; RTL Library, 5–3	Message definition
Memory region	in message source file, Message, MSG-22
examining, System Dump Analyzer, SDA-54	qualifiers for, Message, MSG-22, MSG-23
Memory synchronization	statements, Message, MSG-3
required use of, MACRO, 10–42	Message display directive
Menu, RTL Screen Management, 2–14	(.ERROR), MACRO, 6–31
creating, RTL Screen Management, 2–14	(.PRINT), MACRO, 6-76 Message examples, Message, MSG-29
creating with SMG\$ routines, Programming Resources, 7-22	
deleting, RTL Screen Management, 2–14	Message file
reading, Programming Resources, 7–23	See also Nonexecutable message file
selecting, RTL Screen Management, 2–15	Message format
Menu bar widget, VAXTPU, 4–16	See Mailbox
Menu position	Message object module
of widget	linking, Message, MSG-4
fetching in VAXTPU, VAXTPU, 7-210	Message pointer
setting in VAXTPU, VAXTPU, 7-422	creating, Message, MSG-5
MENU_POSITION parameter to SET built-in	example, Message, MSG-29
procedure, VAXTPU, 7-422	use of, Message, MSG-4, MSG-5
"menu_position" string constant parameter to GET_INFO, VAXTPU, 7-210	Messages, SUMSLP, SUM-13; VAXTPU, D-1 to D-10
MERGE command, Programming Resources, 8–13	See also Message
file interface, Programming Resources, 8–19	converting security message from binary to
record interface, Programming Resources, 8–21	ASCII, System Services, SYS-262
/MERGE qualifier, Convert, CONV-1, CONV-17	filtering sensitive information, System Services
Message	SYS-262
See also Messages	Message source file comments in, Message, MSG-7
chaining, Programming Resources, 9-23	comments in, Message, MSG-1 compiling, Message, MSG-4
construction of, Message, MSG-2 debugger, Debugger, 2-7, CD-5	elements of, Message, MSG-3

Message source file (cont'd) Message Utility (MESSAGE) (cont'd) expressions in, Message, MSG-7 /FAO_COUNT, Programming Resources, 9–9 format, Message, MSG-3 invoking, Message, MSG-8 sample of, Message, MSG-18 linking the message object module, Message, symbols in, Message, MSG-7 MSG-4 Message source file statements, Message, MSG-6, logging messages, Programming Resources, MSG-15 base message number directive (.BASE), message object module, Programming Message, MSG-16 Resources, 9-9 end directive (.END), Message, MSG-17 message source file, Message, MSG-3 facility directive (.FACILITY), Message, message text, Programming Resources, 9-9 MSG-18 message text variables, Programming identification directive (.IDENT), Message, Resources, 9-9 MSG-20 modifying a message source file, *Programming* listing directives, Message, MSG-25, MSG-28 Resources, 9-10 literal directive (.LITERAL), Message, MSG-21 program example, Message, MSG-3 message definition. Message, MSG-22 SET MESSAGE command. Message, MSG-5 page directive (.PAGE), Message, MSG-25 .SEVERITY, Programming Resources, 9-8 severity directive (.SEVERITY), Message, source file, Programming Resources, 1-19 MSG-26 source module, Programming Resources, 9-7 title directive (.TITLE), Message, MSG-7, .TITLE, Programming Resources, 9–9 MSG-28 using message pointers, Message, MSG-4 Message symbol, Message, MSG-2, MSG-6, Message warning display directive MSG-22; System Services, SYS-480 (.WARN), MACRO, 6-99 Message text Message window specifying variables in, Programming in EVE editor, VAXTPU, 4-16 MESSAGE_ACTION_LEVEL keyword, VAXTPU, Resources, 9-9 Message Utility (MESSAGE), Programming 7 - 424Resources, 1-19, 9-7; RTL Library, 4-26 to "Message action level" string constant parameter to GET INFO, VAXTPU, 7-206 MESSAGE_ACTION_TYPE keyword, VAXTPU, accessing message object module, Programming Resources, 9-10 7-426 command qualifiers, Message, MSG-9 to MESSAGE_BUFFER identifier, VAXTPU, 7-266 MESSAGE_BUFFER variable, VAXTPU, 4-29 MSG-28compiling message file, Programming MESSAGE_FLAGS keyword, VAXTPU, 7-427 Resources, 9-9 "Message_flags" string constant parameter to compiling the message source file, Message, GET_INFO, VAXTPU, 7-207 MSG-4 MESSAGE_ROUTINES.EXE global symbols, System Dump Analyzer, constructing messages, Message, MSG-2 controlling output, Message, MSG-9 SDA-61 creating a message object library, MESSAGE_TEXT built-in procedure, VAXTPU, Programming Resources, 9–10 7–270 to 7–272 creating messages. Programming Resources. .MEXIT directive. MACRO, 6-62 MFD (master file directory), File Applications, definition statements, Programming Resources, 6 - 121 - 19MFPR (Move from Processor Register) instruction, directives, Programming Resources, 1–19 MACRO, 9-196 vector IPRs, MACRO, 10-3, 10-8, 10-32 .END, Programming Resources, 9-8 examples, Message, MSG-28 VPSR, MACRO, 10-6, 10-31, 10-41 creating pointer files, Message, MSG-29 MFVP (Move from Vector Processor) instruction, image containing message data, Message, MACRO, 10-19, 10-35 MSG-29 \$MGBLSC, System Services, SYS-425 exiting, Message, MSG-8 MicroVAX .FACILITY, Programming Resources, 9-8 See Workstation facility name, *Programming Resources*, 9–8 MicroVAX/VAXstation 3100 computer facility number, Programming Resources, 9-8 support for SCSI devices, Device Support (A), FAO parameters, Programming Resources, 1 - 18

9 - 12

MicroVAX 2000 computer MNEGG (Move Negated G_floating) instruction, bootstrap procedure for XDELTA, MACRO, 9-117 Delta/XDelta, DELTA-5 MNEGH (Move Negated H_floating) instruction, MACRO, 9-117 inducing a crash, System Dump Analyzer, SDA-31 MNEGL (Move Negated Long) instruction, requesting interrupt, Delta/XDelta, DELTA-7 MACRO, 9-23 MNEGW (Move Negated Word) instruction, MicroVAX 3500 computer bootstrap procedure for XDELTA, MACRO, 9-23 Delta/XDelta, DELTA-5 MNT (module name table), Librarian, LIB-2 requesting interrupt, Delta/XDelta, DELTA-7 Mode MicroVAX 3600 computer CANCEL MODE command, Debugger, CD-23 bootstrap procedure for XDELTA, interactive, File Applications, 10-11 Delta/XDelta, DELTA-5 inducing a crash, System Dump Analyzer, performance, File Applications, 9-9 SET MODE [NO]DYNAMIC command, SDA-31 requesting interrupt, Delta/XDelta, DELTA-7 Debugger, 5-7, 5-14, CD-148 MicroVAX I computer SET MODE [NO]G_FLOAT command, bootstrap procedure for XDELTA, Debugger, CD-148 Delta/XDelta, DELTA-5 SET MODE [NO]INTERRUPT command, inducing a crash, System Dump Analyzer, Debugger, CD-149 SET MODE [NO]KEYPAD command, SDA-31 requesting interrupt, Delta/XDelta, DELTA-7 Debugger, 8-7, CD-149 MicroVAX II computer SET MODE [NO]LINE command, Debugger, adapter logic, Device Support (A), 14-1 CD-149 SET MODE [NO]OPERANDS command, bootstrap procedure for XDELTA, Debugger, 4-19, CD-150 Delta/XDelta, DELTA-5 inducing a crash, System Dump Analyzer, SET MODE [NO]SCREEN command, Debugger, 7-1, CD-150 SDA-31 SET MODE [NO]SCROLL command, requesting interrupt, Delta/XDelta, DELTA-7 "Middle of tab" string constant parameter to Debugger, CD-150 GET INFO, VAXTPU, 7-223 SET MODE [NO]SEPARATE command, Minimal interface example, VAXTPU, 4-26 Debugger, 9-5, CD-150 Minimum record length field with DECwindows, Debugger, 1-33 SET MODE [NO]SYMBOLIC command, See also XAB\$W_MRL field Debugger, 4-13, CD-151 in XABKEY, RMS, 13-12 SHOW MODE, Debugger, CD-224 Minimum value, RTL Math, 1-7 Mode card "Minimum_parameters" string constant parameter 026 punch mode, I/O User's I, 2-2 to GET INFO, VAXTPU, 7-190 029 punch mode, I/O User's I, 2-2 Minor ID, Linker, 3-7 of shareable image in map, Linker, 5-6 Mode field in XABITM Miscellaneous data type, Routines Intro, 2-18 See XAB\$L_MODE field Mixed I/O Modem signals precautions listed, RMS, 4-24 input transitions of, Device Support (A), 18-15 MMG\$GL_SBICONF, Device Support (A), 16-8 sending to device, Device Support (A), 18-13 MMG\$IOLOCK, Device Support (B), 3-33, 3-35, Mode qualifier, PATCH command, Patch, PAT-15, 3-41, 3-46, 3-55, 3-59 PAT-76 MMG\$UNLOCK, Device Support (B), 1-43, 3-109 "Mode" string constant parameter to GET_INFO, MMG spin lock, Device Support (A), 3-13; Device VAXTPU, 7-173 Support (B), 3-16, 3-107, 3-108, 3-109 Mode switching MNEGB (Move Negated Byte) instruction, when permitted, RMS, 4-24 MACRO, 9-23Modifiability MNEGD (Move Negated D_floating) instruction, setting records, VAXTPU, 7-448 MACRO, 9-117 MODIFIABLE keyword, VAXTPU, 7-429 MNEGF (Move Negated F_floating) instruction, "Modifiable" string constant parameter to GET_INFO, VAXTPU, 7-173 MACRO, 9-117 MODIFICATIONS keyword using in collating sequence expression,

National Char Set, NCS-14

MODIFICATIONS keyword (cont'd) using in conversion function expression, National Char Set, NCS-16 MODIFICATIONS keyword clause, National Char Set, NCS-17 Modified page list displaying, System Dump Analyzer, SDA-115 /MODIFIED qualifier, System Dump Analyzer, SDA-115 "Modified" string constant parameter to GET_ INFO, VAXTPU, 7-173 Modify access type, MACRO, 8-17 MODIFY command, File Applications, 10-28; File Def Language, FDL-64 Edit/FDL Utility, File Applications, A-1 Modify-fault vector, MACRO, 10-47 Modify file function, I/O User's I, 1-28 Modify function FDT routine for, Device Support (A), 7-9 /MODIFY qualifier, Debugger, CD-127, CD-185; *VAXTPU*, 5–12 "Modify" string constant parameter to GET_INFO, VAXTPU, 7-177 MODIFY_RANGE built-in procedure, VAXTPU, 7-273 to 7-277Modularity virtual displays, Programming Resources, 7-31 Modular programming, Linker, 2-1 Module, Debugger, 2-5 See also Shareable image canceling, Debugger, 5-7, CD-24 creating, Librarian, LIB-4 finding a failing, System Dump Analyzer, SDA-24formatting, Librarian, LIB-5 information about, Debugger, 5-7, CD-225 key number in, Librarian, LIB-5 replacing in the default NCS library, National Char Set, NCS-21 setting, Debugger, 5-6, CD-152 with DECwindows, Debugger, 1-26 terminating, Librarian, LIB-5 traceback information, Debugger, 5-3 with DECwindows, Debugger, 1-3 Module declaration syntax, VAXTPU, 3-15 Module header, Librarian, LIB-2 Module Management System See VAX DEC/MMS Module name made available to debugger, MACRO, 6-23 Module name table See MNT /MODULE qualifier, Debugger, CD-28, CD-167, CD-172; Librarian, LIB-32

using with /INSERT, Librarian, LIB-32

MODULE statement, Command Def, CDU-14, CDU-37; VAXTPU, 3-14 to 3-15 Modules used with EVE\$BUILD, VAXTPU, G-2 Monitoring procedures, Modular Procedures, 4-8, in the Run-Time Library, Modular Procedures, timer, Modular Procedures, 4-8 MOUNT command, I/O User's I, 6-27 and window size, File Applications, 9-8 Mount function, I/O User's I, 1-30 MOUNT privilege, System Services Intro, 7-4 Mount verification, Device Support (B), 1-40, 1-78Mount verification routine, Device Support (B), 1-30, 1-31 determining support for, VAXTPU, 7-432 determining where drag operation originated, VAXTPU, 7-188 Mouse button, VAXTPU, 7-188 MOUSE keyword, VAXTPU, 7-432 with POSITION, VAXTPU, 7-288, 7-289 Mouse pad implementing, VAXTPU, B-4 "Mouse" string constant parameter to GET_INFO, *VAXTPU*, 7–200 MOVAB (Move Address Byte) instruction, MACRO, 9-34MOVAD (Move Address D floating) instruction, MACRO, 9-34MOVAF (Move Address F_floating) instruction, MACRO, 9-34MOVAG (Move Address G_floating) instruction, MACRO, 9-34MOVAH (Move Address H floating) instruction, MACRO, 9-34 MOVAL (Move Address Long) instruction, MACRO, 9-34 MOVAO (Move Address Octa) instruction, MACRO, 9-34 MOVAQ (Move Address Quad) instruction, MACRO, 9-34 MOVAW (Move Address Word) instruction, MACRO, 9-34MOVB (Move Byte) instruction, MACRO, 9-24 MOVC3 (Move Character 3 Operand) instruction, MACRO, 9-132 RTL routine to access, RTL Library, LIB-275 MOVC5 (Move Character 5 Operand) instruction, MACRO, 9-132 RTL routine to access, RTL Library, LIB-276 MOVD (Move D floating) instruction, MACRO, 9 - 118MOVE command, Debugger, 7–12, CD–104 MOVE_HORIZONTAL built-in procedure, *VAXTPU*, 7–278 to 7–279

MOVE_TEXT built-in procedure, VAXTPU, 7-280 to 7-281 MOVE_VERTICAL built-in procedure, VAXTPU, 7-282 to 7-283 MOVF (Move F_floating) instruction, MACRO, 9 - 118MOVG (Move G_floating) instruction, MACRO, 9 - 118MOVH (Move H_floating) instruction, MACRO, 9 - 118MOVL (Move Long) instruction, MACRO, 9-24 MOVO (Move Octa) instruction, MACRO, 9-24 MOVP (Move Packed) instruction, MACRO, 9-165 MOVPSL (Move PSL) instruction, MACRO, 9-77 MOVQ (Move Quad) instruction, MACRO, 9-24 MOVTC (Move Translated Characters) instruction, MACRO, 9-134 MOVTUC (Move Translated Until Character) instruction, MACRO, 9-136 MOVW (Move Word) instruction, MACRO, 9-24 MOVZBL (Move Zero-Extended Byte to Long) instruction, MACRO, 9-25 MOVZBW (Move Zero-Extended Byte to Word) instruction, MACRO, 9-25 MOVZWL (Move Zero-Extended Word to Long) instruction, MACRO, 9-25 MSCP server code base address, System Dump Analyzer, SDA-14 MSCP symbol, System Dump Analyzer, SDA-14 MSE option, File Def Language, FDL-37 MSG\$_CRUNSOLIC, Device Support (A), 9-7 MSG\$_DEVOFFLIN, Device Support (A), 10-7 MSYNC (Memory Instruction Synchronization) instruction, MACRO, 10-35, 10-39, 10-42, 10-44, 10-88 MTH\$ACOS, RTL Math, MTH-3 MTH\$ACOSD, RTL Math, MTH-6 MTH\$AIMAG, RTL Math, MTH-110 MTH\$ALOG, RTL Math, MTH-112 MTH\$ALOG10, RTL Math, MTH-116 MTH\$ALOG2, RTL Math, MTH-114 MTH\$ASIN, RTL Math, MTH-9 MTH\$ASIND, RTL Math, MTH-11 MTH\$ATAN, RTL Math, MTH-13 MTH\$ATAN2, RTL Math, MTH-17 MTH\$ATAND, RTL Math, MTH-15 MTH\$ATAND2, RTL Math, MTH-19 MTH\$ATANH, RTL Math, MTH-21 MTH\$CABS, RTL Math, MTH-23 MTH\$CCOS, RTL Math, MTH-26 MTH\$CDABS, RTL Math, MTH-23 MTH\$CDCOS, RTL Math, MTH-28

MTH\$CDEXP, RTL Math, MTH-33

MTH\$CDLOG, RTL Math, MTH-37

MTH\$CDSIN, RTL Math, MTH-54

MTH\$CDSQRT, RTL Math, MTH-59 MTH\$CEXP, RTL Math, MTH-31 MTH\$CGABS, RTL Math, MTH-23 MTH\$CGCOS, RTL Math, MTH-28 MTH\$CGEXP, RTL Math, MTH-33 MTH\$CGLOG, RTL Math, MTH-37 MTH\$CGSIN, RTL Math, MTH-54 MTH\$CGSQRT, RTL Math, MTH-59 MTH\$CLOG, RTL Math, MTH-35 MTH\$CMPLX, RTL Math, MTH-40 MTH\$CONJG, RTL Math, MTH-44 MTH\$COS, RTL Math, MTH-47 MTH\$COSD, RTL Math, MTH-49 MTH\$COSH, RTL Math, MTH-51 MTH\$CSIN, RTL Math, MTH-53 MTH\$CSQRT, RTL Math, MTH-57 MTH\$CVT_DA_GA, RTL Math, MTH-63 MTH\$CVT_D_G, RTL Math, MTH-62 MTH\$CVT_GA_DA, RTL Math, MTH-63 MTH\$CVT_G_D, RTL Math, MTH-62 MTH\$DACOS, RTL Math, MTH-3 MTH\$DACOSD, RTL Math, MTH-6 MTH\$DASIN, RTL Math, MTH-9 MTH\$DASIND, RTL Math, MTH-11 MTH\$DATAN, RTL Math, MTH-13 MTH\$DATAN2, RTL Math, MTH-17 MTH\$DATAND, RTL Math, MTH-15 MTH\$DATAND2, RTL Math, MTH-19 MTH\$DATANH, RTL Math, MTH-21 MTH\$DCMPLX, RTL Math, MTH-42 MTH\$DCONJG, RTL Math, MTH-45 MTH\$DCOS, RTL Math, MTH-47 MTH\$DCOSD, RTL Math, MTH-49 MTH\$DCOSH, RTL Math, MTH-51 MTH\$DEXP, RTL Math, MTH-65 MTH\$DIMAG, RTL Math, MTH-110 MTH\$DLOG, RTL Math, MTH-112 MTH\$DLOG10, RTL Math, MTH-116 MTH\$DLOG2, RTL Math, MTH-114 MTH\$DREAL, RTL Math, MTH-120 MTH\$DSIN, RTL Math, MTH-122 MTH\$DSINCOS, RTL Math, MTH-124 MTH\$DSINCOSD, RTL Math, MTH-127 MTH\$DSIND, RTL Math, MTH-131 MTH\$DSINH, RTL Math, MTH-133 MTH\$DSQRT, RTL Math, MTH-136 MTH\$DTAN, RTL Math, MTH-139 MTH\$DTAND, RTL Math, MTH-141 MTH\$DTANH, RTL Math, MTH-143 MTH\$EXP, RTL Math, MTH-65 MTH\$GACOS, RTL Math, MTH-3 MTH\$GACOSD, RTL Math, MTH-6 MTH\$GASIN, RTL Math, MTH-9 MTH\$GASIND, RTL Math, MTH-11 MTH\$GATAN, RTL Math, MTH-13 MTH\$GATAN2, RTL Math, MTH-17 MTH\$GATAND, RTL Math, MTH-15

MTH\$GATAND2, RTL Math, MTH-19 MTH\$GATANH, RTL Math, MTH-21 MTH\$GCMPLX, RTL Math, MTH-42 MTH\$GCONJG, RTL Math, MTH-45 MTH\$GCOS, RTL Math, MTH-47 MTH\$GCOSD, RTL Math, MTH-49 MTH\$GCOSH, RTL Math, MTH-51 MTH\$GEXP, RTL Math, MTH-65 MTH\$GIMAG, RTL Math, MTH-110 MTH\$GLOG, RTL Math, MTH-112 MTH\$GLOG10, RTL Math, MTH-116 MTH\$GLOG2, RTL Math, MTH-114 MTH\$GREAL, RTL Math, MTH-120 MTH\$GSIN, RTL Math, MTH-122 MTH\$GSINCOS, RTL Math, MTH-124 MTH\$GSINCOSD, RTL Math, MTH-127 MTH\$GSIND, RTL Math, MTH-131 MTH\$GSINH, RTL Math, MTH-133 MTH\$GSQRT, RTL Math, MTH-136 MTH\$GTAN, RTL Math, MTH-139 MTH\$GTAND, RTL Math, MTH-141 MTH\$GTANH, RTL Math, MTH-143 MTH\$HACOS, RTL Math, MTH-68 MTH\$HACOSD, RTL Math, MTH-70 MTH\$HASIN, RTL Math, MTH-72 MTH\$HASIND, RTL Math, MTH-74 MTH\$HATAN, RTL Math, MTH-76 MTH\$HATAN2, RTL Math, MTH-80 MTH\$HATAND, RTL Math, MTH-78 MTH\$HATAND2. RTL Math. MTH-82 MTH\$HATANH, RTL Math, MTH-84 MTH\$HCOS, RTL Math, MTH-86 MTH\$HCOSD, RTL Math, MTH-87 MTH\$HCOSH, RTL Math, MTH-88 MTH\$HEXP, RTL Math, MTH-90 MTH\$HLOG, RTL Math, MTH-92 MTH\$HLOG10, RTL Math, MTH-96 MTH\$HLOG2, RTL Math, MTH-94 MTH\$HSIN, RTL Math, MTH-98 MTH\$HSINCOS, RTL Math, MTH-124 MTH\$HSINCOSD, $RTL\ Math$, MTH-127 MTH\$HSIND, RTL Math, MTH-99 MTH\$HSINH, RTL Math, MTH-100 MTH\$HSQRT, RTL Math, MTH-102 MTH\$HTAN, RTL Math, MTH-104 MTH\$HTAND, RTL Math, MTH-106 MTH\$HTANH, RTL Math, MTH-108 MTH\$RANDOM, RTL Math, MTH-118 MTH\$REAL, RTL Math, MTH-120 MTH\$SIN, RTL Math, MTH-122 MTH\$SINCOS, RTL Math, MTH-124 MTH\$SINCOSD, RTL Math, MTH-127 MTH\$SIND, RTL Math, MTH-131 MTH\$SINH, RTL Math, MTH-133 MTH\$SIN R4, RTL Intro, 3-5 MTH\$SQRT, RTL Math, MTH-136 MTH\$TAN, RTL Math, MTH-139

MTH\$TAND, RTL Math, MTH-141 MTH\$TANH, RTL Math, MTH-143 MTH\$UMAX, RTL Math, MTH-145 MTH\$UMIN, RTL Math, MTH-146 MTH\$VxFOLRLy_MA_V5, RTL Math, MTH-201 MTH\$VxFOLRLy_z_V2, RTL Math, MTH-205 MTH\$VxFOLRy_MA_V15, RTL Math, MTH-192 MTH\$VxFOLRy_z_V8, RTL Math, MTH-197 MTPR (Move to Processor Register) instruction, MACRO, 9-195, 10-47 vector IPRs, MACRO, 10-8, 10-47 MTVP (Move to Vector Processor) instruction, MACRO, 10-90 MT_BLOCK_SIZE attribute, File Def Language, FDL-21 MT_BLOCK_SIZE secondary attribute, File Applications, 4-28 MT CLOSE REWIND attribute, File Def Language, FDL-21 MT_CURRENT_POSITION attribute, File Def Language, FDL-21 MT_NOT_EOF attribute, File Def Language, MT_OPEN_REWIND attribute, File Def Language, FDL-21 MT_PROTECTION attribute, File Def Language, FDL-22 MT_PROTECTION secondary attribute, File Applications, 4–28 MULB2 (Multiply Byte 2 Operand) instruction, MACRO, 9-26 MULB3 (Multiply Byte 3 Operand) instruction, MACRO, 9-26MULD2 (Multiply D_floating 2 Operand) instruction, MACRO, 9-119 MULD3 (Multiply D floating 3 Operand) instruction, MACRO, 9-119 MULF2 (Multiply F_floating 2 Operand) instruction, MACRO, 9-119 MULF3 (Multiply F_floating 3 Operand) instruction, MACRO, 9-119 MULG2 (Multiply G_floating 2 Operand) instruction, MACRO, 9-119 MULG3 (Multiply G_floating 3 Operand) instruction, MACRO, 9-119 MULH2 (Multiply H_floating 2 Operand) instruction, MACRO, 9-119 MULH3 (Multiply H_floating 3 Operand) instruction, MACRO, 9-119 MULL2 (Multiply Long 2 Operand) instruction, MACRO, 9-26MULL3 (Multiply Long 3 Operand) instruction, MACRO, 9-26 MULP (Multiply Packed) instruction, MACRO, 9 - 166Multiblock, File Applications, 3–11 defined, File Applications, 2-1, 3-6

restriction for use, File Applications, 3-6

Multiblock count field See RAB\$B_MBC field	Multiplication, RTL Library, LIB-128, LIB-130, LIB-132, LIB-134
MULTIBLOCK_COUNT attribute, File Def Language, FDL-12	decimal strings, RTL String Manipulation, STR-58
MULTIBLOCK_COUNT secondary attribute, File	extended precision, RTL Library, LIB-136
Applications, 7–18	of complex number, RTL General Purpose,
Multibuffer count, File Applications, 3-11, 3-13,	OTS-53
3–26, 3–27	Multiplication operator (*), System Dump
Multibuffer count field	Analyzer, SDA-12
See RAB\$B_MBF field	Multiplying
MULTIBUFFER_COUNT attribute, File Def	vector, RTL Math, MTH-155
Language, FDL-12	Multiprocessing
MULTIBUFFER_COUNT secondary attribute,	global symbols, System Dump Analyzer,
File Applications, 7–17, 7–19	SDA-61
and record access type, File Applications, 7-20	Multiprocessing device driver
for sequential file, File Applications, 7–18	analyzing crash dumps, Device Support (A),
Multilanguage program	E-19 to E-20
debugging, Debugger, 9–6	incompatibility with uniprocessing driver,
with DECwindows, Debugger, 1–28	Device Support (A), 12–13, E–3
Multilevel device interrupt dispatching, Device	using XDELTA, Device Support (A), 13-7, E-20
Support (A), 14-31, 14-33 to 14-36; Device	writing, Device Support (A), E-8 to E-20
Support (B) , 1–22	Multiprocessing environment, Programming
Multinational character set	Resources, 4–18
See DEC Multinational Character Set	See also Synchronization
Multiple active signal, Routines Intro, 2–54	contrasted with uniprocessing environment,
Multiple area	Device Support (A), 3-11, E-1
See Area	debugging a driver designed for, Device
Multiple argument	Support (A), 13–28 to 13–30 initial XDELTA breakpoint, Delta/XDelta,
delimiting in control block fields, RMS, 3-5,	DELTA-8
3–7	scheduling, Programming Resources, 4–19
specifying in control block fields, RMS, B-3	XDELTA breakpoints, Delta/XDelta,
Multiple buffers, VAXTPU, 7–59	DELTA-13, DELTA-29, DELTA-35
Multiple definition modules	XDELTA operation, Delta/XDelta, DELTA-13
specifying with /DELETE qualifier, National	MULTIPROCESSING parameter, Device Support
Char Set, NCS-27, NCS-32	(A), 13–28, E–2 to E–3, E–4
specifying with /EXTRACT qualifier, National	Multiprocessing software model
Char Set, NCS-28	master/slave, RTL Parallel Processing, 1-3 to
specifying with /ONLY qualifier, National Char	1–4
Set, NCS-38	pipelining, RTL Parallel Processing, 1-4 to 1-5
Multiple exception, System Services Intro, 11–15	work queue processing, RTL Parallel
Multiple input files, Convert, CONV-5 specifying, National Char Set, NCS-21	Processing, 1–5
Multiple-key indexed file	Multiprocessor
creating, RMS, 4–5	analyzing crash dumps, System Dump
Multiple keys, Convert, CONV-27	$Analyzer,\mathrm{SDA-9}$
example of use with Close service, RMS, 4–12	displaying synchronization structures, System
performance cost of using, RMS, 13–14	Dump Analyzer, SDA-150
recommended number, RMS, 13–14	Multiprocessor state, Device Support (B), 1–16
Multiple record stream	Multiprocess program
with block I/O, RMS, 4-25	CALL command, Debugger, CD-10
Multiple service	CONNECT command, Debugger, 10–4, 10–13, CD–36
for retrieving records, File Applications, 8-3	
Multiplexer	controlling execution, <i>Debugger</i> , 10–5 DBG\$PROCESS, <i>Debugger</i> , 10–9
DMB32 device, I/O User's I, 8-1	debugging, Debugger, 10-9
DMF32 device, I/O User's I, 8-1	with DECwindows, Debugger, 1–9, 1–29
DZ11 device, I/O User's I, 8-1	DEFINE/PROCESS_GROUP command,
DZ32 device, I/O User's I, 8–1	Debugger. CD-52

Multiprocess program (cont'd)	Mutex (cont'd)
DO command, Debugger, 10-5, CD-72	deleting, DECthreads, cma-79, pthread-78
EXIT command, <i>Debugger</i> , 10-8, 10-9, CD-90	fast, DECthreads, 2-10, cma-35, pthread-76
with DECwindows, Debugger, 1–20	for ACL, Device Support (B), 1-45
global section watchpoint, Debugger, 10-15	for I/O database, Device Support (B), 4-6
GO command, Debugger, 10-5, CD-100	I/O database, Device Support (A), 11-12
QUIT command, Debugger, 10-8, 10-9,	locking, DECthreads, cma-81, cma-83,
CD-106	pthread–82, pthread–84
with DECwindows, Debugger, 1–20	locking before signaling condition variable,
screen mode features, Debugger, 10-14	DECthreads, 3–8
SET MODE [NO]INTERRUPT command,	nonrecursive, DECthreads, 2-10, pthread-76
Debugger, 10–6, CD–149	obtaining kind, DECthreads, cma-23
SET PROCESS command, Debugger, 10-6,	recursive, DECthreads, 2-10, cma-35,
10-7, CD-157	pthread_76
SHOW PROCESS command, Debugger, 10-2,	setting kind, DECthreads, cma-35
CD-229	types of, DECthreads, 2–10
specifying processes, Debugger, 10–11	unlocking, DECthreads, cma-85, pthread-86
STEP command, Debugger, 10-5, CD-258	Mutex attributes object
system requirements, Debugger, 10-16	creating, DECthreads, pthread-70
with DECwindows, Debugger, 1-9, 1-29	deleting, DECthreads, pthread-72
Multiprogramming, RTL Parallel Processing, 1-1	Mutex type attribute, DECthreads, 2-8
timesharing, RTL Parallel Processing, 1-1	Mutual exclusion
Multistream access option	definition of, RTL Parallel Processing, 1-2
See FAB\$V_MSE option	semaphore, RTL Parallel Processing, 4-9
MULTISTREAM attribute, File Def Language,	MXV option, File Def Language, FDL-21
FDL-37	
Multistreamed workload, Programming	N
Resources, 4–18	
MULTISTREAM secondary attribute, File	NAM\$B_BID field, RMS, 6-4
Applications, 7–4	NAM\$B_BLN field, RMS, 6-4
Multithreaded programming	NAM\$B_DEV descriptor, RMS, 6-3
introduction, DECthreads, 1-1	NAM\$B_DEV field, RMS, 6-4
potential problems, DECthreads, 1-7	NAM\$B_DIR descriptor, RMS, 6-3
complexity, DECthreads, 1-7	NAM\$B_DIR field, RMS, 6–5
deadlocks, DECthreads, 3-7	NAM\$B_ESL field, RMS, 6-5
nonreentrant routines, DECthreads, 1-8	NAM\$B_ESS field, RMS, 6-5
priority inversion, DECthreads, 3–6	NAM\$B_NAME descriptor, RMS, 6-3
race conditions, DECthreads, 3-7	NAM\$B_NAME field, RMS, 6-7
software models, DECthreads, 1-5	NAM\$B_NODE descriptor, RMS, 6-3
boss/worker, DECthreads, 1-5	NAM\$B_NODE field, RMS, 6-7
combination, DECthreads, 1-7	NAM\$B_NOP field, RMS, 6–7
pipelining, DECthreads, 1-6	options listed, RMS, 6–8
work crew, DECthreads, 1-6	NAM\$B_RSL field, RMS, 6-9, RMS-63
Multithread program	NAM\$B_RSS field, File Applications, 6–9; RMS,
See Tasking (multithread) program	6-9 NAM\$B_TYPE descriptor, RMS, 6-3
MULW2 (Multiply Word 2 Operand) instruction,	NAM\$B_TYPE field, RMS, 6–9
MACRO, 9–26	
MULW3 (Multiply Word 3 Operand) instruction,	NAM\$B_VER descriptor, RMS, 6–3 NAM\$B_VER field, RMS, 6–10
MACRO, 9-26	NAM\$L_DEV descriptor, RMS, 6–3
Must Be Zero	NAM\$L_DEV descriptor, MMS, 6-3 NAM\$L_DEV field, RMS, 6-4
See Field	
See MBZ	NAM\$L_DIR descriptor, RMS, 6–3
Mutex, DECthreads, 2-9	NAM\$L_DIR field, RMS, 6-5
	NAM\$L_ESA field, File Applications, 6-4; RMS, 6-5
comparing to condition variable, <i>DECthreads</i> , 3–6	
creating, DECthreads, cma-77, pthread-80	NAM\$L_FNB field, RMS, 6-6, RMS-63, RMS-87
definition of, <i>DECthreads</i> , pthread–80	NAM\$L_FNB status bit listing, <i>RMS</i> , 6–6
dominion of, Disconnedas, pulleau-ov	name, mas, o-o

NAM (name block) (cont'd) NAM\$L_NAME descriptor, RMS, 6-3 and resulting file specification, File NAM\$L NAME field, RMS, 6-7 Applications, 5-8 NAM\$L_NODE descriptor, RMS, 6-3 and Search service, File Applications, 5-8 NAM\$L_NODE field, RMS, 6-7 presence of a search list, File Applications, 5-9 NAM\$L_RLF field, File Applications, 6-4, 6-9, presence of a wildcard character, File 9-7; RMS, 6-8 Applications, 5-9 NAM\$L_RSA field, File Applications, 6-4, 6-9; summary of fields, RMS, 6-1 RMS, 6-9, RMS-63 support by FDL, File Applications, 5-10 NAM\$L_TYPE descriptor, RMS, 6-3 support by languages, File Applications, 5-10 NAM\$L_TYPE field, RMS, 6-9 using, File Applications, 5-12 to 5-14 NAM\$L_VER descriptor, RMS, 6-3 using from higher-level language, RMS, 6-2 NAM\$L_VER field, RMS, 6-10 using from VAX MACRO, RMS, 6-2 NAM\$L_WCC field, RMS, 6-10 NAM (name block) option returned by Remove service, RMS, RMS-82 See FAB\$V_NAM option NAM\$T_DVI field, File Applications, 6-5; RMS, 6-5\$NAMDEF, File Applications, 5–10 NAM\$V_CNCL_DEV bit, RMS, 6-6 NAM\$V_CONCEAL field, RMS, RMS-26, See also Handle **RMS-63** widget NAM\$V_DIR_LVLS bit, RMS, 6-6 case sensitivity of, VAXTPU, 7-74 NAM\$V_EXP_DEV bit, RMS, 6-6 %NAME, Debugger, D-4 NAM\$V_EXP_DIR bit, RMS, 6–6 NAME attribute, File Def Language, FDL-19, NAM\$V_EXP_NAME bit, RMS, 6-6 FDL-22, FDL-29 NAM\$V_EXP_TYPE bit, RMS, 6-6 Name block NAM\$V_EXP_VER bit, RMS, 6-6 See NAM NAM\$V_GRP_MBR bit, RMS, 6-6 Name block address field NAM\$V HIGHVER bit, RMS, 6-6 See FAB\$L_NAM field NAM\$V_LOWVER bit, RMS, 6-6 Name block options field NAM\$V NOCONCEAL option, RMS, 6-8, See NAM\$B NOP field RMS-16, RMS-68 NAME keyword NAM\$V_NODE bit, RMS, 6-6 with FILE_PARSE, VAXTPU, 7-141 NAM\$V_PPF bit, RMS, 6-6 with FILE_SEARCH, VAXTPU, 7-144 NAM\$V_PWD field, RMS, RMS-26, RMS-63, Name services, System Services Intro, 6–1 **RMS-68** Namespace NAM\$V_PWD option, RMS, 6-8, RMS-16 listing information, System Services Intro, 6-30 NAM\$V_QUOTED bit, RMS, 6-6 /NAMES qualifier, Librarian, LIB-33 NAM\$V_ROOT_DIR bit, RMS, 6-7 "Name" string constant parameter to GET_INFO, NAM\$V_SEARCH_LIST bit, RMS, 6-7 VAXTPU, 7-164, 7-173, 7-182 NAM\$V_SRCHXABS option, RMS, 6-8 Naming NAM\$V_SYNCHK option, RMS, 6-8, RMS-68 application-wide, RTL Parallel Processing, 2-4 use with Parse service, RMS, 5-7 Naming conventions, Modular Procedures, 3-1, using for Parse service without I/O, RMS, **RMS-67** FOLR routines, RTL Math, 2-7 NAM\$V_WILDCARD bit, RMS, 6-7 for facilities, Modular Procedures, 3-2 NAM\$V_WILD_GRP bit, RMS, 6-7 for files, Modular Procedures, 3-4 NAM\$V_WILD_MBR bit, RMS, 6-7 for modules, Modular Procedures, 3-4 NAM\$V_WILD_NAME bit, RMS, 6-7 for procedures, Modular Procedures, 3-3 NAM\$V_WILD_SFD1 bit, RMS, 6-7 for PSECTs, Modular Procedures, 3-5 NAM\$V_WILD_TYPE bit, RMS, 6-7 for VAXTPU procedures, VAXTPU, 3-16 NAM\$V_WILD_UFD bit, RMS, 6-7 macros, RMS, 3-2 NAM\$V_WILD_VER bit, RMS, 6-7 services, RMS, 3-3 NAM\$W_DID field, File Applications, 6-5; RMS, vector routines, RTL Math, 2-9 Naming help modules, Librarian, LIB-4 NAM\$W_FID field, File Applications, 6-5; RMS, Naming PPL\$ components, RTL Parallel Processing, 5-5 NAM (name block), Programming Resources, \$NAM macro, RMS, B-6 1–36; System Dump Analyzer, SDA-77 argument categories, RMS, B-6 address field, File Applications, 5-9

\$NAM_STORE macro, RMS, B-7 NCS convert string routine argument categories, RMS, B-7 See NCS\$CONVERT routine comparing with \$NAM macro, RMS, B-7 NCS get collating sequence routine NAM\$T_DVI argument, RMS, B-7 See NCS\$GET CS routine NAM\$W_DID argument, RMS, B-7 NCS get conversion function routine NAM\$W_FID argument, RMS, B-7 See NCS\$GET_CF routine requirements, RMS, B-7 NCS keyword .NARG directive, MACRO, 6-63 for /FORMAT qualifier, National Char Set, NARGS keyword, System Services Intro, 2-8 NCS-29 National Character Set (NCS) Routines NCS library See NCS routines creating, National Char Set, NCS-25 National Character Set Utility (NCS), See also /CREATE qualifier Programming Resources, 1-22; National Char deleting definition modules from, National Set, NCS-3 Char Set, NCS-27 DCL interface extracting definition modules from, National default function, National Char Set, Char Set, NCS-28 NCS-3 generating MACRO-32 output from, National library functions, National Char Set, Char Set, NCS-36 NCS-3 generating NCS definition files from, National directing output from, National Char Set, Char Set, NCS-39 NCS-21 inserting definition modules, National Char exiting, National Char Set, NCS-21 Set, NCS-32 functions, National Char Set, NCS-3 obtaining listing of, National Char Set, implementation, National Char Set, NCS-3 NCS-34 Native language replacing definition modules, National Char on VMS, File Def Language, FDL-41 Set, NCS-40 specifying an alternate, National Char Set, See Memory interconnect to VAXBI adapter NCS-33 NBP (next block pointer) specifying history records, National Char Set, default for block transfer, RMS, 7-2 NCS-24, NCS-25 for block I/O. RMS, 4-25 specifying MACRO-32 output format, National functions listed, RMS, 4-25 Char Set, NCS-29 .NCHR directive, MACRO, 6-64 specifying maximum length of definition module NCR 5380 controller, Device Support (A), 1-18 names, National Char Set, NCS-24, NCS NCS-25 See National Character Set Utility specifying maximum number of modules, NCS\$COMPARE routine, Utility Routines, NCS-7 National Char Set, NCS-24, NCS-25 NCS\$CONVERT routine, Utility Routines, NCS-9 specifying size, National Char Set, NCS-24, NCS\$END_CF routine, Utility Routines, NCS-11 NCS-25 NCS\$END_CS routine, Utility Routines, NCS-12 verifying operations, National Char Set, NCS\$GET_CF routine, Utility Routines, NCS-13 NCS-35 NCS\$GET_CS routine, Utility Routines, NCS-15 with data-expanded format, National Char Set, NCS\$RESTORE_CF routine, Utility Routines, NCS-26 NCS-17 with data-reduced format, National Char Set, NCS\$RESTORE_CS routine, Utility Routines, NCS-26 NCS-19 NCS restore collating sequence routine NCS\$SAVE_CF routine, Utility Routines, NCS-21 See NCS\$RESTORE_CS routine NCS\$SAVE_CS routine, Utility Routines, NCS-23 NCS restore conversion function routine NCS collating sequence end routine See NCS\$RESTORE_CF routine See NCS\$END_CS routine NCS routines. Utility Routines. NCS-1 NCS command example of use in FORTRAN program, Utility specifying input files for, National Char Set, Routines, NCS-2 NCS-21 example of use in MACRO-32 program, Utility NCS compare strings routine Routines, NCS-4 See NCS\$COMPARE routine list of, Utility Routines, NCS-1 NCS conversion function end routine typical application of, Utility Routines, NCS-2 See NCS\$END_CF routine

%NEXTSOURCE, Debugger, C-6 NCS save collating sequence routine "Next" string constant parameter to GET_INFO, See NCS\$SAVE_CS routine VAXTPU, 7-166, 7-168, 7-169, 7-180, 7-181, NCS save conversion function routine 7-183, 7-184, 7-191, 7-218, 7-223 See NCS\$SAVE CF routine Next Volume service, File Applications, 8-5; NEF option, File Def Language, FDL-21 RMS, RMS-55 **NEGATABLE** clause condition values, RMS, RMS-57 for DEFINE TYPE statement, Command Def, control block input and output fields, RMS, CDU-28 **RMS-56** for QUALIFIER clause, Command Def. flush logic, RMS, RMS-56 CDU-25, CDU-34 input logic sequence, RMS, RMS-56 Negative compression, File Def Language, FDL-4 output logic sequence, RMS, RMS-56 Negative condition code (N), MACRO, 8-15 requirements for using, RMS, RMS-56 Negative operator (-), System Dump Analyzer, "Next_marker" string constant parameter to SDA-12GET_INFO, VAXTPU, 7-173 NETDEF.STB, System Dump Analyzer, SDA-60 %NEXT_PROCESS, Debugger, 10-11 Network "Next_range" string constant parameter to completing connection, Programming GET_INFO, VAXTPU, 7-173 Resources, 3-27 %NEXT_SCOPE_ENTRY, Debugger, D-10 connection request, Programming Resources, %NEXT_TASK, Debugger, 12-14 Nexus, Device Support (A), 12-5, 12-8, 12-9, debugging over, Debugger, 3-1 12-10, 12-11 exchanging messages, Programming Resources, Nexus ID, Device Support (B), 1-6 NFS option, File Def Language, FDL-22 terminating connection, Programming NIL option, File Def Language, FDL-37 Resources, 3-30 .NLIST directive, MACRO, 6-65 NETWORK attribute, File Def Language, FDL-32 See also .NOSHOW directive Network device, Device Support (B), 1-74 NLK option, File Def Language, FDL-12 Network work area nnDRIVER symbol, System Dump Analyzer, See NWA SDA-13 NETWORK_BLOCK_COUNT qualifier /NOAPPEND qualifier, Convert, CONV-7 for specifying maximum record size, RMS, NOCONCATENATE clause for VALUE clause, Command Def, CDU-24, NETWORK_DATA_CHECKING attribute, File CDU-33 Def Language, FDL-32 /NOCREATE qualifier, Convert, CONV-8 /NEW_VERSION qualifier, Patch, PAT-30 .NOCROSS directive, MACRO, 6-16, 6-66 Next block pointer Node, Device Support (A), 12-5, 12-8, 12-9, See NBP 12-10, 12-11 NEXT command, File Applications, 10–12, 10–16; See also VAXBI node Analyze/RMS_File, ARMS-29 lock-mastering, File Applications, 3-29 %NEXTDISP, Debugger, C-6 lock-requesting, File Applications, 3–29 %NEXTINST, Debugger, C-6 Node ID, Device Support (A), 16-9; Device Next key Support (B), 1-6 See RAB\$V_NXT option NODE keyword Next-key option, File Applications, 8–9, 8–10 with FILE_PARSE, VAXTPU, 7-140 %NEXTLOC, Debugger, 4-8, 4-13, D-5 with FILE SEARCH, VAXTPU, 7-143 Next location Node name address descriptor See Logical successor See NAM\$L_NODE descriptor Next or equal key option Node name address field See RAB\$V_EQNXT option See NAM\$L_NODE field %NEXTOUTPUT, Debugger, C-6 Node name length field /NEXT qualifier, Debugger, 6-6, CD-115 See NAM\$B_NODE field Next-record position, File Applications, 8-16 Node name size descriptor use with sequential access, File Applications, See NAM\$B NODE descriptor 8 - 16Node private space, Device Support (A), 16-5 %NEXTSCROLL, Debugger, C-6

NONE keyword (cont'd) Node space, Device Support (A), 16-5 with SET (VIDEO), VAXTPU, 7-492 accessing BIIC registers within, Device Support (A), 16-5 Nonexecutable message file address, Device Support (A), 16-9 creating, Message, MSG-4 mapped by VMS, Device Support (A), 16-8 Nonexistent record option NODISALLOW clause See RAB\$V_NXR option for DEFINE SYNTAX statement, Command NONEXISTENT_RECORD attribute, File Def Def, CDU-22 Language, FDL-12 for DEFINE VERB statement, Command Def, NONEXISTENT_RECORD secondary attribute, CDU-31 File Applications, 7–15, 8–9 /NODISPLAY qualifier Non-file-structured option effect on LAST_KEY, VAXTPU, 7-242 See FAB\$V_NFS option to disable screen manager, VAXTPU, 6-1 NONNEGATABLE clause with EVE\$BUILD, VAXTPU, G-10 for DEFINE TYPE statement, Command Def. /NOEXCEPTIONS_FILE qualifier, Convert, CDU-28 CONV-9 for QUALIFIER clause, Command Def, /NOEXIT qualifier, Convert, CONV-10 CDU-25, CDU-34 /NOFAST_LOAD option Nonpaged dynamic storage pool compared with /FAST_LOAD option, Convert, displaying contents, System Dump Analyzer, CONV-11 SDA-118 /NOFAST_LOAD qualifier, Convert, CONV-11 Nonpaged pool /NOFILL_BUCKETS qualifier, Convert, CONV-14 allocating, Device Support (B), 3-12 to 3-13, /NOFIXED_CONTROL qualifier, Convert, 3-14, 3-15, 3-22 to 3-23 CONV-15 allocating in initialization routine, Device /NOINTERACTIVE qualifier, File Applications, Support (A), 11-210–29; File Def Language, FDL–42, FDL–52 deallocating, Device Support (B), 3-3, 3-19 /NOJOURNAL command qualifier, VAXTPU, 1–12 lookaside list, Device Support (A), E-14; NOLOCK attribute, File Def Language, FDL-12 Device Support (B), 3-13, 3-14 No lock option synchronizing access to, Device Support (A), See RAB\$V_NLK option 3 - 14NOLOCK secondary attribute, File Applications, variable region, Device Support (A), E-14; Device Support (B), 3-15 NO logical value, File Def Language, FDL-2 NONPAGED qualifier, System Dump Analyzer, /NOLOGICAL_NAMES qualifier, System Dump SDA-118 Analyzer, SDA-162 Nonrecursive mutex, DECthreads, 2-10, cma-35, /NOLOG qualifier pthread-76 CREATE/FDL, File Def Language, FDL-45 Nonreentrant code "Nomodify" string constant parameter to compilers that generate, DECthreads, 3-2 GET_INFO, VAXTPU, 7-177 Nonreentrant library packages Noncontiguous array descriptor, Routines Intro, calling, *DECthreads*, cma-75, cma-116, 2 - 31pthread-68 Non-Digital-supplied SCSI class driver Nonreentrant software, DECthreads, 3-2 using global lock to avoid, DECthreads, 3-3 See Third-party SCSI class driver Non-Digital terminal using thread-specific data to avoid, support for, RTL Screen Management, 5-1 DECthreads, 3-3 Nonstandard file processing Non-direct-vector interrupt, Device Support (A), 13-9, 14-3, 14-28, 14-29, 14-31; Device run-time options, File Applications, 9-14 Nonstatic variable, *Debugger*, 3–17, 4–1 Support (B), 1-7, 1-25 NONE carriage control, File Def Language, with DECwindows, Debugger, 1-24 FDL-34 Nonterminating signals, DECthreads, A-4 NONE keyword Nonthreaded software, DECthreads, 3-1 with MARK, VAXTPU, 7-261 /NOOPTIMIZE qualifier, Debugger, 2-5, 5-2, 9-1 with SELECT, VAXTPU, 7-337 with DECwindows, Debugger, 1-3 with SET (MESSAGE_ACTION_TYPE), /NOOUTPUT qualifier. Analyze/RMS File. VAXTPU, 7-426 ARMS-16 with SET (PROMPT AREA), VAXTPU, 7-446 with SET (STATUS_LINE), VAXTPU, 7-476

/NOWAIT qualifier, System Dump Analyzer, NOP (No Operation) instruction, Debugger, 4-21; MACRO, 9-78 SDA-162 /NOPAD qualifier, Convert, CONV-18 /NOWRITE_CHECK qualifier, Convert, CONV-28 NOPARAMETERS clause NO_EXACT keyword with LEARN_BEGIN, VAXTPU, 7-244 for DEFINE SYNTAX statement, Command with SEARCH, VAXTPU, 7-328 Def, CDU-23 with SEARCH_QUIETLY, VAXTPU, 7-333 for DEFINE VERB statement, Command Def, CDU-32 NO_TRANSLATE keyword, VAXTPU, 7-483 NOP field "No_video" string constant parameter to GET_ INFO, VAXTPU, 7-223 specifying multiple values, RMS, B-6 NOQUALIFIERS clause "No video status" string constant parameter to GET_INFO, VAXTPU, 7-223 for DEFINE SYNTAX statement, Command "No_write" GET_INFO request_string, VAXTPU, Def, CDU-24 for DEFINE VERB statement, Command Def, 7 - 174NO_WRITE keyword, VAXTPU, 7-434 CDU-33 /NOREAD_CHECK qualifier, Convert, CONV-20 NPR (nonprocessor request) Norm See DMA transfer Euclidean .NTYPE directive, MACRO, 6-68 of a vector, RTL Math, MTH-170 Null Normal directory syntax, File Applications, 6-12 key value, File Def Language, FDL-29 to 6-14 string, File Def Language, FDL-2 Normal termination of a thread, DECthreads, Null arguments, System Services Intro, 1-5 cma-95, cma-101, pthread-47, pthread-54 Null character field /NOSCRIPT qualifier, File Def Language, See XAB\$B NUL field FDL-42, FDL-57 Null device, System Services Intro, 7-28 /NOSHARE qualifier, Convert, CONV-21 Null key No sharing option for improving performance, File Applications, See FAB\$V NIL option .NOSHOW directive. MACRO, 6-67, 6-89 NULL pad character, Convert, CONV-18 /NOSKIP qualifier, System Dump Analyzer, Null parameters, VAXTPU, 3-18 SDA-52null_arg data type, Routines Intro, A-10t /NOSORT qualifier, Convert, CONV-22 NULL_KEY attribute, File Def Language, for avoiding unnecessary sort, Convert, FDL-29 CONV-11 NULL_VALUE attribute, File Def Language, /NOSTATISTICS qualifier FDL-29 with CONVERT, Convert, CONV-24 Number with CONVERT/RECLAIM, Convert, CONV-5, See also Integer, Floating-point number, and CONV-24 Packed decimal string /NOSUPPRESS qualifier, System Dump Analyzer, in source statement, MACRO, 3-2 SDA-52 Number of allocation areas field /NOSYMBOLS qualifier, System Dump Analyzer, See XAB\$B_NOA field SDA-162 Number of arguments directive (.NARG), NOTANY built-in procedure, VAXTPU, 7-284 to MACRO, 6-63 7 - 285Number of characters directive (.NCHR), Not end-of-file option MACRO, 6-64 See FAB\$V_NEF option Number of files processed, Convert, CONV-24 Notification Number of key segments field of abnormal exit, RTL Parallel Processing, 4-9 See XAB\$B_NSG field of normal exit, RTL Parallel Processing, 4-9 Number of keys field /NOTIFY qualifier, System Dump Analyzer, See XAB\$B_NOK field SDA-162 Number of modules NOT operator, VAXTPU, 3-7 in NCS library, specifying, National Char Set, NOT operator (#), System Dump Analyzer, NCS-24, NCS-25 SDA-12Number sign (#) /NOTRUNCATE qualifier, Convert, CONV-26 requirement for in control store macro, RMS, 3 - 8

Number value File Def Language EDI 0	Object module (cont'd)
Number value, File Def Language, FDL-2 /NUMBER_KEYS qualifier, File Def Language,	statements for, Command Def, CDU-14
FDL-42, FDL-53	title, MACRO, 6–95
Numeric constant	Object module library
specifying radix of, VAXTPU, 3–37	contents of, Linker, 2-3
Numeric control operator, MACRO, 3–14	creating, Modular Procedures, 5-2
Numeric data	input to linker, Linker, 2-3
entering, Patch, PAT-22	processing of, Linker, 6-13
Numeric expression, Delta/XDelta, DELTA-9,	updating, Modular Procedures, 6–5
DELTA-42	/OBJECT qualifier, Command Def, CDU-41;
Numeric string	Librarian, LIB-34; Message, MSG-12
leading separate, MACRO, 8-11	Occlusion, RTL Screen Management, 2-5
trailing, MACRO, 8-8	%OCT, Debugger, 4-11, D-5
Numeric time, System Services Intro, 10-7	OCTA directive, MACRO, 6–70
NWA (network work area), System Dump	OCTAL mode, Patch, PAT-17
Analyzer, SDA-77	OCTAL qualifier
NXR option, File Def Language, FDL-12	with DELETE command, Patch, PAT-52
	with DEPOSIT command, Patch, PAT-55
0	with EVALUATE command, Patch, PAT-59
	with EXAMINE command, Patch, PAT-62
O command, Delta/XDelta, DELTA-35	with INSERT command, Patch, PAT-68
Object	with REPLACE command, Patch, PAT-71 with SET MODE command, Patch, PAT-76
definition of, RTL Parallel Processing, 1–2	with VERIFY command, Patch, PAT-90
modifying, System Services Intro, 6-24	OCTAL qualifier, Debugger, 4–11, CD–77, CD–79,
protection, Device Support (B), 1–45	CD-83
retrieving information about, RTL Parallel	Octal text
Processing, 4–1 Object file	converting to binary, RTL Library, LIB-76
input to linker, Linker, 1–4, 2–2	Octaword data type, MACRO, 8-3
processing of, Linker, 6–9, 6–12	OCTAWORD qualifier, Debugger, CD-60, CD-83
used as linker input, Linker, 1–4	Octaword storage directive (.OCTA), MACRO,
Object language, Linker, 7-1 to 7-37	6–70
See also Linker Utility	octaword_signed data type, Routines Intro, A-10t
Object library, Programming Resources, 1–18,	octaword_unsigned data type, Routines Intro,
5–1, 5–12; <i>Librarian</i> , LIB–1	A-10t
adding a module, Programming Resources, 5–2	ODD directive, MACRO, 6-71
character case in, Librarian, LIB-2	OFF keyword
creating, Programming Resources, 5–2	with CREATE_WINDOW, VAXTPU, 7–77
deleting a module, Programming Resources,	with HELP_TEXT, VAXTPU, 7–228
5–2	with QUIT, VAXTPU, 7–291
extracting a module, Programming Resources,	with SET (AUTO_REPEAT), VAXTPU, 7–353
5–2	with SET (BELL), VAXTPU, 7–355
including message object module,	with SET (COLUMN_MOVE_VERTICAL),
Programming Resources, 9–9	VAXTPU, 7–359
listing modules, <i>Programming Resources</i> , 5–2	with SET (CROSS_WINDOW_BOUNDS),
replacing a module, Programming Resources,	VAXTPU, 7-361 with SET (DEBUG), VAXTPU, 7-363, 7-364
5–2	with SET (DEBUG), VAXIPU, 1–303, 1–304 with SET (INFORMATIONAL), VAXIPU,
Object module, Debugger, 5-3, 6-1	7–397
See also Message object module	with SET (LINE_NUMBER), VAXTPU, 7–416
contents of, Linker, 2–2	with SET (MODIFIABLE), VAXTPU, 7–429
for command table, Command Def, CDU-4,	with SET (MOUSE), VAXTPU, 7–432
CDU-16, CDU-41	with SET (NO_WRITE), VAXTPU, 7–434
how to create, Command Def, CDU-46	with SET (PAD), VAXTPU, 7-437
identifying, MACRO, 6-39	with SET (PAD_OVERSTRUCK_TABS),
input to linker, Linker, 6–3	VAXTPU, 7–439
naming, MACRO, 6-95	with SET (SCREEN_UPDATE), VAXTPU,
record contents of, Linker, 6-3	7–460

OFF keyword (cont'd)	Opcode (cont'd)
with SET (SCROLLING), VAXTPU, 7-467	defining, MACRO, 6-83
with SET (SELF_INSERT), VAXTPU, 7-470	format, MACRO, 8-16
with SET (SUCCESS), VAXTPU, 7-479	illegal vector, MACRO, 10-17
with SET (TIMER), VAXTPU, 7-486	redefining, MACRO, 6-58, 6-72
with SET (TRACEBACK), VAXTPU, 7-488	summary, MACRO, D-1
with SPAWN, VAXTPU, 7-515	alphabetic order, MACRO, D-1
"Offset" string constant parameter to GET_INFO,	numeric order, MACRO, D-12
VAXTPU, 7–174, 7–186	VAX MACRO instructions with same, Patch,
"Offset_column" string constant parameter to	PAT-21
GET_INFO, <i>VAXTPU</i> , 7–174, 7–186	with the same name as a macro, MACRO, 6-58
OFP option, File Def Language, FDL-22	Opcode definition directive (.OPDEF), MACRO,
One's complement	6–72
of expression, MACRO, 3-14	OPCOM (operator communication manager)
One-time initialization routines, DECthreads,	process
2–17	sending a message to, Device Support (A),
ON keyword	10–7; Device Support (B), 3–53, 3–61
with CREATE_WINDOW, VAXTPU, 7-77	OPDEF directive, MACRO, 6-72
with HELP_TEXT, VAXTPU, 7–228	Open-by-name-block option, File Applications,
with QUIT, VAXTPU, 7–291	5–9, 6–5
with SET (AUTO_REPEAT), VAXTPU, 7–353	and performance, File Applications, 6-7
with SET (BELL), VAXTPU, 7–355	Open Location and Display Contents command,
with SET (COLUMN_MOVE_VERTICAL),	Delta/XDelta, DELTA-17
VAXTPU, 7–359	Open Location and Display Contents in Instruction
with SET (CROSS_WINDOW_BOUNDS),	Mode command, Delta/XDelta, DELTA-20
VAXTPU, 7–361	Open Location and Display Indirect Location
with SET (DEBUG), VAXTPU, 7–363	command, Delta/XDelta, DELTA-24
with SET (INFORMATIONAL), VAXTPU,	Open Location and Display Previous Location
7–397	command, Delta/XDelta, DELTA-23
with SET (LINE_NUMBER), VAXTPU, 7-416	\$OPEN macro
with SET (MODIFIABLE), VAXTPU, 7-429	expansion of, RMS, 3-10
with SET (MOUSE), VAXTPU, 7-432	for invoking the Open service, RMS, 4-1
with SET (NO_WRITE), VAXTPU, 7-434	using in example, RMS, 3-10, 3-11
with SET (PAD), VAXTPU, 7-437	Open service, File Applications, 5-9; RMS,
with SET (PAD_OVERSTRUCK_TABS),	RMS-58
VAXTPU, 7–439	condition values, RMS, RMS-64
with SET (SCREEN_UPDATE), VAXTPU,	contrasted with Parse and Search services,
7–460	RMS, 4-10
with SET (SCROLLING), VAXTPU, 7-467	control block input fields, RMS, RMS-59
with SET (SELF_INSERT), VAXTPU, 7-470	control block output fields, RMS, RMS-61
with SET (SUCCESS), VAXTPU, 7-479	for process-permanent files, File Applications,
with SET (TIMER), VAXTPU, 7-486	6–21
with SET (TRACEBACK), VAXTPU, 7-488	function, RMS, 4-1
with SPAWN, VAXTPU, 7-515	invoking, RMS, 4-4
Online bit	NAM input fields, RMS, RMS-63
See UCB\$V_ONLINE	NAM output fields, RMS, RMS-63
Online condition	program example, RMS, 4-2
on MASSBUS, Device Support (A), 15–10	requirements for using, RMS, RMS-59
ONLY qualifier, Librarian, LIB-35; National	Operand, MACRO, 2-3
Char Set, NCS-38	determining addressing mode of, MACRO,
ON_ERROR statement, VAXTPU, 3-21, 3-25 to	6–68
3–31	instruction, Debugger, 4-19, CD-83, CD-150
location, VAXTPU, 3–25	primary, MACRO, 8-26
Opaque name	reserved, MACRO, 9-102, 9-103, 9-145
converting to string, System Services, SYS-176,	vector instruction, Debugger, 11-5, 11-9
SYS-180	Operand generation directive
Opcode	(.REF16), <i>MACRO</i> , 6–83
creating MACRO 6-72	(.REF2), MACRO, 6–83

Operand generation directive (cont'd)	Operator (cont'd)
(.REF4), MACRO, 6-83	precedence, System Dump Analyzer, SDA-12
(.REF8), <i>MACRO</i> , 6–83	SDA-13; <i>VAXTPU</i> , 3-7
Operand specifier, MACRO, 8-17	radix control, MACRO, 3-11
access type notation, MACRO, 9-2	register, MACRO, 3-13
access types, MACRO, 8–17	relational, VAXTPU, 2-18
base, MACRO, 8-26	sending message, System Services, SYS-615
data type notation, MACRO, 9-2	summary, MACRO, C-7
data types, MACRO, 8–17	textual, MACRO, 3–12
notation, MACRO, 9-2	unary, <i>MACRO</i> , 3–10, C–7
restrictions on usage for vector instructions,	Operator device, Device Support (B), 1-74
MACRO, 10–16	Optimization
Operand specifier addressing mode formats,	Edit/FDL Utility, File Applications, A-1
MACRO, 8–18	effect on debugging, Debugger, 2-5, 5-2, 7-7
autodecrement mode, MACRO, 8-21	9–1
autoincrement deferred mode, MACRO, 8-20	with DECwindows, Debugger, 1-3, 1-10,
autoincrement mode, MACRO, 8-19	1–11
branch mode, MACRO, 8-29	of indexed file, File Applications, 10-29
displacement deferred mode, MACRO, 8-22	/OPTIMIZE qualifier, Debugger, 2-5, 5-2, 9-1
displacement mode, MACRO, 8-21	with DECwindows, Debugger, 1–3
index mode, MACRO, 8-26	Optimize script, File Def Language, FDL-39,
literal mode, MACRO, 8-23	FDL-47
register deferred mode, MACRO, 8-19	Option
register mode, MACRO, 8-19	BASE=, Linker, 1-7, 3-5
/OPERANDS qualifier, Debugger, 4–19, 11–9,	CLUSTER=, Linker, 1-7, 3-6
CD-83, CD-150	COLLECT=, Linker, 1–8, 3–6
Operand type directive (.NTYPE), MACRO, 6-68	creating with LBR\$OPEN, Programming
Operation	Resources, 8-36
involving condition handler, Routines Intro,	default values, Linker, 3–2
2–46	DZROMIN=, <i>Linker</i> , 1–8, 3–7
Operational controls, RTL Screen Management,	GSMATCH=, <i>Linker</i> , 1–8, 3–7
2–16	IDENTIFICATION=, Linker, 1–8, 3–9
Operator, Patch, PAT-23; SUMSLP, SUM-3;	IOSEGMENT=, Linker, 1-6, 1-8, 2-11, 3-9
System Dump Analyzer, SDA-12; MACRO,	ISDMAX=, <i>Linker</i> , 1–8, 3–10
2-3; VAXTPU, 3-6 to 3-8	NAME=, <i>Linker</i> , 1–8, 3–10
address expression, Debugger, D-6	PROTECT=, Linker, 1–8, 3–10
AND, <i>MACRO</i> , 3–16	PSECTATTR=, Linker, 1–9, 3–11
arithmetic, Delta/XDelta, DELTA-10	specifying by symbolic bit offset, RMS, 2-3
arithmetic shift, MACRO, 3-16	STACK=, Linker, 1–6, 1–9, 2–11, 3–11
ASCII, MACRO, 3–12	SYMBOL=, <i>Linker</i> , 1–9, 3–11
binary, <i>MACRO</i> , 3–15, C–8	UNIVERSAL=, Linker, 1–9, 3–12
complement, MACRO, 3-14	Optional argument
exclusive OR, MACRO, 3–16	to service, RMS, 3–11
floating-point, MACRO, 3-14	Options file, Programming Resources, 5–8
for addressing locations, Patch, PAT-24	See also Linker Utility
for arithmetic expressions, Patch, PAT-23	content of, Linker, 2-5, 3-1
for DISALLOW clause, Command Def,	creating, Programming Resources, 5-6;
CDU-13	Linker, 1–7
inclusive OR, MACRO, 3–16	creation of, Linker, 3–4
language expression, Debugger, E-1	how used with linker, Linker, 1–6
macro, MACRO, 4-8	identification of, Linker, LINK-26
macro string, MACRO, C-8	in command procedure, Linker, 3-4
numeric control, MACRO, 3-14	input to linker, Linker, 1-5, 2-4
partial pattern assignment (@), VAXTPU, 2-17	processing of, Linker, 6–9
pattern, MACRO, 9-172	rules for, Linker, 1-7, 3-4
pattern alternation (), VAXTPU, 2-16	specification of clusters in, Linker, 6–10
pattern concatenation (+), VAXTPU, 2-15	use for, <i>Linker</i> , 2–5, 3–1
pattern linking (&), VAXTPU, 2–15	

```
OPTIONS qualifier, Debugger, 5-12; Linker,
                                                 OTS$MULCG_R3, RTL General Purpose, OTS-53
    1-5, 2-4, LINK-26
                                                 OTS$POWCxCx, RTL General Purpose, OTS-55
ORB (object rights block), Device Support (B),
                                                 OTS$POWCxJ, RTL General Purpose, OTS-58
    1-44 to 1-46
                                                 OTS$POWDD, RTL General Purpose, OTS-61
  address, Device Support (B), 1-73
                                                 OTS$POWDJ, RTL General Purpose, OTS-65
  cloned, Device Support (A), 11-13; Device
                                                 OTS$POWDLU, RTL General Purpose, OTS-79
      Support (B), 4–7
                                                 OTS$POWDR, RTL General Purpose, OTS-63
                                                 OTS$POWGG, RTL General Purpose, OTS-67
Organization
                                                 OTS$POWGJ, RTL General Purpose, OTS-70
  See File organization
                                                 OTS$POWGLU, RTL General Purpose, OTS-79
ORGANIZATION attribute, File Def Language,
                                                 OTS$POWHH_R3, RTL General Purpose, OTS-72
                                                 OTS$POWHJ_R3, RTL General Purpose, OTS-74
ORGANIZATION secondary attribute, File
                                                 OTS$POWHLU_R3, RTL General Purpose,
   Applications, 4-28
                                                     OTS-79
Organizing
                                                 OTS$POWII, RTL General Purpose, OTS-76
  files, Convert, CONV-1
                                                 OTS$POWJJ. RTL General Purpose, OTS-77
      See also File organization
                                                 OTS$POWLULU, RTL General Purpose, OTS-78
  files and modules, Modular Procedures, 2–1
                                                 OTS$POWRD, RTL General Purpose, OTS-81
  procedures, Modular Procedures, 2-1
                                                 OTS$POWRJ, RTL General Purpose, OTS-84
"Original_bottom" string constant parameter to
                                                 OTS$POWRLU, RTL General Purpose, OTS-79
    GET_INFO, VAXTPU, 7-223
                                                 OTS$POWRR, RTL General Purpose, OTS-86
"Original_length" string constant parameter to
                                                 OTS$SCOPY_DXDX, RTL General Purpose,
    GET INFO, VAXTPU, 7-223
                                                     OTS-89; RTL String Manipulation, 2-7
"Original_top" string constant parameter to
                                                 OTS$SCOPY_R_DX, RTL General Purpose,
   GET_INFO, VAXTPU, 7–223
                                                     OTS-91
"Original_width" string constant parameter to
                                                 OTS$SFREE1_DD, RTL General Purpose,
    GET_INFO, VAXTPU, 7-200
                                                     OTS-94
OR operator, VAXTPU, 3-7
                                                 OTS$SFREEN DD, RTL General Purpose,
OR operator ( | ), System Dump Analyzer,
                                                     OTS-95
    SDA-12
                                                 OTS$SGET1 DD, RTL General Purpose, OTS-96
OTS$CNVOUT, RTL General Purpose, OTS-3
                                                 Out-of-band AST, I/O User's I, 8-13, 8-46
OTS$CNVOUT_G, RTL General Purpose, OTS-3
OTS$CNVOUT_H, RTL General Purpose, OTS-3
                                                    configuration, displaying, Debugger, 8-2, 8-5,
OTS$CVT_L_TB, RTL General Purpose, OTS-5
                                                       CD-228
OTS$CVT_L_TI, RTL General Purpose, OTS-7
                                                    configuration, setting, Debugger, 8-2, 8-5,
OTS$CVT_L_TL, RTL General Purpose, OTS-9
                                                       CD-155
OTS$CVT_L_TO, RTL General Purpose, OTS-11
                                                    debugger, DBG$DECW$DISPLAY
OTS$CVT_L_TU, RTL General Purpose, OTS-13
                                                       with DECwindows, Debugger, 1-32, D-1
OTS$CVT_L_TZ, RTL General Purpose, OTS-15
                                                    debugger, DBG$OUTPUT, Debugger, 9-5, D-1
OTS$CVT_TB_L, RTL General Purpose, OTS-17
                                                       with DECwindows, Debugger, 1-33
OTS\$CVT\_TI\_L, \ \ RTL \ General \ Purpose, \ OTS-20
                                                    directing, Librarian, LIB-15; Analyze/RMS
OTS$CVT_TL_L, RTL General Purpose, OTS-22
                                                       File, ARMS-10
OTS$CVT_TO_L, RTL General Purpose, OTS-24
                                                   display (OUT), Debugger, 7-6, C-4
OTS$CVT_TU_L, RTL General Purpose, OTS-27
                                                       with DECwindows, Debugger, 1-10
OTS$CVT_TZ_L, RTL General Purpose, OTS-36
                                                   display kind, Debugger, 7-16, C-1
OTS$CVT_T_z, RTL General Purpose, OTS-29,
                                                   formatting character string, System Services,
   OTS-33
                                                       SYS-221
OTS$DIVC, RTL General Purpose, OTS-39
                                                   from DELTA, Delta/XDelta, DELTA-14
OTS$DIVCD_R3, RTL General Purpose, OTS-39
                                                   from XDELTA, Delta/XDelta, DELTA-14
OTS$DIVCG_R3, RTL General Purpose, OTS-39
                                                   window (OUT), DECwindows, Debugger, 1-10
OTS$DIV_PK_LONG, RTL General Purpose,
                                                 Output data register
   OTS-42
                                                   See DR11-W/DRV11-WA driver, ODR
OTS$DIV_PK_SHORT, RTL General Purpose,
                                                 Output device, Device Support (B), 1-75
   OTS-46
                                                 Output file, SUMSLP, SUM-3; VAXTPU, 5-12
OTS$MOVE3, RTL General Purpose, OTS-49
                                                   creating, Convert, CONV-1
OTS$MOVE5, RTL General Purpose, OTS-51
                                                   how effected by CONVERT, Convert, CONV-3
OTS$MULCD R3, RTL General Purpose, OTS-53
                                                   loading, Convert, CONV-1
```

Output file parse option	Ownership
	global selection (cont'd)
See FAB\$V_OFP option	losing, VAXTPU, 7–202
Output formatting control routine, RTL Library, 2–20	requesting, VAXTPU, 7-380
Output image file, Patch, PAT-6	input focus
Output image me, Tatch, TAI=0 OUTPUT qualifier, Patch, PAT=32	determining, VAXTPU, 7-199
with UPDATE command, Patch, PAT-89	losing, VAXTPU, 7–202
Output operation	requesting, VAXTPU, 7-398
batching of, RTL Screen Management, 2–17	
OUTPUT parameter	P
SET built-in procedure, VAXTPU, 7–203	
OUTPUT qualifier, Debugger, 7–19, CD–118,	;P command, Delta/XDelta, DELTA-32
CD-164, CD-256; Command Def, CDU-42;	P0BR register
Librarian, LIB-36; Patch, PAT-6, PAT-32;	displaying, System Dump Analyzer, SDA-90
SUMSLP, SUM-17; Analyze/RMS_File,	POBR symbol, System Dump Analyzer, SDA-14
ARMS-16; File Def Language, FDL-42;	/PoIMAGE qualifier, Linker, LINK-13
National Char Set, NCS-39; System Dump	POLR register
Analyzer, SDA-162; VAXTPU, 5-12	displaying, System Dump Analyzer, SDA-90
EDIT/FDL, File Def Language, FDL-54	POLR symbol, System Dump Analyzer, SDA-14
using with /COMPRESS, Librarian, LIB-15	P0 page table
using with /CROSS_REFERENCE, Librarian,	displaying, System Dump Analyzer, SDA-127
LIB-19	/P0 qualifier, System Dump Analyzer, SDA-127
using with /EXTRACT, Librarian, LIB-22	P0 region
Output record buffer address field	examining, System Dump Analyzer, SDA-52 used for VMS RMS buffers, File Applications
See RAB\$L_RBF field	7-17
"Output" string constant parameter to GET_INFO,	P1BR register
VAXTPU, 7–177	displaying, System Dump Analyzer, SDA-90
OUTPUT_FILE keyword, VAXTPU, 7-435	P1BR symbol, System Dump Analyzer, SDA-14
"Output_file" string constant parameter to	P1LR register
GET_INFO, <i>VAXTPU</i> , 7–174, 7–178	displaying, System Dump Analyzer, SDA-90
OUTPUT_FILE_PARSE attribute, File Def	P1LR symbol, System Dump Analyzer, SDA-14
Language, FDL-22	P1 page table
OUTRANGE case constant, VAXTPU, 3-24	displaying, System Dump Analyzer, SDA-127
Overflow condition code (V), MACRO, 8-15	/P1 qualifier, System Dump Analyzer, SDA-52,
Overflow detection, RTL Math, 2-9	SDA-127
Overlapped vector instruction execution, MACRO,	P1 region
10–21	examining, System Dump Analyzer, SDA-52
OVER qualifier, Debugger, CD-127, CD-186,	Packed decimal byte
CD-197, CD-259	structure for key type, RMS, 13-6
/OVERRIDE=ACCESSIBILITY qualifier, File Def	Packed decimal instructions, MACRO, 9-144
$Language, { m FDL-}22$	Packed decimal string, MACRO, 9-144
OVERRIDE qualifier, Debugger, 4-24, CD-26,	as key type, RMS, 13-6
CD-33, CD-164, CD-192, CD-234, CD-252	data type, MACRO, 8–13
Override type, Debugger, 4–24	format, MACRO, 3-4
OVERSTRIKE keyword, VAXTPU, 7-436	in source statement, MACRO, 3-4
Overstrike mode	storing, MACRO, 6-74
COPY_TEXT, VAXTPU, 7-53	Packed decimal string directive (.PACKED),
MOVE_TEXT, VAXTPU, 7–280	MACRO, 6–74
Overwrite tape file, File Def Language, FDL-16	.PACKED directive, MACRO, 6-74
OWNER attribute, File Def Language, FDL-22	/PACKED qualifier, Debugger, CD-60, CD-84
OWNER protection code, File Def Language,	Pad character, Convert, CONV-18
FDL-23	how to select, Convert, CONV-3
OWNER secondary attribute, File Applications,	in collating sequence, National Char Set,
4–28 Ovunovshin	NCS-10
Ownership	Padding effects, VAXTPU, 6-11 to 6-12
global selection	version differences, VAXTPU, 7–439
determining, VAXTPU, 7–199	with APPEND LINE. VAXTPII. 7–28

Padding effects (cont'd)	Page fault (cont'd)
with ATTACH, VAXTPU, 7-35	taken within driver code, Device Support (A),
with COPY_TEXT, VAXTPU, 7–53	3–5
with CURRENT_CHARACTER, VAXTPU,	Page fault cluster, Linker, 3-6, 5-5
7–81	Page frame section, System Services Intro, 12-18
with CURRENT_LINE, VAXTPU, 7–86	/PAGE qualifier, Debugger, 7–22, CD–181
with CURRENT_OFFSET, VAXTPU, 7–88	ALIGN command, Patch, PAT-38
with ERASE_CHARACTER, VAXTPU, 7–119	Page table
with ERASE_LINE, VAXTPU, 7–121	displaying, System Dump Analyzer, SDA-111,
with MARK, VAXTPU, 7–262	SDA-127
with MOVE_HORIZONTAL, VAXTPU, 7–278	physical address of, Device Support (A), 16-21
with MOVE_TEXT, VAXTPU, 7–281 with MOVE_VERTICAL, VAXTPU, 7–282	Page table entry
with READ_FILE, VAXTPU, 7–297	allocating, Device Support (B), 3-107
with SELECT, VAXTPU, 7–238	deallocating, Device Support (B), 3–108 evaluating, System Dump Analyzer, SDA–48
with SELECT_RANGE, VAXTPU, 7–341	examining, System Dump Analyzer, SDA-48 examining, System Dump Analyzer, SDA-52
with SET (PAD), VAXTPU, 7–437	format, Device Support (A), 16-20
with SPAWN, VAXTPU, 7–516	modifying, Device Support (A), E-15; Device
with SPLIT_LINE, VAXTPU, 7–518	Support (B), 2-41
Padding records, Convert, CONV-3	PAGE_BREAK keyword, VAXTPU, 7–286
PAD keyword, VAXTPU, 7-437	with SEARCH, VAXTPU, 7–327
/PAD qualifier, Convert, CONV-3, CONV-18	with SEARCH_QUIETLY, VAXTPU, 7–332
"Pad" string constant parameter to GET_INFO,	PAGE_MANAGEMENT.EXE
VAXTPU, 7–223	global symbols, System Dump Analyzer,
PAD_OVERSTRUCK_TABS keyword, VAXTPU,	SDA-61
7–439	page_protection data type, Routines Intro, A-10t
"Pad_overstruck_tabs" string constant parameter	/PAGE_TABLES qualifier, System Dump
to GET_INFO, VAXTPU, 7–207	Analyzer, SDA–127
Page, System Services Intro, 12–3	Paging file
copy-on-reference, System Services Intro, 12-10	See also SYS\$SYSTEM:PAGEFILE.SYS
demand-zero, System Services Intro, 12-10	as system dump file, System Dump Analyzer,
locking into memory, System Services Intro,	SDA-5
12–7; System Services, SYS–420	Paging file section, System Services Intro, 12-14
locking into working set, System Services, SYS-422	global, System Services Intro, 12-14
owner, System Services Intro, 12–5	Paging I/O function, Device Support (B), 1–40
ownership and protection, System Services	Parallel processing, Programming Resources,
Intro, 12–5	4-15; RTL Parallel Processing, 1-1
removing from working set, System Services,	considerations when developing an application,
SYS-473	RTL Parallel Processing, 5-1
setting protection, System Services, SYS-529	initializing, <i>Programming Resources</i> , 4–16 subprocess
unlocking from memory, System Services,	creating, Programming Resources, 4–16
SYS-651	deleting, Programming Resources, 4-16
unlocking from working set, System Services,	terminating, Programming Resources, 4–16
SYS-653	using semaphores, Programming Resources,
%PAGE, Debugger, C-6	4–17
Page boundary, Linker, 3-5	using spin locks, Programming Resources, 4-16
Paged dynamic storage pool	Parallel programming, Programming Resources,
displaying contents, System Dump Analyzer,	4–18 to 4–19
SDA-118	Parameter, Librarian, LIB-11
Page directive (.PAGE)	debugger command procedure, Debugger, 8-2,
in message source file, Message, MSG-25	CD-44
PAGED qualifier, System Dump Analyzer,	for procedures, VAXTPU, 3-16 to 3-19
SDA-118	for VMS RMS, File Def Language, FDL-2
Page ejection directive (.PAGE), MACRO, 6-75	how to define, Command Def, CDU-23,
Page fault, Programming Resources, 3–20;	CDU-32
Convert, CONV-24	PARAMETER clause
illegal, System Dump Analyzer, SDA-19	

PARAMETER clause (cont'd) Passing mechanism (cont'd) for DEFINE SYNTAX statement, Command by reference, RTL Intro, 3-7 Def, CDU-23 by value, RTL Intro, 3-6 for DEFINE VERB statement, Command Def, descriptor code, Routines Intro, 1-11 CDU-32 "Parameter" string constant parameter to definition of, Routines Intro, 2-3 GET_INFO, VAXTPU, 7-180 for arrays, RTL Intro, 3-9 Parameter value for scalars, RTL Intro, 3-9 delimiting a, Patch, PAT-23 for strings, RTL Intro, 3-10 %PARCNT, Debugger, 8-2, D-4 language extensions, Routines Intro, 2-6 Parent reference of widget definition of, Routines Intro, 2-3 fetching in VAXTPU, VAXTPU, 7-215 value ""parent"" string constant parameter to GET_ definition of, Routines Intro, 2-3 INFO, VAXTPU, 7-215 Password Parentheses return hash value, System Services, SYS-399 as precedence operator, System Dump PASSWORD command Analyzer, SDA-13 in card reader batch job, I/O User's I, 2-2 in expressions, VAXTPU, 3-7 Pasteboard, Programming Resources, 7-8; Parent lock, System Services Intro, 13-11 Debugger, 7-3; RTL Screen Management, 1-4 /PARENT qualifier, System Dump Analyzer, creating, Programming Resources, 7-9 SDA-41 deleting, Programming Resources, 7-9 Parity bit, File Applications, 1-8 ID, Programming Resources, 7-31 Parity flag, I/O User's I, 8-41 sharing, Programming Resources, 7-31 \$PARSE macro Pasthru mode, I/O User's I, 8-9, 8-11, 8-24, 8-27 PAT\$A_NONPAGED, Device Support (A), 13-20 for processing wildcard characters, RMS, 4-10 PAT\$A_NONPGD maximum stack depth of, VAXTPU, 4-2 replaced by PAT\$A_NONPAGED, Device Parsers with EVE\$BUILD, VAXTPU, G-3 to G-4 Support (A), 13-20 Parse service, File Applications, 5-8 to 5-12; Patch applying a, Patch, PAT-2 RMS, RMS-66, RMS-67 condition values, RMS, RMS-69 sample session, Patch, PAT-92 control block input fields, RMS, RMS-67 PATCH control block output fields, RMS, RMS-68 See Patch Utility preparing for file search, RMS, 4-9 Patch area, Patch, PAT-17 preparing for wildcard character processing, allocate space, Patch, PAT-38 RMS, RMS-67 commands that affect, Patch, PAT-20 program example, RMS, 4-9 creating and accessing, Patch, PAT-19 requirements for using, RMS, RMS-67 default, Patch, PAT-18 depositing new data or instructions, Patch, Parsing PAT-55, PAT-57 See File specification parsing descriptor, Patch, PAT-18, PAT-79 Parsing file specification displaying size and starting address, *Patch*, See File specification parsing PAT-87 Partial pattern assignment (@), VAXTPU, 2-17 /INITIALIZE qualifier, Patch, PAT-79 Participant, System Services, SYS-198 inserting new instructions, Patch, PAT-68 definition of, RTL Parallel Processing, 1-2 patch area symbols, Patch, PAT-18, PAT-38 Participant in a transaction, System Services resetting, Patch, PAT-19, PAT-43 Intro, 14–2; System Services, SYS–5 SET PATCH_AREA, Patch, PAT-79 Pascal setting user-defined patch area, Patch, PAT-79 See VAX Pascal starting address, Patch, PAT-38 PASCAL compiler terminating, Patch, PAT-19 generating reentrant code, DECthreads, 3-2 used with device driver images, Patch, PAT-19 Passall mode, I/O User's I, 5-4 used with shareable images, Patch, PAT-19 Passing arguments, System Services Intro, 1-7 user-defined, Patch, PAT-19, PAT-80 Passing mechanism, Routines Intro, 1-10; Patch area symbol, Patch, PAT-18 System Services Intro, 1–8; RTL Intro, 2–24 created with ALIGN, Patch, PAT-18 by descriptor, RTL Intro, 3-7 reserved by Digital, Patch, PAT-18

PATCH command, Patch, PAT-25, PAT-38 for expressing symbols and path names, Patch, PAT-14	Pattern matching built-in procedures (cont'd) ANY, VAXTPU, 7-26
qualifiers, Patch, PAT-26	ARB, <i>VAXTPU</i> , 7–30
rules of syntax for, Patch, PAT-20	LINE_BEGIN, VAXTPU, 7–249
Patch space, Device Support (A), 13–20	LINE_END, VAXTPU, 7–251
Patch Utility (PATCH), Programming Resources,	MATCH, VAXTPU, 7-264
1–20	NOTANY, VAXTPU, 7–284
applying patches, Patch, PAT-95	PAGE_BREAK, VAXTPU, 7-286
commands, Patch, PAT-38	REMAIN, VAXTPU, 7–312
DCL qualifiers, Patch, PAT-26	SCAN, VAXTPU, 7–319
directing output from, Patch, PAT-25	SCANL, VAXTPU, 7–322
examples	SPAN, VAXTPU, 7–510
interactive patch session, <i>Patch</i> , PAT–92	SPANL, VAXTPU, 7–512
exiting, Patch, PAT-25	UNANCHOR, VAXTPU, 7–530
input, Programming Resources, 1–20	Pattern operator, MACRO, 9-170, 9-172
invoking, Patch, PAT-25	PB (path block), System Dump Analyzer, SDA-99
rules of syntax, Patch, PAT-20	PBI
using entry and display modes, Patch, PAT-14	See Memory interconnect to VAXBI adapter
using PATCH, Patch, PAT-1	%PC
using patch area, Patch, PAT-17	See PC
using symbols, Patch, PAT-7	
/PATCH_AREA qualifier, Patch, PAT-18 See also DEPOSIT command	PC (program counter), System Dump Analyzer, SDA-14
	built-in symbol (%PC), Debugger, 4–22, D–3
with DEPOSIT command, Patch, PAT-56, PAT-57	content of, Debugger, 2–11, 4–19
	EXAMINE/INSTRUCTION command,
Path block	Debugger, 7–9, 7–16
See PB	EXAMINE/OPERANDS command, Debugger,
Path name, Patch, PAT-12	4–19, 11–9
abbreviating, Debugger, 5-9	EXAMINE/SOURCE command, Debugger, 6–4,
commands that affect, Patch, PAT-14	7-6, 7-18, 7-20
determining value of, Patch, PAT-60	examining, Debugger, 4–19, 11–9
numeric, Debugger, 5–10	with DECwindows, Debugger, 1–24
relation to symbol, Debugger, 5–9	in a crash dump, System Dump Analyzer,
with DECwindows, Debugger, 1–10	SDA-15
syntax, Debugger, 5–9	scope, Debugger, 5–8
to specify scope, Debugger, 3–11, 5–8, 5–9	SHOW CALLS display, Debugger, 2–13,
with DECwindows, Debugger, 1–26	CD-209
Path to file	PCA (Performance and Test Coverage Analyzer),
file specification string address, RMS, 4-9	Modular Procedures, 1–12
file specification string size, RMS, 4-9	PCB\$L_ASTQFL, Device Support (A), E-14
Pattern	PCB\$L_JIB, Device Support (A), 7–6
alternation (), VAXTPU, 2–16	PCB\$L_PID, Device Support (A), 11–8; Device
anchoring, VAXTPU, 7–24	Support (B), 3–68, 4–5
built-in procedures, VAXTPU, 2–13	PCB\$V_SSRWAIT, Device Support (A), 4–9;
compilation, VAXTPU, 2–18	Device Support (B), 3–12, 3–20, 3–22
concatenation (+), VAXTPU, 2–15	PCB\$W_ASTCNT, Device Support (B), 3-4, 3-6,
execution, VAXTPU, 2–18	3–10
expression, VAXTPU, 3–11	modifying with ADAWI instruction, Device
linking (&), VAXTPU, 2–15	Support (A), E-13
operators, VAXTPU, 2–15	PCB\$W_BIOCNT, Device Support (A), 2-7
searching, VAXTPU, 2–11	PCB (process control block), System Dump
Pattern assignment	Analyzer, SDA-160; Device Support (A), 3-4,
partial (@), VAXTPU, 2–17	3–5, 13–13
PATTERN data type, VAXTPU, 2–11 to 2–20	displaying, System Dump Analyzer, SDA-127
Pattern matching	hardware, System Dump Analyzer, SDA-129
built-in procedures ANCHOR, <i>VAXTPU</i> , 7–24	referring to current, Device Support (A), E-6

PCB (process control block) (cont'd) Performance measurement routine, RTL Library, synchronizing access to, Device Support (A), 2 - 183-14Period(.) PCB address location, Delta/XDelta, DELTA-9 contents-of operator, Debugger, 4-6, 4-19, D-7 PCBB register current entity, Debugger, 4-8, 4-13, D-5 displaying, System Dump Analyzer, SDA-90 current location counter, MACRO, 3-17 /PCB qualifier. System Dump Analyzer, SDA-127 PERMANENT keyword, VAXTPU, 7-441 PCB vector start symbolic address. Delta/XDelta, Permanent mailbox DELTA-9 See Mailbox PC symbol, System Dump Analyzer, SDA-14 "Permanent" string constant parameter to PDT (port descriptor table), System Dump GET_INFO, VAXTPU, 7-174 Analyzer, SDA-123; Device Support (B), 1-80 Permanent symbol, MACRO, 3-5, 3-6 Pending I/O queue, Device Support (A), 3-23, Permanent symbol table, MACRO, D-1 4-13, 8-1, 11-7, E-14; Device Support (B), Per-process common blocks, Programming 1-38, 1-76, 3-27, 3-28, 3-37, 3-38, 3-73, 3-95 Resources, 3-6 bypassing, Device Support (A), 7-5; Device Per-process page Support (B), 3-17 locking in memory, Device Support (A), E-16 length, Device Support (B), 1-79, 3-28 Per-thread context, DECthreads, 2-18 synchronizing with driver internal queue, generating key value for, DECthreads, cma-69, Device Support (A), 7-5 pthread-65 Per-CPU database obtaining, DECthreads, cma-71, pthread-61 See CPU setting, *DECthreads*, cma-73, pthread-101 PERFMON spin lock, Device Support (A), 3-14 uses for, DECthreads, cma-69, pthread-65 Performance, Linker, 3-7, 4-4, 4-5, 6-8; File using to avoid nonreentrant software, Applications, 3-1, 9-7 to 9-10 DECthreads, 3-3 and asynchronous processing, File PFN (page frame number) database, System Applications, 9-9 Dump Analyzer, SDA-111 and extension size, File Applications, 9-8 displaying, System Dump Analyzer, SDA-115 and fast-delete option, File Applications, 9-9 PFN (physical page number), Delta/XDelta, and global buffer count, File Applications, 9-9 DELTA-38 and locate mode, File Applications, 9-9 PFN database and window size, File Applications, 9-8 examining with XDELTA, Device Support (A), buffers, File Applications, 9-9 13-13 to 13-14 deferred-write option, File Applications, 3-28, PFN mapping, Device Support (A), 19-5 to 19-7 deleting a page designated for, Device Support effect of compression, File Applications, 3-16 (A), 19–7 extension size, File Applications, 9-9 modifying a page designated for, Device I/O in VAXcluster, File Applications, 3-29 Support (A), 19-5 improving with null keys, File Applications, PGFIPLHI bugcheck, System Dump Analyzer, improving with SHR argument, RMS, 4-14 PHD\$L_BIOCNT, Device Support (A), 2-7 in a VAXcluster, File Applications, 3–28 PHD (process header), System Dump Analyzer, multiblock count, File Applications, 9-9 SDA-160 read-ahead option, File Applications, 9-9 displaying, System Dump Analyzer, SDA-127 recommendations for a VAXcluster, File /PHD qualifier, System Dump Analyzer, SDA-127 Applications, 3-30 Phonemic text sequential access, File Applications, 9-10 defined, RTL DECtalk, 1-1 stack time, Device Support (B), 1-17 speaking, RTL DECtalk, DTK-35 using Prolog 3, File Applications, 3-16 Physical address window size, File Applications, 9-10 format, Device Support (A), 19-4 write-behind option, File Applications, 9-10 Physical device name, Routines Intro, A-5t Performance analysis, Modular Procedures, 4-8 Physical I/O Performance and Test Coverage Analyzer access checks, System Services Intro, 7-7 operations, System Services Intro, 7-6 See PCA privilege, System Services Intro, 7-4, 7-6, 7-7 Performance measurement, RTL Parallel Physical I/O function, Device Support (B), 1-40, Processing, 5-10 3 - 72geometric model, RTL Parallel Processing,

5-10 to 5-13

Physical name, System Services Intro, 7-26 Pool checking mechanism, Device Support (A), 13-23 to 13-27 Physical page number POOLCHECK parameter, Device Support (A), See PFN 13 - 23PID (process identification), System Dump POOL spin lock, Device Support (A), 3-14; Device Analyzer, SDA-126 Support (B), 3-14, 3-15, 3-19 using -1 wildcard as pidadr with \$GETJPI, Poor man's lockdown, Device Support (A), E-16 to System Services, SYS-286 E-17; Device Support (B), 2-49 to 2-50, 2-97 using with \$GETJPI to return information POPL instruction, MACRO, 9-27 about a process, System Services, SYS-286 /POP qualifier, Debugger, CD-67, CD-162 PID (process identification) number, System POPR (Pop Registers) instruction, MACRO, 9-79 Services Intro, 8-7, 9-2; Device Support (B), Pop-up menu 1 - 74with DECwindows, Debugger, 1-12 defined, System Services Intro, 9-1, 9-2 Port, Device Support (A), 17-1 using to reference remote processes, System displaying SDA information, System Dump Services Intro, 9-1 Analyzer, SDA-123 "Pid" string constant parameter to GET_INFO, DMA buffer, Device Support (A), 17-2, 17-16, VAXTPU, 7-192 17-27; Device Support (B), 2-77 to 2-79 PIO transfer, Device Support (A), 1-21 examining status of, Device Support (A), 17-17 example, Device Support (A), 2-1 to 2-7 to 17-18 using buffered I/O in, Device Support (A), 6-8 resetting, Device Support (B), 2-82 using I/O adapter resources in, Device Support Port access mode, I/O User's I, 3–12 (A), 14-2 Port capabilities longword, Device Support (A), Pipelining model, DECthreads, 1-6 17 - 13Pipelining software model, RTL Parallel Port command buffer Processing, 1-4 to 1-5 allocating, Device Support (A), 17-11, 17-27; Pixmap Device Support (B), 2-69 use of to implent icon in DECwindows VAXTPU, deallocating. Device Support (A), 17-11, 17-28; VAXTPU, 7-393, 7-395 Device Support (B), 2-72 PL/I Port driver, Device Support (A), 17-3 See VAX PL/I See also Terminal port driver PLACEMENT clause displaying SDA information, System Dump for QUALIFIER clause, Command Def, Analyzer, SDA-82 CDU-25, CDU-34 Port driver entry vector table, Device Support (B), Plane rotation applying Givens plane rotation to a vector, Port driver vector table, Device Support (A), 18-4 RTL Math, MTH-173 to 18-5; Device Support (B), 1-89 generating the elements for a Givens plane address, Device Support (A), 18-9; Device rotation, RTL Math, MTH-178 Support (B), 2-8 PMT option, File Def Language, FDL-14 creating, Device Support (A), 18-6; Device Pn symbol, Delta/XDelta, DELTA-9 Support (B), 2-99, 2-100 Pointer defining entry in, Device Support (B), 2-98 See also Message pointer relocating, Device Support (B), 2-7 retrieval, File Applications, 9-8 Port selection, I/O User's I, 3-12 structure, Analyze/RMS_File, ARMS-21 PORT_ABORT service routine, Device Support Pointer position, VAXTPU, 7-252 (A), 18–16 Pointer type, Debugger, 4-18 PORT_CANCEL service routine, Device Support POLYD (Polynomial Evaluation D_floating) (A), 18–17 instruction, MACRO, 9-120 PORT_DISCONNECT initiate routine, Device POLYF (Polynomial Evaluation F_floating) Support (A), 18–13 instruction, MACRO, 9-120 PORT_DS_SET initiate routine, Device Support POLYG (Polynomial Evaluation G_floating) (A), 18–13 instruction, MACRO, 9-120 PORT_FDT initiate routine, Device Support (A), POLYH (Polynomial Evaluation H floating) 18 - 14instruction, MACRO, 9-120 PORT_FORKRET initiate routine, Device Support Polynomial (A), 18–14, 18–20 evaluating, RTL Library, LIB-300, LIB-302, LIB-305, LIB-307

PORT_MAINT initiate routine, Device Support (A), 18–15; Device Support (B), 1–90 PORT_RESUME service routine, Device Support (A), 18–17 PORT_SET_LINE initiate routine, Device Support (A), 18–15 PORT_SET_MODEM initiate routine, Device Support (A), 18-15 PORT_STARTIO initiate routine, Device Support (A), 18–16 PORT_STOP service routine, Device Support (A), PORT_XOFF service routine, Device Support (A), PORT_XON service routine, Device Support (A), 18 - 18Positional argument, MACRO, 4-3 POSITIONAL clause for PLACEMENT clause, Command Def, CDU-25, CDU-34 Positional qualifier /INCLUDE, Linker, 2-4, 2-10, LINK-24 incompatibility among, Linker, LINK-23 /LIBRARY, Linker, 2-4, LINK-25 /OPTIONS, Linker, 2-4, LINK-26 /SELECTIVE_SEARCH, Linker, LINK-27 /SHAREABLE, Linker, LINK-28 POSITION attribute, File Applications, 4–31; File Def Language, FDL-7, FDL-28, FDL-29 POSITION/BUCKET command, Analyze/RMS_ File, ARMS-30 POSITION built-in procedure, VAXTPU, 7-287 to example of use, VAXTPU, B-25 to B-27 Position independence, Modular Procedures, 3-1, A-3coding guidelines for, Linker, 4-5 desirability of, Linker, 4-4 in shareable image, Linker, 1-10, 4-4 Position-independent code, Device Support (A), 5-1POSITION/RECORD command, Analyze/RMS_ File, ARMS-32 Positive operator (+), System Dump Analyzer, SDA-12sigwait service, DECthreads, A-5 POS option, File Def Language, FDL-21 Postprocessing

"Post_key_procedure" string constant parameter to

Power failure, MACRO, 10-43 blocking, Device Support (A), 3-7 determining the occurrence of, Device Support (A), 8–5 occurring when device is busy, Device Support (B), 1–78 on I/O bus, Device Support (A), 19-7 servicing in an initialization routine, Device Support (A), 11-1, 11-5 servicing in port driver unit initialization routine, *Device Support* (A), 18–13, 18–22 Power failure recovery procedure, Device Support (B), 1-25, 1-26, 1-74 device timeout forced by, Device Support (A), 10 - 5initialization performed by, Device Support (A), 11 - 5Power recovery setting AST for, System Services, SYS-522 PPL\$ADJUST_QUORUM, RTL Parallel Processing, 4-4, PPL-3 PPL\$ADJUST_SEMAPHORE_MAXIMUM, RTL Parallel Processing, 4-13, PPL-5 PPL\$AWAIT_EVENT, RTL Parallel Processing, 4-7, PPL-7 PPL\$CREATE_APPLICATION, RTL Parallel Processing, 2-1, PPL-9 PPL\$CREATE_BARRIER, RTL Parallel Processing, 4-2, PPL-14 PPL\$CREATE_EVENT, RTL Parallel Processing, 4-5, PPL-16 PPL\$CREATE_PROCESS, Programming Resources, 4–16 PPL\$CREATE_SEMAPHORE, RTL Parallel Processing, 4–11, PPL–20 PPL\$CREATE_SHARED_MEMORY, RTL Parallel Processing, 3-1, PPL-23 PPL\$CREATE SPIN LOCK, RTL Parallel Processing, 4-14, PPL-27 PPL\$CREATE_VM_ZONE, RTL Parallel Processing, 3-4, PPL-29 PPL\$CREATE_WORK_QUEUE, RTL Parallel Processing, 4–16, PPL–34 PPL\$DECREMENT_SEMAPHORE, RTL Parallel Processing, 4-12, PPL-36 PPL\$DELETE_APPLICATION, RTL Parallel Processing, 2-2, PPL-38 PPL\$DELETE_BARRIER, RTL Parallel Processing, 4-3, PPL-39 PPL\$DELETE_EVENT, RTL Parallel Processing, 4-6, PPL-41 PPL\$DELETE_SEMAPHORE, RTL Parallel Processing, 4-12, PPL-43 PPL\$DELETE_SHARED_MEMORY, RTL Parallel Processing, 3-3, PPL-45 PPL\$DELETE_SPIN_LOCK, RTL Parallel Processing, 4-15, PPL-47

Power bit

See I/O postprocessing

See UCB\$V_POWER

POST_KEY_PROCEDURE keyword, VAXTPU,

GET_INFO, VAXTPU, 7-204

PPL\$DELETE_VM_ZONE, RTL Parallel Processing, 3-4, PPL-49

PPL\$DELETE_WORK_ITEM, RTL Parallel Processing, 4–18, PPL–51

PPL\$DELETE_WORK_QUEUE, RTL Parallel Processing, 4–17, PPL–53

PPL\$DISABLE_EVENT, RTL Parallel Processing, 4-7, PPL-55

PPL\$ENABLE_EVENT_AST, RTL Parallel Processing, 4–6, PPL–56

PPL\$ENABLE_EVENT_SIGNAL, RTL Parallel Processing, 4–7, PPL–59

PPL\$FIND_OBJECT_ID, RTL Parallel Processing, 4–1, PPL–63

PPL\$FLUSH_SHARED_MEMORY, RTL Parallel Processing, 3–3, PPL-65

PPL\$GET_INDEX, RTL Parallel Processing, 2-4, PPL-67

PPL\$INCREMENT_SEMAPHORE, RTL Parallel Processing, 4–13, PPL–68

PPL\$INDEX_TO_PID, RTL Parallel Processing, 2–4, PPL–69

PPL\$INSERT_WORK_ITEM, RTL Parallel Processing, 4-17, PPL-71

PPL\$PID_TO_INDEX, RTL Parallel Processing, 2–4, PPL–73

 $\begin{array}{cccc} {\tt PPL\$READ_BARRIER}, & {\tt RTL~Parallel~Processing}, \\ {\tt 4-3}, {\tt PPL-75} \end{array}$

PPL\$READ_EVENT, RTL Parallel Processing, 4–8, PPL–77

PPL\$READ_SEMAPHORE, RTL Parallel Processing, 4–13, PPL–79

PPL\$READ_SPIN_LOCK, RTL Parallel Processing, 4–16, PPL–81

PPL\$READ_WORK_QUEUE, RTL Parallel Processing, 4–17, PPL–83

PPL\$RELEASE_SPIN_LOCK, RTL Parallel Processing, 4–15, PPL–85

PPL\$REMOVE_WORK_ITEM, RTL Parallel Processing, 4–18, PPL–86

PPL\$RESET_EVENT, RTL Parallel Processing, 4–8, PPL–88

PPL\$ routines, Programming Resources, 4–15 PPL\$SEIZE_SPIN_LOCK, RTL Parallel Processing, 4–15, PPL–89

PPL\$SET_QUORUM, RTL Parallel Processing, 4-4, PPL-91

PPL\$SET_SEMAPHORE_MAXIMUM, RTL Parallel Processing, 4–14, PPL–93

PPL\$SPAWN, RTL Parallel Processing, 2–3, PPL–95

PPL\$STOP, RTL Parallel Processing, 2–3, PPL–99

PPL\$TERMINATE, RTL Parallel Processing, 2–2, PPL–100

PPL\$TRIGGER_EVENT, RTL Parallel Processing, 4–8, PPL–101 PPL\$UNIQUE_NAME, RTL Parallel Processing, 2-4, PPL-103

PPL\$WAIT_AT_BARRIER, RTL Parallel Processing, 4–3, PPL–105

PPL\$_INSVIRMEM

reasons for error, RTL Parallel Processing, PPL-11

PR\$_ASTLVL processor register, Device Support (A), 3-4

PR\$_SID processor register, Device Support (B), 1-17

PR\$_SIRR processor register, Device Support (A), 3-9; Device Support (B), 2-67

PR\$_TBIA processor register, Device Support (A), E-15

PR\$_TBIS processor register, Device Support (A), E-15

Precedence of operators, System Dump Analyzer, SDA-12

Precedence operator, System Dump Analyzer, SDA-13

Predecessor

See Logical predecessor

Predefined constants

names, VAXTPU, 3-13

Predefined logical name

LNM\$FILE_DEV, System Services Intro, 6–11

/PREDEFINED qualifier, Debugger, CD-15, CD-18, CD-31, CD-207, CD-250

Predicate, *DECthreads*, pthread-37 definition of, *DECthreads*, pthread-37

Prefetch function of UNIBUS adapter, Device Support (A), 14-3, 14-12, 14-13

/PREFIX qualifier

in FACILITY directive, Message, MSG-18

Preprocessing

See I/O preprocessing

Preprocessing routine

See FDT routine

Previous location

See Logical predecessor

"Previous" string constant parameter to GET_ INFO, VAXTPU, 7–166, 7–168, 7–169, 7–180, 7–181, 7–183, 7–184, 7–191, 7–218, 7–223

%PREVIOUS_PROCESS, Debugger, 10–11

 ${\it \%} PREVIOUS_SCOPE_ENTRY, \ {\it Debugger}, \ D-10$

%PREVIOUS_TASK, Debugger, 12-14

%PREVLOC, *Debugger*, 4–8, 4–13, D–5

PRE_KEY_PROCEDURE keyword, VAXTPU, 7–444

"Pre_key_procedure" string constant parameter to GET_INFO, VAXTPU, 7-204

Primary attribute, File Applications, 4–9; File Def Language, FDL–1

Primary data record, Analyze/RMS_File, ARMS-6

Primary exception vector, Programming	Privilege (cont'd)
Resources, 9–13	PRMGBL, RTL Parallel Processing, 1-6
Primary handler, Debugger, 3–20, 9–13	required to analyze VAX RMS Journaling files,
Primary index structure, Analyze/RMS_File,	Analyze / RMS_File, ARMS-11
ARMS-6	setting for process, System Services, SYS-533
	SS\$_NOPRIV, Programming Resources, 9–3
Primary key, Convert, CONV-16	SYSGBL, RTL Parallel Processing, 1–6
Primary operand, MACRO, 8-26	SYSLCK, RTL Parallel Processing, 1–6
Primary processor, Device Support (A), E-2	SYSTEM, System Services Intro, 7–6
Primary record structure, File Applications, 10–20	user, System Services Intro, 2–2
Prime number search example, DECthreads, 5–1	XDELTA, Delta/XDelta, DELTA-14
PRIMITIVE_IO.EXE	Privileged image
global symbols, System Dump Analyzer,	installing, <i>Programming Resources</i> , 6–2
SDA-61	Privileged shareable image, System Services Intro
PRINT carriage control, Convert, CONV-2; File	A-1
Def Language, FDL-34	
.PRINT directive, MACRO, 6–76	creation of, Linker, 1-11, 4-11
Printer device width, Programming Resources,	definition of, Linker, 1–11, 4–11
7–6	PROBER (Probe Read) instruction, MACRO,
Printer driver	9–188
description, Device Support (A), 2-1 to 2-7	PROBEW (Probe Write) instruction, MACRO,
Print format option	9–188
See FAB\$V_PRN option	Procedural error handler, VAXTPU, 3-26 to 3-28
Print format options for VFC records with 2-byte	Procedure
control area, RMS, 5-25	definition of, Routines Intro, 2-3
Print queue, File Def Language, FDL-23	entry mask, Modular Procedures, 3-11
Print symbiont	entry point names, Modular Procedures, 3-3
•	executing, $VAXTPU$, 4–21
See Symbiont	grouping, Modular Procedures, 5-1
Print Symbiont Modification routines	interface, Modular Procedures, 2-3, A-2
See PSM routines	language support
PRINT_ON_CLOSE attribute, File Def Language,	definition of, Routines Intro, 2–4
FDL-23	use of, Routines Intro, 2-4
Priority	library, Modular Procedures, 5–1
obtaining for thread, DECthreads, cma-102,	definition of, Routines Intro, 2-4
pthread-57	use of, Routines Intro, 2–4
of task or thread, Debugger, 12-15, 12-19	name, VAXTPU, 3-16
of work queue, RTL Parallel Processing, 4-16	operation, Routines Intro, A-7t
setting, System Services, SYS-524	parameter, VAXTPU, 3-16 to 3-19
setting for thread, DECthreads, cma-109,	recommended naming conventions, VAXTPU,
cma-111, pthread-95, pthread-98	4–31
Priority attribute, <i>DECthreads</i> , cma-25, cma-37,	recommended size for, VAXTPU, 4-2
pthread-9, pthread-17	recursive, VAXTPU, 3-19
Priority inversion	returning result, VAXTPU, 2-8, 3-19, 7-101
avoiding, DECthreads, 3-6, cma-81	samples using EVE, VAXTPU, B-1 to B-33
/PRIORITY qualifier, Debugger, CD-179, CD-247	using LEARN_ABORT in, VAXTPU, 7-243
Private section	Procedure call format, Routines Intro, 1-3
defining, System Services Intro, 12–7	Procedure call instructions, MACRO, 9-63
Privilege, System Services Intro, 6–6	procedure data type, Routines Intro, A-11t
	Procedure descriptor, Routines Intro, 2–29
allocate terminal, Debugger, 9–6	PROCEDURES keyword
BYPASS, System Services Intro, 7–6	with EXPAND_NAME, VAXTPU, 7–135
defined by access mode, System Services Intro,	PROCEDURE statement, VAXTPU, 3–15 to 3–21
2-2	"Procedure" string constant parameter to
DELTA, Delta/XDelta, DELTA-14	GET_INFO, VAXTPU, 7–180
I/O operations, System Services Intro, 7–2	Proceed from Breakpoint command, Delta/XDelta
logical I/O, System Services Intro, 7-4, 7-6, 7-7	DELTA-32
MOUNT, System Services Intro, 7–4	Process
physical I/O, System Services Intro, 7-4, 7-6,	See also Process quota
7_7	DEE AISO I TOCESS CHOLM

Process (cont'd)	Process
See also SYS\$GETJPI	multiple
See also SYS\$PROCESS_SCAN	built-in procedures (cont'd)
activation tracepoint, predefined, Debugger,	SPAWN, VAXTPU, 7-515
10–12	multiprocess debugging, Debugger, 10-1
channel, System Dump Analyzer, SDA-126	with DECwindows, Debugger, 1–9, 1–29
communicating between, Programming	name, System Services Intro, 8-7
Resources, 3–7	name within group, System Services Intro, 8–9
communicating within, Programming	obtaining information about, <i>Programming</i>
Resources, 3–1	Resources, 2–9; System Services Intro, 9–1
using logical names, Programming	example, System Services Intro, 9-2
Resources, 3-2	synchronously, System Services Intro, 9–13
using symbols, Programming Resources,	using LIB\$GETJPI, Programming
3–5	Resources, 2–9
connecting debugger to, Debugger, 10-4, 10-13,	using SYS\$GETJPI, Programming
CD-36	Resources, 2–9
creating, Programming Resources, 2–1;	using SYS\$GETJPIW, Programming
System Services Intro, 8–2; System	Resources, 2–9
Services, SYS-100	obtaining information about one process,
creation restriction, System Services Intro, 8–7	System Services Intro, 9–2
current, Device Support (B), 1-15	obtaining information about processes on
deadlock, RTL Parallel Processing, 5-4	specific nodes, System Services Intro, 9–11,
definition of, RTL Parallel Processing, 1-2	9–12
deleting, Programming Resources, 2–15;	obtaining information about the calling process,
System Services Intro, 8–16; System	System Services Intro, 9–2
Services, SYS-144; VAXTPU, 7-108	obtaining information about using PID, System
detached, Programming Resources, 2–7;	Services Intro, 9–1
System Services Intro, 8–2, 8–6	obtaining information about using process
disabling swap mode, System Services Intro,	name, System Services Intro, 9–1, 9–2
12–7	priority
disallowing swapping, System Services Intro,	modifying, Programming Resources, 2–12
12–7	privilege mask, Device Support (B), 1-42
displaying SDA information, System Dump	privileges
Analyzer, SDA-126, SDA-159	setting, Programming Resources, 2–12
examining a hung, System Dump Analyzer,	quantum end event, Device Support (A), 3-8
SDA-8	resource limits, File Applications, 1–16
execution, Programming Resources, 2-14	resuming after suspension, System Services,
getting information about	SYS-500
asynchronously, System Services, SYS-286	returning control from driver to, Device
synchronously, System Services, SYS-305	Support (A), 4–16
hibernating, System Services Intro, 8-10;	scanning across the cluster, System Services,
System Services, SYS-402	SYS-460
how to set writable, Delta/XDelta, DELTA-43	scheduling, Programming Resources, 2–12
identification, System Services Intro, 8-7	scheduling state, System Dump Analyzer,
image, System Dump Analyzer, SDA-159	SDA-129, SDA-159
listening, System Dump Analyzer, SDA-83	scheduling wakeup for, System Services,
locating a subset of, System Services, SYS-460	SYS-509
lock, System Dump Analyzer, SDA-127	setting name of, System Services, SYS-527
modes of execution, Programming Resources,	setting priority of, System Services, SYS-524
2–1	setting privilege, System Services, SYS-533
modifying name, Programming Resources, 2-13	setting swap mode for, System Services,
multiple	SYS-542
built-in procedures	spawning a subprocess, System Dump
ATTACH, VAXTPU, 7–35	$Analyzer,\mathrm{SDA-162}$
CREATE_PROCESS, VAXTPU, 7–67	subprocess, System Services Intro, 8-2
RECOVER_BUFFER, VAXTPU, 7-307	suspending, System Services Intro, 8-10, 8-13;
SEND, VAXTPU, 7-342	System Services, SYS-634
SEND_EOF, VAXTPU, 7-346	swapping, System Services Intro, 12-6

Process (cont'd) Process directory table, System Services Intro, 6-3 swapping by suspension, System Services Intro. Process header 8 - 13See PHD termination mailbox, System Services Intro, Process I/O channel, Device Support (A), 11-6; 7–34, 8–18 Device Support (B), 1-11, 1-40 termination tracepoint, predefined, Debugger, assigning, Device Support (A), 4-5 10 - 12assigning to template device, Device Support types of resources, File Applications, 1-15 (A), 11–12 asynchronous system trap limit (ASTLM), deassigning, Device Support (A), 11-7, 11-8, File Applications, 1–17 18-13; Device Support (B), 4-4 buffered I/O limit (BIOLM), File reference count, Device Support (B), 1-77, 1-78 Applications, 1–17 validating, Device Support (A), 2-3, 4-5; direct I/O limit (DIOLM), File Device Support (B), 3-103 Applications, 1-17 Process I/O segment, File Applications, 1-16 using \$PROCESS_SCAN item list to specify Process identification selection criteria about processes, System See PID Services Intro, 9-6, 9-9, 9-10 Process index, System Dump Analyzer, SDA-126 using \$PROCESS_SCAN item list with remote Process index number, System Services, SYS-298 procedures, System Services Intro, 9-13 Process information services, System Services using \$PROCESS_SCAN item-specific flags Intro, 1-2to control selection information, System Processing Services Intro, 9-6 deferred-write option, File Applications, 3–15, using \$PROCESS_SCAN search for, System Services Intro, 9-6 options for improving file performance, File using wildcard search for, System Services Applications, 3-7 Intro, 9-4read-ahead option, File Applications, 3-11, waiting for entire set of event flags, System 3-12Services, SYS-668 write-behind option, File Applications, 3–11, waiting for event flag to be set, System Services, SYS-663 Process logical name table. System Services Intro. waiting for one of set of event flags, System Services, SYS-670 Process management, Programming Resources, waking, System Services, SYS-665 Process command table, Command Def, CDU-2 Process name, System Dump Analyzer, SDA-126 adding commands to, Command Def, CDU-3, length of for remote processes, System Services CDU-45 Intro, 9-2 deleting commands from, Command Def, specifying for local processes, System Services CDU-39 Intro, 9-2 Process context, Device Support (A), 1-8, 2-4, specifying for remote processes, System 4-13, 7-1 Services Intro, 9–2 changing, System Dump Analyzer, SDA-68, specifying processes by, System Services, SDA-73, SDA-93, SDA-126 SYS-466 returning to, Device Support (A), 4-20 specifying processes with node name. System using with \$GETJPI, System Services Intro, Services, SYS-465 9-1using to obtain information about remote Process control block processes, System Services Intro, 9-1, 9-2, See PCB 9 - 10Process control region, System Dump Analyzer, example, System Services Intro, 9-4 SDA-14 Processor Process control region operator (H), System Dump causing thread to release control of, Analyzer, SDA-12 DECthreads, cma-118, pthread-106 Process control services, System Services Intro, synchronization, Programming Resources, 4-18 1-2Processor context PROCESS data type, VAXTPU, 2-20 to 2-21 changing, System Dump Analyzer, SDA-68, Process default, File Applications, 4-14; File Def SDA-74, SDA-89, SDA-93, SDA-126

Language, FDL-30

batch queue, File Def Language, FDL-24 print queue, File Def Language, FDL-23

Processor register symbol, Delta/XDelta,	Process search (cont'd)
DELTA-9	using item-specific flags to control selection
Processor-specific loadable code	information, System Services Intro, 9-6
base address, System Dump Analyzer, SDA-14	using wildcard on local system, System
Processor state	Services Intro, 9–4
See Multiprocessor state	Process section table
-	See PST
Processor status longword	/PROCESS_GROUP qualifier, Debugger, 10-12,
See PSL	CD-52
Processor status longword symbol, Delta/XDelta, DELTA-9, DELTA-13	process_id data type, Routines Intro, A-11t PROCESS_MANAGEMENT.EXE
See also PSL	global symbols, System Dump Analyzer,
Processor status word	SDA-61
See PSW	%PROCESS_NAME, Debugger, 10–11
Processor subtype, Device Support (B), 2–9	process_name data type, Routines Intro, A-11t
Processor type, Device Support (B), 2-9	%PROCESS_NUMBER, Debugger, 10–11
displaying, System Dump Analyzer, SDA-90	%PROCESS_PID, Debugger, 10-11
Process-permanent files, File Applications, 1–16,	\$PROCESS_SCAN, System Services, SYS-460
6–20	controlling selection information for \$GETJPI,
access to, File Applications, 6–20	System Services, SYS-462
implications for indirect access, File	item descriptor
Applications, 6–21	buffer length, System Services, SYS-460
Process-permanent I/O structures, System Dump	format, System Services, SYS-460
Analyzer, SDA-77	using item-specific flags, System Services,
/PROCESS qualifier, Debugger, 10-5, 10-14,	SYS-462
CD-68, CD-72; System Dump Analyzer,	/PROCESS_SECTION_TABLE qualifier, System
SDA-163	Dump Analyzer, SDA-127
Process quota	Product
adjusting, Device Support (A), 4-20	of a vector, RTL Math, MTH-165
buffered I/O, Device Support (A), 2–3, 2–7, 4–9	Program
byte count, Device Support (A), 7–8	add to section file, VAXTPU, 4-25
charging, Device Support (A), 4-9, 4-12;	calling VAXTPU from, VAXTPU, 4–1, 7–41
Device Support (B), 1–41, 4–17	compiling, VAXTPU, 4–18 to 4–19
direct I/O, Device Support (A), 4-9	complex, VAXTPU, 4-2
symbolic names for (PQL\$_xxxx), System	creating, Message, MSG-4
Services, SYS-103 Process rights list, Programming Resources, 6-1;	debugging, VAXTPU, 4–33 to 4–37
System Services Intro, 3–2	deleting, VAXTPU, 7–108
Process search, System Services, SYS-460	display kind, Debugger, 7–18, C–1
obtaining information about one process,	executing, Message, MSG-4; VAXTPU, 4-19 to
System Services Intro, 9–2	4–21
obtaining information about the calling process,	interrupting, VAXTPU, 4–20
System Services Intro, 9–2	order, VAXTPU, 4–3
searching on all nodes, System Services Intro,	simple, VAXTPU, 4–2
9–11	syntax, VAXTPU, 4–3
searching on specific nodes, System Services	example, VAXTPU, 4-4
Intro, 9–11, 9–12	using wildcard characters, RMS, 4–12
using \$PROCESS_SCAN item list to specify	writing, VAXTPU, 4-1 to 4-14
processes	Program counter
example, System Services Intro, 9–9	See PC
using \$PROCESS_SCAN item list to specify	Program counter mode, MACRO, 5–12
selection criteria, System Services Intro,	summary, MACRO, 8–29
9–6	PROGRAM data type, <i>VAXTPU</i> , 2–21
using \$PROCESS_SCAN item list to specify	Program decomposition, Programming Resources,
selection criteria about processes, System	4–18
Services Intro, 9–7, 9–10	Program execution
using item list with remote procedures, System	See also Synchronization
Services Intro. 9–13	built-in procedures

Program execution	Prolog, File Applications, 3-12, 3-15, 3-16, 3-19
built-in procedures (cont'd)	Prolog 1, File Applications, 3–16
COMPILE, VAXTPU, 7–47	Prolog 2, File Applications, 3–16
SAVE, VAXTPU, 7–316	Prolog 3, File Applications, 3–16, 10–30
continuing, Delta/XDelta, DELTA-33	Prolog 3 file, Convert, CONV-1; File Def
proceeding from breakpoint, Delta/XDelta,	Language, FDL-27
DELTA-32	compression, File Def Language, FDL-27,
specifying a time, Programming Resources,	FDL-28
4-8, 4-9	creating with CONV routines, Utility Routines,
step execution, Delta/XDelta, DELTA-34	CONV-15
step over subroutine execution, Delta/XDelta,	key segment length, File Def Language,
DELTA-35	FDL-30
timed intervals, Programming Resources, 4-10	key segment position, File Def Language,
Program execution mode	FDL-30
using to call services, RMS, 2-7	Prolog 3 indexed files
Program execution time	reclaiming, Utility Routines, CONV-18
delaying, MACRO, 9-78	with Convert/Reclaim Utility, Utility Routines,
Program interface, RMS, 2-1	CONV-1
to VMS RMS, RMS, 2-1	PROLOG attribute, Convert, CONV-19; File Def
PROGRAM keyword, VAXTPU, 7–362	Language, FDL -27 , FDL -28 , FDL -29
with LOOK_UP_KEY, VAXTPU, 7–254	Prolog field
Programmed I/O	See XAB\$B_PROLOG field
See PIO transfer	Prolog files
Programming examples	with CONV routines, Utility Routines,
interpreting, System Services Intro, 2–17	CONV-15
Programming language	Prolog level, RMS, RMS-18
using control blocks with, RMS, 2-1	/PROLOG qualifier, Convert, CONV-19
Programming rules, RMS, 3-6	PROLOG structure, File Applications, 10–16,
/PROGRAM qualifier, Debugger, 7–19, CD–118	10–19
Program region, System Services Intro, 12–2, 12–3	Prolog version number field
adding page to, System Services, SYS-218	See XAB\$W_PVN field
base register, System Dump Analyzer, SDA-14	Prompt
deleting page from, System Services, SYS-147	COMMAND box, DECwindows, Debugger,
examining, System Dump Analyzer, SDA-52 length register, System Dump Analyzer,	1-27
SDA-14	debugger (DBG>), Debugger, 2-6, 10-2,
Program region page table	CD-161
displaying, System Dump Analyzer, SDA-127	with DECwindows, Debugger, 1–27, 1–33
Program section	display (PROMPT), Debugger, 7-7, C-4
See also PSECT	ECO level, Patch, PAT-45, PAT-47
absolute, MACRO, 6–80	ending repetitive, Patch, PAT-65
alignment, MACRO, 6–80	multiprocess program, Debugger, 10-2
attributes, MACRO, 6-77, 6-80	Prompt buffer address field
defining, MACRO, 6–77	See RAB\$L_PBF field
directive	Prompt buffer size field
(.PSECT), MACRO, 6-77	See RAB\$B_PSZ field
(.RESTORE_PSECT), MACRO, 6-86	PROMPT clause
(.SAVE_PSECT), MACRO, 6–87	for PARAMETER clause, Command Def,
name, MACRO, 6-77, 6-80	CDU-23, CDU-32
restoring context of, MACRO, 6-86	Prompt for input
saving context of, MACRO, 6-87	with LIB\$GET_INPUT, Programming
saving local label, MACRO, 6-87	Resources, 7–4
unnamed, MACRO, 6-80	/PROMPTING qualifier, File Def Language,
PROHIBIT attribute, File Def Language, FDL-37	FDL-42, FDL-55
PROHIBIT secondary attribute, File Applications,	Prompt option
7–4	See RAB\$V_PMT option

/PROMPT qualifier, Debugger, 7–20, CD–118	PSECT (program section) (cont'd)
Prompt string	attributes, Linker, 1-9, 3-11, 4-3, 6-3, 6-4,
setting with CLI\$DCL_PARSE, Utility	6-5, 6-6
Routines, CLI-8	base address of, in map, Linker, 5-6
PROMPT_AREA	Digital-written, Modular Procedures, 3-5
video attributes, VAXTPU, 7-446	executable, Linker, 6–5
PROMPT_AREA keyword, VAXTPU, 7–446	global, <i>Linker</i> , 6–5, 6–12
"Prompt_length" string constant parameter to	in image section generation, Linker, 6-3
GET_INFO, VAXTPU, 7–200	length of, in map, Linker, 5-6
"Prompt_row" string constant parameter to	LIB\$INITIALIZE, Modular Procedures, 3-17
GET_INFO, VAXTPU, 7–201	local, <i>Linker</i> , 6–5, 6–12
Properties of condition handler, Routines Intro,	location controls, Linker, 1–13
2–49	modification of attributes, Linker, 1-12, 6-3
Protected shareable image, System Services Intro,	module contribution to, Linker, 6-4
A-1	module contribution to, in map, Linker, 5-6
Protection	name, <i>Linker</i> , 1–12, 6–4
See also Mailbox	name of, in map, Linker, 5-6
access category, File Applications, 4-21	nonexecutable, Linker, 6–5
ACL-based, File Applications, 1-10, 4-21	nonposition-independent, Linker, 6-6
by access mode, System Services Intro, 2–2	nonshareable, Linker, 6–6
cluster, Linker, 1–8, 3–10, LINK–14	nonwritable, <i>Linker</i> , 6–6
debugging with two terminals, Debugger, 9-6	ordering of, in image section, Linker, 6–16
device, System Services Intro, 7-5	position-independent, Linker, 6-6
directory entry, I/O User's I, 1-9	relocatable, Linker, 1–12, 6–4
disk and tape volumes, File Applications, 1-10	shareable, Linker, 6–6
I/O operations, System Services Intro, 7-2	significant attributes of, Linker, 6-15, 6-16
image section, Linker, 5–6	size, <i>Linker</i> , 1–12, 6–4
mailbox, System Services Intro, 7-4	summary, Linker, 1–12
of terminal, Debugger, 9–6	user-written, Modular Procedures, 3-5
page, System Services Intro, 12-5	writable, <i>Linker</i> , 6–6
queues, System Services, SYS-607	.PSECT directive, MACRO, 6-77
setting for page, System Services, SYS-529	Pseudoterminal
shareable image, Linker, LINK-14	canceling request, I/O User's I , 9–2
UIC-based, File Applications, 1–10, 4–21	control connection routines, I/O User's I , C-1
volume, System Services Intro, 7-4	creating, I/O User's I , 9–1
PROTECTION attribute, File Def Language,	deleting, I/O User's I , 9–2
FDL-23	device characteristics, I/O User's I , 9–3
Protection code, File Def Language, FDL-23	driver, I/O User's I , 9–1
Protection extended address block	event notification, I/O User's I , 9–6
See XABPRO block	features, I/O User's I, 9-3
Protection mask, System Services Intro, 7–4	flow control, I/O User's I , 9–6
PROTECTION secondary attribute, File	I/O buffers, I/O User's I , 9–4
Applications, 4–28	programming example, $I/O User$'s I , 9–8
/PROTECT qualifier, Linker, LINK-14	reading data, I/O User's I , 9–5
Protocol	using write with echo, I/O User's I , 9–5
DMC11/DMR11 driver, I/O User's II, 1-1, 1-8	writing data, I/O User's I , 9–5
DMP11/DMF32 driver, I/O User's II, 2–1	%PSL, Debugger, 4–22, D–3
\$PRTCTEND macro, Device Support (A), 16-13,	PSL (processor status longword), Debugger, 4–22;
16–14	System Dump Analyzer, SDA-14; MACRO,
\$PRTCTINI macro, Device Support (A), 16–13,	8–14
16–14	evaluating, System Dump Analyzer, SDA-22,
\$PRTDEF macro, Routines Intro, A-10t	SDA-48
PSECT (program section), Modular Procedures,	examining, System Dump Analyzer, SDA-52
2–13, 3–5, A–3	examining with XDELTA, Device Support (A),
absolute, <i>Linker</i> , 1–12, 6–4	13–10
alignment, Linker, 1–12, 6–4	symbol, System Dump Analyzer, SDA-14
in map, Linker, 5–6	Z condition code, Device Support (B), 3-27
iii iiiup, iiiiiivoi, o o	

/PSL qualifier, Debugger, CD-84; System Dump Analyzer, SDA-52 PSM\$PRINT routine, Utility Routines, PSM-23 PSM\$READ_ITEM_DX routine, Utility Routines, PSM-25PSM\$REPLACE routine, Utility Routines, PSM-27PSM\$REPORT routine, Utility Routines, PSM-32 PSM\$_FUNNOTSUP, Utility Routines, PSM-36 PSM routines examples, Utility Routines, PSM-18 to PSM-22introduction, Utility Routines, PSM-1 user-written USER-FORMAT-ROUTINE, Utility Routines, PSM-35 USER-INPUT-ROUTINE, Utility Routines, PSM-40USER-OUTPUT-ROUTINE, Utility Routines, PSM-46 PST (process section table) displaying, System Dump Analyzer, SDA-127 PSW (processor status word), MACRO, 8-14 condition codes, MACRO, 8–14 decimal overflow enable (DV), MACRO, 8-16 floating underflow enable (FU), MACRO, 8-16 integer overflow enable (IV), MACRO, 8-15 trace trap enable (T), MACRO, 8-15 /PSW qualifier, Debugger, CD-84 PTA option, File Def Language, FDL-14 PTD\$CANCEL control connection routine, I/O User's I, C-2 PTDCREATE control connection routine, I/OUser's I. C-3 PTD\$DELETE control connection routine. I/OUser's I, C-6 PTD\$READ control connection routine, I/OUser's I, C-7 PTD\$SET_EVENT_NOTIFICATION control connection routine, I/O User's I, C-9 PTD\$WRITE control connection routine, I/OUser's I. C-12 /PTE qualifier, System Dump Analyzer, SDA-48, SDA-52 pthread.h, DECthreads, B-2 pthread exc.h, DECthreads, B-2 pthread_once_t data structure, DECthreads, pthread-88 PURDPR macro, Device Support (A), 14-24; Device Support (B), 2-51, 3-82 detecting memory errors using, Device Support (A), 14–25 Purge type-ahead option See RAB\$V_PTA option \$PURGWS, System Services, SYS-473

PUSHAD (Push Address D_floating) instruction, MACRO, 9-35PUSHAF (Push Address F_floating) instruction, MACRO, 9-35 PUSHAG (Push Address G_floating) instruction, MACRO, 9-35 PUSHAH (Push Address H_floating) instruction, MACRO, 9-35 PUSHAL (Push Address Long) instruction, MACRO, 9-35 PUSHAQ (Push Address Quad) instruction, MACRO, 9-35 PUSHAW (Push Address Word) instruction, MACRO, 9-35PUSHL (Push Long) instruction, MACRO, 9-27 /PUSH qualifier, Debugger, CD-69 PUSHR (Push Registers) instruction, MACRO, 9 - 80PUT attribute, File Def Language, FDL-3, FDL-37 \$PUT macro program example, RMS, 4-16 PUTMSG, Message, MSG-2PUT option, File Def Language, FDL-3, FDL-37 PUT secondary attribute, File Applications, 7–3, Put service, File Applications, 8-1, 8-3 to 8-4; RMS, RMS-70 and next record, File Applications, 8-16 condition values, RMS, RMS-74 See also Completion status code control block input fields, RMS, RMS-73 control block output fields, RMS, RMS-74 effect on next-record position, File Applications, 8 - 16high-level language equivalents, File Applications, 8-1 inserting records by sort order, RMS, RMS-72 inserting records into indexed files, RMS, RMS-71 inserting records into relative files, RMS, RMS-71 inserting records into sequential files, RMS, RMS-71inserting records with duplicate keys, RMS, RMS-72record-locking caution, RMS, RMS-72 record-processing options, RMS, 7-16 requirements for using, RMS, RMS-72 run-time options, File Applications, 9-17 to 9 - 19update-if logic, RMS, RMS-72 using RAB\$V_TPT option, RMS, RMS-71 using RAB\$V_UIF option, RMS, RMS-71 using with mailboxes, RMS, RMS-71 using with stream format files, RMS, RMS-71

PUSHAB (Push Address Byte) instruction,

MACRO, 9-35

See also \$ADJWSL

QUALIFIER clause (cont'd) Put service option for DEFINE VERB statement, Command Def, See FAB\$V_PUT option CDU-33 Put sharing option Qualifier lines See FAB\$V_PUT option help files, Librarian, LIB-6 Quantum end event, Device Support (A), 3-8 Queue, RTL Library, 2-12, LIB-251; MACRO, Q 9-82; *DECthreads*, 2-16 Q22-bus, Device Support (A), 1-16; Device See also Work queue Support (B), 2–3 absolute, MACRO, 9-82 accomplishing a DMA transfer on, Device creating, *DECthreads*, cmalib-11 Support (A), 14-15 to 14-16, 14-19 to creating an attributes object for, DECthreads, 14 - 26cmalib-3 address size, Device Support (A), 14-6 creating and managing device interrupt dispatching, Device Support asynchronously, System Services, SYS-558 (A), 14-33 to 14-36; Device Support (B), synchronously, System Services, SYS-614 deleting, *DECthreads*, cmalib-13 example of driver designed for. Device Support deleting an attributes object for, DECthreads, (A), C-1 to C-29, D-1 to D-26 cmalib-5 I/O address space, Device Support (A), 19-1, entry insertion, RTL Library, LIB-248 19-4, 19-7 execution, Utility Routines, PSM-4 I/O space, Device Support (A), 14-4 generic, Utility Routines, PSM-4 power failure, Device Support (A), 19-7 getting information about rules for configuring, Device Support (A), 1-16, asynchronously, System Services, SYS-323 14-34 to 14-35 synchronously, System Services, SYS-365 scatter-gather map, Device Support (A), 14-4 header, MACRO, 9-82, 9-85 to 14-7 inserting an element at the end of, Q22-bus interface DECthreads, cmalib-17, cmalib-23, functions, Device Support (A), 14-1 to 14-15 cmalib-27 obtaining resources of, Device Support (A), inserting an element at the front of, 14 - 16DECthreads, cmalib-19, cmalib-25 QBUS MULT INTR parameter, Device Support inserting entries. MACRO, 9-82, 9-85 (A), 14–34 lock management. System Services Intro, 13-4 Q symbol, Delta/XDelta, DELTA-9 obtaining size of, DECthreads, cmalib-7 .QUAD directive, MACRO, 6-82 protection, System Services, SYS-607 /QUAD qualifier removing an element from, *DECthreads*, ALIGN command, Patch, PAT-38 cmalib-15, cmalib-21 Quadword, MACRO, 8-2 removing entries, MACRO, 9-84, 9-87 /QUADWORD qualifier, Debugger, 11-6, 11-7, self-relative, RTL Library, 2–13; MACRO, CD-60, CD-84 9 - 85Quadword storage directive (.QUAD), MACRO, setting size of, DECthreads, cmalib-9 6-82stepping through, System Dump Analyzer, quadword_signed data type, Routines Intro, A-11t SDA-64quadword unsigned data type, Routines Intro. types of, System Services, SYS-604 validating, System Dump Analyzer, SDA-164 Qualifier, Librarian, LIB-13 to LIB-45; Message, Queue access routine, RTL Library, 2-13 MSG-9; SUMSLP, SUM-15 to SUM-20; QUEUEAST spin lock, Device Support (A), 3-13; Convert, CONV-5 to CONV-28 Device Support (B), 3-7 for DCL command, Patch, PAT-26 Queue I/O Request system service, File for SET COMMAND command, Command Def. Applications, 7–4, 9–14 CDU-38 to CDU-44 Queue information, obtaining, Programming how to define, Command Def, CDU-24, Resources, 3-22 CDU-33 Queue instructions, MACRO, 9-82 mode, PATCH command, Patch, PAT-15 Queue operations to LINK command, Linker, 1–2 in multiprocessing environment, Device QUALIFIER clause

for DEFINE SYNTAX statement, Command

Def, CDU-24

Support (A), E-13 to E-14

RAB\$B_MBC field (cont'd) QUIT built-in procedure, VAXTPU, 7-291 to performance benefit, RMS, 7-6 7 - 292use restriction, RMS, 7-5, 7-6 QUIT command, Debugger, 3-4, CD-106; File RAB\$B_MBF field, File Applications, 3-11, 3-26, Def Language, FDL-65 7-17, 7-19, 7-20, 9-9; File Def Language, multiprocess program, Debugger, 10-8, 10-9 FDL-12; *RMS*, 7-6 with DECwindows, Debugger, 1-20 use with read-ahead option, RMS, 7-16 Quorum, System Dump Analyzer, SDA-82 use with write-behind option, RMS, 7-16 adjusting, RTL Parallel Processing, 4-4 RAB\$B_PSZ field, RMS, 7-7 setting, RTL Parallel Processing, 4-4 RAB\$B_RAC field, RMS, 7-7 Quota, Routines Intro, A-9t RAB\$C_KEY option, File Applications, 8-6, See also Process quota, Job quota 9-10, 9-16, 9-18 AST, System Services Intro, 7-3; I/O User's I, RAB\$C_RFA option, File Applications, 8-6, 3-24, 4-14, 6-13, 7-5, 7-9, 8-439-10, 9-16, 9-18 AST limit, RTL Parallel Processing, 1-6 RAB\$C_SEQ option, File Applications, 8-6, buffered I/O, System Services Intro, 7-3; I/O 9-10, 9-16, 9-18 User's I, 3-24, 6-13, 7-5; I/O User's II, RAB\$B_TMO field, File Applications, 7–12, 7–13, 1-3, 2-3, 5-19-17; File Def Language, FDL-13; RMS, buffered I/O byte count, System Services Intro, 7-217-3; I/O User's II, 1-3, 1-9, 2-3, 5-1 use with RAB\$V_TMO option for mailbox BYTELIM, I/O User's I, 1-11 service, RMS, 7-14 direct I/O, System Services Intro, 7-3; I/O use with timeout option for terminal operation, User's I, 3-24, 6-13; I/O User's II, 1-3, RMS, 7-19RAB\$C_KEY option, RMS, 7-8 disk, I/O User's I, 1-33 to 1-34 RAB\$C_RFA option, RMS, 7-8 enqueue, RTL Parallel Processing, 1-6 RAB\$C_SEQ option, RMS, 7-7 establishing, System Services Intro, 6-8 RAB\$L_BKT field global section, RTL Parallel Processing, 1-7 as output, RMS, 7-2 I/O operations, System Services Intro, 7-2 use with block I/O, RMS, 7-2 mailbox buffer, I/O User's I, 7-2, 7-3, 7-5 RAB\$L_CKT field, File Def Language, FDL-9 resource, System Services Intro, 2-2 RAB\$L_CTX field, File Def Language, FDL-10; SS\$_EXQUOTA, Programming Resources, 9-3 RMS, 7–3 subprocess, RTL Parallel Processing, 1-6 RAB\$L_FAB field, RMS, 7-3 Quota file transfer block, I/O User's I, 1-33 RAB\$L_FOP field, File Def Language, FDL-14 Quotation mark (") RAB\$L_KBF field, File Applications, 8-8, 8-9, ASCII string delimiter, Debugger, 4-15 8-12, 9-13, 9-15, 9-18; RMS, 7-3 instruction delimiter, Debugger, 4-21 use with limit option, RMS, 7-13 Quote characters, VAXTPU, 7-112, 7-113 use with RAB\$B_KSZ field, RMS, 7-4 use with search key, RMS, 7-12, 7-14 R RAB\$L_PBF field, RMS, 7-7 RAB\$L_RBF field, File Applications, 9-18, 9-20; R0RMS, 4-4, 7-8 use by control block store macros, RMS, 3-8 RAB\$L_RBZ field, File Applications, 9–18 use in asynchronous operations, RMS, 2-5 RAB\$L_RHB field, File Applications, 9-17, 9-18, RA60 disk, I/O User's I, 3-5 9-20; RMS, 7-9 RA70 disk, I/O User's I, 3–5 RAB\$L_ROP field, File Applications, 9-7; File RA90 disk, I/O User's I, 3-5 Def Language, FDL-9, FDL-10, FDL-11, RAB\$B_BID field, RMS, 7-2 FDL-12, FDL-13, FDL-14, FDL-15; RMS, RAB\$B_BLN field, RMS, 7-3 7 - 10RAB\$B_KRF field, File Applications, 9-13, 9-15; RAB\$V_ASY option, File Applications, 8-17, File Def Language, FDL-11; RMS, 7-4 8-18, 9-9, 9-15, 9-18, 9-19, 9-20 for selecting key path, RMS, 4-12 RAB\$V_EOF option, File Applications, 8-14, RAB\$B_KSZ field, File Applications, 8-8, 8-9, 8-16, 9-10 8-12, 9-13, 9-15, 9-18; RMS, 7-4 RAB\$V_EQNXT option, File Applications, use with limit option. RMS, 7-13 9-12, 9-15 use with search key, RMS, 7-12, 7-14 RAB\$V_FDL option, File Applications, 9-9, RAB\$B_MBC field, File Applications, 3-11, 7-18, 9-12, 9-20 9-9; File Def Language, FDL-12; RMS, 7-5

default logic, RMS, 7-5

RAB\$L ROP field (cont'd) RAB\$V_ASY option, RMS, 7-11, 7-14 RAB\$V_KGE option, File Applications, 8-9, use restriction, RMS, 7-15 RAB\$V_BIO option, RMS, 7-11 RAB\$V KGT option, File Applications, 8-9, RAB\$V_CCO option, RMS, 7-18 RAB\$V_CVT option, RMS, 7-19 RAB\$V_LIM option, File Applications, 9–13, RAB\$V_EOF option, RMS, 7-12 RAB\$V_EQNXT option, RMS, 7-12 RAB\$V_LOA option, File Applications, 9-13, examples, RMS, 7-13 specifying key match method, RMS, 7-5 RAB\$V_LOC option, File Applications, 9-9, RAB\$V_ETO option requirement for using XABTRM, RMS, 18-1 RAB\$V_NLK option, File Applications, 7-12, RAB\$V_FDL option, RMS, 7-15 9 - 15RAB\$V_KGE option RAB\$V_NXR option, File Applications, 7-15, See RAB\$V_EQNXT option 8-9, 9-16See RAB\$V_NXT option RAB\$V_NXT option, File Applications, 9-13, RAB\$V_LIM option, RMS, 7-13 RAB\$V_LOA option, RMS, 7-13 RAB\$V_RAH option, File Applications, 3-12, determining fill size, RMS, 13-10 9-9, 9-16 example of use, RMS, 4-8 RAB\$V_REA option, File Applications, 7–12, use restriction, RMS, 13-4, 13-11 9-16RAB\$V_LOC option, RMS, 7-15 RAB\$V RLK option, File Applications, 7-12, RAB\$V_NLK option, RMS, 7-17 9-16, 9-18 RAB\$V_NXR option, RMS, 7-17 RAB\$V RRL option, File Applications, 7–12, RAB\$V_NXT option, RMS, 7-14 9 - 16specifying key match method, RMS, 7-5 RAB\$V_TMO option, File Applications, 7-12, RAB\$V_PMT option, RMS, 7-19 7-13, 9-17, 9-19 RAB\$V_PTA option, RMS, 7-19 RAB\$V_TPT option, File Applications, 9-11, RAB\$V_RAH option, RMS, 7-12, 7-15 9-19default logic, RMS, 7-16 RAB\$V_UIF option, File Applications, 8-4, use restriction, RMS, 7-16 8-8, 9-11, 9-19 RAB\$V_REA option, RMS, 7-17 RAB\$V ULK option, File Applications, 7-15, use restriction, RMS, 7-17 RAB\$V_RLK option, RMS, 7-18 RAB\$V_WAT option, File Applications, 7-12, RAB\$V_RNE option, RMS, 7-19 RAB\$V_RNF option, RMS, 7-19 RAB\$V_WBH option, File Applications, 3-12, RAB\$V_RRL option, RMS, 7-18 9-10, 9-19 RAB\$V_SYNCSTS option, RMS, 7-16 specifying key match method, RMS, 7-5 RAB\$V TMO RAB\$L_STS field, RMS, 7-20 for immediate mailbox service, RMS, 7-14 RAB\$L_STV0 field RAB\$V_TMO option, RMS, 7-14, 7-18, 7-19 for returning terminating character, RMS, RAB\$V_TPT option, RMS, 7-16 **RMS-49** using with Put service, RMS, RMS-71 RAB\$L_STV field, RMS, 7-20 RAB\$V_UIF option, RMS, 7-17 for returning I/O status block, RMS, RMS-49 using with Put service, RMS, RMS-71 for returning I/O status block from Put service, RAB\$V_ULK option, RMS, 7-18 RMS, RMS-74 RAB\$V_WAT option, *RMS*, 7-18, 7-19 for returning PID from Put service, RMS, RAB\$V_WBH option, RMS, 7-12, 7-16 RMS-71 RAB\$W_ISI field, RMS, 7-3 for returning process identification (PID), RAB\$W_RBF, File Applications, 8-3 RMS, RMS-50 RAB\$W_RFA field, File Applications, 8–12, 8–15, for returning record length, RMS, RMS-53 9-17; RMS, 7-9 using with Get service, RMS, RMS-50 as argument to \$RAB_STORE macro, RMS. RAB\$L_UBF field, File Applications, 9-17; RMS, B - 127 - 21RAB\$W_RSZ field, File Applications, 8-3, 9-20; RAB\$L_USZ field, File Applications, 9-17 RMS, 4-4, 7-20 RAB\$L_XAB field, RMS, 7-22 RAB\$W STV0 offset requirement for using XABTRM, RMS, 18-1 alternate access to RAB\$L_STV, RMS, 7-20

RAB\$W_STV2 field to relative files, File Applications, 2-6, 8-9, for returning length of escape sequence, RMS, 8-12 to 8-13 **RMS-49** to sequential files, File Applications, 2-6, 8-8, RAB\$W_STV2 offset 8-12 to 8-13 alternate access to RAB\$L_STV, RMS, 7-20 with multibuffer count, File Applications, 3-26 RAB\$W_USZ field, RMS, 7-21 Random access device, Device Support (B), 1-75 use with block I/O, RMS, 7-22 Random access mode, File Applications, 1-2 RAB\$_V_WAT option Random number generator, RTL Math, MTH-118 use with timeout option for record locking, Range RMS, 7-18 colon (:), Debugger, 4-16, 11-4, 11-6, 11-7, RAB (record access block), Programming Resources, 1–36, 8–58; File Applications, converting contents of to string format using 1-11; System Dump Analyzer, SDA-77 STR, *VAXTPU*, 7–520 arguments, RMS, 1-4 deleting, VAXTPU, 2-22, 7-70, 7-108 described in context of example, RMS, 4-4 determining if unmodifiable records are present description, RMS, 1-4 in, VAXTPU, 7-193 general description, RMS, 7-1 erasing, VAXTPU, 2-22, 7-70, 7-117 summary of fields, RMS, 7-1 moving delimiters of, VAXTPU, 7-273 rab data type, Routines Intro, A-12t syntax, MACRO, 7-1 \$RABDEF, File Applications, 5-10 video attributes, VAXTPU, 2-22 \$RAB macro, RMS, B-9 RANGE data type, VAXTPU, 2-21 to 2-22 argument categories, RMS, B-10 Rank \$RAB_STORE macro, RMS, B-11 of spin lock, Device Support (A), 3-15 argument categories, RMS, B-12 RAZ field, MACRO, 7-2 requirements, RMS, B-12 RB02 disk, I/O User's I, 3-6 RFA argument, RMS, B-12 RC25 disk, I/O User's I, 3-6 Race condition RCK option, File Def Language, FDL-23 avoiding at AST level, Modular Procedures, RD53 disk, I/O User's I, 3-6 3 - 21RD54 disk, I/O User's I, 3-6 elimination of, Modular Procedures, 3-21 RDT (response descriptor table), System Dump how to avoid, DECthreads, 3-7 Analyzer, SDA-148 Radix, Message, MSG-7 RDT (revision-date-time) argument, RMS, B-16 canceling, Debugger, CD-26 READ access, File Def Language, FDL-23 conversion, Debugger, 4-10, D-5 Read access type, MACRO, 8-17 current, Debugger, 4-10, CD-164 Read ahead option default, System Dump Analyzer, SDA-12 displaying, Debugger, CD-234 See RAB\$V_RAH option multilanguage program, Debugger, 9-8 Read As Zero of numeric constant See RAZ field specifying, VAXTPU, 3-37 Read attention AST function, I/O User's I, 7-9 specifying, Debugger, 4-10, CD-164 Read check Radix control operator, MACRO, 3-11 enabling, Device Support (B), 1-75 Radix modes, Patch, PAT-17 Read check option See also Entry and display modes See FAB\$V_RCK option Radix operator, Linker, 1-7, 3-5; Message, READ command, System Dump Analyzer, MSG-7; Patch, PAT-17; System Dump SDA-59 Analyzer, SDA-12 SYS\$DISK, System Dump Analyzer, SDA-60 RAH option, File Def Language, FDL-13 READ/EXECUTIVE command, System Dump RAISE exception, DECthreads, 4-4 Analyzer, SDA-16 Random access Read function, Device Support (B), 1-40, 1-41 by key value, File Applications, 2-5 to 2-7, FDT routine for, Device Support (A), 7-9 8-6, 8-11 to 8-12 postprocessing for, Device Support (B), 3-72 by relative record number, File Applications, Read-no-echo option 2-5 to 2-7, 8-6, 8-8, 8-9 See RAB\$V RNE option by RFA (record file address), File Applications, Read no filter option 2-7, 8-6, 8-12 to 8-13 to indexed files, File Applications, 2-6, 8-11 to See RAB\$V_RNF option

Random access (cont'd)

8-13

Read regardless of lock option See RAB\$V RRL option Read request fetching, VAXTPU, 7-199 Read routine fetching, VAXTPU, 7-174, 7-201 specifying, VAXTPU, 7-385 Read service, RMS, RMS-76 condition values, RMS, RMS-78 control block input fields, RMS, RMS-77 control block output fields, RMS, RMS-77 requirements for using, RMS, RMS-77 Read/write attributes ACP-QIO interface, I/O User's I, 1–14 Read/write attributes subfunction, I/O User's I, READ_AHEAD attribute, File Def Language, FDL-12 READ_CHAR built-in procedure, VAXTPU, 7-293 to 7-294 READ_CHECK attribute, File Def Language, FDL-23 /READ_CHECK qualifier, Convert, CONV-20 READ_CLIPBOARD built-in procedure, VAXTPU, READ_FILE built-in procedure, VAXTPU, 7-297 to 7-298 READ_GLOBAL_SELECT built-in procedure, *VAXTPU*, 7–299 example of use. VAXTPU, B-28 to B-31 READ_KEY built-in procedure, VAXTPU, 7-301 to 7-302 READ_LINE built-in procedure, VAXTPU, 7-303 to 7-305 /READ_ONLY qualifier, VAXTPU, 5-13 "Read_only" string constant parameter to GET_INFO, VAXTPU, 7-178 READ_REGARDLESS attribute, File Def Language, FDL-13 READ_REGARDLESS secondary attribute, File Applications, 7–12 READ SYSTIME macro, Device Support (A), E-15: Device Support (B), 2-52 example, Device Support (B), 2-52 REALIZE_WIDGET built-in procedure, VAXTPU, Realizing widgets in VAXTPU, VAXTPU, 7-306 Real-time device, Device Support (B), 1-75, 1-76 REALTIME_SPTS parameter, Device Support (A), Real type, Debugger, 4-14 REA option, File Def Language, FDL-11 RECLAIMED SPACE attribute, File Def Language, FDL-3 Reclaiming buckets, Convert, CONV-1 Reclamation statistics, Convert, CONV-24

Record, File Applications, 1-1; Analyze/RMS_ File, ARMS-6 See also Data record adding, File Applications, 9-10 to 9-11 blocking, File Applications, 1-8 compressing, Programming Resources, 8-26 contents, File Applications, 2-1 deleting, File Applications, 8-5, 9-20 determining if unmodifiable is present. VAXTPU, 7-175, 7-186, 7-193 erasing unmodifiable preventing or allowing, VAXTPU, 7-375 expanding, Programming Resources, 8-32 fetching display value of, VAXTPU, 7–186 fixed-length format, File Applications, 1–2, 2-8, 2-9, 3-9, 3-12; Convert, CONV-18 format, File Applications, 2-7; Convert, CONV-1; RMS, 1-1 I/O, Programming Resources, 8–10 inserting, File Applications, 8-3 to 8-4, 9-17 to 9 - 19VMS RMS program example, RMS, 4-16 locating, File Applications, 8-2 to 8-3 maximum length, Convert, CONV-26; File Def Language, FDL-35 maximum number, File Def Language, FDL-20 maximum size, File Def Language, FDL-35 merging, Programming Resources, 8-21 requirements for reading or writing in a file, RMS, 4-12retrieving, File Applications, 8-2 to 8-3, 9-14 to 9-17 VMS RMS program example, RMS, 4–16 sensing unmodifiable erasable state, VAXTPU, 7 - 169setting attribute, VAXTPU, 7-448 sorting, Programming Resources, 8-16 source line correlation, Debugger, 6-1 stream format, File Applications, 1-2, 3-9 undefined format, File Applications, 3-9, 3-10 updating, File Applications, 8-4, 9-19 to 9-20 variable format, File Applications, 1-2 variable-length format, File Applications, 2-9, 3-9, 3-10, 3-12 variable-length with fixed-length control field (VFC) format, File Applications, 1-2, 3-12 Record access, File Applications, 9–6, 9–10 in stream context, File Applications, 8-14 options, File Applications, 7-3 Record access block, Routines Intro, A-12t See RAB Record access field See RAB\$B_RAC field Record access mode, File Applications, 1-2, 2-2 for indexed files, File Applications, 8-9 to 8-12 for relative files, File Applications, 8-8 to 8-9 for sequential files, File Applications, 8-7 to

8-8

Record access mode (cont'd) Record-oriented device, Device Support (B), 1-74 sequential, File Applications, 2-2, 8-6, 8-9, RECORD primary attribute BLOCK_SPAN secondary attribute, File specifying, File Applications, 8-6 to 8-7, 9-10, Applications, 3-10, 4-29 9-16, 9-18 CARRIAGE_CONTROL secondary attribute, Record attribute, VAXTPU, F-1 File Applications, 4–29 RECORD attribute, File Def Language, FDL-2, FORMAT secondary attribute. File FDL-33 Applications, 4–30 Record attribute field SIZE secondary attribute, File Applications, See FAB\$B RAT field 4-29 Record attributes field in XABFHC Record processing See XAB\$B ATR field VMS RMS services listed, RMS, 3-3 Record attributes option, File Applications, 4-29 Record-processing macro Record attributes value, I/O User's I, 1-20 format example, RMS, 3-12 Record buffer, File Applications, 9-18, 9-20 Record-processing option size, File Applications, 9–18, 9–20 for Connect service, RMS, 7-10 Record buffer field Record-processing options field See RAB\$L_RBF field See RAB\$L_ROP field Record buffering Record processing run-time option See Buffering technique deleting, File Applications, 9-20 RECORD CONTROL_FIELD_SIZE attribute, File inserting, File Applications, 9-17 to 9-19 Def Language, FDL-35 retrieving, File Applications, 9-14 to 9-17 Record deleting, VAXTPU, 6-5 updating, File Applications, 9-19 to 9-20 Record-processing services Record file address list of, File Applications, 8-5 See RFA Record file address field Record reference vector See RAB\$W_RFA field See RRV Record format, File Applications, 1-1, 1-2, 3-12; Record size field VAXTPU, F-1 See RAB\$W_RSZ field fixed-length, File Applications, 3-19 Record stream selecting, File Applications, 2-1 connecting to a file, File Applications, 7-2 variable-length, File Applications, 3-19 defined, File Applications, 7-2 in the context of a RAB, RMS, 7-1 Record format field See FAB\$B_RFM field Record stream connection option Record format option, File Applications, 4-30 See File opening option Record header buffer, File Applications, 9-17, Record structure, Analyze/RMS_File, ARMS-6 9-18, 9-20 Record transfer mode Record header buffer field locate, File Applications, 7-16 See RAB\$L_RHB field move, File Applications, 7–16 Record I/O Record type, Debugger, 4-17 RECORD_ATTRIBUTE parameter to SET built-in how to execute, RMS, 4-24 Record insertion, VAXTPU, 6-5 procedure, VAXTPU, 7-448 "Record_count" string constant parameter to Record lock block GET_INFO, VAXTPU, 7-175 See RLB RECORD_IO attribute, File Def Language, FDL-3 Record locking, File Applications, 9-6 RECORD_IO secondary attribute, File deadlock, File Applications, 7-16 Applications, 7-3 use with update operation, File Applications, "Record_number" string constant parameter to GET_INFO, VAXTPU, 7-175 Record locking record-processing options, RMS, "Record size" string constant parameter to GET_INFO, VAXTPU, 7-175 Record management, Programming Resources, /RECOVER command qualifier, VAXTPU, 1-11, Record Management Services "Recover" GET_INFO request_string, VAXTPU, See VMS RMS 7 - 178Record operation, File Applications, 8-1 to 8-6 /RECOVER qualifier, VAXTPU, 5-11, 5-14

controlling errors related to, VAXTPU, 7-408

Recovery	/REFRESH qualifier, Debugger, CD-69
of buffer contents, VAXTPU, 1–11, 7–307	Register
role of source file, VAXTPU, 7–308	See also BIIC registers
using buffer change journaling, VAXTPU, 7–307	See also Device registers
using keystroke journal file	See also General-purpose registers
enabling and disabling, VAXTPU, 7–408	See also Map registers
Recovery unit block	See also Vector register
See RUB	built-in symbol, Debugger, 4–22, D–3
Recovery unit extended address block	data, Routines Intro, 1–6
See XABRU block	depositing into, Debugger, 4-22
Recovery unit file block	with DECwindows, Debugger, 1–25
See RUFB	display (REG), Debugger, 7–9, C–5 with DECwindows, Debugger, 1–12
Recovery unit stream block	display contents, Delta/XDelta, DELTA-17
See RUSB	displaying, System Dump Analyzer, SDA-89,
Recovery unit system services	SDA-127
global symbols, System Dump Analyzer,	display kind, Debugger, 7-17, C-1
SDA-61	examining, Debugger, 4-22
Recovery unit XAB	with DECwindows, Debugger, 1-25
See XABRU block	for returns, Routines Intro, 1-5, 1-15, 2-12
RECOVERY_UNIT_SERVICES.EXE	general, System Dump Analyzer, SDA-14
global symbols, System Dump Analyzer,	loading base, Delta/XDelta, DELTA-40
SDA-61	PC
RECOVER_BUFFER built-in procedure,	See PC
VAXTPU, 7-307 to 7-309	PSL, Debugger, 4–22
Recurrence	saving when making call, RMS, 2-4
linear	symbol, <i>Debugger</i> , D–3 symbol for base, <i>Delta/XDelta</i> , DELTA–9
definition of, RTL Math, 2–7 Recursive mutex, DECthreads, 2–10, cma–35,	symbol for general, Delta/XDelta, DELTA-13
pthread-76	symbol for processor, Delta/XDelta, DELTA-9
Recursive procedure, <i>VAXTPU</i> , 3–19	symbolizing, Debugger, 4–13, CD–263
Redirecting output	with DECwindows, Debugger, 1–25
DELTA, Delta/XDelta, DELTA-14	usage, Routines Intro, 2-12
XDELTA, Delta/XDelta, DELTA-14	variable, Debugger, 3–17, 4–1
REDUCE keyword	with DECwindows, Debugger, 1–24
for /DATA qualifier, National Char Set,	vector, Routines Intro, 2–12; MACRO, 10–1
NCS-26	control registers, MACRO, 10-2
Reentrancy, Linker, 4–3	internal processor registers, MACRO, 10-3
AST, Modular Procedures, 3–19	watchpoint, Debugger, 3-17
full, Modular Procedures, 3–19 Reentropt code, Davice Support (A) 5–1	window (REG), DECwindows, Debugger, 1–12
Reentrant code, Device Support (A), 5-1	Register 0
See also Thread-reentrant code compilers that generate, <i>DECthreads</i> , 3–2	See R0
necessary for multithreaded program,	Register conflict
DECthreads, 1–5	vector, MACRO, 10–23 Register deferred mode, MACRO, 5–5
nonreentrant routines (avoiding), DECthreads,	operand specifier format, MACRO, 8–19
1–8	Register dumping routine, Device Support (A),
%REF, Debugger, CD-10	1-4, 11-10, 11-11; Device Support (B), 1-30,
.REFn directive, MACRO, 6–83	1-83, 2-51, 3-9, 3-69, 3-82
Reformatting libraries	address, Device Support (A), 6-4; Device
with /COMPRESS qualifier, Librarian, LIB-15	Support (B) , $4-15$
with /DATA qualifier, Librarian, LIB-20	context, Device Support (B), 4–15
REFRESH built-in procedure, VAXTPU, 6–10,	entry point, Device Support (B), 4-15
7-310 to 7-311 compared with UPDATE (ALL), VAXTPU,	exit method, Device Support (B), 4-15
7–538	for generic VAXBI device, Device Support (A), 16-22
	10-44

Register dumping routine (cont'd) Relative file (cont'd) examining, File Applications, 10-16 functions, Device Support (B), 4-16 input, Device Support (B), 4-15 maximum record size, File Applications, 3-12 of SCSI third-party class driver, Device nonexistent record processing, RMS, 7-17 Support (A), 17-21, 17-28 omitting initial prezeroing, RMS, 4-23 register usage, Device Support (B), 4-15 optimizing performance, File Applications, synchronization requirements, Device Support 3-12 to 3-15 random access, RMS, 7-3 (B), 4-15Register mask operator, MACRO, 3-13, 6-29 record access, File Applications, 8-8 to 8-9, Register mode, MACRO, 5-4 8-12 to 8-13 operand specifier format, MACRO, 8-19 record size limit, RMS, 5-21 RFA value, RMS, 7–9 Register name, MACRO, 3-5, 3-6 Register save mask, MACRO, 6-29, 6-59 specifying bucket size, RMS, 8-5 Register save mask directive (.MASK), MACRO, specifying cell size, RMS, 10-5 structure, Analyze/RMS File, ARMS-1, /REGISTERS qualifier, System Dump Analyzer, ARMS-2 SDA-127 tuning, File Applications, 3-12 to 3-15 Regression testing, Modular Procedures, 6-1 with global buffers, File Applications, 3-14 REI (Return from Exception or Interrupt) Relative file field instruction, MACRO, 9-192 record access, RMS, 7-2 Relative file organization, File Applications, 1-2 role in AST delivery, Device Support (A), 3-4 Relative file record limit, File Def Language, Reinitialization table, Device Support (A), 6-2, 12-8; Device Support (B), 1-34, 2-25 FDL-20 Relative mode, MACRO, 5-12 RELALT macro, Device Support (A), 14-26; assembled as absolute mode, MACRO, 6-22 Device Support (B), 2–53, 3–84 setting default displacement length, MACRO, Related file identification field See XAB\$W_RFI field /RELATIVE qualifier, File Applications, 7–19 Related file identification field in XABALL Relative record number, File Applications, 1-2, See XAB\$W_RFI field 3-12Related file NAM block address field Relative volume number field See NAM\$L RLF field See XAB\$W_VOL field Related-file-position option, File Applications, RELCHAN macro, Device Support (A), 10-2, 15-15; Device Support (B), 2-54, 3-86 /RELATED qualifier, Debugger, CD-24, CD-152, RELDPR macro, Device Support (A), 14-25; CD-225Device Support (B), 2-55, 3-87 Relational expression, VAXTPU, 3-10 RELEASE qualifier, System Dump Analyzer, Relational operators, VAXTPU, 2-18 SDA-3 RELATIVE attribute, File Def Language, FDL-22 Release service, File Applications, 8–5; RMS, Relative deferred mode, MACRO, 5-13 RMS-79, RMS-80 setting default displacement length, MACRO, condition values, RMS, RMS-80 6 - 19control block input and output fields, RMS, Relative file, File Applications, 2–16, 3–12 RMS-80 advantages and disadvantages of using, File RELMPR macro, Device Support (A), 14-26; Applications, 2-18 Device Support (B), 2–56, 3–89 allocating, File Applications, A-1 Relocatable expression, MACRO, 3-9 bucket size, File Applications, 3-6, 3-13, 7-19, RELOCATE qualifier, System Dump Analyzer, A-1SDA-59buffering, File Applications, 7–19 RELSCHAN macro, Device Support (B), 2-57, buffer requirement, RMS, 7-6 3 - 91deferred-write option with, File Applications, Remainder, RTL Math, 1-7 REMAIN keyword, VAXTPU, 7–312 defining cell size, RMS, 5-21 with SEARCH, VAXTPU, 7–327 description of relative record number, RMS, with SEARCH_QUIETLY, VAXTPU, 7-332 7-5Remote file access designing, File Applications, 3-12 to 3-15 See also File specification determining record length, RMS, 5-21 FORTRAN program example, File establishing highest record number, RMS, Applications, 5–6 5 - 21

Remote node Repeat range end directive (.ENDR), MACRO, establishing logical link with, System Services, Repetitive statements, VAXTPU, 3-21 to 3-22 Remote terminal UCB extension, Device Support REPLACE command, Patch, PAT-71 (B), 1–75 with /INSTRUCTION qualifier, Patch, PAT-72, Removal of key map PAT-73 /REPLACE qualifier, Command Def, CDU-43; built-in procedures ${\tt REMOVE_KEY_MAP}, \ \ \textit{VAXTPU}, \ 7\text{--}313$ Librarian, LIB-12, LIB-39; National Char Removal of window, VAXTPU, 2-28 Set, NCS-40 /REMOVE qualifier, Debugger, CD-69; LIBRARY command, Programming Resources, Librarian, LIB-38 Remove service, RMS, RMS-81, RMS-82 Report system event caution against mixing with Search service, global symbols, System Dump Analyzer, SDA-61 *RMS*, RMS–82 comparing with Erase service, RMS, RMS-82 REQALT macro, Device Support (A), 14-10, condition values, RMS, RMS-84 14-19; Device Support (B), 3-92 control block input fields, RMS, RMS-82 REQCOM macro, Device Support (A), 10-3, control block output fields, RMS, RMS-83 17-28; Device Support (B), 2-59, 3-94 improving performance, RMS, RMS-82 required for error logging, Device Support (A), requirements for using, RMS-82 11 - 10REQDPR macro, Device Support (A), 14-11, use with wildcard characters and search lists, RMS, RMS-82 14–17; Device Support (B), 2–60, 3–96 REMOVE_KEY_MAP built-in procedure, REQMPR macro, Device Support (A), 14-10, VAXTPU, 7-313 to 7-314 14-11, 14-19; Device Support (B), 2-61, 3-98 REMQHI (Remove Entry from Queue at Head, REQPCHAN macro, Device Support (A), 3-27, 8-2 Interlocked) instruction, MACRO, 9-95 to 8-4, 15-6, 15-14; Device Support (B), 2-62, REMQTI (Remove Entry from Queue at Tail, 3-100 Interlocked) instruction, MACRO, 9-97 REQSCHAN macro, Device Support (A), 15-6, REMQUE (Remove Entry from Queue) instruction, 15-14; Device Support (B), 2-63, 3-100 MACRO, 9-99 Request sense key, Device Support (A), 17-18 Request to unwind, Routines Intro, 2-52 Rename service, File Applications, 5-9; RMS, RMS-85, RMS-86 Requeue, DECthreads, 2-16 alternative to specifying arguments to REQUIRED clause \$RENAME macro, RMS, RMS-86 specifying keyword in a VALUE clause, condition values, RMS, RMS-88 Command Def, CDU-29 control block input fields, RMS, RMS-86 specifying parameter in a VALUE clause, control block output fields, RMS, RMS-87 Command Def, CDU-24 exception in argument list, RMS, 2-5 specifying qualifier in a VALUE clause, format, RMS, 3-11 Command Def, CDU-26 indicating successful completion, RMS, 4-16 Required values program example, RMS, 4-14 for /DATA qualifier, National Char Set, NCS-26 requirements for using, RMS, RMS-86 Reorganizing a file, Convert, CONV-4 RERAISE exception, DECthreads, 4-6, 4-9, 4-13 Repeat block Reserved data type code, Routines Intro, 2–20 argument substitution, MACRO, 6-47 Reserved descriptor class code, Routines Intro, character substitution, MACRO, 6-49 2 - 44end, MACRO, 6-28 Reserved event flag listing range definitions of, MACRO, 6-89 use of, RMS, 2–7 listing range expansions of, MACRO, 6-89 Reserved operand, MACRO, 9-102, 9-103, 9-145 listing specifiers, MACRO, 6-89 fix floating-point fault, RTL Library, LIB-165 terminating repetition, MACRO, 6-62 Reserved word Repeat block directive (.REPEAT), MACRO, 6-84 built-in procedures, VAXTPU, 3-12 REPEAT command, Debugger, 8-10, CD-109; keywords, VAXTPU, 3-12 System Dump Analyzer, SDA-64 language elements, VAXTPU, 3-13 to 3-14 .REPEAT directive, MACRO, 6-84 predefined constants, VAXTPU, 3-13 Repeating characters, File Def Language, FDL-27, FDL-28 of screen in VAXTPU, VAXTPU, 7-391, 7-501

in compression, File Applications, 3-16

Resultant string area address field Resource controlling, System Services Intro, 8-6 See NAM\$L RSA field displaying SDA information, System Dump Resultant string area size field Analyzer, SDA-143 See NAM\$B_RSS field lock management concept, System Services Resultant string length field Intro, 13-1 See NAM\$B_RSL field name, System Services Intro, 13-2 RET (Return from Procedure) instruction, of widget MACRO, 9-69 fetching class and data type of, VAXTPU, Retrieval pointer, File Applications, 9-8 7 - 215Retrieval window size field quota, System Services Intro, 2–2 See FAB\$B_RTV field supported data types for, VAXTPU, 4–12 Retrieving record RESOURCE attribute, System Services Intro, 3-4 program example, RMS, 4-16 Resource block Retry count, Device Support (A), 10-6 See RSB Return address array, System Services Intro, 12-4 Resource manager, System Services Intro, 14-2 Return condition "resources" string constant parameter to special, System Services Intro, 2-12 GET_INFO, VAXTPU, 7-215 Return condition value, System Services Intro, Resource wait flag 2-13See PCB\$V SSRWAIT high-level language, System Services Intro, Resource wait mode, System Services Intro, 2-2; Device Support (A), 4-9; Device Support (B), Returning condition values, Modular Procedures, 3-12, 3-20, 3-22 setting, System Services, SYS-538 Returning from condition handler, Routines Intro, Resource wait queue, Device Support (A), 3-25 to 2-52 3-27, E-14 Return key, I/O User's I, 8-6 See also Alternate map register wait queue interactive mode, File Applications, 10-12 See also Data path wait queue logical successor, Debugger, 4-8, 4-13, D-5 Return key command, Delta/XDelta, DELTA-27 See also Device controller data channel wait /RETURN qualifier, Debugger, CD-127, CD-186, CD-259 See also Map register wait queue Returns, Routines Intro, 1-14 See also Secondary data channel wait queue condition value, Routines Intro, 2-8 buffered data path, Device Support (B), 3-88 function value, Routines Intro, 2-7 Response descriptor table I/O status, Routines Intro, A-7t See RDT in I/O status block, Routines Intro, 1-14 Response ID in mailbox, Routines Intro, 1-14 See RSPID object, Routines Intro, A-7t /RESPONSES qualifier, File Def Language, signaled in register, Routines Intro, 1-15 FDL-42, FDL-56 Returns heading, Routines Intro, 1-5 REST command, File Applications, 10-12, 10-16; RETURN statement, VAXTPU, 3-26, 3-31 to 3-33, 7-315 Analyze/RMS_File, ARMS-33 /RESTORE qualifier, Debugger, CD-179 Return status, Programming Resources, 9-3 .RESTORE_PSECT directive, MACRO, 6-86 from signal, Programming Resources, 9-6 Restoring terminal width REVERSE keyword, VAXTPU, 7-85, 7-453 example, VAXTPU, A-5 with MARK, VAXTPU, 7-261 Restriction, Librarian, LIB-11; Analyze/RMS_ with SEARCH, VAXTPU, 7-328 File, ARMS-11; Convert, CONV-5; File Def with SEARCH_QUIETLY, VAXTPU, 7-333 Language, FDL-43 with SELECT, VAXTPU, 7-337 for subprocess, VAXTPU, 2-20 with SET (MESSAGE_ACTION_TYPE), in help file keys, Librarian, LIB-4 VAXTPU, 7-426 to calling services, RMS, 2-7 with SET (PROMPT_AREA), VAXTPU, 7-446 with SET (STATUS_LINE), VAXTPU, 7-476 VAXTPU virtual address space, VAXTPU, 5-1 with SET (VIDEO), VAXTPU, 7-492 Resultant string "Reverse_status" string constant parameter to requesting, RMS, 6-2 GET_INFO, VAXTPU, 7-224

"Reverse video" string constant parameter to "Right_margin" string constant parameter to GET INFO, VAXTPU, 7-224 GET_INFO, VAXTPU, 7-175, 7-186 Revert to the caller's handling, Routines Intro, RIGHT_MARGIN_ACTION keyword, VAXTPU, REVISION attribute, File Def Language, FDL-16, "Right_margin_action" string constant parameter FDL-24 to GET_INFO, VAXTPU, 7-175 Revision data, File Applications, 9–10 RK06 cartridge disk, I/O User's I, 3-7 RK07 cartridge disk, I/O User's I, 3-7 Revision date and time extended address block RL01 driver, Device Support (A), C-1 to C-29 See XABRDT block RL02 driver, Device Support (A), C-1 to C-29 Revision date and time field RL11 driver, Device Support (A), C-1 to C-29 See XAB\$Q_RDT field RLB (record lock block), System Dump Analyzer, Revision number, File Def Language, FDL-24 SDA-77 Revision number field RLK option, File Def Language, FDL-11 See XAB\$W_RVN field RM03 device, File Def Language, FDL-38 REVISION secondary attribute, File Applications, RM03 disk, I/O User's I, 3-7 RM05 disk, I/O User's I, 3-7 Rewind offline function, I/O User's I, 6-21 RMS\$_OK_LIM success status code, RMS, 7-13 Rewind on close option RMS (Record Management Services) See FAB\$V_RWC option See VMS RMS Rewind on open option RMS.EXE, System Dump Analyzer, SDA-61 See FAB\$V_RWO option RMS-11 Rewind service, File Applications, 8-5; RMS, block identifier field limitation, RMS, 5-3 RMS-89, RMS-90 stream files, File Def Language, FDL-35 condition values, RMS, RMS-90 Version 1.8, File Def Language, FDL-30 control block input fields, RMS, RMS-90 RMS control blocks control block output fields, RMS, RMS-90 with FDL routines, Utility Routines, FDL-14, effect on next-record position, File Applications, FDL-17 8-16 RMSDEF.STB, System Dump Analyzer, SDA-60 use restriction, RMS, RMS-90 \$RMSDEF macro RF30 disk, I/O User's I, 3-7 See also VMS RMS RF71 disk, I/O User's I, 3-7 access to symbolic offset names, RMS, 2-2 RFA (record file address), File Applications, 1-2, RMS image 8-12 to 8-13, 9-17, 10-31; Convert, CONV-1, base address, System Dump Analyzer, SDA-14 CONV-4 /RMS qualifier, System Dump Analyzer, SDA-127 access, File Applications, 10-30; Convert, RMS structures, Programming Resources, 8-58 CONV-4 RMS symbol, System Dump Analyzer, SDA-14 created by CONVERT, File Applications, 3-16 RMS utilities use of table for rapid access, File Applications, See VMS RMS RMS_DEFAULT command, File Def Language, /RIGHT qualifier, Debugger, CD-94, CD-104, FDL-30 CD-112 RMS_DFNBC system parameter Rights database, *Programming Resources*, 6–1; for specifying default network block count, System Services Intro, 3-2, 3-5, 3-14 RMS, 5-22adding to, System Services Intro, 3-8 RMS_GBLBUFQUO system parameter, File default protection, System Services Intro, 3-6 Applications, 1–16 elements of, System Services Intro, 3-6 RNE option, File Def Language, FDL-14 holder record, System Services Intro, 3-5 RNF option, File Def Language, FDL-14 identifier record, System Services Intro, 3-5 Rn symbol, Delta/XDelta, DELTA-9 initializing, System Services Intro, 3-6 Rooted-device logical name, File Applications, keys, System Services Intro, 3-5 modifying, System Services Intro, 3-12, 3-14 Rooted-directory logical name Rights identifier, Routines Intro, A-12t for additional nesting, File Applications, 6-18 Rights list, System Services Intro, 3-27 Rooted-directory specification rights_holder data type, Routines Intro, A-11t concatenated, File Applications, 6-17 to 6-19 rights_id data type, Routines Intro, A-12t syntax, File Applications, 6–15 to 6–20 RIGHT_MARGIN keyword, VAXTPU, 7-454

Root index bucket virtual block field RQDX3 disk controller, I/O User's I, 3-5 See XAB\$L RVB field RR ("round robin") scheduling, DECthreads, 2-6 Root level, File Applications, 3-17 RRL option, File Def Language, FDL-13 Rotation RRV (record reference vector), File Applications, applying to a vector, RTL Math, MTH-173 3-6, 3-22; *Analyze/RMS_File*, ARMS-6 Rotational latency, File Applications, 1–5 RSB (resource block), System Dump Analyzer, ROTL (Rotate Long) instruction, MACRO, 9-28 SDA-109, SDA-143 Routine, Librarian, LIB-10 RSB (Return from Subroutine) instruction, Device Support (A), 7-4; MACRO, 9-60 See also DECtalk routine RSPID (response ID) See also Entry point displaying SDA information, System Dump See also Mathematics routine Analyzer, SDA-148 See also String manipulation routine RST (run-time symbol table), Debugger, 5-6 calling, Debugger, 8-10, 11-22, CD-10 and symbol search, Debugger, 5-8 calling from a program, Convert, CONV-1 deleting symbol records in, Debugger, 5-7, call stack, Debugger, 2-13, 7-6, 7-9, CD-166, CD-24 CD-209 displaying modules in, Debugger, 5-7, CD-225 with DECwindows, Debugger, 1-21, 1-23, displaying symbols in, Debugger, 5-9, CD-243 inserting symbol records in, *Debugger*, 5–6, definition of, RTL Intro, 1-1 CD-152 displaying instructions for, on call stack, shareable image, Debugger, 5-13 Debugger, 7-9, CD-166 with DECwindows, Debugger, 1-26 with DECwindows, Debugger, 1-21 RSTS/E, File Def Language, FDL-38 displaying source code for, on call stack, RSX-11M, File Def Language, FDL-38 Debugger, 7-6, CD-166 RSX-11M/M-PLUS with DECwindows, Debugger, 1-21 differences from VMS, I/O User's I, 4-35 EXAMINE/SOURCE command, Debugger, 6-4 RSX-11M-PLUS, File Def Language, FDL-38 how to call, RTL Intro, 1-19, 3-1, 3-2 RT-11, File Def Language, FDL-38 library, File Def Language, FDL-41, FDL-42 RTL (Run-Time Library) multiple invocations of, Debugger, 5-10, capabilities of, RTL Intro, 1-1 CD-166 condition handling, RTL Library, 4-1 with DECwindows, Debugger, 1-26 described, RTL Intro, 1-1 processwide resource allocation, RTL Library, organization of, RTL Intro, 1-19 2-16, 2-17queue access, RTL Library, 2-12 selecting from DECwindows window, Debugger, RTL procedures, Modular Procedures, 1-6 1 - 22RTL routine, Programming Resources, 1-24 to SET BREAK command, Debugger, 3-10 1 - 29SET SCOPE command, Debugger, CD-166 capabilities of, RTL Intro, 1-18 SET TRACE command, Debugger, 3-10 DECtalk, RTL DECtalk, 1-1 SHOW CALLS command, Debugger, 2-13 defined, RTL Intro, 1-1 traceback information, Debugger, 5-3 entry point, RTL Intro, 3-3, 3-4, 3-5 with DECwindows, Debugger, 1-23 general purpose, RTL General Purpose, 1-1 variable-length bit field, RTL Library, 2-10 how to call, RTL Intro, 1-19, 3-1, 3-2 ROUTINE clause integer and floating-point, RTL Library, 2-12 for DEFINE SYNTAX statement, Command interaction with operating system, RTL Def, CDU-26 Library, 2–1 for DEFINE VERB statement, Command Def, jacket routine, RTL Library, 2-1 CDU-35 library, RTL Library, 1-1 Routine name linking with, RTL Intro, 1-19 made available to debugger, MACRO, 6-23 output formatting control, RTL Library, 2-20 Routine name heading, Routines Intro, 1–1 performance measurement, RTL Library, 2-18 Routine overview heading, Routines Intro, 1-1 return status, Programming Resources, 9-3 RP05 disk, I/O User's I, 3–7 string manipulation, RTL String Manipulation, RP06 device, File Def Language, FDL-38 RP06 disk, I/O User's I, 3-7 system service access, RTL Library, 2-1 RP07 disk, I/O User's I, 3-7 to access command language interpreter, RTL RPG II Library, 2-2 See VAX RPG II

RTL routine (cont'd)	RZ22 disk, I/O User's I, 3-10
to access VAX instruction set, RTL Library,	RZ23 disk, I/O User's I, 3–10
2–9	RZ55 disk, I/O User's I, 3–10
to access VMS system components, RTL	10250 (151, 170 (567 51, 0 10
Library, 2–1	0
to manipulate character string, RTL Library,	<u>S</u>
2–14	S command, Delta/XDelta, DELTA-34
variable-length bit field instruction, RTL	S0 region
Library, 2–10	examining, System Dump Analyzer, SDA-52
RTPAD, I/O User's I, 8–11	"safe_for_journaling" string constant parameter
RUB (recovery unit block), System Dump	GET_INFO built-in, VAXTPU, 7–175
Analyzer, SDA-77	Sample procedures using DECwindows VAXTPU
RUFB (recovery unit file block), System Dump	built-in procedures, VAXTPU, B-1 to B-33
Analyzer, SDA–77 Rules	Sample program, System Services Intro, 15-1
	invoked by user-defined command, Command
for FDL validity, File Def Language, FDL-39 RUN command, Debugger, 3-1, 3-3, 5-4; Linker,	Def, CDU-45
2–5	to parse and execute commands, Command Def, CDU-46
See also Execution	Sample VAXTPU procedures
shareable image, Debugger, 5–13	debugon, VAXTPU, 7–365
with DECwindows, Debugger, 1-4	delete_all_definitions, VAXTPU, 7-533
Running VAXTPU from subprocess	init_help_key_map_list, VAXTPU, 7–66
example, VAXTPU, A-5	init_sample_key_map, VAXTPU, 7–64
RUN processor state, Device Support (B), 1–16	line_number_example, VAXTPU, 7–417
Run-time	mail_sub, VAXTPU, 7–343
access options, RMS, 1-2	my_call_user, VAXTPU, 7-43
access options under VMS RMS, RMS, 1-2	remove_comments, VAXTPU, 7-312
implementation of services, RMS, 4-1	SAVE, VAXTPU, 7–318
implementation of VMS RMS services, RMS, 4-1	shift_key_handler, VAXTPU, 7–257
information, RMS, 1–4	show_key_maps_in_list, VAXTPU, 7-161
information to VMS RMS listed, RMS, 1–4	show_key_map_lists, VAXTPU, 7-160
processing environment, RMS, 2–1	show_self_insert, VAXTPU, 7-161
Run-Time Library	strip_blanks, VAXTPU, 7-124, 7-126, 7-128 strip_eight, VAXTPU, 7-528
See RTL	toggle_self_insert, VAXTPU, 7-471
Run-time option	traceback_example, VAXTPU, 7–489
example, File Applications, 9–20 to 9–22	user_change_mode, VAXTPU, 7–103
specifying, File Applications, 9–20 to 9–22	user_change_windows, VAXTPU, 7–290
	user_clear_key, VAXTPU, 7–533
Run-time symbol table	user_collect_rnos, VAXTPU, 7–145
See RST	user_dcl_process, VAXTPU, 7–68
RUSB (recovery unit stream block), System Dump	user_define_edtkey, VAXTPU, 7–240
Analyzer, SDA-77	user_define_key, VAXTPU, 7–103
RU_JOURNAL qualifier description, Analyze/RMS_File, ARMS-18	user_delete, VAXTPU, 7-89
format, Analyze/RMS_File, ARMS_18	user_delete_char, VAXTPU, 7–29
overview, Analyze/RMS_File, ARMS-18	user_delete_extra, VAXTPU, 7–109
using with /OUTPUT qualifier, Analyze/RMS_	user_delete_key, <i>VAXTPU</i> , 7–120
File, ARMS–16	user_display_current_character, VAXTPU, 7-82
RWC option, File Def Language, FDL-21	user_display_help, VAXTPU, 7–23
RWO option, File Def Language, FDL-22	user_display_key_map_list, VAXTPU, 7–160
RX01 console disk, I/O User's I, 3–8	user_display_position, VAXTPU, 7–522
RX02 diskette, I/O User's I, 3–8	user_do, VAXTPU, 7–131
RX23 diskette, I/O User's I, 3–9	user_double_parens, VAXTPU, 7–265
RX33 diskette, I/O User's I, 3–10	user_edit_string, VAXTPU, 7-114
RX50 diskette, I/O User's I, 3–10	user_emphasize_message, VAXTPU, 7–509
RX-series, I/O User's I, 3–9	user_end_of_line, VAXTPU, 7-251
	user erase message buffer VAXTPU 7-315

Sample VAXTPU procedures (cont'd) Sample VAXTPU procedures (cont'd) user_erase_to_eob, VAXTPU, 7-71 user_show_direction, VAXTPU, 7-85 user_error_messsage, VAXTPU, 7-139 user_fao_conversion, VAXTPU, 7-139 user_show_first_line, VAXTPU, 7-539 user_simple_insert, VAXTPU, 7-54 user_slow_down_arrow, VAXTPU, 7-354 user_find_chap, VAXTPU, 7-330, 7-335 user_find_mark_twain, VAXTPU, 7-514 user_slow_up_arrow, VAXTPU, 7-354 user_find_parens, VAXTPU, 7-320 user_split_line, VAXTPU, 7-84, 7-519 user_find_procedure, VAXTPU, 7-27 user_start_journal, VAXTPU, 7-142 user_find_string, VAXTPU, 7-315 user_start_select, VAXTPU, 7-339 user_free-cursor_up, VAXTPU, 7-98 user_tab, VAXTPU, 7-33 user_free_cursor_down, VAXTPU, 7-98 user_test_key, VAXTPU, 7-34 user_free_cursor_left, VAXTPU, 7-95 user_toggle_direction, VAXTPU, 7-80 user_free_cursor_right, VAXTPU, 7-95 user_top, VAXTPU, 7-38 user_get_info, VAXTPU, 7-160 user_tpu, VAXTPU, 7-132 user_get_key_info, VAXTPU, 7-256 user_trans_text, VAXTPU, 7-528 user_go_down, VAXTPU, 7-91 user_two_window, VAXTPU, 7-298 user_upcase_item, VAXTPU, 7-46 user_go_up, VAXTPU, 7-91 user_help, VAXTPU, 7-229 user_what_is_comment, VAXTPU, 7-256 user_help_buffer, VAXTPU, 7-62 user_write_file, VAXTPU, 7-545 user_help_on_key, VAXTPU, 7-302 SAVE built-in procedure, VAXTPU, 7-316 to user_include_file, VAXTPU, 7-38 7 - 318user_initial_cap, VAXTPU, 7-524 SAVE command, Debugger, 7-21, CD-110 user_is_character, VAXTPU, 7-231 SAVEDUMP parameter, System Dump Analyzer, user_lowercase_line, VAXTPU, 7-46 SDA-3, SDA-28 user make window, VAXTPU, 7-79 Save set (BACKUP), File Applications, 10-31 user_mark, VAXTPU, 7-248 .SAVE_PSECT directive, MACRO, 6-87 user_message_window, VAXTPU, 7-260 /SAVE_VECTOR_STATE qualifier, Debugger, user_move_8_lines, VAXTPU, 7-283 11-22, CD-11 user_move_by_lines, VAXTPU, 7-279 SAVIPL macro, Device Support (A), 3-10; Device user_move_text, VAXTPU, 7-281 Support (B), 2-64 user_move_to_mouse, VAXTPU, 7-253 SB (system block), System Dump Analyzer, user_next_page, VAXTPU, 7-286 SDA-83, SDA-99 user_next_screen, VAXTPU, 7-93 SBI (synchronous backplane interconnect), Device user_not_quite_working, VAXTPU, 7-39 Support (A), 1-11 user_one_window_to_two, VAXTPU, 7-537 UNIBUS interlock sequence to, Device Support user_on_eol, VAXTPU, 7-269 (A), 14–10 user_paste, VAXTPU, 7-116, 7-263 SBICONF array, Device Support (A), 16-8 user print, VAXTPU, 7-485 SBR register user_prompt_number, VAXTPU, 7-233, 7-305 displaying, System Dump Analyzer, SDA-90 user_quick_parse, VAXTPU, 7-137 SBWC (Subtract with Carry) instruction, user_quit, VAXTPU, 7-292 MACRO, 9-29user_quote, VAXTPU, 7-294 SBZ field, MACRO, 7-2 user_remove_blank_lines, VAXTPU, 7-514 SCA (Source Code Analyzer), Modular Procedures, user_remove_comments, VAXTPU, 7-25 user_remove_crlfs, VAXTPU, 7-118 Scalar user_remove_dsrlines, VAXTPU, 7-250 processor synchronization, Routines Intro, 2-13 user_remove_non_numbers, VAXTPU, 7-323 Scalar type, Debugger, 4-14 user_remove_numbers, VAXTPU, 7-514 Scalar/vector memory synchronization, MACRO, user_remove_odd_characters, VAXTPU, 7-321 10 - 38user_remove_paren_text, VAXTPU, 7-531 Scaling user_repaint, VAXTPU, 7-311 vector, RTL Math, MTH-183 user_replace_prefix, VAXTPU, 7-31 user_ring_bell, VAXTPU, 7-356 See VAX SCAN user_runoff_line, VAXTPU, 7-87 SCAN built-in procedure, VAXTPU, 7-319 to user_scroll_buffer, VAXTPU, 7-326 user_search_for_nonalpha, VAXTPU, 7-285 SCANC (Scan Characters) instruction, MACRO, user_search_range, VAXTPU, 7-331, 7-336 9 - 138user_select, VAXTPU, 7-341 RTL routine to access, RTL Library, LIB-334

```
SCANL built-in procedure, VAXTPU, 7-322 to
Scatter-gather map, Device Support (A), 14-4
   See also Map registers
SCB (system control block), Device Support (A),
    16-10; Device Support (B), 1-7
SCBB register
   displaying, System Dump Analyzer, SDA-90
SCB vector, MACRO, 10-28
SCDRP$L_ABCNT, Device Support (A), 17-15
SCDRP$L_BCNT, Device Support (A), 17-15,
    17-19; Device Support (B), 2-78, 2-85
SCDRP$L_CMD_PTR, Device Support (A), 17-11;
    Device Support (B), 2–85
SCDRP$L_DISCON_TIMEOUT, Device Support
    (A), 17–11, 17–12
SCDRP$L_DMA_TIMEOUT, Device Support (A),
    17-11, 17-12
SCDRP$L_IRP, Device Support (A), 17-27
SCDRP$L_MEDIA, Device Support (A), 17–15
SCDRP$L_PAD_COUNT, Device Support (A),
    17 - 15
SCDRP$L_SCSI_FLAGS, Device Support (A),
    17-15, 17-16, 17-27; Device Support (B),
SCDRP$L_SPTE_SVAPTE, Device Support (A),
SCDRP$L STS PTR, Device Support (A), 17-11.
    17-18: Device Support (B), 2-85, 2-86
SCDRP$L_SVAPTE, Device Support (A), 17-15;
    Device Support (B), 2-78
SCDRP$L_SVA_SPTE, Device Support (B), 2-79
SCDRP$L_SVA_USER, Device Support (A), 17-15,
    17-16; Device Support (B), 2-78, 2-79, 2-85
SCDRP$L_TRANS_CNT, Device Support (A),
    17-19; Device Support (B), 2-86
SCDRP$V_BUFFER_MAPPED, Device Support
    (A), 17–16, 17–27
SCDRP$V_S0BUF, Device Support (A), 17-16,
    17 - 27
SCDRP$W_BOFF, Device Support (A), 17-15;
    Device Support (B), 2-78
SCDRP$W_FUNC, Device Support (A), 17-15;
   Device Support (B), 2-85
SCDRP$W_MAPREG, Device Support (A), 17-17;
    Device Support (B), 2–79
SCDRP$W_NUMREG, Device Support (A), 17–16;
    Device Support (B), 2-79
SCDRP$W_PAD_BCNT, Device Support (B), 2-85
SCDRP$W_STS, Device Support (A), 17-15,
    17-16; Device Support (B), 2-78
SCDRP (SCSI class driver request packet), Device
   Support (A), 17-7; Device Support (B), 1-46
   to 1-54
```

allocating. Device Support (A), 17-27

deallocating, Device Support (A), 17-28

defining fields of, Device Support (A), 17-24

```
SCDRP (SCSI class driver request packet) (cont'd)
  initializing, Device Support (A), 17-15 to
      17-16, 17-27
$SCDRPDEF macro, Device Support (A), 17-24
SCDT (SCSI connection descriptor table), Device
    Support (A), 17-7; Device Support (B), 1-54
    to 1-60
SCF option, File Def Language, FDL-24
SCH$GL_CURPCB, Delta/XDelta, DELTA-9
  replaced in VMS Version 5.0, Device Support
      (A), E-6
SCH$GL_PCBVEC, Delta/XDelta, DELTA-9;
    Device Support (A), 13-13
SCH$POSTEF, Device Support (B), 1-39
SCH$QAST, Device Support (A), 3-4
SCH$RESCHED, Device Support (A), 3-7
SCHED spin lock, Device Support (A), 3-4, 3-8,
    3-14; Device Support (B), 3-19
Scheduler
  blocking activity of, Device Support (A), 3-5
  global symbols, System Dump Analyzer,
      SDA-61
  synchronization of, Device Support (A), 3-7
Scheduling
  thread, DECthreads, 2-20
Scheduling policy
  obtaining for thread, DECthreads, cma-104,
      pthread-59
  setting for thread, DECthreads, cma-111,
      pthread-98
Scheduling policy attribute, DECthreads, 2–6,
    cma-39, pthread-19
  obtaining, DECthreads, cma-27, pthread-11
Scheduling priority attribute, DECthreads, 2-7
Scope
  built-in symbol, Debugger, 7-4, 7-7, 7-16,
      7-18, C-3, C-5, D-10
  canceling, Debugger, 5-11, CD-27; Patch,
      PAT-44
  current, Debugger, 5-11, CD-166
  default, Debugger, 5-8, CD-27, CD-167,
      CD-235
      with DECwindows, Debugger, 1-26
  definition of, DECthreads, 3-4
  displaying, Debugger, 5-11, CD-235
  displaying current setting, Patch, PAT-88
  for instruction display, Debugger, 7-9, CD-166
      with DECwindows, Debugger, 1-9, 1-21
  for source display, Debugger, 7-6, CD-166
      with DECwindows, Debugger, 1-9, 1-21
  for symbol search, Debugger, 3-11, 5-8, 5-11,
      CD-27, CD-166, CD-235
      with DECwindows, Debugger, 1-9, 1-26
  PC, Debugger, 5-8
  relation to call stack, Debugger, 5-10, 5-11,
      7-6, 7-9, CD-166
      with DECwindows, Debugger, 1-9, 1-21,
          1 - 26
```

Scope (cont a)	Screen management
SEARCH command, Debugger, 6-6, CD-114	debugging screen-oriented program (cont'd)
search list, Debugger, 5-8, 5-11, CD-27,	with DECwindows, Debugger, 1-33
CD-166, CD-235	deleting text, Programming Resources, 7-21
with DECwindows, Debugger, 1–9, 1–26 SET SCOPE command, Debugger, 5–11, 7–6,	double-width characters, <i>Programming Resources</i> , 7–19, 7–20
7–9, CD–166	drawing lines, Programming Resources, 7–20
setting, Debugger, 5–11, CD–166; Patch, PAT–84	inserting characters, Programming Resources,
with DECwindows, Debugger, 1–26	menus
specifying with path name, <i>Debugger</i> , 5–9	creating, Programming Resources, 7–22
TYPE command, Debugger, 6-4, CD-266 vector register, Debugger, 11-1	reading, Programming Resources, 7–23 types of, Programming Resources, 7–22
/SCOPE-/NOSCOPE qualifier	reading data, Programming Resources, 7–23
with DELETE command, Patch, PAT–53	scrolling, Programming Resources, 7–20
with DEPOSIT command, Patch, PAT-56	setting background color, Programming
with EXAMINE command, Patch, PAT-63	Resources, 7–9
with INSERT command, Patch, PAT-69	setting screen dimensions, Programming
with REPLACE command, Patch, PAT-72	Resources, 7–9
with SET MODE command, Patch, PAT-77	using system routines, Programming
with VERIFY command, Patch, PAT-91	Resources, 1–23
SCOPE-NOSCOPE mode, Patch, PAT-17	video attributes, <i>Programming Resources</i> , 7–20
Scratch file, Convert, CONV-11	viewport, Programming Resources, 7–17
Screen	Screen management resources, Modular
enabling resizing of, VAXTPU, 7-372	Procedures, 2–17
minimal update, RTL Screen Management,	Screen manager, VAXTPU, 2-28, 6-1 to 6-12
2–17	automatic update, VAXTPU, 6-7
resizing, <i>VAXTPU</i> , 7–391, 7–501	line changes, VAXTPU, 6-6
specifying size of, VAXTPU, 7-458	partial update, VAXTPU, 6-8
updating	specific window update, VAXTPU, 6-8
controlling support for, VAXTPU, 7-460	suppressing updates, VAXTPU, 6-6
Screen display	update all windows, VAXTPU, 6–9
See Display, debugger, screen mode	update order, VAXTPU, 6-7
SCREEN keyword	updates, VAXTPU, 6-6
using with widget-related built-in procedures,	update with ADJUST_WINDOW, VAXTPU,
VAXTPU, 4–16	7–22
Screen layout	update with CURSOR_HORIZONTAL,
built-in procedures	<i>VAXTPU</i> , 7–94
ADJUST_WINDOW, VAXTPU, 7–19	update with CURSOR_VERTICAL, VAXTPU,
CREATE_WINDOW, VAXTPU, 7–77	7–97
MAP, $VAXTPU$, 7–259	Screen mode, Debugger, 7–1, CD–150
REFRESH, VAXTPU, 7-310	multiprocess program, Debugger, 10–14
SHIFT, VAXTPU, 7–503	summary reference information, Debugger, C-1
UNMAP, VAXTPU, 7–536	Screen object
UPDATE, $VAXTPU$, 7–538	in VAXTPU, VAXTPU, 4–14
Screen management, Programming Resources,	Screen-oriented program
7-7; RTL Screen Management, 1-1	debugging, Debugger, 9–5
See also Key table	with DECwindows, Debugger, 1–32, 1–33 Screen size
See also Pasteboard	displaying, Debugger, 7–22, CD–249
See also Video attribute	%PAGE, %WIDTH symbols, Debugger, C-6
See also Viewport	setting, Debugger, 7–22, CD–181
See also Virtual display	
See also Virtual keyboard	Screen update
debugging DECwindows application, Debugger,	See Screen manager
1–32	/SCREEN_LAYOUT qualifier, Debugger, CD-97
debugging screen-oriented program, Debugger, 9-5	SCREEN_UPDATE keyword, VAXTPU, 7-460

SCSI bus "Screen update" string constant parameter to GET_INFO, VAXTPU, 7-201 releasing in AEN operation, Device Support Script (B), 2–81 EDIT/FDL, File Def Language, FDL-63 resetting, Device Support (B), 2-82 list of, File Applications, 4-4 sensing phase of, Device Support (B), 2-87 optimize, File Applications, 10-1 setting phase of, Device Support (B), 2–90 touch-up, File Applications, 10-28 VAX systems concepts, Device Support (A), /SCRIPT=OPTIMIZE qualifier, File Applications, 10 - 29SCSI bus analyzer, Device Support (A), 17-32 /SCRIPT qualifier, File Applications, 10-28; File SCSI class driver, I/O User's I, 11-2 Def Language, FDL-42, FDL-57 See also Class driver Scroll See also Disk class driver backward, Programming Resources, 7–19 See also Generic SCSI class driver down, Programming Resources, 7-19 See also Tape class driver forward, Programming Resources, 7-19 See also Template class driver output, Programming Resources, 7-19 See also Third-party SCSI class driver up, Programming Resources, 7-19 SCSI class driver request packet Scroll bar See SCDRP disabling, VAXTPU, 7-462 SCSI class/port architecture, *I/O User's I*, 11–2; enabling, VAXTPU, 7-462 Device Support (A), 17-2 to 17-5 Scroll bar slider summary of I/O request servicing, Device adjusting automatically, VAXTPU, 7-224 Support (A), 17-22 to 17-24 Scroll bar widget example of fetching, VAXTPU, B-19 to B-22 SCSI command controlling the number of retries, Device SCROLL built-in procedure, VAXTPU, 6–10, Support (A), 17-13 7-324 to 7-326 determining timeout setting for, Device SCROLL command, Debugger, 7-11, CD-112 Support (B), 2-76 Scrolling disabling retry, I/O User's I, 11-8; Device effect of on cursor position, VAXTPU, 7-324 Support (A), 17-12; Device Support (B), effect of on editing point, VAXTPU, 7-324 2-75, 2-88 with records deleted, VAXTPU, 6-5 enabling retry, I/O User's I, 11–13; Device with records inserted, VAXTPU, 6–5 Support (B), 2-75 SCROLLING keyword, VAXTPU, 7-467 examining status of, Device Support (A), 17-17 Scroll mode, Debugger, CD-150 to 17-19, 17-27 jump, RTL Screen Management, SMG-347 padding, when required, I/O User's I, 11-14 smooth, RTL Screen Management, SMG-347 preparing to issue, Device Support (A), 17-10 /SCROLL qualifier, Debugger, 7-20, CD-118 to 17-13 "Scroll" string constant parameter to GET_INFO, sending to SCSI device, Device Support (A), VAXTPU, 7-201, 7-224 17-11; Device Support (B), 2-84 to 2-86 "Scroll_amount" string constant parameter to setting disconnect timeout for, I/O User's I, GET_INFO, VAXTPU, 7-224 11-8, 11-14; Device Support (A), 17-11, "Scroll_bottom" string constant parameter to 17-12; Device Support (B), 2-76, 2-89 GET_INFO, VAXTPU, 7-224 setting DMA timeout for, I/O User's I, 11-8, "Scroll_top" string constant parameter to 11-14; Device Support (A), 17-11, 17-12; GET_INFO, VAXTPU, 7-225 Device Support (B), 2-76, 2-89 SCS (system communications services), Device setting phase change timeout for, I/O User's Support (B), 1-33 I, 11-8, 11-14; Device Support (A), 17-11, base address, System Dump Analyzer, SDA-14 17-12; Device Support (B), 2-76, 2-89 displaying SDA information, System Dump size of, Device Support (A), 17-11 Analyzer, SDA-82, SDA-83, SDA-87, terminating, Device Support (A), 17–28; SDA-123, SDA-148 Device Support (B), 2–68 global symbols, System Dump Analyzer, SCSI command byte SDA-60 buffering, Device Support (A), 17-11, 17-27; SCSDEF.STB, System Dump Analyzer, SDA-60 Device Support (B), 2–69 SCSI (Small Computer System Interface) SCSI command descriptor block definition, Device Support (A), 17-1 creating, Device Support (A), 17-11 hardware considerations, Device Support (A),

1-18

SCSI command descriptor block (cont'd) initializing pointer to, Device Support (A), 17 - 11SCSI connection descriptor table See SCDT SCSI controller NCR 5380, Device Support (A), 1–18 SII, Device Support (A), 1-19 SCSI device connecting to, Device Support (A), 17-9 SCSI device ID, Device Support (A), 17-2 SCSI device UCB, Device Support (A), 17-8 extending. Device Support (A), 17-24 SCSI disconnect feature enabling, I/O User's I, 11-7SCSI disk class driver, I/O User's I, 3-22 error recovery, I/O User's I, 3–17, 3–22 SCSI ID, Device Support (A), 17–2 SCSI port descriptor table See SPDT SCSI port driver, I/O User's I, 11-2 See Port driver SCSI port ID, Device Support (A), 17-1 SCSI port interface See SPI SCSI port UCB, Device Support (A), 17-8 SCSI status byte examining, Device Support (A), 17-18 initializing, Device Support (A), 17-11 servicing CHECK CONDITION status, Device Support (A), 17-18 SCSI_NOAUTO system parameter, I/O User's I, 11-10; Device Support (A), 17-31 SCSLOA symbol, System Dump Analyzer, SDA-14 /SCS qualifier, System Dump Analyzer, SDA-82 SCU (system control unit), Device Support (A), 1 - 16SCU/XMI bus I/O address space, Device Support (A), 16-5 SCU/XMI bus architecture, Device Support (A), 1 - 16SDA\$INIT logical name, System Dump Analyzer, SDA-8 SDA (System Dump Analyzer), Programming Resources, 1-21 to 1-22; Device Support (A), analyzing dump file, Programming Resources, command format, System Dump Analyzer, SDA-10 to SDA-14, SDA-32

commands, System Dump Analyzer, SDA-1 to

context, System Dump Analyzer, SDA-9 to

current process, Device Support (A), E-19

SDA-2, SDA-39 to SDA-165

SDA (System Dump Analyzer) (cont'd) exiting, System Dump Analyzer, SDA-33, SDA-55expression, System Dump Analyzer, SDA-11 to SDA-14 initialization file, System Dump Analyzer, SDA-8 logging a session, System Dump Analyzer, SDA-71 multiple screen displays, System Dump Analyzer, SDA-55 obtaining help, System Dump Analyzer, SDA-58recording output, System Dump Analyzer, SDA-32, SDA-72 SET CPU command, Device Support (A), E-19 SHOW CPU command, Device Support (A), E - 19SHOW CRASH command, Device Support (A), E_{-19} SHOW SPINLOCKS command, Device Support (A), E-20 specifying an alternate system symbol table, System Dump Analyzer, SDA-37 usage summary, System Dump Analyzer, SDA-32 using to debug device driver, Device Support (A), 13–29 SDA current CPU, System Dump Analyzer, SDA-10, SDA-68, SDA-74, SDA-89, SDA-93, SDA-126, SDA-157 SDA current process, System Dump Analyzer, SDA-9, SDA-10, SDA-68, SDA-73, SDA-93, SDA-126, SDA-157; Device Support (A), E-19 SDA symbol table, System Dump Analyzer, SDA-13 building, System Dump Analyzer, SDA-7 expanding, System Dump Analyzer, SDA-8 Search anchored, VAXTPU, 7-24 anchoring a pattern, VAXTPU, 2-19 for pattern, VAXTPU, 2-11 synonyms, RMS, 7-12 unanchoring pattern elements, VAXTPU, 2-19 to 2-20 SEARCH built-in procedure, VAXTPU, 7-327 to 7 - 331SEARCH command, Debugger, 6-6, CD-114; System Dump Analyzer, SDA-66 displaying default qualifiers for, Debugger, 6-7, CD-237 setting default qualifiers for, Debugger, 6-7, CD-170 Search list, System Services Intro, 6-2 See also File specification and multiple file locations, File Applications, 5-7, 5-8

SDA-10

Search list (cont'd) Section (cont'd) as alternative to using wildcard characters, creating, System Services Intro, 12-8; System RMS, 4-10Services, SYS-117 definition, File Applications, 5-7 defining extent, System Services Intro, 12-9 example, File Applications, 5-15 deleting, Programming Resources, 8-9; System scope, Debugger, 5-8, 5-11, CD-166, CD-235 Services Intro, 12–17 with DECwindows, Debugger, 1-9, 1-26 deleting global, System Services, SYS-158 source file, Debugger, 6-2, CD-28, CD-172, global, Programming Resources, 5-15 CD-239 global paging file, System Services Intro, 12–14 image, System Services Intro, 12-17 translation, File Applications, 6-7 to 6-8 using with Remove service, RMS, RMS-82 mapping, Programming Resources, 8-4; System Services Intro, 12-12; System \$SEARCH macro for processing wildcard characters, RMS, 4-10 Services, SYS-117 Search operations, System Services Intro, 3-14 page frame, System Services Intro, 12-18 Search service, File Applications, 5–8 to 5–12; paging, System Services Intro, 12–14, 12–15 RMS, RMS-91, RMS-92 private, Programming Resources, 8-4 releasing, System Services Intro, 12-17 condition values. RMS, RMS-94 control block input fields, RMS, RMS-92 unmapping, System Services Intro, 12-17 updating, Programming Resources, 8-9 control block output fields, RMS, RMS-93 using to share data, System Services Intro, example of completion code handling, RMS, 12 - 16program example, RMS, 4-9 writing back, System Services Intro, 12–17 requirement for Parse service, RMS, 4-9 writing modifications to disk, System Services, SYS-657, SYS-662 using with wildcard characters and search lists, RMS, RMS-92 Section file, VAXTPU, 5-16 created with EVE editor\$BUILD, VAXTPU, Search string translation G-10 to G-11 requirements for parsing, RMS, 4-9 creating, VAXTPU, 4-23 SEARCH_QUIETLY built-in procedure, VAXTPU, 7-332 to 7-336 debugging, VAXTPU, 4-34 \$SECDEF macro. Device Support (A), 19-6 default, VAXTPU, 4-21 Secondary attribute, File Applications, 4-9; File definition, VAXTPU, 1-10 extending, VAXTPU, 4-24 Def Language, FDL-2 Secondary bootstrap program (SYSBOOT), Device processing, VAXTPU, 4-24, 4-25 recommended conventions, VAXTPU, 4-28 Support (A), 13-21 updating, System Services, SYS-657, SYS-662 Secondary completion status value field, File Applications, 5-12 Section name Secondary controller data channel, Device Support made available to debugger, MACRO, 6-23 (A), 15-14, 15-15; Device Support (B), 2-57 /SECTION qualifier, VAXTPU, 4-25, 5-16 "Section" string constant parameter to GET_INFO, obtaining ownership of, Device Support (B), VAXTPU, 7-178 2-63, 3-100 to 3-101 "Section_file" string constant parameter to releasing, Device Support (B), 3-91 Secondary controller data channel wait queue, GET_INFO, VAXTPU, 7-178, 7-207 Device Support (B), 3-91, 3-101 section id data type, Routines Intro, A-12t section name data type, Routines Intro, A-12t Secondary device characteristics field Sector, File Applications, 1-5 See FAB\$L_SDC field Sector translation, I/O User's I, 3–18 Secondary exception vector, Programming Security, Programming Resources, 1–23 Resources, 9-13 converting message from binary to ASCII, Secondary index System Services, SYS-262 See Alternate index filtering sensitive message information, System Secondary index data record Services, SYS-262 See SIDR for user-written system services, System Secondary service Services Intro, A-1 effect on next-record position, File Applications, hashing passwords, System Services, SYS-399 8-16 image, Debugger, 5-5 Section, System Services Intro, 12-7 terminal, Debugger, 9-6 characteristic, System Services Intro, 12-9 SECURITY.EXE

SECURITY.EXE (cont'd) global symbols, System Dump Analyzer, SDA-61 Security considerations, VAXTPU, 1–12, 7–59, 7-234, 7-235, 7-406 Security services, System Services Intro, 1–1 Seek operation, I/O User's I, 3-16; Device Support (A), 8-6 overlapping with data transfer, Device Support (A), 8-2Seek time, File Applications, 1-5 Segmented key, File Def Language, FDL-30; RMS, 13-13 restriction against overlapping, RMS, 13-13 SEGn secondary, File Def Language, FDL-40 SEGn_LENGTH attribute, File Def Language, FDL-30 SEGn_POSITION attribute, File Def Language, FDL-30 SELECT built-in procedure, VAXTPU, 7-337 to SELECT command, Debugger, 7–18, CD–117 Selected map register See MBA\$L_SMR Selection, VAXTPU, 4-16 dynamic, VAXTPU, 4-17 found range, VAXTPU, 4-18 static, VAXTPU, 4-17 using MODIFY_RANGE built-in to alter, *VAXTPU*, 7–273 /SELECTIVE_SEARCH positional qualifier, Librarian, LIB-40; Linker, LINK-27 Select range in EVE editor, VAXTPU, 4-16 SELECT_RANGE built-in procedure, VAXTPU, 7-340 to 7-341 Self-relative queue, MACRO, 9-85 validating, System Dump Analyzer, SDA-164 Self-test status, Device Support (A), 16-25 SELF_INSERT keyword, VAXTPU, 7-470 "Self_insert" string constant parameter to GET_INFO, VAXTPU, 7-204 /SELF_RELATIVE qualifier, System Dump Analyzer, SDA-164 Semaphore, Programming Resources, 4-17; RTL Parallel Processing, 4–9 See also Synchronization adjusting maximum value, RTL Parallel Processing, 4-13 binary, Programming Resources, 4-17; RTL Parallel Processing, 4–10 counting, Programming Resources, 4-17; RTL Parallel Processing, 4–10 creating, RTL Parallel Processing, 4-11 decrementing, RTL Parallel Processing, 4-12

deleting, RTL Parallel Processing, 4-12

incrementing, RTL Parallel Processing, 4-13

reading, RTL Parallel Processing, 4-13 setting maximum value, RTL Parallel Processing, 4-14 Semaphore synchronization advantages and disadvantages, RTL Parallel Processing, 5-8 PPL\$ routines for, RTL Parallel Processing, 4-11 to 4-14 Semicolon (;) as statement separator, VAXTPU, 1-8, 3-4, 3-15, 3-16, 3-17, 4-3 command separator, Debugger, CD-4 SEND built-in procedure, VAXTPU, 7-342 to 7-343 SEND CLIENT MESSAGE built-in procedure, VAXTPU, 7-344 to 7-345 SEND_EOF built-in procedure, $V\!AXTPU$, 7–346 Sense device characteristics function, Device Support (A), 7-9 Sense device mode function, Device Support (A), Sense tape mode function, I/O User's I, 6-22 Separator in symbolic name, RMS, 2-3 semicolon used as, VAXTPU, 1-8, 3-4, 3-15, 3-16, 3-17, 4-3 SEQUENCE keyword description, National Char Set, NCS-13 Sequential access, File Applications, 8-6 mode, File Applications, 1-2 to indexed files, File Applications, 2-4, 8-10 to relative files, File Applications, 2-4, 8-9 to sequential files, File Applications, 2-3 use with sequential files, File Applications, 8-7 with multibuffer count, File Applications, 3-26 SEQUENTIAL attribute, File Def Language, FDL-22 Sequential file, File Applications, 2–14; File Def Language, FDL-25 advantages and disadvantages of using, File Applications, 2–15 allocating, File Applications, A-1 buffering, File Applications, 7–18 to 7–19 creating, *Programming Resources*, 8–10 designing, File Applications, 3–9 to 3–12 examining, File Applications, 10–12, 10–13 maximum record size, File Applications, 3-10 merging, Programming Resources, 8-13, 8-14 optimizing performance, File Applications, 3-9 to 3-12organization, File Applications, 1-2 read-ahead and write-behind, File Applications, record access, File Applications, 8-7 to 8-8, 8-12 to 8-13 sorting, Programming Resources, 8-13, 8-14 structure, Analyze/RMS File, ARMS-1

Semaphore (cont'd)

Sequential file (cont'd) tuning, File Applications, 3-9 to 3-12 updating, Programming Resources, 8-11 Sequential only option See FAB\$V_SQO option SEQUENTIAL qualifier, File Applications, 7–19 SEQUENTIAL_ONLY attribute, File Def Language, FDL-24 Serial line multiplexer, I/O User's I, 8-1 Server, DECthreads, 1-4 Service allowable program execution modes, RMS, 2-7 block I/O. RMS. 3-5 calling example, RMS, 3-11 invoking at run time, RMS, 3-1 naming conventions, RMS, 3-3 passing argument list to, RMS, 3-10 restrictions to calling, RMS, 2-7 Service macro description, RMS, 3-1 for creating and processing files, RMS, 4-1 format, RMS, 3-10, 3-11 format rules, RMS, 3-11 types, RMS, 3-12 Service routine AST, System Services Intro, 5-3 SET (ACTIVE_AREA) built-in procedure, VAXTPU, 7-350 SET (AUTO_REPEAT) built-in procedure, VAXTPU, 7-353 to 7-354 SET (BELL) built-in procedure, VAXTPU, 7-355 to 7-356 SET (CLIENT_MESSAGE) built-in procedure, VAXTPU, 7-357 to 7-358 SET (COLUMN_MOVE_VERTICAL) built-in procedure, VAXTPU, 7-359 to 7-360 SET (CROSS_WINDOW_BOUNDS) built-in procedure, VAXTPU, 7-361 SET (DEBUG) built-in procedure, VAXTPU, 7-362 to 7-365 SET (DEFAULT_DIRECTORY) built-in procedure, VAXTPU, 7-366 SET (DETACHED_ACTION) built-in procedure, VAXTPU, 7-367 to 7-369 SET (DISPLAY_VALUE) built-in procedure, VAXTPU, 7-370 SET (DRM_HIERARCHY) built-in procedure, VAXTPU, 7-371 SET (ENABLE_RESIZE) built-in procedure, VAXTPU, 7-372 SET (EOB_TEXT) built-in procedure, VAXTPU, SET (ERASE_UNMODIFIABLE) built-in

procedure, VAXTPU, 7-375 to 7-377

SET (FACILITY_NAME) built-in procedure,

VAXTPU, 7-378

SET (FORWARD) built-in procedure, VAXTPU, 7 - 379SET (GLOBAL_SELECT) built-in procedure, VAXTPU, 7-380 SET (GLOBAL_SELECT_GRAB) built-in procedure, VAXTPU, 7-382 SET (GLOBAL SELECT READ) built-in procedure, VAXTPU, 7-385 SET (GLOBAL_SELECT_TIME) built-in procedure, VAXTPU, 7-387 SET (GLOBAL_SELECT UNGRAB) built-in procedure, VAXTPU, 7-389 SET (HEIGHT) built-in procedure, VAXTPU. 7 - 391SET (ICONIFY_PIXMAP) built-in procedure, VAXTPU, 7-395 to 7-396 SET (ICON_NAME) built-in procedure, VAXTPU. 7 - 392SET (ICON_PIXMAP) built-in procedure, VAXTPU, 7-393 to 7-394 SET (INFORMATIONAL) built-in procedure, VAXTPU, 7-397 SET (INPUT_FOCUS) built-in procedure, VAXTPU, 7-398 SET (INPUT_FOCUS_GRAB) built-in procedure, VAXTPU, 7-400 SET (INPUT_FOCUS_UNGRAB) built-in procedure, VAXTPU, 7-402 SET (INSERT) built-in procedure, VAXTPU, 7 - 404SET (JOURNALING) built-in procedure, VAXTPU, 7-405 to 7-407 SET (KEYSTROKE_RECOVERY) built-in procedure, VAXTPU, 7-408 to 7-409 SET (KEY_MAP_LIST) built-in procedure, VAXTPU, 7-410 to 7-411 SET (LEFT_MARGIN) built-in procedure, VAXTPU, 7-412 to 7-413 SET (LEFT_MARGIN_ACTION) built-in procedure, VAXTPU, 7-414 to 7-415 SET (LINE_NUMBER) built-in procedure, VAXTPU, 7-416 to 7-417 SET (MAPPED_WHEN_MANAGED) built-in procedure, VAXTPU, 7-418 SET (MARGINS) built-in procedure, VAXTPU, 7-419 to 7-420 SET (MAX_LINES) built-in procedure, VAXTPU, SET (MENU_POSITION) built-in procedure, VAXTPU, 7-422 to 7-423 SET (MESSAGE_ACTION_LEVEL) built-in procedure, VAXTPU, 7-424 to 7-425 SET (MESSAGE_ACTION_TYPE) built-in procedure, VAXTPU, 7-426 SET (MESSAGE_FLAGS) built-in procedure, VAXTPU, 7-427 to 7-428

- SET (MODIFIABLE) built-in procedure, *VAXTPU*, 7–429 to 7–430
- SET (MODIFIED) built-in procedure, VAXTPU, 7-431
- SET (MOUSE) built-in procedure, $V\!AXTPU$, 7-432 to 7-433
- SET (NO_WRITE) built-in procedure, VAXTPU, 7-434
- SET (OUTPUT) built-in procedure, VAXTPU, 7-203
- SET (OUTPUT_FILE) built-in procedure, VAXTPU, 7–435
- SET (OVERSTRIKE) built-in procedure, *VAXTPU*, 7–436
- SET (PAD) built-in procedure, $\ V\!AXTPU, 7-437$ to 7-438
- SET (PAD_OVERSTRUCK_TABS) built-in procedure, VAXTPU, 7-439 to 7-440
- SET (PERMANENT) built-in procedure, VAXTPU, 7-441
- SET (POST_KEY_PROCEDURE) built-in procedure, VAXTPU, 7-442 to 7-443
- SET (PRE_KEY_PROCEDURE) built-in procedure, VAXTPU, 7-444 to 7-445
- SET (PROMPT_AREA) built-in procedure, *VAXTPU*, 7–446 to 7–447
- SET (RECORD_ATTRIBUTE) built-in procedure, VAXTPU, 7–448 to 7–450
- SET (RESIZE_ACTION) built-in procedure, *VAXTPU*, 7–451
- SET (REVERSE) built-in procedure, *VAXTPU*, 7-453
- SET (RIGHT_MARGIN) built-in procedure, VAXTPU, 7–454 to 7–455
- SET (RIGHT_MARGIN_ACTION) built-in procedure, *VAXTPU*, 7–456 to 7–457
- SET (SCREEN_LIMITS) built-in procedure, VAXTPU, 7-458
- SET (SCREEN_UPDATE) built-in procedure, VAXTPU, 7-460 to 7-461
- SET (SCROLLING) built-in procedure, *VAXTPU*, 7-467 to 7-469
- SET (SCROLL_BAR) built-in procedure, VAXTPU, 7–462
 - example of use, VAXTPU, B-22 to B-25
- SET (SCROLL_BAR_AUTO_THUMB) built-in procedure, VAXTPU, 7-465
- example of use, *VAXTPU*, B–22 to B–25 SET (SELF_INSERT) built-in procedure,
- VAXTPU, 7-470 to 7-471
 SET (SHIFT_KEY) built-in procedure, VAXTPU, 7-472 to 7-473
- SET (SPECIAL_ERROR_SYMBOL) built-in procedure, VAXTPU, 7-474 to 7-475
- SET (STATUS_LINE) built-in procedure, VAXTPU, 7-476 to 7-478

- SET (SUCCESS) built-in procedure, VAXTPU, 7-479
- SET (SYSTEM) built-in procedure, $V\!AXTPU$, $7\!-\!480$
- SET (TAB_STOPS) built-in procedure, $V\!AXTPU$, 7–481 to 7–482
- SET (TEXT) built-in procedure, VAXTPU, 7-483 to 7-485
- SET (TIMER) built-in procedure, VAXTPU, 7–486 to 7–487
- SET (TRACEBACK) built-in procedure, VAXTPU, 7-488 to 7-489
- SET (UNDEFINED_KEY) built-in procedure, $V\!AXTPU$, 7–490 to 7–491
- SET (VIDEO) built-in procedure, *VAXTPU*, 7–492 to 7–493
- SET (WIDGET) built-in procedure, $V\!AXTPU$, 7-494
 - example of use, VAXTPU, B-22 to B-27 using to specify resource values, VAXTPU, 4-12
- SET (WIDGET_CALLBACK) built-in procedure, VAXTPU, 7-499
 - example of use, VAXTPU, B-22 to B-25
- using to specify callback routine, VAXTPU, 4-9
- SET (WIDGET_CALL_DATA) built-in procedure, VAXTPU, 7–496 to 7–498
- SET (WIDTH) built-in procedure, $V\!AXTPU$, 7–501 to 7–502
- SET ABORT_KEY command, Debugger, 2–7, CD–121
- Set All Processes Writable command, Delta/XDelta, DELTA-43
- \$SETAST, System Services, SYS-512
- SET ATSIGN command, Debugger, 8-2, CD-123
- Set attention AST
 - See Attention AST
- SET BREAK command, *Debugger*, 3–8, 6–7, 9–10, 11–3, 12–24, 12–27, CD–124
- SET built-in procedure, *VAXTPU*, 7–347 to 7–349 WIDGET, *VAXTPU*, 4–10
- SET CARD_READER command, I/O User's I, 2–2 Set characteristic
 - card reader, I/O User's I, 2–7
 - line printer, I/O User's I, 5-9
 - magnetic tape, I/O User's I, 6-23
 - terminal, I/O User's I, 8-38
- SET command, File Def Language, FDL-66
- SET COMMAND command
 - See also Command Definition Utility
 - delete mode, Command Def, CDU-15, CDU-39 input for, Command Def, CDU-44
 - object mode, Command Def, CDU-16, CDU-41
 - output from, Command Def, CDU-42
 - processing modes, Command Def, CDU-14
 - qualifiers for, Command Def, CDU-38 to CDU-44

SET COMMAND command (cont'd) replace mode, Command Def, CDU-15, CDU-43 SET CPU command, System Dump Analyzer, SDA-10, SDA-68 analyzing a running system, System Dump Analyzer, SDA-9 SET DEFAULT command, File Applications, 6-14, 6-15/TRANSLATION_ATTRIBUTES qualifier, File Applications, 6–15 SET DEFINE command, Debugger, 8-6, CD-133 Set device characteristics function, Device Support (A), 7-9; Device Support (B), 1-76Set device mode function, Device Support (A), 7–9; Device Support (B), 1–76 Set Display Mode command, Delta/XDelta, DELTA-16 SET ECO command, Patch, PAT-75 affect of UPDATE command, Patch, PAT-89 applying patches, Patch, PAT-2 SET EDITOR command, Debugger, CD-134 SET EVENT_FACILITY command, Debugger, 12-28, CD-136 SET FILE command ACL qualifier, File Applications, 4-22 EXTENSION qualifier, File Applications, 3-5 for changing global buffer count value, RMS, 5 - 19GLOBAL BUFFERS qualifier. File Applications, 3-9, 7-22 SET HOST facility, I/O User's I, 8-11 SET IMAGE command, Debugger, 5-14, CD-138 effect on symbol definitions, Debugger, CD-48 SETIPL macro, Device Support (A), 3-9, 3-10, E-4: Device Support (B), 2-65 example, Device Support (B), 2-66 replacing with spin lock synchronization macro, Device Support (A), E-13 SET KEY command, Debugger, 8–9, CD–140 SET LANGUAGE command, Debugger, 4–10, CD-141 SET LOG command, Debugger, 8-5, CD-143; System Dump Analyzer, SDA-71 compared with SET OUTPUT command, System Dump Analyzer, SDA-71 SET MARGINS command, Debugger, 6-8, CD-144 SET MAX SOURCE_FILES command, Debugger, 6-3, CD-147 SET MESSAGE command, Message, MSG-5 Set mode card reader, I/O User's I, 2-7 line printer, I/O User's I, 5–9 magnetic tape, I/O User's I, 6-23 mailbox. I/O User's I. 7-9

terminal, I/O User's I, 8–38

SET MODE command, Debugger, CD-148; Patch, PAT-76 Set mode function, Device Support (B), 1-76 SET MODE [NO]DYNAMIC command, Debugger, 5-7, 5-14, CD-148 SET MODE [NO]G_FLOAT command, Debugger, CD-148 SET MODE [NO]INTERRUPT command, Debugger, 10-5, CD-149 SET MODE [NO]KEYPAD command, Debugger, 8-7, CD-149, B-1 SET MODE [NO]LINE command, Debugger, CD-149 SET MODE [NO]OPERANDS command, Debugger, 4-19, CD-150 SET MODE [NO]SCREEN command, Debugger, 7-1, CD-150 SET MODE [NO]SCROLL command, Debugger, CD-150SET MODE [NO]SEPARATE command, Debugger, 9-5, CD-150 with DECwindows, Debugger, 1–33 SET MODE [NO]SYMBOLIC command, Debugger, 4-13, CD-151 SET MODULE command, Debugger, 5-6, 5-15, CD-152; *Patch*, PAT-78 SET NOLOG command, System Dump Analyzer, SDA-71 SET OUTPUT command, Debugger, CD-155; System Dump Analyzer, SDA-72 compared with SET LOG command, System Dump Analyzer, SDA-71 SET OUTPUT [NO]LOG command, Debugger, 8-5, CD-155 SET OUTPUT [NO]SCREEN_LOG command, Debugger, 8-5, CD-155 SET OUTPUT [NO]TERMINAL command, Debugger, CD-155 SET OUTPUT [NO]VERIFY command, Debugger, 8-2, CD-155 SET PATCH_AREA command, Patch, PAT-79 creating and accessing patch area, Patch, PAT-19 with /INITIALIZE qualifier, Patch, PAT-80 \$SETPRA, System Services, SYS-522 SET PROCESS command, Debugger, 10-6, 10-7, CD-157; System Dump Analyzer, SDA-9, SDA-73; Device Support (A), E-19 SET PROMPT command, Debugger, CD-161 SET PROTECTION command, File Applications, 4 - 21\$SETPRT, System Services, SYS-529 SET RADIX command, Debugger, 4-10, 9-8, CD-164 SET RMS command, System Dump Analyzer, SDA-76 SET RMS_DEFAULT command, RMS, 7-6

SET RMS_DEFAULT command (cont'd) SFSB (shared file synchronization block), System /BUFFER_COUNT qualifier, File Applications, Dump Analyzer, SDA-77 3-8, 3-11, 3-13, 7-19, 7-20 Shadow set /EXTEND_QUANTITY qualifier, File displaying SDA information, System Dump Applications, 3-5, 9-8 Analyzer, SDA-99 /INDEXED qualifier, File Applications, 7-20 Shadow set virtual unit driver, I/O User's I, 10-1 /RELATIVE/BUFFER_COUNT qualifier, File functions, I/O User's I, 10-4 Applications, 3–14 hardware configurations, I/O User's I, 10-2 /RELATIVE qualifier, File Applications, 7-19 system configuration, I/O User's I, 10-2 /SEQUENTIAL qualifier, File Applications, Shareable device, Device Support (B), 1–75 7 - 19Shareable image, Programming Resources, 5-3; to limit default extension quantity, RMS, 5-6 Modular Procedures, A-6; Linker, 6-2; SET SCOPE command, Debugger, 5-11, 6-4, 7-6, Patch, PAT-3, PAT-19; RTL Intro, 1-19 7-9, CD-166; Patch, PAT-84 See also Module SET SEARCH command, Debugger, 6-7, CD-170 activating, RTL Library, LIB-160 SET SOURCE command, Debugger, 6-2, CD-172 adding, Programming Resources, 5-8 SET STEP command, Debugger, 3-7, 4-18, 6-7, as separate cluster, Linker, 6-7 11-3, CD-175 based, Linker, 1-11, 4-9, 6-7 \$SETSTK, System Services, SYS-540 benefit of, Linker, 4-1 SETSWM, Programming Resources, 10-4 CANCEL IMAGE command, Debugger, 5-14, \$SETSWM, System Services, SYS-542 Set system failure exception mode code references to, in map, Linker, 5-8 coding for position independence, Linker, 4-5 See SYS\$SETSFM SET TASK command, Debugger, 12-10, 12-22, contents of, Programming Resources, 5-3; Linker, 1-4, 2-2 CD-178creating, Programming Resources, 5-6; SET TERMINAL command, Debugger, 7–22, CD-181; I/O User's I, 8-4, 8-19, 8-25 Modular Procedures, 5-4; Linker, 1-11, SET TRACE command, Debugger, 3-9, 6-7, 9-10, 4 - 1011-3, 12-24, 12-27, CD-183 debugging, Debugger, 5-12 Set translation mode, I/O User's I. 2-2 with DECwindows, Debugger, 1–28 SET TYPE command, Debugger, 4-23, CD-191 default directory of, Linker, 1-11, 4-12 SET TYPE/OVERRIDE command, Debugger, default file type, Programming Resources, 5-9 default location, Programming Resources, 5-9 4-24, CD-191 SET VECTOR_MODE command, Debugger, deleting, Programming Resources, 5-8 11-19, CD-194 SET VERIFY command, Linker, 3-4 used as linker input, Linker, 1-4 SET WATCH command, Debugger, 3-15, 6-7, for COMMON area, Linker, 4-22 11-3, CD-196 TD SET WINDOW command, Debugger, 7-14, major, Programming Resources, 5-5 minor, Programming Resources, 5-5 CD-202/SET_STATE qualifier, Debugger, 8-9, CD-50; specifying major, Programming Resources, System Dump Analyzer, SDA-45 specifying minor, Programming Resources. /SEVERE qualifier in message definition, Message, MSG-23 5 - 7identification of, Linker, LINK-28 Severity code, Routines Intro, 2-9, 2-10 handling of, Routines Intro, 2-10 input to linker, Linker, 1-4, 2-2, 6-3 in completion status code field, RMS, 2-6 in resource allocation, *Linker*, 4–13 interpreting, Routines Intro, 2–10 installation of, *Linker*, 4–1, 4–11 meanings, Routines Intro, 2-10 library, Programming Resources, 5-8; Linker, symbols, Routines Intro, 2–10 1-11, 4-11 .SEVERITY directive, Programming Resources, linking, Programming Resources, 5-7, 5-8 linking of multiple, Linker, 4–18 9 - 8Severity directive (.SEVERITY) linking several, Linker, 4-22 in message source file, Message, MSG-26 listing, Programming Resources, 5–8 Severity level. Message, MSG-1 location of by image activator, Linker, 4–12 S field in symbolic offset match control for, Linker, 1-8, 3-7 for specifying field length, RMS, 2-3 memory allocation for, Linker, 6-7 output of linker, Linker, 1-5, 2-5

Snareable image (cont d)	Shared access, File Applications, 3–3
position independent, Linker, 1–10, 4–4, 6–7	requirement to specify, RMS, 4-1
private copy of, Linker, 4–12	Shared files, Programming Resources, 5–19
privileged, Linker, 1–11, 4–11	See also File sharing
processing of, Linker, 6–14	end-of-file positioning, RMS, RMS-7
program sections in, Linker, 1–10, 4–3	
protection of, Linker, 1–8, 3–11	Shared file synchronization block
replacing, Programming Resources, 5-8	See SFSB
resolving references to, Linker, 6–7	Shared image
restriction to use as input file, <i>Linker</i> , 1–1	creating, Programming Resources, 5–10
rules for upward compatibility, Linker, 1–11,	Shared memory, RTL Parallel Processing, 3-1 to
4–9	3–3
	creating, RTL Parallel Processing, 3-1
SET BREAK/INTO command, Debugger, 3–12,	definition of, RTL Parallel Processing, 1-2
CD-128	deleting, RTL Parallel Processing, 3–3
SET IMAGE command, Debugger, 5–14,	flushing to disk, RTL Parallel Processing, 3–3
CD-138	possible error when creating, RTL Parallel
SET STEP INTO command, Debugger, 3–8,	
CD-176	Processing, 3–2
SET TRACE/INTO command, Debugger, 3–12,	/SHARED qualifier
CD-186	in .FACILITY directive, Message, MSG-18
SET WATCH command, Debugger, 3–20	Shared variables, DECthreads, 3–3
shareability, Linker, 4–3	/SHARE qualifier, Debugger, 3–12, 5–15, CD–128,
guidelines for, Linker, 1-10, 4-4	CD-186, CD-225, CD-259; <i>Librarian</i> ,
shared image, Programming Resources, 5–10	LIB-41; Convert, CONV-21
SHOW IMAGE command, Debugger, 5-13,	SHARING attribute, File Def Language, FDL-2,
CD-217	FDL-36
specification of, <i>Linker</i> , 1–11, 4–11	Sharing data
specifying alternate locations, <i>Programming</i>	VMS RMS shared files, Programming
Resources, 5–9	Resources, 5–19
	SHARING primary attribute
STEP/INTO command, Debugger, CD-259	secondary attributes, File Applications, 7–4,
symbol table of, Linker, 6–2	7–7, 7–22
transfer vector, Programming Resources, 5-3,	SHDRIVER.EXE, I/O User's I, 10–1
5–6; Linker, 1–10, 4–5	SHIFT built-in procedure, VAXTPU, 7–503 to
universal symbol, Programming Resources,	7–504
5-5; Linker, 1-11, 4-10	Shift instruction
updating, Modular Procedures, 6–6; Linker,	
3–8, 3–9	vector, MACRO, 10–67
use for, $Linker$, 1–5, 2–5	SHIFT key
use of for COMMON area, Linker, 4–18	restriction on defining in EVE, VAXTPU, 7–472
use of GSMATCH, Linker, 3–8, 3–9, 4–10	Shift operator (@), System Dump Analyzer,
writing code for, Linker, 4–3	SDA-13; <i>MACRO</i> , 3–16
Shareable image library, Programming Resources,	"Shift_amount" string constant parameter to
1–18; Librarian, LIB–1, LIB–3	GET_INFO, VAXTPU, 7–225
See also Shareable image	SHIFT_KEY keyword, VAXTPU, 7-472
as user default library, <i>Linker</i> , LINK–21	"Shift_key" string constant parameter to
content of, Linker, 1–5, 2–3	GET_INFO, VAXTPU, 7–204, 7–207
	Short literal mode
creating, Modular Procedures, 5–10	usage restricted in vector floating-point
input to linker, Linker, 1–5, 2–3	instructions, MACRO, 10–16
processing of, Linker, 6–13, 6–14	Should Be Zero
shareable image in, Librarian, LIB-3	See SBZ field
system default, Linker, LINK-18	SHOW (KEYWORDS) built-in procedure,
updating, Modular Procedures, 6-7	VAXTPU, 2-5
/SHAREABLE positional qualifier, Linker,	· · · · · · · · · · · · · · · · · · ·
LINK–28	SHOW ABORT_KEY command, Debugger,
/SHAREABLE qualifier, Debugger, 5–12; Linker,	CD-204
1–5, 2–5, LINK–15	SHOW AST command, Debugger, 9–16, CD–205
LIBRARY command, Programming Resources,	
5–8	

- SHOW ATSIGN command, Debugger, 8-2, CD-206
- SHOW BREAK command, *Debugger*, 3–9, CD–207 SHOW built-in procedure, *VAXTPU*, 7–505 to 7–507
- SHOW CALLS command, *Debugger*, 2–13, 3–3, 9–10, 9–16, CD–209
- SHOW CALL_FRAME command, System Dump Analyzer, SDA-65, SDA-79
- SHOW CLUSTER command, System Dump Analyzer, SDA-82
- SHOW CLUSTER/SCS command, System Dump Analyzer, SDA-123
- SHOW CONNECTIONS command, System Dump Analyzer, SDA-87
- SHOW CPU command, System Dump Analyzer, SDA-10, SDA-68, SDA-89
 - analyzing a running system, System Dump Analyzer, SDA-9
- SHOW CRASH command, System Dump Analyzer, SDA-10, SDA-15, SDA-16, SDA-68, SDA-93
 - analyzing a running system, System Dump Analyzer, SDA-9
- SHOW DEFAULTS BUFFER command, VAXTPU, 4-32
- SHOW DEFINE command, *Debugger*, 8–6, CD–211
- SHOW DEVICE command, System Dump Analyzer, SDA-15, SDA-24, SDA-98; Device Support (B), 1-80
- .SHOW directive, MACRO, 6-89
- SHOW DISPLAY command, Debugger, 7–12, CD–212
- SHOW EDITOR command, Debugger, CD-214
- SHOW entry point, *Modular Procedures*, 4–8 SHOW EVENT_FACILITY command, *Debugger*,
- 3-14, 12-28, CD-215
- SHOW EXECUTIVE command, System Dump Analyzer, SDA-15, SDA-104
- SHOW EXIT_HANDLERS command, *Debugger*, 9–16, CD–216
- SHOW HEADER command, System Dump Analyzer, SDA-106
- SHOW IMAGE command, Debugger, 5–13, CD–217
- Showing version number, VAXTPU, 4-2
- SHOW KEY command, Debugger, 8-8, CD-218
- SHOW LANGUAGE command, Debugger, 4–10, CD–220
- SHOW LOCK command, System Dump Analyzer, SDA-108
- SHOW LOG command, *Debugger*, 8–5, CD–221 SHOW MARGINS command. *Debugger*, 6–8.
- SHOW MARGINS command, Debugger, 6–8, CD–222
- SHOW MAX_SOURCE_FILES command, Debugger, 6-3, CD-223

- SHOW MEMORY command, System Dump Analyzer, SDA-3
- SHOW MODE command, Debugger, CD-224; Patch, PAT-85
- SHOW MODULE command, Debugger, 5-7, 5-15, CD-225; Patch, PAT-86
- SHOW OUTPUT command, Debugger, 8-2, 8-5, CD-228
- SHOW PAGE_TABLE command, System Dump Analyzer, SDA-23, SDA-111
- SHOW PATCH_AREA command, Patch, PAT-87
- SHOW PFN_DATA command, System Dump Analyzer, SDA-115
- SHOW POOL command, System Dump Analyzer, SDA-118
- SHOW PORTS command, System Dump Analyzer, SDA-123
- SHOW PROCESS/ALL command, System Dump Analyzer, SDA-128
- SHOW PROCESS command, Debugger, 10-2, 11-2, CD-229; System Dump Analyzer, SDA-74, SDA-126
- SHOW PROCESS/LOCKS command, System Dump Analyzer, SDA-108
- SHOW PROCESS/RMS command, System Dump Analyzer, SDA-147
 - selecting display options, System Dump Analyzer, SDA-76
- SHOW RADIX command, Debugger, 4–10, CD–234
- SHOW RESOURCE command, System Dump Analyzer, SDA-108, SDA-143
- SHOW RMS command, System Dump Analyzer, SDA-147
- SHOW RMS_DEFAULT command, File Applications, 3-8, 3-14; Convert, CONV-19; File Def Language, FDL-30
 - current default extension size, File Applications, 9-8
 - current process-default buffer count, File Applications, 7–19 to 7–20
- SHOW RSPID command, System Dump Analyzer, SDA-148
- SHOW SCOPE command, Debugger, 5–11, CD-235; Patch, PAT-88
- SHOW SEARCH command, Debugger, 6–7, CD–237
- SHOW SELECT command, Debugger, 7–20, CD–238
- SHOW SOURCE command, Debugger, 6–2, CD–239
- SHOW SPINLOCKS command, System Dump Analyzer, SDA-151; Device Support (A), E-17
- SHOW STACK command, Debugger, 9–12, CD-241; System Dump Analyzer, SDA-21, SDA-157
- SHOW STEP command, Debugger, 3-7, CD-242

Signaler's registers, Routines Intro, 2-53 SHOW SUMMARY command, System Dump Analyzer, SDA-126, SDA-159 Signal handlers SHOW SYMBOL command, Debugger, 5-9, installing for UNIX signals, DECthreads, A-5 12-26, CD-243; System Dump Analyzer, Signaling, Programming Resources, 9-5 changing to return status. Programming SDA-161 SHOW SYMBOL/DEFINED command, Debugger, Resources, 9-6 8-6 Signaling a condition, Routines Intro, 2-47 SHOW TASK command, Debugger, 12-13, 12-15, Signaling and condition handling, Modular CD-246Procedures, 2–22 SHOW TERMINAL command, Debugger, 7-22, Signaling a wake-up, *DECthreads*, cma-49, CD-249 cma-51, pthread-40 Signaling error conditions, Modular Procedures, SHOW TRACE command, Debugger, 3-9, CD-250 SHOW TYPE command, Debugger, 4-24, CD-252 2 - 23SHOW VECTOR_MODE command, Debugger, Signaling errors 11-19, CD-253 example in a VAX MACRO program, File SHOW WATCH command, Debugger, 3-15, Applications, 5–12 CD-254Signal primitive operation, RTL Parallel SHOW WINDOW command, Debugger, 7-14. Processing, 4-10 CD-255Signed byte storage directive (.SIGNED BYTE), SHOW BUFFER identifier, VAXTPU, 7-506 MACRO, 6-91 SHOW_BUFFER variable, VAXTPU, 4-29 Signed word storage directive (.SIGNED_WORD), SHR\$_HALTED, I/O User's II, 4-32 MACRO, 6-92 SHR\$_NOCMDMEM, I/O User's II, 4-28, 4-31, .SIGNED_BYTE directive, MACRO, 6-91 4-32, 4-33 .SIGNED_WORD directive, MACRO, 6-92 SHR\$_QEMPTY, I/O User's II, 4-32 Sign-Extended longword field, RTL Library, LIB-142 SHR field Significance indicator, MACRO, 9-185 See FAB\$B SHR field Sign representation Shutdown preference for key type coding, RMS, 13-7 operator-requested, System Dump Analyzer, SII controller, Device Support (A), 1–19 SDA-5 SII integral adapter, I/O User's I, 3-4 SIDR (secondary index data record), File /SILENT qualifier, Debugger, 3-13, 12-31, Applications, 3-15, 3-19, 10-22; CD-128, CD-187, CD-197, CD-259 Analyze/RMS_File, ARMS-7; File Def Simple breakpoint, Delta/XDelta, DELTA-28 Language, FDL-5 Simple key, RMS, 13-13 for storing sorted pointers, Convert, CONV-12 Simple name SID register converting to opaque, System Services, displaying, System Dump Analyzer, SDA-90 SYS-178 Signal Simplified callable interface alternatives to using, *DECthreads*, A–6 arithmetic error, DECthreads, A-7 See VAXTPU routines /SINCE qualifier, Librarian, LIB-42; National asynchronous, DECthreads, A-4, A-7 enabling an event, RTL Parallel Processing, Char Set, NCS-41 4-7 Sine illegal instruction, DECthreads, A-8 hyperbolic, RTL Math, MTH-100, MTH-133 nonterminating, DECthreads, A-4 in degrees, RTL Math, MTH-99, MTH-127, reasons to avoid in a multithreaded program, DECthreads, A-6 in radians, RTL Math, MTH-98, MTH-122, reported as exceptions, DECthreads, A-7 MTH-124 synchronous, DECthreads, A-4 of complex number, RTL Math, MTH-53, terminating, DECthreads, A-4, A-7 MTH-54types of, *DECthreads*, A-3 Single instruction access, Modular Procedures, Signal argument vector, RTL Library, 4-7, 4-9, 4 - 20SIRR (software interrupt request register), Device Signal array, Programming Resources, 9–14: Support (A), 3–9 System Dump Analyzer, SDA-18 SISR register Signal array argument, System Services Intro, displaying, System Dump Analyzer, SDA-90

11 - 10

Site-specific startup procedure

See SYS\$MANAGER:SYSTARTUP.COM

Size

allocating pages for PPL\$ data structures, RTL Parallel Processing, PPL-11

NCS library, specifying, National Char Set, NCS-24, NCS-25

SIZE attribute, File Def Language, FDL-35

/SIZE qualifier, Debugger, CD-69

SIZE secondary attribute, File Applications, 4-29

Skip file function, I/O User's I, 6–20

Skip sectoring, I/O User's I, 3–17

SKPC (Skip Character) instruction, MACRO, 9–139

Slash (/)

division operator, Debugger, D-7

Slave formatter, I/O User's I, 6-8

SLEEP built-in procedure, $V\!AXTPU$, 7–508 to 7–509

Slider, VAXTPU, 7-224

example of fetching, VAXTPU, B-19 to B-22

SLR register

displaying, System Dump Analyzer, SDA-90

Small Computer System Interface

See SCSI

Small request packet

See SRP

SMB\$CHECK_FOR_MESSAGE routine, *Utility* Routines, SMB-15

SMB\$INITIALIZE routine, *Utility Routines*, SMB-16

SMB\$READ_MESSAGE routine, Utility Routines, SMB-18

SMB\$READ_MESSAGE_ITEM routine, *Utility* Routines, SMB-21

SMB\$SEND_TO_JOBCTL routine, *Utility* Routines, SMB-31

SMB routines

See also Job Controller

See also Symbiont

introduction, Utility Routines, SMB-1

SMG\$

debugging screen-oriented program, *Debugger*, 9-5

SMG\$ADD_KEY_DEF, Programming Resources, 7–28; RTL Screen Management, 3–2, SMG–3

SMG\$BEGIN_DISPLAY_UPDATE, RTL Screen Management, 2–18, SMG-7

SMG\$BEGIN_PASTEBOARD_UPDATE, RTL Screen Management, 2–18, SMG–8

SMG\$CANCEL_INPUT, RTL Screen Management, 1-7, 3-1, SMG-9

SMG\$CHANGE_PBD_CHARACTERISTICS, RTL Screen Management, 1–5, SMG-10 SMG\$CHANGE_RENDITION, RTL Screen Management, 2–9, SMG–13

SMG\$CHANGE_VIEWPORT, RTL Screen Management, 2–13, SMG–16

SMG\$CHANGE_VIRTUAL_DISPLAY, Programming Resources, 7–15; RTL Screen Management, 2–9, SMG–21

SMG\$CHECK_FOR_OCCLUSION, Programming Resources, 7–12; RTL Screen Management, 2–5, SMG–24

SMG\$CONTROL_MODE, RTL Screen Management, 2–16, SMG–28

SMG\$COPY_VIRTUAL_DISPLAY, RTL Screen Management, SMG-31

SMG\$CREATE_KEY_TABLE, Programming Resources, 7–28; RTL Screen Management, 3–2, SMG–36

SMG\$CREATE_MENU, RTL Screen Management, 2-14, SMG-37

SMG\$CREATE_PASTEBOARD, Programming Resources, 7–8; RTL Screen Management, 1–4, 6–2, SMG–41

SMG\$CREATE_SUBPROCESS, Programming Resources, 7–16; RTL Screen Management, SMG-45

SMG\$CREATE_VIEWPORT, RTL Screen Management, 2–13, SMG–58

SMG\$CREATE_VIRTUAL_DISPLAY, Programming Resources, 7–8; RTL Screen Management, 1–6, SMG–49

SMG\$CREATE_VIRTUAL_KEYBOARD, Programming Resources, 7–24; RTL Screen Management, 1–7, 3–1, SMG–54

SMG\$CURSOR_COLUMN, RTL Screen Management, 2-6, SMG-62

SMG\$CURSOR_ROW, RTL Screen Management, 2-6, SMG-63

SMG\$DEFINE_KEY, RTL Screen Management, 3-2, SMG-64

SMG\$DELETE_CHARS, Programming Resources, 7–22; RTL Screen Management, 2–7, SMG–67

SMG\$DELETE_KEY_DEF, RTL Screen Management, 3-2, SMG-71

SMG\$DELETE_LINE, Programming Resources, 7–22; RTL Screen Management, 2–7, SMG–73

SMG\$DELETE_MENU, RTL Screen Management, 2–14, SMG-77

SMG\$DELETE_PASTEBOARD, Programming Resources, 7-9; RTL Screen Management, 1-4, SMG-78

SMG\$DELETE_SUBPROCESS, Programming Resources, 7–16; RTL Screen Management, SMG-80

SMG\$DELETE_VIEWPORT, RTL Screen Management, 2-13, SMG-81

- SMG\$DELETE_VIRTUAL_DISPLAY, Programming Resources, 7–14; RTL Screen Management, 1–6, 2–4, 6–1, SMG–82
- SMG\$DELETE_VIRTUAL_KEYBOARD, RTL Screen Management, 3-1, SMG-83
- SMG\$DEL_TERM_TABLE, RTL Screen Management, 5-2, SMG-66
- SMG\$DISABLE_BROADCAST_TRAPPING, RTL Screen Management, SMG-84
- SMG\$DISABLE_UNSOLICITED_INPUT, RTL Screen Management, SMG-94
- SMG\$DRAW_CHAR, RTL Screen Management, 2-11, SMG-96
- SMG\$DRAW_LINE, Programming Resources, 7-20; RTL Screen Management, 2-11, SMG-100
- SMG\$DRAW_RECTANGLE, Programming Resources, 7–20; RTL Screen Management, 2–11, SMG–105
- SMG\$ENABLE_UNSOLICITED_INPUT, RTL Screen Management, 4–2, SMG-110
- SMG\$END_DISPLAY_UPDATE, RTL Screen Management, 2–18, SMG-113
- SMG\$END_PASTEBOARD_UPDATE, RTL Screen Management, 2–18, SMG-114
- SMG\$ERASE_CHARS, Programming Resources, 7-21; RTL Screen Management, 2-8, SMG-116
- SMG\$ERASE_COLUMN, Programming Resources, 7–22; RTL Screen Management, 2–8, SMG-120
- SMG\$ERASE_DISPLAY, Programming Resources, 7-21; RTL Screen Management, 2-8, SMG-122
- SMG\$ERASE_LINE, Programming Resources, 7–21; RTL Screen Management, 2–8, SMG–126
- SMG\$ERASE_PASTEBOARD, Programming Resources, 7–9; RTL Screen Management, 1–5, SMG–130
- SMG\$EXECUTE_COMMAND, Programming Resources, 7–16; RTL Screen Management, SMG-133
- SMG\$FIND_CURSOR_DISPLAY, RTL Screen Management, SMG-136
- SMG\$FLUSH_BUFFER, RTL Screen Management, 2–17, SMG–138
- SMG\$GET_BROADCAST_MESSAGE, RTL Screen Management, 4–1, SMG–139
- SMG\$GET_CHAR_AT_PHYSICAL_CURSOR, RTL Screen Management, SMG-141
- SMG\$GET_DISPLAY_ATTR, RTL Screen Management, SMG-143
- SMG\$GET_KEYBOARD_ATTRIBUTES, RTL Screen Management, 3–1, SMG–149
- SMG\$GET_KEY_DEF, RTL Screen Management, SMG-146

- SMG\$GET_NUMERIC_DATA, RTL Screen Management, 5-2, SMG-152
- SMG\$GET_PASTEBOARD_ATTRIBUTES, RTL Screen Management, 1-5, SMG-154
- SMG\$GET_PASTING_INFO, RTL Screen Management, SMG-158
- SMG\$GET_TERM_DATA, RTL Screen Management, 5-2, SMG-160
- SMG\$GET_VIEWPORT_CHAR, RTL Screen Management, 2-14, SMG-162
- SMG\$HOME_CURSOR, Programming Resources, 7-17; RTL Screen Management, 2-7, SMG-166
- SMG\$INIT_TERM_TABLE, RTL Screen Management, 5-2, SMG-168
- SMG\$INIT_TERM_TABLE_BY_TYPE, RTL Screen Management, 5–2, SMG–170
- SMG\$INSERT_CHARS, Programming Resources, 7-18; RTL Screen Management, 2-8, SMG-172
- SMG\$INSERT_LINE, Programming Resources, 7-20; RTL Screen Management, 2-8, SMG-177
- SMG\$INVALIDATE_DISPLAY, RTL Screen Management, SMG-183
- SMG\$KEYCODE_TO_NAME, RTL Screen Management, 3-4, SMG-184
- SMG\$LABEL_BORDER, Programming Resources, 7–10; RTL Screen Management, SMG–186
- SMG\$LIST_KEY_DEFS, RTL Screen Management, SMG-192
- SMG\$LIST_PASTING_ORDER, Programming Resources, 7–14; RTL Screen Management, 2–5, SMG–195
- SMG\$LOAD_KEY_DEFS, RTL Screen Management, 3–2, SMG–197
- SMG\$LOAD_VIRTUAL_DISPLAY, RTL Screen Management, 2–15, SMG–199
- SMG\$MOVE_TEXT, RTL Screen Management, 2–4, SMG–201
- SMG\$MOVE_VIRTUAL_DISPLAY, RTL Screen Management, 2–3, SMG–204
- SMG\$NAME_TO_KEYCODE, RTL Screen Management, 3-4, SMG-207
- SMG\$PASTE_VIRTUAL_DISPLAY, Programming Resources, 7–8; RTL Screen Management, 2–1, SMG–209
- SMG\$POP_VIRTUAL_DISPLAY, Programming Resources, 7–32; RTL Screen Management, 2–4, 6–2, SMG–212
- SMG\$PRINT_PASTEBOARD, RTL Screen Management, SMG-214
- SMG\$PUT_CHARS, RTL Screen Management, 2–8, SMG–216
- SMG\$PUT_CHARS_HIGHWIDE, Programming Resources, 7–19; RTL Screen Management, 2–8, SMG–221

- SMG\$PUT_CHARS_MULTI, RTL Screen Management, 2–8, SMG-224
- SMG\$PUT_CHARS_WIDE, RTL Screen Management, 2-8, SMG-227
- SMG\$PUT_HELP_TEXT, RTL Screen Management, SMG-230
- SMG\$PUT_LINE, Programming Resources, 7–19; RTL Screen Management, 2–9, SMG–233
- SMG\$PUT_LINE_HIGHWIDE, RTL Screen Management, 2-9, SMG-240
- SMG\$PUT_LINE_MULTI, RTL Screen Management, 2-9, SMG-244
- SMG\$PUT_LINE_WIDE, Programming Resources, 7-20; RTL Screen Management, 2-9, SMG-249
- SMG\$PUT_PASTEBOARD, RTL Screen Management, SMG-254
- SMG\$PUT_STATUS_LINE, RTL Screen Management, SMG-256
- SMG\$PUT_WITH_SCROLL, Programming Resources, 7–19
- SMG\$READ_COMPOSED_LINE, Programming Resources, 7–28; RTL Screen Management, 1–7, 3–2, SMG–258
- SMG\$READ_FROM_DISPLAY, Programming Resources, 7–23; RTL Screen Management, 2–12, SMG–263
- SMG\$READ_KEYSTROKE, RTL Screen Management, 3-1, SMG-267
- SMG\$READ_STRING, Programming Resources, 7–24; RTL Screen Management, 1–7, 3–1, SMG–275
- SMG\$READ_VERIFY, RTL Screen Management, 3-1, SMG-285
- SMG\$REMOVE_LINE, RTL Screen Management, 2–11, SMG–292
- SMG\$REPAINT_LINE, RTL Screen Management, SMG-294
- SMG\$REPAINT_SCREEN, RTL Screen Management, SMG-296
- SMG\$REPASTE_VIRTUAL_DISPLAY, RTL Screen Management, 2–3, SMG–299
- SMG\$REPLACE_INPUT_LINE, RTL Screen Management, SMG-304
- SMG\$RESTORE_PHYSICAL_SCREEN, Programming Resources, 7–31; RTL Screen Management, 6–3, SMG–307
- SMG\$RETURN_CURSOR_POS, Programming Resources, 7–18; RTL Screen Management, 2–6, SMG–309
- SMG\$RETURN_INPUT_LINE, RTL Screen Management, SMG-311
- SMG\$RING_BELL, RTL Screen Management, SMG-315
- SMG\$SAVE_PHYSICAL_SCREEN, Programming Resources, 7–31; RTL Screen Management, 6–3, SMG–316

- SMG\$SAVE_VIRTUAL_DISPLAY, RTL Screen Management, 2–15, SMG–318
- SMG\$SCROLL_DISPLAY_AREA, Programming Resources, 7-20; RTL Screen Management, SMG-320
- SMG\$SCROLL_VIEWPORT, RTL Screen Management, 2-13, SMG-323
- SMG\$SELECT_FROM_MENU, RTL Screen Management, 2-15, SMG-328
- SMG\$SET_BROADCAST_TRAPPING, RTL Screen Management, 4-1, SMG-343
- SMG\$SET_CURSOR_ABS, Programming Resources, 7–17; RTL Screen Management, 2–7, SMG-345
- SMG\$SET_CURSOR_MODE, RTL Screen Management, SMG-347
- SMG\$SET_CURSOR_REL, Programming Resources, 7–17; RTL Screen Management, 2–7, SMG-349
- SMG\$SET_DEFAULT_STATE, RTL Screen Management, SMG-351
- SMG\$SET_DISPLAY_SCROLLING_REGION, RTL Screen Management, SMG-353
- SMG\$SET_DISPLAY_SCROLL_REGION, Programming Resources, 7–20
- SMG\$SET_KEYPAD_MODE, RTL Screen Management, 3-2, SMG-355
- SMG\$SET_OUT_OF_BAND_ASTS, RTL Screen Management, 4-2, SMG-357
- SMG\$SET_PHYSICAL_CURSOR, Programming Resources, 7–18; RTL Screen Management, SMG-361
- SMG\$SET_TERM_CHARACTERISTICS, RTL Screen Management, SMG-363
- SMG\$SNAPSHOT, RTL Screen Management, SMG-367
- SMG\$UNPASTE_VIRTUAL_DISPLAY, Programming Resources, 7–14; RTL Screen Management, 2–1, 6–1, SMG–369
- SMP\$ACQNOIPL, Device Support (A), 13-29, E-18; Device Support (B), 2-17
- SMP\$ACQUIRE, Device Support (A), 13–28, 13–29, E–18; Device Support (B), 2–34, 2–47
- SMP\$ACQUIREL, Device Support (A), 13–28, 13–29, E–18; Device Support (B), 2–17
- SMP\$AR_IPLVEC, Device Support (B), 2-33, 3-26, 3-30
- SMP\$AR_SPNLKVEC, Device Support (A), 3–13; Device Support (B), 1–66, 2–34, 2–47, 2–96
- SMP\$GL_FLAGS, Device Support (A), 12–13, E–3 SMP\$RELEASE, Device Support (A), 13–28,
- 13-29, E-18; Device Support (B), 2-35, 2-96
- SMP\$RELEASEL, Device Support (A), 13–28, 13–29, E–18; Device Support (B), 2–19
- SMP\$RESTORE, Device Support (A), 13–28, 13–29, E–18; Device Support (B), 2–35, 2–96

SMP\$RESTOREL, Device Support (A), 13-28, SORT 13-29, E-18; Device Support (B), 2-19 See Sort/Merge Utility SMP\$V_UNMOD_DRIVER, Device Support (A), SORT32 12-13, E-3 open file limitation, Convert, CONV-22 \$SNDJBC, System Services, SYS-558 SORT command, Programming Resources, 8-13 SOBGEQ (Subtract One and Branch Greater Than file interface, Programming Resources, 8-15 or Equal) instruction, MACRO, 9-61 record interface, Programming Resources, 8-16 SOBGTR (Subtract One and Branch Greater Than) Sort/Merge routines instruction, MACRO, 9-62 See SOR routines SOFTINT macro, Device Support (A), 3-10; Sort/Merge Utility (SORT), Programming Device Support (B), 2-67, 3-26, 3-30 Resources, 8-13 Soft link file interface, Programming Resources, 8-14, enumerating, System Services, SYS-175 8-15, 8-19 locating target, System Services, SYS-180 keys, Programming Resources, 8-14 Software errors, File Applications, 10–1 multiple sort operations, Programming Software interrupts Resources, 8-14 exceptions, DECthreads, A-6 record interface, Programming Resources, Software life cycle, Modular Procedures, 1–1 8-14, 8-16, 8-21 Software Performance Report Sort order establishing, RMS, 7-5 See SPR /SORT qualifier, Convert, CONV-22, CONV-27 Software timer interrupt service routine, Device Support (A), 3-8, 10-4 /SOURCE, Debugger, 12-26 SOURCE attribute, File Def Language, FDL-38 Solicited interrupt Source code See Device interrupt See Source display SOR\$\$STAT routine, Utility Routines, SOR-50 SOR\$BEGIN_MERGE routine, Programming Source Code Analyzer Resources, 8–19; Utility Routines, SOR–18 See SCA SOR\$BEGIN_SORT routine, Programming Source directory Resources, 8-15; Utility Routines, SOR-25 displaying, Debugger, 6-2, CD-239 SOR\$DTYPE routine, Utility Routines, SOR-31 search list, Debugger, 6-2, CD-28, CD-172 SOR\$END_SORT routine, Programming Source display, Debugger, 2-8, 6-1, 7-1 Resources, 8–15; Utility Routines, SOR–34 discrepancies in, Debugger, 7-4, 9-1 SOR\$PASS_FILES routine, Programming with DECwindows, Debugger, 1-10 Resources, 8-15, 8-19; Utility Routines, display kind, Debugger, 7-17, C-1 SOR-36 EXAMINE/SOURCE command, Debugger, 6-4, SOR\$RELEASE_REC routine, Programming 7-6, 7-17, C-4 Resources, 8-16; Utility Routines, SOR-41 for routine on call stack, Debugger, 7-6, SOR\$RETURN_REC routine, Programming CD-166 Resources, 8–16; Utility Routines, SOR–43 with DECwindows, Debugger, 1-9, 1-10, SOR\$SORT_MERGE routine, Programming 1-21Resources, 8-15: Utility Routines, SOR-45 line-oriented, Debugger, 6-3 SOR\$SPEC_FILE routine, Utility Routines, margins in, Debugger, 6-8, CD-222 SOR-48 multiprocess program, Debugger, 10-14 SOR routines not available, Debugger, 2-10, 2-11, 6-1, 7-4, examples, *Utility Routines*, SOR-4 to SOR-17 CD-172, C-4 interface with DECwindows, Debugger, 1-10, 1-21 file, Utility Routines, SOR-2 optimized code, *Debugger*, 2-5, 5-2, 7-7, 9-1 record, Utility Routines, SOR-2 with DECwindows, Debugger, 1-10 introduction, Utility Routines, SOR-1 SEARCH command, Debugger, 6-6, CD-114 list of, Utility Routines, SOR-1 SET BREAK command, Debugger, 6-7 reentrancy SET SCOPE/CURRENT command, Debugger, using context argument, Utility Routines, 7-6, CD-166 SOR-4 SET STEP command, Debugger, 6-7, CD-175 Sort SET TRACE command, Debugger, 6-7 suggestions for improving performance, SET WATCH command, Debugger, 6-7 Convert, CONV-22 SRC, predefined, Debugger, 7-4, C-3 with DECwindows, Debugger, 1-10

STEP command, Debugger, 6-7 TYPE command, Debugger, 6-3, CD-266 with DECwindows, Debugger, 1-9, 1-10, 1-21 Source file See also Message source file See also Source display correct version of, Debugger, CD-172, CD-239 defined, Debugger, 6-2; VAXTPU, 7-308 EVE editor, VAXTPU, 1-11 file specification, Debugger, 6-2 location, Debugger, 6-2, CD-28, CD-172, CD-239maximum number, Debugger, 6-3, CD-147, CD-223 not available, Debugger, 6-2, CD-172 Source file statements See Message source file statements Source line, File Def Language, FDL-40 Source line correlation, *Debugger*, 6–1 /SOURCE qualifier, Debugger, 6-4, 6-7, 7-6, 7-20, CD-84, CD-118, CD-128, CD-187, CD-197, CD-260 Source statement See Statement Source window See also Source display SRC, DECwindows, Debugger, 1-10, 1-21 %SOURCE_SCOPE, Debugger, 7-18, C-3 %SP, *Debugger*, 4–22, D–3 Space allocating for PPL\$, RTL Parallel Processing, PPL-11 Space service, RMS, RMS-95 condition values, RMS, RMS-96 control block input fields, RMS, RMS-96 control block output fields, RMS, RMS-96 SPAN built-in procedure, VAXTPU, 7-510 to 7 - 511SPANC (Span Characters) instruction, MACRO, SPANL built-in procedure, VAXTPU, 7-512 to SPAWN built-in procedure, VAXTPU, 7-515 to 7 - 517SPAWN command, Debugger, 3-4, CD-256; System Dump Analyzer, SDA-162 Spawned subprocess See Subprocess Spawning a subordinate, RTL Parallel Processing, SPDT (SCSI port descriptor table), Device Support

(A), 17-7; Device Support (B), 1-60 to 1-66

creation of, Device Support (A), 17-26

Special analysis sections, Analyze/RMS_File,

Source display (cont'd)

Special characters, Librarian, LIB-5 SPECIAL_GRAPHICS keyword with SET (STATUS_LINE), VAXTPU, 7-476 "Special_graphics_status" string constant parameter to GET_INFO, VAXTPU, 7-225 Specification of file, File Def Language, FDL-19 Speed See Performance SPI\$ABORT_COMMAND macro, Device Support (A), 17-6, 17-28; Device Support (B), 2-68 SPI\$ALLOCATE_COMMAND_BUFFER macro, Device Support (A), 17-6, 17-11, 17-27; Device Support (B), 2–69 SPI\$CONNECT macro, Device Support (A), 17-6, 17-10, 17-26, 17-29; Device Support (B), 2-70 to 2-71SPI\$DEALLOCATE_COMMAND_BUFFER macro, Device Support (A), 17-6, 17-11, 17-28; Device Support (B), 2–72 SPI\$DISCONNECT macro, Device Support (A), 17-6; Device Support (B), 2-73 SPI\$FINISH COMMAND macro, Device Support (A), 17–29; Device Support (B), 2–74 SPI\$GET_CONNECTION_CHAR macro, Device Support (A), 17-6; Device Support (B), 2-75 to 2-76, 2-88 SPI\$MAP_BUFFER macro, Device Support (A), 17-6, 17-16 to 17-17, 17-27; Device Support (B), 2-77 to 2-79 SPI\$RECEIVE_BYTES macro, Device Support (A), 17-29; Device Support (B), 2-80 SPI\$RELEASE_BUS macro, Device Support (A), 17–29; Device Support (B), 2–81 SPI\$RESET macro, Device Support (A), 17-6 SPI\$SEND BYTES macro, Device Support (A), 17-29; Device Support (B), 2-83 SPI\$SEND_COMMAND macro, Device Support (A), 17-6, 17-11, 17-17, 17-27; Device Support (B), 2-84 to 2-86 SPI\$SENSE_PHASE macro, Device Support (A), 17-29; Device Support (B), 2-87 SPI\$SET_CONNECTION_CHAR macro, Device Support (A), 17-6, 17-12, 17-13, 17-14, 17-27; Device Support (B), 2-88 to 2-89 SPI\$SET_PHASE macro, Device Support (A), 17–29; Device Support (B), 2–90 SPI\$UNMAP_BUFFER macro, Device Support (A), 17-6, 17-17; Device Support (B), 2-91 SPI (SCSI port interface), Device Support (A), 17-5 to 17-6; Device Support (B), 2-68 to calling protocol for, Device Support (A), 17-6; Device Support (B), 2-68 extensions to, Device Support (A), 17-29 to 17-30; Device Support (B), 2-73 to 2-90

ARMS-14

Spin lock synchronization macros (cont'd) Spin lock, Programming Resources, 4–16; Device See also FORKLOCK Support (A), 1-7, 3-3, 3-12 to 3-17 See also FORKUNLOCK See also Device lock See also LOCK See also Fork lock See also UNLOCK See also Spin lock index Spin wait, Device Support (A), 3-15; Device See also Spin wait Support (B), 1-68, 3-110, 3-112, 3-113 See also SPL SPL\$B_IPL, Device Support (A), 3-9, E-18; See also Synchronization Device Support (B), 1-77 acquisition IPL, Device Support (A), 3-11, SPL\$B_RANK, Device Support (A), E-18 3-15, E-17, E-20; Device Support (B), ${\tt SPL\$L_BUSY_WAITS},\ \ Device\ Support\ (A),\ {\tt E-17}$ 1-67, 3-111 SPL\$L_OWN_PC_VEC, Device Support (A), E-17 acquisition PC list, Device Support (A), E-17; SPL\$Q_ACQ_COUNT, Device Support (A), E-17 Device Support (B), 1–68 SPL (spin lock data structure), Device Support address, Device Support (A), E-20 (B), 1-66 to 1-68 creating, RTL Parallel Processing, 4-14 SPLACQERR bugcheck, Device Support (A), definition of, RTL Parallel Processing, 4–14 13-28, 13-30, E-18; Device Support (B), deleting, RTL Parallel Processing, 4-15 3 - 111displaying SDA information, System Dump \$SPLCODDEF macro, Device Support (A), E-8; Analyzer, SDA-150 Device Support (B), 2–23, 2–25 dynamic, Device Support (A), 3-13; Device SPLIPLHIGH bugcheck, Device Support (A), Support (B), 1–68 13-28, E-18; Device Support (B), 3-111, multiple acquisition of, Device Support (A), 3-15, E-20; Device Support (B), 2-96, SPLIPLLOW bugcheck, Device Support (A), 3 - 11613-28, E-18; Device Support (B), 3-114, name, Device Support (A), E-20 3-115, 3-116, 3-117 obtaining, Device Support (A), 3-10; Device SPLIT_LINE built-in procedure, VAXTPU, 7-518 Support (B), 2-47 to 2-48, 3-111 to 3-112 to 7-519 owned, System Dump Analyzer, SDA-90 SPL option, File Def Language, FDL-23 ownership, Device Support (A), 3-15, 13-30, SPLRELERR bugcheck, Device Support (A), E-20; Device Support (B), 1-67, 1-68 13-29, 13-30, E-18; Device Support (B), rank, Device Support (A), 3-13 to 3-14, 3-15, 3-114, 3-115 3-17, E-17, E-20; Device Support (B), SPLRSTERR bugcheck, Device Support (A), 1 - 6713-29, 13-30, E-18; Device Support (B), reading, RTL Parallel Processing, 4-16 3-116, 3-117 releasing, RTL Parallel Processing, 4–15; Spooled device, Device Support (B), 1-74 Device Support (A), 3-10; Device Support Spool file option (B), 2–96, 3–114 See FAB\$V_SPL option restoring, Device Support (B), 2-96, 3-116 Spool on close option, File Applications, 9–12 seizing, RTL Parallel Processing, 4-15 SPR (Software Performance Report), File static, Device Support (A), 3-13; Device Applications, 10-2; System Dump Analyzer, Support (B), 1–68 SDA-2, SDA-28status, Device Support (A), E-20 SP symbol, System Dump Analyzer, SDA-14 system, Device Support (A), 3-13; Device SPTREQ parameter, Device Support (B), 3-16 Support (B), 1-68 SQO option, File Def Language, FDL-24 Spin lock index, Device Support (A), 3-13 to 3-14, Square root, RTL Math, MTH-102, MTH-136 E - 20/SQUEEZE qualifier, Librarian, LIB-43 Spin lock IPL vector SRC See SMP\$AR_SPNLKVEC source display, screen mode, Debugger, 7-4, Spin lock synchronization advantages and disadvantages, RTL Parallel source window, DECwindows, Debugger, 1-10, Processing, 5-8PPL\$ routines for, RTL Parallel Processing, SRP (small request packet), System Dump 4-14 to 4-16 Analyzer, SDA-119 Spin lock synchronization macros, Device Support SRP lookaside list (A), E-4, E-13 displaying contents, System Dump Analyzer, See also DEVICELOCK SDA-119

See also DEVICEUNLOCK

```
/SRP qualifier, System Dump Analyzer, SDA-119
SS$_ABORT return, I/O User's I, 8-45, 8-50,
    A-2, A-3, A-5, A-7, A-9; I/O User's II, 2-15,
    4-23, 6-33, A-1, A-3, A-4, A-5, A-6; Device
    Support (A), 10-6
SS$_ACCONFLICT return, I/O User's I, A-1
SS$_ACCVIO return, I/O User's I, 7-12, 8-51;
   I/O User's II, A-6; Device Support (B), 3-32,
    3-33, 3-35, 3-41, 3-43, 3-46, 3-50, 3-51,
    3-55, 3-56, 3-59, 3-73
SS$_ACPVAFUL return, I/O User's I, A-1
SS$_BADATTRIB return, I/O User's I, A-1
SS$_BADCHKSUM return, I/O User's I. A-1
SS$_BADESCAPE return, I/O User's I, 8-7, A-9
SS$_BADFILEHDR return, I/O User's I, A-1
SS$_BADFILENAME return, I/O User's I, A-1
SS$_BADFILEVER return, I/O User's I, A-1
SS$_BADIRECTORY return, I/O User's I, A-1
SS$_BADPARAM return, I/O User's I, 8-51, A-1,
    A-5, A-9; I/O User's II, 3-11, 4-22, 4-26,
    4-27, 4-31, 6-9, 6-23, 6-35, A-1, A-3, A-4,
    A-5, A-6; Device Support (B), 3-32, 3-35,
    3-41, 3-43, 3-46, 3-55, 3-56, 3-59, 3-107
SS$_BADQFILE return, I/O User's I, A-1
SS$_BADQUEHDR return, I/O User's II, 4-33,
SS$_BADQUEUEHDR return, I/O User's II,
    4-28, 4-31, 4-32
SS$_BLOCKCNTERR return, I/O User's I, A-1
SS$_BUFFEROVF return, I/O User's I, 7-6, A-7;
    I/O User's II, 2-20, 5-10, 5-11, 6-38, A-3,
    A-5, A-6
SS$_BUFNOTALIGN return, I/O User's I, A-5;
   I/O User's II, 4-23, A-4
SS$_CANCEL return, I/O User's I, A-3, A-5,
    A-7, A-9; I/O User's II, 4-23, A-3, A-4, A-5;
    Device Support (A), 11-7
SS$_COMMHARD return, I/O User's II, A-6
SS$_CONTROLC return, I/O User's I, 8-46, A-9
SS$_CONTROLO return, I/O User's I, A-9
SS$_CONTROLY return, I/O User's I, A-9
SS$_CREATED return, I/O User's I, A-1
SS$_CTRLERR return, I/O User's I, A-3, A-5,
    A-7; I/O User's II, 3-8, 4-23, 4-33, 4-36,
    A-3, A-4, A-6
SS$ DATACHECK return. I/O User's I, A-3.
    A-5, A-7; I/O User's II, A-6
SS$_DATAOVERUN return, I/O User's I, 8-9,
    A-2, A-3, A-7, A-9; I/O User's II, 1-6, 2-8,
    5-5, 6-19, A-1, A-6
SS$_DEBUG condition, Debugger, D-1
SS$ DEVACTIVE return, I/O User's I, 8-50, A-5;
    I/O User's II, 4-20, A-1, A-3, A-4, A-5, A-6
SS$_DEVALLOC return, I/O User's II, A-6
SS$_DEVCMDERR return, I/O User's I, A-5
SS$_DEVICEFULL return, I/O User's I, A-1;
    I/O User's II, A-3, A-5
```

```
SS$_DEVINACT return, I/O User's II, A-3, A-5,
SS$_DEVOFFLINE return, I/O User's I, A-7;
   I/O User's II, A-1, A-3, A-5, A-6
SS$_DEVREQERR return, I/O User's I, A-5;
   I/O User's II, 4-23, 4-36, A-4, A-6
SS$_DIRFULL return, I/O User's I, A-1
SS_DIRNOTEMPTY return, I/O User's I, A-1
SS_DISCONNECT return, I/O User's II, A-6
SS_DRVERR return, I/O User's I, A-3, A-7;
   I/O User's II, 3-8, A-3
SS$_DUPDSKQUOTA return, I/O User's I, A-1
SS$_DUPFILENAME return, I/O User's I, A-1
SS$_DUPUNIT return, I/O User's II, A-6
SS$_ENDOFFILE return, I/O User's I, 6-21, 7-6,
   7-9, A-1, A-2, A-7; I/O User's II, 2-8, 5-5,
   6-19, A-1, A-6
SS$_ENDOFTAPE return, I/O User's I, A-7
SS$_ENDOFVOLUME return, I/O User's I, 6-21,
   A - 7
SS$_EXBYTLM return, I/O User's I, A-1
SS_EXDISKQUOTA return, I/O User's I, A-1
SS$_EXQUOTA return, I/O User's I, A-5;
   I/O User's II, 4-23, A-3, A-4, A-6; Device
   Support (A), E-6; Device Support (B), 3-6,
   3-20, 3-22
SS$_FCPREADERR return, I/O User's I, A-1
SS$_FCPREWNDERR return, I/O User's I, A-1
SS$_FCPSPACERR return, I/O User's I, A-1
SS$_FCPWRITERR return, I/O User's I, A-1
SS$_FILELOCKED return, I/O User's I, A-1
SS$_FILENUMCHK return, I/O User's I, A-1
SS$_FILEPURGED return, I/O User's I, A-1
SS$_FILESEQCHK return, I/O User's I, A-1
SS$_FILESTRUCT return, I/O User's I, A-1
SS$_FILNOTEXP return, I/O User's I, A-1
SS$_FORCEDERR return, I/O User's I, A-3
SS$_FORMAT return, I/O User's I, A-3, A-7
SS$_HANGUP return, I/O User's I, 8-13
SS$ HEADERFULL return, I/O User's I, A-1
SS$ IBCERROR return, I/O User's I, A-1
SS$_IDXFILEFULL return, I/O User's I, A-1
SS$_ILLCNTRFUNC return, I/O User's I, A-1
SS$_ILLIOFUNC return, I/O User's I, 8-50, A-3,
   A-7; Device Support (B), 3-51
SS$ INCOMPAT return, I/O User's I, A-9
SS$_INSFBUFDP return, I/O User's I, A-5
SS$_INSFMAPREG return, I/O User's II, A-6;
   Device Support (B), 3-64
SS$_INSFMAPREQ return, I/O User's I, A-5
SS_INSFMEM return, I/O User's I, 7–12, A–5;
   I/O User's II, 4-23, 4-28, 4-31, A-4, A-6;
   Device Support (B), 3-6, 3-12, 3-14, 3-15,
   3-16, 3-52, 3-61
SS$_INSFSPTS return, Device Support (B), 3-16,
```

3-107

```
SS$_INSFWSL return, Device Support (B), 3-33,
                                                    SS$_UNSAFE return, I/O User's I, A-3, A-7
    3-35, 3-41, 3-46, 3-59
                                                    SS$_VOLINV return, I/O User's I, A-3, A-7
SS$_IVADDR return, I/O User's I, A-3
                                                    SS$_WASECC return, I/O User's I, A-3
SS$_IVBUFLEN return, I/O User's I, A-3, A-5;
                                                    SS$_WRITLCK return, I/O User's I, A-2, A-3,
    I/O User's II, 4-23, 6-21, A-4, A-6
SS$_IVCHAN return, Device Support (B), 3-103
                                                    SS$_WRONGACP return, I/O User's I, A-2
SS$_IVMODE return, I/O User's I, A-5
                                                    SSP symbol, System Dump Analyzer, SDA-14
SS$_MBFULL return, I/O User's I, 7-2, 7-7,
                                                    SSRVEXCEPT bugcheck, System Dump Analyzer,
    7-12; Device Support (B), 3-52, 3-61
                                                        SDA-16
SS_MBTOOSML return, I/O User's I, 7–12;
                                                    Stack, DECthreads, 3-5
   Device Support (B), 3-52, 3-61
                                                      See also Call stack, Call frame, Scope
SS$_MCNOTVALID return, I/O User's I, A-5;
                                                      changing minimum size of, DECthreads,
    I/O User's II, 4-23, A-4
                                                          cma-41, pthread-21
SS$_MEDOFL return, I/O User's I, A-3, A-7;
                                                      changing minimum size of guard area,
    I/O User's II, A-6
                                                          DECthreads, cma-31
SS$_NODISKQUOTA return, I/O User's I, A-1
                                                      device driver use of, Device Support (A), 8-1
SS$ NOMOREFILES return, I/O User's I, A-1
                                                      displaying contents, System Dump Analyzer,
SS$_NONEXDRV return, I/O User's I, A-3, A-7
                                                          SDA-157
SS$_NONSMPDRV return, Device Support (A),
                                                      obtaining minimum size of, DECthreads,
                                                          cma-29, pthread-13
SS_NOPRIV return, I/O User's I, 7–12, 8–51,
                                                      obtaining minimum size of guard area,
    A-1; I/O User's II, A-3, A-6; Device Support
                                                          DECthreads, cma-19
    (B), 3–52, 3–61, 3–103
                                                      overflow, DECthreads, 3-5
SS$_NOQFILE return, I/O User's I, A-1
                                                      preventing and detecting overflow,
SS$_NORMAL return, I/O User's I, 8-50, 8-51,
                                                          DECthreads, cma-19, cma-31
    A-2, A-3, A-7, A-9; I/O User's II, 4-23, A-1,
                                                      routines for, DECthreads, cma-91
    A-3, A-4, A-5, A-6
                                                      sizing, DECthreads, 3-5
SS$_NOSUCHFILE return, I/O User's I, A-1
                                                      using for temporary storage, Device Support
SS$ NOTAPEOP return, I/O User's I, A-2
                                                          (A), 5–3
SS$_NOTLABELMT return, I/O User's I, A-2
                                                      variable, Debugger, 3-17, 4-1
SS$_NOTPRINTED return, I/O User's I, A-2
                                                          with DECwindows, Debugger, 1-24
SS$_NOTVOLSET return, I/O User's I, A-2
                                                    Stack frame, MACRO, 9-64
SS$_OPINCOMPL return, I/O User's I, A-3, A-7;
                                                      displaying in SDA, System Dump Analyzer,
    I/O User's II, 3-12, 6-33, A-3, A-6
                                                          SDA-79
SS$_OVRDSKQUOTA return, I/O User's I, A-2
                                                      following a chain, System Dump Analyzer,
SS$_PARITY return, I/O User's I, A-3, A-5, A-7,
                                                          SDA-79
   A-9; I/O User's II, 4-20, 4-23, 4-36, A-3,
                                                    Stack guard area
                                                      location of, DECthreads, cma-19, cma-31
SS$_PARTESCAPE return, I/O User's I, 8-7,
                                                    Stack limit
    8-30, A-9
                                                      changing size of, System Services, SYS-540
SS$_POWERFAIL return, I/O User's I, A-5; I/O
                                                      checking, DECthreads, cma-91
    User's II, 4-3, 4-20, 4-23, A-4
                                                    Stack memory, DECthreads, 3-4
SS$_QFACTIVE return, I/O User's I, A-2
                                                    Stack pointer
SS$_QFNOTACT return, I/O User's I, A-2
                                                      adjusting, System Services, SYS-14
SS$_RCT return, I/O User's I, A-3
                                                    Stack pointer symbol, Delta/XDelta, DELTA-9,
SS$_RDDELDATA return, I/O User's I, A-3
                                                       DELTA-13
SS$_SERIOUSEXCP return, I/O User's I, A-2,
                                                    Stacksize attribute, DECthreads, 2-8, cma-29,
                                                       cma-41, pthread-21
SS$_SSFAIL return, Device Support (B), 3-64,
                                                      obtaining, DECthreads, pthread–13
    3-75, 3-85, 3-93
                                                    Stack usage, Routines Intro, 2–14, 2–45
SS$_SUPERSEDE return, I/O User's I, A-2
                                                    Standard Disk Interconnect (SDI), I/O User's I,
SS$_TAPEPOSLOST return, I/O User's I, A-2
                                                        3-5
SS_TIMEOUT return, I/O User's I, 8-27, 8-50,
                                                    STARLET.OLB, Programming Resources, 5-1,
   A-3, A-5, A-7, A-9; I/O User's II, 6-33, A-3,
                                                       5 - 12
                                                      See also SYS$LIBRARY:STARLET.OLB
```

SS\$_TOOMANYVER return, I/O User's I, A-2 SS\$_TOOMUCHDATA return, I/O User's II, A-6

Statement (cont'd) Start I/O routine, System Dump Analyzer, for command definition file, Command Def, SDA-99; Device Support (A), 1-3 CDU-19 to CDU-37 See also Alternate start I/O routine format, MACRO, 2-1 activating, Device Support (B), 3-28 label, MACRO, 2-2 address, Device Support (A), 2-4, 6-4; Device operand, MACRO, 2-3 Support (B), 1-30, 4-17 operator, MACRO, 2-3, C-7 checking for zero-length buffer, Device Support separator for, VAXTPU, 4-3 (B), 3–32, 3–41, 3–55 special characters, MACRO, C-6 context, Device Support (A), 4-15, 8-1 to 8-2; STAT entry point, Modular Procedures, 4-9 Device Support (B), 4–17 /STATE qualifier, Debugger, 8-8, CD-57, CD-140, entry point, Device Support (B), 4-17 CD-219, CD-247 exit method, Device Support (B), 4-18 Static memory, DECthreads, 3-4 for connect to interrupt facility, Device Support /STATIC qualifier, Debugger, CD-197 (A), 19–10, 19–15 to 19–16 Static selection, VAXTPU, 4-17 for MASSBUS device, Device Support (A), Static spin lock, Device Support (A), 3-13 Static variable, Debugger, 3-17, 4-1 functions, Device Support (A), 4-15 to 4-16 Statistical report, Analyze/RMS_File, ARMS-10 input, Device Support (B), 4-17 Statistics of CONINTERR.EXE, Device Support (A), produced by CONVERT, Convert, CONV-24 19 - 13produced by CONVERT/RECLAIM, Convert, of third-party SCSI class driver, Device CONV-24 Support (A), 17-27 to 17-28 /STATISTICS qualifier, Debugger, CD-247; File reactivating, Device Support (A), 4-18 Applications, 10-6 register usage, Device Support (A), 8-1; Device description, Analyze/RMS_File, ARMS-19 Support (B), 4-17 example of, Analyze/RMS_File, ARMS-16 suspending, Device Support (A), 4-16 format, Analyze/RMS File, ARMS-19 synchronization requirements, Device Support limitation. Analyze/RMS File, ARMS-13. (A), 3-6, 3-22, 8-5, E-9 to E-11; Device ARMS-14, ARMS-19, ARMS-20 Support (B), 4-17 overview, Analyze/RMS_File, ARMS-19 transferring control to, Device Support (A), using with /OUTPUT qualifier, Analyze/RMS_ 4-13 to 4-15, 8-1, 10-3; Device Support File, ARMS-16 (B), 3–38, 3–70 to 3–71 with CONVERT/RECLAIM, Convert, CONV-5, writing, Device Support (A), 8-1 to 8-7 CONV-24 Starting a transaction, System Services, SYS-629, with wildcard characters, Analyze/RMS_File, SYS-631, SYS-633 ARMS-10 Starting key position, File Def Language, FDL-29 Statistics report, File Applications, 10-6, 10-11 Starting logical block number field Status See XAB\$L_SBN field See Port Startup file, VAXTPU, 1-10 to 1-11, 4-21 to 4-33 See SCSI command command file, VAXTPU, 1-10 See SCSI status byte definition, VAXTPU, 1-10 Status line initialization file, VAXTPU, 1-10 default information, VAXTPU, 7-77 order of execution, VAXTPU, 4-22 fields added with EVE\$BUILD, VAXTPU, G-7 section file, VAXTPU, 1–10 to G-8 "Start_character" string constant parameter to video attributes, VAXTPU, 7-476 GET INFO, VAXTPU, 7-178 Status register /START_POSITION qualifier, Debugger, CD-134; See CSR VAXTPU, 5-17 See MBA\$L SR "Start_record" string constant parameter to STATUS_LINE keyword, VAXTPU, 7-476 GET_INFO, VAXTPU, 7-178 "Status_line" string constant parameter to State, RTL Screen Management, 3-3 GET INFO, VAXTPU, 7-225 of task or thread, Debugger, 12-15, 12-19 "Status_video" string constant parameter to Statement, MACRO, 1-1 GET_INFO, VAXTPU, 7-225 character set, MACRO, 3-1 Step button comment, MACRO, 2-3 with DECwindows, Debugger, 1-9 continuation of, MACRO, 2-1

STEP command, *Debugger*, 3–6, 6–7, CD–258 and instruction-level debugging, *Debugger*, 4–18

displaying default qualifiers for, Debugger, CD-242

multiprocess program, *Debugger*, 10–5 setting default qualifiers for, *Debugger*, CD–175

vectorized program, *Debugger*, 11–3 with DECwindows, *Debugger*, 1–23

Step Instruction command, Delta/XDelta, DELTA-34

Step Instruction Over Subroutine command, Delta/XDelta, DELTA-35

Sticky default

defined, File Applications, 6-9

Stop button

with DECwindows, Debugger, 1-9, 1-20

STOP command, Debugger, 3-4

STOPPED processor state, Device Support (B), 1–16

STOPPING processor state, Device Support (B), 1–16

Storage, Modular Procedures, 2–12 heap, Modular Procedures, 2–12 initializing, Modular Procedures, 3–14 stack, Modular Procedures, 2–12 static, Modular Procedures, 2–13, A–5 summary, Modular Procedures, 2–15 types of, DECthreads, 3–3

STR\$ADD, RTL String Manipulation, STR-3 STR\$ANALYZE_SDESC, RTL String

Manipulation, 2-4, STR-7

STR\$APPEND, RTL String Manipulation, 2–9, STR–9

STR\$CASE_BLIND_COMPARE, RTL String Manipulation, STR-11

 $\begin{array}{ll} {\rm STR\$COMPARE}, & RTL \ String \ Manipulation, \\ {\rm STR-13} \end{array}$

 $\begin{array}{ll} {\rm STR\$COMPARE_EQL}, \ RTL \ String \ Manipulation}, \\ {\rm STR-15} \end{array}$

STR\$COMPARE_MULTI, RTL String Manipulation, STR-17

STR\$CONCAT, RTL String Manipulation, 2–9, STR–20

STR\$COPY_DX, RTL String Manipulation, 2-7, 2-8, STR-23

STR\$COPY_R, RTL String Manipulation, STR-25 STR\$DIVIDE, RTL String Manipulation, STR-28 STR\$DUPL_CHAR, RTL String Manipulation, STR-32

 $\begin{array}{cccc} {\rm STR\$ELEMENT}, & RTL \ String \ Manipulation, \\ {\rm STR-34} \end{array}$

STR\$FIND_FIRST_IN_SET, RTL String Manipulation, STR-36

STR\$FIND_FIRST_NOT_IN_SET, RTL String Manipulation, STR-38 STR\$FIND_FIRST_SUBSTRING, RTL String Manipulation, STR-41

 $\begin{array}{ll} {\rm STR\$FREE1_DX}, & RTL \ String \ Manipulation, \\ {\rm STR-45} \end{array}$

 $\begin{array}{ll} {\rm STR\$GET1_DX}, & RTL \ String \ Manipulation, \\ {\rm STR-46} \end{array}$

STR\$GET1_DX routine, File Applications, 5–10 STR\$LEFT, RTL String Manipulation, 2–9, STR-48

STR\$LEN_EXTR, RTL String Manipulation, STR-51

 $\begin{array}{ll} {\rm STR\$MATCH_WILD}, & RTL \ String \ Manipulation, \\ {\rm STR-55} \end{array}$

STR\$MUL, RTL String Manipulation, STR-58 STR\$POSITION, RTL String Manipulation, STR-62

 $\begin{array}{ll} {\rm STR\$POS_EXTR}, & RTL \ String \ Manipulation, \ 2-9, \\ {\rm STR-65} \end{array}$

STR\$PREFIX, RTL String Manipulation, 2–9, STR-68

STR\$RECIP, RTL String Manipulation, STR-70 STR\$REPLACE, RTL String Manipulation, STR-74

STR\$RIGHT, RTL String Manipulation, 2–9, STR-77

STR\$ROUND, RTL String Manipulation, STR-80 STR\$TRANSLATE, RTL String Manipulation, STR-84

STR\$TRIM, RTL String Manipulation, STR-87 STR\$UPCASE, RTL String Manipulation, STR-89

STR built-in procedure, VAXTPU, 7–520 to 7–522 STREAM carriage control, Convert, CONV-2 STREAM format, File Def Language, FDL-35 Streamlined synchronization image, Device Support (A), 13–28

loading, Device Support (A), E-2

Stream record format, $\ File\ Applications,\ 2-12$

Stream record format option

See FAB\$C_STM option

Stream record format with carriage return option See FAB\$C_STMCR option

Stream record format with line feed option See FAB\$C_STMLF option

STREAM_CR format, File Def Language, FDL-35 STREAM_LF format, File Def Language, FDL-35

vector, MACRO, 10-49

String, Command Def, CDU-4

See also Descriptor

See also String manipulation routine allocating, RTL General Purpose, OTS-96 appending source string to end of destination string, RTL String Manipulation, STR-9 comparing for equality, no padding, RTL String Manipulation, STR-15

String (cont'd) String (cont'd) comparing two, RTL String Manipulation, STR-13 comparing without regard to case, RTL String Manipulation, STR-11 concatenating, RTL String Manipulation, STR-20; VAXTPU, 3-4 converting contents of buffer to using STR, VAXTPU, 7-520 converting contents of range to using STR, VAXTPU, 7-520 converting to uppercase, RTL String Manipulation, STR-89 copying by descriptor, RTL General Purpose, OTS-90; RTL Library, LIB-336; RTL String Manipulation, STR-23 copying by reference, RTL General Purpose, OTS-92; RTL Library, LIB-338; RTL String Manipulation, STR-25 depositing ASCII, Delta/XDelta, DELTA-37 dividing two decimal strings, RTL String Manipulation, STR-28 dynamic length, RTL String Manipulation, 2-2, 2-3, 2-11, 2-12 evaluation rules, RTL String Manipulation, finding substring, RTL String Manipulation, STR-62 fixed-length, RTL String Manipulation, 2-1 formatting output, System Services, SYS-221 freeing, RTL General Purpose, OTS-95 how denoted, National Char Set, NCS-7 inserting source string at front of destination, RTL String Manipulation, STR-68 limit on numeric representation, National Char Set, NCS-7 maximum length of, RTL String Manipulation, null. RTL String Manipulation, 2-11 output length argument, RTL String Manipulation, 2-8 ranges used in collating sequence, National Char Set, NCS-18 reciprocal of decimal, RTL String Manipulation, STR-70 removing trailing blanks and tabs, RTL String Manipulation, STR-87 rounding or truncating decimal, RTL String Manipulation, STR-80 searching for file specification in, System Services, SYS-236 semantics of, RTL String Manipulation, 2-1, skipping characters in, RTL Library, LIB-379 to insert with FAO, VAXTPU, 7-138 to insert with MESSAGE, VAXTPU, 7-268 to insert with MESSAGE_TEXT, VAXTPU,

Manipulation, STR-84 String argument, MACRO, 4-3 String arithmetic addition of decimal strings, RTL String Manipulation, STR-3 division of decimal strings, RTL String Manipulation, STR-28 multiplication, RTL String Manipulation, STR-58 String constants, VAXTPU, 3-5 String data type, Routines Intro, 2-17 character, MACRO, 8-7 leading separate numeric, MACRO, 8-11 packed decimal, MACRO, 8-13 trailing numeric, MACRO, 8-8 STRING data type, VAXTPU, 2-23 to 2-24 String descriptor, RTL Library, LIB-10; RTL String Manipulation, STR-7 String instructions, MACRO, 9-126, 9-144 String manipulation routine, RTL String Manipulation, 2-1 descriptor classes and string semantics, RTL String Manipulation, 2-4 how to select, RTL String Manipulation, 2-8 list of severe errors, RTL String Manipulation, reading input string arguments, RTL String Manipulation, 2-6 writing output string arguments, RTL String Manipulation, 2-6 String operator in macro, MACRO, 4-8 /STRING qualifier, Debugger, 6-6, CD-115 String type, Debugger, 4-15, 4-26 String value, File Def Language, FDL-2, FDL-32 String with bounds descriptor, Routines Intro, Strong definition, Linker, 2-9, 2-10 Strong reference, Linker, 2-9 Structure error, Analyze/RMS_File, ARMS-13 examining, Analyze/RMS_File, ARMS-15 of file, Analyze/RMS_File, ARMS-1, ARMS-10 of indexed file, Analyze/RMS File, ARMS-6; File Def Language, FDL–29 of relative file, Analyze/RMS_File, ARMS-2 of sequential file, Analyze/RMS_File, ARMS-1 pointer, Analyze/RMS_File, ARMS-21 STS (status) field See also Completion status field See also FAB\$L_STV field contents, RMS, 2-6 STUFF_SELECTION client message, VAXTPU, 7 - 344STV (status value) field See also Completion status value field

translating matched characters, RTL String

7 - 271

STV (status value) field (cont'd) Subprocess contents, RMS, 2-6 built-in procedures (cont'd) SUBB2 (Subtract Byte 2 Operand) instruction, ATTACH, VAXTPU, 7-35 MACRO, 9-30 CREATE_PROCESS, VAXTPU, 7-67 SUBB3 (Subtract Byte 3 Operand) instruction, RECOVER_BUFFER, VAXTPU, 7-307 MACRO, 9-30 SEND, VAXTPU, 7-342 SEND_EOF, VAXTPU, 7-346 Subclass finding out if a widget is a member of, built-in procedures for defining VAXTPU, 7-214 SPAWN, VAXTPU, 7-515 Subconditional assembly block directive, MACRO, connecting to using LIB\$ATTACH, RTL Library, 2-9 6-43 .IF_FALSE, MACRO, 6-43 creating, RTL Screen Management, 4-2 .IF_TRUE, MACRO, 6-43 with LIB\$SPAWN, Programming Resources, 2-2; RTL Library, 2-9 .IF_TRUE_FALSE, MACRO, 6-43 Subcontroller, Device Support (B), 1-33 with PPL\$CREATE_PROCESS, SUBD2 (Subtract D floating 2 Operand) Programming Resources, 2-4 instruction, MACRO, 9-123 with PPL\$ routines, Programming SUBD3 (Subtract D_floating 3 Operand) Resources, 4-16 instruction, MACRO, 9-123 with SMG\$ routines, Programming SUBF2 (Subtract F_floating 2 Operand) Resources, 7-16 instruction, MACRO, 9-123 with SYS\$CREPRC, Programming SUBF3 (Subtract F_floating 3 Operand) Resources, 2-3 definition of, RTL Parallel Processing, 1-2 instruction, MACRO, 9-123 deleting, RTL Screen Management, 4-2; SUBG2 (Subtract G_floating 2 Operand) instruction, MACRO, 9-123 VAXTPU, 7-67 SUBG3 (Subtract G_floating 3 Operand) deleting with PPL\$ routines, Programming instruction, MACRO, 9-123 Resources, 4–16 SUBH2 (Subtract H_floating 2 Operand) disk and directory default, System Services instruction, MACRO, 9-123 Intro, 8-5 SUBH3 (Subtract H floating 3 Operand) executing commands, RTL Screen instruction, MACRO, 9-123 Management, 4-3 Subkeys, Librarian, LIB-5, LIB-6 image, System Services Intro, 8-3 SUBL2 (Subtract Long 2 Operand) instruction, input, output, and error device, System MACRO, 9-30 Services Intro, 8-3 SUBL3 (Subtract Long 3 Operand) instruction, priority setting, Programming Resources, 2-12 MACRO, 9-30 Sublock, System Services Intro, 13–11 program debugging, Programming Resources, 2-5Submit command file option restrictions, VAXTPU, 2-20 See FAB\$V_SCF option running VAXTPU from, VAXTPU, A-5 SUBMIT_ON_CLOSE attribute, File Def within VAXTPU, VAXTPU, 7-67 Language, FDL-24 Subroutine Subordinate definition of. Routines Intro. 2-3 creation of, RTL Parallel Processing, 2-3 SUBSTR built-in procedure, VAXTPU, 7-523 to definition of, RTL Parallel Processing, 1-2 7 - 525deletion of, RTL Parallel Processing, 2-3 Substring, RTL String Manipulation, 2-10 notification of abnormal termination, RTL replacing, RTL String Manipulation, STR-74 Parallel Processing, 2-3 .SUBTITLE directive, MACRO, 6-94 retrieving information about, RTL Parallel Subtitle listing control directive Processing, 2-4 (.SUBTITLE), MACRO, 6-94 SUBP4 (Subtract Packed 4 Operand) instruction, Subtraction MACRO, 9-167 quadword times, RTL Library, LIB-397 SUBP6 (Subtract Packed 6 Operand) instruction, two's complement, RTL Library, LIB-400 MACRO, 9-167 Subtraction operator (-), System Dump Analyzer, Subprocess, System Services Intro, 8-2; System SDA-12 Services, SYS-111; RTL Screen Management, SUBW2 (Subtract Word 2 Operand) instruction, 4-2; System Dump Analyzer, SDA-162 MACRO, 9-30 at DCL level, VAXTPU, 7-67 built-in procedures

SUPERSEDE attribute, File Def Language, SUBW3 (Subtract Word 3 Operand) instruction, MACRO, 9-30FDL-24 Success completion routine, RMS, 2-5 Supersede existing file option SUCCESS keyword, VAXTPU, 7-479 See FAB\$V_SUP option Supersede option, File Applications, 4-27, 5-9 Successor See Logical successor SUPERSEDE secondary attribute, File /SUCCESS qualifier Applications, 4-27 in message definition, Message, MSG-22 Supervisor-mode (PSL\$C_SUPER) constant "Success" string constant parameter to GET_INFO, for FAB\$V_CHAN_MODE, RMS, 5-5 VAXTPU, 7-207 /SUPERVISOR qualifier, System Dump Analyzer, /SUFFIX qualifier, Debugger, 10–14, CD–20, SDA-157 CD-69, CD-94, CD-97, CD-104, CD-110, Supervisor stack CD-112, CD-119, CD-161, CD-212 displaying contents, System Dump Analyzer, SDA-157 Summary extended address block Supervisor stack pointer, System Dump Analyzer, See XABSUM block SDA-14 Summary of OPCODES SUP option, File Def Language, FDL-24 alphabetic order, MACRO, D-1 Supported terminals, VAXTPU, 1-8 numeric order, MACRO, D-12 Surface_Plot graph, File Applications, 4–12, A–2 /SUMMARY qualifier, System Dump Analyzer, Suspension, System Services Intro, 8–10, 8–13 SDA-119 compared with hibernation, System Services compared with /CHECK qualifier, Intro, 8-11 Analyze/RMS_File, ARMS-20 SVPCTX (Save Process Context) instruction, description, Analyze/RMS_File, ARMS-20 MACRO, 9-194 example of, Analyze/RMS File, ARMS-20 Swap mode format, Analyze/RMS File, ARMS-20 changing, Programming Resources, 10-4 limitation, Analyze/RMS_File, ARMS-13, Swapper ARMS-14, ARMS-20 global symbols, System Dump Analyzer, overview, Analyze/RMS_File, ARMS-20 SDA-61 using with /OUTPUT qualifier, Analyze/RMS_ Swapping File, ARMS-16 by suspension, System Services Intro, 8–13 with wildcard characters, Analyze/RMS_File, vector, RTL Math, MTH-187 ARMS-10 Swapping I/O function, Device Support (B), 1–40 Summary report, Analyze/RMS File, ARMS-10 SWI\$GL FQFL Summary XAB replaced by CPU\$Q SWIQFL, Device Support for key information, RMS, 13-1 (A). E-14 Sum of absolute values Switch, File Def Language, FDL-2 of a vector, RTL Math, MTH-152 Symbiont SUMSLP See also Queue See SUMSLP Utility allocating memory, Utility Routines, SMB-4 SUMSLP Utility (SUMSLP), Programming carriage control Resources, 1-20 to 1-21 processing of, Utility Routines, PSM-12 command file, running SUMSLP from a, connecting to a device, Utility Routines, SMB-4 SUMSLP, SUM-12 device, Utility Routines, PSM-2 directing output from, SUMSLP, SUM-14 environments, Utility Routines, SMB-5 examples, SUMSLP, SUM-21 function, Utility Routines, PSM-4, SMB-2 how SUMSLP processes files, SUMSLP, input, Utility Routines, PSM-2, SMB-1 SUM-7 INPSMB.EXE file, Utility Routines, input source file, SUMSLP, SUM-1 SMB-1invoking, SUMSLP, SUM-2, SUM-14 input routines output file, SUMSLP, SUM-3demand, Utility Routines, PSM-6 qualifiers, SUMSLP, SUM-15 to SUM-20 internal logic, Utility Routines, PSM-5 SUMSLP editing commands, specifying, main format routine, Utility Routines, SUMSLP, SUM-3 PSM-13SUMSLP files, SUMSLP, SUM-1 main input routine, Utility Routines, SUMSLP messages, SUMSLP, SUM-13 PSM-11 update file, SUMSLP, SUM-1 main output routine, Utility Routines, PSM-15

Symbiont (cont'd) Symbol, Command Def, CDU-4; Patch, PAT-7 to invoking VMS print symbiont, Utility Routines, PAT-14; System Dump Analyzer, SDA-13 to PSM-23 SDA-14, SDA-23; MACRO, 3-4; VAXTPU, job controller 3-3 to 3-4 communication with, Utility Routines, See also DST, GST, RST, Scope ambiguity, resolving, Debugger, 5-7 job controller request, Utility Routines, SMB-5 with DECwindows, Debugger, 1–26 asynchronous, Utility Routines, SMB-6 built-in, Debugger, C-5, D-2 processing, Utility Routines, SMB-10 commands that affect, Patch, PAT-14 reading, Utility Routines, SMB-10 compiler generated type, Debugger, 4-4 responding, Utility Routines, SMB-13 creating, Patch, PAT-11, PAT-50, PAT-51 synchronous, Utility Routines, SMB-6 cross-reference listing, Modular Procedures, modifying, Utility Routines, PSM-7, SMB-4 format routine, Utility Routines, PSM-13 cross-referencing, MACRO, 6-16, 6-66 guidelines, Utility Routines, PSM-8 defining, Programming Resources, 5-11; initialization routine, Utility Routines, Debugger, 8-6, CD-48 PSM-16 defining for SDA, System Dump Analyzer, input routine, Utility Routines, PSM-10 SDA-43 integration of routines, Utility Routines, definition, Modular Procedures, A-6; Linker, PSM-172-7output routine, Utility Routines, PSM-14 determining value of, Patch, PAT-60; restrictions, Utility Routines, PSM-8 MACRO, 3-6 multistream, Utility Routines, SMB-9 displaying, Debugger, 5-9, 8-6, CD-48, multithreaded, Utility Routines, PSM-3 CD-243; System Dump Analyzer, SDA-14 output, Utility Routines, PSM-2, SMB-1 with DECwindows, Debugger, 1-24 PRTSMB.EXE file, Utility Routines, entering into symbol table, Patch, PAT-78 SMB-1evaluating, System Dump Analyzer, SDA-161 print symbiont external, MACRO, 6-34, 6-101 internal logic, Utility Routines, PSM-5 global, Programming Resources, 5-11; modifying, Utility Routines, PSM-1 Debugger, 5-4, 5-10; Linker, 2-8; Patch, processing it performs, *Utility Routines*, PAT-7; MACRO, 3-6, 6-34, 6-37, 6-96, PSM-16 - 101user-written, Utility Routines, PSM-1 image setting, Debugger, 5–14 processing it performs, Utility Routines, information about, in map, Linker, 5-7 PSM-5in message source file, Message, MSG-7 process-permanent file, Utility Routines, in operand field, MACRO, 3-6 SMB-4 in operator field, MACRO, 3-6 server, Utility Routines, PSM-2, SMB-1 in place of numbers, Modular Procedures, 3-8, single stream, Utility Routines, SMB-9 A–6 stream label, Debugger, 3-10, 5-1 active. Utility Routines, PSM-3 line number, Debugger, 3-11, 5-1 multiple streams, Utility Routines, PSM-3 listing, System Dump Analyzer, SDA-161 single stream, Utility Routines, PSM-3 list of, Delta/XDelta, DELTA-9 SYSGEN MAXBUF parameter, Utility loading into the SDA symbol table, System Routines, PSM-7Dump Analyzer, SDA-59 type, *Utility Routines*, SMB-1 local, *Programming Resources*, 5–11; user-written, Utility Routines, SMB-1, SMB-3 Debugger, 5-4; Linker, 2-8; Patch, PAT-8; guidelines, Utility Routines, SMB-4 MACRO, 3-6user-written routines macro name, MACRO, 3-6 interfaces, Utility Routines, PSM-7 made available to debugger, MACRO, 6-22 VMS printer, Utility Routines, SMB-1 module name, Patch, PAT-8 Symbiont/Job Controller Interface routines module setting, Debugger, 5-6 with DECwindows, Debugger, 1-26 See SMB routines name, System Dump Analyzer, SDA-13, Symbiont thread, Utility Routines, PSM-3 SDA-43 . symbol, Delta/XDelta, DELTA-9 not in symbol table, Debugger, 5-6, 5-15 with DECwindows, Debugger, 1-26 not unique, Debugger, 5-9

Symbol	Symbol definition
not unique (cont'd)	\$FABDEF (cont'd)
with DECwindows, Debugger, 1–26	for defining symbols to USEROPEN
overloaded, Debugger, 12–26, E–4, E–17	routine, File Applications, 5–10
passing, Patch, PAT-7	\$NAMDEF
patch area, Patch, PAT-18, PAT-38	for defining symbols to USEROPEN
PATCH symbol table, Patch, PAT-7	routine, File Applications, 5–10
path name, Patch, PAT-12	\$RABDEF
permanent, MACRO, 3-5, 3-6	for defining symbols to USEROPEN
program section name, Patch, PAT-8	routine, File Applications, 5-10
referring to, Programming Resources, 5-10	Symbol definition for shareable image, MACRO,
register name, MACRO, 3-5, 3-6	6–96
relation to address expression, Debugger, 4-4	Symbol definition macro
with DECwindows, Debugger, 1–22	description, RMS, 3-1
relation to path name, Debugger, 5-9	using, RMS, 3-7
with DECwindows, Debugger, 1–10	Symbol for shareable image directive
removing from symbol table, Patch, PAT-41	(.TRANSFER), MACRO, 6–96
representing executive modules, System Dump	Symbolic address
Analyzer, SDA-104	use in locating start of control block, RMS, 3-7
routine, Debugger, 3-10, 5-1	Symbolic bit offset
routine name, Patch, PAT-8	use in specifying options, RMS, 2–3
search based on call stack, <i>Debugger</i> , 5–11, CD-166	Symbolic debugger
with DECwindows, Debugger, 1–9, 1–26	See Debugger
search conventions, Debugger, 3–11, 5–8,	Symbolic definition macro, System Services Intro,
CD-167	2–8
with DECwindows, Debugger, 1-9, 1-26	Symbolic instruction label
SET SCOPE command, Debugger, 5–11,	function of, Patch, PAT-9
CD-166	side effects when using patch, <i>Patch</i> , PAT-9 Symbolic mode, <i>Debugger</i> , 4-13, CD-151
shareable image, Debugger, 5-13	Symbolic name
with DECwindows, Debugger, 1–28	assigning to starting address, <i>Patch</i> , PAT-18,
show symbol	PAT-38
with DECwindows, Debugger, 1-24	creating, Patch, PAT-50
SHOW SYMBOL command, Debugger, 5-9	for argument lists, System Services Intro, 2-7
storage, Programming Resources, 5–10	Symbolic naming exception
suppressing, MACRO, 6-23	control block, RMS, 2-3
symbolic instruction label, Patch, PAT-9	Symbolic offset
symbolic mode, Debugger, 4–13, CD–151	control block, RMS, 2-4
traceback information, Debugger, 5-3	format, RMS , 2–2
transferral to VAX Symbolic Debugger, MACRO, 6–18	use in locating control block fields, RMS, 2-2
translating address value into, Patch, PAT-13	/SYMBOLIC qualifier, Debugger, 4–13, CD–84
translating into address values, <i>Patch</i> , PAT-13,	Symbolize
PAT-17	address, Debugger, 3–12, 4–13, CD–263
types of, Linker, 2–8	with DECwindows, Debugger, 1–25
undefined, MACRO, 6–22	register, Debugger, 4-13, CD-263
universal, Programming Resources, 5-5;	with DECwindows, Debugger, 1–25
Debugger, 5-4, 5-5, 5-12, 5-15; Linker,	vector register, Debugger, 11-1 SYMBOLIZE command, Debugger, 3-12, 4-13,
2–8; Patch, PAT–8, PAT–9	CD-263
unresolved, Programming Resources, 5–12	Symbol list
user-defined, System Dump Analyzer, SDA-43;	defining, Device Support (B), 2–29 to 2–30
MACRO, 3–5, 3–6	Symbol record
variable, Debugger, 3–15, 4–1, 4–14, 5–1	
vector register, Debugger, 11-1	See Symbol Symbol reference, Linker, 2-7
Symbol attribute directive	Symbol reference, <i>Linker</i> , 2–1 Symbol resolution, <i>Linker</i> , 1–6, 2–3, 2–7, 2–10,
(.WEAK), <i>MACRO</i> , 6–101	4–8, 6–14, LINK–19, LINK–27, LINK–31
Symbol definition	- 0, 0 - 1, marita 10, milita 21, milita 01
\$FABDEF	

Synchronization (cont'd) /SYMBOLS-/NOSYMBOLS qualifier SHOW VECTOR_MODE command, Debugger, with DELETE command, Patch, PAT-53 11-19, CD-253 with DEPOSIT command, Patch, PAT-56 with EXAMINE command, Patch, PAT-63 using asynchronous system traps, Programming Resources, 4–7 with INSERT command, Patch, PAT-68 using detached processes. Programming with REPLACE command, Patch, PAT-72 Resources, 4-8 with SET MODE command, Patch, PAT-77 using events flags, Programming Resources, with VERIFY command, Patch, PAT-91 Symbol search mode, Patch, PAT-17 using process priority, Programming Resources, See also Entry and display modes SYMBOLS-NOSYMBOLS mode, Patch, PAT-16 using semaphores with PPL\$ routines, /SYMBOLS qualifier, Message, MSG-13 Programming Resources, 4-17 for EVALUATE, System Dump Analyzer, using spin locks with PPL\$ routines, SDA-48 Programming Resources, 4–16 Symbol table, Patch, PAT-7, PAT-12 using subprocesses, Programming Resources, See also DST, GST, RST 4-8 See also SDA symbol table Synchronization element See also System symbol table comparing use of, RTL Parallel Processing, 5-7 of a library, Linker, 6-13 definition of, RTL Parallel Processing, 1-2 of a shareable image, Linker, 1-5, 2-2 retrieving information about, RTL Parallel specifying an alternate SDA, System Dump Processing, 4-1Analyzer, SDA-37 Synchronization image Symbol table file full-checking, Device Support (A), 13-28, E-2, content of, Linker, 1-5, 2-3 E-17 to E-18 input to linker, Linker, 1-5, 2-3, 6-3 streamlined, Device Support (A), 13-28, E-2 output of linker, Linker, 2-6, LINK-16 uniprocessing, Device Support (A), 13-28, E-2 reading into SDA symbol table, System Dump Synchronization objects Analyzer, SDA-59 atomic queue, DECthreads, 2-16 used as linker input, Linker, 1-5 condition variable, DECthreads, 2-12 /SYMBOL_TABLE qualifier, Linker, 2-6, join, DECthreads, 2–16 LINK-16 mutex, DECthreads, 2-9 SYNC (Scalar/Vector Instruction Synchronization) Synchronization techniques, Device Support (A), instruction, MACRO, 10-20, 10-37, 10-88 1-7, 3-1 to 3-27 Synchronization, *Programming Resources*, 1–24; See also Fork queue RTL Parallel Processing, 4-1; MACRO, 10-37 See also IPL barrier, Programming Resources, 4-17 See also Resource wait queue binary semaphore, RTL Parallel Processing, See also Spin lock Synchronization with parallel processing routines counting semaphore, RTL Parallel Processing, See Parallel processing critical section, RTL Parallel Processing, 4-9 SYNCHRONIZE VECTOR_MODE command, deadlock, RTL Parallel Processing, 5-4 Debugger, 11-19, CD-264 debugging vectorized program, Debugger, Synchronous backplane interconnect 11-19, CD-194, CD-253, CD-264 See SBI delivery of vector exception, Debugger, 11-19, Synchronous communications device, Device 11 - 22Support (B), 1–76 element, RTL Parallel Processing, 4-1 Synchronous input/output, Programming exception, Routines Intro, 2-13 Resources, 7–46 memory, Routines Intro, 2-13 Synchronous memory management exception mutex, DECthreads, cma-77, pthread-80 handling, MACRO, 10-30 passing control to another image, Synchronous operation, File Applications, 8–17 Programming Resources, 4-19 Synchronous SCSI data transfer mode semaphore, RTL Parallel Processing, 4-9 determining REQ-ACK offset setting, Device operations on, RTL Parallel Processing, Support (B), 2-75 4 - 10determining transfer period setting, Device SET VECTOR_MODE command, Debugger, Support (B), 2–75 11-19, CD-194

Synchronous SCSI data transfer mode (cont'd) SYS\$ASCTIM, Programming Resources, 3-24; enabling, I/O User's I, 11-7, 11-13; Device System Services, SYS-26 Support (A), 17-13; Device Support (B), example, System Services Intro, 10-2 RTL jacket routine for, RTL Library, LIB-401 setting REQ-ACK offset, Device Support (A), SYS\$ASCTOID, System Services Intro, 3-7; 17-13; Device Support (B), 2-88 System Services, SYS-29 setting transfer period, Device Support (A), SYS\$ASSIGN, Programming Resources, 7-45; 17–13; Device Support (B), 2–88 System Services, SYS-31; I/O User's I, 7-2, Synchronous signals, *DECthreads*, A-4 8-17, 8-52; I/O User's II, 2-9, 5-6, 6-2; Synchronous status option Device Support (A), 1-6, 2-3, 4-5, 19-9; See FAB\$V_SYNCSTS option Device Support (B), 1-11, 1-77, 1-78 example, System Services Intro, 7-12 See RAB\$V_SYNCSTS option for template device, Device Support (B), 4-6 Synchronous system service, System Services SYS\$BINTIM, Programming Resources, 3-24; Intro, 2–11 System Services Intro, 10-3; System Services, SYNONYM clause SYS-36; RMS, 3-10 for DEFINE VERB statement, Command Def. SYS\$BRKTHRU, System Services, SYS-39 CDU-35 SYS\$BRKTHRUW, System Services, SYS-47 Synonyms for commands, VAXTPU, G-5 to G-7 SYS\$CANCEL, System Services, SYS-48; I/O Syntax, VAXTPU, 4-3 User's I, 4-14; Device Support (A), 1-4, 11-6, See also DEFINE SYNTAX statement 11-8, 18-17, 19-19; Device Support (B), 1-30, changing, Command Def, CDU-5 to CDU-6 SYNTAX clause example, System Services Intro, 7–19 for DEFINE TYPE statement, Command Def, SYS\$CANEXH, System Services, SYS-50 CDU-28 SYS\$CANTIM, System Services, SYS-51 for QUALIFIER clause, Command Def, example, System Services Intro, 10-6 CDU-25, CDU-34 SYS\$CANWAK, System Services Intro, 10-7; Syntax-name verb clause, Command Def, CDU-5 System Services, SYS-53 Syntax rules for PATCH commands SYS\$CHANGE_ACL, System Services Intro, 3-17, delimiting parameter values, Patch, PAT-23 3-23; System Services, SYS-56 entering ASCII data strings, Patch, PAT-20 SYS\$CHECK_ACCESS, System Services Intro, entering comments, Patch, PAT-23 3-30: System Services, SYS-62 entering numeric data, Patch, PAT-22 SYS\$CHFDEF macro, System Services Intro, 11-7 entering VAX MACRO instructions, Patch, SYS\$CHKPRO, System Services Intro, 3-28; PAT-21 System Services, SYS-67 operators for addressing locations, *Patch*, SYS\$CLOSE PAT-24See Close service operators for arithmetic expressions, Patch, SYS\$CLREF, System Services Intro, 4-4; System PAT-23 Services, SYS-74 VAX MACRO instructions with same opcodes, SYS\$CMEXEC, System Services, SYS-75 Patch. PAT-21 SYS\$CMKRNL, System Services, SYS-77 SYS\$ABORT_TRANS, System Services Intro, SYS\$CONNECT 14–4; System Services, SYS–3 SYS\$ABORT_TRANSW, System Services, SYS-7 See Connect service SYS\$ADD_HOLDER, System Services Intro, 3-9; SYS\$CREATE, Programming Resources, 8-8 System Services, SYS-8 See also Create service SYS\$ADD_IDENT, System Services Intro, 3–8; SYS\$CREATE_RDB, System Services Intro, 3-6 System Services, SYS-11 SYS\$CRELNM, System Services, SYS-81 SYS\$ADJWSL, System Services Intro, 12-6 SYS\$CRELNT, System Services, SYS-87 SYS\$ALLOC, System Services, SYS-19; Device SYS\$CREMBX, Programming Resources, 3-8; Support (B), 1–74, 1–77 System Services, SYS-93; I/O User's I, 7-1 example, System Services Intro, 7–21 SYS\$CREPRC, System Services, SYS-100 SYS\$AR_JOBCTLMB, Device Support (A), 9-7, example, System Services Intro, 8-3 SYS\$CRETVA, Programming Resources, 10-3 SYS\$AR_OPRMBX, Device Support (A), 10-7, E-7 SYS\$CRMPSC, Programming Resources, 8-4, SYS\$ASCEFC, System Services, SYS-22 8-5; Device Support (A), 19-5 to 19-6, 19-8

SYS\$DACEFC, System Services, SYS-127

SYS\$DALLOC, System Services, SYS-129; SYS\$ERROR warning message, Convert, CONV-3 Device Support (A), 11-8, 18-17; Device SYS\$EXIT, System Services Intro, 8-14; System Support (B), 1-30, 1-77, 4-4 Services, SYS-217 SYS\$DASSGN, Programming Resources, 8-9; issuing for specified process, System Services, System Services, SYS-131; I/O User's I, 7-2; SYS-249 I/O User's II, 6-2; Device Support (A), 11-7, SYS\$EXPREG, Programming Resources, 10-3 11-8, 18-17; Device Support (B), 1-30, 1-77, example, System Services Intro, 12-3 SYS\$EXTEND example, System Services Intro, 7-18 See Extend service SYS\$DCLAST SYS\$FAO, Programming Resources, 3-24; example, System Services Intro, 5-5 System Services, SYS-221; RTL Library, SYS\$DCLCMH, System Services, SYS-135 4-13, 4-16, 4-27 SYS\$DCLEXH, Programming Resources, 9-27; directive System Services, SYS-137 format of, System Services, SYS-223 example, System Services Intro, 8-15 list of. System Services, SYS-224 SYS\$DELETE example, System Services Intro, 7-29; System See Delete service Services, SYS-228, SYS-229 SYS\$DELLNM, System Services, SYS-139 RTL jacket routine for, RTL Library, LIB-404 SYS\$DELMBX, System Services, SYS-142; I/O SYS\$FAOL, System Services, SYS-221 *User's I*, 7–3 example, System Services, SYS-231 SYS\$DELPRC, System Services Intro, 8-18; SYS\$FILESCAN, System Services, SYS-236; File System Services, SYS-144 Applications, 5-8 SYS\$DELTVA, Programming Resources, 8-9 SYS\$FIND SYS\$DEQ, System Services, SYS-149 See Find service example, System Services Intro, 13-13 SYS\$FIND_HELD, System Services Intro, 3-9, SYS\$DEVICE_SCAN, System Services, SYS-154 3-14; System Services, SYS-241 SYS\$DISCONNECT SYS\$FIND_HOLDER, System Services Intro, 3-9, See Disconnect service 3-14; System Services, SYS-244 SYS\$DISK SYS\$FINISH_RDB, System Services, SYS-247 applied to file specification, File Applications, SYS\$FLUSH See Flush service as SDA output, System Dump Analyzer, SYS\$FORCEX, System Services, SYS-249 SDA-72See also SYS\$DELPRC global read, System Dump Analyzer, SDA-60 example, System Services Intro, 8-15 SYS\$DISMOU, System Services Intro, 7–24; SYS\$FORMAT_ACL, System Services Intro, 3–17, System Services, SYS-161 3-23: System Services, SYS-252 SYS\$DISMOUNT, I/O User's I, 1–32 SYS\$FORMAT_AUDIT, System Services, SYS\$DISPLAY SYS-262 See Display service SYS\$FREE SYS\$DLCEFC, System Services, SYS-165 See Free service SYS\$DNS system service SYS\$GET See \$DNS system service See Get service SYS\$END_TRANS, System Services Intro, 14-4; SYS\$GETDVI, Programming Resources, 7-50; System Services, SYS-196 I/O User's I, 6-11 SYS\$END_TRANSW, System Services, SYS-201 asynchronous DDCMP driver, I/O User's II, SYS\$ENQ, System Services, SYS-202 5-2example, System Services Intro, 13-6, 13-9 card reader, I/O User's I, 2-5 SYS\$ENQW, System Services, SYS-213 disk, I/O User's I, 3-22 SYS\$ENTER DMC11/DMR11 device, I/O User's II, 1-3 DMP11/DMF11 device, I/O User's II, 2-3 See Enter service DR11-W/DRV11-WA device, I/O User's II, 3-8 SYS\$ERAPAT, System Services Intro, 3–32; DR32 device, I/O User's II, 4-3 System Services, SYS-214 Ethernet/802 drivers, I/O User's II, 6-14 SYS\$ERASE line printer, I/O User's I, 5–3 See Erase service LPA11-K device, I/O User's I, 4-5 SYS\$ERROR, Programming Resources, 9–24 mailbox, I/O User's I, 7-4

SYS\$GETDVI (cont'd) SCSI generic class driver, I/O User's I, 11-14 terminal, I/O User's I, 8–20 SYS\$GETDVIW, System Services, SYS-285 SYS\$GETJPI, System Services Intro, 9-1; System Services, SYS-286 See also SYS\$PROCESS SCAN AST in target process, System Services Intro, 9 - 16buffer, System Services Intro, 9-14, 9-15 control flags, System Services Intro, 9–16 example, System Services, SYS-303 item list, System Services Intro, 9-6, 9-13 specifying criteria to select processes example, System Services Intro, 9-9 obtaining information about all processes on the local system, System Services Intro, 9-2, obtaining information about one process, System Services Intro, 9-2 obtaining information with wildcard search example, System Services Intro, 9-5 packing information in buffers, System Services Intro, 9–14, 9–15 searching for processes on all nodes, System Services Intro, 9–11 searching for processes on specific nodes, System Services Intro, 9–11, 9–12 searching for selected processes, System Services Intro, 9–6 specifying buffer size, System Services Intro, 9-14, 9-15 specifying criteria to select processes example, System Services Intro, 9-10 swapping processes, System Services Intro, 9-16synchronizing calls, System Services Intro, 9-11, 9-12, 9-13 using \$PROCESS_SCAN item list to specify selection criteria about processes, System Services Intro, 9-6, 9-7, 9-9, 9-10 using \$PROCESS_SCAN item-specific flags to control selection information, System Services Intro, 9–6 using \$PROCESS_SCAN search, System Services Intro, 9-6 using item list with remote procedures, System Services Intro, 9-13 using multiple \$PROCESS_SCAN contexts, System Services Intro, 9–13 using synchronous calls, System Services Intro, 9 - 13using wildcard example, System Services Intro, 9-5

using wildcard as pidadr, System Services

using wildcard search, System Services Intro,

Intro, 9-2, 9-4

SYS\$GETJPIW, System Services, SYS-305 SYS\$GETLKI, System Services, SYS-306 SYS\$GETLKIW, System Services, SYS-318 SYS\$GETMSG, System Services, SYS-319; RTL Library, 4-16SYS\$GETQUI, Programming Resources, 3-22; System Services, SYS-323 SYS\$GETQUIW, System Services, SYS-365 SYS\$GETSYI, Programming Resources, 3-22; System Services, SYS-366 SYS\$GETSYIW, System Services, SYS-381 SYS\$GETTIM, Programming Resources, 3-24; System Services Intro, 10-2; System Services, SYS-382 SYS\$GETUAI, System Services, SYS-383 SYS\$GL_JOBCTLMB replaced by SYS\$AR_JOBCTLMB, Device Support (A), E-7 SYS\$GL OPRMBX replaced by SYS\$AR_OPRMBX, Device Support (A), E-7 SYS\$GRANTID, System Services, SYS-395 SYS\$HASH_PASSWORD, System Services, SYS-399 SYS\$HIBER, System Services, SYS-402 example, System Services Intro, 8-12 use of, RTL Parallel Processing, 5-5 SYS\$IDTOASC, System Services Intro, 3-7, 3-14; System Services, SYS-404 SYS\$INIT VOL. System Services, SYS-407 SYS\$INPUT, Programming Resources, 9-24; Linker, 3-4 default value of, Programming Resources, 7-2 redefining, Programming Resources, 7-3 using with LIB\$GET_INPUT, Programming Resources, 7-3using with LIB\$PUT_OUTPUT, Programming Resources, 7–3 SYS\$LCKPAG, Programming Resources, 10-4 SYS\$LIBRARY, Linker, 6–14 SYS\$LIBRARY:IMAGELIB.OLB, Programming Resources, 5-12; Linker, 1-5, 2-4, 4-11, 5-4, 6-7, 6-14, LINK-8 searched by linker, Linker, LINK-17 SYS\$LIBRARY:STARLET.MLB as source of macros, RMS, 1-1, 3-2 SYS\$LIBRARY:STARLET.OLB, Linker, 1-5, 2-4, 6-14, LINK-8 searched by linker, Linker, LINK-17 SYS\$LKWSET, Programming Resources, 10-3; System Services Intro, 12–6 SYS\$LOADABLE_IMAGES directory, Device Support (A), E-8 SYS\$MANAGER:SYSTARTUP.COM invoking SDA, System Dump Analyzer, SDA-5 producing an SDA listing, System Dump Analyzer, SDA-5

SYS\$MANAGER:SYSTARTUP.COM (cont'd) releasing page file blocks, System Dump Analyzer, SDA-3 SYS\$MGBLSC, Programming Resources, 5-15 SYS\$MOD_HOLDER, System Services Intro, 3-12; System Services, SYS-430 SYS\$MOD_IDENT, System Services Intro, 3-12; System Services, SYS-433 SYS\$MOUNT, System Services Intro, 7-22; System Services, SYS-436 SYS\$MTACCESS, System Services Intro, 3–32; System Services, SYS-451 SYS\$NUMTIM, System Services Intro, 10-7; $System\ Services,\ SYS-455$ SYS\$NXTVOL See Next Volume service SYS\$OPEN, Programming Resources, 8–8 See also Open service SYS\$OUTPUT, Analyze/RMS_File, ARMS-16 default value of, Programming Resources, 7-2 for check report, File Applications, 10-1 redefining, Programming Resources, 7-3 using with LIB\$GET_INPUT, Programming Resources, 7–3 using with LIB\$PUT_OUTPUT, Programming Resources, 7–3 with CONVERT, Convert, CONV-9 SYS\$OUTPUT_HELP, Programming Resources, 8 - 36SYS\$PARSE See Parse service SYS\$PARSE_ACL, System Services Intro, 3-17, 3-23; System Services, SYS-457 SYS\$PROCESS_SCAN, System Services Intro, 9-1See also SYS\$GETJPI obtaining information about processes on all nodes, System Services Intro, 9-11 obtaining information about processes on specific nodes, System Services Intro, 9-11, 9 - 12searching on all nodes, System Services Intro, 9 - 11searching on specific nodes, System Services Intro, 9-11, 9-12 setting up multiple contexts, System Services Intro, 9-13using item list to specify selection criteria about processes, System Services Intro, 9-6, 9-7, 9 - 10example, System Services Intro, 9-9 using item list with remote procedures, System Services Intro, 9-13 using item-specific flags to control selection information, System Services Intro, 9-6 SYS\$PUT

See Put service

SYS\$PUTMSG, Programming Resources, 9–15, 9-22; System Services, SYS-475; RTL Library, 4-4, 4-13, 4-16, 4-27 SYS\$QIO, Programming Resources, 7-45; System Services, SYS-483; Device Support (A), 1-1, 2-2 to 2-4, 4-1 to 4-15; Device Support (B), device-dependent arguments of, Device Support (B), 1-41example, System Services Intro, 7-13 for additional processing, RMS, 5–18 for connect to interrupt facility, Device Support (A), 19–9 to 19–13 format for request to SCSI generic class driver, I/O User's I, 11-11 use in I/O operation, RMS, 2-7 SYS\$QIOW, Programming Resources, 7-45; System Services, SYS-488; Device Support (A), 2-7; Device Support (B), 1-37 SYS\$READ See Read service SYS\$READEF, System Services, SYS-489 SYS\$RELEASE See Release service SYS\$RELEASE_VP, System Services, SYS-491 SYS\$REMOVE See Remove service SYS\$REM_HOLDER, System Services Intro, 3-14; System Services, SYS-492 SYS\$REM_IDENT, System Services Intro, 3–14; System Services, SYS-494 SYS\$RENAME See also Rename service noting format difference, RMS, 3-11 SYS\$RESTORE_VP_EXCEPTION, System Services, SYS-496 SYS\$RESTORE_VP_STATE, System Services, SYS-498 SYS\$RESUME, System Services, SYS-500 SYS\$REVOKID, System Services, SYS-503 SYS\$REWIND See Rewind service SYS\$RMSRUNDWN, System Services, SYS-639 SYS\$SAVE_VP_EXCEPTION, System Services, SYS-507 SYS\$SCHDWK, System Services, SYS-509 canceling, System Services Intro, 10-7 converting time format for, System Services, SYS-36 example, System Services Intro, 10-6 request, System Services Intro, 10-6 SYS\$SEARCH See Search service

SYS\$SETDDIR, System Services, SYS-641; File

Applications, 6-14

SYS\$SETDFPROT, System Services, SYS-643 SYS\$SETEF, System Services Intro, 4-4; System Services, SYS-514 SYS\$SETEXV, Programming Resources, 9–13; System Services, SYS-515 example, System Services Intro, 11-6 SYS\$SETIME, System Services Intro, 10–8; System Services, SYS-517 SYS\$SETIMR, System Services Intro, 10–4; System Services, SYS-519 converting time format for, System Services, SYS-36 example with AST, System Services Intro, 5–1 SYS\$SETPRI, System Services, SYS-524 SYS\$SETPRN, System Services, SYS-527 SYS\$SETPRV, System Services, SYS-533 SYS\$SETRWM, System Services Intro, 7-3; System Services, SYS-538 SYS\$SETSFM use in signaling errors, RMS, 2-6 SYS\$SETSWM example, System Services Intro, 12–7 SYS\$SETUAI, System Services, SYS-544 SYS\$SHARE, Programming Resources, 5-9; Linker, 4-12, 4-17, 4-22 SYS\$SNDERR, System Services, SYS-556 SYS\$SNDJBCW, System Services, SYS-614 SYS\$SNDOPR, System Services, SYS-615 SYS\$SPACE See Space service SYS\$START_TRANS, System Services Intro, 14-3; System Services, SYS-629 SYS\$START_TRANSW, System Services Intro, 14–3; System Services, SYS–633 SYS\$SUSPND, System Services, SYS-634 SYS\$SYNCH, System Services, SYS-637; Device Support (A), 2-7 SYS\$SYSTEM:OPCCRASH.COM involvement in writing crash dump, System Dump Analyzer, SDA-5 SYS\$SYSTEM:PAGEFILE.SYS, System Dump Analyzer, SDA-5, SDA-28 See also System dump file as dump file, System Dump Analyzer, SDA-3 releasing blocks containing a crash dump, System Dump Analyzer, SDA-36 SYS\$SYSTEM:REQSYSDEF.STB, System Dump Analyzer, SDA-6, SDA-7

SYS\$SYSTEM:SYS.STB, Linker, LINK-27; System Dump Analyzer, SDA-6, SDA-7, SDA-9, SDA-15 SYS\$SYSTEM:SYSDEF.STB, System Dump Analyzer, SDA-8 SYS\$SYSTEM:SYSDUMP.DMP, System Dump Analyzer, SDA-28 See also System dump file protection, System Dump Analyzer, SDA-5 size of, System Dump Analyzer, SDA-3 SYS\$TRNLNM, System Services, SYS-645 SYS\$TRUNCATE See Truncate service ${\bf SYS\$ULKPAG},\ \textit{Programming Resources},\ 10{-}4$ ${\tt SYS\$ULWSET},\ \textit{Programming Resources},\ 10\text{--}4$ SYS\$UNWIND, Programming Resources, 9–18; RTL Library, 4–14, 4–21, 4–22 to 4–23, 4–29 example, System Services Intro, 11-14 SYS\$UPDATE See also Update service SYS\$UPDSEC, Programming Resources, 8-9; System Services, SYS-657 SYS\$UPDSECW, System Services, SYS-662 SYS\$WAIT See Wait service SYS\$WAITFR, System Services, SYS-663 SYS\$WAKE, System Services, SYS-665 See also SYS\$HIBER example, System Services Intro, 8-12 use of, RTL Parallel Processing, 5–5 SYS\$WFLAND, System Services, SYS-668 SYS\$WFLOR, System Services, SYS-670 SYS\$WRITE See Write service SYSAP (system application), System Dump Analyzer, SDA-148 SYSDEVICE.EXE global symbols, System Dump Analyzer, SDA-61 SYSGEN See System Generation Utility SYSGETSYI.EXE global symbols, System Dump Analyzer, SDA-61 /SYSLIB qualifier, Linker, LINK-17 SYSLICENSE.EXE global symbols, System Dump Analyzer, SYSLOA symbol, System Dump Analyzer, SDA-14 SYSMSG.EXE global symbols, System Dump Analyzer, SDA-61SYSPRV privilege, System Services Intro, 7-6 requirement for creating files with different UIC, RMS, 14-8

SYS\$SYSTEM:SHUTDOWN.COM

Dump Analyzer, SDA-59

SDA-104

Dump Analyzer, SDA-5

involvement in writing crash dump, System

SYS\$SYSTEM:SYS.EXE, Linker, 2–6; System

contents, System Dump Analyzer, SDA-60,

System dump file (cont'd) /SYSSHR qualifier, Linker, LINK-18 size, System Dump Analyzer, SDA-3 System failure, MACRO, E-10 analyzing a running, System Dump Analyzer, analyzing, System Dump Analyzer, SDA-15 to SDA-2, SDA-8 to SDA-9, SDA-32 SDA-28default, File Applications, 4-14 causing, System Dump Analyzer, SDA-28 to exception dispatcher, System Services Intro, SDA-3111-6diagnosing from PC contents, System Dump getting information about Analyzer, SDA-15 asynchronously, System Services, SYS-366 example, System Dump Analyzer, SDA-21 to synchronously, System Services, SYS-381 investigating performance problems, System SDA-28inducing with XDELTA, Device Support (A), Dump Analyzer, SDA-8 13 - 21library, System Services Intro, 2-1, 2-5 summary, System Dump Analyzer, SDA-93 mailbox, System Services Intro, 7-33 System Generation Utility (SYSGEN), Device message, System Services Intro, 2–14 Support (A), 12-2 to 12-23 resources, File Applications, 1-15 AUTOCONFIGURE command, Device Support System application (A), 11-4, 12-13 to 12-23; Device Support See SYSAP (B), 1–2, 1–34, 1–68, 2–22, 4–21 SYSTEM attribute, File Def Language, FDL-2, configuring SCSI devices, I/O User's I, 11–9; FDL-38 Device Support (A), 17–30 System block CONNECT command, Device Support (A), See SB 11-4, 12-2, 12-3 to 12-7, E-3; Device System buffer Support (B), 1-7, 1-26, 1-36, 1-44, 1-68, See Buffer 2-22, 4-8, 4-22 See Nonpaged pool ADAPTER qualifier, Device Support (A), System clock 12 - 5setting, System Services Intro, 10-8 ADPUNIT qualifier, Device Support (A), System command table, Command Def, CDU-2 12 - 6adding commands to, Command Def, CDU-3 /CSR qualifier, Device Support (A), 12–5 System configuration, Device Support (A), 12–11 /CSR_OFFSET qualifier, Device Support System console terminal, I/O User's I, 8-1 (A), 12–6 System context, Device Support (A), 1-8 DRIVERNAME qualifier, Device Support System control block (A), 12–6 /MAXUNITS qualifier, Device Support (A), See SCB System control unit /NOADAPTER qualifier, Device Support See SCU (A), 12–5 System default, File Def Language, FDL-30 /NUMVEC qualifier, Device Support (A), System default library, Linker, 1-5, 2-4, 12-6, 14-31, 14-32; Device Support LINK-18 (B), 1-23content of, Linker, 2-4 /VECTOR qualifier, Device Support (A), linker's search of, Linker, LINK-17, LINK-31 12 - 6processing of, Linker, 6-14 /VECTOR_OFFSET qualifier, Device searched by linker, Linker, LINK-17 Support (A), 12–6 symbols in, Linker, LINK-5 device table, Device Support (A), 12–15, 12–23 System directory table, System Services Intro, 6–3 LOAD command, Device Support (A), 11-4, System Dump Analyzer 12-2 to 12-3, E-3 See SDA loading a VAXBI device driver using, Device System dump file, System Dump Analyzer, SDA-2 Support (A), 16-23 to SDA-3 parameters copying, System Dump Analyzer, SDA-4 global section, RTL Parallel Processing, header, System Dump Analyzer, SDA-5 mapping physical memory to, System Dump RELOAD command, Device Support (A), 11-4, Analyzer, SDA-7 12-7 to 12-8; Device Support (B), 4-10 requirements for analysis, System Dump SHOW/ADAPTER command, Device Support Analyzer, SDA-6 (A), 12–8 saving, System Dump Analyzer, SDA-4 SHOW/BI command, Device Support (A), 12-9

System Generation Utility (SYSGEN) (cont'd) /SYSTEM qualifier, Debugger, 3-12, CD-128, SHOW/BUS command, Device Support (A), CD-187, CD-260; Linker, 2-6, LINK-19; 12 - 10System Dump Analyzer, SDA-52, SDA-73, SHOW/CONFIGURATION command, Device SDA-111, SDA-115, SDA-128 Support (A), 12–11 to 12–12 in .FACILITY directive, Message, MSG-18 SHOW/DEVICE command, Device Support (A), System region 12-12examining, System Dump Analyzer, SDA-52 SHOW/XMI command, Device Support (A), System resources, Modular Procedures, 2-12 12 - 11accessing, Device Support (B), 2-47 to 2-48 System hang, System Dump Analyzer, SDA-28 System routine documentation, Routines Intro, System help 1-1 library, Librarian, LIB-8 arguments heading, Routines Intro, 1-7 System image, Linker, 6-2, LINK-19 access entry, Routines Intro, 1-9 contents, Linker, 6-2; System Dump Analyzer, mechanism entry, Routines Intro, 1-10 SDA-60, SDA-104 text entry, Routines Intro, 1-11 memory allocation for, Linker, 6-2 type entry, Routines Intro, 1-8 output of linker, Linker, 2-6 VMS Usage entry, Routines Intro, 1-7 System information condition values returned, Routines Intro, 1-12 returns, Routines Intro, 1-12, 1-14 See Timer, statistics SYSTEM keyword, VAXTPU, 7-480 returns in I/O status block, Routines Intro, System logical name table, System Services Intro, 1 - 146 - 6returns in mailbox, Routines Intro, 1-14 returns signaled, Routines Intro, 1-15 System management, File Applications, 3-8 description of, Routines Intro, 1-1 creating a crash dump file, System Dump format heading, Routines Intro, 1-2 Analyzer, SDA-2 explanatory text, Routines Intro, 1-4 image activation, File Applications, 5-5 System manager, File Def Language, FDL-16 JSB call format, Routines Intro, 1-4 procedure call format, Routines Intro, 1-3 System map, System Dump Analyzer, SDA-15 main headings, Routines Intro, 1-1 System message routines returns heading, Routines Intro, 1-5 global symbols, System Dump Analyzer, condition values, Routines Intro, 1-5 SDA-61reigister data, Routines Intro, 1-6 System page locking in memory, Device Support (A), E-16 routine name heading, Routines Intro, 1–1 System page table (SPT) routine overview heading, Routines Intro, 1-1 System routines, Programming Resources, 1-22 to displaying, System Dump Analyzer, SDA-23, 1 - 24SDA-111 in system dump file, System Dump Analyzer, system services SDA-2, SDA-7 asynchronous, *Programming Resources*, System page-table entry 4-12synchronous, Programming Resources, allocating, Device Support (A), 16-18, E-7; Device Support (B), 3-107 System routine template, Routines Intro, 1–1 allocating permanent, Device Support (A), 6-2; Systems Device Support (B), 1-33, 1-79, 2-21, 3-79, communication between, *Programming* deallocating, Device Support (B), 3-108 Resources, 3-26System service, *Programming Resources*, 1–29; System paging file as dump file, System Dump Analyzer, SDA-3 Modular Procedures, 3-11, A-2 releasing blocks containing a crash dump, Abort Transaction, System Services, SYS-3 Abort Transaction and Wait, System Services, System Dump Analyzer, SDA-36 SYS-7 System parameters, File Applications, 1–16 System PCB (process control block) Adjust Outer Mode Stack Pointer, System Services, SYS-14 displaying, System Dump Analyzer, SDA-128 System process, System Dump Analyzer, SDA-73 Adjust Working Set Limit, System Services, SYS-17 SYSTEM protection code, File Def Language, checking completion status of, System Services, FDL-23 SYS-637 Create Virtual Address Space, System Services, SYS-114

System service (cont'd) System service exception, RMS, 2-6 Delete Global Section, System Services, System service exception generation SYS-158 disabling, RMS, 2-6 Delete Virtual Address Space, System Services, System space SYS-147 base address, System Dump Analyzer, SDA-14 End Transaction, System Services, SYS-196 SET BREAK command, Debugger, CD-128 End Transaction and Wait, System Services, SET STEP command, Debugger, CD-176 SYS-201 SET TRACE command, Debugger, CD-187 executing STEP command, Debugger, CD-260 asynchronously, System Services Intro, System space operator (G), System Dump Analyzer, SDA-12 synchronously, System Services Intro, 2-11 System space prefix symbol, Delta/XDelta, Expand Program/Control Region, System DELTA-9 Services, SYS-218 System spin lock, Device Support (A), 3-13 Format Security Audit Event Message, System "System" string constant parameter to GET_INFO, Services, SYS-262 VAXTPU, 7-175 Hash Password, System Services, SYS-399 System symbol table, Linker, LINK-27; System Initialize Volume, System Services Intro, 7–24; Dump Analyzer, SDA-6, SDA-13 System Services, SYS-407 System time, Programming Resources, 3–23; loading site-specific, System Services Intro, C-1 Device Support (A), 3-8, 3-14, E-13; Device Lock Pages in Memory, System Services, Support (B), 3-69 SYS-420 reading, Device Support (A), E-15; Device Lock Pages in Working Set, System Services, Support (B), 2-52 SYS-422 setting, System Services, SYS-517 MACRO, System Services Intro, 2-1, 2-5 System time quadword Map Global Section, System Services, SYS-425 examining, System Dump Analyzer, SDA-52 obtaining information about processes, System System timer Services Intro, 9-1 canceling, Programming Resources, 4-12 Purge Working Set, System Services, SYS-473 setting, Programming Resources, 4-11 Release Vector Processor, System Services, system_access_id data type, Routines Intro, A-12t SYS-491 SYSTEM_PRIMITIVES.EXE Restore Vector Processor Exception State, global symbols, System Dump Analyzer, System Services, SYS-496 SDA-61 Restore Vector State, System Services, SYSTEM_SYNCHRONIZATION.EXE global symbols, System Dump Analyzer, return status, Programming Resources, 9-3 SDA-61 Save Vector Processor Exception State, System Services, SYS-507 Set Process Swap Mode, System Services, SYS-542 Set Protection on Pages, System Services, Ctrl/I, *I/O User's I*, 8–6 SYS-529 terminal mechanical, I/O User's I, 8-21 Set Stack Limits, System Services, SYS-540 terminal tab stops, I/O User's I, 8-35 Start Transaction, System Services, SYS-629 TAB key command, Delta/XDelta, DELTA-24 Start Transaction and Wait, System Services, Table SYS-633 See Command table Unlock Pages from Memory, System Services, /TABLE qualifier, Command Def, CDU-44 SYS-651 Tab stops Unlock Pages from Working Set, System in source statement, MACRO, 2-1 Services, SYS-653 TAB_STOPS keyword Unwind Call Stack, System Services, SYS-655 used with SET, VAXTPU, 7-481 Update Section File on Disk, System Services, "Tab_stops" string constant parameter to SYS-657 GET_INFO, VAXTPU, 7-175 what is available. Modular Procedures, 1-8 Tangent, RTL Math, MTH-104, MTH-106, System service access, RTL Library, 2–1, 2–2 MTH-139, MTH-141 System service dispatcher hyperbolic, RTL Math, MTH-108, MTH-143 role in servicing I/O request, Device Support

Tape

(A), 4-1

Tape (cont'd) Tasking (multithread) program (cont'd) See Magnetic tape setting time-slice value, Debugger, 12-23 Tape class driver setting tracepoint, Debugger, 12–24 disabling the loading of, I/O User's I, 11–10; setting watchpoint, Debugger, 12-24 Device Support (A), 17–31 SHOW EVENT FACILITY command. Tape driver, Device Support (B), 1-74, 4-13 Debugger, 12-28, CD-215 using local tape UCB extension, Device SHOW TASK command, Debugger, 12-15, Support (B), 1-69, 1-81 to 1-82 CD-246 Tape mark, I/O User's I, 6–17, 6–20 specifying task body, Debugger, 12-12 Tape processing specifying tasks or threads, *Debugger*, 12–10 run-time options, File Applications, 9–13 to stack checking, Debugger, 12-31 state of task or thread, Debugger, 12–15, 12–19 Tape volume substate of task or thread, Debugger, 12-15, mounting, System Services Intro, 7-22 12 - 19Target, Device Support (A), 17-2 task built-in symbols, Debugger, 12-13 enabling selection from, Device Support (A), task event, Debugger, 12–27 17-28 to 17-30; Device Support (B), 2-70, task ID, Debugger, 12-6, 12-12, 12-14, 12-15, 2-73 to 2-90 12 - 19TARGET attribute, File Def Language, FDL-38 task object, Debugger, 12-11 visible task, Debugger, 12-10 Target mode /TASK qualifier, Debugger, 12-12, CD-60, CD-84 See Asynchronous event notification Task state, *Debugger*, 12–15, 12–19 Task, Debugger, 12-1 Task substate, Debugger, 12-15, 12-19 See also Tasking (multithread) program Task switching, Debugger, 12-9, 12-23, 12-26 %TASK \$TASK_BODY, Debugger, 12–12, 12–25 See Task ID TB (translation buffer) Task ID, Debugger, 12-6, 12-12, 12-14, 12-15, invalidating, Device Support (A), E-15; Device 12 - 19Support (B), 2-41 to 2-42 Tasking (multithread) program vector, MACRO, 10-7, 10-8, 10-20, 10-32, active task, Debugger, 12-10 10-34, 10-41, 10-47 comparison of task and DECthreads TBIA (TB Invalidate All) instruction, MACRO, terminology, Debugger, 12-2 controlling and monitoring execution, TBIS (TB Invalidate Single) instruction, MACRO, Debugger, 12-24 10 - 47controlling task switching, Debugger, 12–23 TEF option, File Def Language, FDL-25 deadlock condition, Debugger, 12-30 Template class driver, Device Support (A), 17-9 debugging, Debugger, 12-1 listing of, Device Support (A), B-1 to B-35 with DECwindows, Debugger, 1-28 Template device, Device Support (A), 11-12 environment task, Debugger, 12-6 Template for a device driver, Device Support (A), event facility, Debugger, 12-27 A-1 to A-10 eventpoints. Debugger, 12-24 Template UCB, Device Support (B), 1-78 monitoring events, Debugger, 12-27 TEMPORARY attribute, File Def Language, null task, Debugger, 12-13 FDL-24 obtaining information about, Debugger, 12–15 Temporary file, Convert, CONV-27; File Def obtaining priority of task or thread, Debugger, Language, FDL-19, FDL-20 12-15, 12-19 Temporary file delete option predefined breakpoint, Debugger, 12-29 See FAB\$V_TMD option sample Ada program for debugging, Debugger, Temporary file option 12-6See FAB\$V_TMP option sample C program for debugging, Debugger, 12 - 2Temporary mailbox, I/O User's I, 7-4 SET EVENT_FACILITY command, Debugger, Temporary option, File Applications, 4–27 12-28, CD-136 delete option, File Applications, 4–27 SET TASK command, Debugger, 12-22, /TEMPORARY qualifier, Debugger, CD-128, CD-178CD-187, CD-197 setting breakpoint, Debugger, 12-24 TEMPORARY secondary attribute, File setting priority of task or thread, Debugger, Applications, 4-27

12-22, 12-30

Terminal (cont'd) Terminal, Device Support (B), 1-74, 1-76 function modifiers See also Terminal class driver See also Terminal, item codes See also Terminal controller IO\$M_BRDCST, I/O User's I, 8-46, 8-55 See also Terminal port driver IO\$M_BREAKTHRU, I/O User's I, 8-10, See also Terminal UCB extension ANSI CRT terminal, I/O User's I, 8-22 IO\$M_CANCTRLO, I/O User's I, 8-5, autobaud detection, I/O User's I, 8-19, 8-22 8 - 35baud rate, I/O User's I, 8-19, 8-22, 8-40 IO\$M_CTRLCAST, I/O User's I, 8-42 behavior, VAXTPU, C-1 IO\$M_CTRLYAST, I/O User's I, 8-5, 8-13, bell (Ctrl/G), I/O User's I, 8-9 broadcast message, I/O User's I, 8-18, 8-21, IO\$M_CVTLOW, I/O User's I, 8-27 8-23, 8-46 IO\$M_DSABLMBX, I/O User's I, 8-27 carriage control, I/O User's I, 8-36 IO\$M_ENABLMBX, I/O User's I, 8-35 characteristic IO\$M_ESCAPE, I/O User's I, 8-7, 8-27 See Terminal characteristic IO\$M_EXTEND, I/O User's I, 8-27, 8-29 command line editing, I/O User's I, 8-3, 8-34 IO\$M_HANGUP, I/O User's I, 8-42 command recall (Ctrl/B), I/O User's I, 8-3, 8-6 IO\$M_INCLUDE, I/O User's I, 8-19, control and data signals, I/O User's I, 8-16 8-43, 8-46 control characters, I/O User's I, 8-4 to 8-6, IOM_LOOP$, I/O User's I, 8–45 8-9, 8-27 IO\$M_LT_CONNECT, I/O User's I, 8-49 numeric values, I/O User's I, B-1 IO\$M_LT_DISCON, I/O User's I, 8-49 control sequences, I/O User's I, 8-8 IO\$M_LT_MAP_PORT, I/O User's I, 8-49 cursor movement, I/O User's I, 8–3, 8–5, 8–22 P1 parameters, I/O User's I, 8-50 DEC_CRT2, VAXTPU, C-3 IO\$M_LT_RATING, I/O User's I, 8-49 delete character, I/O User's I, 8-3 IO\$M_MAINT, I/O User's I, 8-44, 8-45 delete line (Ctrl/U), I/O User's I, 8-5, 8-27 IO\$M_NOECHO, I/O User's I, 8-9, 8-10, detached, Device Support (B), 1-75 8-24, 8-27 device characteristics, I/O User's I, 8-20 IO\$M_NOFILTR, I/O User's I, 8-27 categories, I/O User's I, 8-25 IO\$M_NOFORMAT, I/O User's I, 8-11, changing, I/O User's I, 8-42 8-35, 8-45 extended, I/O User's I, 8-22 IO\$M_OUTBAND, I/O User's I, 8-46 dial-up IO\$M_PURGE, I/O User's I, 8-27 characteristic, I/O User's I, 8-22 IO\$M_RD_MODEM, I/O User's I, 8-54 lines, I/O User's I, 8-13, 8-23, 8-42 IO\$M_REFRESH, I/O User's I, 8-36 support, I/O User's I, 8-13 IO\$M_SET_MODEM, I/O User's I, 8-44 Digital CRT terminal, I/O User's I, 8-23 IO\$M TIMED, I/O User's I, 8-27 discard output (Ctrl/O), I/O User's I, 8-5, IO\$M_TRMNOECHO, I/O User's I, 8-28 8-27, 8-35 IO\$M_TT_ABORT, I/O User's I, 8-19, driver, I/O User's I, 8-1 duplex modes, I/O User's I, 8-10, 8-13 IO\$M_TYPEAHDCNT, I/O User's I, 8-54 enable Ctrl/C AST, I/O User's I, 8-42 IO\$M_UNLOOP, I/O User's I, 8-45 enable Ctrl/Y AST. I/O User's I. 8-42 hang up, I/O User's I, 8–13, 8–17, 8–18, 8–23, escape sequences, I/O User's I, 8–7, 8–57 8-24, 8-42, 8-52 ANSI, I/O User's I, B-9 I/O functions, Device Support (B), 1-40 Digital-private, I/O User's I, B-9 CTDRIVER, I/O User's I, 8-35 overflow size (item code), I/O User's I, IO\$_READLBLK, I/O User's I, 8-26 8 - 30IO\$_READPROMPT, I/O User's I, 8-26, extended characteristics, I/O User's I. 8-22 8 - 27fallback conversion, I/O User's I, 8-11, 8-24, IO\$ READVBLK, I/O User's I, 8-26 8-42 IO\$_SENSECHAR, I/O User's I, 8-53 features, I/O User's I, 8–2 IO\$_SENSEMODE, I/O User's I, 8-53 for debugger input/output, separate, Debugger, IO\$_SETCHAR, I/O User's I, 8-38 9-5, CD-150 IO\$_SETMODE, I/O User's I, 8-38 using DECterm window, Debugger, 1-33 IO\$_TTY_PORT, I/O User's I, 8-49 form feed, I/O User's I, 8-21, 8-35 IO\$_WRITELBLK, I/O User's I, 8–34 frame size, I/O User's I, 8-41 IO\$_WRITEPBLK, I/O User's I, 8–34 function codes, I/O User's I, 8-26, A-8 IO\$_WRITEVBLK, I/O User's I, 8-34

Terminal (cont'd)	Terminal
I/O status block, I/O User's I, 8-56	read function (cont'd)
initiate login, I/O User's I, 8-9	with timeout, I/O User's I , 8–26, 8–27
input processing, I/O User's I, 8-3	read verify, I/O User's I, 8-6, 8-33
insert/overstrike (Ctrl/A), I/O User's I, 8-3,	example, I/O User's I , 8–70
8–6	receive speed, I/O User's I, 8-40
interrupt (Ctrl/Y), I/O User's I, 8-5	redirected, Device Support (B), 1–75
item codes, I/O User's I , 8–30 to 8–33	redisplay data (Ctrl/R), I/O User's I, 8–6, 8–27
itemlist read, I/O User's I , 8–29	ReGIS graphics, I/O User's I, 8-24
example, I/O User's I , 8–70	restart data (Ctrl/Q), I/O User's I, 8–6
item codes, I/O User's I , 8–30 to 8–33	restoring width, VAXTPU, A-5
item descriptor, I/O User's I, 8–30	sense characteristics function, I/O User's I ,
LAT line, I/O User's I, 8–1	8–53
LAT port driver, I/O User's I, 8–48	sense mode function, I/O User's I, 8–53
application services creation, I/O User's I ,	serial line multiplexer, I/O User's I, 8-1
8–51	set characteristics function, I/O User's I, 8–38
example, I/O User's I, 8–74	arguments, I/O User's I, 8-39
I/O functions, I/O User's I , 8–49 LAT rejection codes, I/O User's I , 8–58	set mode function, I/O User's I, 8–38
line editing, I/O User's I , 8–3, 8–23	arguments, I/O User's I, 8–39 SET TERMINAL DCL command, I/O User's I,
	8-4, 8-19, 8-25
See also Terminal, item codes	setting, <i>VAXTPU</i> , C-1 to C-3
line feed, I/O User's I , 8–35 line terminators, I/O User's I , 8–9	AUTO_REPEAT, VAXTPU, C-2
mailbox, I/O User's I, 8-17, 8-35	auxiliary keypad, VAXTPU, C-2
message format, I/O User's I , 8–18	132 columns, VAXTPU, C-2
message types, I/O User's I, 8–18	control sequence introducer, VAXTPU, C-2
modem	CSI, VAXTPU, C-2
characteristic, I/O User's I, 8–21	cursor, VAXTPU, C-2
control signals, I/O User's I, 8–16	$\mathrm{DEC_CRT},\ V\!AXTPU,\mathrm{C}\!-\!2$
data signals, I/O User's I , 8–16	edit mode, VAXTPU, C-2
protocol, I/O User's I, 8-14	eightbit characters, VAXTPU, C-2
sense signals, I/O User's I, 8-54	scrolling, VAXTPU, C-3
signal control, I/O User's I, 8-13	video attributes, <i>VAXTPU</i> , C–3
modem signal control, I/O User's I, 8-13	wrap, <i>VAXTPU</i> , C–4
no type-ahead, I/O User's I, 8–21	SIXEL graphics, I/O User's I, 8-24
out-of-band	special operating modes, I/O User's I, 8–10
See also Out-of-band AST	status (Ctrl/T), I/O User's I, 8–6
characters, I/O User's I , 8–19	status returns, I/O User's I , $A-9$
output	stop data (Ctrl/S), I/O User's I, 8–6
CTDRIVER, I/O User's I , 8–11	support, VAXTPU, C-1
RTPAD, I/O User's I, 8–11	supported devices, I/O User's I, 8–1
SET HOST, I/O User's I, 8–11	support for SET and SHOW TERMINAL
output formatting, I/O User's I, 8–11, 8–25	commands, RTL Screen Management, 5–24 SYS\$GETDVI returns, I/O User's I, 8–20
output processing, I/O User's I, 8–10	system password, I/O User's I , 8–24
page length and width, I/O User's I , 8–40,	tab
8–53	Ctrl/I, I/O User's I, 8–6
parity flag, <i>I/O User's I</i> , 8–41 pasthru mode, <i>I/O User's I</i> , 8–9, 8–11, 8–24,	mechanical, I/O User's I, 8-21
8–27	stops, I/O User's I, 8–35
process preservation, I/O User's I, 8–17	terminator mask, I/O User's I , 8–28, 8–29
programming examples, I/O User's I, 8–59	time (Ctrl/T), I/O User's I, 8-6
protocol, I/O User's I, 8–14	transmit speed, I/O User's I, 8-40
read function, I/O User's I, 8–26	TTY_DIALTYPE SYSGEN parameter, I/O
arguments, I/O User's I , 8–26	User's I, 8–13, 8–14, 8–16
function modifiers, I/O User's I, 8–27	type-ahead, I/O User's I, 8–8, 8–17, 8–21, 8–54
itemlist read, I/O User's I , 8–29	alternate buffer, I/O User's I, 8-22
terminating, I/O User's I , 8–26	unsolicited data, I/O User's I, 8-17
terminators, I/O User's I , $8-28$	width

Terminal	Terminal port driver, Device Support (A), 18-1 to
width (cont'd)	18–23; Device Support (B) , 2–7
restoring, VAXTPU, A-5	aborting output activity in, Device Support (A)
write breakthrough function, I/O User's I ,	18–16
8–36	binding to class driver, Device Support (A),
write function, I/O User's I , 8–34	18–9 to 18–10; Device Support (B), 2–8
carriage control, I/O User's I, 8–36	canceling I/O request in, Device Support (A),
function modifiers, I/O User's I, 8-35	18–17
XON/XOFF control, I/O User's I, 8-24	control flags, Device Support (B), 1–89
Terminal characteristic, Programming Resources,	detecting an error on terminal line in, Device
7–51	Support (A), 18–22
ANSI CRT, I/O User's I, 8–22	disconnecting a process from a terminal in,
ASCII (8-bit) code, I/O User's I, 8-21	Device Support (A), 18–19
baud rate, I/O User's I , 8–22	forking in, <i>Device Support</i> (A), 18–14, 18–20
block mode, I/O User's I, 8-23	implementing modem functions in, Device
dial-up line, I/O User's I, 8-23	Support (A), 18–15
dial-up terminal, I/O User's I , 8–22	initiate routines, Device Support (A), 18–13 to
Digital CRT, I/O User's I, 8–23	18–16
DMA mode, I/O User's I, 8-23	managing data set state transitions in, Device
edit, I/O User's I, 8–23	Support (A), 18–20
extended characteristics, I/O User's I, 8-22	obtaining characters for output in, Device
local echo, I/O User's I, 8-24	Support (A), 18–20
modem, I/O User's I, 8-21	passing input characters to class driver from,
modify hang up, I/O User's I , 8–24	Device Support (A), 18–21
no echo, I/O User's I, 8-21	resuming stopped output in, Device Support
no type-ahead, I/O User's I , 8–21	(A), 18–17
pasthru mode, I/O User's I, 8–24	service routines, Device Support (A), 18–16 to
ReGIS graphics, I/O User's I, 8-24	18–18
remote terminal, I/O User's I , 8–22	starting output on an inactive line in, Device
secure, I/O User's I , $8-24$	Support (A), 18–16
set speed, I/O User's I, 8-24	startup routines, Device Support (A), 18–12 to
SIXEL graphics, I/O User's I, 8-24	18–13
system password, I/O User's I , 8–24	stopping output in, Device Support (A), 18–17
XON/XOFF, I/O User's I , $8-24$	structure, Device Support (A), 18-7
Terminal class driver, Device Support (A), 18-1 to	using input flow control character in, Device
18–23	Support (A), 18–17, 18–18
See also Class driver	Terminal read operation
binding to port driver, Device Support (A),	RAB\$L_ROP field options, RMS, 18-2
18-9 to 18-10; Device Support (B), 2-8	Terminal screen size
service routines, Device Support (A), 18–19 to	See Screen size
18–23	Terminal support, VAXTPU, 1–8
structure, Device Support (A), 18-7	Terminal timeout, <i>Programming Resources</i> , 7–41
Terminal controller, Device Support (B), 1–21	Terminal UCB extension, Device Support (A),
Terminal device record-processing option, RMS,	18–2 to 18–3; Device Support (B), 1–69, 1–84
7–18	to 1–91
Terminal device width, Programming Resources,	initializing, Device Support (A), 18–22
7–6	remote, Device Support (B), 1-75
Terminal echo, Programming Resources, 7–40	/TERMINATE qualifier, Debugger, 8–8, CD–50;
disabling, Programming Resources, 7–41	System Dump Analyzer, SDA-45
Terminal emulator, VAXTPU, 6-4	Terminating
See also Terminal	DELTA
Terminal extended address block	See Exiting
See XABTRM block	DELTA/XDELTA commands, Delta/XDelta,
Terminal I/O, Modular Procedures, 2–17	DELTA-27
example, System Services Intro, 7–18	Terminating access to PPL\$, RTL Parallel
Terminal key	Processing, 2–2
defining for SDA, System Dump Analyzer,	1. 30000000g, m m
SDA-43	

/TERMINATING qualifier, Debugger, 10–12, Text editor creating command procedure with, Patch, CD-18, CD-31, CD-129, CD-187 Terminating signals, DECthreads, A-4 to create FDL files, File Def Language, FDL-42 Termination debugging session, Debugger, 3-4, 10-8, Text entry CD-90, CD-106 See Explanatory text with DECwindows, Debugger, 1–20 TEXT keyword, VAXTPU, 7-483 execution of handlers at, Debugger, 9-15 Text library, *Programming Resources*, 1–18; multiprocess program, Debugger, 10-8, 10-9, Librarian, LIB-1 character case in, Librarian, LIB-2 waiting for, DECthreads, cma-107, pthread-63 Text manipulation Termination mailbox, System Services Intro, 7–34, built-in procedures 8 - 18APPEND_LINE, VAXTPU, 7-28 Termination message BEGINNING_OF, VAXTPU, 7–37 CHANGE_CASE, VAXTPU, 7–44 format, System Services, SYS-108 Termination of a thread COPY_TEXT, VAXTPU, 7-53 error, DECthreads, cma-95, cma-100, CREATE_BUFFER, VAXTPU, 7-58 pthread-47 EDIT, VAXTPU, 7-111 events that cause, DECthreads, cma-95, END_OF, VAXTPU, 7-115 pthread-47 ERASE, VAXTPU, 7-117 normal, DECthreads, cma-95, cma-101, ERASE_CHARACTER, VAXTPU, 7-119 pthread-47, pthread-54 ERASE_LINE, VAXTPU, 7-121 premature successful completion, DECthreads, FILE_PARSE, VAXTPU, 7-140 cma-101, pthread-54 FILE_SEARCH, VAXTPU, 7-143 without raising an exception, DECthreads, FILL, VAXTPU, 7-146 cma-100 MOVE_TEXT, VAXTPU, 7-280 without returning from start routine, READ_FILE, VAXTPU, 7-297 DECthreads, cma-101, pthread-54 SEARCH, VAXTPU, 7-327 Termination of subordinate abnormally SEARCH_QUIETLY, VAXTPU, 7-332 notification of. RTL Parallel Processing, 2-3 SELECT, VAXTPU, 7-337 Terminator, RTL Screen Management, 3-3 SELECT_RANGE, VAXTPU, 7-340 See also Input/output SPLIT_LINE, VAXTPU, 7-518 codes, RTL Screen Management, 3-4 TRANSLATE, VAXTPU, 7-526 echo, Programming Resources, 7-24 WRITE_FILE, VAXTPU, 7-543 file, Programming Resources, 7-54 Text processing, Programming Resources, 1-3 record, Programming Resources, 7-53 EVE editor, Programming Resources, 1-5 Terminator character bit mask, I/O User's I, 8-28 Text processing routines Terminator variations, File Applications, 3–10 See VAXTPU routines Term in MACRO statement, MACRO, 3-9 /TEXT qualifier, Librarian, LIB-44; Message, TERMTABLE.EXE, RTL Screen Management, MSG-14 5-1, 5-17"Text" string constant parameter to GET_INFO, creating, RTL Screen Management, 5-22 VAXTPU, 7-225 TERMTABLE.TXT, RTL Screen Management, Textual operator, MACRO, 3-12 5-1, 5-17T field in symbolic offset Test and set instructions, Modular Procedures, for specifying varying field length, RMS, 2-3 %THEN lexical keyword, VAXTPU, 3-36 Testing new procedures, Modular Procedures, 4-1 Third-party SCSI class driver black box, Modular Procedures, 4-2 cancel-I/O routine of, Device Support (A), 17-28 integration, Modular Procedures, 4-1, 4-5 components, Device Support (A), 17-24 to language independence, Modular Procedures, 17 - 284-1.4-4data definitions, Device Support (A), 17-24 modularity, Modular Procedures, 4-1 debugging, Device Support (A), 17-31 to 17-43 reentrancy, Modular Procedures, 4-6 driver prologue table, Device Support (A), regression, Modular Procedures, 6-1 17 - 25unit, Modular Procedures, 4-1 error logging, Device Support (A), 17-20 to white box, Modular Procedures, 4–3 17 - 22loading, Device Support (A), 17–30 compression of, Utility Routines, DCX-1

Third-party SCSI class driver (cont'd)	Thread
maintaining local context of, Device Support	scheduling (cont'd)
(A), 17–19 to 17–20	scheduling priority attribute, DECthreads,
receiving notification of asynchronous events on	2–7
target, Device Support (A), 17-28 to 17-30;	setting current priority of, DECthreads,
Device Support (B), 2-70, 2-73 to 2-90	cma-109, pthread-95
register dumping routine of, Device Support	setting current scheduling policy and priority of,
(A), 17–21, 17–28	DECthreads, cma-111, pthread-98
start-I/O routine of, Device Support (A), 17–27 to 17–28	starting, DECthreads, 2–1 states, DECthreads, 1–4
unit initialization routine of, Device Support	terminating, DECthreads, 2–1, cma–93
(A), 17–26 to 17–27	error termination, <i>DECthreads</i> , 2–3
writing, <i>Device Support</i> (A), 17–1 to 17–43	normal termination, DECthreads, 2–2
THIS_CATCH exception, DECthreads, 4-7	waiting for a mutex, DECthreads, cma-81,
Thrashing	pthread-82
magnetic tape, I/O User's I , 6–10	waiting for another to terminate, DECthreads,
Thread	2–3
See also Multithreaded programming	waiting for the termination of, DECthreads,
See also Tasking (multithread) program	cma-107, pthread-63
alerting, DECthreads, 2–19	waking, DECthreads, cma-43, cma-49,
canceling, DECthreads, 2–19, pthread–23	cma-51, pthread-33, pthread-40 yielding processor to another thread,
asynchronous cancelability, DECthreads,	DECthreads, cma-118, pthread-106
2–20 general cancelability, DECthreads, 2–19	Thread attributes, DECthreads, 2–5
creating, DECthreads, 2–1, cma–95,	Thread attributes object
pthread-47	creating, DECthreads, pthread-3
definition of, DECthreads, 1–1	deleting, DECthreads, pthread-5
delaying execution of, DECthreads, cma-61,	Thread creation
pthread-50	guardsize attribute, DECthreads, cma-19,
deleting, DECthreads, 2–3, cma–98,	cma-31
pthread-52	inherit scheduling attribute, DECthreads,
error termination, <i>DECthreads</i> , cma-95,	cma-21, cma-33, pthread-7, pthread-15 priority attribute, <i>DECthreads</i> , cma-25,
cma-100, pthread-47 events that cause termination, <i>DECthreads</i> ,	cma-37, pthread-9, pthread-17
cma-95, pthread-47	scheduling policy attribute, <i>DECthreads</i> ,
initializing, DECthreads, cma-67	cma-27, cma-39, pthread-11, pthread-19
nonreentrant routines (avoiding), DECthreads,	stacksize attribute, DECthreads, cma-29,
1–8	cma-41, pthread-13, pthread-21
normal termination, DECthreads, cma-95,	Thread-reentrant code
cma-101, pthread-47, pthread-54	definition of, DECthreads, 3–2
obtaining current priority of, DECthreads,	Thread-safe code
cma-102, pthread-57	definition of, DECthreads, 3-1
obtaining current scheduling policy of,	Threads of execution, Modular Procedures, 3–19 Thread-specific data, DECthreads, 2–18
DECthreads, cma-104, pthread-59 obtaining handle of, DECthreads, cma-106	using to avoid nonreentrant software,
obtaining identifier of, <i>DECthreads</i> , cma=100	DECthreads, 3–3
pthread–90	Throughput (default) scheduling, DECthreads,
per-thread context of, <i>DECthreads</i> , cma-69,	2–6
pthread-65	Time, Programming Resources, 3-23
reentrant code necessary, DECthreads, 1–5	See also Current
releasing processor, DECthreads, cma-118,	absolute, System Services Intro, 10-2
pthread-106	adding interval to current time, DECthreads,
scheduling, DECthreads, 2–20	cma–114, pthread–55
inherit scheduling attribute, DECthreads,	conversion, System Services Intro, 10–1
2–8 schoduling policy attribute. DECthroads	converting ASCII to binary, System Services
scheduling policy attribute, <i>DECthreads</i> , 2–6	Intro, 10–3 converting binary to ASCII string, System
	Services, SYS-26

Time (cont'd) Timeout (cont'd) converting binary to numeric, System Services, for SCSI device, I/O User's I, 11-8, 11-14; SYS-455 Device Support (A), 17-11, 17-12; Device delta, System Services Intro, 10-2 Support (B), 2-89 getting current system, System Services Intro, logging, Device Support (A), 10-6, 11-10 10-2; System Services, SYS-382 Timeout enable bit inserting with FAO, VAXTPU, 7-138 See UCB\$V_TIM inserting with MESSAGE, VAXTPU, 7-268 Timeout field inserting with MESSAGE_TEXT, VAXTPU, See RAB\$B_TMO field Timeout handling routine, Device Support (A), internal format, Programming Resources, 3-23 1-4, 3-8, 9-4, 10-4 to 10-7, 11-8; Device numeric and ASCII, System Services Intro, Support (B), 2-104, 4-5 10 - 7aborting an I/O request in, Device Support (A), obtaining 10-6using SYS\$ASCTIM, Programming address, Device Support (A), 8-7, 10-1; Device Resources, 3-24 Support (B), 4-19 using SYS\$BINTIM, Programming context, Device Support (A), 10-4; Device Resources, 3-24 Support (B), 4-19 using SYS\$FAO, Programming Resources, entry point, Device Support (B), 4-19 3 - 24exit method, Device Support (B), 4-20 using SYS\$GETTIM, Programming functions, Device Support (A), 10-5; Device Resources, 3-24 Support (B), 4-20 obtaining expiration, DECthreads, cma-114, input, Device Support (B), 4-20 pthread-55 register usage, Device Support (B), 4-19 reading system, Device Support (B), 2-52 retrying an I/O operation in, Device Support setting system, System Services Intro, 10-8; (A), 10-5 to 10-6 $System\ Services,\ SYS-517$ synchronization requirements, Device Support system format, System Services Intro, 10-2 (A), 3-22, E-12; Device Support (B), 4-19 TIMEDWAIT macro, Device Support (B), 2-92 to Timeout interval. Device Support (B), 2-104 2 - 93specifying, Device Support (A), 10-4 See also TIMEWAIT macro Timeout option example, Device Support (B), 2-93 See RAB\$V_TMO option "Timed_message" string constant parameter to TIMEOUT_ENABLE attribute, File Def GET_INFO, VAXTPU, 7-207 Language, FDL-13 Time manipulation, Programming Resources, TIMEOUT_PERIOD attribute, File Def Language, 3 - 24FDL-13 converting, Programming Resources, 3-24 TIMEOUT_PERIOD secondary attribute, File formatting, Programming Resources, 3-24 Applications, 7-12 using LIB\$ADDX, Programming Resources, /TIME qualifier, System Dump Analyzer, SDA-52 3 - 24using LIB\$ADD_TIME, Programming See also Interval clock Resources, 3-24 See also Software timer using LIB\$DAY, Programming Resources, 3–25 deallocating, Programming Resources, 3-21 using LIB\$MULT DELTA TIME. initializing, Programming Resources, 3-20 Programming Resources, 3-24 obtaining statistics, Programming Resources, using LIB\$SUBX, Programming Resources, 3-20, 3-21 3 - 24setting, System Services, SYS-519 using LIB\$SUB_TIME, Programming statistics Resources, 3-24 buffer input/output, Programming Timeout, Device Support (B), 1-78, 2-104 Resources, 3–20 caused by power failure recovery procedure, CPU time, Programming Resources, 3-20 Device Support (A), 10-5 direct input/output, Programming detecting, Device Support (B), 1-79 Resources, 3-20disabling, Device Support (A), 4-17, 10-1; elapsed time, Programming Resources, Device Support (B), 2-43, 3-30 3 - 20due time, Device Support (B), 1-79 page fault, Programming Resources, 3-20 expected, Device Support (B), 1-77, 3-105

TIMER keyword, VAXTPU, 7-486 Timer queue, Device Support (A), 3-14, E-13; Device Support (B), 3-29, 3-48 Timer queue element See TQE Timer request, System Services Intro, 10-4 canceling, System Services Intro, 10-6; System Services, SYS-51 TIMER spin lock, Device Support (A), 3-8, 3-13, E-13; Device Support (B), 3-29, 3-48 Timeslice definition of, DECthreads, 2-6 TIMEWAIT macro, Device Support (B), 2-94 See also TIMEDWAIT macro example, Device Support (B), 2-95 time_name data type, Routines Intro, A-12t /TIME_SLICE qualifier, Debugger, 12-23, CD-179, CD-247 TIMOUT processor state, Device Support (B), 1 - 16TITLE attribute, File Def Language, FDL-2, FDL-39 Title bar widget, $V\!AXTPU$, 4–16 .TITLE directive, *Programming Resources*, 9–9; MACRO, 6-95 Title directive (.TITLE) in message source file, Message, MSG-7, MSG-28Title listing control directive (.TITLE), *MACRO*, 6–95 /TMASK qualifier, Debugger, 11–13, CD–84 TMD option, File Def Language, FDL-24 TMO option, File Def Language, FDL-13 TMP option, File Def Language, FDL-20 Tools to aid in application development, Modular Procedures, 1–12 TOP command, File Applications, 10–12; Analyze/RMS_File, ARMS-34 /TOP qualifier, Debugger, CD-113 Total buckets reclaimed, Convert, CONV-24 Total buckets scanned, Convert, CONV-24 Total exception records, Convert, CONV-24 Total key size field See XAB\$B_TKS field Total records processed, Convert, CONV-24 Total valid records, Convert, CONV-24 TPT option, File Def Language, FDL-13 TPU See VAXTPU TPU\$CLEANUP routine, Utility Routines, TPU-26 TPU\$CLIPARSE routine, Utility Routines, TPU-29

TPU\$CLOSE_TERMINAL routine, Utility

Routines, TPU-30

TPU\$COMMAND logical name, VAXTPU, 4-21, TPU\$CONTROL routine, Utility Routines, TPU-31 TPU\$DEBUG logical name, VAXTPU, 5-8 TPU\$EDIT routine, Utility Routines, TPU-32 TPU\$EXECUTE_COMMAND routine, Utility Routines, TPU-34 TPU\$EXECUTE_INIFILE routine, Utility Routines, TPU-35 TPU\$FILEIO routine, Utility Routines, TPU-37 TPU\$HANDLER routine, Utility Routines, TPU-41 TPU\$INITIALIZE routine, Utility Routines, TPU-43 TPU\$INIT_PROCEDURE procedure, VAXTPU, 4-22, 4-28 TPU\$K_DISJOINT constant, VAXTPU, 7-198, TPU\$K_INVISIBLE constant, VAXTPU, 7-198, 7 - 368TPU\$K_OFF_LEFT constant, VAXTPU, 7-198. 7 - 368TPU\$K_OFF_RIGHT constant, VAXTPU, 7-198, 7 - 368TPU\$K UNMAPPED constant, VAXTPU, 7-198, 7 - 368TPU\$LOCAL_INIT procedure, VAXTPU, 4-29 TPU\$LOCAL_INIT_PROCEDURE procedure, VAXTPU, 4-23TPU\$MESSAGE routine, Utility Routines, TPU-48 TPU\$PARSEINFO routine. Utility Routines. TPU-49 TPU\$SECTION logical name, VAXTPU, 4-21, 4-27, 5-16 TPU\$STACKOVER status correcting, VAXTPU, 4-2 TPU\$TPU routine, Utility Routines, TPU-50 TPU\$WIDGET INTEGER CALLBACK callback routine, VAXTPU, 4-9, 4-10 TPU\$WIDGET_STRING_CALLBACK callback routine, VAXTPU, 4-9, 4-10 TPU\$X_MESSAGE_BUFFER variable, VAXTPU, TPU\$X_SHOW_BUFFER variable, VAXTPU, TPU\$X_SHOW_WINDOW variable, VAXTPU, TPU\$_UNKLEXICAL error message, VAXTPU, 3 - 38TPU command, VAXTPU, 4–19 TPU debugger. VAXTPU, 4-33 to 4-37 ATTACH command, VAXTPU, 4-36 CANCEL BREAKPOINT command, VAXTPU, 4 - 36DEBUGON procedure, VAXTPU, 4-35 DEPOSIT command, VAXTPU, 4-36

TPU debugger (cont'd) Tracepoint (cont'd) DISPLAY SOURCE command, VAXTPU, 4-36 source display at, Debugger, 6-7 EXAMINE command, VAXTPU, 4-36 WHEN clause, Debugger, 3-13 with DECwindows, Debugger, 1-23 GO command, *VAXTPU*, 4-34, 4-36 HELP command, VAXTPU, 4-36 Trace trap enable (T), MACRO, 8-15 invoking, VAXTPU, 4-33 Track, File Applications, 1-5 QUIT command, VAXTPU, 4-36 size, File Applications, 3-13 SCROLL command, VAXTPU, 4-37 Trailing numeric string SET BREAKPOINT command, VAXTPU, 4-34, data type, MACRO, 8-8 Transaction SET WINDOW command, VAXTPU, 4-37 aborting, System Services Intro, 14-2; System SHIFT command, VAXTPU, 4-37 Services, SYS-3, SYS-5, SYS-7 SHOW BREAKPOINTS command, VAXTPU, abort reason codes, System Services, SYS-4, 4 - 37SYS-5, SYS-197 SPAWN command, VAXTPU, 4-37 committing, System Services Intro, 14-2; STEP command, VAXTPU, 4-35, 4-37 System Services, SYS-196, SYS-198, TPU command, VAXTPU, 4-37 SYS-201 TQE\$B_RQTYPE, Device Support (B), 3-48 completing, System Services Intro, 14-4 TQE\$Q_TIME, Device Support (B), 3-29 current, System Services, SYS-631 TQE (timer queue element) participants, System Services Intro, 14-2; calling a driver from, Device Support (A), E-15 System Services, SYS-5, SYS-198 expiration time, Device Support (A), 3-8; starting, System Services, SYS-629, SYS-631, Device Support (B), 3-29 SYS-633 inserting in timer queue, Device Support (B), states, System Services Intro, 14-2 Transaction identifier (TID), System Services removing in timer queue, Device Support (B), Intro, 14-3; System Services, SYS-4, SYS-198, SYS-629, SYS-630, SYS-631, TQELM (timer queue entry limit) quota SYS-633 effect of canceling timer request, System Transaction management, System Services Intro, Services, SYS-52 14 - 1Traceback, MACRO, 6-23 Transaction manager, System Services Intro, 14-2 compiler option, Debugger, 5-3 transaction_id data type, Routines Intro, A-12t Transfer address, Debugger, 3-1, 9-7 link option, Debugger, 5-4 SHOW CALLS display, Debugger, 2–13 .TRANSFER directive, Linker, 4-8; MACRO, Traceback handler, Programming Resources, 9-5, Transfer from disk volumes, File Def Language, 9 - 13TRACEBACK keyword, VAXTPU, 7-488 FDL-23 Transfers, far-end DR device (DR32), I/O User's /TRACEBACK qualifier, Debugger, 3-3, 5-4, 5-5; Linker, LINK-20 II, 4-3shareable image, Debugger, 5-13 Transfer vector, Programming Resources, 5–3 "Traceback" string constant parameter to See also Shareable image GET_INFO, VAXTPU, 7-207 advantage of, Linker, 4-6 Tracepoint changing, Modular Procedures, 6-6 canceling, Debugger, 3-15, CD-30 coded for procedure call, Linker, 4-8 defined, Debugger, 3-9 coded for subroutine call, Linker, 4-8 delayed triggering of, Debugger, 3-13, CD-184 compiling, Programming Resources, 5-6 displaying, Debugger, CD-250 creating, Programming Resources, 5-6; DO clause, Debugger, 3-13 Modular Procedures, 5-5; Linker, 4-7 exception, Debugger, 9-10, CD-183 deleting, Programming Resources, 5-4 in tasking (multithread) program, Debugger, example, Linker, 1-10 12 - 24for upward compatibility, Linker, 1-11, 4-9 on activation (multiprocess program), placement of, Programming Resources, 5-3 Debugger, 10-12 purpose of, Linker, 4-5 on task event, Debugger, 12-27 reasons for using, Programming Resources, 5-4 on termination (image exit), Debugger, 10-12 recommended length of, Linker, 4-7 on vector instruction, Debugger, 11-3 updating, Modular Procedures, 6-3 predefined, Debugger, 10-12 setting, Debugger, 3-9, CD-183

TRANSLATE built-in procedure, VAXTPU, 7-526 Truncate service, File Applications, 8-5; RMS, to 7-529 **RMS-97** Translation condition values, RMS, RMS-98 logical to physical, I/O User's I, 3–18 See also Completion status code of addresses to symbols, Patch, PAT-13 control block input fields, RMS, RMS-98 of symbols to addresses, Patch, PAT-13 control block output fields, RMS, RMS-98 Translation buffer effect on next-record position, File Applications, See TB 8 - 16invalidating, Device Support (A), E-15; Device use restriction, RMS, RMS-97 Support (B), 2-41 to 2-42 Truncate subfunction, I/O User's I, 1-13 Translation mode card TRUNCATE_ON_CLOSE attribute, File Def 026 punch mode, I/O User's I, 2-2 Language, FDL-25 029 punch mode, I/O User's I, 2–2 TRUNCATE_ON_PUT attribute, File Def /TRANSLATION_ATTRIBUTES qualifier, File Language, FDL-13 Applications, 5-7, 6-15Truncation of floating-point value, RTL Math, 1-6 Trap Truncation of records, Convert, CONV-3 arithmetic, MACRO, E-1 TRY/ENDTRY block arithmetic type code, MACRO, E-1 restriction, DECthreads, B-1 change mode, MACRO, E-8 TSTB (Test Byte) instruction, MACRO, 9-31 decimal TSTD (Test D_floating) instruction, MACRO, string overflow, MACRO, E-3 9 - 125decimal overflow, MACRO, 8-16 TSTF (Test F_floating) instruction, MACRO, divide by zero, MACRO, 8-16 9 - 125floating TSTG (Test G floating) instruction, MACRO, divide-by-zero, MACRO, E-2 9 - 125overflow, MACRO, E-2 TSTH (Test H_floating) instruction, MACRO, underflow, MACRO, E-3 9 - 125integer TSTL (Test Long) instruction, MACRO, 9-31 divide-by-zero, MACRO, E-2 TSTW (Test Word) instruction, MACRO, 9-31 overflow, MACRO, E-2 TTDRIVER.EXE, Device Support (A), 18-1 integer overflow, MACRO, 8-15 TTY\$V_PC_NOTIME, Device Support (A), 18-16 subscript-range, MACRO, E-3 TTY\$V_PC_PORTFDT, Device Support (A), 18-14 trace, MACRO, 8-15 TTY\$V_TP_ABORT, Device Support (A), 18-18 Tree structure, File Applications, 10-11 \$TTYDEFS macro, Device Support (A), 18-2 of indexed file, File Applications, 10-19 \$TTYMACS macro, Device Support (A), 18-12; of relative file, File Applications, 10-16 Device Support (B), 2-7, 2-8, 2-98, 2-99, of sequential file, File Applications, 10–12 TRM\$M_TM_ESCAPE, Programming Resources, \$TTYMDMDEF macro, Device Support (A), 18-20 7 - 25\$TTYMODEMDEF macro, Device Support (A), TRM\$M_TM_NOECHO, Programming Resources, 7 - 25\$TTYUCBDEF macro, Device Support (B), 1-69 TRM\$M TM TRMNOECHO. Programming TT_CANCEL_CONTROL_O attribute, File Def Resources, 7–24 Language, FDL-14 TRUE logical value, File Def Language, FDL-2 TT_PROMPT attribute, File Def Language, Truncate at end-of-file option FDL-14 TT_PURGE_TYPE_AHEAD attribute, File Def See FAB\$V_TEF option Language, FDL-14 TRUNCATE attribute, File Def Language, FDL-3 TT_READ_NOECHO attribute, File Def Truncate-on-put option Language, FDL-14 See also RAB\$V TPT option TT_READ_NOFILTER attribute, File Def access requirement, File Applications, 7-7 Language, FDL-14 Truncate option TT_UPCASE_INPUT attribute, File Def See FAB\$V_TRN option Language, FDL-14 /TRUNCATE qualifier, Convert, CONV-3, TU58 console bootstrap procedures, Delta/XDelta, CONV-26 DELTA-6 TRUNCATE secondary attribute, File TU58 magnetic tape Applications, 7-3 See Disk

Tuning, File Applications, 3-3, 10-26 Type code field in summary XAB indexed files, File Applications, 3-15 See XAB\$B_COD field relative files, File Applications, 3-12 Type code field in terminal XAB sequential files, File Applications, 3-9, 3-10 See XAB\$B_COD field 256 keyword TYPE command, Debugger, 6-3, 7-6, CD-266 for /FORMAT qualifier, National Char Set, Type entry, Routines Intro, 1-8 NCS-29 "Type" GET_INFO request_string, VAXTPU, Two-phase commit protocol, System Services Intro, 7 - 16514 - 4TYPE keyword Type with FILE_PARSE, VAXTPU, 7-141 See also Built-in value type with FILE_SEARCH, VAXTPU, 7-144 address expression, Debugger, 4-4, 4-23 Type override, Debugger, 4–24, CD–33, CD–192, array, Debugger, 4-16 CD-252 ASCII string, Debugger, 4–15, 4–26 /TYPE qualifier, Debugger, 4–26, CD–60, CD–85, compiler generated, Debugger, 4-4, 4-14 CD-243; System Dump Analyzer, SDA-56, conversion, numeric, Debugger, 4-7 SDA-119 current, *Debugger*, 4-23, CD-191, CD-252 Types of libraries, Librarian, LIB-1 displaying, Debugger, CD-252 integer, Debugger, 4-14, 4-25 U override, Debugger, 4-24, CD-191 pointer, Debugger, 4-18 UAF (user authorization file) real, Debugger, 4-14 getting information about, System Services, record, Debugger, 4-17 SYS-383 scalar, Debugger, 4-14 modifying, System Services, SYS-544 SET TYPE command, Debugger, 4-23, CD-191 UBA (UNIBUS adapter), Device Support (A), 1-11 symbolic address expression, Debugger, 4-4 See also UNIBUS adapter /TYPE qualifier, Debugger, 4-26, CD-60, UBI (UNIBUS interface), Device Support (A), CD-85, CD-243 1 - 11VAX instruction, Debugger, 4-18 See also UNIBUS adapter vector register, Debugger, 11-6 UBMAPEXCED bugcheck, Device Support (B), Type-ahead 3-74, 3-78See Terminal, type-ahead UCB\$B_DEVCLASS, Device Support (A), 6-3, Type-ahead buffer, Programming Resources, 7–39 17-21, 17-25; Device Support (B), 2-25, 3-51 UCB\$B_DEVTYPE, Device Support (A), 6-3, TYPE attribute, File Def Language, FDL-28, FDL-29, FDL-30 17-21, 17-25; Device Support (B), 2-25, 3-51 TYPE clause UCB\$B_DIPL, Device Support (A), 3-6, 6-2, 10-4; definition of value types, Command Def, Device Support (B), 2–25 UCB\$B_ERTCNT, Device Support (A), 10-3; CDU-6 for VALUE clause, Command Def, CDU-24, Device Support (B), 3–69, 3–94 CDU-26, CDU-33, CDU-34 UCB\$B FIPL, Device Support (B), 1-73, 2-33 with VALUE clause, Command Def, CDU-29 UCB\$B_FLCK, Device Support (A), 3-6, 6-2, 10-1; Device Support (B), 2-25, 2-33 Type code field in allocation XAB initializing, Device Support (A), E-8 See XAB\$B_COD field UCB\$B_SLAVE, Device Support (A), 15–12 to Type code field in date and time XAB 15 - 13See XAB\$B_COD field UCB\$B SLAVE+1, Device Support (A), 15–12 to Type code field in file header characteristics XAB 15 - 13See XAB\$B_COD field UCB\$B_TP_STAT, Device Support (A), 18-18 UCB\$B_TT_DEPARI, Device Support (A), 18-22 Type code field in item list XAB UCB\$B_TT_DETYPE, Device Support (A), 18-22 See XAB\$B_COD field UCB\$B_TT_MAINT, Device Support (A), 18–15 Type code field in key XAB UCB\$B_TT_OUTYPE, Device Support (A), 18-16, See XAB\$B_COD field 18-21, 18-22, 18-23 Type code field in protection XAB UCB\$B TT PARITY, Device Support (A), 18-15, See XAB\$B_COD field 18 - 22Type code field in revision date and time XAB UCB\$L_AFFINITY, Device Support (B), 3-71 See XAB\$B_COD field

```
UCB$L_CRB, Device Support (A), 11-5, 15-13
                                                   UCB$V_ERLOGIP, Device Support (A), 10-3,
                                                       11-10; Device Support (B), 3-8, 3-95
UCB$L DDB, Device Support (A), 4-8
UCB$L_DDT, Device Support (A), 18-9
                                                   UCB$V_INT, Device Support (A), 8-7, 9-3, 9-7,
UCB$L DEVCHAR, Device Support (A), 6-3,
                                                       10-4, 15-10, 18-16
    11-9; Device Support (B), 2-25
                                                   UCB$V_JOB, Device Support (A), 9-6, 9-7, 9-8
UCB$L_DLCK, Device Support (A), 3-22
                                                   UCB$V_ONLINE, Device Support (A), 9-8, 11-2,
UCB$L_DUETIM, Device Support (A), 4-16, 8-7,
                                                       11-3, 16-13; Device Support (B), 1-36
    10-5; Device Support (B), 3-104, 3-105
                                                   UCB$V_POWER, Device Support (A), 8-5, 10-5,
UCB$L EMB, Device Support (A), 10-3; Device
                                                       11-1, 17-26, 18-13
    Support (B), 3-8
                                                   UCB$V_TEMPLATE, Device Support (B), 4-6
                                                   UCB$V_TIM, Device Support (A), 8-7, 10-1, 10-4;
UCB$L_FPC, Device Support (A), 4-16, 4-17, 9-4,
                                                       Device Support (B), 2-43, 3-30, 3-104
    10-1, 10-4
                                                   UCB$V_TIMOUT, Device Support (A), 10-4;
UCB$L_FR3, Device Support (A), 4-16, 4-17, 9-4,
                                                       Device Support (B), 3-71, 3-104
    10-1, 10-4
UCB$L_FR4, Device Support (A), 4-16, 4-17, 9-4,
                                                   UCB$V_VALID, Device Support (A), 9-8
                                                   UCB$W BCNT, Device Support (A), 8-2, 14-19,
    10-1, 10-4
UCB$L IOQFL, Device Support (A), 10-3, E-14;
                                                       14-22, 15-3, 15-4, 15-14, 16-19; Device
    Device Support (B), 3-28
                                                       Support (B), 1-41, 1-79, 3-64, 3-66, 3-71
UCB$L_IRP, Device Support (A), 4-5, 10-3;
                                                   UCB$W_BOFF, Device Support (A), 8-2, 14-19,
    Device Support (B), 3-71
                                                       14-21, 14-22, 14-23, 15-3, 15-4, 15-14,
UCB$L_LINK, Device Support (A), 11-5
                                                       16-19; Device Support (B), 1-41, 1-79, 3-64,
UCB$L MAXBCNT, Device Support (A), 17-14,
                                                       3-66, 3-71
                                                   UCB$W_BUFQUO
UCB$L_OPCNT, Device Support (B), 3-5, 3-24,
                                                      in mailbox UCB, Device Support (B), 3-61
                                                   UCB$W_DEVBUFSIZ, Device Support (A), 6-3;
    3 - 94
  adjusted by IOC$REQCOM, Device Support
                                                       Device Support (B), 3-51
                                                      in mailbox UCB, Device Support (B), 3-61
      (B), 3–95
UCB$L_ORB, Device Support (B), 1-44
                                                   UCB$W_DEVSTS, Device Support (A), 10-3
UCB$L PDT, Device Support (A), 17–26
                                                   UCB$W EC1, Device Support (B), 3-67
UCB$L_SCDT, Device Support (A), 17-26
                                                   UCB$W EC2. Device Support (B), 3-67
                                                   UCB$W_ERRCNT, Device Support (A), 11-10;
UCB$L_STS, Device Support (A), 2-4, 8-5, 8-7
UCB$L_SVAPTE, Device Support (A), 4-5, 8-2,
                                                       Device Support (B), 3-8
    14-22, 15-3, 15-14, 16-19; Device Support
                                                   UCB$W_QLEN, Device Support (B), 3-28
                                                   UCB$W_REFC, Device Support (A), 9-6, 9-7,
    (B), 1–40, 3–71, 3–79
                                                       11-6, 11-7; Device Support (B), 4-4
UCB$L_SVPN, Device Support (B), 2-21, 3-67,
                                                   UCB$W STS, Device Support (A), 17-26
UCB$L_TT_CLASS, Device Support (A), 18-9;
                                                   UCB$W_TT_CURSOR, Device Support (A), 18-22
   Device Support (B), 2-8
                                                   UCB$W_TT_DESPEE, Device Support (A), 18-22
UCB$L_TT_GETNXT, Device Support (A), 18-9
                                                   UCB$W_TT_HOLD, Device Support (A), 18-22
UCB$L_TT_LOGUCB, Device Support (A), 18-22
                                                   UCB$W_TT_OUTLEN, Device Support (A), 18-16,
UCB$L_TT_OUTADR, Device Support (A), 18-16,
                                                       18-21, 18-22
    18-21, 18-22
                                                   UCB$W TT PRTCTL, Device Support (A), 18-14,
UCB$L_TT_PORT, Device Support (A), 18-9;
    Device Support (B), 2-8
                                                   UCB$W TT SPEED, Device Support (A), 18-15,
UCB$L_TT_PUTNXT, Device Support (A), 18-9
                                                       18 - 22
UCB$L_TT_RTIMOU, Device Support (A), 18-22
                                                   UCB$W_UNIT, Device Support (A), 15-12
UCB$L_TT_WFLINK, Device Support (A), 18-22
                                                   UCB (unit control block), System Dump Analyzer,
UCB$Q_DEVDEPEND, Device Support (A), 6-3;
                                                       SDA-87; Device Support (A), 1-5, 3-5, 4-5;
    Device Support (B), 3-49, 3-51
                                                       Device Support (B), 1-12, 1-68 to 1-91
UCB$V BSY, Device Support (A), 2-4, 4-5, 7-5,
                                                      See also SCSI device UCB
    10-4, 11-8; Device Support (B), 3-28, 3-68,
                                                      See also SCSI port UCB
                                                      address, Device Support (A), 8-7, 11-5
UCB$V_CANCEL, Device Support (A), 10-6,
                                                      as fork block, Device Support (A), 8-7
   10-7, 11-8; Device Support (B), 3-68, 3-71,
                                                      as template, Device Support (B), 1-78
                                                      cloned, Device Support (B), 1-31, 1-78
UCB$V_DELMBX, Device Support (A), 18-13
                                                      creation, Device Support (A), 11-4, 12-4,
UCB$V_ECC, Device Support (B), 3-67
                                                          12-21, 15-7; Device Support (B), 1-37,
```

1 - 68

UCB (unit control block) (cont'd) UNDEFINED results, MACRO, 7-1 dual-path extension, Device Support (B), 1-69 UNDEFINED_KEY keyword, VAXTPU, 7-490 error log extension, Device Support (A), 11-9; "Undefined_key" string constant parameter to Device Support (B), 1-69, 1-80 to 1-81 GET_INFO, VAXTPU, 7-204 extending, Device Support (B), 1–69 to 1–70 UNDEFINE_KEY built-in procedure, VAXTPU, initializing, Device Support (A), 11-3 7-532 to 7-533 local disk extension. Device Support (A), 11-9: Underflow detection, RTL Math, 2-9 Device Support (B), 1-69, 1-82 to 1-84, UNDERLINE keyword 3-9, 3-67 with MARK, VAXTPU, 7-261 local tape extension, Device Support (A), 11-9; with SELECT, VAXTPU, 7-337 Device Support (B), 1-69, 1-81 to 1-82, 3-9 with SET (PROMPT_AREA), VAXTPU, 7-446 logical, Device Support (B), 1–87 with SET (STATUS_LINE), VAXTPU, 7-476 number to be created. Device Support (A), 6-2 with SET (VIDEO), VAXTPU, 7-492 physical, Device Support (B), 1–86 "Underline_status" string constant parameter to reference count, Device Support (B), 1-78 GET_INFO, VAXTPU, 7-225 remote terminal extension, Device Support (B), "Underline_video" string constant parameter to GET_INFO, VAXTPU, 7–225 size, Device Support (B), 1-33, 1-69 to 1-70, Ungrab routine 1-72, 2-22global selection storing data in, Device Support (A), 4-5, 5-2 fetching, VAXTPU, 7-202 synchronizing access to, Device Support (A), specifying, VAXTPU, 7-389 2-4, 3-5, 3-6, 3-16 input focus terminal extension, Device Support (A), 18-2 fetching, VAXTPU, 7-202 to 18-3; Device Support (B), 1-69, 1-84 to specifying, VAXTPU, 7-402 **UNIBUS** \$UCBDEF macro, Device Support (B), 1-69 accomplishing a DMA transfer on, Device UDA50 disk adapter, I/O User's I, 3-3 Support (A), 14-15 to 14-26 UFO (user-file open), Programming Resources, address size, Device Support (A), 14-6 example of driver designed for, Device Support UFO (user-file open) option, File Def Language, (A), C-1 to C-29, D-1 to D-26 FDL-25 example of read operation, Device Support (A), See also FAB\$V_UFO option 14-12 to 14-13, 14-14 UIC (user identification code), Routines Intro, example of write operation, Device Support (A), A-11t, A-12t; File Applications, 1-10; File 14-12, 14-15 Def Language, FDL-22 I/O address space, Device Support (A), 19–1, delimiting in control block fields, RMS, 3-7 19-4, 19-7 UIC-based protection, File Applications, 4-21 I/O space, Device Support (A), 14-4 uic data type, Routines Intro, A-12t power failure, Device Support (A), 19-7 UIF option, File Def Language, FDL-14 UNIBUS adapter, Device Support (A), 1–11, 1–13 ULK option, File Def Language, FDL-11 error interrupt from, Device Support (A), \$ULKPAG, System Services, SYS-651 13-22, 19-7 \$ULWSET, System Services, SYS-653 functions, Device Support (A), 14-1 to 14-15 Unaligned bit array descriptor, Routines Intro, interrupt service routine, Device Support (A), Unaligned bit string descriptor, Routines Intro, nexus value of, Device Support (A), 12-5 obtaining resources of, Device Support (A), Unaligned bit string with bounds descriptor, 14 - 16Routines Intro, 2-42 prefetch function, Device Support (A), 14–12, UNANCHOR keyword, $V\!AXTPU$, 7–530 to 7–531 14 - 13with SEARCH_QUIETLY, VAXTPU, 7-333 registers, Device Support (A), 14–15 Unary operator, System Dump Analyzer, SDA-12; scatter-gather map, Device Support (A), 14-4 MACRO, 3-10 to 14-7 summary, MACRO, C-7 synchronizing access to, Device Support (A), Unbound code 14 - 2use of local variables in, VAXTPU, 3-34 Uniprocessing device driver UNDEFINED format, File Def Language, FDL-35 converting to multiprocessing device driver, Undefined record format option Device Support (A), E-8 to E-20 See FAB\$C_UDF option

Uniprocessing device driver (cont'd) Unit initialization routine (cont'd) incompatibility with multiprocessing device of third-party SCSI class driver, Device driver, Device Support (A), 12-13, E-3 Support (A), 17–26 to 17–27 Uniprocessing environment register usage, Device Support (B), 4-22 contrasted with multiprocessing environment, synchronization requirements, Device Support (A), E-11 to E-12; Device Support (B), Device Support (A), 3-11, E-1 4-22Uniprocessing synchronization image, Device Support (A), 13-28 Unit testing, Modular Procedures, 4–1 black box, Modular Procedures, 4-2 loading, Device Support (A), E-2 white box, Modular Procedures, 4–3 Unit control block UNIVERSAL option See SCSI device UCB See SCSI port UCB See Linker Utility Universal symbol, Programming Resources, 5-5; See UCB Linker, 1-5, 2-2, 2-8; Patch, PAT-8, PAT-9 Unit delivery routine, Device Support (B), 1-2 address, Device Support (A), 6-2, 12-21; See also Symbol declaring, Patch, PAT-8 Device Support (B), 1-34, 2-22, 4-21 context, Device Support (A), 12–21; Device designation of, *Linker*, 1–9, 2–8, 3–12 Support (B), 4-21 in shareable image creation, Linker, 1-11, 4-10 entry point, Device Support (B), 4-21 reason for, Linker, 2-8 exit method, Device Support (B), 4-21 referencing in a shareable image, Patch, functions, Device Support (A), 12-21; Device PAT-8, PAT-9 Support (B), 4–21 resolving, Programming Resources, 5-5 input, Device Support (B), 4-21 UNIX services output, Device Support (A), 12-21 atfork(), DECthreads, A-2 calling, DECthreads, A-1 register usage, Device Support (B), 4-21 synchronization requirements, Device Support fork(), DECthreads, A-2 (B), 4-21jacket routines for, DECthreads, A-1 Unit initialization routine, Device Support (A), UNIX signals 1-3, 11-1 to 11-6, 12-4 installing signal handlers for, DECthreads, address, Device Support (A), 4-6, 6-3, 6-4, 11-1, 14-30; Device Support (B), 1-26, SIGINT, DECthreads, A-4 1-30, 2-26, 4-22 SIGKILL, DECthreads, A-5 allocating controller data channel in, Device SIGQUIT, DECthreads, A-5 SIGSTOP, DECthreads, A-5 Support (A), 8-4, 10-2 SIGTRAP, DECthreads, A-5 allocating permanent buffered data path in, SIGTSTP, DECthreads, A-5 Device Support (A), 14–18 allocating permanent map registers in, Device Unload function Support (A), 14-20 to 14-21 disk, I/O User's I, 3-32 context, Device Support (A), 11-1, 11-3; Device magnetic tape, I/O User's I, 6-22 Unlocking a global mutex, DECthreads, cma-116, Support (B), 4-22 entry point, Device Support (B), 4-22 pthread-104 exit method, Device Support (B), 4-23 Unlocking a mutex, DECthreads, cma-85, for connect to interrupt facility, Device Support pthread-86 (A), 19–10, 19–15 UNLOCK macro, Device Support (A), 3-10, E-4; for generic VAXBI device, Device Support (A), Device Support (B), 2–96, 3–114, 3–116 16-12, 16-22 UNLOCK_SYSTEM_PAGES macro, Device forking in, Device Support (A), 3-24, 11-6 Support (B), 2–97 for MASSBUS device, Device Support (A), 11-5, UNMANAGE_WIDGET built-in procedure, 15-12 to 15-13; Device Support (B), 1-26 VAXTPU, 7-534 UNMAP built-in procedure, VAXTPU, 7-536 to for terminal port driver, Device Support (A), 18-9, 18-12 Unmodifiable record, VAXTPU, 7-448 functions, Device Support (A), 11-3; Device Support (B), 4-23 determining if present, VAXTPU, 7-175, input, Device Support (A), 11-3; Device 7–186, 7–193 Support (B), 4-23 preventing or allowing erasing of, VAXTPU, of CONINTERR.EXE, Device Support (A), 7 - 375sensing erasable state, VAXTPU, 7-169 of terminal port driver, Device Support (B), 2-8

Update sharing option "Unmodifiable_records" string constant parameter to GET_INFO, VAXTPU, 7-175, 7-186, 7-193 See FAB\$V_UPD option UNPREDICTABLE results, MACRO, 7-1 "Update" string constant parameter to GET_INFO, Unsegmented key, File Def Language, FDL-28 VAXTPU, 7-208 Unsolicited interrupt UPDATE_IF attribute, File Def Language, FDL-14 See Device interrupt UPDATE_IF secondary attribute, File Unsolicited interrupt service routine, Device Applications, 8-8 Support (A), 9-5, 15-16; Device Support (B), Updating windows, VAXTPU, 2-29 UPD option, File Def Language, FDL-3, FDL-37 address, Device Support (A), 6-4; Device UPI option, File Def Language, FDL-37 Support (B), 4-24 /UP qualifier, Debugger, CD-95, CD-105, CD-113 context, Device Support (B), 4-24 Upward compatibility, Modular Procedures, 6-1, entry point, Device Support (B), 4-24 A-7 exit method, Device Support (B), 4-24 User-action routine, Modular Procedures, 2-7 input, Device Support (B), 4-24 interface, Modular Procedures, 3-11 register usage, Device Support (B), 4-24 optional, Modular Procedures, 3-11 synchronization requirements, Device Support passing, Modular Procedures, 3-11 (B), 4-24User buffer UNSPECIFIED data type, VAXTPU, 2–24 address, File Applications, 9-17 Unsupported terminals, VAXTPU, 2-29 size, File Applications, 9-17 UNSUPRTCPU bugcheck, Device Support (B), User classification, File Def Language, FDL-23 2 - 10\$UNWIND, System Services, SYS-655 User context field Unwind condition handler, Programming See RAB\$L_CTX field User default library Resources, 9-18UP command, File Applications, 10–12; object module, Linker, 6-14 Analyze/RMS_File, ARMS-35 shareable image, Linker, 6-14 User-defined condition code UPDATE attribute, File Def Language, FDL-3, FDL-37 signaling, Programming Resources, 9-10 UPDATE built-in procedure, VAXTPU, 6-9, 7-538 User-defined local label, MACRO, 3-7 range, MACRO, 3-7 to 7-539 compared with REFRESH, VAXTPU, 7-538 User-defined logical name tables, System Services UPDATE command, Patch, PAT-2, PAT-6, Intro, 6-6 PAT-30, PAT-89 User-defined patch area Update file, SUMSLP, SUM-1 accessing with SET PATCH_AREA, Patch, Update-if option, File Applications, 8-4 PAT-80 creating and accessing, Patch, PAT-19 See also RAB\$V_UIF option default size, Patch, PAT-81 Update operation, File Applications, 3-9 resetting, Patch, PAT-19, PAT-43 /UPDATE qualifier, Patch, PAT-33 to PAT-35; terminating use of, Patch, PAT-19 SUMSLP, SUM-20 when to use, Patch, PAT-19 UPDATE secondary attribute, File Applications, User-defined symbol, Patch, PAT-5; MACRO, 7-3, 7-43-5, 3-6 Update service, File Applications, 8-1, 8-4; User-entered reply RMS, RMS-99, RMS-100 as used in example for selecting key path, comparing with Put service for stream format RMS, 4-12 files, RMS, RMS-100 User-file open condition values, RMS, RMS-101 control block input fields, RMS, RMS-100 See UFO control block output fields, RMS, RMS-101 User identification code high-level language equivalents, File See UIC Applications, 8-1 User identification code field invoking, RMS, 5-11 See XAB\$L UIC field program example, RMS, 4-20 User interface CSR space requirements for using, RMS, RMS-100 enabling interrupts from, Device Support (A), run-time options, File Applications, 9-19 to 16 - 169 - 20User library using with indexed files, RMS, RMS-100 creating, Linker, 1-5

Utility routines (cont'd) /USERLIBRARY qualifier, Linker, 2-4, LINK-21 See FDL routine User-mode (PSL\$C_USER) constant See LBR routines for FAB\$V_CHAN_MODE, RMS, 5-5 See PSM routines User number, File Def Language, FDL-22 See SMB routines User-open routine, Programming Resources, 8-58 See SOR routines User privilege, System Services Intro, 2-2 See VAXTPU routines User procedure, RTL Intro, 3-1 defined, Utility Routines, 1-1 User process interlock option forming the VAXTPU callable interface, See FAB\$V_UPI option VAXTPU, 4-1, 7-41 User prompt string program example, RMS, 4-16 /USER qualifier, Debugger, CD-15, CD-18, CD-31, CD-207, CD-250; System Dump VADD (Vector Floating Add) instruction, MACRO, Analyzer, SDA-157 User record buffer address field VADDL (Vector Integer Add) instruction, MACRO, See RAB\$L_UBF field 10 - 57User record buffer size field VAER (Vector Arithmetic Exception Register), See RAB\$W USZ field MACRO, 10-6User stack %VAL, Debugger, CD-10 displaying contents, System Dump Analyzer, VALIDATE QUEUE command, System Dump SDA-157 Analyzer, SDA-164 User stack pointer, System Dump Analyzer, Validity rules, File Def Language, FDL-39, SDA-14FDL-40 User window Value in EVE editor, VAXTPU, 4-16 See also Built-in value type User-written system service, System Services assigning to widget resources, VAXTPU, 4–10, Intro, A-1 7 - 494User-written VAXTPU routines how to define, Command Def, CDU-6 to See VAXTPU routines CDU-8 symbol for last displayed value, Delta/XDelta, user_arg data type, Routines Intro, A-13t USER_FILE_OPEN attribute, File Def Language, DELTA-9 **VALUE** clause USER_FILE_OPEN secondary attribute, File for defining parameters, qualifiers, keywords, Command Def, CDU-6 Applications, 7-4 USER_INTERLOCK, File Applications, 7-4, 7-7; for PARAMETER clause, Command Def. File Def Language, FDL-37 CDU-24, CDU-32 /USER_VALUE qualifier for QUALIFIER clause, Command Def. CDU-25, CDU-34 in message definition, Message, MSG-22 /VALUE qualifier, Debugger, 8-6, CD-47 /USE_CLAUSE qualifier, Debugger, CD-244 Using entry and display modes, Patch, PAT-14 Variable Using patch area. Patch. PAT-17 as override type, Debugger, 4-26 Using procedure libraries, Modular Procedures, buffer, VAXTPU, 2-4 depositing into, Debugger, 4-3, 4-14 5 - 11Using symbols, Patch, PAT-7 with DECwindows, Debugger, 1-24 Using the Patch Utility, Patch, PAT-1 examining, Debugger, 4-2, 4-14 with DECwindows, Debugger, 1-24 USP symbol, System Dump Analyzer, SDA-14 global, VAXTPU, 3-4 global section, Debugger, 10-15 See also entries for each utility initialized, Debugger, 4-1 invoking from a program, Programming initializing, VAXTPU, 2-24 Resources, 1-24 local, VAXTPU, 3-4, 3-20, 3-34 Utility routines, Programming Resources, 1-34; nonstatic, Debugger, 3-17, 4-1 Modular Procedures, 1-10 with DECwindows, Debugger, 1-24 See ACL Editor routine optimized code, Debugger, 9-1 See CLI routine recommended naming conventions, VAXTPU, See CONV routine 4-31 See DCX routines register, Debugger, 3-17, 4-1 See EDT routines

Variable VAX-11/730 computer register (cont'd) bootstrap procedure for XDELTA, with DECwindows, Debugger, 1-24 Delta/XDelta, DELTA-6 selecting from DECwindows window, Debugger, inducing a crash, System Dump Analyzer, 1-22SDA-31 stack local, Debugger, 3-17, 4-1 requesting interrupt, Delta/XDelta, DELTA-7 with DECwindows, Debugger, 1-24 VAX-11/750 computer static, Debugger, 3-17 booting with XDELTA from, Delta/XDelta, uninitialized, Debugger, 3-21 DELTA-5 watchpoint, Debugger, 3-15, 10-15 bootstrap procedure for XDELTA with TU58 with DECwindows, Debugger, 1-24 console, Delta/XDelta, DELTA-6 Variable bit base address access type, MACRO, inducing a crash, System Dump Analyzer, 8 - 17SDA-31 Variable buffer descriptor, Routines Intro, 2-25 requesting interrupt, Delta/XDelta, DELTA-7 VARIABLE declaration, VAXTPU, 3-36 VAX-11/780 computer VARIABLE format, File Def Language, FDL-35 booting with XDELTA from, Delta/XDelta, Variable-length bit field DELTA-4 bytes referenced, MACRO, 8-7 inducing a crash, System Dump Analyzer, data type, MACRO, 8-6 SDA-30Variable-length bit field instructions, MACRO, requesting interrupt, Delta/XDelta, DELTA-6 9 - 36VAX-11/785 computer Variable-length bit field routine, RTL Library, booting with XDELTA from, Delta/XDelta, DELTA-4 Variable-length format option inducing a crash, System Dump Analyzer, See FAB\$C_VAR option SDA-30 Variable-length record, File Def Language, requesting interrupt, Delta/XDelta, DELTA-6 VAX 6200 computer guidelines for specifying, RMS, 5-21 inducing a crash, System Dump Analyzer, with D format, File Applications, 2-9 SDA-29VAX 8200 computer with V format, File Applications, 2-9 booting with XDELTA from, Delta/XDelta, Variable name address expression, Debugger, 4-7 DELTA-4 with DECwindows, Debugger, 1-22 inducing a crash, System Dump Analyzer, DEPOSIT command, Debugger, 4-3 SDA-29EXAMINE command, Debugger, 4–2 requesting interrupt, Delta/XDelta, DELTA-7 language expression, Debugger, 4-6 VAX 8230 computer selecting from DECwindows window, Debugger, inducing a crash, System Dump Analyzer, 1 - 22SDA-29SET WATCH command, Debugger, 3-15 VAX 8250 computer VARIABLES keyword booting with XDELTA from, Delta/XDelta, with EXPAND_NAME, VAXTPU, 7-135 DELTA-4 inducing a crash, System Dump Analyzer, Variable with fixed-length control field SDA-29See VFC requesting interrupt, Delta/XDelta, DELTA-7 Varying character string data type, Routines VAX 8300 computer Intro, 2-21 booting with XDELTA from, Delta/XDelta, Varying length string, RTL String Manipulation, DELTA-4 2-1, 2-2, 2-3, STR-9, STR-24, STR-68 inducing a crash, System Dump Analyzer, Varying string array descriptor, Routines Intro, SDA-292 - 35requesting interrupt, Delta/XDelta, DELTA-7 Varying string descriptor, Routines Intro, 2–34 VAX 8350 computer varying_arg data type, Routines Intro, A-13t booting with XDELTA from, Delta/XDelta, VAX-11/725 computer DELTA-4 bootstrap procedure for XDELTA, inducing a crash, System Dump Analyzer, Delta/XDelta, DELTA-6 SDA-29inducing a crash, System Dump Analyzer, requesting interrupt, Delta/XDelta, DELTA-7 SDA-31VAX 8530 computer requesting interrupt, Delta/XDelta, DELTA-7

VAX 8530 computer (cont'd) booting with XDELTA from, Delta/XDelta, DELTA-2 inducing a crash, System Dump Analyzer, SDA-29requesting interrupt, Delta/XDelta, DELTA-6 VAX 8550 computer booting with XDELTA from, Delta/XDelta, DELTA-2 inducing a crash, System Dump Analyzer, SDA-29requesting interrupt, Delta/XDelta, DELTA-6 VAX 8600 computer booting with XDELTA from, Delta/XDelta, DELTA-3 inducing a crash, System Dump Analyzer, SDA-30requesting interrupt, Delta/XDelta, DELTA-6 VAX 8650 computer booting with XDELTA from, Delta/XDelta, DELTA-3 inducing a crash, System Dump Analyzer, SDA-30 requesting interrupt, Delta/XDelta, DELTA-6 VAX 8700 computer booting with XDELTA from, Delta/XDelta, DELTA-2 inducing a crash, System Dump Analyzer, SDA-29requesting interrupt, Delta/XDelta, DELTA-6 VAX 8800 computer booting with XDELTA from, Delta/XDelta, DELTA-2 inducing a crash, System Dump Analyzer, SDA-29requesting interrupt, Delta/XDelta, DELTA-6 VAX 8830 computer inducing a crash, System Dump Analyzer, SDA-29VAX 8850 computer inducing a crash, System Dump Analyzer, SDA-29VAX 9000 computer bus architecture, Device Support (A), 1-16 hardware, Device Support (A), 1-16 I/O address space, Device Support (A), 16-5

VAX Ada, Programming Resources, 1-5

A - 13

A - 13

A - 15

Processing, 5-6

Ada data type declaration, *Routines Intro*,

Ada implementation table, Routines Intro.

APL data type declaration, Routines Intro.

APL implementation table, Routines Intro,

special considerations, RTL Parallel

VAX APL, Programming Resources, 1–6

VAX BASIC, Programming Resources, 1-6 BASIC data type declaration, Routines Intro, BASIC implementation table, Routines Intro, USEROPEN routine, File Applications, 5-10, 9-5VAXBI bus, Device Support (A), 1-13 address, Device Support (A), 16-2 to 16-5 arbitration mode of, Device Support (A), 16-25 displaying bus assignments, Device Support (A), 12–10 displaying mapped addresses, Device Support (A), 12-9 errors, Device Support (A), 16-26 I/O address space, Device Support (A), 16-2, 16-17, 19-1 master of, Device Support (A), 16-10 memory space, Device Support (A), 16-2 VAXBI node See also Generic VAXBI device, Node ID definition, Device Support (A), 16-1 determining self-test status of, Device Support (A), 16–13 enabling BIIC options on, Device Support (A), enabling error interrupts from, Device Support (A), 16–16 mapping window space of, Device Support (A), 16-16 to 16-18; Device Support (B), 3-107 setting interrupt destination of, Device Support (A), 16–15 setting interrupt vector for, Device Support (A), VAXBI-to-UNIBUS adapter See DWBUA See DWMUA VAX BLISS BLISS data type declaration, Routines Intro, A-22BLISS implementation table, Routines Intro, example in. RTL Parallel Processing, 6-4 using JSB entry point, RTL Intro, 2-2 VAX BLISS-32, Programming Resources, 1-6; System Services Intro, 2-4; File Def Language, FDL-41 example in, RTL Parallel Processing, 6-4 VAX BLISS compiler generating reentrant code, DECthreads, 3-2 VAX C, Programming Resources, 1–7 C data type declaration, Routines Intro, A-25 C implementation table, Routines Intro, A-25 example in, RTL Parallel Processing, 6-14 VAXcluster, File Applications, 3–28 base address of loadable code, System Dump

Analyzer, SDA-13

VAX MACRO (cont'd) VAXcluster (cont'd) displaying SDA information, System Dump MACRO implementation table, Routines Intro. Analyzer, SDA-82 A - 36locking considerations, File Applications, 3-29 using JSB entry point, RTL Intro, 2-2 VAX COBOL, Programming Resources, 1-7 VAX MACRO instruction COBOL data type declaration, Routines Intro, as used in device driver, Device Support (A), 5-1 to 5-5A - 28entering, Patch, PAT-21 COBOL implementation table, Routines Intro, A - 28formatting memory with SDA, System Dump VAX common language environment, Analyzer, SDA-51 Programming Resources, 1-5 INSERT command, Patch, PAT-68 with same opcode, Patch, PAT-21 VAX compilers VAX object language, Linker, 7-1 to 7-37 See Compiler VAX Pascal, Programming Resources, 1-9 VAX condition, Routines Intro, 2-44 Pascal data type declaration, Routines Intro, VAX condition codes, MACRO, 10-17 VAX Condition Handling Standard, Routines Pascal implementation table, Routines Intro, Intro, 2-44 A - 38exception, Routines Intro, 2-44 VAX PL/I, Programming Resources, 1–10 VAX data type, Routines Intro, 1-8 PL/I data type declaration, Routines Intro, VAX DEC/CMS (Code Management System), Modular Procedures, 1–12 PL/I implementation table, Routines Intro, VAX DEC/MMS (Module Management System), A - 42Modular Procedures, 1–12 VAX Procedure and Condition Handling Standard VAX DEC/Test Manager, Modular Procedures, for calling services, RMS, 3-3 VAX procedure calling conventions, System VAX DIBOL, Programming Resources, 1-8 Services Intro, 2-1 VAX FORTRAN, Programming Resources, 1-8; VAX Procedure Calling Standard, Routines Intro, File Def Language, FDL-33 /BLAS qualifier, $RTL\ Math,\ 2-1$ address, Routines Intro, 2-3 example in, RTL Parallel Processing, 6-9 argument list, Routines Intro, 2-3 FORTRAN data type declaration, Routines argument list format, Routines Intro, 2-4 Intro, A-31 calling sequence, Routines Intro, 2-4 FORTRAN implementation table, Routines argument list, Routines Intro, 2-4 Intro, A-31 condition value, Routines Intro, 2-3 special considerations, RTL Parallel severity code, Routines Intro, 2-9 Processing, 5-6 condition value format, Routines Intro, 2-8 VAX FORTRAN-HPO compiler, RTL Math, 2-1, data type, Routines Intro, 2-15 2 - 10atomic, Routines Intro, 2-15 VAX instruction set COBOL intermediate temporary, Routines accessing through Run-Time Library, RTL Intro, 2-20 Library, 2-9 miscellaneous, Routines Intro, 2-18 VAX language string, Routines Intro, 2-17 use with control blocks, RMS, 2-1 descriptor, Routines Intro, 2-3 VAX language extension, Routines Intro, 2-6 descriptor formats, Routines Intro, 2-21 VAX language implementation table exception condition, Routines Intro, 2-3 See Implementation table for high-level languages, Routines Intro, 2-6 VAX Language-Sensitive Editor, Debugger, CD-74 function, Routines Intro, 2-3 VAX LISP, Programming Resources, 1-8 function value, Routines Intro, 2-7 VAX MACRO, Programming Resources, 1-9; goals, Routines Intro, 2-2 System Services Intro, 2-1, 2-4, 2-5; File immediate value, Routines Intro, 2-3 Applications, 3–12, 3–15, 3–27, 4–2 introduction, Routines Intro, 2-1 See also Addressing mode language support procedures, Routines Intro, See also Directive library procedures, Routines Intro, 2-4 See also Macro procedure, Routines Intro, 2-3 and VMS RMS, File Applications, 9-5 reference, Routines Intro, 2-3 MACRO data type declaration, Routines Intro, registers, Routines Intro, 2-12 A - 36

VAX Procedure Calling Standard (cont'd) **VAXTPU** routines callable VAXTPU (cont'd) stacks use of, Routines Intro, 2-14 full interface, Utility Routines, TPU-2, subroutine, Routines Intro, 2-3 VAX language extensions, Routines Intro, 2-6 overview, Utility Routines, TPU-1 simplified interface, Utility Routines, VAX RMS Journaling error caused by active recovery units, TPU-2, TPU-5 Analyze/RMS_File, ARMS-9 condition handler how to turn off, Analyze/RMS_File, ARMS-8 condition codes, Utility Routines, TPU-4 VAX RMS Journaling errors default, Utility Routines, TPU-4 return values, Utility Routines, TPU-4 how to handle, Analyze/RMS_File, ARMS-8 VAX RMS Journaling recovery units universal symbols, Utility Routines, TPU-4 examples, Utility Routines, TPU-5, TPU-8 to how to turn off, Analyze/RMS_File, ARMS-9 VAX RPG II, Programming Resources, 1–10 TPU-25 introduction, Utility Routines, TPU-1 RPG II data type declaration, Routines Intro, parameter RPG II implementation table, Routines Intro, bound procedure value, Utility Routines, A - 48TPU-4 VAX scalar shareable image, Utility Routines, TPU-1, See Scalar TPU-3 constants, Utility Routines, TPU-3 VAX SCAN, Programming Resources, 1–11 SCAN data type declaration, Routines Intro, symbols, Utility Routines, TPU-3 user-written FILEIO, Utility Routines, TPU-51 SCAN implementation table, Routines Intro, HANDLER, Utility Routines, TPU-53 INITIALIZE, Utility Routines, TPU-54 VAX standard data type, Routines Intro, 1-8 requirements, Utility Routines, TPU-8 VAXstation USER, Utility Routines, TPU-55 See Workstation VAX vector VAXstation 2000 computer See Vector bootstrap procedure for XDELTA, Delta/XDelta, DELTA-5 VAX Vector Instruction Emulation Facility requesting interrupt, Delta/XDelta, DELTA-7 See VVIEF VAXstation 3520 and 3540 computers VBIC (Vector Bit Clear) instruction, MACRO, support for SCSI devices, Device Support (A), 1-18, 1-19 VBIS (Vector Bit Set) instruction, MACRO, 10-64 VAXstation II computer VBN (virtual block number), Analyze/RMS_File, inducing a crash, System Dump Analyzer, ARMS-6 SDA-31 VCB (volume control block), System Dump VAX Text Processing Utility routines Analyzer, SDA-99; Device Support (B), 1-74, See VAXTPU routines VAXTPU (VAX Text Processing Utility), VCMP (Vector Floating Compare) instruction, MACRO, 10-72 Programming Resources, 1-4 built-in procedures, VAXTPU, 1-2 VCMPL (Vector Integer Compare) instruction, DECwindows, VAXTPU, 1-2 MACRO, 10-59EVE editor, Programming Resources, 1–5 %VCR file support, VAXTPU, F-1 See VCR journaling methods, *VAXTPU*, 1–11 VCR (vector count register), Debugger, 11-4, D-3; relationship with DEC windows features, MACRO, 10-3, 10-88, 10-90 VAXTPU, 1–2 VDIV (Vector Floating Divide) instruction, running from a subprocess MACRO, 10-78 VEC\$B_DATAPATH, Device Support (A), 14-17, example, VAXTPU, A-5 used with UIL, VAXTPU, 1-4 14-18, 14-21, 14-25 VEC\$B_NUMREG, Device Support (A), 14-20 VAXTPU callable interface See VAXTPU routines VEC\$L_IDB, Device Support (A), 4-6, 15-13 **VAXTPU** routines VEC\$L_INITIAL, Device Support (A), 4-6, 12-4; callable VAXTPU, Utility Routines, TPU-1 Device Support (B), 4-8

error handling, Utility Routines, TPU-3

VEC\$L_ISR, Device Support (A), 4-6, E-5; Vector control word, MACRO, 10-9, 10-13, 10-17 EXC (Exception Enable) bit, MACRO, 10-11, Device Support (B), 4–13 VEC\$L_RTINTD, Device Support (A), 14-34, 10-12, 10-13, 10-17, 10-28, 10-58, 10-61, 10-63, 10-68, 10-71, 10-76, 10-79, 10-81, VEC\$L_UNITINIT, Device Support (A), 4-6, 12-4; 10-83 Device Support (B), 4-22 MI (Modify Intent) bit, MACRO, 10-11, 10-12, VEC\$Q_DISPATCH, Device Support (B), 1-25 10-18, 10-50, 10-53 MOE (Masked Operations Enable) bit, VEC\$V_LWAE, Device Support (A), 14-15, 14-21; Device Support (B), 3–78 MACRO, 10-11, 10-12, 10-18 VEC\$V_MAPLOCK, Device Support (A), 14-20; MTF (Match True/False) bit, MACRO, 10-11, Device Support (B), 3-90 10-12, 10-18 register specifier fields, MACRO, 10-13 VEC\$V_PATHLOCK, Device Support (A), 14-17, 14-18; Device Support (B), 3-87 Vector count register VEC\$W_MAPALT, Device Support (A), 14-21, See VCR Vector exception VEC\$W_MAPREG, Device Support (A), 14-20, delivery of, Debugger, 11-19, 11-22 14-22 Vector instruction, Debugger, 11-8 VEC\$W_NUMALT, Device Support (A), 14-21 CANCEL BREAK/VECTOR_INSTRUCTION VEC (interrupt transfer vector), Device Support command, Debugger, 11-3, CD-18 (A), 14-29, 14-30 to 14-33; Device Support CANCEL TRACE/VECTOR_INSTRUCTION (B), 1-9, 1-22 to 1-27 command, Debugger, 11-3, CD-31 initializing, Device Support (A), 14-31 decoding, MACRO, 10-18 multiple, Device Support (B), 1-23 delivery of vector exception, Debugger, 11-19, \$VECEND macro, Device Support (A), 18-6; 11 - 22Device Support (B), 2-99 depositing, Debugger, 11-12example, Device Support (B), 2-100 displaying, Debugger, 11–8 \$VECINI macro, Device Support (A), 18-6; EXAMINE/OPERANDS command, Debugger, Device Support (B), 2-98, 2-100 11 - 9example, Device Support (B), 2-100 examining, Debugger, 11-9 \$VEC macro, Device Support (A), 18-6; Device execution, MACRO, 10-21 Support (B), 2-98 formats, MACRO, 10-9 example, Device Support (B), 2-100 masked operation, Debugger, 11-9, 11-14 **VECTAB** operand, Debugger, 11-9 See Adapter dispatch table replacing, Debugger, 11-12 Vector, MACRO, 10-28 SET BREAK/VECTOR_INSTRUCTION applying Givens plane rotation, RTL Math, command, Debugger, 11-3, CD-129 MTH-173 SET STEP VECTOR_INSTRUCTION command, copying, RTL Math, MTH-160 Debugger, 11-3, CD-176 fixed space, Device Support (A), 12-14 SET TRACE/VECTOR_INSTRUCTION floating space, Device Support (A), 12-14 command, Debugger, 11-3, CD-187 generating the elements for a Givens plane STEP/VECTOR INSTRUCTION command, rotation, RTL Math, MTH-178 Debugger, 11-3, CD-260 multiplying, RTL Math, MTH-155 Vectorization of a loop obtaining the Euclidean norm of, RTL Math, preventing, RTL Math, MTH-192, MTH-197, MTH-170 MTH-201, MTH-205 obtaining the index of, RTL Math, MTH-149 Vectorized program obtaining the inner product of, RTL Math, CALL/[NO]SAVE VECTOR_STATE command, MTH-165 Debugger, 11-22, CD-11 obtaining the sum of the absolute values of, controlling and monitoring execution, RTL Math, MTH-152 Debugger, 11-2 processor synchronization, Routines Intro, 2-13 debugging, Debugger, 11-1 register usage, Routines Intro, 2-12 with DECwindows, Debugger, 1-29 scaling, RTL Math, MTH-183 delivery of vector exception, Debugger, 11–19, swapping, RTL Math, MTH-187 Vector address translation, MACRO, 10-47 depositing into vector register, Debugger, 11-4, Vector code assembling, MACRO, 6-23 depositing vector instruction, Debugger, 11-12

Vectorized program (cont'd)	Vector mode (cont'd)
EXAMINE/FMASK command, Debugger, 11–13	SYNCHRONIZE VECTOR_MODE command,
EXAMINE/OPERANDS command, Debugger,	Debugger, 11–19
11–9, CD–83	Vector opcode, MACRO, D-1
EXAMINE/TMASK command, Debugger, 11-13	Vector processor
examining vector instruction, Debugger, 11-9	disabled, MACRO, 10–31, 10–32
examining vector register, Debugger, 11-4,	exception handling, Routines Intro, 2-51
11–6	releasing, System Services, SYS-491
masked operation, Debugger, 11-5, 11-9, 11-13	restoring the exception state of, System
obtaining information about, Debugger, 11–2	Services, SYS-496
setting breakpoint, Debugger, 11–3	saving the exception state of, System Services,
setting tracepoint, Debugger, 11-3	SYS-507
setting watchpoint, Debugger, 11-3	Vector processor status register
SET VECTOR_MODE command, Debugger,	See VPSR
11–19, CD–194	Vector register, MACRO, 10-1
SHOW PROCESS/FULL command, Debugger,	See also Register
11–2	built-in symbol, Debugger, 11–4, D–3
SHOW VECTOR_MODE command, Debugger,	composite address expression, Debugger, 11-16
11–19, CD–253	depositing into, Debugger, 11-4, 11-6
specifying vector register, Debugger, 11–4	display, screen mode, Debugger, 7-9, 7-15,
SYNCHRONIZE VECTOR_MODE command,	11–23
Debugger, 11–19, CD–264	examining, Debugger, 11-4, 11-6
synchronizing scalar and vector processors, Debugger, 11–19	scope, Debugger, 11–1
V0 to V15, Debugger, 11–6	V0 to V15, Debugger, 11-6, D-3
VCR, Debugger, 11–4	VCR, Debugger, 11–4, D–3
VLR, Debugger, 11–4 VLR, Debugger, 11–4	VLR, Debugger, 11–4, D–3
VMR, Debugger, 11–5, 11–9, 11–13	VMR, Debugger, 11–5, 11–9, 11–13, D–3
with DECwindows, Debugger, 1–29	watchpoint, Debugger, 11-3
Vectorizing FORTRAN compiler, RTL Math, 2–8	Vector routines
Vector jump table	table of entry points, RTL Math, B-1 to B-4
	Vector state
See Adapter dispatch table	restoring, System Services, SYS-498
Vector length register	Vector state address register
See VLR	See VSAR
Vector Logical Functions, MACRO, 10–64	vector_byte_signed data type, Routines Intro,
Vector mask register	A-13t
See VMR	vector_byte_unsigned data type, Routines Intro,
Vector memory	A-13t
accessing page tables, MACRO, 10-47	/VECTOR_INSTRUCTION qualifier, Debugger,
access mode, MACRO, 10-20, 10-49	11–3, CD–18, CD–31, CD–129, CD–187,
alignment, MACRO, 10–49	CD-260 vector_longword_signed data type, Routines Intro,
HALT considerations, MACRO, 10–43	A-13t
indicating intent to modify, MACRO, 10-12	vector_longword_unsigned data type, Routines
instructions, MACRO, 10-49	Intro, A-13t
management	vector_quadword_signed data type, Routines
See Memory management	Intro, A-13t
required use of synchronization instructions,	vector_quadword_unsigned data type, Routines
MACRO, 10-42	Intro, A-13t
scalar/vector synchronization of, MACRO,	vector_word_signed data type, Routines Intro,
10–38	A-13t
stride, MACRO, 10–49	vector_word_unsigned data type, Routines Intro,
Vector memory activity check register	A-13t
See VMAC	Verb
Vector mode	See also DEFINE VERB statement
SET VECTOR_MODE [NO]SYNCHRONIZED	how to define, Command Def, CDU-8 to
command. Debugger, 11-19	CDU-9

See /LOG qualifier Verify SET OUTPUT VERIFY command, Debugger, CD-155 VERIFY command, Patch, PAT-90 VERSION keyword, VAXTPU, 7-141 with FILE_SEARCH, VAXTPU, 7-144 Version number, File Def Language, FDL-20; VAXTPU, 4–2 "Version" string constant parameter to GET_INFO, VAXTPU, 7-208 VFC (variable with fixed-length control) field, File Applications, 2-11, 3-9, 3-10 record, File Def Language, FDL-34, FDL-35 converting, Convert, CONV-15 format of, File Def Language, FDL-35 record format, File Applications, 1-2 VFC record format option See FAB\$C_VFC option VGATH (Gather Memory Data into Vector Register) instruction, MACRO, 10-12, 10-16, 10 - 44Video attribute, Programming Resources, 7–10, 7-16, 7-20 current, Programming Resources, 7-16 default, Programming Resources, 7-16 marker, VAXTPU, 2-9, 7-261 PROMPT_AREA, VAXTPU, 7-446 range, VAXTPU, 2-22 SET (VIDEO) built-in procedure, VAXTPU, 7 - 492with STATUS_LINE, VAXTPU, 7-476 VIDEO keyword, VAXTPU, 7-492 "Video" string constant parameter to GET_INFO, VAXTPU, 7-187, 7-193, 7-226 \$VIELD macro, Device Support (B), 2-102 to 2 - 103_VIELD macro, Device Support (B), 1-70, 2-102 to 2-103 example, Device Support (B), 2-103 VIEW command, File Def Language, FDL-67 Viewport, Programming Resources, 7–17; RTL Screen Management, 1-6, 2-12 changing characteristics, RTL Screen Management, 2-14 creating, RTL Screen Management, 2-13 deleting, RTL Screen Management, 2-13 moving, RTL Screen Management, 2-13 pasting, RTL Screen Management, 2–13 scrolling, RTL Screen Management, 2-13 unpasting, RTL Screen Management, 2–13 VIRTCONS spin lock, Device Support (A), 3-14 Virtual address, MACRO, 8-1 Virtual address operator (@), System Dump Analyzer, SDA-12

Verification of NCS library operations

Virtual address register See MBA\$L_VAR Virtual address space, System Services Intro, 12-2, 12-3 adding page to, System Services, SYS-114, SYS-218 creating, System Services, SYS-114 deleting page from, System Services, SYS-147 increasing and decreasing, System Services Intro, 12-3 layout, System Services Intro, 12-2 mapping section of, System Services Intro, specifying array, System Services Intro, 12-4 sufficient for system dump analysis, System Dump Analyzer, SDA-6 VAXTPU restriction concerning, VAXTPU, 5-1 Virtual block dump, Analyze/RMS_File, ARMS-25 Virtual block number See VBN Virtual-block-position option, File Applications, Virtual display, *Programming Resources*, 7–10; RTL Screen Management, 1-5 See also Viewport changing rendition of, RTL Screen Management, 2-9 checking occlusion of, Programming Resources, 7 - 12creating, Programming Resources, 7-10 creating a subprocess from, Programming Resources, 7-16 cursor movement, Programming Resources, 7 - 20deleting, Programming Resources, 7-14 deleting text, Programming Resources, 7-21 drawing lines, Programming Resources, 7-20 erasing, Programming Resources, 7-14 ID, Programming Resources, 7–10, 7–32 inserting text, Programming Resources, 7-18, list pasting order of, Programming Resources, logical cursor position, Programming Resources, 7-17 modifying, Programming Resources, 7-15 obtaining the pasting order, Programming Resources, 7–14 outputting through, RTL Screen Management, 2-5overwriting text, Programming Resources, 7-18, 7-20 pasting, Programming Resources, 7-11 physical cursor position, *Programming* Resources, 7–18 popping, Programming Resources, 7–15

Virtual display (cont'd) "Visible" string constant parameter to GET_INFO, reading data from, Programming Resources, VAXTPU, 7-226 7 - 23"Visible_bottom" string constant parameter to reading from, RTL Screen Management, 2-12 GET_INFO, VAXTPU, 7-226 rearranging, Programming Resources, 7-13 "Visible_length" string constant parameter to saving, RTL Screen Management, 2-15 GET_INFO, VAXTPU, 7-202, 7-226 scrolling, Programming Resources, 7-20 %VISIBLE_PROCESS, Debugger, 10-11 sharing, Programming Resources, 7-32 %VISIBLE_TASK, Debugger, 12–10, 12–14 specifying double-width characters, "Visible_top" string constant parameter to Programming Resources, 7–20 GET_INFO, VAXTPU, 7-226 specifying video attributes, Programming "Vk100" string constant parameter to GET_INFO, Resources, 7–10 *VAXTPU*, 7–202 viewport, Programming Resources, 7-17 VLD (Load Memory Data into Vector Register) writing double-width characters, Programming instruction, MACRO, 10-12, 10-16, 10-44, Resources, 7–19 writing text to, *Programming Resources*, 7–17 %VLR Virtual I/O, System Services Intro, 7–7 See VLR canceling requests for, System Services, VLR (vector length register), Debugger, 11-4, SYS-48 D-3; MACRO, 10-2, 10-88, 10-90 Virtual I/O function, Device Support (B), 1–40, VMAC (vector memory activity check) register, 1-41MACRO, 10-7, 10-20, 10-40, 10-42, 10-44 translation to logical function from, Device VMERGE (Vector Merge) instruction, MACRO, Support (A), 2–3 10 - 84Virtual keyboard, RTL Screen Management, 1-7 %VMR definition of, RTL Screen Management, 3-1 See VMR inputting through, RTL Screen Management, VMR (vector mask register), Debugger, 11-4, 11-5, 11-9, 11-13, D-3; MACRO, 10-3, obtaining data from, RTL Screen Management, 10-24, 10-88, 10-90 3-1VMS data type, Routines Intro, 1-7, A-1; System reading data from, Programming Resources, Services Intro, 1–6 7-23, 7-24 VMS Debugger Virtual keyboard characteristics See Debugger setting and retrieving, RTL Screen VMS executive image Management, 3-1 global symbols, System Dump Analyzer, Virtual memory address SDA-59 See Memory address VMS Linker Virtual memory allocation See Linker Utility See Memory allocation VMS operating system, File Def Language, Virtual memory zone FDL-38 creating, RTL Parallel Processing, 3-4 VMS print symbiont deleting, RTL Parallel Processing, 3-4 See Symbiont VIRTUAL option, File Applications, 4–31 VMS RMS (Record Management Services), VIRTUALPAGECNT parameter, System Dump Programming Resources, 1-35 to 1-38; Analyzer, SDA-6 Modular Procedures, 1-11; System Services Visibility Intro, 7-1; File Applications, 1-10; File Def fetching display value of record or window. Language, FDL-42 VAXTPU, 7-186, 7-222 allocating buffers, File Applications, 3-12, 3-14 of record Analyze/RMS_File Utility, Programming using display value to determine, Resources, 1–38 *VAXTPU*, 7–370 applicable macro programming rules, RMS, setting record, VAXTPU, 7-448 Visible process, Debugger, 10-2, 10-7 argument delimiters, RMS, 3-10 field and buttons in main window block I/O processing services, RMS, 3-5 with DECwindows, Debugger, 1-9 bucket splits, File Applications, 3-23 /VISIBLE qualifier, Debugger, 12-11, CD-158, calculating extension size, File Applications, CD-179, CD-230 3 - 10

VMS RMS (Record Management Services) (cont'd) VMS RMS (Record Management Services) service (cont'd) calculating file extension size, File allowable program execution modes, RMS, Applications, 3–5 calling sequence, RMS, 2-4 2-7calling services, RMS, 1-1 calling example, RMS, 3-11 naming conventions. RMS, 3-3 connect-time options, File Applications, 4–2 control block, File Applications, 1–11, 4–15; optional arguments to, RMS, 3-11 File Def Language, FDL-2; RMS, 1-2 restrictions to calling, RMS, 2-7 supporting file operations, RMS, 1-2 FAB, Programming Resources, 1–36 supporting record operations, RMS, 1-2 NAM, Programming Resources, 1–36 XAB, Programming Resources, 1–36 use of DEC Multinational Character Set, RMS, Convert/Reclaim Utility, Programming Resources, 1-39 use of multiblocks, File Applications, 3-11 Convert Utility, Programming Resources, 1-39 use of reserved event flags, RMS, 2-7 Create/FDL Utility, Programming Resources, using with languages, File Applications, 1-10 utilities ANALYZE/RMS_FILE, File Applications, creation-time options, File Applications, 4–2, 4-17; File Def Language, FDL-41 data structures, File Applications, 1–11 CONVERT, File Applications, 1-14 CONVERT/RECLAIM, File Applications, data structures shown by SDA, System Dump Analyzer, SDA-76 default, Convert, CONV-19; File Def CREATE/FDL, File Applications, 1–14 EDIT/FDL, File Applications, 1–14 Language, FDL-19 with Prolog 3 files, File Applications, 10-30 deferred-write operation, File Applications, 3-15, 3-27VMS Symbolic Debugger device support, Programming Resources, 1-36 See Debugger displaying data structures, System Dump VMS system image Analyzer, SDA-127, SDA-147 global symbols, System Dump Analyzer, Edit/FDL Utility, Programming Resources, SDA-59 1 - 39VMS usage, System Services Intro, 1-6 error VMS Usage, Modular Procedures, B-1; Routines recommended method for signaling, RMS, Intro, 1-7, A-1; RTL Intro, 2-6 description of, Routines Intro, A-1 file organizations, RMS, 1-1 VMS Usage entry, Routines Intro, 1-7 global symbols, System Dump Analyzer, VMS Usage implementation table SDA-60, SDA-61 See Implementation table how to use, RMS, 2-1 VMUL (Vector Floating Multiply) instruction, image activation, File Applications, 5–5 MACRO, 10-80 in indexed files, File Applications, 3-15 VMULL (Vector Integer Multiply) instruction, macro capabilities listed, RMS, 4-1 MACRO, 10-61 MACRO parameter, File Applications, 3-12 Voice characteristics, RTL DECtalk, 1-2 macros, Programming Resources, 1-37 comma pause, RTL DECtalk, 1-2, DTK-31 opening file for mapping, System Services period pause, RTL DECtalk, 1-2, DTK-31 Intro, 12-8 speech rate, RTL DECtalk, 1-2, DTK-31 option Voice identifier selection, File Applications, 9-1 See DECtalk device overflow into P0, File Applications, 7-17 Volume, File Applications, 1-4; Device Support passing arguments to, RMS, 1-2 (B), 1–78 placing file information in prolog, File dismounting, System Services, SYS-161 Applications, 3–15 getting information about program interface description, RMS, 2-1 asynchronously, System Services, SYS-266 Put service, Convert, CONV-11 synchronously, System Services, SYS-285 record access modes, RMS, 1-1 initializing from within a program, System record formats, RMS, 1-1 Services Intro, 7-24; System Services, role in reclaiming buckets, Convert, CONV-4 SYS-407 security features, RMS, 1-1 example, System Services Intro, 7-24 service

Volume (cont'd) mounting, System Services Intro, 7–22; System Services, SYS-436 multidisk, File Applications, 3–23 positioning, File Applications, 3–23 VOLUME attribute, File Def Language, FDL-8 Volume control block See VCB Volume-number option, File Applications, 4-32 Volume protection, System Services Intro, 7-4 /VOLUME qualifier, Patch, PAT-36 VOLUME secondary attribute, File Applications, Volume set, File Applications, 1-5 for improving performance, File Applications, to minimize disk head competition, File Applications, 3-23 Volume valid bit See UCB\$V_VALID Vote, System Dump Analyzer, SDA-82 10-4, 10-5, 10-6 10-5, 10-31, 10-32, 10-33, 10-34 10 - 4810-34, 10-47, 10-48 10-17, 10-31, 10-32, 10-33, 10-34 10-30, 10-34 10-4, 10-19, 10-30, 10-33, 10-34 10 - 34

MACRO, 10-82

VPSR (vector processor status register), MACRO, AEX (Arithmetic Exception) bit, MACRO, W BSY (Busy) bit, MACRO, 10-4, 10-5, 10-6, 10-8, 10-20, 10-21, 10-33, 10-39, 10-47, IMP (Implementation-Specific Hardware Error) bit, MACRO, 10-5, 10-31, 10-32, 10-33, IVO (Illegal Vector Opcode) bit, MACRO, 10-5, MF (Memory Fault) bit, MACRO, 10-4, 10-19, PMF (Pending Memory Fault) bit, MACRO, RLD (State Reload) bit, MACRO, 10-4, 10-5, RST (State Reset) bit, MACRO, 10-4, 10-5, 10-6, 10-8, 10-33, 10-41 STS (State Store) bit, MACRO, 10-5, 10-33 VEN (Enable) bit, MACRO, 10-4, 10-5, 10-6, 10-18, 10-20, 10-31, 10-33, 10-34, 10-47, 10-48 VSAR (vector state address register), MACRO, 10 - 7VSCAT (Scatter Vector Register Data into Memory) instruction, MACRO, 10-12, 10-16, 10-44, 10 - 56VSL (Vector Shift Logical) instruction, MACRO, 10-67VST (Store Vector Register Data into Memory) instruction, MACRO, 10-12, 10-16, 10-44, VSUB (Vector Floating Subtract) instruction,

MACRO, 10-63 VSYNC (Synchronize Vector Memory Access) instruction, MACRO, 10-41, 10-42, 10-44, 10-91 "Vt100" string constant parameter to GET_INFO, VAXTPU, 7-202 "Vt200" string constant parameter to GET_INFO, *VAXTPU*, 7–202 "Vt300" string constant parameter to GET_INFO, VAXTPU, 7-202 VTBIA (Vector TB Invalidate All) instruction, MACRO, 10-7, 10-8, 10-32, 10-34, 10-41, VVCVT (Vector Convert) instruction, MACRO, 10 - 75VVIEF (VAX Vector Instruction Emulation Facility) SHOW PROCESS/FULL command, Debugger, 11-2VXOR (Vector Exclusive Or) instruction, MACRO, 10 - 64Wait for interrupt macro See WFIKPCH macro, WFIRLCH macro Waiting for condition variable, DECthreads, cma-53, cma-56, pthread-42, pthread-45 **\$WAIT** macro format difference, RMS, 3-12 Wait option See RAB\$V_WAT option Wait primitive operation, RTL Parallel Processing, 4-10 /WAIT qualifier, Debugger, CD-256 Wait service, File Applications, 8-5; RMS, RMS-102 and asynchronous operations, File Applications, 8–18 condition values, RMS, RMS-103 control block input and output fields, RMS, RMS-102 WAIT_FOR_RECORD attribute, File Def Language, FDL-15 WAIT_FOR_RECORD secondary attribute, File Applications, 7-12 WAKE system service use of, RTL Parallel Processing, 5-5 Wakeup canceling, System Services, SYS-53 scheduling, System Services Intro, 10–6 Waking a thread, *DECthreads*, cma-43, cma-49, cma-51, pthread-33, pthread-40 .WARN directive, MACRO, 6–99 Warning message, Convert, CONV-3

VSUBL (Vector Integer Subtract) instruction,

/WARNING qualifier	Widget (cont'd)
in message definition, Message, MSG-23	managing, VAXTPU, 7–258
Watchpoint	membership in subclass
aggregate, Debugger, 3-17, 11-3	finding out in VAXTPU, VAXTPU, 7–214
canceling, Debugger, CD-34	menu bar
defined, Debugger, 3–15	in VAXTPU, <i>VAXTPU</i> , 4–16
displaying, Debugger, CD-254	menu position of in VAXTPU, VAXTPU, 7-210
effect on execution speed, Debugger, 3–18	parent of
global section, Debugger, 10-15	fetching in VAXTPU, VAXTPU, 7–215
in tasking (multithread) program, Debugger,	realizing in VAXTPU, VAXTPU, 7–306
12–23, 12–24	resource
multiprocess program, Debugger, 10-15	fetching class and data type of in VAXTPU,
nonstatic (stack or register) variable, Debugger,	$V\!AXTPU,7$ –215
3–17	scroll bar, <i>VAXTPU</i> , 7–224, 7–462
register, Debugger, 3–17	scroll bar slider, VAXTPU, 7–224
setting, Debugger, 3–15, CD–196	setting resource values of, VAXTPU, 7-494
shareable image, Debugger, 3–20	title bar, VAXTPU, 4–16
source display at, Debugger, 6-7	unmanaging, VAXTPU, 7-534
static variable, <i>Debugger</i> , 3–17	using callback data structure in VAXTPU,
vector register, Debugger, 11–3	VAXTPU, 7–496
with DECwindows, Debugger, 1–24	widget_id, VAXTPU, 7–209
WAT option, File Def Language, FDL-15	Widget children
WBH option, File Def Language, FDL-15	managing, VAXTPU, 7–258
WCB (window control block), System Dump	unmanaging, VAXTPU, 7–534
Analyzer, SDA-77; Device Support (A), 4-10;	WIDGET data type, VAXTPU, 2-24 to 2-25
Device Support (B) , 1–12, 1–39	Widget resources
WCK option, File Def Language, FDL-25	data types of, VAXTPU, 4–12
Weak definition, Linker, 2–9, 2–10	specifying, VAXTPU, 4–12
WEAK directive, MACRO, 6–101	WIDGET_CALL_DATA parameter to SET built-in
Weak reference, Linker, 2–9, 2–10	procedure, VAXTPU, 7–496
WFIKPCH macro, Device Support (A), 4–16, 8–5,	%WIDTH, Debugger, C-6
8-6, 10-7, 15-14, E-10; Device Support (B),	WIDTH parameter to SET built-in procedure,
2-66, 2-104 to 2-105, 3-104, 4-19	VAXTPU, 7–501
WFIRLCH macro, Device Support (A), 4–16, 8–5,	/WIDTH qualifier, Debugger, 7-22, CD-181;
8-6; Device Support (B), 2-104 to 2-105,	Librarian, LIB-45
3-104, 4-19	"Width" string constant parameter to GET_INFO,
WHEN clause	VAXTPU, 7–202
example, Debugger, 3–13	Wildcard character, Librarian, LIB-5; Convert,
format, Debugger, CD-4	CONV-5
WHILE command, Debugger, 8–10, CD–268	See also File specification
White box testing, Modular Procedures, 4–3	and multiple file locations, File Applications,
Widget	5–8
callback_parameters, VAXTPU, 7–209	in file names, VAXTPU, 5-20
case sensitivity of name, VAXTPU, 7–74	program preprocessing, File Applications, 5–8
controlling mapping, VAXTPU, 7–418	to 5–14
creating, VAXTPU, 7–72	use of, National Char Set, NCS-27, NCS-28,
defining a class of, VAXTPU, 7–105	NCS-38
deleting, VAXTPU, 7–108	use restriction, National Char Set, NCS-34,
fetching callback routine for, VAXTPU, 7–214	NCS-36
fetching children of in VAXTPU, VAXTPU,	use with Remove service, RMS, RMS-82
7–210	use with Search service, RMS, 4-10
fetching class of in VAXTPU, VAXTPU, 7–214	using with ANALYZE/RMS_FILE,
fetching name of, VAXTPU, 7–215	Analyze / RMS_File, ARMS-10
finding out if managed in VAXTPU, VAXTPU,	with CONV routines, Utility Routines,
7–214	CONV-12
getting information about, VAXTPU, 7–216	Wildcard context field
listing of, VAXTPU, 4–5	See NAM\$L_WCC field
main window, VAXTPU, 4–16	· -

Wildcard operation	Window (cont'd)
using \$GETJPI with \$PROCESS_SCAN to	instruction (INST), DECwindows, Debugger,
perform wildcard searches across the	1–11, 1–21
cluster, System Services, SYS-286	key map list
using \$GETJPI with \$PROCESS_SCAN to	example of fetching, VAXTPU, B-19 to
search for specific processes, System	B-22
Services, SYS–286	length, VAXTPU, 2–26
using with \$GETJPI to return information	example of fetching, VAXTPU, B-16 to
about processes, System Services, SYS-286	B-19
Wildcard search	making current, VAXTPU, 6-2
obtaining information about processes, System	mapping, <i>VAXTPU</i> , 2–27, 6–3
Services, SYS-460	message
example, System Services Intro, 9-5	in EVE editor, VAXTPU, 4-16
using \$GETJPI, System Services Intro, 9-4	output (OUT), DECwindows, Debugger, 1-10
Wildcard substitution	predefined, DECwindows, Debugger, 1-9
specifying NAM\$L_RSA field, RMS, 6–9	reducing, VAXTPU, 7–20
Window, File Applications, 9–8 to 9–10	register (REG), DECwindows, Debugger, 1-12
· · · · · · · · · · · · · · · · · ·	removing, VAXTPU, 2-28
See also Display, debugger, screen mode	screen management, VAXTPU, 6-2 to 6-4
adjusting size, VAXTPU, 7–19	screen-mode, creating definition for, Debugger
attribute, DECwindows, Debugger, 1–10	7–14, CD–202
attributes, VAXTPU, 7–78	screen-mode, defined, Debugger, 7-2
automatic (AUTO), DECwindows, Debugger,	screen-mode, deleting definition of, Debugger,
1–11	7–14, CD–35
bottom	screen-mode, identifying, Debugger, 7-14,
example of fetching, VAXTPU, B-16 to	CD-255
B-19	screen-mode, predefined, Debugger, CD-255,
changing position, VAXTPU, 7-20	C-7
command	screen-mode, specifying, Debugger, 7–13
in EVE editor, VAXTPU, 4–16	screen updates, VAXTPU, 6-7
creating, VAXTPU, 2–26	scroll bar in, <i>VAXTPU</i> , 7–224, 7–462
current, <i>VAXTPU</i> , 2–27, 7–77	scroll bar slider in, VAXTPU, 7–224
default configuration, DECwindows, Debugger,	selecting address expression from,
1–4	DECwindows, Debugger, 1–22
definition, VAXTPU, 2–25	setting display value of, VAXTPU, 7–370
deleting, VAXTPU, 6-4, 7-108	size
determining bottom of, VAXTPU, 7-222	with terminal display, VAXTPU, 6-4
determining boundaries and size of, VAXTPU,	with terminal emulator, VAXTPU, 6–4
7–222	source (SRC), DECwindows, Debugger, 1–10,
determining last column of, VAXTPU, 7-224	1–21
determining leftmost column of, VAXTPU,	top
7–222	example of fetching, VAXTPU, B-16 to
determining length of, VAXTPU, 7-223	B–19
determining top of, VAXTPU, 7-225	unmapping, VAXTPU, 2–28
determining width of, VAXTPU, 7-226	unsupported terminals, VAXTPU, 2–29
dimensions, VAXTPU, 2-25	updating, VAXTPU, 2–29
enlarging, VAXTPU, 7–19	user
fetching display value of, VAXTPU, 7–222	in EVE editor, VAXTPU, 4–16
for debugger command interface	values, VAXTPU, 2–27
DECwindows COMMAND box, Debugger,	width, VAXTPU, 2–26
1-19, 1-27	example of fetching, VAXTPU, B-19 to
DECwindows DECterm window, Debugger,	B-22
1–33	window width, VAXTPU, 6–4
VWS window, Debugger, 9-5, CD-150	
function of	Window control block
in VAXTPU compared with DECwindows,	See WCB
$V\!AXTPU$, 4–16	WINDOW data type, VAXTPU, 2–25 to 2–29
getting information, VAXTPU, 2-29	Windowing system
	using threads in, DECthreads, 1–4

Work queue (cont'd) Window size, File Applications, 10–29 deleting, RTL Parallel Processing, 4-17 Window space, Device Support (A), 16-5 deleting work item from, RTL Parallel mapping, Device Support (A), 16-16 to 16-18 Processing, 4-18 starting address, Device Support (A), 16-17 first in/first out, RTL Parallel Processing, 4-16, WINDOW_SIZE attribute, File Def Language, 4 - 18FDL-25 inserting an item into, RTL Parallel "Within_range" string constant parameter to Processing, 4-17 GET_INFO, VAXTPU, 7-187 reading, RTL Parallel Processing, 4-17 Word count register, Device Support (A), 14-23 removing work item from, RTL Parallel Word data type, MACRO, 8-2 Processing, 4-18 .WORD directive, MACRO, 6-102 variation of boss/worker model, DECthreads, WORD mode, Patch, PAT-16 1-5 /WORD qualifier Work queue processing software model, RTL with ALIGN command, Patch, PAT-38 Parallel Processing, 1-5 with DELETE command, Patch, PAT-52 Work queue synchronization with DEPOSIT command, Patch, PAT-55 advantages and disadvantages, RTL Parallel with EVALUATE command. Patch, PAT-59 Processing, 5-9 with EXAMINE command, Patch, PAT-62 PPL\$ routines for, RTL Parallel Processing, with REPLACE command, Patch, PAT-71 4-16 to 4-18 with SET MODE command, Patch, PAT-76 Workstation with VERIFY command, Patch, PAT-90 See also VAXstation 2000 /WORD qualifier, Debugger, CD-60, CD-85 debugger commands for (when using VWS), Word separators, VAXTPU, 7-146 Debugger, CD-5 Word storage directive (.WORD), MACRO, 6-102 debugger DECwindows interface for, Debugger, word_signed data type, Routines Intro, A-13t word_unsigned data type, Routines Intro, A-13t debugging DECwindows application, Debugger, Work crew model, DECthreads, 1-6 1 - 32Working set, File Applications, 1–16 debugging screen-oriented program adjusting for optimal sort performance, using separate DECterm window, Convert, CONV-22 Debugger, 1-33 adjusting limit, System Services, SYS-17 using separate VWS window, Debugger, adjusting size, Programming Resources, 10-3; 9-5, CD-150 System Services Intro, 12-6 popping debugger window (when using VWS), locking page into, Programming Resources, Debugger, CD-162 10-3; System Services Intro, 12-6; System separate, for debugger DECwindows interface, Services, SYS-422 Debugger, 1-32 paging, System Services Intro. 12-6 separate debugger terminal-emulator window purging, System Services, SYS-473 using DECwindows (DECterm), Debugger, unlocking page from, System Services, SYS-653 using VWS, Debugger, 9-5, CD-150 Working set limit, Device Support (B), 3-35, 3-41 terminal emulator screen size, Debugger, 7-22, insufficient, Device Support (B), 3–33 CD-181 Working set list Workstation device, Device Support (B), 1-76 displaying, System Dump Analyzer, SDA-128 /WORK_FILES qualifier, Convert, CONV-12, Working set quota CONV-27 how to determine, Convert, CONV-22 WORLD category, File Def Language, FDL-23 /WORKING_SET qualifier, System Dump WRITE access, File Def Language, FDL-23 Analyzer, SDA-128 Write access type, MACRO, 8-17 WORKING_SET_MANAGEMENT.EXE Write attention AST function, I/O User's I, 7-9 global symbols, System Dump Analyzer, Write back section, System Services Intro, 12-17 SDA-61 Work item Write-behind option deleting, RTL Parallel Processing, 4-18 See RAB\$V WBH option inserting, RTL Parallel Processing, 4-17 Write breakthrough function, I/O User's I, 8–36 removing, RTL Parallel Processing, 4-18 Write check Work queue enabling, Device Support (B), 1-75 creating, RTL Parallel Processing, 4-16

definition of, RTL Parallel Processing, 4-16

Write check option XAB\$B_BLN field See FAB\$V_WCK option in allocation XAB (XABALL), RMS, 8-5 Write end-of-file function in date and time XAB (XABDAT), RMS, 9-2 in file header characteristics XAB (XABALL), magnetic tape, I/O User's I, 6-21 RMS, 10-3message, I/O User's I, 7-9 in item list XAB (XABITM), RMS, 11-2 Write function in key XAB (XABKEY), RMS, 13-2 FDT routine for, Device Support (A), 7-9 in protection XAB (XABPRO), RMS, 14-4 Write protection hardware, I/O User's I, 10-4 in revision date and time XAB (XABRDT), /WRITE qualifier, VAXTPU, 5-17 RMS, 15-2in summary XAB (XABSUM), RMS, 17-1 Write service, RMS, RMS-104, RMS-105 in terminal XAB (XABTRM), RMS, 18-2 condition values, RMS, RMS-106 XAB\$B COD field control block input fields, RMS, RMS-105 control block output fields, RMS, RMS-105 See also COD field "Write" string constant parameter to GET_INFO, in allocation XAB (XABALL), RMS, 8-5 *VAXTPU*, 7–178 in date and time XAB (XABDAT), RMS, 9-3 WRITE_BEHIND attribute, File Def Language, in file header characteristics XAB (XABFHC), FDL-15 RMS, 10-3 WRITE_CHECK attribute, File Def Language, in item list XAB (XABITM), RMS, 11-2 FDL-25 in key XAB (XABKEY), RMS, 13-2 /WRITE_CHECK qualifier, Convert, CONV-28 in protection XAB (XABPRO), RMS, 14-4 WRITE_CLIPBOARD built-in procedure, in revision date and time XAB (XABRDT), VAXTPU, 7-540 RMS. 15-2example of use, VAXTPU, B-11 to B-13 in summary XAB (XABSUM), RMS, 17-1 WRITE_FILE built-in procedure, VAXTPU, 7-543 in terminal XAB (XABTRM), RMS, 18-2 to 7-545 XAB\$B_DAN field, File Def Language, FDL-27; WRITE_GLOBAL_SELECT built-in procedure, RMS, 13-4XAB B_DBS field, RMS, 13–4 VAXTPU, 7-546 example of use, VAXTPU, B-31 to B-33 XAB\$B_DPT field, File Def Language, FDL-32 Writing operations, RTL Screen Management, 2-8 XAB\$B_DTP field, RMS, 13-5 data formats, RMS, 13-6 data type restrictions, RMS, 13-5 X options, RMS, 13-5 ;X command, Delta/XDelta, DELTA-40 use with search key, RMS, 7-13, 7-14 X4 symbol, Delta/XDelta, DELTA-9 value prefixes for sorting, RMS, 13-5 X5 symbol, Delta/XDelta, DELTA-9 XAB\$B_FLG field, File Def Language, FDL-26, XAB\$B_AID field, File Applications, 4–30; File FDL-27, FDL-28, FDL-29; RMS, 13-8, B-21 Def Language, FDL-6; RMS, 8-2 option allowable combinations listed, RMS, XAB\$B_ALN field, File Def Language, FDL-8; 13-9 RMS, 8-2 options, RMS, 13-8 options, File Applications, 4-31 XAB\$B HSZ field, RMS, 10-4 XAB\$B_AOP field, File Def Language, FDL-6, use restriction, RMS, 10-4 FDL-7; RMS, 8-3 XAB\$B_IAN field, File Def Language, FDL-28; options, File Applications, 4-30; RMS, 8-4 RMS, 13-10 XAB\$B_ATR field, RMS, 10-2 conditional usage, RMS, 13-10 options, RMS, 10-2 indicating index level, RMS, 8-5 XAB\$B_BKZ field, File Applications, 3-24, 4-28, XAB\$B_IBS field, RMS, 13-10 7-19, 7-20 XAB\$B_LAN field, File Def Language, FDL-28; as output, RMS, 8-5 RMS, 13-11 default logic, RMS, 8-5 indicating index level, RMS, 8-5 determining bucket size, RMS, 8-5 relationship to XAB\$B_AID field, RMS, 13-11 in allocation XAB (XABALL), RMS, 8-4 requirement for compatibility with XAB\$B IAN in file header characteristics allocation XAB field, RMS, 13-11 (XABFHC), *RMS*, 10-3 use restriction, RMS, 13-11 RMS-11 restriction, RMS, 8-5 XAB\$B_LVL field, RMS, 13-12 size requirements for multiple index areas, XAB\$B_MTACC field, File Def Language, RMS, 8–5 FDL-22; RMS, 14-5 default logic, RMS, 14-5

XAB\$B MTACC field (cont'd) XAB\$L_ALQ field, File Applications, 4-30; File valid character codes, RMS, 14-5 Def Language, FDL-6; RMS, 8-3 XAB\$B_NOA field, RMS, 17-2 XAB\$L_COLNAM field, RMS, 13-2 XAB\$B_NOK field, RMS, 17–2 XAB\$L_COLSIZ field, RMS, 13-3 XAB\$B NSG field. RMS, 13-12 XAB\$L_COLTBL field, RMS, 13-3 XAB\$B_NUL field, File Def Language, FDL-29; XAB L_DVB field, RMS, 13–7 RMS, 13-12 XAB\$L_EBK field, RMS, 10-3 use restrictions, RMS, 13-12 XAB\$L_HBK field, RMS, 10-4 XAB\$B PROLOG field, File Def Language, comparing with FAB\$L_ALQ field, RMS, 10-4 FDL-30; RMS, 13-13 XAB\$L_ITEMLIST field, RMS, 11-2 default logic, RMS, 13-13 XAB\$L_ITMLST field, RMS, 18-2 service usage, RMS, 13-13 requirement for valid terminal driver, RMS, use restriction, RMS, 13-13 XAB\$B_PROT_OPT field, RMS, 14-7 XAB\$L_KNM field, File Def Language, FDL-29; XAB\$B_REF field, File Def Language, FDL-26 RMS, 13-11 XAB\$B RFO field, RMS, 10-5 XAB\$L_LOC field, File Applications, 4-31; File values listed, RMS, 10-6 Def Language, FDL-8; RMS, 8-6 XAB\$B SIZ0 field, File Def Language, FDL-28, determining value, RMS, 8-6 FDL-30 requirement for alignment option, RMS, 8-6 XAB\$B SIZ0 through XAB\$B SIZ7 field, RMS, XAB\$L_MODE field, RMS, 11-2 13 - 14XAB\$L_NXT field default logic, RMS, 13-15 in XABALL, RMS, 8-6 requirement for compatibility with XAB\$W in XABDAT, RMS, 9-3 POS0 through XAB\$W_POS7 field, RMS, in XABFHC, RMS, 10-5 in XABKEY, RMS, 13–12 with segmented key, RMS, 13-14 in XABPRO, RMS, 14-5 with simple key, RMS, 13-14 in XABRDT, RMS, 15-2 XAB\$B_TKS field, RMS, 13-15 in XABSUM, RMS, 17-2 XAB\$C_ALLEN value, RMS, 8-5 in XABTRM, RMS, 18-3 XAB\$C_ALL value, RMS, 8-6 XAB\$L_RVB field, RMS, 13-14 XAB\$C DATLEN value, RMS, 9-2 XAB\$L_SBN field, RMS, 10-6 XAB\$C_DAT value, RMS, 9-3 XAB\$L_UIC field, RMS, 14-4, 14-8 XAB\$C_FHCLEN value, RMS, 10-3 combining the XAB\$W_GRP and XAB\$W_MBM XAB\$C_FHC value, RMS, 10-3 fields, RMS, 14-8 XAB\$C_ITMLEN value, RMS, 11-2 order of determining value, RMS, 14-8 XAB\$C_ITM value, RMS, 11-2 setting XAB\$W_GRP field, RMS, 14-4 XAB\$C_KEYLEN value, RMS, 13-2 setting XAB\$W_MBM field, RMS, 14-5 XAB\$C_KEY value, RMS, 13-2 XAB\$NXT field XAB\$C_PROLEN value, RMS, 14-4 in XABITM, RMS, 11-2 XAB\$C_PRO value, RMS, 14-4 XAB\$Q_BDT field, File Def Language, FDL-15; XAB\$C_RDTLEN value, RMS, 15-2 RMS, 9-2XAB C_RDT value, RMS, 15–2 XAB\$Q_CDT field, File Def Language, FDL-16; XAB\$C_SUMLEN value, RMS, 17-1 RMS, 9-2XAB\$C_SUM value, RMS, 17-2 XAB\$Q_EDT field, File Def Language, FDL-16; XAB\$C_TRMLEN value, RMS, 18-2 RMS, 9-3XAB\$C TRM value, RMS, 18-2 XAB\$Q RDT field, File Def Language, FDL-16; XAB\$L_ACLBUF field, RMS, 14-2 RMS, 9-3, 15-2 determining value for Create service, RMS, XAB\$V_BLK option, RMS, 10-2 XAB\$V_CBT option, RMS, 8-4 determining value for Open and Display service, XAB\$V_CHG option, RMS, 13-8 RMS, 14-2 use restriction, RMS, 13-8 handling ACE, RMS, 14-2 XAB\$V_CR option, RMS, 10-2 XAB\$L_ACLCTX field, RMS, 14-2, 14-3 XAB\$V CTG option, RMS, 8-4 XAB\$L_ACLSTS field, RMS, 14-3 XAB\$V_DAT_NCMPR option, RMS, 13-8 error-handling guidelines, RMS, 14-3 XAB\$V_DUP option, RMS, 13-8 use restriction, RMS, 14-4 XAB\$V_FTN option, RMS, 10-2 XAB\$V HRD option, RMS, 8-4 use restrictions, RMS, 8-4

XAB\$V_IDX_NCMPR option, RMS, 13-8 XAB\$W_POS0 through XAB\$W_POS7 field, RMS, use in defining string keys, RMS, 13-8 use restriction, RMS, 13-8 requirement to be compatible with XAB\$B SIZ0 XAB\$V_KEY_NCMPR option, RMS, 13-8 through XAB\$B SIZ7 field. RMS, 13-13 use in defining string keys, RMS, 13-8 XAB\$W_PRO field, File Def Language, FDL-23; use restriction, RMS, 13-9 RMS, 14-6 XAB\$V_NUL option, RMS, 13-9 default logic, RMS, 14-7 setting for various data types, RMS, 13-6 organization, RMS, 14-6 use in defining string keys, RMS, 13-8 required ordering of arguments, RMS, 14-6 use restriction, RMS, 13-9 subfield offsets, RMS, 14-6 with XAB\$B_NUL field, RMS, 13-9 user classes, RMS, 14-7 XAB\$V_ONC option, RMS, 8-4 XAB\$W_PVN field, RMS, 17-2 XAB\$V_PRN option, RMS, 10-2 XAB\$W_RFI field, File Def Language, FDL-8; XAB\$V_PROPAGATE option, RMS, 14-7 RMS, 8–7 XAB\$W_ACLLEN field, RMS, 14-3 as argument to \$XABALL_STORE macro, determining value, RMS, 14-3 RMS, B-14 limitation, RMS, 14-3 requirement for XAB\$C RFI, RMS, 8-7 XAB\$W_ACLSIZ field, RMS, 14-3 specifying, RMS, 8-7 limitations imposed by MAXBUF, RMS, 14-3 XAB\$W_RVN field, File Def Language, FDL-24; limitations imposed by user's BYTLM quota, RMS, 9-3, 15-3 XAB\$W_VERLIMIT field RMS, 14–3 in XABFHC, RMS, 10-6 XAB\$W_DEQ field, File Applications, 4-31; File Def Language, FDL-7; RMS, 8-6 XAB\$W VOL field, File Applications, 4–32; File XAB\$W_DFL field, File Def Language, FDL-27; Def Language, FDL-8; RMS, 8-7 RMS, 13-4 use restriction, RMS, 8-7 XAB\$_REF field, RMS, 13-14 advantages of using, RMS, 13-4 comparing for primary and alternate keys, XAB (extended attribute block), Programming RMS, 13-4 Resources, 1–36; File Applications, 1–11, 4–2; determining value, RMS, 13-4 System Dump Analyzer, SDA-77 use with RAB\$V LOA option, RMS, 7-13 See also XAB block XAB\$W DXQ field date and time fields, File Applications, 4-28 in XABFHC, RMS, 10-3 description, RMS, 1-3 XAB\$W FFB field, RMS, 10-4 key definition fields, File Applications, 4-29 XAB\$W_GBC field naming conventions for FAB, RMS, 1-3 in XABFHC, RMS, 10-4 program example, RMS, 4-8 XAB\$W_GRP field, File Def Language, FDL-23; protection fields, File Applications, 4-28 RMS, 14-4 types, RMS, 1–3 XAB\$W IFL field, File Def Language, FDL-28; types for VMS RMS file operations, RMS, 1-3 RMS, 13-10 XABALL block, RMS, 1-3, 8-1 advantages of using, RMS, 13-11 relationship to FAB fields. RMS, 8-1 XAB\$W_ITMLST_LEN field, RMS, 18-2 summary of fields, RMS, 8-1 requirement for valid terminal driver, RMS, \$XABALL macro, RMS, B-13 18 - 1argument categories, RMS, B-13 XAB\$W_LRL field, RMS, 10-4 \$XABALL_STORE macro, RMS, B-14 use restriction, RMS, 10-5 argument categories, RMS, B-14 XAB\$W_MBM field, File Def Language, FDL-23; comparing with \$XABALL macro, RMS, B-14 RMS, 14-5 requirements, RMS, B-14 XAB\$W_MRL field, RMS, 13-12 XAB block comparing primary key and alternate keys, naming conventions for RAB, RMS, 1-4 RMS, 13-12 XABDAT block, RMS, 9-1 XAB\$W_MRZ field brief description, RMS, 1-3 in XABFHC, RMS, 10-5 summary of fields, RMS, 9-1 XAB\$W_MRZ field in XABFHC value selection logic, RMS, 9-2 determining value, RMS, 10-5 \$XABDAT macro, RMS, B-15 XAB\$W_POS0 field, File Def Language, FDL-29, \$XABDAT_STORE macro, RMS, B-16 FDL-30 argument categories, RMS, B-16 argument variations, RMS, B-16 example of use, RMS, 3-9

\$XABDAT_STORE macro (cont'd) XABRU block, RMS, 16-1 requirements, RMS, B-16 brief description, RMS, 1-3 XABFHC block, RMS, 10-1 XABSUM block, RMS, 17-1 brief description, RMS, 1-3 brief description, RMS, 1-3 summary of fields, RMS, 10-1 summary of fields, RMS, 17-1 use exception, RMS, 10-1 use restriction, RMS, 17-1 values for shared sequential files, RMS, 10-1 \$XABSUM macro, RMS, B-29 \$XABFHC macro, RMS, B-17 \$XABSUM STORE macro, RMS, B-30 \$XABFHC_STORE macro, RMS, B-18 argument categories, RMS, B-30 argument categories, RMS, B-18 requirements, RMS, B-30 requirements, RMS, B-18 XABTRM block, RMS, 18-1 XABITM block, RMS, 11-1 brief decription, RMS, 1-4 brief description, RMS, 1-3 requirements to use, RMS, 18-1 summary of fields, RMS, 11-1 summary of fields, RMS, 18-1 \$XABITM macro, RMS, B-19 \$XABTRM macro, RMS, B-31 XABJNL block, RMS, 12-1 \$XABTRM_STORE macro, RMS, B-32 brief description, RMS, 1-3 argument categories, RMS, B-32 XABKEY block, RMS, 13-1 requirements, RMS, B-32 brief description, RMS, 1-3 XADRIVER.MAR, Device Support (A), D-1 to data type options, RMS, 13-5 D-26 default logic, RMS, 13-9 **XDELTA** summary of fields, RMS, 13-1 See Delta/XDelta Utility XAB\$W_MRL field, RMS, 13-12 XDELTA entry IPL, Device Support (A), 3-9 \$XABKEY macro, RMS, B-20, B-21 XE base register, Delta/XDelta, DELTA-9, argument categories, RMS, B-21 position and size options, RMS, B-21 XF base register, Delta/XDelta, DELTA-9, \$XABKEY_STORE macro, RMS, B-22 DELTA-38 argument categories. RMS. B-23 XFC (Extended Function Call) instruction, requirements, RMS, B-23 MACRO, 9-81 XABPRO block, RMS, 14-1 XFMAXRATE parameter, I/O User's II, 4-22 brief description, RMS, 1-3 %X format, Analyze/RMS_File, ARMS-25 summary of fields, RMS, 14-1 XMI XAB\$B_BLN field, RMS, 14-4 displaying mapped addresses, Device Support XAB\$W_GRP field, RMS, 14-4 (A), 12–11 \$XABPRO macro, RMS, B-24 XMI bus ASCII radix indicator requirement in MTACC memory space, Device Support (A), 16-5 argument, RMS, B-24 Xn symbol, Delta/XDelta, DELTA-9 describing UIC argument, RMS, B-25 XORB2 (Exclusive OR Byte 2 Operand) example of MTACC argument, RMS, B-24 instruction, MACRO, 9-32 listing user classes, RMS, B-25 XORB3 (Exclusive OR Byte 3 Operand) XAB\$W PRO field requirements. RMS, B-24 instruction, MACRO, 9-32 \$XABPRO_STORE macro, RMS, B-26 XORL2 (Exclusive OR Long 2 Operand) argument categories, RMS, B-26 instruction, MACRO, 9-32 argument exceptions to general rules, RMS, XORL3 (Exclusive OR Long 3 Operand) B - 26instruction, MACRO, 9-32 requirements, RMS, B-26 XOR operator, VAXTPU, 3-7 XABRDT block, RMS, 15-1 XOR operator (\), System Dump Analyzer, brief description, RMS, 1-3 SDA-13 comparing with XABDAT, RMS, 15-1 XORW2 (Exclusive OR Word 2 Operand) default logic, RMS, 15-1 instruction, MACRO, 9-32 service use of XAB\$Q_RDT and XAB\$W_RVN XORW3 (Exclusive OR Word 3 Operand) fields, *RMS*, 15–1 instruction, MACRO, 9-32 summary of fields, RMS, 15-1 XQP (extended QIO processor), I/O User's I, 1-1; use restriction, RMS, 15-1 System Dump Analyzer, SDA-99; Device \$XABRDT macro, RMS, B-27 Support (B), 1-12, 1-74 \$XABRDT_STORE macro, RMS, B-28 default, Device Support (B), 1-28 argument categories, RMS, B-28 X resource requirements, RMS, B-28 fetching value of, VAXTPU, 7-151

Y

YES logical value, File Def Language, FDL-2 Yielding to another thread, DECthreads, cma-118, pthread-106

Z

Zero condition code (Z), MACRO, 8-15

Zone, RTL Library, 5-6

See also Virtual memory zone allocation algorithm, *RTL Library*, 5–15 attribute, *RTL Library*, 5–8 creating, *RTL Library*, 5–6 default, *RTL Library*, 5–12 deleting, *RTL Library*, 5–6 identifier, *RTL Library*, 5–12 resetting, *RTL Library*, 5–14 user-created, *RTL Library*, 5–6

How to Order Additional Documentation

Technical Support

If you need help deciding which documentation best meets your needs, call 800-343-4040 before placing your electronic, telephone, or direct mail order.

Electronic Orders

To place an order at the Electronic Store, dial 800-DEC-DEMO (800-332-3366) using a 1200- or 2400-baud modem. If you need assistance using the Electronic Store, call 800-DIGITAL (800-344-4825).

Telephone and Direct Mail Orders

Your Location	Call	Contact
Continental USA, Alaska, or Hawaii	800-DIGITAL	Digital Equipment Corporation P.O. Box CS2008 Nashua, New Hampshire 03061
Puerto Rico	809-754-7575	Local Digital subsidiary
Canada	800-267-6215	Digital Equipment of Canada Attn: DECdirect Operations KAO2/2 P.O. Box 13000 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6
International		Local Digital subsidiary or approved distributor
Internal ¹		USASSB Order Processing - WMO/E15 or U.S. Area Software Supply Business Digital Equipment Corporation Westminster, Massachusetts 01473

 $^{^1\}mathrm{For}$ internal orders, you must submit an Internal Software Order Form (EN-01740-07).

Reader's Comments

VMS Programming Master Index

AA-LA56C-TE

Please use this postage-paid form to comment				
problem and are eligible to receive one under comments on an SPR form.	Software Perform	ance Report (SPR) service,	submit your
Thank you for your assistance.				
I rate this manual's:	Excellent	Good	Fair	\mathbf{Poor}
Accuracy (software works as manual says) Completeness (enough information) Clarity (easy to understand) Organization (structure of subject matter) Figures (useful) Examples (useful) Index (ability to find topic) Page layout (easy to find information) I would like to see more/less				
What I like best about this manual is				
What I like least about this manual is				
I found the following errors in this manual: Page Description				
Additional comments or suggestions to improv	e this manual:			
I am using Version of the software th	nis manual describ	es.		
Name/Title Company Mailing Address		I	_	

_____ Phone _____

Do Not Tear – Fold Here and T





No Postage Necessary if Mailed in the United States

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION Corporate User Information Products ZK01-3/J35 110 SPIT BROOK RD NASHUA, NH 03062-9987



Do Not Tear - Fold Here -----

Reader's Comments

VMS Programming Master Index

AA-LA56C-TE

Please use this postage-paid form to comment problem and are eligible to receive one under comments on an SPR form.				
Thank you for your assistance.				
I rate this manual's:	Excellent	Good	Fair	Poor
Accuracy (software works as manual says) Completeness (enough information) Clarity (easy to understand) Organization (structure of subject matter) Figures (useful) Examples (useful) Index (ability to find topic) Page layout (easy to find information)				
I would like to see more/less		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
What I like best about this manual is				
What I like least about this manual is				
I found the following errors in this manual: Page Description				
Additional comments or suggestions to improve	e this manual:			
·	,			
I am using Version of the software thi				7.65 11
Name/Title		I	Dept	
Company			_	
Mailing Address				

_____ Phone ____

Do	Not	Tear	_	Fold	Here	and	Tape





No Postage Necessary if Mailed in the United States

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION Corporate User Information Products ZK01–3/J35 110 SPIT BROOK RD NASHUA, NH 03062–9987



Manulli Dan Hambilla bib bib bib bib bib

Do Not Tear - Fold Here --