



DECUS U.S. CHAPTER SIGs NEWSLETTERS

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DECEMBER 1985

Volume 1, Number 4

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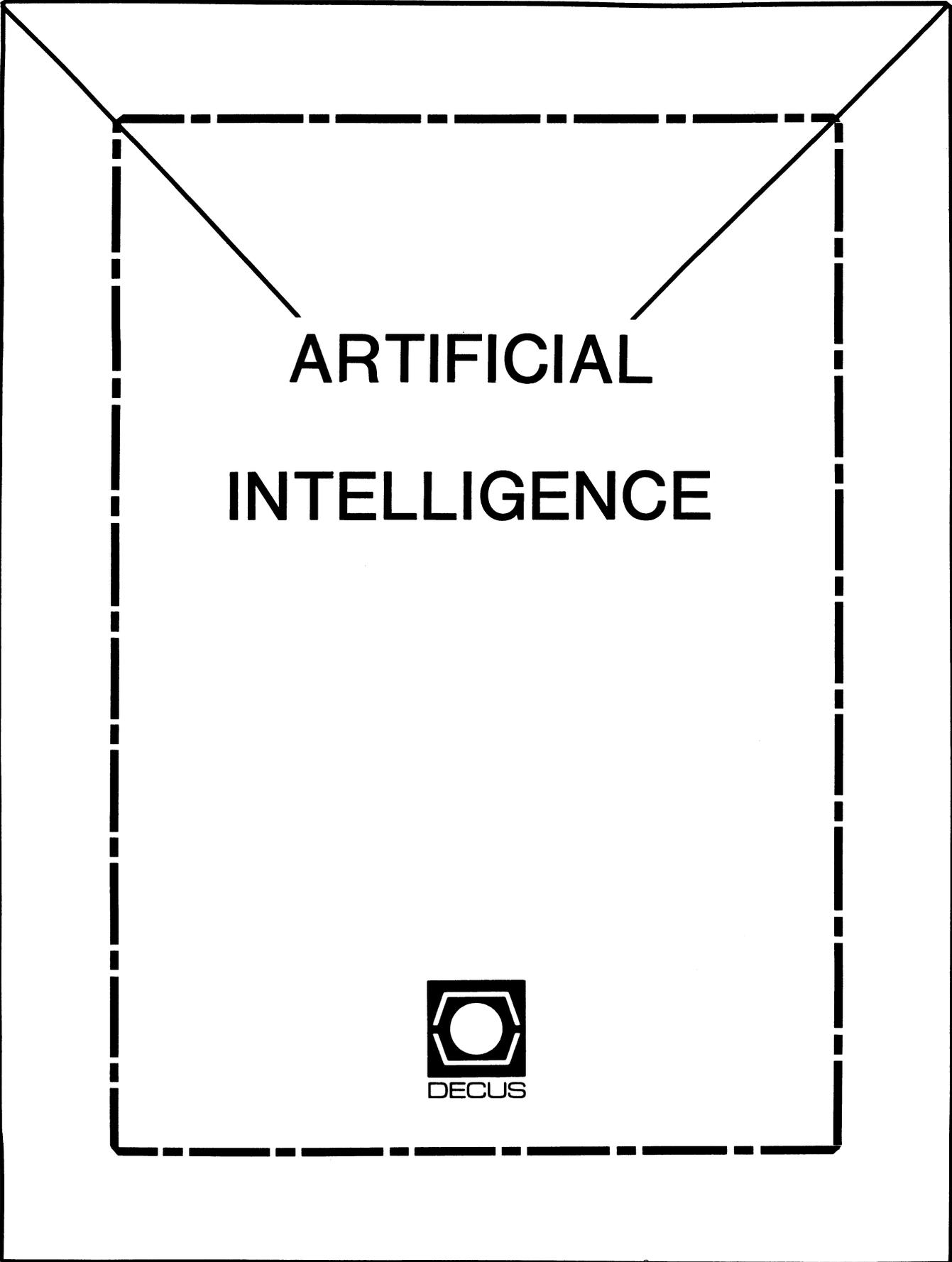
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Letter from the Editor

Well, here we are in our fourth edition of the new DECUS Newsletter. I for one am really pleased to be receiving a copy of the newsletters from ALL the SIG's. Seeing articles from groups that I am not a member of, has been enlightening (and free!). Information for informations sake, who knows when it will be valuable.

By now, you should have been introduced to our new group (Business Application Special Interest Committee), and had the revelation that this is THE group to belong to. In addition to any other group that you may belong to already, we are a group that can address your concerns along a broad spectrum of issues and problems. We are not limited to product specific problems/solutions as some of the other groups are. We address the very general problem of how can we use computers to get the job done and do it in a better way than before.

The past couple of letters from the editor have given some ideas for you to think about and communicate with your other DECUS members about. I hope that you have done that and my mailbox will soon be overflowing with all kinds of goodies to pass along to the readership. In case you haven't found it elsewhere, I will include my address at the bottom of this months letter.

The time warp is still feeling weird. I have been here for months and you just know about it for weeks. Please let me hear from you soon and let me know you are out there.

Now for this month's idea about what to write about. This may be more appropriate for the hardware or site SIG, but let's give it a try.

How dependent is your organization on the computer? What happens if you go down for an hour? or a day? What plans have you made to keep the company going in case of a catastrophe? How do you guarantee up-time?

Our organization is, I think, typical in that we have gone from "I ain't going to use that thing!" to "What do you mean the computer is down for an hour! That's the second time this year! I need to (fill in the blank) now!!!".

We schedule our maintenance for late in the day and work overtime while the users (anyone got a better name to call them?) go home to supper with the wife and kids. We try to build redundancy into the system and justify the costs to accountants. We have people who swear by and at the service we provide.

How do you do it? Let's share your situations and solutions with others. Get your name in print. Publish or perish!

I look forward to hearing from you.

Thomas M. Byrne
L. Karp & Sons
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FALL '85 SYMPOSIUM - BUSINESS APPLICATIONS

The Fall '85 DECUS Symposium being held December 9th-13th in Anaheim, California at the Disneyland Hotel, is certain to be of value to those of you interested in the application of technology to solve business problems.

The DECUS Business Applications SIC will present a full and varied schedule of sessions during the week that include such titles as:

- o Insuring Success for Managerial Involvement in Automated Business
- o Digital's Commitment to the Financial Services Industry
- o Digital's Solutions for Finance and Business Operations
- o Tracking Personnel in the Project Environment
- o Programming: What Are We Doing and is it Right or Wrong?
- o DEHealth: The Solution for Managing Employee Health and Safety Data
- o Developing Large Applications on VAX Systems
- o PBX and Facilities Management and the Shared Tenant Services
- o Computer to PBX Interconnect
- o Packaged Software and the International Market
- o User Perceived Performance of Systems
- o PDP-11 Hardware Planning for Business Users
- o Application Software for Digital Systems
- o Conversion of Business Systems to a VAX
- o Information Center Management: A Digital Solution
- o Digital's Business Solutions Strategy
- o Digital's Solutions for Sales and Marketing Departments
- o Customer Service Techniques for Information Center Personnel
- o Productivity Tools for Information Systems
- o MIS Management Workshop
- o Integrated Manufacturing Solutions
- o Technical Architecture in Digital (Using Our Own Technology to Solve Business Problems)
- o Applications of Simulation in Manufacturing
- o A-to-Z Introduction
- o A-to-Z Training and Applications Review
- o A-to-Z Construction Management System
- o Repetitive/Flexible Manufacturing
- o Manufacturing and Financial Roles in Computer Integrated Mfg.
- o Digital's Business Accounting Products
- o Multi-User Digital Accounting System
- o A-to-Z Menus
- o Writing A-to-Z Applications
- o Application Generation for the A-to-Z Integrated System
- o A-to-Z System Tuning
- o Migrating to 32-Bit A-to-Z
- o PDP-11 Business Users Forum
- o "DECintosh": A Picture Is Worth A Thousand Words
- o Inhouse Typesetting on a VAX

...and MORE!

Join us Monday December 9th at the Business Applications Roadmap Session to review the schedule in detail and to prepare for a busy but rewarding week of informative sessions.

See you in Anaheim!

COMMERCIAL
LANGUAGES
SIG

RPG Sprechen sie DIBOL Parlez-vous BASIC Hablo COBOL



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USER'S GUIDE

DIBOL V3.0 moves closer to release with news of the impending release of a field test version. For more details, read Kevin Cullen's article "What's New With DIBOL".

RPG II V2.0 and RPG migrations assistance are detailed in "Announcing VAX RPG II V2.0 With Increased IBM Compatibility". This article was written by Shirley Ann Stern, DEC's VAX RPG II Product Manager.

The VAX RPG II development/writing group has submitted several program listings including RPG II sample programs and TPU utility programs useful to RPG II programmers. The development/writing group consists of

- o Don Braffitt
- o Dan Szymanski
- o Sue Davidson
- o Nick Tsakares

Listed below are some of the sessions the Commercial Languages SIG is sponsoring at the Anaheim session. (This list is taken from a preliminary program and is subject to change.)

RSTS TO VMS BASIC MIGRATION: HINTS AND KINKS
BASIC-PLUS/RT-11 V3.0 MIGRATION PATHS
AN OVERVIEW OF THE DRAFT STANDARD FOR DIBOL
DIBOL STATE OF THE LANGUAGE ADDRESS
USING VMS TOOLS WITH DIBOL
RPG Q & A
RPG IN MIGRATION - COST/BENEFITS ANALYSIS
STRUCTURED RPG
SCAN - COMMERCIAL APPLICATION EXAMPLES
PDP-11 LANGUAGES RUN-TIME TASK LAYOUT
PDP-11 SORT/MERGE INTERNALS
VAX BASIC AND TOOLS (2 sessions)
RPG II MIGRATION TOOLS AND TECHNIQUES
VAX COBOL AND TOOLS (2 sessions)
VAX COMMERCIAL LANGUAGES AND PRODUCTIVITY TOOLS FOR
COMMERCIAL DEVELOPMENT
BEST OF DIBOL -- A WORKSHOP
COMMERCIAL LANGUAGES SIG MEDICINE AND MAGIC SHOW

The Commercial Languages SIG will be selling session notes at the Symposium.

WHAT'S NEW WITH DIBOL?

by

Kevin Cullen

It appears that the next major release of DIBOL is near. A Digital source has indicated that the field test version of DIBOL V3.0 (DIBOL 85) will begin shipping within the first two weeks of November. This should be good news to those of you with VAX systems. However, as revealed in New Orleans in the spring, this product will not be made available to many other systems. DIBOL on other systems (including RSTS) has gone into "maintenance mode" which means no future major enhancements.

For those of you with VAX systems, here is a list of enhancements which have a high probability of being in V3.0.

- (1) New data types
 - (a) Decimal with implied decimal point
 - (b) Packed
 - (c) Packed with implied decimal point
 - (d) Integer
- (2) Data defining with COBOL-like level numbers
- (3) Multi-dimensional arrays
- (4) Field level terminal I/O
- (5) Expanded control over file management facilities
 - (a) More options on OPEN
 - (b) Ability to create an indexed file
 - (c) FIND statement to locate but not read a record
- (6) Functions
- (7) New statements for enhanced program structuring
- (8) Escape sequence processing
- (9) Read-only literals

In the near future I hope to be able to report the actual new features as well as providing an estimate of when the final product will reach the distribution center.

ANNOUNCING VAX RPG II V2.0 WITH INCREASED IBM COMPATIBILITY

RPG MIGRATION ASSISTANCE SERVICE ALSO AVAILABLE

RPG was developed by IBM over 20 years ago and with the availability of RPG II on System/3X became the second most popular language in commercial data processing applications. V1.0 of VAX RPG II concentrated on the System/3 batch-oriented features of the language; V2.0 gives increased compatibility with System/34 and /36 implementations and makes it easier to migrate or develop interactive applications.

Because the new features of V2 include data structures, modifiable external indicators, and local data areas, VAX RPG II now has much greater compatibility with IBM System/34 than V1. Also, the CDD interface, /COPY feature and long character literals make converting screen handling applications very much easier as now VAX TDMS can be utilized more effectively. VAX RPG II can access screen handling packages such as FMS, TDMS, or Runtime Library screen management package by using a CALL statement - just like any other VMS language. V2.0 of VAX RPG II also includes EXCPT with factor 2 and support for full procedural files for greater System/36 compatibility.

To summarize, V2 narrows the gap with System/34 RPG considerably. There STILL is some conversion because VAX RPG II does not support WORKSTN file syntax and S and D specifications. However, with the other features provided, conversion of screen handling applications directly to VAX RPG II V2 is NOT as time-consuming as it was with V1. Therefore, you as a System/34 owner, now have a greater opportunity of converting directly to VAX RPG II and opening up the vast world functionality of VMS.

Listed below is a summary of features that VAX RPG II now has BEYOND that of IBM System/34 RPG II:

- Full support for VAX interactive symbolic debugger and PCA including debug support to the RPG II source line level
- CALL/PARMx/EXTRN/GIVNG operation codes to support the VAX Calling Standard including CALL by VALUE, REFERENCE and DESCRIPTOR providing the ability to CALL:
 - System services
 - Runtime library routines
 - Modules written in other languages
 - DBMS/Rdb for database support
 - TDMS/FMS/SMG for screen handling
 - GKS for graphics support
 - other utilities with callable interfaces
- Files
 - Multikey ISAM support
 - File sharing
 - File sharing options (S and R) on F spec to control record/file locking
 - CHAIN indicator on record locked or choice of automatic wait until released on record lock
 - Record lengths up to 9999 characters
 - Variable file format
 - Primary file not required
- /COPY_CDD support
- /COPY support (similar to IBM System/34 autoreport capability)
- Long character literals
- Editor
 - Terminal support
 - VT100/VT200 family and GIGI (VK100)
 - VAXstation I and VAXstation II including support for variable-sized

- window page lengths
- Keypad editing interface similar to EDT including key redefinition
- No SEU-like forms to fill out for commands and functions such as
 - Syntax checking and numeric right justification
 - Find
 - Substitute
 - Resequence
- Compilation and review and correction of errors without leaving editor
- Online help including online specification templates
- Startup command files
- Full procedural files (IBM System/36 Release 2 compatible)
- EXCPT with excptname (IBM System/36 compatible)
- Data structures
 - 512 byte local data area (IBM System/36 compatible)
 - Data structure length specification
 - Data structure use throughout program as a character field

One of the major advantages of VAX RPG II is the super-productive editing environment. This editor is full-screen keypad-controlled specifically tailored to the development and maintenance of RPG II code. The HELP facility is particularly valuable and productive as among other information, it provides column headings for the current RPG II specification being edited. These change automatically when the user changes from one specification to another. These will be of special significance to experienced RPG users who used coding sheets to create their programs then entered them at the terminal. The VAX RPG II editor puts this coding sheet directly on the screen thus eliminating the need to transfer code which could cause errors in the process. The integrated EDIT/COMPILE/REVIEW ERROR cycle within this editor is also a major advantage; it can significantly reduce time spent in the traditional edit/compile loop as the user does not have to leave the editing environment.

V2.0 VAX RPG II editor extends the ease-of-use and productivity features in the following ways:

- Command line parsing to use standard DCL parsing.
- SET RULER allows the user to move the 80-column ruler to the bottom of the screen - this will be particularly familiar to IBM users who are used to having the ruler on the bottom.
- Start-up command file to set editing options.
- SUBSTITUTE command.
- Automatic right justification of numeric fields on input to the RPG II specifications.
- And last but not least, single-line syntax checking which has been available on IBM systems.

All these features make the creation and maintenance of RPG II code much easier and more productive for your data processing needs.

The RPG Migration Assistance Service is a comprehensive package aimed at penetrating the IBM System/3, /34, and /36 installed base. Many of these installations are out of capacity. Unlike Digital's VAX family architecture, IBM has not provided this installed base with a consistent architecture across a wide range of products; this means conversion whenever more capacity or functionality is needed. If you are one of these sites, you can now take advantage of this service which offers tools and assistance to your own staff

to do your own conversion at sizeable savings. Now the choice is yours - continue with IBM and endless conversions or switch to VAX and move through a large family of computer hardware with no change to your software!

There are four major components to the RPG Migration Assistance Service:

- One week of on-site planning assistance.
- Conversion aids and documentation.
- Migration assistance manual.
- One year of telephone assistance.

On-site planning assistance helps you develop a migration plan, a schedule, and an estimate of resources required to do the job. It also introduces you to the conversion tools and documentation, provides technical advice on how to perform the conversion, familiarizes the Digital specialist with the your applications and determines the need for additional services.

Conversion aids and documentation provide you with tools that help perform file conversion, data conversion, and OCL/DCL conversion. Documentation includes a reference guide which explains how to use the tools effectively.

The Migration Assistance Manual provides you with a "how to" guide for organizing, planning, managing, and performing the migration. Examples of topics covered are: generation of compatible media, loading files from compatible media and converting files to VMS format. There are also lots of sample programs including workstation programs.

Telephone assistance which is available from the "Expertise Center" hotline answers your questions about all the conversion tools, documentation, Migration Manual, and the conversion process. It also helps clarify syntactical differences between the application programs.

This range of conversion tools and services, the strengths of VAX and VMS in networking and other products, and the wide range of applications available can provide a long-term solution to your computing needs. Migration to VMS eliminates the need for future conversions while the RPG Migration Program protects your present software investment.

Sample VAX RPG II program using VAX Rdb.

Submitted by: VAX RPG II development/writing group

H*++

H* This program demonstrates VAX RPG II V2.0 calling VAX Rdb/VMS.
H* The program uses the callable RDO interface to Rdb and is based
H* on part of the VAX BASIC sample program in the
H* VAX Rdb/VMS Guide to Programming section 5.8.

H*

H* The output file produced by this program contains a list of all
H* department codes and names from the Rdb sample PERSONNEL database
H* sorted by department name. The sample database, or a procedure to
H* build it, can be found in RDM\$DEMO: after installing VAX Rdb.

H*--

```
FDEPTS  O  F      35          DISK
C          RDBINT  EXTRN'RDB$INTERPRET'
C* Indicator 01 is turned on when initialization is completed.
C* Invoke the database.
C  N01          CALL RDBINT          LR
C          PARMD          "
C" 'INVOKE DATABASE FILENAME "RDM$DEMO:PERSONNEL"'
C*
C* Start a transaction.
C*
C  N01NLR      CALL RDBINT          LR
C          PARMD          "
C" 'START_TRANSACTION READ_ONLY'
C*
C* Form stream of departments.
C*
C  N01NLR      CALL RDBINT          LR
C          PARMD          "
C" 'START_STREAM DEPTS USING D IN DEPARTMENTS '+
C" 'SORTED BY D.DEPARTMENT_NAME'
C*
C* Done with initialization.
C*
C  N01          SETON          01
C*
C* Point to a department record. If the stream is not empty, retrieve
C* the department name and code; otherwise we are done. Indicator LR
C* will be turned on when the stream is empty.
C*
C          CALL RDBINT          LR
C          PARMD          "
C" 'FETCH DEPTS'
C  NLR          CALL RDBINT
C          PARMD          "
C" 'GET !VAL = D.DEPARTMENT_NAME; !VAL = D.DEPARTMENT_CODE END_GET'
C          PARMD          DEPNAM 30
C          PARMD          DEPCOD  4
C*
C* When indicator LR is on, all departments have been processed so
C* that we can rollback the transaction and finish. LR is also turned
C* on if any RDB error is detected
C  LR          CALL RDBINT
C          PARMD          "
C" 'ROLLBACK'
C  LR          CALL RDBINT
C          PARMD          "
C" 'FINISH'
ODEPTS  D      N1PNLR
O          DEPCOD  4
O          DEPNAM  35
```

CONTROLLING PROGRAM TERMINATION WHEN SYSTEM SHUTDOWN IS OCCURRING.

Submitted by: VAX RPG II development/writing group

The IBM System/34,36,38 provide an RPG II program opcode (SHTDN) which can be used to determine if the system operator has requested shutdown so that the program can be terminated in an orderly fashion by printing partial totals, etc. A similar capability exists on VMS and MicroVMS systems since the SYS\$SYSTEM:SHUTDOWN.COM command procedure defines the system logical name SHUTDOWN\$TIME to be the time at which the system will be shutdown. The following VAX RPG II V2.0 program demonstrates the translation of this logical name to determine if and when the system is shutting down.

```
-----  
FTTY      D      V      80      TTY  
C          NOTRAN  EXTRN'SS$ NOTRAN'  
C          TRNLOG  EXTRN'LIB$SYS_TRNLOG'  
  
C*-----*  
C* Attempt to translate SHUTDOWN$TIME logical name.      *  
C*-----*  
  
C          CALL TRNLOG  
C          PARMD          "  
C"          'SHUTDOWN$TIME'  
C          PARMV          0  
C          PARMD          TRANS  23  
C          GIVNG          STATUS  90  
  
C*-----*  
C* If logical is defined, turn on last record indicator *  
C* to start end of job processing.                      *  
C*-----*  
  
C          STATUS      COMP NOTRAN      LRLR  
  
C*-----*  
C* Handle end of job processing.                          *  
C*-----*  
  
C  LR      "          DSPLYTTY  
C"          'System shutting down at'  
C  LR      TRANS      DSPLYTTY  
-----
```

This technique is not unique to RPG and could be used in other VMS languages which are able to translate the SHUTDOWN\$TIME logical name. In fact, the value of the SHUTDOWN\$TIME logical will be the planned shutdown time so that a program could use this value and the current system time value to determine how much additional clock time is available before shutdown.

Shared appends to a relative file.

Submitted by: VAX RPG II development/writing group

F*++

F* The following VAX RPG II program updates a relative file by adding
F* records to the end of the file. The file is shared for update.
F* The first record in the file is used to keep track of the last
F* relative record number that was used to write a record to the
F* relative file. When this program goes to add a record to the relative
F* file, the LAST value from the first record is read, incremented
F* and updated by to the first record of the file so any subsequent
F* attempts to determine the LAST relative record number used will
F* get this updated LAST value. Note that future attempts might
F* be by the currently running process, or another user running
F* this program and sharing the OUT file (possibly on another node
F* in a VMS V4 cluster). Each record written to OUT is tagged
F* with the first value of LAST that was read when this particular
F* program run was begun (variable SAVE). The first record in
F* OUT always contains the relative record number (LAST) for
F* the last cell reserved for output as well as the data
F* for that cell. If the first record of OUT is locked, then
F* a program has CHAINED to the first record to get the
F* current LAST value and is in the process of incrementing
F* LAST and updating the first record. Any other updaters
F* will wait (RMS WAT option) until the update completes.

F*--

FIN	IP	F	80	DISK		
FOUT	UC	F	92R	DISK		A S
IIN						
I					1	80 DATA
IOUT						
I					1	40LAST
C	N01	1	CHAINOUT			88
C	N01	88	Z-ADD1	LAST		
C	N01		Z-ADDLAST	SAVE	40	
C	N01		SETON			01
C		1	ADD LAST	LAST		
C			EXCPT			
C		LAST	CHAINOUT			88
C			EXCPT			
C		1	CHAINOUT			88
OOUT	EADD		88			
O			LAST	4		
O			SAVE	10		
O			DATA	92		
O	E		N88N1P			
O			LAST	4		
O			SAVE	10		
O			DATA	92		

File-dumping utility.

Submitted by: VAX RPG II development/writing group

```
$!+
$! This command procedure handles some of the capabilities of the
$! PDP-11 RPG II RPGDMP utility using the VMS DUMP and SORT/MERGE
$! utilities (VMS/MicroVMS V4.0 or later).
$!
$! This command procedure dumps records in a file. The records
$! can be selected either by record number or based on the data values
$! for any field within the record. Note that record selection by
$! data value does not require the field to be the primary key field
$! in an indexed file as required by RPGDMP - the specified field can
$! be any field within the record for any file organization.
$!
$! Invoke this command procedure as follows:
$!
$! $ @XDUMP File-spec Field-position Field-size Start-record End-record
$!
$! File-spec          - file with records to be dumped
$! Field-position     - byte position in record (1 is first position in record)
$!                    where field begins by which records are to be selected
$! Field-size        - length of field which begins at field-position
$! Start-record      - if field-position and field-size are non-zero, start data
$!                    by which records are to be selected; otherwise start
$!                    record number
$! End-record        - if field-position and field-size are non-zero, end data
$!                    by which records are to be selected; otherwise end
$!                    record number
$!
$! The command procedure will prompt for any missing parameters. If
$! field-position and field-size are non-zero, the temporary files XDUMP.SRT
$! and XDUMP.XDUMP are used.
$!
$! EXAMPLES: (all examples use the file X.DAT listed below - the first line
$!            includes field names for ease of reference in the examples)
$!
$!      PN PNAME   W COL   WE QTY
$!      -----
$!      P01NUT    W2RED  +12+135
$!      P02BOLT   W2GREEN+17+167
$!      P03SCREW  W1BLUE  +17+048
$!      P04SCREW  W2RED   +14+143
$!      P05CAM    W1BLUE  +12+205
$!      P06COG    W3RED   +19+215
$!      P07GEAR   W3GREY  +09+234
$!      P08BEARINGW2GREY +25+136
$!      P09BOLT   W1WHITE+05+015
$!
$! $ @XDUMP                ! DUMPS records 2 through 8
$! File-spec: X.DAT
$! Field-position: 0
$! Field-size: 0
$! Start-record: 2
$! End-record: 8
$! $ @XDUMP X.DAT 0 0 2 8    ! DUMPS records 2 through 8
$! $ @XDUMP X.DAT 0 0 3 3    ! DUMPS record 3
$! $ @XDUMP X.DAT 1 3 P02 P05 ! DUMPS records with PN between P02 and P05
$! $ @XDUMP X.DAT 11 2 W2 W3 ! DUMPS records with W between W2 and W3
$! $ @XDUMP X.DAT 22 3 0 100 ! DUMPS records with QTY between 0 and 100
$!-
$ file_spec          = p1
$ field_position    = p2
```

```

$ field_size      = p3
$ start_record   = p4
$ end_record     = p5
$ if p1 .EQS. "" then inquire file_spec      "File-spec"
$ if p2 .EQS. "" then inquire field_position "Field-position"
$ if p3 .EQS. "" then inquire field_size    "Field-size"
$ if p4 .EQS. "" then inquire start_record  "Start-record"
$ if p5 .EQS. "" then inquire end_record    "End-record"
$
$! A SORT record selection is needed only in the case where the user
$! specified field_position and field_size.
$
$ if field_position .LES. "0" .or. field_size .les. "0" -
    then goto no_record_selection
$ open/write sort_spec xdump.srt
$ write sort_spec -
    "/field=(name=field,position:''field_position',size:''field_size')"
$ write sort_spec "/condition=(name=condition," -
    + "test=(field ge ""''start_record'" and field le ""''end_record'""))"
$ write sort_spec "/include=(condition=condition)"
$ close sort_spec
$ sort/specifications=xdump.srt 'file_spec xdump.xdump
$ dump/records xdump.xdump
$ delete xdump.srt;,.xdump;
$ goto all_done
$
$no_record_selection:
$ dump/records=(start:'start_record ,end:'end_record) 'file_spec
$
$all_done:
$ exit

```

Utility to convert RPG II Input specs to Cddl

Submitted by: VAX RPG II development/writing group

```
!+
! File: CIC.TPU - Convert RPG II Input specs to Cddl
!
! This TPU source file takes as input an RPG II source file and produces
! as output a file which contains VAX CDD CDDL corresponding to the
! input records contained in the source file.
!
! Invoke with:  EDIT/TPU/COMMAND=CIC.TPU/NOSECTION/NODISPLAY file-spec
!
! The Input specs must be in ascending order of field start position and
! there must be no gaps between fields.
!-

procedure rpg$cic ! CIC - Convert RPG II Input specs to Cddl
  local
    ispec;
    rpg$cic_input_buf := create_buffer("RPG$CIC_IN",
      file_parse(get_info(COMMAND_LINE,'FILE_NAME'),".RPG"));
    rpg$cic_output_buf := create_buffer("RPG$CIC_OUT");
    position(beginning_of(rpg$cic_input_buf));
  loop
    exitif (mark(NONE) = end_of(rpg$cic_input_buf));
    ispec := current_line;
    rpg$cic_process_ispec(ispec);
  endloop;
  if mark(NONE) <> beginning_of(rpg$cic_input_buf)
  then
    write_file(rpg$cic_output_buf,
      file_parse(".DDL",get_info(COMMAND_LINE,'FILE_NAME')));
  endif;
endprocedure ! rpg$cic

procedure rpg$cic_process_ispec(ispec)
  if (substr(ispec,6,1) = "I")      ! Only deal with Input specs
  and (substr(ispec,7,1) <> "*")  ! Ignore comments
  then
    position(rpg$cic_output_buf);
    if substr(ispec,53,1) <> ""
    then
      rpg$cic_process_ifield(ispec)
    else
      rpg$cic_process_irec(ispec)
    endif;
    position(rpg$cic_input_buf);
  endif;
  move_vertical(1);
endprocedure ! rpg$cic_process_ispec

procedure rpg$cic_process_irec(ispec)
  local
    rec_name;
    rec_name := substr(ispec,7,8);
    edit(rec_name,TRIM_TRAILING);
    if rec_name <> ""
    then
      position(end_of(rpg$cic_output_buf));
      rpg$cic_output(fao("DEFINE RECORD !AS", rec_name));
      rpg$cic_output("  DESCRIPTION IS");
      rpg$cic_output(fao("!/* Generated from RPG II Input specs !%D",0));
      rpg$cic_output(fao("!/* contained in source file !AS. */.",
```

```

        get_info(rpg$scic_input_buf,"file name"));
    rpg$scic_output(fao("      !AS STRUCTURE.",    rec_name));
    rpg$scic_output(fao("      END !AS STRUCTURE.",rec_name));
    copy_text(      fao("END !AS RECORD.",        rec_name));
    move_horizontal(1);
    move_vertical(-2);
endif;
endprocedure ! rpg$scic_process_irec

procedure rpg$scic_process_ifield(ispec)
    local
        data_type,
        start_pos,
        end_pos,
        decl_pos,
        field_name,
        field_size,
        fao_tmp,
        output_tmp;
    data_type := substr(ispec,43,1);
    start_pos := substr(ispec,44,4);
    end_pos   := substr(ispec,48,4);
    decl_pos  := substr(ispec,52,1);
    field_name := substr(ispec,53,6);
    edit(start_pos, TRIM_LEADING);
    edit(end_pos,   TRIM_LEADING);
    edit(field_name,TRIM_TRAILING);
    field_size := int(end_pos)-int(start_pos)+1;
    rpg$scic_output(fao("! !AS! DATATYPE IS !AS!\",field_name,
        rpg$scic_data_type(data_type,field_size,decl_pos)));
    if decl_pos = " "
    then
        fao_tmp := "CHARACTER";
    else
        fao_tmp := "DIGIT";
        rpg$scic_digits(data_type,field_size);
    endif;
    fao_tmp := "! ! SIZE IS !SL "+fao_tmp+"!%S";
    output_tmp := fao(fao_tmp,field_size);
    if decl_pos <> " "
    then
        output_tmp := output_tmp + fao(" !SL FRACTION!%S",int(decl_pos));
    endif;
    rpg$scic_output(fao(output_tmp+"!\\"));
endprocedure ! rpg$scic_process_ifield

```

```

!+
! PARAMETERS:
! data_type - data type from Input spec (P, B or blank)
! field_size - size of field in bytes from Input spec
! decl_pos - number of decimal positions from Input spec
! RETURNS:
! String representing appropriate CDDL data type
!-

```

```

procedure rpg$scic_data_type(data_type,field_size,decl_pos)
    if data_type = " "
    then
        if decl_pos = " "
        then
            rpg$scic_data_type := "TEXT";
        else
            rpg$scic_data_type := "RIGHT OVERPUNCHED NUMERIC";
        endif;
    else if data_type = "B"
    then
        if field_size = 2

```

```

    then
        rpg$cic_data_type := "SIGNED WORD";
    else if field_size = 4
    then
        rpg$cic_data_type := "SIGNED LONGWORD";
    endif;
    endif;
else if data_type = "P"
then
    rpg$cic_data_type := "PACKED DECIMAL"
endif;
endif;
endif;
endprocedure ! rpg$cic_data_type

!+
! PARAMETERS:
! data_type - 1 character string denoting data type (P or B). No action
!             if performed for any other value for data type.
! field_size - integer denoting number of bytes in the field as specified
!             on the Input spec (modified to be corresponding number of
!             digits).
!-
procedure rpg$cic_digits(data_type,field_size)
    if data_type = "P"
    then
        field_size := (field_size*2)-1;
    else if data_type = "B"
    then
        if field_size = 2
        then
            field_size := 4;
        else if field_size = 4
        then
            field_size := 9;
        endif;
        endif;
    endif;
    endif;
endprocedure ! rpg$cic_digits

procedure rpg$cic_output(output_rec)
    copy_text(output_rec);
    split_line;
endprocedure ! rpg$cic_output

rpg$cic;
exit

```

Sample VAX RPG II program using DECgraph.

Submitted by: VAX RPG II development/writing group

This is a version of the SHIPS sample program. It has been modified to produce two output files (SHIPDIV.DAT and SHIPQTR.DAT) containing DECgraph load file format directives. A pie chart of SHIPDIV and a cluster bar chart of SHIPQTR are included.

```
H***
H*  FUNCTIONAL DESCRIPTION:
H*  This program produces a report of shipments for various
H*  products broken down by division and department using an
H*  input file with the shipment data for the past 4 quarters.
H*--
H
FSHIPS  IP  F      41          DISK
FSHIPDIV O  V      80          DISK  .GRL
FSHIPQTR O  V      80          DISK  .GRL
E              QTY          4  2  0
E              DQTY         4  4  0
ISHIPS    AA  01
I
I              1  5  DIV  L2
I              6  7  DEPT L1
I              8 16  PROD
I              17 24 QTY
C*
C  01          XFOOTQTY      PROQTY  30
C  01          PROQTY      ADD  DEPQTY  30
C  01          QTY        ADD  DQTY    30
C*
CL1          DEPQTY      ADD  DIVQTY  30
CL1          Z-ADD0      DEPQTY
CL2          DIVQTY      ADD  FINQTY  40
CL2          QTR        ADD  1        QTR    10
C*
OSHIPDIV H          1P
O
O              5 'TITLE'
O              29 'PRODUCT SHIPMENT REPORT'
O          H          1P
O
O              8 'SUBTITLE'
O              30 'Shipments by Division'
O          H          1P
O
O              16 'X_DATA_TYPE TEXT'
O          T          L2
O
O              1 ''
O              DIV      6
O              7 ''
O              DIVQTYZB 15
OSHIPQTR H          1P
O
O              5 'TITLE'
O              29 'PRODUCT SHIPMENT REPORT'
O          H          1P
O
O              8 'SUBTITLE'
O              30 'Shipments by Division'
O          H          1P
O
O              24 'VERTICAL_LABEL Shipments'
O          H          1P
O
O              16 'HORIZONTAL_LABEL'
O              25 'Division'
O          H          1P
O
O              16 'X_DATA_TYPE TEXT'
O          H          1P
O
O              11 'Y_LEGEND Q1'
```


Utility procedure to compress RPG source programs.

Submitted by: VAX RPG II development/writing group

```
!++
! REMPROGID.TPU
!
! This file contains a single procedure which will remove columns
! 75-80 of each line in the current buffer and then trim off trailing
! blanks and tabs from each line. A single pass through the current
! buffer is made to accomplish both tasks. A message is displayed
! on completion with the total number of bytes saved and the current
! position is left at the beginning of the line at which the procedure
! terminated.
!
! This procedure is designed to be used with RPG programs which contain
! the program ID in columns 75-80 and may have all records padded out
! to 80 columns. Any line with characters past column 80 is left
! unmodified. Note that any data at the end of the source file is
! also left alone since this procedure will stop processing if it encounters
! any line with ** or // in columns 1-2.
!
! To use this procedure, invoke TPU with
!
!     $ EDIT/TPU/COMMAND=REMPROGID.TPU file_to_be_converted
!
! Then execute the following command from within TPU:
!
!     remove_program_id
!
! Then exit TPU.
!--
```

procedure remove_program_id

```
    local
        cur_len,           ! length of current line before modification
        bytes_saved,      ! total # of bytes removed from program
        tmp_str,          ! modified current line
        first_2_cols;     ! first 2 chars in current_line

    bytes_saved := 0;

!+
! Start at beginning of current buffer and then loop to process
! each line.
!--
    position(beginning_of(current_buffer));
    loop

!+
! Done if we are at the end of the current buffer or columns 1 and 2
! indicate data following.
!--
        exitif (mark(NONE) = end_of(current_buffer));
        first_2_cols := substr(current_line,1,2);
        exitif (first_2_cols = "**")
            or (first_2_cols = "//");

!+
! Strip off columns 75-80 if they exist and trailing spaces and tabs
! if they exist (after columns 75-80 are gone). This is done by
! inserting new cleaned-up text, splitting the current line between
! the new text and the old text, and deleting the old text. Any line
! longer than 80 characters is left alone.
!--
```

```

cur_len := length(current_line);
if cur_len <= 80
then
    tmp_str := substr(current_line,1,74);
    edit(tmp_str,TRIM TRAILING);
    bytes_saved := bytes_saved + cur_len - length(tmp_str);
    copy_text(tmp_str);
    split_line;
    erase_line;
else
    move_vertical(1);
endif;
endloop;

!+
! Message on savings.
!-
    message(str(bytes_saved) + " bytes saved by removing program ID "
        + "and trailing spaces and tabs.");

endprocedure;

```



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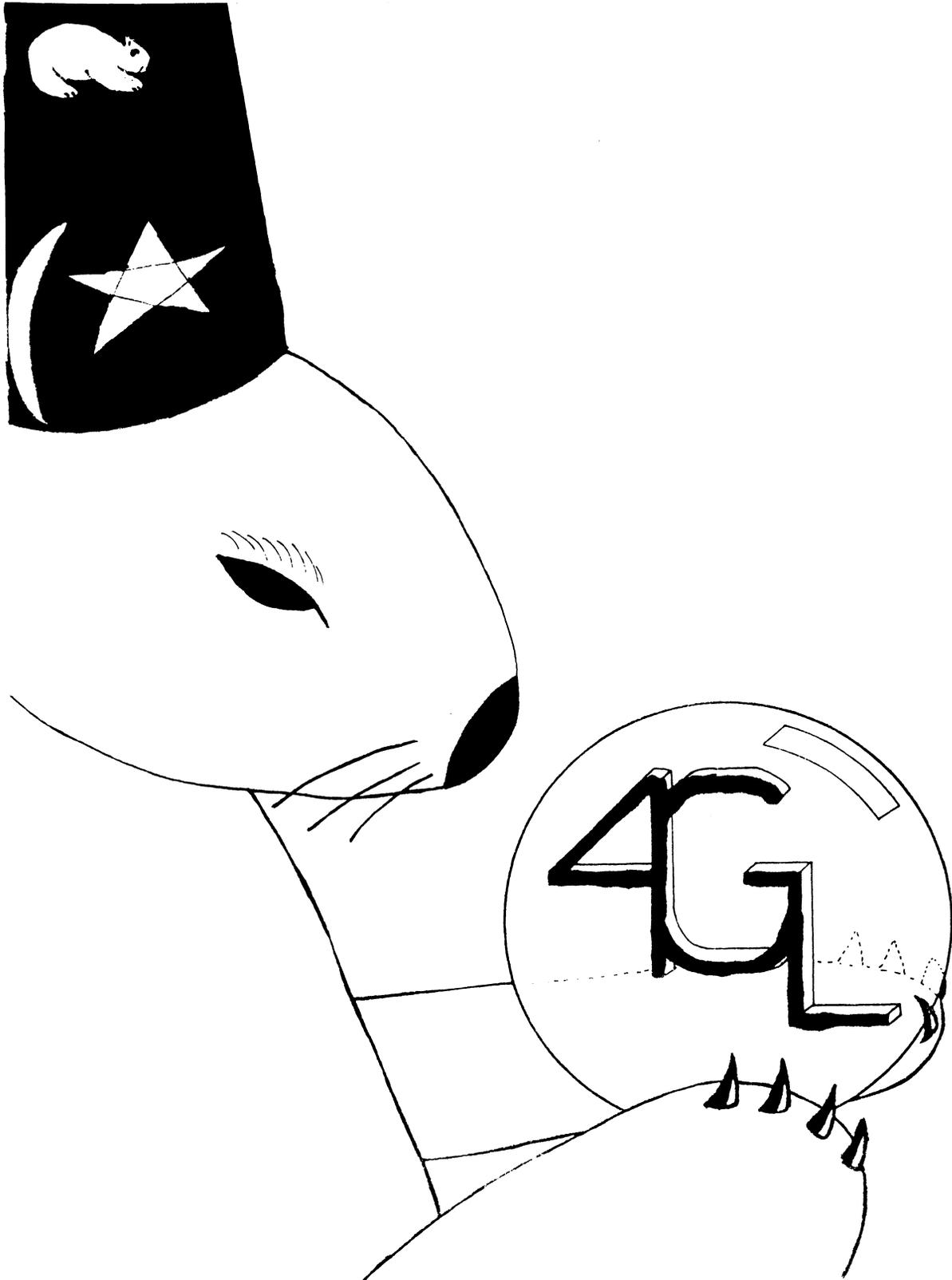
The Wombat

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DTR-I

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Letters and articles for publication are requested from members of the SIG. They may include helpful hints, inquiries to other users, reports on SIG business, summaries of SPRs submitted to Digital or other information for members of the DATATRIEVE SIG. Machine readable input is highly desirable and machine-to-machine transfer of material is preferred, but most anything legible will be considered. However, this newsletter is not a forum for job and/or head hunting, nor is commercialism appropriate.

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About the Cover

The section cover for this issue of the Wombat Examiner was drawn by Bart Lederman. The Wombat is looking for the future of Fourth Generation Languages.

Chairman's Corner**Larry Jasmann, U. S. Coast Guard, Burke, VA**

Once more a month rolls by. Time sure goes fast when you are busy. When you read this, you should be looking forward to the Anaheim Symposia in the very near future. If you are not going, reconsider. If travel funds are short, check one more time. The schedule this time is incredibly dense. There is so much material presented in so many different formats that the task of deciding which area to hit next is almost impossible. DATATRIEVE SIG (soon to be DTR/4GL) is presenting more sessions than ever before. Campground activities will increase this time with the addition of a clinic, and Wombat Magic has been moved to a new night to avoid the conflict with VAX Magic.

At a Woods Meeting in October, the Steering Committee revised the Operating Procedures for the SIG to reflect the changed name and mission of the SIG to DTR/4GL. These new operating procedures will go into effect when the organizational change is approved by the Management Council and the Board. I expect the change will be approved in Anaheim by the SIG council, and prior to Dallas Symposium by the Management Council and the Board. Our name should be different in Dallas. When the Operating Procedures are approved, they will be published in this publication. In order to emphasize the change in the character of the SIG, we have appointed Diane Pinney as the New Product Focal Point on the Steering Committee.

Well, that is "all the news that if fit to print". See you in Anaheim.

Larry Jasmann

From the Editor's Pen**Joe H. Gallagher, Cleveland, OH**

Please note that a number of changes have been made in the DATATRIEVE SIG Officers which appears on the back of the section cover. Some positions have been renamed and others have been added.

Also please note the article which appears on page DTR-17 corrects some errors which occurred in the November issue of the Wombat Examiner due to a change in the location of the production of the newsletter.

This is now the fourth issue of the combined newsletters. Most of the production bugs have been ironed out and the issues should be arriving during the first week of each month. An absence of information in some of the other sections of the newsletter has been noted. If you do not want that to happen to the Wombat Examiner section, send in your articles.

A Seasonal Poem -- 'Twas the Night before Implementation

Author: Unknown

[This poem was circulating around an IBM shop. With apologies to Clement Clarke Moore.]

'Twas the night before implementation and all through the house,
Not a program was working not even a browse.
The programmers hung by their tubes in despair,
with hopes that a miracle would soon be there.
The users were nestled all snug in their beds,
while visions of inquires danced in their heads.
When out in the machine room there arose such a clatter,
I sprang from my desk to see what was the matter.
and what to my wondering eyes should appear,
but a super programmer (with a six-pack of beer).
His resume glowed with experience so rare,
he turned out great code with a bit-pusher's flair.
More rapid than eagles, his programs they came,
and he cursed and muttered and called them by name:
On update! on add! on inquiry! on delete!
on batch jobs! on closing! on functions complete!
His eyes were glazed-over, fingers nimble and lean,
from weekends and nights in front of a screen.
A wink of his eye, and a twitch of his head,
soon gave me to know I had nothing to dread.
He spoke not a word, but went straight to his work,
turning specs into code; then turned with a jerk;
And laying his finger upon the "ENTER" key,
the system came up and worked perfectly.
The updates updated; the deletes, they deleted;
the inquires inquired, and closings completed.
He tested each whistle, and tested each bell
with nary an abend, and all had gone well.
The system was finished, the tests were concluded.
The users' last changes were even included.
And the user exclaimed with a snarl and a taunt,
"It's just what I asked for, but not what I want!"

Warmest seasons greetings from the Editorial Staff of the Wombat Examiner and the DATATRIEVE SIG Steering Committee; best wishes for a happy and prosperous New Year. And to paraphrase Charles Dickens: God bless our users; God bless them everyone!

Fourth Generation Language Panel - 1985 Spring DECUS

Larry Jasmann, DATATRIEVE SIG Chairman
Chuck Duncan, Digital DATATRIEVE SIG Counterpart
Katherine Hornback, Languages & Tools SIG Chairperson

Session Editors: Steve Cordiviola, Associate Editor Wombat Examiner and
Joe H. Gallagher, Editor Wombat Examiner

Larry Jasmann:

My name is Larry Jasmann; I'm the Chairman of the DATATRIEVE Special Interest Group, and this session has been advertised as a panel on Fourth Generation Languages.

Well, I will tell you quite frankly that we've had some problems getting people as panelist to discuss 4GL's and so the purpose and intentions of this session has been changed a little bit. If it is not what you came for, I will not feel bad if you walk out, on the other hand if you stick around maybe we can get some place together.

Basically, the situation is that DATATRIEVE SIG is in the process of changing its charter and orientation slightly and what we're really doing is changing the SIG so instead of being the DATATRIEVE SIG, it's going to be DTR/Fourth Generation Language SIG. The specific subset of 4GL that [the] DATATRIEVE [SIG] is interested in, are those things which have to do with information management (manipulating, storing and handling information), . . . decision support system[s], information management systems, and things like that. We are probably not really all that interested in something which controls assembly line process through robotics or things like that which may, depending on how you look at it, may be [a] Fourth Generation Language.

So really, as we begin to embark on this task of changing the definition of the SIG slightly, it would help us a great deal . . . (I know it might actually help some of you also) . . . if we spent some time trying to define exactly what . . . [does] a Fourth Generation Language means to us and, secondly, after we understand that, what could a SIG who represents Fourth Generation Languages do for DECUS? What are the issues? What are the problems? What are the sort of things that you would like us to deal with? These can range from issues like: "How do I get my stuff from one 4GL to another 4GL, whether it is a DEC product or non-DEC product?"; "Which Fourth Generation Language or DBM 'thing-a-ma-job' should I buy if I want to do this, or these kinds of things, or if I am this kind of a company?"; "If I don't know anything about it, which is the best deal - in terms of getting functionality out for what I put into it?"; "What are the implications in terms of management and managing my information for having more than one [4GL]?". There is a whole list of things like that.

What I would like to do is start out with a discussion of what is a Fourth Generation Language and I would like to move from that to a discussion of what should a Fourth Generation Language SIG do for DECUS. I would like to introduce Kathy Hornback, who is the Chairman of the Language and Tools SIG. She's agreed to kick off the discussion with a short discussion of what a 4GL means to her and her organization. After that I might throw in a few two cents. The other person I would like to introduce is Chuck Duncan. He's the

counterpart [he was the counterpart; Andy Schneider is the new counterpart as of October 1985] to the DATATRIEVE SIG and represents the part of . . . [Digital] which has some interest in this area.

So we will probably throw in some concepts, but after Kathy [has finished], it is going to be up to you people to tell us what you think. This could either be a real short, short session or be as long as it goes. We will have to see what happens.

Kathy Hornback:

What I want to talk about is how we use DATATRIEVE as a Fourth Generational [sic] Language techniques and what we found out about it.

We develop avionics systems and we use DATATRIEVE as a tool to help us develop other software tools. We brought DATATRIEVE when we got our first VAX back in 1980. We didn't know what it was and we didn't use it for a year, but since then it has become the second most widely used tool in our system after the CODE Management System (CMS).

We have done some really astonishing things with it. Things which I think are properties of a Fourth Generation Language and I would like to go through some of them.

The first thing that I think a Fourth Generation Language has to do is let you develop [applications] an order of magnitude faster than you would be able to do with a traditional documentation language. We put up a whole tool set; we had a major avionics development with about 100 people working on the project [with] 500,000 lines of source code, and we need some tools just to keep track of what we were doing on the project. We put together a requirements database, a problem report database, a traceability database, global variable database; all together [there was] about six or eight DATATRIEVE applications [with] about 50,000 records stored in them.

What was important for us is that we could put those tools up in about one week apiece, not the 2 or 3 or 4 months it would have taken for FORTRAN. If we hadn't had a Fourth Generation Language, we would not have done those tools. They just wouldn't have gotten done. I need fourth generation techniques to give me enough leverage so I could afford to develop other tools.

We use DATATRIEVE in combination with FMS; and I would call FMS part of the fourth generation because it gives you something without having to program.

So that is one of the first things is an **order of magnitude [productivity] increase over traditional programming languages.**

The next thing is the **ability to change the system very rapidly.** A lot of these systems we put up, we really didn't have much of an idea of the sort of the system we needed; what type of data the programmers wanted in; what sort of report they wanted out; and we changed them continually over a couple of years. And it was very cheap to change them. So that is another thing I want to do with a Fourth Generation Language. Change my thoughts around on the fly without paying a big penalty.

The third thing that we were very pleased with DATATRIEVE and FMS about, and I think it is probably part of the fourth generation, is [the fact] that they are **relatively non-technical.** We had business school graduates, 2 year graduates using these tools, we had managers using these tools, we had non-computer people using these tools. I think that is another attribute: it was very important for us, especially being able to hire a 2 year business school graduate to do the programming rather than having to devote one of our software engineers to write a FORTRAN program which would have been our alternative.

Another thing that Fourth Generation Languages are going to become very important for, and this relates my SIG, Language and Tools, is rapid prototyping. Traditional software lifecycles goes through requirements, design, implementation, tests and then operations and maintenance. That is all very well and good, but what happens is that you really don't know what the requirements are, you don't have a thorough understanding of them until you have done the implementation and said "Oh! that right! I forgot that!" or the user says "That's not really what I want!". In [the] Languages and Tools [SIG] and also at Lear-Seigler, we're looking very, very hard for a way to do rapid prototyping; throw up an early version of the system, or a mock up of the system that will give us a feel for what it is like, but will allow us to do it very, very quickly and get some feed back from the user as an aid to defining our requirements. And in fact, we've used DATATRIEVE and FMS to some extent in that way: to throw up a quick version of the system and either evolve it into the final production system or just use that as the model and go back and develop in some other method. **Rapid prototyping** is becoming very, very important as an aid to getting software done on time.

Those are the four things I see as part of a Fourth Generation Language, and things we have all had experience with, and I can tell you, they work! We need more of them.

Some of the things I see in the future, that I would like to have, that I do not have right now: are some sort of graphical capabilities somehow mixed in there with DATATRIEVE, not just out printing plots, but actually the ability to interactively have graphics on the screen with the user, maybe an icon-based DATATRIEVE or DATATRIEVE entry based on icons. I am not really sure what I want, but I want some sort of graphics in it.

At Lear we are looking at it for pilot interface. We produce displays that go in the cockpit and the pilots are very picky about what the displays look like and how they travel from screen to screen as they are pulling up information. They have a lot of graphically based information. Right now we go all the way through into implementation, practically into flight tests before the pilots take a look at it, and they usually want a million changes. We like to be able to simulate flying an airplane. The pages that the pilot sees, including all the graphics, up front in the requirement stage. We need a tool to do that.

Another thing we would like out of a Fourth Generation Language is more functionality. Right now DATATRIEVE is really good at adding records, storing records, returning subsets of records, printing records, but it doesn't do a lot of other things besides this data manipulation. I am not even exactly sure what I would want it to do, but I want it to do more than what it does now. Maybe not necessarily DATATRIEVE, but some sort of fourth generational [sic] techniques that will give me some more rapid prototyping capabilities and give me the ability to do the rest of my software development as fast as I can do this limited subset of application.

As you look more and more into all of these things, what we are almost leading towards is executable specifications, which is a part of prototyping, but in a non-procedural way. Specifying what you want to do. It does it. You don't have to think about the programming. That's a couple of years down the road, I think.

That is a quick overview of how I see Fourth Generation Language and how we use them at Lear and what I would like to see out of them. Some of them are pretty nearing and some of them are exotic. That is all I have to say.

Chuck Duncan:

Thank you, I have to say when I came and for the first time was able to hear some of the comments people here making about what they expected 4GL and where they expected it to go. I was a little bit relieved. Part of my responsibility as DATATRIEVE and the other part is 4GL technology in our area in DEC. I was glad to hear some of the things that she had mentioned.

I want to make some comments about some general perceptions of 4GL. First of all, DEC internal[ly] sometimes gets a little confused in talking about 4GL's because, really we have two definitions of it, an internal and external. The internal definition really basically is so stringent that we believe nobody has really made a 4GL yet. However, since the world labels various classes of tools as 4GL's, then we have to recognize that we have classes of tools that fall right in line there and therefore we call DATATRIEVE and others tool true 4GL's. So, we recognize that there are some directions that various tools need to go.

One of the things we believe is that there are at least two kinds of 4GL because you have at least two very coarse definitions of types of users; you have end users and you have more technical users. I think the kind that she was just commenting on, would tend to go toward the more technical, i.e. those who are developing applications for an end user audience. Yet you can say, likewise, there would be a Fourth generation environment that end users would want to have, which could be called a decision support environment. It is a place where they want to get answers and they don't want to do it by programming. This would tend to elude to the idea that a fourth generation language or a fourth generation space (let me call it, not a language, but a fourth generation space) may predominately tend to be non-procedural. [It] may not be necessarily language based. I am talking here specifically about an end user environment as opposed to a more technical or development environment where you are trying to tackle more difficult problems. My belief there is that you inevitably need a procedural language to rely upon.

There are also multiple levels of end users; technical people, developers who are developing applications to go into an end users' space. You find, I think, that there are business systems analyst type people, who know the business, know the end users' requirements and needs very well, have less of an understanding of programming languages and technology. So they kind of fit in a middle level there. They kind of need a blend of the two. I think, both the non-procedural and procedural and need to be able to develop applications for the end user.

On the prototyping, I fully agree that prototyping is one of the really valuable areas. Quick implementation and quick prototyping is absolutely an essential requirement of any 4GL space, whether it be procedural or non-procedural.

One of the things that Kathy has mentioned, was that the end users often haven't communicated their needs very well. I think to go one step further, sometimes the expression of those needs change. Once you have set up the prototype you partially solve the problem. Now once they see that solution they say "Oh, I see what I really wanted was . . ." and they go one step further. So the definitions not only get expanded upon and clarified, it evolves. And that is one of the real values of defining a solution in a fourth generation space. It is something that third generation spaces do not solve very well; in fact are very poor at. [This is] one of the reasons for a lack of productivity at that level.

I think another thing that should be thought of, and was already touched on, is that there has to be several modes of problem solution. Instead of

constantly trying to rely on a digital solution, (I don't mean DEC, I mean digital versus analog), you should have both. You should be able to do an analog solution or an analog expression to a problem that calls for that and a digital one, a numeric one, where that is necessary. I think that is one area that some of our tools can really gain on.

I also think that there needs to be kind of an adaptive interface. One of the things I ran across when the McIntosh and Star System first came out, they had that kind of move where you went through all the menus and play with the icons and pull-down menus and everything. It was really neat until I got comfortably with the system. Then it got to be a pain. You need something that adapts to the level of the user, as the user becomes more expert in the area. Whether this be an end user or developer. There will always be certain areas where that person is comfortable with and certain areas that person is not comfortable with. They need to be able to go in and out of them very gracefully. That helps with the productivity very much. Also each node has to point forward to the next node. If this person is working in a strip pull down menu (that somehow should relate to [something], if it is a command language that they ultimately going to go to) it needs to sort to help teach them how to get there.

Another thing that I have been doing an awful lot of thinking about is functionality verses complexity. I think it is very, very true that 4GL's need to be rich in functionality. I think one example of . . . what helped me learn in this space, is what happened to Lotus Development Corporation in going to Symphony. They took a, I hope there is nobody here I am going to offend, really super idea, they got the idea that there has to be some packages here, there has to be some word processing, there has to be some graphics wrapped together in a package and they added a lot of functionality to each one. If you took any one of these all by itself; it was not really overwhelming to learn this word processor and all its functionality or this spread sheet with all its functionality and power. If you took some time in some cases, but by themselves they weren't too bad. But then you take all of these things and put them together into one package, and you look at the same amount of functionality now crammed together because all the packages were stuck together, it is almost overwhelming. And Symphony has gotten, and I think it is agreed, kind of a black eye because of how tough it is to learn all of Symphony. Yet when you look at it, there was not a whole lot more functionality down deep than was already there with the exception of possibly communications and some enhancements in the database area. So, one thing I think has to be clear, is that as a person is learning, they shouldn't suddenly be dropped in the middle of this ocean of things that they have to learn to get going. They have to be able to become productive very, very quickly and then as they are ready for more power, be able to open up power, open-up windows and doors that allow them the more power and flexibility. But if users are dropped in the middle, sometimes it isn't clear; "Where do I go next?" and you see all this wealth of things to do and no understanding of how to do it.

Particularly in the end user environment this will spell success or failure. An end user, a person who is looking for answers, is not looking for a string of manuals to read. They are looking for answers to the problem they are trying to solve now. They haven't got time to try to learn 40 commands just to get the answer.

I think that is one thing that has to be known, that there is a difference in the basic psychology of the two kinds of users, the end users and the more technical user.

I think those are some of the views I wanted to talk about. Thank you.

Larry Jasmann:

Well Kathy and Chuck have stole[n] my thunder, but that's okay. I've just a couple of things I'd like to say and then there is going to be a dead long silence until somebody out there decides to say something.

First of all, in my view a 4GL should be **both integratable and should be a focus for integration**. I have a strong feeling that in too many cases we have organizations with stove pipe applications which go from the top to the bottom or the bottom to the top and none of them speak to each other. A 4GL ought to be a common mechanism for making things integratable so that data can be used as information in the organization at the level and in an appropriate manner depending on who is trying to use it and what their role in the organization is.

I am not saying that 4GL is the whole solution to that problem because is a huge problem. It demands a lot of different products and a lot of different things working together to produce that. But the 4GL, if it doesn't provide some sort of focus in that area, is pretty deficient. DATATRIEVE, for example, definitely does provide some focus. Just because of VAX-DATATRIEVE (it forces you to use the CDD) gives it at least one good thing about it.

Another thing that a 4GL needs to do, is worry about something I call "Fuzzy Sets" or defining things which are not totally definable. It has to have the ability to coalesce things out of a group of data which are not totally defined so you can interactively "mush" around in the database and get closer to defining something you don't really understand or can define at this point in time.

Finally, and this is sort of an out-growth of that, it needs to have an **ad hoc** conversion of data to information capability. It has to be able to, on the fly and as the user wants, be able to take data and produce information which is useful to the user with a minimum of fuss and a minimum of overhead in terms of having to do things.

OK. Well this is three peoples ideas of what 4GL's are. I would like to know if there are other people out there who have ideas about this. I would like to know if there are people using products other than DEC products. Maybe we will let the discussion run for a while on that and then after that maybe we can talk a little bit about what a SIG ought to do in this area. [Jasmann explained the usual DECUS groundrules for questions and discussion from the floor.]

Lee Solin, Cognos Corporation, Dallas, Texas:

I have been working with a Fourth Generation Language called POWERHOUSE for about 4 years. [POWERHOUSE is a dictionary driven applications development system; POWERHOUSE is a product of Cognos Corporation, 2 Corporate Place at 195, Peabody, MA 01960.] That particular package did not start out on a VAX and it has just fairly recently been made available on it. But on the basis of that experience there are a couple of comments I would like to make.

First of all, I agree with everything I heard from the first three speakers. I think you are bang on, so far.

I would like to add one more tremendous benefit to use a fourth generation language, and that is **maintenance**. Everybody starts using 4GL's because of development, in order to get systems together and up and running faster. By the time you use it for a year, you discover that your maintenance is starting to disappear. That is because the systems are designed cleaner in the first place; it's because there is less code as you can get your whole entire

program on a piece of paper or better yet, on a screen. That makes it a whole lot easier to maintain. And thirdly, because the code is less complex because the 4GL itself does the tricky stuff like figuring out how to get the data off the disk and figuring out how to get stuff to the screen.

Second main point is that people are talking a lot about prototyping and that, I think, is a tremendous benefit to be able to do prototyping instead of just talk about it, is a good idea that I wish I had time to do. I think, that what we are finding with fourth generation languages, is that prototype can be actually turned into the final system. That the 4GL is strong enough, you don't need to rewrite (in most applications) in FORTRAN, COBOL, or whatever. In some places where time is a tremendous consideration, or a huge system, that may change; you may need to rewrite into something faster. But in main, your prototype can be turned over to the users, then added to and embellished upon, until you finally got the end system.

Third main point I want to make . . . is that it is important as the SIG develops its interest in 4GL, is to realize that Fourth Generation Language and database management systems are separate and independent issues. Again my own experience, POWERHOUSE runs on whatever file system happens to be available on the computer supplied by the vendor and does not incorporate a database management system itself. There are other things available that have both a database management system and a data manipulation language. I think they are separate issues and that should be kept in mind. Thank you.

Chris Richardson, Computer Science Corp., Naval Weapons Center, Ridgecrest, CA

We have been playing around with a package called FILE MANAGER from the Veterans Administration. The neat part about it is that it is a Fourth Generation Language or package. It provides a capability called "LEGO" (Learn As You Go). You can dynamically expand the menu lists by the end user.

Another nice thing about it is that it is in the public domain -- it's free. It is available on PDP-11's, VAXes, Rainbows, anything that will run MS-DOS, PC-DOS. . . . **Larry Jasmann:** Is this in the DECUS library? **Chris:** It is not at the present time. Actually, the . . . author of FILE MANAGER will be here at the end of week [. . . at the] MUMPS presentations. **Larry:** Is this considered to be part of MUMPS? **Chris:** It is written in MUMPS and uses that database capability.

David Turnup, Cornferry[?] International:

It is interesting upon inheriting a new design and development team who are mostly inexperienced with VAX Information Architecture; it is kind of hard for me sitting back, aching to implement a lot of the design and coding tools we have been talking about here, to put across of real acceptance on what we are talking about as Fourth Generation Language techniques.

I guess just for a general question, I would like to see how people feel about how far you should push? I know Kathy in her session yesterday, said that it has to be a gradual process to get people to accept a lot of the tools we want to use. But with DCL, with FMS and TDMS, with Rdb and DBMS, and ACMS now, the implication is almost that we no longer any need to write high level language code in third generation Languages. I am wondering just how practical is that? I can come on like gangbusters and insist that all these things be purchased and brought up, . . . and spend twice as much time getting people to accept use of the tools. If I tell them that, they are not going to write any more than 12 pages of standard language code to bring up a new application, that everything else is going to be done using productivity tools. I would have a real acceptance problem, [a] lack of credibility.

DTR-10

Larry: My reaction to that is, I know personally, my attitude is somewhat pragmatic. I would like to ([for] the people who work for me) enhance their professional capabilities to the maximum extent. As far as I am concerned in the computer business, if you don't learn something new about once every 3 days, inside of 6 months you're dead.

If you have someone who is writing in COBOL and hasn't learned a damned thing in 5 years, except how to write in COBOL better, well maybe there are some things to learn about COBOL too, but the point is, you need to learn new tools; you need to figure out how they can help you; and you need to use the tools that suit themselves the best. . . . I things like use BASIC and FORTRAN, and so does Kathy, and so do most of us when it suits us [. . . **END OF SIDE ONE OF THE TAPE . . .]** [but] Fourth Generation Language's need to be integratable. They need to work with other things. If you got something that works in FORTRAN, fine. FORTRAN is the place, but if you got something in that which is better off in something else then you ought to have the freedom to go do it in that and make the two play together.

That is my reaction to that, it is a pragmatic thing. It has to be done depending on the situation type of approach. It would be very difficult for me to say "thou shalt not have more than 12 page of FORTRAN in my application" because the guy is going to shoot you in the foot. **[Unidentified speaker, most likely Chris Richardson or David Turnip]:** My I respond to that? That is very interesting, Larry. You write COBOL, or FORTRAN, or BASIC whenever you feel like it, but when you have a programmer who is assigned to output 45 modules in the next 6 months, he does it not because he wants to, but because he has to. That is the only way he knows how to get it out. **Larry:** Well, that is true, but you've got to encourage some professional development in an organization. **Kathy:** I have a comment on that too. We use a lot of tools and techniques and we do have, for example, CMS. It was a lot of work to convince people to switch over to use CMS. DATATRIEVE is something we did not have that problem with. It was sort of an underground movement. Before we knew it, we had about half the shop was writing in DATATRIEVE because people could easily see how it enhanced their productivity. I am sure there are still a lot of people that did not know it, but we had a lot higher acceptance rate with DATATRIEVE than we had with almost any of the rest of our tools.

Randy Barth, G. D. Searle Pharmaceuticals, Chicago, IL:

Our shop has been a fairly long time DATATRIEVE user. We have been involved since the beginning. And just recently we decided that we were going to stop being a test site for it. The basic reason is that we wanted to see it or it as a Fourth Generation Language, go a lot further than DEC was willing to take it. We wanted to see good run time execution, one of the things DATATRIEVE doesn't offer. I know a lot of people have pushed on the DATATRIEVE developers to, in fact, provide that. I guess our feeling right now is that DEC probable feels that DATATRIEVE has risen as far as its architecture will permit it to go. It is time for something new and better to come along.

I have personally been looking at a lot of 4GL products recently because we really firmly believe in the productivity gains that a 4GL technology can bring. Sort of paralleling the advances in technology that hardware has seen over the past 15 or 20 years. We just haven't seen that in software and we've got to. As a result I have been out looking, because we will get something. If DEC gets there, we may get DEC, but otherwise we'll probably get somebody else's.

One of the points raised earlier about 4GL's, the end users versus applications developer issues. From everything I have seen, the conferences I have attended, that is a key thing. We have a product on our systems right now, that is called SMARTSTAR. [SMARTSTAR, application development and data management systems tools, is a product of Signal Technology, Inc., 5951 Encina Road, Goleta, CA 93117.] They think it can be used for a lot of things. We tend to think it is more of an end user product. It does what it does very good. [It allows end users defined screens, create underlying data sets. Their newest release now interfaces with Rdb (they managed to talk DEC out of the DSRI interface). It will create the data sets so the relations as necessary underneath, allow users input, modify, delete data, do queries, do reports. But that doesn't go full enough for us as applications developers and we needed something more.

One of attributes about applications developer's 4GL, that we've experience is the fact that in the 4GL's that are out there . . . POWERHOUSE was mentioned for instance, which seems to be a very good product. As a matter of fact I want to throw a question out. . . . There was a press release that went out. DEC itself brought POWERHOUSE to use internally in their Digital Information Systems. Supposedly like a license for about 1000 copies and I am still trying to find out some more about that, but they apparently plan on using it to do in-house applications development.

. . . One of the strong points about the application developer for 4GL's is that they have very strong data dictionaries. The CDD really is only a fraction of what some of the other products are currently. Cosmos' POWERHOUSE product, their PHD dictionary, it is very extensive. It gives you, the application developer a lot of tracking capabilities. You can track fields into records and into files. If one would logically extend that you should be able to track the usage of those elements out to the report, to the data input streams, and all the other things that happen.

There is another product available in the marketplace that we have been looking at recently too, the APPLICATION FACTORY from CORTEX [Cortex Corp., 55 William Street, Wellesley, MA 02181], which seems to have adopted that stance. They are fairly new; they have only been out for a year. They seem to buy off a lot on the James Martin philosophies. They seem very committed to carrying that whole process out through [sic].

Another thing too, it seems very important, is the issue of open architecture. Cognos' POWERHOUSE, for instance, right now only support RMS files. Some of the other products that are in the offering, APPLICATION FACTORY, although it presently does not offer it, is touting an open architecture standpoint where they will provide good integratability. Clearly a 4GL product will not do everything, so you will need to do certain components of your application in a 3GL kind of thing. If you need good interconnection capability, that's critical.

That's the extent of my comments right now. . . . I was wondering. Do you know anything about shedding some light on the Cognos-DEC interlinking or what DIS is using? **Chuck Duncan:** Let me answer in . . . the way you asked the question. The answer is: Yes, I do know. [pregnant pause] That's it. [Another pregnant pause] [Editor's comment: The fact that Chuck Duncan did not answer the question forthrightly means that he is constrained and cannot answer it. He cannot publically state what Digital might or might not do in the future.] **Randy:** You know that its been purchased? But? **Chuck:** We worked with them very closely. In fact to get them onto the VAX with the capabilities that they have there now. That's all I can say about where we are going with that.

Larry Jasmann: . . . If anyone has any comments on what a Fourth Generation Language SIG ought to do, I would like to start looking at that area too.

Jim Wadel, Sohio Petroleum , Dallas, Texas:

This is pretty much aimed at that. I am presently supporting ORACLE [Oracle Corporation, 2710 Sand Hill Rd, Menlo Park, CA 94025] on 14 VAX installations from an 8600 in our shop to a lonely 725 up on the North Slope [of Alaska]. When we first brought ORACLE in, we thought we had a tool -- a Fourth Generation Language -- I guess we really did not know what it was. The gentleman's comment about separating the language from the database is probably what I would like to address.

We found, very rapidly that we were not an ORACLE shop, but we were rapidly becoming a SEQUEL shop. We had this real problem with anyplace we look because of our tremendous investment in not only teaching the computer professionals some variety of SEQUEL, but geologists, geophysicists, managers, and so forth, we are dead in the water with anything that doesn't speak SEQUEL. One of the things I would like to see the SIG strongly involved in is supporting any efforts towards some sort of uniformity of syntax and of languages. If its SEQUEL, that is great for me, if it turns out to be a QUEL-like language or something that we haven't seen yet, so be it. We are more than willing to get behind it. I think we desperately need it. **Chuck:** You're aware that there is now an ANSI standard for SEQUEL? **Jim:** I heard that there is some talk about it. **Chuck:** For whatever that means. **Jim:** And its an ANSI standard now? **Chuck:** Yes, it is basically IBM's DB2. **Jim:** And they are actually are saying this is the standard? Hurray, my life is easier.

John Enity, National Informations Systems, Inc.:

We're the author of a fourth GL [sic]. We come from the other side of the fence. We are non-SEQUEL oriented. We have been in business since 1972, so we have developed our own syntax.

Some of the comments that were made earlier were kind of interesting, in that they seemed to address one problem. That one problem was programmer productivity. Yet there was desire on the part of Kathy about performance. I think that one of the things that is very, very important, and I have seen over the years, is that to get the productivity out of people you not only have to give them a non-procedural language, but you have to integrate that with something that will produce compiled code, so that when they get to the point where they want to turn the application into a production application, they can get the performance equal to or greater than COBOL or FORTRAN. So you don't have to take two steps backwards just because you prototype something in a higher level language.

I also disagree slightly with the fellow who spoke before. I think there needs to be a close coupling between the database manager and the language itself. In that, as you advance in developing higher and higher level type of language for people, end users particular to use, they don't want to know about the low level stuff; about how to make data couple each other. There has to be an integration of the database manager and the language so that if somebody says "I want to change a field called PARTS", that it knows what PARTS is all about and can do validation automatically, and things like this. If you do not have a close coupling between the database manger and the language, then you are not going to do it. . . .

The other thing that seems to be lacking, from what we have seen in general, is the depth of the languages available. A lot of the products in

the current marketplace go so far and then you run out of horsepower. In our case, we are not on the VAX right now, but will be later this year (we have been in the DEC 10/20 environment for about 3 years), with our product and we have had to address that problem because people wanted to do things, such as work with tangents, work with bits, work with a lot of things they were customarily used to working with in a language like FORTRAN or COBOL. The Fourth GL and non-procedural languages did not have that kind of depth. We had to add those kinds of things to the product.

Also, it was mentioned about integrating to other languages. You can't exist in a vacuum. Any computer you are on has FORTRAN, has COBOL, has other languages on it; you have to be able to interface to that, so you need some kind of host language interface so that you can make the connection between these things.

The other thing, I think is very important, is the comment that was made this morning, I think it was in the AI session, where you can go into LISP and then all you have to do is logoff. We agree with that philosophy in that: for most production out of a person, you cannot be flipping back between environments, because the human brain has to flip back and forth. Whereas if you had an integrated environment, so that if the same editor was available not only at the programming level, but once you start using the language and you are saying "Ok. I want to change the field call DESCRIPTION" and I have made a mistake in the 40th character, I don't want to have to retype that, I want to be able to use the line editor to edit that line; to zip out there and make that change. So you have to have total integration of the product so that the person not only developing applications can be productive, but also that the user can be productive because he does not have to learn a lot of different things.

As far as the SIG goes, to make a comment there, I think you need two parts to the SIG (I have been in the LCG SIG for a number of years). One part is a vendor oriented part, where you've got a lot of products that are available, especially in the VAX area, where vendors have developed different things. I think you need some representation from that side.

The other side, is the user representation because there are going to be different problems that will need to be addressed, and I think it will make it very strong if you had the two sides and you could cohesively bring them together in the 4th GL SIG to accomplish that.

Larry Jasmann, DATATRIEVE SIG Chair:

That's basically the idea. I'll make one comment and that is there is a recent strategy, long term strategic plan that has been promulgated by the Board and the Management Committee [Management Council], LDEC, and some other people. Basically, the long range strategic plan now encompasses some sort of strengthening of the relationship between DECUS and some of the 3rd party products. I think you will also see that DEC has changed in the last 2 or 3 years rather significantly in the way they relate to other 3rd party products. So, when we change the name of the SIG, which will probably happen in Anaheim, we are going to welcome and encourage products other than DEC products to come and see us and join with us. In fact, this week I am going to be up in the campground and I would like to talk to some people who are on the user's side or are on the vendor's side of those kinds of products.

Now the tricky thing is there isn't a lot of history in terms of DECUS; in terms of how we can make these relationships work without getting ourselves in trouble. In fact there is not total unanimity of opinion and in DECUS on how exactly we ought to relate to this, so we do not get bogged down in

commercialism. We are going to have to feel as we go and we have to be careful and make sure we do not step on a whole lot of toes. I do want to make some careful and considered movements into this area.

For me, as a user and from a users prospectus, I say "Gosh! I have got 3 different 4GLs running on my systems. One of them use RMS, something else uses some other non-DEC way of putting stuff in files. How the heck do I get everything to go back and forth? Or which one is the best one to use for a particular kind of application?". I see that as things that need to be done. Perhaps, on the vendor side there are some issues also in terms of integration that the SIG can address in a non threatening environment.

Chuck Duncan:

I want to respond to the last comments that were made. I want to thank him for his comments because I think they were very good. One thing that he did mention was performance. I think it is very true that if you look around at 4GL products, performance is sadly lacking in a lot of them. But I do not think that is necessarily inherent in a definition of a 4GL. I think that is inherent in the bulk of the implementation of the 4GLs up to now. I think you will start to see some dramatic changes in that area -- also at DEC. I will not mention any particular 4GLs there.

One of the things he also mentioned was coupling the data base information. I think the fellow from G. D. Searle and he were really saying the same thing from two different sides. What it really means is that there is a lot of information in meta-data and the end user has had that all transparent to him. I think they were both saying the same kind of thing in that respect.

On the depth of capabilities, I was kind of eluding to that, maybe not to the say extreme, when I was saying that an end user doesn't want to have to see the world for want to be able to open doors and windows to get more power and capability further down. I am not so sure you always want to give them all the power of an assembly language, for example. I don't know if you really want to carry it that far; I am not hard and fast on my opinion there. I have the realization that if you can ever really do without a 3rd generation language all the time.

I think he made a comment about, there needs to be a host language or DCL to kind of tie or interconnect the parts of the environment together. I really, personally, don't believe that. It seems to me that a fourth generation environment or space can really be self-contained. It doesn't need something else to tie all the pieces together.

Dave Dayton, Applied Technology Associates, Albuquerque, New Mexico:

We have been doing a lot of work using DATATRIEVE as sort of a database kernel with FORTRAN applications.

One direction I would like to see DATATRIEVE and other fourth generation products go in, is sort of combining 3rd generation type programming languages with fourth generation [ones]. In other words, one of the speakers made the comment that there are two different types of programmers; low level and high level programmers within Fourth Generation Languages. What I would like see is the ability to do low level programing within the Fourth Generation Language and sort of customize the package to the specific end user who would then use sort of a higher level programming within the package. **Chuck:** If I read what you were saying, it sort of says if you can do an initial development of an application in Fourth Generation Language and then expand upon it in a more technical way. Is that what you are saying? **Dave:** Well, I

guess a good analogy might be the idea of the UNIX operating system where if you really understand how things work, you have the ability to go in and easily modify and expand different functions of the operating system in a lower level, if you consider the UNIX operating system as a higher level language and you can go in with C at a lower level and modify things. I would like to see the same thing in something like DATATRIEVE or other Fourth generation packages. The end users wouldn't do this but the development person would customize the package for a specific end use. Right now we are sort of doing this type of thing only we are using FORTRAN as the development language and then tying it through the call interface to DATATRIEVE.

Chris Hines, American Board of Family Practice, Lexington, KY:

We make extensive use of DATATRIEVE. One thing, like the G. D. Searle person said: I am kind of getting feelings that DEC feels that DATATRIEVE has gone about as far as it can go.

I feel that the package the way it stands now is wonderful in terms of the number of things it does. It always amazes people when you tell them that you can write a report, extracting information from ISAM files, CODASL DBMS, and relational databases all at once. I think that is really a fine feature. It is one of the few "relational" packages on the market that will operate as an algebra or calculus. In fact, there are very few relational algebras available on the market. It has two different forms interfaces. It has excellent extensibility both with the user-added keyword and then with the call standard.

I have a large number of users accessing DATATRIEVE all the time, none of them have ever seen a DTR> prompt. They all go in through menu-driven front-ends. You got the power of a 4GL, but you can tailor it to what ever level of user you want.

I feel it is an outstanding package. My company is heavily committed to it, so I am somewhat distressed that I get the feeling from DEC that it has reached the end of the line. Two years ago I heard OUTER JOIN was coming into Version 3 of DATATRIEVE, but now I hear that OUTER JOIN isn't even vaguely being considered. I understand that, yes there is a whole lot of code on that and perhaps it is getting unwieldy to maintain. But on the other hand, I don't think you can let the product stagnate and die totally and I hope that doesn't happen with the product. **Larry:** Do you want to respond to that Chuck? **Chuck:** Yes, I sure do. This is not the first time I heard that comment and concern about where DATATRIEVE is going and the concern that DATATRIEVE has gone about as far as it will.

I think the first thing that you have to understand is that DATATRIEVE will be around a very long time. It is not going to go away. I will say that with my dying breath and it will probably be around when I am whispering my dying breath.

Another thing that you must understand is that of course, yes, we understand that there are some difficulties because of the architecture and implementation that DATATRIEVE has had, to accommodate all of the solutions that we would really like to put into it. What I would like to say, without dropping anything out of the bag, is that there will always be progress made in a 4GL solution, which DATATRIEVE is one of them and is a part of that and we can solve all of those problems. We are not standing still on that by any stretch of the imagination. There will be a 4GL solution and answers to all of these concerns about expansions and report writers and performance and "how do I get better applications environment for the various kinds of users", etc. etc. And DATATRIEVE is a part of that solution.

Chris Hines:

I would like to make one other comment on what sort of things, perhaps, should go into a Fourth Generation Language.

One thing I have only seen at some AI seminars, has been really file design packages. The whole crux of file design is coming up with good normalized design. "When do I break to a ONE TO MANY" and "am I going to go straight FORTH NORMAL FORM or FIFTH NORMAL FORM, or whatever"; or "am I going to cheat and put in OCCURS clauses?". There are very few things that address that now. I have only seen some very AI type things where people have tried to address that. That is a key issue, I think, especially if you want to get programmers out of things and let users...because an average user doesn't really...a ONE TO MANY...What does that mean to an average user?...but that is the key to doing database design is understanding how to implement ONE TO MANY, MANY TO MANY. . . . **Chuck:** One of the things I didn't get into was, in my belief, is that there is a place for expert systems in a 4GL environment. We have been looking hard, and doing a lot of looking ourselves into AI and what has been going on in these areas.

I am sure there will be some solutions in the near and distant future that will rely very heavily on those techniques to improve the underlying efficiencies and things you wouldn't even know of if you were doing it in a 3GL. This not only helps the productivity or the performance level of the 4GL, but, maybe, also plane improves the kind of solution you got in the first place.

Chris Richardson:

On the observation about 4GL languages, is really what they should try to achieve is an architecturist environment in order to try to map to reality rather than have reality conform to the limitations of the machine. What we really should be doing, maybe, is defining a hypothetical machine of all of our wish lists of what it should look like.

Larry Jasmann:

Ok. I think this was really an outstanding session. I heard some really great comments and I am pleased to see that we have other people who are thinking the same way we are. . . . Thank you very much for coming to this session.

ERRATA

The record definition for the SYSUAF file in the article "Accessing SYSUAF.DAT and QUOTA.SYS with VAX DATATRIEVE" by Don Stern, DECUS U. S. Chapter SIGs Newsletters, Volume 1, Number 2, October 1985 (Wombat Examiner, Volume 7, Number 2) on pages 12 and 13 is in error. The portions of the record which are incorrect and the corrections are listed below. The author and editor regret this error.

Incorrect	Correct
03 Account PIC X(32).	03 FILLER PIC X(12).
	03 ACCOUNT PIC X(8).
	03 FILLER PIC X(24).
03 FILLER USAGE BYTE.	03 OWNER_FIELD_LENGTH USAGE BYTE.
03 OWNER PIC X(31).	03 OWNER PIC X(31).
03 FILLER USAGE BYTE.	03 DEVICE PIC X(32).
03 DEVICE PIC X(31).	
03 FILLER USAGE BYTE.	03 DIRECTORY_FIELD_LENGTH USAGE BYTE.
03 DIRECTORY PIC X(63).	03 DIRECTORY PIC X(63).
03 FILLER USAGE BYTE.	03 LGICMD_FIELD_LENGTH USAGE BYTE.
03 LGICMD PIC X(63).	03 LGICMD PIC X(63).
03 FILLER USAGE BYTE.	03 CLI_FIELD_LENGTH USAGE BYTE.
03 CLI PIC X(41).	03 CLI PIC X(31).
03 FILLER USAGE BYTE.	03 TABLES_FIELD_LENGTH USAGE BYTE.
03 TABLES PIC X(31).	03 TABLES PIC X(31).
03 FILLER USAGE WORD.	

Because of the change in employment status of the Editor of Wombat Examiner, the productions of the October issue of the newsletter was hastily moved from the location at which it had been typeset for over a year to the Associate Editor's VAX in Lexington, Kentucky. Under the time pressure of production, the final copy which was sent to the DECUS office and published was produced with a word processing letter quality printwheel rather than a data processing printwheel. This resulted in five glaring errors in the October issue. The "<" symbol was printed as a "plus/minus"; the "@" symbol was printed as a heavy dot in the middle of the line; and the "|" symbol was printed as a "delta". These errors occurred at

Page DTR-4, line 24

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      WHILE WAIT_CTR < 50 BEGIN                ! create the new version of EDIT.TXT;

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Page DTR-5, line 10

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      ^Z

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Page DTR-6, line 9

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      <@DTRMP.ODL

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Page DTR-6, line 14

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      <@DTRMP.ODL

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Page DTR-9, line 23

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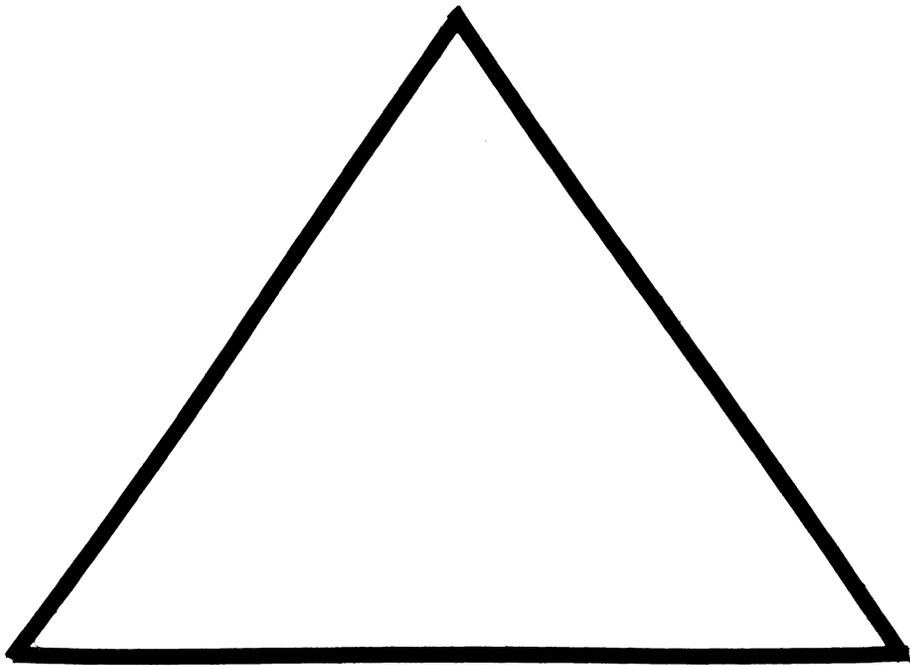
      05 CLOCK_DATA COMPUTED BY DATE_IN ||| DATE_OUT.

```

The Editor and Associate Editor regret these errors. However, under the circumstances, we were lucky to get the issue out at all.



edusig



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EDUSIG Sessions at the Fall '85 DECUS Symposium

By Sue Bates, EDUSIG Symposium Coordinator

The Fall '85 DECUS Symposium, December 9-13 at Disneyland in Anaheim, CA, will feature sessions of special interest to the education community. User input has helped EDUSIG present an exciting schedule for you.

Monday will begin with the EDUSIG Business Meeting and Roadmap session that will highlight the schedule for the week. A special attraction on Monday will be 3 sessions on School District (K-12) instructional and administrative software.

Tuesday will feature instructor-student oriented software. New features of the Courseware Authoring System (C.A.S.) V1.5 will be reported on. Other sessions about classroom computer-based instruction on micro's and mini's will also be presented.

Wednesday will focus on administrative computing packages for education that use both RSTS and VAX. Sessions about VAX management at small and large educational sites will appeal to both novice and experienced VAX users. An academic VAX users panel will discuss achievements, problems, and solutions with audience participation.

Thursday's sessions about planning, implementing, and supporting large educational systems and networks will be extremely valuable.

On Friday, the EDUSIG Wrap-Up session will provide an opportunity for education users to give their comments and recommendations to the EDUSIG Steering Committee and the Education Computer Systems group from Digital.

Representatives from Digital's ECS group will be in Anaheim all week to discuss current and new products and services. They want to find out what your educational site is doing and what you need.

The following is the daily schedule of EDUSIG sessions:

Monday - Sierra Conference Center, Pacific Room

9:00-10:00	E005	EDUSIG Business Meeting and Roadmap
10:00-10:30	E024	Adults and Computers: Breaking the Ice
10:30-12:00	E018	Faculty CBE Training (Panel)
1:00- 2:30	E031	School District Instructional Software
2:30- 4:00	E032	School District Administrative Software - Part 1
4:00- 5:00	E029	School District Administrative Software - Part 2

5:00- 5:30 E13 8088 Macro Assembler on the Rainbow
Micro Computer
5:30- 6:00 E019 Using Micros in the Auditing Course

Tuesday - Convention Center, Rooms 2 & 4

9:00- 9:30 E023 Courseware Authoring System V1.5
New Features:
Part I - Delivery System
9:30-10:30 E022 Courseware Authoring System V1.5
New Features:
Part II - VAX DAL Authoring
Language Compiler & Run-Time
Library
10:30-11:30 E033 Tools for Developing & Delivering
Computer-Based
Instruction using Courseware
Authoring System & VAX DAL
11:30-12:00 E010 Computer-Assisted Instruction at a
Liberal Arts College
1:00- 2:00 E004 C.A.S. Customer Panel Discussion
2:00- 3:00 E009 DAL Magic - Some Surprising
Features of DAL
3:00- 4:00 E036 Managing a Large CBE Project
4:00- 4:30 E021 Using UNIX to Introduce Operating
System Concepts
4:30- 5:30 E002 Report on Student Usage of a
Computer-Based Statistics Course

Wednesday - Convention Center, Rooms 2 & 4

9:00-10:00 E008 Education Computer Systems Q & A
10:00-11:00 E014 Administrative Software for
Education - Part 1
11:00-12:00 E015 Administrative Software for
Education - Part 2
1:00- 2:00 E016 Administrative Software for
Education - Part 3
2:00- 3:00 E017 Academic VAX Management Panel
3:00- 3:30 E001 Decision Support for Administrators
of Colleges
3:30- 4:00 E006 VAXing at a Small College - User
Control
4:00- 5:00 E003 Academic & Administrative Computing
in the South Carolina Technical
Education System
5:00- 5:30 E035 System Simulation for ECSU Computer
Center

Thursday - Convention Center, Rooms 2 & 4

9:00-10:00 E011 Evaluating, Selecting and
Implementing an On-Line Library
Card Catalog

10:00-11:00	E030	Student Workstations and Campus- Wide Networking at Stevens Institute of Technology
11:00-12:30	E025	Planning, Implementing, and Managing a Comprehensive Campus- Wide Network (Panel)
1:00- 2:00	E034	MIT Project Athena Overview
2:00- 3:00	E028	Inter-System and Inter-University Networking
3:00- 4:00	E027	Supporting Academic Computing at R.I.T.
4:00- 5:00	E012	System Management at a Large VAX Educational Site

Friday - Convention Center, Rooms 6 & 8

10:00-11:00	E007	EDUSIG Wrap-Up
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See you in Anaheim!



GRAPHICS



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Wilmington, DE

Pre-Symposium Seminars on Graphics

The GAPSIG is offering two pre-symposium seminars in Anaheim, on Sunday, December 8. These seminars offer a unique environment, adding to the symposium experience for those who choose to attend. They fill an entire day, and allow for in-depth investigation of topics which are too complex to fit within the symposium sessions. The format allows highly respected experts to present the topics, usually at a substantial discount to what a day long seminar would cost if presented outside the symposium.

For this fall symposium, the Graphics Applications SIG will offer two seminars.

Introduction to PHIGS: The Programmer's Hierarchical Interactive Graphics System will be presented by Dr. Richard Puk, an internationally recognized computer graphics consultant. He helped develop the Core Graphics System proposal for ACM SIGGRAPH, and served as Chairman of the ANSI subcommittee responsible for the development of PHIGS. He is recognized as one of the few experts on this newly emerging standard.

PHIGS is a 3-dimensional graphics standard designed primarily for engineering and scientific applications, particularly Computer Aided Design and other applications which require high interactivity, including process control, simulation, command and control, and real-time dynamic graphics. The seminar will present an overview of PHIGS functionality, introduce PHIGS facilities, and show how PHIGS differs from GKS.

Selection of Computer Graphics Hardware and Software is a seminar designed to address the issues all of us face when trying to decide which graphics equipment and software package to purchase. These issues are particularly frustrating to people new to

the field of computer graphics. The seminar will review different types of hardware, and then tasks will be investigated to determine which hardware performs well, and where it may fail with regard to other hardware. The same approach will be followed for software. One of the most difficult tasks is selecting evaluation criteria to determine how well different products meet the needs of users. This seminar will present effective methods to catalog and rank graphics hardware and software, providing qualitative and quantitative criteria which will help you judge how well the user needs are met.

The seminar will be presented by Jim Flatten and Bill Kramer. Jim, a computer scientist at Ames Laboratory, coordinates the selection of graphics hardware and software for the DOE Lab. During the last three years he has represented DECUS on the ANSI X3H3 Standards Committee for Computer Graphics. Bill has worked at the University of Delaware for the past 6 years, developing graphics software and installing graphics hardware on a variety of computer systems. He has led several task forces in charge of major selections of hardware and software systems.

These seminars were selected for presentation by the SIG because they present practical solutions to common concerns and also take a look at what is happening at the leading edge of the computer graphics field. The registration form is included in the symposium registration kit, along with detailed descriptions of the seminars. Add to your symposium experience by attending one of these seminars or any one of the other 69 seminars listed in the registration kit.

From the Editor

Here it is, the middle of the night again! It's been six months since I took an early retirement from Du Pont and moved to Houston to explore graphics applications for Schlumberger Well Services. Sometimes it feels like it was only days ago; other times it feels like years...

A few of you have called or written. Some to ask for help; a few to offer it. Thanks to all of you! With your continued interest, our SIG will grow, and better serve the needs of our growing DEC graphics user community.

Promises? Yeah, I broke a few. I promised that I would meet the deadlines. After I missed the first one, the others were easy. But then, where were you? Didn't you say you would write down that idea you thought up over lunch. Didn't you promise to describe how you got pictures on that new hunk of tin in your office. (At least you could have written to admit that you couldn't get it working!) You'd be surprised how much people can benefit from simply knowing that something is possible or "impossible".

Well, all is forgiven. If you write, I'll continue to stay up all night praying that my modem connection doesn't give out. If you don't, I may need to start using wider margins. Write to:

**P.O. Box 591293
Houston, Texas 77259-1293**

or, if you need a company address:

**Schlumberger Well Services
5000 Gulf Freeway - 3H
Houston, Texas 77252**

Thanks for you support!

*Michael Anton
GAPSIG Newsletter Editor*

Keynote Address at the Fall Symposium

We are pleased to announce that for the first time, a GAPSIG Keynote address will be presented at the Symposium. Dr. Richard Puk a knowledgeable and well-known expert in the field of computer graphics will present the Keynote address, entitled **Future Directions of Graphics Standards**. Dr. Puk's address will center on the issues involved with designing computer graphics standards. This is a unique opportunity for you to get a glimpse into the future as Dick explains how proposed graphics standards will affect the development of computer graphics workstations and how the development of workstations has affected the standards. The Keynote address will be presented Monday afternoon. **DON'T MISS IT.** Look for details in the program and in the Symposium newspaper.

How could systems be made friendlier?

"...By spending a little more money on the user interface and worrying less about whether they waste a little bit of computing time. Let the computer do more of the work so human beings have to do less. Particularly, computing power has gotten to be so cheap that some of the early attitudes – all of us had them – of having to do things so terribly efficiently are [no longer] ... applicable."

*John Kemeny
Inventor of BASIC
Computerworld (p.ID30)
May 16, 1983*

Questions

Is there any way I can get high quality output from DECslide and DECgraph? We have dozens of plotters and laser printers around, but nobody can figure out how to get them to work right.

This is one of the most common question I hear. I wish I had a good answer. DECslide and DECgraph, unlike many of the device independent graphics packages on the market, only support the DEC protocols ReGIS and Sixel format (a compact bit map). You could use one of the LA series printers from DEC, but you said that you needed higher resolution. Houston Instruments (HI) developed a "ReGIS compatible" plotter a couple years ago. HI was very excited about it at the time, and folks in DEC did what they could to assist the effort. Now you can hardly get anyone to talk about it. HI matched what they thought was the ReGIS specification, then found out that there was more than one specification for ReGIS within DEC. There is no "standard" ReGIS; different flavors evolved in different product groups. New magic ReGIS commands popped into different applications, and HI had their share of angry phone calls. The HI marketing manager I spoke to in New Orleans just sighed. It seemed like a good idea at the time. They will still sell you one if you'd like to try.

I heard that one of our Schlumberger graphics wizards, Tony Booer, has written a little utility to dump Sixel files to a QMS printer. Sounds like it may be useful to some of you DECslide and DECgraph users. He also developed a MACintosh-style paint program to demonstrate the power of DECgks on a VAXstation. I think he may be willing to donate it to the DECUS program library, especially if someone writes in to say they

want it...

Speaking of "paint programs"...

We just received a grant to explore computerized commercial art systems. Any ideas where I should start looking?

There are scores, perhaps even hundreds of packages on the market ranging from a hundred dollars to a hundred-thousand dollars. I gave you the names of a dozen or so companies that I knew of. I hope when you complete your investigation, and have a system in-house, you'll write back to tell us what you found out.

Send questions to:

**The GAPSIG Q & A
c/o Michael Anton
P.O. Box 591293
Houston, Texas 77259-1293**

The Last Words on Merging Newsletters?

Nice to hear some good words. Doug Quine took the time to write down his thoughts: that merging the SIG newsletters into one will strengthen the Society overall.

Subscriptions are up, so many of you must feel the same way. From the point of view of our SIG, I think we will benefit from the change. Most Graphics Applications SIG members are members of at least one other SIG. After all, we all need a computer to draw pictures! We will benefit from having access to the information that the other SIGs provide. And the monthly publication schedule will allow us to get more timely information to you.

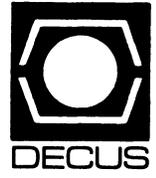
If you're a new subscriber, welcome aboard! If you're an old timer, We hope that you benefit from the change!

Spring 1986 Symposium: Call For Participation

I know – we aren't even back from Anaheim yet and here we are talking about Dallas. Well, the deadline is coming up fast! Whether you work on a DECmate, a VAXstation, a DEC-20, or something in between, we'd like to hear about your experiences. Presentations will span the range from business and scientific applications running on PC's and workstations, to CAD and image processing applications running on the largest and fastest machines. Interest is always high for tutorial sessions which present basic graphics concepts, interactive designs, or hardware overviews and comparisons. Contact:

Bijoy Misra
Symposium Coordinator
Smithsonian Institute
Center for Astrophysics
60 Garden Street
Cambridge, MA 02138
(617) 495-7392

or any of the Steering Committee members listed on the back of the header page of this newsletter section. Or even better, bring your ideas for a session to the GAPSIG suite in Anaheim!



H M S



HMS

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- o REAL-TIME INTERFACE ON THE PRO-300
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FROM THE EDITOR -- William K. Walker

If I have things figured out correctly, you should receive this issue right after the Fall DECUS symposium. I would like to encourage those of you that attend to submit articles on the sessions that were of interest to you. This will benefit those readers who were unable to get to the DECUS meeting. It will also help people like me who bounce around the meeting like buckshot in a tin shed, and don't always get to all of the good sessions.

DEADLINE FOR THE NEXT ISSUE: 24 JANUARY 1986

HOW TO REPORT HARDWARE HINTS AND KINKS (HHK's)

In the back of this newsletter is a Hardware Submission Form. You may use this form to make the HMS SIG aware of any problems which you have encountered, or any improvements which you would like to see in Digital's hardware. Relevant items will be passed on to the appropriate people in Digital, and some will be published in the newsletter and/or presented at the next Hardware Hints and Kinks session.

LASER PRINTERS -- Jack J. Peterson

[Originally published in the TSX-Plus Users' Group Newsletter]

Horizon has recently acquired a DEC LN03 Laser Printer and one of our customers recently acquired a Hewlett-Packard Laser-Jet, so we have had an opportunity to compare these two printers side-by-side. We wish to share with you our impressions and opinions.

What is a laser printer? Basically, it is a xerographic copier that creates its own original. Characters delivered to printer cause a laser to create an image on a photosensitive medium in much the same way that a copier does when scanning an original document. Characters are formed using a dot matrix with a resolution of 90,000 dots per square inch. The rest of the process is straight copier technology. Exposed areas place an electrical charge on the copy paper, then toner is deposited in the charged areas and fused by heat.

Laser printers contain one or more internal fonts and will accept additional font cartridges. Fonts can be mixed freely during printing, even on a single page. Printing modes include portrait (lines across the short paper dimension) and landscape (lines across the long paper dimension). Both may also be mixed in a document or on a page without reorienting the paper feed. To illustrate the utility of this, we produce 80-column listings in portrait mode using a 12-pitch font, and 132-column listings in landscape mode using a 13.6-pitch font. Both are offset from the left paper edge by an inch or so to allow three-hole punching and insertion into a binder.

Laser printing is a joy! Since we installed our LN03, we have not even turned on our LA-120, previously used for program printouts and draft work. And our letter quality printer is now used almost exclusively for labels, multi-part forms, and unusual paper sizes. Another benefit is that laser printers can accept stock paper, letterhead, copier label sheets, and transparencies.

The three most striking attributes of laser printing are speed, quiet, and quality. Both the LN03 and the H-P operate at a maximum speed of 8 pages per minute, attainable by driving them at 9600 bps. This is about 450 - 500 lines per minute, equivalent to 500 to 1000 characters per second. Both printers are sufficiently quiet to place in a work area; standby noise is basically fan noise, although the LN03 does growl some while printing. The print quality when examined under a magnifying glass is, to my eye, better than

that of our Xerox 1750 metal daisywheel printer with a film ribbon.

The operating costs for the LN03 are quite reasonable. The toner cartridge is replaced at 3K - 5K copy intervals, and several parts must be replaced at 10K copy intervals, all easily done by the user using maintenance kits available from DEC. We estimate our supply costs at a little over 2 cents per page. We are purchasing stock xerographic paper at \$20.00 per 5K sheets, so our printing cost is less than 3 cents per page, slightly more than decent quality continuous forms (especially when you consider the waste) and LA-120 ribbons changed at reasonable intervals.

Comparing the two laser printers, the H-P possesses only a few advantages over the LN03:

1. It is quieter in standby mode, and noticeably quieter while printing, although the noise level of the LN03 is far from ear splitting.
2. It will handle letter and legal size paper, in both North American and European sizes, and has a manual feed mechanism for odd size papers, including envelopes. The LN03 is limited to 8.5 x 11 and A4 (European) letter sizes.
3. It is cheaper. The LN03 lists for \$4K; the H-P lists for \$3.5K and is more widely available (because of its ties to the PC market), often at a substantial discount.

Aside from these features, the LN03 is a clear winner, especially for DEC users, for the following reasons:

1. The LN03 collates copies in order. In other words, the LN03 stacks its output face down, while the H-P stacks it face up. If you print a 100-page document on an LN03, the document is in order when you remove it from the tray. On the H-P, the pages are reversed, i.e., page 100 is at the top, page 99 below it, and so forth. The first time you have to manually reverse the pages in a big document, you will appreciate this difference more than I can describe.
2. The LN03 has more internal fonts. The H-P has only 10-pitch and 12-pitch portrait mode ASCII characters. The LN03 comes with 32 fonts (although the differences are sometimes subtle), including ASCII characters, the DEC Multinational Character Set, the DEC Technical Character Set, and the VT-100 line drawing set, in 10-pitch, 10.3-pitch,

12-pitch, and 13.6-pitch. All fonts can be used in either portrait or landscape modes.

3. The LN03 will accept up to 2 additional font cartridges, the H-P only 1. A wide variety of fonts are supposed to be available for both printers, but they seem hard to find at the moment. The LN03 will also accept a RAM cartridge to augment its internal RAM font storage of 27K bytes (needed to rotate fonts and to downline load fonts).
4. The LN03 uses the same ANSI escape sequences as the VT-220 terminal, so nearly all VT-220 screens can be reproduced on the LN03 (sorry, no double high, double wide, or blinking printouts). This also means that the SETUP utility can be used with the LN03. The H-P has its own unique set of escape sequences.
5. The LN03 can do sixel graphics identically to the LA-100, so graphic software that works on an LA-100 should work on an LN03. The LN03 can even be configured to return an LA-100 identification if needed.

Jack J. Peterson
Horizon Data Systems
1901 Wildflower Terr.
Richmond, VA 23233

RQDX1 Controller Tidbits -- Mike Rembis

Since the inception of the Micro PDP-11's and DEC's use of winchesters, a small problem has arisen. If you are a lucky OEM like me who has to support all field configurations and upgrades, this is what you are up against. The controller roms on the RQDX1 have changed a few times in the last two years. The problem is that they are upwards compatible only. The interesting thing that the roms do is when they first talk to a disk, they write some information on that disk that says what roms they have spoken with. If you change the controller roms to a newer version, then there is no problem. If you perchance try an older version, your system will not work. The only way to get a disk to then talk to older roms is to reformat the disk. Of course, if you are in the field, this is not a viable solution. DEC does not give any warnings as to when it is upgrading roms, therefore I have found it prudent to label all disks and pdp's with rom information.

DEC has also announced the demise of the RQDX1 in favor of the RQDX2. The two boards look very much alike with the exception that the new board is a much cleaner layout and the serial number has a -A2 following it. It is also noticed that this board comes with different roms from the last released roms on the RQDX1. DEC has assured me that there is no compatibility problem between this new release and the last release of the RQDX1 roms. I will verify this as soon as I get my new system.

I have included a table of rom information that I have collected since the beginning:

```

=====
ROM          REASON          CHECK-    DEC          IC          DATE
CODE                                     SUM    NUMBER      NO.
=====
2764 Original RD51          23-239E4-00 E105  081883
2764          23-238E4-00 E106

2764 Update to correct bugs F3AD  23-265E4-00 E105  042584
2764          400F  23-264E4-00 E106

27128 To handle RD52's      0C53  043E5 or    E105  110284
                                     LM8449
27128 To handle RD52's      BFF1  042E5 or    E106
                                     LM8450

27128 New revision          4465  23-173E5    E105  060285
27128          DE98  23-172E5    E106

27128 To handle RD53's and  179E5 or    E105  090185
        found on RQDX2 and 3 only LM8547
27128          178E5 or    E106
                                     LM8546
=====

```

PMI MEMORY UPGRADE FOR 11/73's -- Jeff Killeen

If you have a PDP-11/73 quad height processor (KDJ11-BC, M8190 module, J-11, 15MHZ) you can increase it's performance 15-20% by changing it to PMI memory. The backplane must be a Q/CD backplane like a H7892-A, H9278-B, or H9281-Qx. The BA23 (Micro-11) box usually has the H7892 backplane and the BA11-S box usually has the H9281 backplane. Check the backplanes CAREFULLY!!! If you plug a PMI memory board into a Q/Q slot you will damage the board. The memory board must be of the Digital MSV11-JB, Digital MSV11-JC, or Clearpoint QED-1 type. The memory boards must be mounted in the first or second backplane slot, followed by the CPU, followed by the rest of the system. You can only use the first two slots for memory even through some backplanes have more than three Q/CD slots.

To check that you have installed the PMI board correctly use the MAP option when you boot the system. When the CPU maps memory, the BUS TYPE should be PMI, not Q-BUS. If your board is set to auto-boot, type C when it is printing "1 2 3 4..." and this will get you to the point where you can use the MAP option. If the BUS TYPE is reported as Q-BUS, you have either not used a PMI memory board, or did not mount it ahead of the CPU on the bus.

REAL-TIME INTERFACE ON THE PRO-300 -- Bill Forbes

EDITOR'S NOTE

The following material represents a portion of the slides from a talk given by Bill Forbes at the last New Mexico DECUS symposium. Bill is a DEC employee, and works in the Laboratory Data Products Group.

BENEFITS OF COMPUTERIZED DATA ACQUISITION

- o Increase accuracy and throughput
 - o Free human resources for creative work
 - o Decrease testing costs
-

DATA ACQUISITION REQUIREMENTS FOR SCIENTIFIC WORKSTATIONS

- o Ability to manage multiple real-time devices with minimal difficulty
- o Ability to perform other tasks (processing, graphics, communication, etc.) concurrent with data acquisition
- o Ability to accept data from most types of devices
- o Ease of connections to external devices
- o Minimal downtime for calibration/maintenance
- o Software tools with simplicity and flexibility for different types of users

PROFESSIONAL SERIES REAL TIME CAPABILITIES

- o Analog Data Module (ADM) and Real Time Interface (RTI) provide
 - Analog input
 - Parallel digital I/O
 - Serial RS232
 - IEEE-488 interfacing
- o P/OS and Professional RTI library provide:
 - Multitasking software to manage multiple devices and other research tasks concurrently
 - Interactive and application specific programs for non-programmers
 - A powerful subroutine library for programmers
- o RT-11 and VENIX provide alternative software environments

REAL TIME INTERFACE OVERVIEW

Four I/O Ports On One Board

- 2 - Serial Ports
- 1 - Parallel Port
- 1 - IEEE-488 Port

REAL TIME INTERFACE OVERVIEW

- o Interrupt-driven I/O
- o Self Diagnosing
- o User Installable
- o Concurrent Operation of All Ports

SERIAL ASYNCHRONOUS PORTS

- o Two Independent RS232C/RS423 Compatible Ports
 - o Full - or Half - Duplex Operation
 - o Baud Rates of 50-9600
 - o Flow Control -(XON/XOFF) & (CTS/RTS)
-

IEEE-488 BUS PORT

- o Supports IEEE-488 (1978) Specification
- o Implements Full 24-Line Specification
- o Provides All Operational Modes:
 - System Controller
 - Controller in Charge
 - Talker
 - Listener

PARALLEL DIGITAL PORT

- o TTL Compatible Logic
- o 24-Bit Transfers
 - One Direction, No Handshake
- o 16-Bit Transfers
 - One Direction, with Handshake
- o 8-Bit Transfers
 - Two Directions, with Handshake

CABLING & CONNECTIONS

- o S-cable Brings Connections to Back of PRO-300 Box
- o There Are 3 Types of Connection Options Available
 - Single-function Cables
 - Multi-function Passive Connector (External)
 - ADM Pass-through connectors

REAL TIME INTERFACE BENEFITS

- o Interfaces with Most Intelligent Devices
- o Standard, Easy-to-Use Connection Options
- o Installs Easily in a Few Minutes

ANALOG DATA MODULE OVERVIEW

- o Four real time options in a single package:
 - Analog to digital converter
 - Amplifier
 - Real time clock/pacer
 - Parallel digital interface
- o External package with connection to PRO via RTI
- o Easy-to-use connectors on front panel
- o Automatic calibration and analog compensation

ANALOG DATA MODULE

Analog to digital converter

- o 8 true differential, multiplexed channels
 - o 16-bit resolution
 - o -5V to +5V input range
 - o Up to 5000 Hz aggregate throughput
-

TRIGGERING OPTIONS

- o Software trigger - acquisition starts when program statement executes
- o Voltage level on each digital input gates acquisition on corresponding analog channel
- o Pulse on digital bit triggers, analog sweep (allows use of external clock or synchronizing signal)

AMPLIFIER

- o Programmable gain and autoranging modes gains of 1,4,16,64
- o Provides 22 bits (132 db) dynamic range
- o Throughputs of 5kHz at gains of 1,4X
- o Throughputs of 2.5 kHz at gains of 16, 64X

REAL TIME CLOCK/PACER

- o Provides a precise time base for analog and digital inputs
- o Programmable sampling intervals from 8 microseconds to 16.32 seconds per point

PARALLEL DIGITAL INTERFACE

- o Separate 8-Bit Input and 8-Bit Output Ports
- o TTL or Switch Closure Input Voltages
- o TTL Output Voltages
- o Input Bits Provide Triggers for Each Analog Channel
- o Designed for Handshaking and Data

ADDITIONAL HARDWARE FEATURES

- o First-In First-Out (FIFO) Buffer Prevents Data Overflow
- o Analog Circuitry is Auto Zeroed Before Each Conversion
- o Internal Circuits and Program Provide Automatic Calibration of Zero and Gain Trim

DYNAMIC RANGE - WHAT IS IT?

- o The Ability to Acquire Low-and High-Level Voltages Concurrently
- o ADM Can Measure Voltages in 2.5 Microvolt Increments from -5V to +5V
- o This Represents More than 4 Million (2^{22}) Separate Voltage States or 132dB

DYNAMIC RANGE - WHY IS IT IMPORTANT?

- o Lab Devices Can Output Signals at Very Different Voltage Levels - Sometimes Unexpectedly
 - o 12-Bit Converters Provide Adequate Accuracy for Only 1 Voltage Range
 - o Most Pre-amplifiers Work at a Fixed Gain Setting
- => Most A/D Converter/Amplifier Combinations can Acquire Data from Only One Device in Only One (Limited) Voltage Range at a Time

DYNAMIC RANGE BENEFITS

- o Acquire Data from Devices with Widely Different Output Voltages Concurrently
 - o Monitor Experiments that Generate Very Low and High Level Signals
 - o Monitor Devices with Uncertain Output Ranges
- => You Don't Have to Worry About or Solve Problems Concerning Voltage Levels to be Acquired.

THROUGHPUT BENEFITS

- o Most 16-Bit or Higher Resolution A-to-D Converters are Integrating Designs with 10-30 Hz Conversion Rates
 - o They Are Found in DVMS and Panel Meters as well as Computer Options
 - o They Can Monitor Only One Device at Very Slow Speeds
 - o The ADM Can Monitor 8 Devices at Up to 100 Times Higher Speeds
- => You Get a Much More Flexible, Cost-Effective System with the ADM

AUTOCALIBRATION BENEFITS

- o Most A-to-D Converters and DVMS Require User Calibration Frequently to Ensure Accuracy
 - o This Requires a High Precision Voltage Source and Considerable Technician Time
 - o The ADM Calibrates Itself in a Few Minutes Automatically
- => You Don't Wast Time and Money on Calibration
-

!!! MICRONOTES !!!

I received the latest set of Micronotes from the OEM Technical Support Group last week. I have included a few of the newer ones that (a) seemed to be of general interest and (b) were short enough to fit in the newsletter. The Micronotes are almost indispensable for anyone whose responsibilities include hardware configuration or integration of DEC Q-Bus components. If you don't receive Micronotes, contact:

OEM Technical Support Group
Digital Equipment Corp.
2 Iron Way (MR03-3/G20)
Marlboro, MA 01752-9103

617-467-5111

Title: FPJ11-AA Compatibility with the LSI-11/73 (KDJ11-A)	Date: 28-APR-85
Originator: Mike Collins	Page 1 of 2

Early LSI-11/73 (KDJ11-A) modules are incompatible with the FPJ11-AA floating point accelerator. This MicroNote describes how to identify those modules which are compatible and those which are not compatible with the FPJ11-AA.

The following information refers to two identifying numbers. They are the module variation and the module revision.

The module variation number is stamped onto the end of the plastic handles. It will be 'M8192', 'M8192-YB' or 'M8192-YC'.

The module revision number can be found on side two of the module (noncomponent side) stamped into the plastic handle, or written with indelible ink. This number is updated as the board is ECO'd. The designation is a number followed by the module revision. e.g. 441 C1, indicates module revision C1.

The first LSI-11/73 module is called a KDJ11-AA and is incompatible with the FPJ11-AA. The module variation for the KDJ11-AA is M8192, and the module revision number is C1. The KDJ11-AA can be upgraded to be FPJ11-AA compatible. Contact the local DEC office for more information concerning the upgrade procedure.

Two new options have been created. The KDJ11-AB is a module which is fully compatible with the FPJ11-AA. The module variation for the KDJ11-AB is M8192-YB, and the module revision number is A1 or A2.

The third option is called a KDJ11-AC and is used for fully compatible modules which have FPJ11-AAs installed onto the board by Digital. It has a module variation of M8192-YC and the module revision number is A1 or A2. Therefore a KDJ11-AB becomes a KDJ11-AC by simply installing an FPJ11-AA.

The following table summarizes the above information and should be used as a 'quick check' for FPJ11-AA compatibility.

OPTION	MODULE VARIATION	MODULE REVISION	FPJ11 COMPATIBLE?
KDJ11-AA	M8192	C1	NO (But Upgradeable)
KDJ11-AB	M8192-YB	A1 or A2	YES
KDJ11-AC	M8192-YC	A1 or A2	YES (FPJ11-AA Installed)

CAUTION

An FPJ11-AA installed on a KDJ11-AA may APPEAR to work but cache errors and parity errors may occur.

An MXV11-BF must be REV C to be compatible with a KDJ11-A with an FPJ11-AA (KDJ11-AC). Earlier versions of the MXV11-BF are incompatible with KDJ11-ACs. KDJ11-As without FPJ11-AAs are compatible with all versions of the MXV11-BF.

The MCV11-D is incompatible with KDJ11-ACs. KDJ11-As without FPJ11-AAs are compatible with all versions of the MCV11-D.

Title: Q-bus Expansion Concepts	Date: 28-Jun-85
Originator: Charlie Giorgetti	Page 1 of 5

This MicroNote discusses the expansion (multiple backplanes) characteristics of a Q-bus system. Understanding this topic is critical when configuring a system. The loading, impedance, and single backplane characteristics of the Q-bus and some assumptions and definitions are discussed prior to defining the expansion rules. The specific products used in expansion are not discussed here.

Viewing the Q-bus for Electrical Analysis

When analyzing the Q-bus from a configuration rule standpoint the bus is treated as a transmission line. The reasons for this:

- o The Q-bus has voltage sources at both ends of a conductor.
- o When one of these voltage sources (typically a processor) changes state (a control/data signal transitioning) its effect is not seen instantaneously at the other end, but after some propagation delay. The propagation delay could result in signal reflections on the bus if it is not properly terminated or expanded.

Loading Definitions

The Q-bus specification defines two loading parameters used when configuring a system. These parameters, AC and DC loading, indicate the load presented to the system by individual elements on the Q-bus. A system element is either a Q-bus module or a backplane. The definition of AC and DC loads are:

- o AC loading is the capacitive loading added to a Q-bus system by a Q-bus module or by the backplane itself. Capacitive loading will cause bus reflections and impact signal rise and fall times. This is measured at the time the module or backplane is being designed. An AC load is 9.35 pf/signal line.
- o DC loading is the amount of leakage current presented to the Q-bus by an undriven signal line on a Q-bus module. This information is obtained from the specification data for Q-bus drivers and receivers. A DC load is defined as 210 uA.

The number of AC and DC loads allowed in a configuration is dictated by the number of backplanes and the termination used. This will be discussed in later sections of this MicroNote.

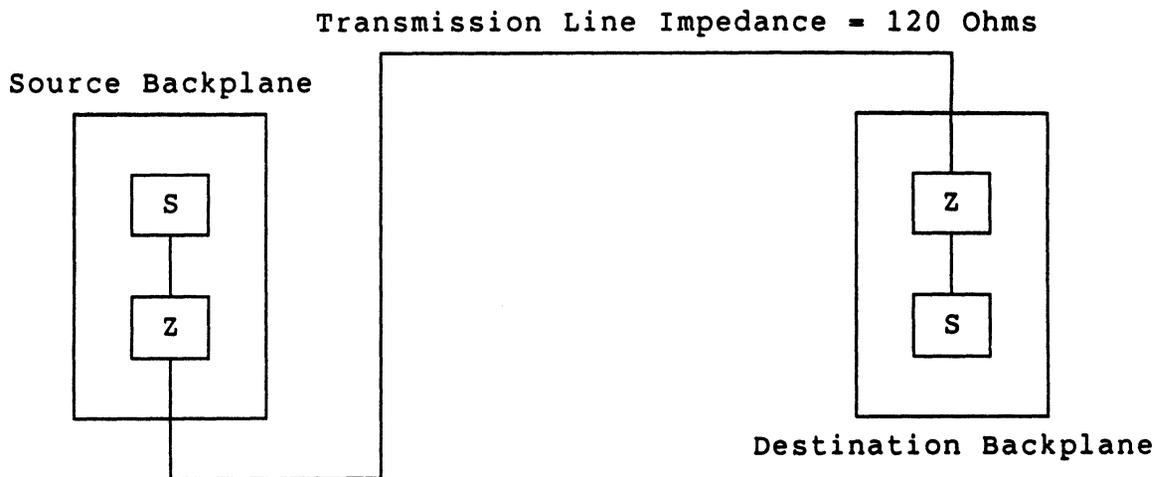
The AC and DC values for Q-bus modules and backplanes can be found in either the Microcomputer Products Handbook (#EB-26078-41) or the Microcomponents Configuration Guide (#EB-27318-68).

Backplane Configurations

The rules that govern Q-bus system implementation must be viewed in light of the backplane arrangement used. The two supported Q-bus configurations are: single backplane or multiple backplanes. How the Q-bus is treated as a transmission line varies for these two configurations and is the foundation for the implementation rules.

Impedance and Termination Characteristics

The characteristic impedance of the Q-bus is approximately 120 Ohms. Therefore, when implementing a system (single or multiple backplane) the basic configuration is:



Source (usually the processor)

Far-end termination

Z - Bus Termination with 120 Ohms Characteristic Impedance
S - Voltage Source

The transmission line in this diagram could be a single backplane or multiple backplanes connected with expansion cables.

Figure 1 - General Q-bus Configuration

Q-bus Configuration - Single Backplane

For the single backplane case the transmission line is the length of the etch runs on the Q-bus connector blocks and the backplane printed circuit board. This orientation has a signal generator at one end (the processor) and potentially a terminator at the far end of the bus. The length of the etch runs cannot exceed 14 inches (35.56 cm). In figure 1 the transmission line is the backplane itself.

A single backplane system does not require termination if there are less than 20 AC loads. In this case the signals do not lose their integrity because the reflections, caused by the mismatched impedances, are not significant enough to disrupt bus activity. However, in a high ambient electrical noise environment, system integrity may be further insured by proper termination.

The single backplane configuration requires termination if the number of AC loads is 20 or greater. The number of allowable AC loads in this case is dictated by the termination on the processor. A 120 Ohm processor can have up to 45 AC loads. A 240 Ohm processor can have up to 35 AC loads.

Q-bus Configuration - Multiple Backplanes

For the multiple backplane case (where the multiples are two or three backplanes) the transmission line is the cables used to interconnect the multiple backplanes. The expansion cable set consists of:

- o A module in the source backplane
- o A module in the destination backplane
- o Cables to connect the two modules.

The maximum length of the cables is 16.0 feet (4.88 meters). The length of these cables is by comparison significantly longer than the length of the Q-bus connector blocks and the backplane etch used in the single backplane case. Therefore, only the interconnect cables are considered for configuration purposes. This arrangement has a signal generator at one end and requires termination at the far end.

The far end termination must reside in the last backplane of the configuration. The location of the far end termination can be any place in the last backplane, since the backplane etch runs do not enter into transmission line considerations. The lump sum termination must be 120 Ohms.

The termination in the source box must also be 120 Ohms. If the processor is 240 Ohms then the expansion cable set module or the backplane printed circuit board must have 240 Ohm termination to achieve the 120 Ohms for the lump sum load.

Lump sum implies that the 120 Ohms can be achieved by one or more expansion module or backplane printed circuit board mounted terminators and its location is position independent in a given backplane. Figure 2 shows an example of how such a lump sum load can be accomplished.

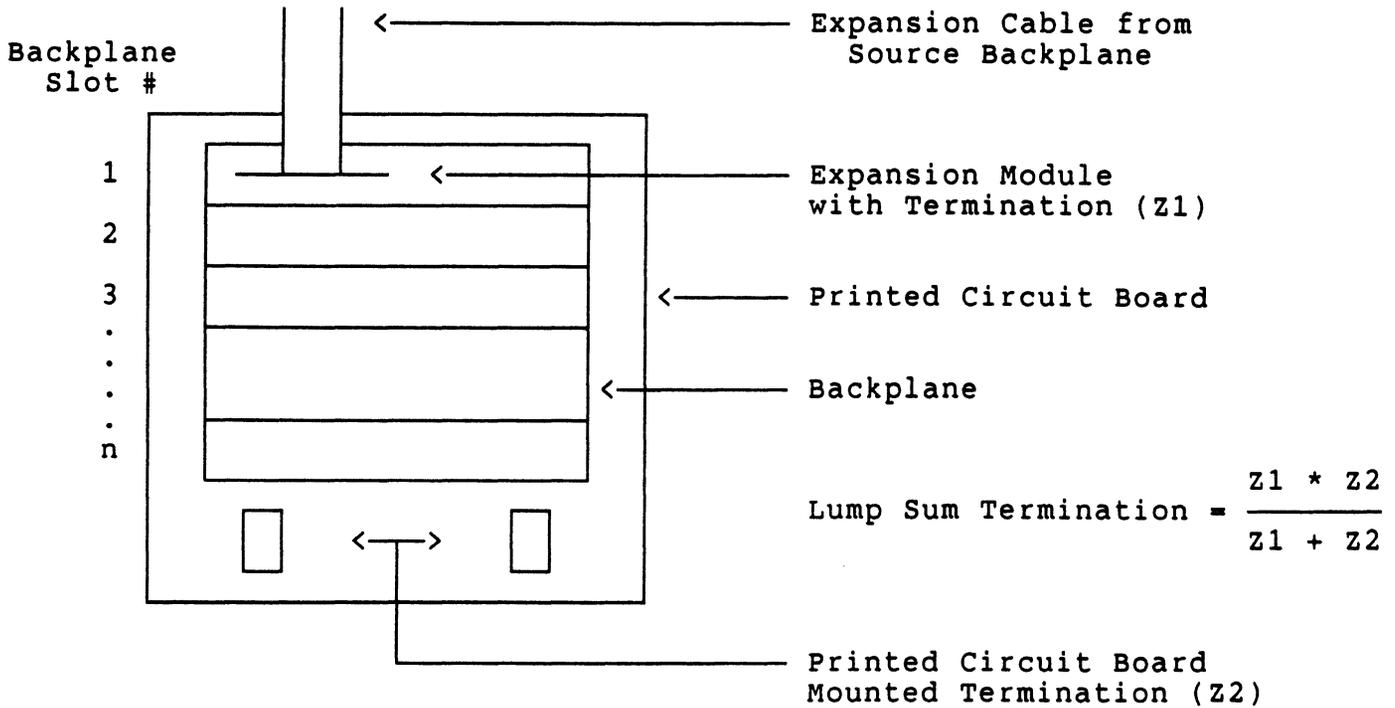


Figure 2 - Example of Lump Sum Termination in an Expanded Backplane

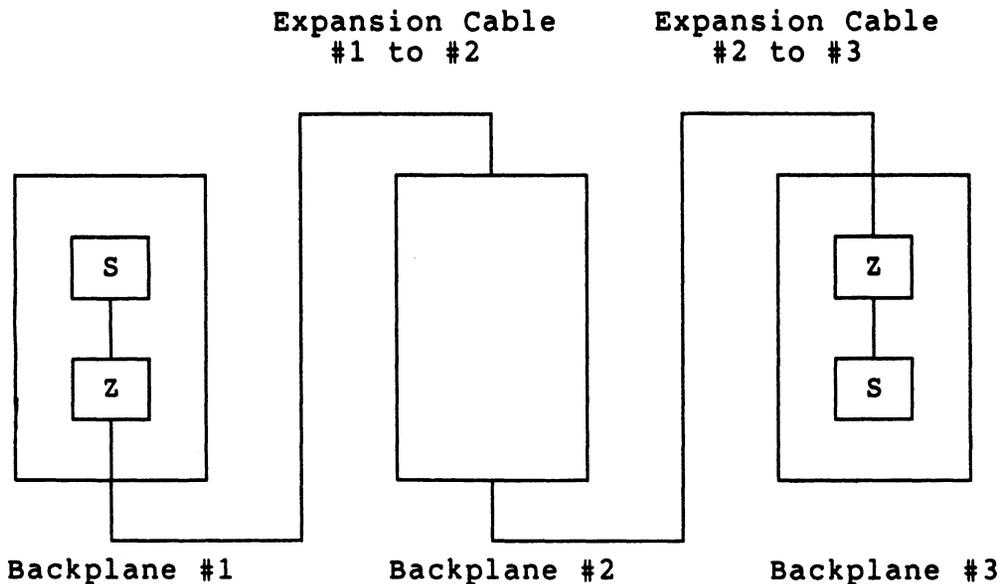
Figure 1 shows the double backplane configuration where the expansion cable set is considered the transmission line. The far end termination is required. Figure 3 shows the three backplane configuration. Backplane #2 in figure 3 for all practical purposes is part of the expansion cable set when looking at it from an expansion point of view.

The lengths of the expansion cables in multiple box configurations are strictly specified. As mentioned the maximum length of the overall cable is 16.0 feet. The minimum length is 2.0 feet (0.61 meters). Therefore, in a two backplane configuration the expansion cable must be between 2.0 and 16.0 feet.

In the three backplane configuration the maximum cable length is still 16.0 feet. One of the two interconnect cables must be between 2.0 feet and 6.0 feet (1.83 meters) in length. The other interconnect cable must be at least 4.0 feet (1.22 meters) but not longer than 10 feet (3.05 meters). The difference in the two cable lengths must be 4.0 feet.

The cable lengths are specified to insure that any reflections occur in the expansion cables and not in the backplane (if they happen).

The etch runs on the backplane printed circuit board used in a multiple backplane configuration must be no longer than 10 inches (25.4 cm). Not all backplanes used in single configurations can be used in multiple backplane configurations.



Z - Bus Termination with a Characteristic Impedance
S - Voltage Source

Figure 3 - Three Backplane Q-bus Configuration

Multiple backplane configurations allow 22 AC loads/backplane. Therefore, it is 44 AC loads in a two or 66 AC loads in a three backplane configuration. To avoid lumping too many AC loads together the total number of AC loads should be distributed as evenly as possible over the two or three backplanes. The entire configuration cannot exceed 20 DC loads.

In summary, following the expansion rules insures proper system operation. The set of rules to be followed are dictated by the single or multiple configuration chosen and the arrangement of the termination in the system.

Title: Backplane Expansion/Termination	Date: 19-Jul-85
Originator: Jack Toto	Page 1 of 8

The following MicroNote discusses the termination and expansion configurations. These configurations will deal with 18 and 22-bit Q-bus processors, backplanes and enclosures. Not all cases presented in this MicroNote meet FCC regulations, and only those that do are so marked. The MicroNote is partitioned as follows:

1. System configurations
2. Single Box expansion/termination rules.
3. Multiple box expansion/termination rules.
4. Configuration/case reference chart.
5. Supported single box configuration cases.
6. Supported multiple box configuration cases.

1. SYSTEM CONFIGURATION

The following is a list of single and multiple backplane termination rules which must be followed when termination is required. Further explanation of these rules can be found in MicroNote # 029, the Microcomputers Products Handbook (EB-26078-41), the Microcomputer Products Configuration Guide (EB-27318-68), and generally the user guide for any of the CPUs.

The LSI-11 Bus system can be divided into two types:

1. Systems containing one backplane.
2. Systems containing multiple backplanes

Before configuring any system, module/system characteristics must be known. These characteristics are:

1. Power consumption. The +5 Vdc and +12 Vdc current requirements.
2. AC bus loading. The amount of capacitance that a module presents to a bus signal line. AC loading is expressed in terms of ac loads where one ac load equals 9.35 pf of capacitance.

3. DC bus loading. The amount of dc leakage current a module presents to a bus signal when the line is high (undriven). DC loading is expressed in terms of dc loads where one dc load equals 210 ma nominal.
4. Total backplane loading must include ac and dc loads and the power consumption of the processor, modules, terminator module, and backplane.
5. Processor termination, class as either 120 ohms or 240 ohms, as follows:

OPTION	TERMINATION	MODEL NAME
A. KDF11-A	240 OHMS	LSI 11/23
B. KDF11-B	120 OHMS	LSI 11/23 +
C. KDJ11-A	240 OHMS	LSI 11/73
D. KDJ11-B	120 OHMS	PDP 11/73
E. MicroVAX I	240 OHMS	MicroVax I CPU
F. MicroVax II	240 OHMS	MicroVax II CPU

Power consumption, ac loading, and dc loading specifications for each module can be found in sources mentioned earlier.

2. SINGLE BACKPLANE TERMINATION RULES

1. When using a processor with 240 ohms termination, the bus can accommodate up to 20 ac loads (total) before additional termination is required. If more than 20 ac loads are included, the far end of the bus must be terminated with 120 ohms, although termination of 240 ohms is optimum. Following the addition of at least the minimum termination up to 35 ac loads may be present in a single backplane.
2. When using a processor with 120 ohms termination, up to 35 ac loads (total) may be present before additional termination is required. If more than 35 ac loads are included, the far end of the bus must be terminated with 120 ohms. When this has been done up to 45 ac loads may be present.
3. The bus can accommodate up to 20 (total) dc loads. This is true in all cases.
4. The bus signal lines on the backplane can be up to 35.6 cm (14 in) long.

3. MULTIPLE BACKPLANE TERMINATION RULES

1. Up to three backplanes maximum can be configured in a multiple backplane system.
2. The signal lines on each backplane can be up to 25.4 cm (10 in) in length.
3. Terminated multiple backplane systems can accommodate up to 44 ac loads, for two backplane systems, and 66 ac loads for three backplane systems. In multiple backplane systems no more than 22 ac loads may be present in any one backplane, nor may any unused ac loads from one backplane be added to the next backplane. It is best to load each backplane equally, but if not possible, then the first and second backplanes should have the highest number of ac loads.
4. DC loading for all modules in all backplanes cannot exceed 20 loads (total).
5. Both ends of the bus must be terminated with 120 ohms. This means that the first and last backplanes must have an impedance of 120 ohms. To achieve this, each backplane must be lumped together as a single point. The resistive termination may be provided by combining two of the modules in the backplane; the processor providing 240 ohms to ground in parallel with an expansion module providing 240 ohms to give the needed 120 ohms termination. Alternately a processor with 120 ohms termination would require no additional termination on the expansion module to provide 120 ohms in the first box. The 120 ohms termination in the last box may be provided in three ways. The termination resistors may reside either on the bus expansion module, or on a bus terminator module such as a BDV11, or on the backplane itself as in the case of the H9275 and H9278 (BA23-A enclosure) backplanes.
6. The cable lengths connecting the first and second backplane are 61 cm (2 ft) or greater.
7. The cables connecting the second and third backplane are 122 cm (4 ft) longer or shorter than the cables connecting the first and second backplanes.
8. The combined length of the cables can not exceed 4.88 m or 16 feet.
9. The cables must have a characteristic impedance of 120 ohms.

4. CONFIGURATION/CASE REFERENCE CHART

The chart below is designed to be a quick reference to a specific CPU and system combination. The actual configurations are listed after the chart.

To use the chart below, find the CPU that is in the system and the number of backplanes or enclosures that you will be using. The intersection of the two parameters will give you the case/variation number that is valid for that configuration. Ex. case 1.2 represents case 1, with variation 2.

SYSTEM CONFIGURATION CHART

PROCESSOR	SINGLE BOX	TWO BOX	THREE BOX
KDF11-A 240 OHMS	CASE 1 CASE 2	CASE 4.1 CASE 4.2 CASE 4.3	18-BIT SYSTEMS ONLY
KDF11-B 120 OHMS	CASE 1 CASE 2	CASE 3.1 CASE 3.2 CASE 3.3 CASE 3.4	18-BIT SYSTEMS ONLY
KDJ11-A 240 OHMS	CASE 1 CASE 2	CASE 4.1 CASE 4.2 CASE 4.3	18-BIT SYSTEMS ONLY
KDJ11-B 120 OHMS	CASE 1 CASE 2	CASE 3.1 CASE 3.2 CASE 3.3 CASE 3.4	18-BIT SYSTEMS ONLY
MICROVAX I 240 OHMS	CASE 2	CASE 3.1 CASE 3.2 CASE 3.3 CASE 3.4	NOT APPLICABLE
MICROVAX II 240 OHMS	CASE 2	CASE 4.1 CASE 4.2 CASE 4.3	NOT APPLICABLE

5. SINGLE BOX SYSTEM CONFIGURATION CASES

Single box 18 or 22 bit system configurations can be terminated the following two ways. The two configuration cases presented in this section will give optimum bus termination respectively to 120 ohm and 240 ohm processor based systems.

CASE 1. Use an unterminated enclosure/backplane with a termination card such as the BDV11 in the first unused slot. This card should be ECO'd to etch revision E, when used in 22-bit systems. This card should also have the on board processor and memory diagnostics disabled if it is going to be used to terminate a system with the KDJ11-A or as the CPU. (refer to MicroNote # 003) The following enclosures and backplanes are unterminated:

OPTION	SYSTEM SIZE
A. BA11-SA	18/22 BIT
B. BA11-M	18 BIT
C. BA11-N	18 BIT
D. H9270-Q	18/22 BIT
E. H9281-QA	18/22 BIT
F. H9273-A	18 BIT

CASE 2. Use an enclosure/backplane which is already terminated. All but one of Digital's backplanes are terminated with 120 ohms, and will meet the minimum termination required for additional ac loading beyond the capabilities of an unterminated backplane. The one backplane that is not terminated at 120 ohms is the one found inside of the BA23-A enclosure. This option is terminated at 240 ohms. This enclosure is the only option that will provide optimum termination for 240 ohm CPUs. The following table list all of the terminated enclosures and backplanes available from Digital Equipment Corporation:

OPTION	SYSTEM SIZE	TERMINATION
A. BA23-A	18/22 bit	240 OHMS
B. H9275-A	22 BIT	(not expandable) 120 OHMS
C. H9281-QB	18/22 BIT	(not expandable) 120 OHMS
D. H9281-QC	18/22 BIT	(not expandable) 120 OHMS

6. MULTIPLE BOX SYSTEM CONFIGURATION CASES

Multiple box configurations can be up to three boxes maximum. However currently only 18-bit three box systems can be configured and terminated properly. Therefore cases 3 and 4 described below will deal only with two box 22-bit system configurations using CPUs of either impedance as

18-bit systems are sufficiently documented as noted below.

NOTE

FOR 18-BIT MULTIPLE BOX SYSTEMS USING A CPU CONTAINING EITHER 120 OR 240 OHMS OF IMPEDANCE THE PROCEDURE FOR EXPANDING FROM A ONE BOX SYSTEM TO A TWO BOX SYSTEM IS DOCUMENTED IN SEVERAL TECHNICAL RESOURCES, SUCH AS THE EXPANSION PRODUCTS HANDBOOK (EB24836-75/68) AND THE BALL-N TECHNICAL MANUAL (EK-BA11N-TM-001). A PARTICULARLY GOOD RESOURCE FOR 18-BIT MULTIPLE BACKPLANE EXPANSION AND TERMINATION GUIDELINES IS THE LSI SYSTEM SERVICES MANUAL (EK-LSIFS-SV-005).

CASE 3. This case deals with a 120 ohm CPU. The 120 ohms of impedance on the CPU does not have to be matched in the first box, but does have to be matched at the far end of the bus which will be located in the second box. This will generate four variations to the case dealing with 120 ohm CPUs. All four of these variations will have in common the BCV2A expansion assembly. This option contains two paddle cards (M9404-00 at 0 ohms and the M9405-YA at 120 ohms) and the BC02D-03 interconnect cable. The card for expanding the bus out of the first box (M9404) will be installed in the first unused slot of the first backplane, with the cable connected to it the bus will be carried to the second backplane. Here the bus is terminated by installing the termination card (M9405) in the first slot of the second backplane.

VARIATION 1: Use two unterminated enclosures such as the BALL-SA master box and the BALL-SE expansion box, connected with the BCV2A. This configuration is not FCC compliant and places the task of FCC compliance on the user. FCC compliance can be obtained by rack mounting these two enclosures in an H9642 cabinet and using the H349 distribution panel to make connections from the system to the outside environment, using the appropriate option cabinet kits. This cabinet system has been tested by Digital Equipment Corporation for FCC compliance.

NOTE

THE NEXT TWO VARIATIONS MAY BE MADE FCC COMPLIANT BY RACK MOUNTING BOTH BOXES IN AN H9642 CABINET THAT HAS THE H9544-AJ SIDE PANELS. THESE SIDE PANELS ALLOW FOR THE SIDE TO SIDE AIR FLOW FOR THE BA23 ENCLOSURE. ALSO INCLUDED IN THIS CABINET CONFIGURATION IS THE H3490 PATCH PANEL WHICH IS USED FOR MAKING CONNECTIONS FROM THE SYSTEM TO THE OUTSIDE ENVIRONMENT VIA THE APPROPRIATE OPTION MODULE CABINET KITS.

VARIATION 2: Use the BA23 enclosure as the primary enclosure and the BA11-SE as the expansion chassis, again using the BCV2A as the interconnect for the two enclosures. The termination that exists on the BA23 backplane must be removed because the that the CPU has 120 ohms of impedance in the first box and does not require any additional termination at this point. The BA11-SE has not been tested in this configuration for FCC compliance, however using the information in the above NOTE MAY produce FCC compliance.

VARIATION 3: Use two BA23 enclosures. When using two BA23-A enclosures and the BCV2A expansion assembly option the termination from both backplanes must be removed. This is due to the fact that the 120 ohms of CPU impedance does not have to be matched in the first backplane of a multiple backplane system and that the BCV2A will put the required termination into the last backplane of this configuration.

VARIATION 4: A final variation to the 120 ohm CPU system would be to follow the same scenario as in the first three variations, but using a mix of some terminated and unterminated backplanes as opposed to system enclosures. These backplanes and their termination states are listed in cases one and two.

CASE 4. This case deals with the 240 ohm CPUs. As stated in the termination rules for 240 ohms CPUs, the processors impedance must be matched in the first box. This would bring the total impedance in the first box to 120 ohms which is the ideal impedance. This 120 ohms from the first box, would be matched at the far end of the bus which will be located in the second box. Configurations with 240 ohm CPUs have three variations. All of the case 4 variations will have in common the BCV2A expansion assembly. The installation of this option is explained above, in the section introducing two box systems.

VARIATION 1: This case variation uses the BA23 enclosure as the primary box and expands into a BA11-SE. Using this configuration requires that the termination on the backplane of the BA23 be left in. This will provide for an optimum impedance match in the first box. The bus will be terminated at the far end in the second box via the expansion assembly termination card (M9405-YA). This configuration as is will not be FCC compliant however following the guide lines from the CASE 3 variations FCC compliance MAY possibly be achieved.

VARIATION 2: The two enclosures used here will be the BA23 system box and the BA23 expansion box. While this configuration resembles case 4 with variation 1, the only change will be the removal of any termination from the second (expansion) backplane. Interconnect between the two boxes and FCC compliance can be achieved as described.

NOTE

WHEN CONFIGURING MULTIPLE BACKPLANE SYSTEMS USING THE BA23-A BOX WITH THE RQDX1 RD/RX CONTROLLER INSTALLED, CONSIDERATION SHOULD BE GIVEN TO THE PLACEMENT OF THE CONTROLLER AND ITS RELATIONSHIP TO THE DEVICES THEMSELVES. FURTHER WHEN USING MULTIPLE BA23-A ENCLOSURES IT BECOMES POSSIBLE TO HAVE THE BEVNT LINE FROM BOTH OF THE POWER SUPPLIES TO BE ACTIVE AT THE SAME TIME. THERE SHOULD ALWAYS BE ONLY ONE BEVNT LINE ACTIVE AT ANYTIME, THEREFORE CARE MUST TAKEN TO AVOID THIS CONFLICT. THIS PROBLEM IS AVOIDED WHEN USING A BA23-C AS THE SECOND BOX.

VARIATION 3: This final case 4 variation deals with the use of terminated and unterminated backplanes rather than enclosures. Using a mix of these products the configurations would resemble the first two for case 4, and would follow the same rules for proper termination.

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Don't Miss the Excitement!!!
Attend the Fall 1985 DECUS Symposium
December 9 - 13 at Anaheim, California



Letter from the Editor

I just received the November issue of the SIGs Newsletters it isn't even November. That means two things: (1) Decus Central is getting better at processing and distributing the newsletters and (2) I had better hurry up and send this in before the deadline of the last working day of the month. It seems strange to be thinking about Hollween as I write this when you will be thinking about the Symposium and the holiday season as you read it.

Although the deadline for the "Find the Hidden Feature" contest is December 1, the overwhelming volume of entries have forced us to keep the contest open until the symposium. Therefore, if you have forgotten to send in your entry, the armadillo ate it, or some other natural calamity occured, you still have a chance to get it in. Don't delay!

Also, call or send in your WHIMS. Operators are standing by. These provide a means for DEC to understand what the users want and need.

The letter from Bob Curley this month is left over from last month. He sent it to me over DCS and because the system was down at the end of last month I did not get it until after the deadline. Better late than never.

The Assistant Editor position is still open. If you are interested, please contact me, and I will fill you in on the details.

Please send all articles for the DeVIAS Letter to:

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26 September 1985

Dear IAS Enthusiast,

I haven't received my copy of the September newsletter, but I have seen it. The sheer size is amazing. I didn't realize that there was that much material being published by the SIGs. Granted that that was a special effort - but even if you look at that as a quarter year of the normal publication - which is probably fair - that is a lot. Since I haven't had the chance to study it I only hope the contents are in keeping with the magnitude of the volume!

I did notice that the issue number of the DeVIAS Letter has been censored by DECUS Central. According to the mail on DCS (the DECUS E-mail network) other SIG Chairmen and many of the newsletter editors have taken offense. I do too. I take pride in the number of issues of The DeVIAS Letter that a small bunch of pushy IAS people can get out to others who are wrestling with a great operating system. Since Steve Keith gave our newsletter its name we've kept a running issue count. Five years. DECUS Central had other ideas, I guess. They don't have to explain them to me - They get the copy before it goes to the printer - and they pay the printer. Lest you get the wrong idea, I do not like it!

Norm Booth has approached DECUS Central (a term, by the way, that originated with John Roman) about copying some of the good stuff that appears in The DeVIAS Letter into the Software Dispatch. I am in favor of it on a couple of conditions. The first such issue will include the material contributed by Frank Borger of the Michael Reese Hospital in Chicago. Frank has graciously agreed to the trial issue. I have a feeling that it can help a lot. I'm soliciting opinions from the other SIG Chairmen and any others who wish to be heard. Please comment if you wish. My mail box is still the same:

Bob Curley
P.O. Box 322
Flourtown, PA 19031

I have noticed that WPS-plus has become a DEC product on many operating systems including MS-DOS (my Rainbow). It is said that it even runs on the PRO-350. Do you think it would be nice if someone made the effort to port it to IAS? I do. We use it on a

WPS-211 (PDP-8A) system, DECmate IIs and IIIs and Rainbows. Having it on IAS would be very useful.

The Fall DECUS Symposium is coming to Anaheim in December. Once more, great timing by DECUS Central. Just before Christmas, just before Final Exams. My wife is not thrilled. I should be decking the halls with boughs of holly rather than DECing myself in the halls of folly. Or some such. October or November would be more appropriate for a Fall symposium I think. I've never heard any good reason for the succession of bad dates (who could forget Memorial Day 1985 in New Orleans), I wonder if there is one.

There has been a dry spell in the Symposia on the subject of TECO. I asked, at a SIG Council meeting, if there was anyone tending to TECO. It's the Languages and Tools SIG. Does anyone use it anymore, besides Ted Smith and I? Someone is making money selling TECO Cards.

IAS V3.2B still has problems. They are not fixed. But the problems seem to be somewhere else than the main body of the operating system which runs very well. The Utilities have flaws. There are small oversights about small things. I hope the problems get resolved soon.

I hope to see you in Anaheim. Happy Autumnal Equinox,

Bob Curley

Borger's browsings

FUN WITH IAS VERSION 3.2 DECNET

I have had people look at me asance when I said I LIKED programming in machine language, but I just experienced something that even I have to admit was a painful experience. I installed DECnet on our IAS version 3.2 system. Without having installed DECnet before. Without having any software support. And, it turns out, I installed what was a version 3.1 DECnet which I had to update to match version 3.2 of IAS.

In response to an angry letter to DEC concerning my problems I was told that DECnet has been put on hold. (Now they tell me, after I have it up and running.) If anyone needs version 3.2 and DECnet, there are only a couple of things wrong, and I will list them in the order we ran into them.

1. After I copied all the standard DECnet distribution to our system disk, I copied the contents of the AUTOPATCH tape we received to [225,200] and tried to execute the autopatch procedure as documented in [225,200]DECNET.DOC. The write-up on the autopatch tape showed a complicated procedure which copied everything from [225,200] to the appropriate UIC using the /NV switch and then did a full generation of DECNET. The actual command file only tried to copy the updated files to the correct account, and also kept failing with the error message:

```
NGN -- UNDEFINED SYMBOL <SUCCES>
      .IF <EXSTAT> = <SUCCES> .RETURN
```

If I had to do it over again, I would just look at the command file and do manually what the command file tries to do. There are only about 6 accounts that need updating.

2. Once I had copied the updated files over, I followed the standard NETPLN command file. This was the only part of the procedure that executed correctly.
3. Next I tried to generate the DECnet command build files via a NGN @[11,67]NETGEN. NGN had all kinds of errors with .IFNINS commands for PIP, LOA, UNL, UFD, LBR, MAC, TKB and STK (slow TKB.) I finally installed all the things NGN tested for and commented out the .IFNINS commands. I also commented out some .IFNLOA commands concerning source and destination disks.
4. Since I had commented out NETGEN.CMD's call to BLDNET, during one of the previous bombs, I then directly executed BLDNET.CMD via a NGN @BLDNET. That is when the first main problem developed. Many of the TKB commands generated errors of the form:

TKB -- *DIAG*-Load address out of range in module

This turned out to be due to one of the new "features" of the new task builder. Examination of the maps of the several tasks in question disclosed that the problem was due to the following.

1. The new TKB links all RW modules alphabetically, followed by all the RO modules, and then changes any RO modules to RW. (Even if one applies the "/RW" switch.) This mainly has an effect upon psects named \$\$name or ..name.
2. The version 3.2 HNDLIB has all modules in psect \$\$HNDL rather than in the .blank psect.

A quick solution to this problem was to copy the version 3.1 HNDLIB object library to the new system disk as HNDLIBV31, and edit any command file that referenced HNDLIB to use the version 3.1 library.

5. The last and greatest bug occurred when everything had built correctly and we tried to bring up the system. The network loader task would consistently abort with an odd address trap. A day or so of debugging finally found the error. It actually been around for a long time, but only surfaced due to the new ordering of modules by the new TKB. Bear with me and I will explain what went wrong.

1. The routine \$PRIO in NTL was doing a BAD thing. IT was doing a 1000 byte read into a 2-byte buffer in psect ..BUF.
2. This would never have worked except under the version 3.1 ordering, psect ..BUF was the last thing in that overlay segment, there were longer overlay sharing the same space as the one containing \$PRIO and ..BUF, and the longest overlay segment was followed by a second root of a co-tree.
3. Under version 3.2 TKB, psect ..BUF, (the last RW psect,) was followed by the first RO psect, which contained general SYSLIB routines, notably \$MUL among others. \$MUL was promptly overwritten with garbage.

A simple fix to this final problem was to expand the ..BUF psect to its proper size via a

```
EXTSCT=..BUF:776
```

command in the build file NTLBLD.CMD.

After the system was finally up and running correctly, I got a call from our friendly DEC salesman telling me I could never get the system up unless I bought software support and got update B. I strongly objected to this in a letter to DEC in Maynard, stating that I believed when we bought version 3.2 of IAS it should have supported all layered products, or that when we bought DECnet IAS we should have received a package that worked on the current version of IAS, version 3.2.

In any case, my final analysis is that DEC's field test sights could not have included any DECnet users, else they would have known there were problems and would (or should) have included some notification in the release notes to warn users that DECnet would not function.

A final disclaimer from my end. Our DECnet installation is an end node connected to a couple of VAXes, so we have not been able to test routing, down line loading, or virtual terminals. The problems with the new TKB and version 3.2 HNDLIB would probably bomb some other tasks that we didnt need.

For anyone who desperately needs DECnet up on version 3.2, let me summarize what needs to be done.

1. Copy the version 3.1 DECnet update to [225,200] and then manually copy the files to the correct account.
2. Make a copy of version 3.1 HNDLIB.OLB, (called HNDLIBV31 for example) and edit any TKB command file that references the library to use the version 3.1 edition.
3. Edit NTLBLD.CMD to include the line:
EXTSCT=..BUF:776

An alternative method that should also work would be to link the version 3.1 TKB and SLOTKB under 3.2 and use them to generate the DECnet components.

Borger's browsings

On the difference between IO.WLB and IO.WVB.

The other day I put up a utility from one of the sig tapes and found I had to make some minor changes to adapt the utility to IAS. What I did was to write a couple of escape sequence commands to the terminal to set it to ansi mode, and to turn off wrap-around mode. The program worked nicely, and I installed it in our system. Everybody liked the program. (It was VTL if anybody is interested.)

The next morning I did a routine check of the console output. (On our system we do a VFY of important disks every day in the early morning.) The VFY report showed that we had several bad file headers on our system disk. Examination of the headers showed that they all had the same 6 octal words in the first part of the block, with the rest of the block cleared. I have gotten pretty good at patching file header blocks, so I patched the bad blocks, used VFY to update the bitmaps, copied new versions of the files that had their headers wiped to the system disk, and let everybody back on the system. I was keeping close observation of the disk, however, and soon discovered that that same wierd 3-word pattern was occuring on other blocks, including block 0 of the disk.

All you Macro Guru's out there you can stop laughing. I finally had enough sense to dump one of the bad blocks in ascii, and discovered that that 3 word overwrite actually contained the ascii string:

```
<esc> < <esc> [ 7 l
```

What I had done was a double error.

1. I had for some reason known only to myself used lun 6 instead of lun 5 to write to the terminal, and Lun 6 was assigned to LB: in the TKB command file.
2. I had used the IO.WLB function instead of the IO.WVB function.

One of the things that DEC never tells you about IAS is that if you are doing QIO writes to a terminal, you should always use IO.WVB, (write virtual block,) instead of IO.WLB (write logical block.) The reason is fairly simple. If your output gets accidentally directed to a disk, IO.WVB will be rejected, while IO.WLB will write to a random disk block, with a high probability of writing to block 0. This is a simple concept, but one that even many DEC programmers don't understand, since I see a lot of DEC code using IO.WLB.

The crucial difference is that IO.WVB gets passed to F11ACP and that F11ACP (1) checks the block numbers in the 4th and 5th word of the parameter block of the IO request node (2) rejects the re-

quest because your IO request node length is too short. In contrast, an IO.WLB function is not passed to F11ACP. To compound things, none of the handlers check the length of the IO request node to see if you specified logical block numbers, they just go out there and get whatever is left in the node from its last use. Often both words are zero and you end up overwriting your boot block. On other occasions, you can end up overwriting any block on the disk.

To see how this works, compare the following two handler dispatch tables, one from a disk handler, one from the line printer handler.

Dispatch table from DR disk handler

```
DSP      0,0,  BADFC           ; 00 - EXPRESS REQUESTS
DSP      210,042,RQPROC        ; 01 - WRITE LOGICAL
DSP      210,041,RQPROC        ; 02 - READ LOGICAL, OVERLAY
DSP      020,140,ATTACH        ; 03 - ATTACH
DSP      020,140,DETACH        ; 04 - DETACH
DSP      000,040,SETCHA        ; 05 - SET/SENSE CHARACTERISTICS
DSP      0,0,  BADFC           ; 06 - DEVICE CONTROL FUNCTIONS
DSP      0,0,  BADFC           ; 07 - MORE DEVICE CONTROL
.
.                               ;many other functions here
.
DSP      300,341,              ; 21 - READ VIRTUAL
DSP      300,342,              ; 22 - WRITE VIRTUAL
```

Dispatch table from LP line printer handler

```
.BYTE    010,142
.WORD    WRITE
.
.                               ;many other functions here
.
.BYTE    100,142               ;WRITE V
.WORD    WRITE
```

The Guide to Writing a Device Handler Task lists the following bit definitions for the lower byte of the function code as follows.

- Bit 7 The volume must be mounted.
- Bit 6 The volume must be a FILES-11 volume.
- Bit 5 The volume must not be set for unloading.
- Bit 4 The volume must be attachable.
- Bit 3 Device control functions must be permitted.
- Bits 2-0 Reserved.

The important bit of the upper byte is bit 7/15.

- Bit 15 Word U.DACP of the PUD contains the first three characters of the taskname for the ACP program.

The basic differences are as follows:

1. Write logical requires the disk to be mounted with Device Control functions, Write virtual does not. (Interestingly enough, no disks allow Device control functions anyway, the dispatch table sends you to the unrecognized function processor, so why not call the switch what it is, and give it a 3-letter name of RWL for Read-Write-Logical?)
2. Write logical does not require a Files-11 disk, Write Virtual does.
3. Write logical is processed directly by the handler. Write virtual is sent first to the ACP task, (since bit 15 is a one.) The ACP task converts the block number in the IO request (which should be the block number of the file) to the absolute block number on the disk, and then returns the request node to the handler for processing.

By contrast, the Line printer handler does not pass the request to an ACP program, nor does it require the disk to be mounted. It does, however require the Line Printer to be a Files-11 device. Very interesting!!!

Some astute readers probably are saying that we should not be mounting our disks with the DCF characteristics since that bypasses some of the protection features of the system. As of version 3.2 this is at least partially true. One now can use the task builder /PR:0 switch on tasks like BRU and DSC to make them privileged. Previous to that, you had to know how to ZAP the task header of the tasks in question to make them privileged, (just turn on bit 7 at byte offset 10 of the first block of the task.) Pre version 3.2 this also had some strange side effects (Standard BRU was not able to backup from a mounted disk, while privileged BRU could do backups, but could not restore, so you ended up with two versions of BRU.)

What most people do not realize is that adding the /PR:0 switch to programs has an even stronger effect upon your programs QIO abilities. All handlers call the HNDLIB routine ..VACC to check the validity of all IO requests before they process the request. One of the first things VACC does is the following:

```
BIT      #SF.PT,S.FW(R5) ;Is this a privileged task ?
BNE      VAL              ;YES -- Let it do anything it wants!!
```

Surprised by that? I was when I found out what the difference was. I knew that a standard privileged task had access to the external page and all of SCOM, but no one told me it bypassed all Dispatch table protections. (Anyone security conscious shouldn't worry about this, this does NOT mean that a copy of PIP that has been ZAPPED to be privileged will be able to bypass file system access rights, that's done by F11ACP, not by the handler alone.) Also, version 3.2 of IAS does some complicated checking if the request is an ATTACH, and even has a special

case for a Mountable, Off-Line, non-Foreign device.

Anyone out there worried that the teletype handler might treat IO.WVB and IO.WLB differently, don't worry. In fact:

1. The teletype handler does not call ..VACC to check the validity of the transfer request.
2. The teletype handler does not even call ..DISP to select the proper IO routine using the Dispatch table.
3. The teletype handler in fact does all dispatching internally, with a modified version of the standard Dispatch table. (Now you see why I used the Line printer handler Dispatch table in the above comparison.)

In a slight digression, there really is a good reason for the TT handler not to use ..VACC and ..DISP. It is quite tight for address space and does not link to the HNDLIB SGA. The logic in individual routines, (such as VACC,) often can be more efficiently dealt with by custom routines, thereby saving more space. In addition, the function dispatch routine in the TT handler does more complex things than the general one in HNDLIB. So don't pick on TT. Once you get over the initial culture shock, it's a very nice package of code. End of digression.

The end result of all this exercise is that you have a choice of two less than optimal options:

1. Mount your disks with the DCF characteristics. Any utility program can do absolute block reads and writes, and as such, have the capability to harm the structure of your disk.
2. Mount your disks normally, and use the PR:0 switch if you have version 3.2, otherwise ZAP the task image of the programs in question to make them privileged. You have prevented absolute block reads and writes for all but privileged tasks, but have bypassed all the Dispatch table protection for those privileged task.

The choice is yours, I just hope this article has cleared up some fog concerning privileged tasks, BRU and the like.

Chapin Road
Hampden, MA
October 10, 1985

John Roman
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Hazelwood, MO 63042

Dear John:

Here is an article for the DeVIAS Letter. It describes an investigation I did while trying to understand the performance of the RA disk drives as related to that of the RM02s. We had a situation where we were moving an application on RM02s to the new RA drives now supported by IAS Release 3.2. As it turns out, I learned what I could have found out by reading the drive specs. Therefore, I call this discussion:

Discovering the Obvious

Essentially, what I did was to exercise the disks in a certain way which I thought was a good approximation of the manner in which they were used in our application. The application was a single threaded database, with relatively (my adjective) small sized reads. The size of the reads was 1 to 16 disk blocks in size. The disks are mounted foreign while the application is running. The size of the database in disk blocks is about 80,000 on RM02s and 300,000 on RA60s and RA81s.

The exercise program essentially did a series of 1 disk block reads at certain disk block distances. In pseudocode, the logic is as follows:

```
get disk_size from PUD.
let location_1 = 100.
let location_2 = 100.
let end_int = 40.
let increment = 10,000.
if (increment * end_int) > disk_size,
    let end_int = disk_size / increment.
outer_loop:
    for j = 1 to end_int
        get start time.
inner_loop:
    for i = 1 to 100
        read disk block at location_1
        read disk block at location_2
    end inner_loop.
```

```
    get end time and calculate average access.
end outer_loop.
```

With this logic, there would be 200 accesses in the inner loop. The length of the first seek would depend on the position of the heads at the start. Rather than worry about all that uncertainty, I just timed the inner loop and divided by 200. I felt that would give me an answer accurate enough for my purposes.

Location 1 was fixed at physical block 100. Location 2 would start at physical block 100 (distance of 0 blocks) and increase by 10,000 blocks for 40 repetitions, or the end of the disk, whichever ever came first. The program was privileged and could get the disk size out of the pud. Then I could plot the length of time per access against the distance between reads in disk blocks.

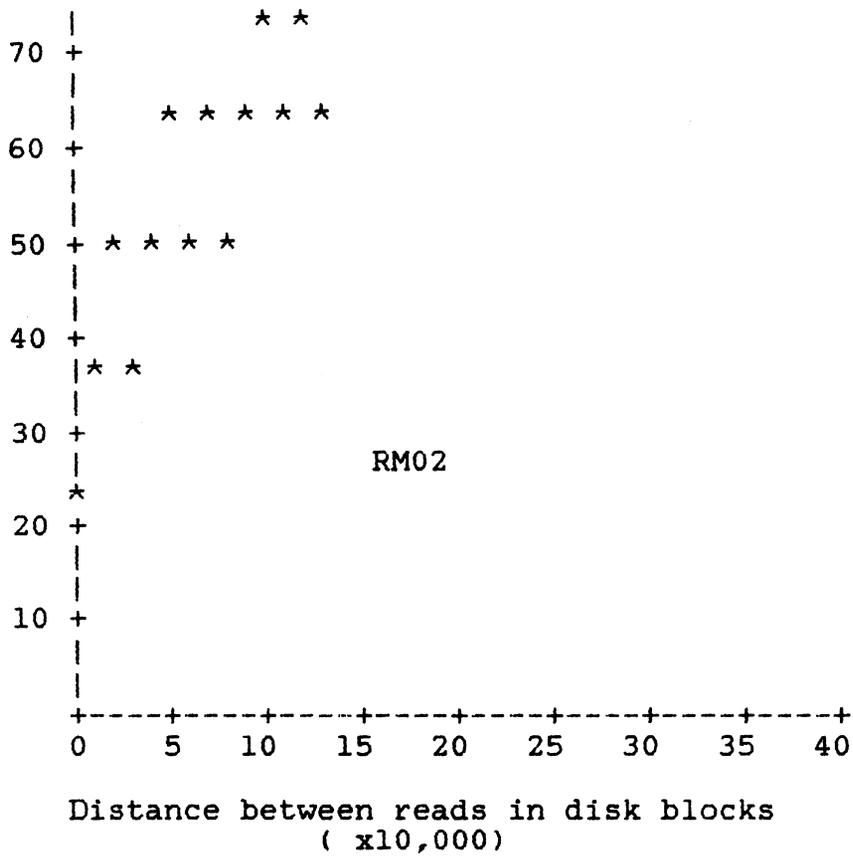
I tried this on RA80, RA60, RA81, and RM02 disk drives. For your information I am including pertinent details on the disk drives:

	RM02	RA80	RA81	RA60
Rotation speed (rpm)	2400	3600	3600	3600
Rotational latency (ms)	12.5	8.3	8.3	8.3
Average seek (ms)	30	25	28	42
Average access (ms)	42.5	33.3	36.3	50.3
Track to track seek (ms)	6	6	6	6
Maximum seek (ms)	N/A	50	52	70
Capacity (MB)	67	121	456	205

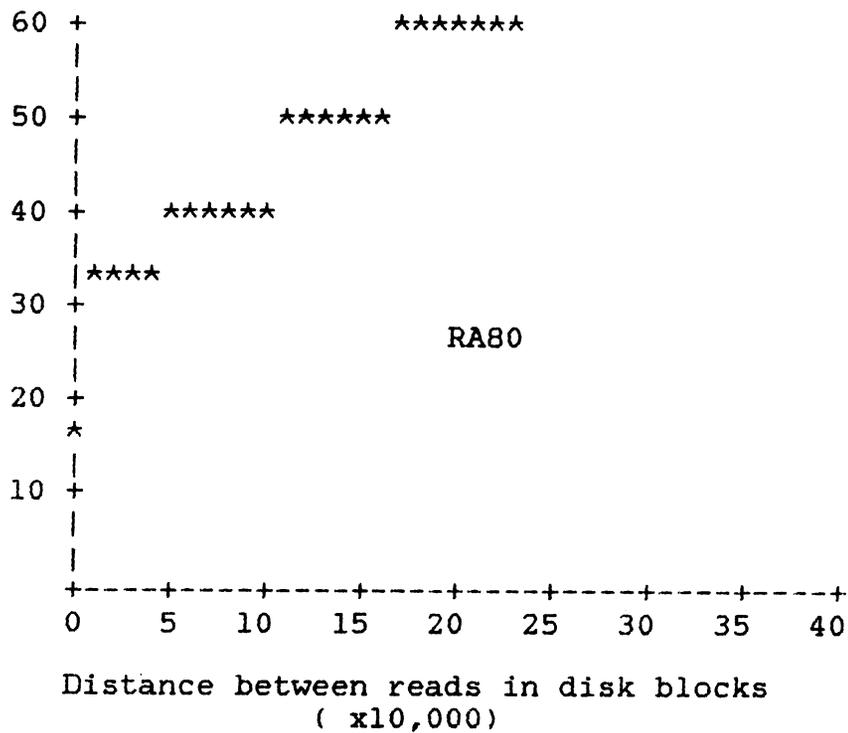
Since the tests are single threaded I did not take advantage of the UDA50s celebrated overlapped seeks and rotational optimization. Because the transfer sizes were relatively small (1 disk block), the differences in transfer rates (0.8 MB/sec for RM02, 1.2 for RA80, 2.2 for RA81, and 2.0 for RA60) were not significant.

Keeping in mind these caveats, these are the results that I got:

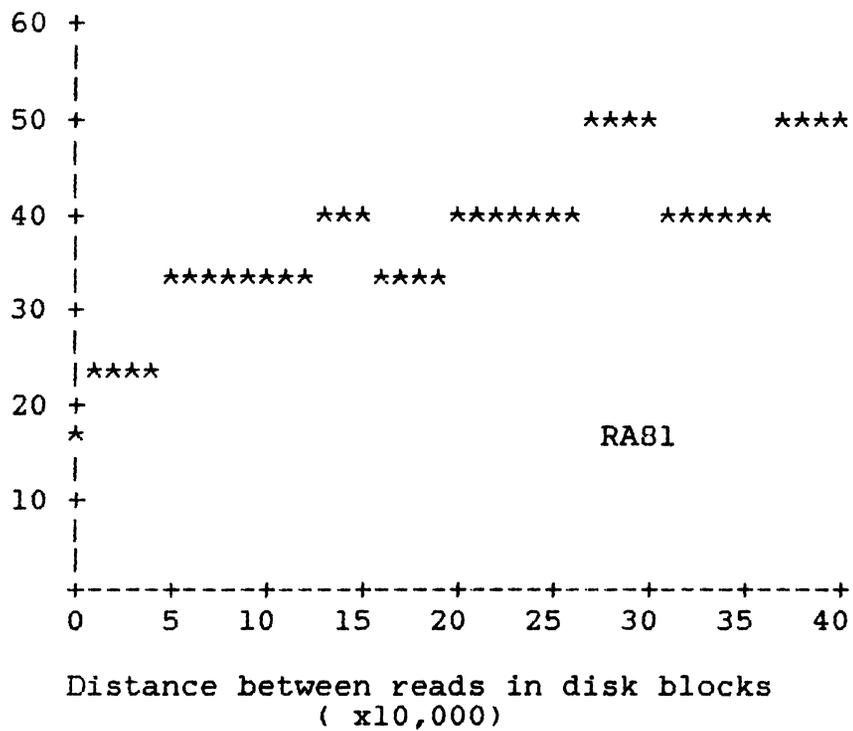
Time in milliseconds



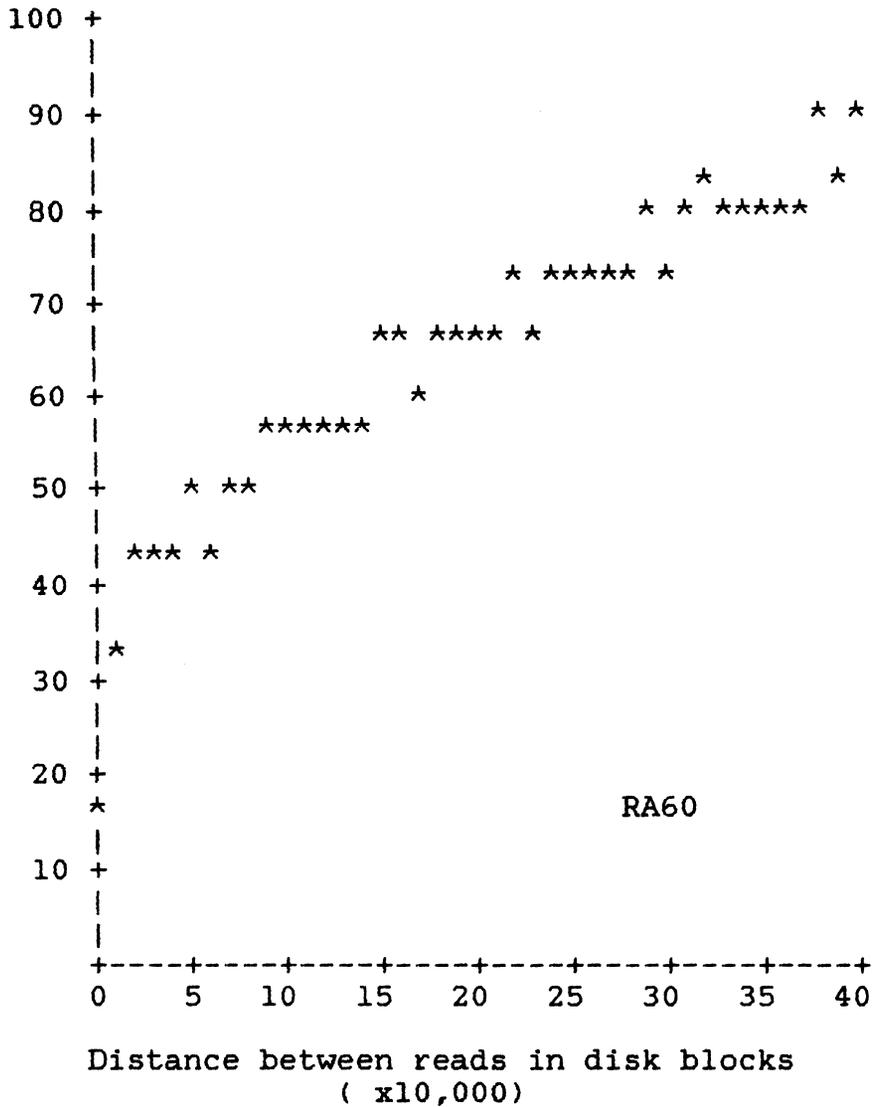
Time in milliseconds



Time in milliseconds



Time in milliseconds



There are several things which are worth noting. The first is the relative performance of the drives. Performance in this test is defined as the speed the drive can read one block and then a second n blocks away. From the curves, it is obvious that the RA81 has better performance than the RA80, which is slightly better than the RA60, which is somewhat better than the RM02. If you calculate the average access over the range of blocks tested, you get the following numbers:

Disk	Best Case (ms)	Worst Case (ms)	Range (disk blocks)	Average Access (ms)	Average access over 10,000 blocks (ms)
RM02	25.2	62.7	130,000	4.88	48.8
RA60	17.3	92.2	400,000	54.8	42.6
RA80	16.7	58.1	230,000	37.4	29.1
RA81	16.9	49.7	400,000	33.4	25.1

This table indicates the best case (0 block distance) access, the worst case access tested and the 100,000 block access for each disk. The range column indicates the distance between reads in disk blocks for the "worst case." This is the size of the disk for each one except the RA81, which has about 900,000 blocks. The "average access" column is the average of the best and worst case columns for each drive. These compare to the published average access times above. The RM02, RA60, and RA80 have slightly poorer access times in this test as compared to the published figures. The RA81 figure I got is better, but I was only accessing over less than half of the disk. The average access over 100,000 blocks somewhat normalizes the data, but the relative performance of the disks does not change.

The second thing that I noted was the shape of the curves. The value for the zero distance access (essentially reading the same disk block over and over again) was just about the rotational latency of the drive. After that the access time increased, but not in a linear fashion. Most of the time it takes to seek on a drive is spent overcoming the inertia of the heads. Once the heads are moving, they do so relatively rapidly. Therefore, the penalty for accessing a distance of 250,000 blocks is not much different from accessing a distance 200,000 blocks on the RA81, say. This curve is much more noticeable on the RA81 than the other drives, and if I had carried the accesses out over the entire 900,000 blocks, it would really be dramatic.

An intriguing thing for me was the fact that the increases were not monotonic. That is, an access of a greater distance may be faster than one of a shorter distance. I pondered this for a moment or two, and then cried, "Eureka! this is disk geometry at work!" Because of the relative position and number of sectors, tracks, and cylinders, it is possible to catch a further sector than a closer one because the further sector is at the right position because of disk latency.

Additionally, the increases are not continuous. If you look at the actual values for the accesses, you will find that the changes are approximately equal to the disk rotational latency.

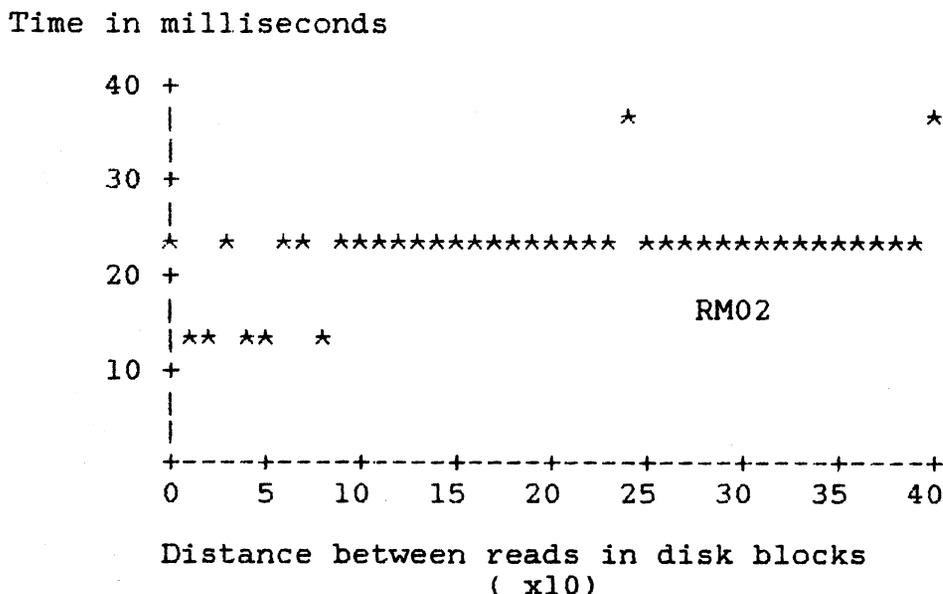
The length of time it takes for an access is the number of rotations that occur while the heads are moving. That's not exactly obvious, but interesting I would say.

As if that wasn't enough. . .

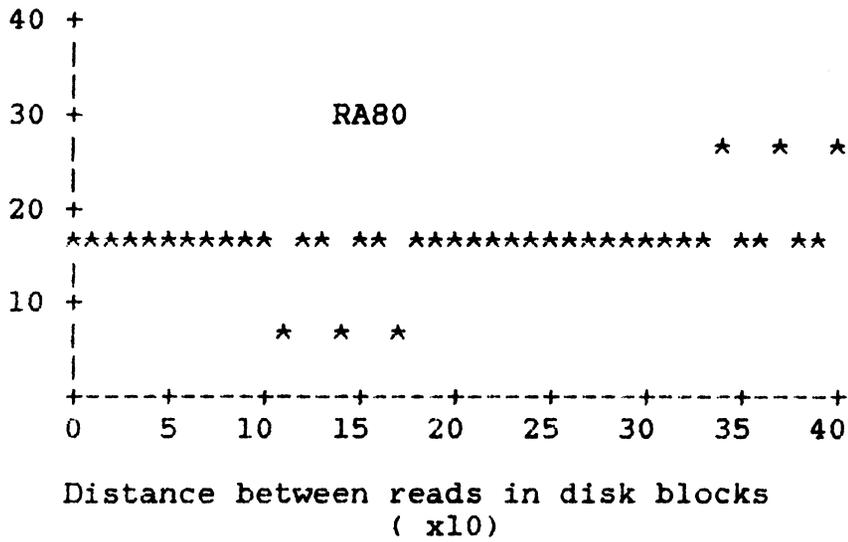
I was somewhat curious about the behavior of the drives when the distance between accesses was relatively small (10 to 400 blocks). So what I did was zap the value of the incremental distance from 10,000 blocks to 10 blocks and run the tests, and then to 1 block and run them again. Because of the importance of disk geometry I ran the tests with increments of 1 and 10 blocks four times, increasing the physical start block by 10 blocks each time.

I am not going to present the data from the 1 block increment here, except for a few comments. The access times were generally the rotational latency (25 ms for the RM02 and 16.7 for the RA drives). However, there would be short intervals where the access times would decrease by half the rotational latency or increase by half the rotational latency. This means if the heads do not have to move, and the geometry is correct, the blocks are in position such that they can be read after 0.5 a turn or 1.5 a turn of the disk.

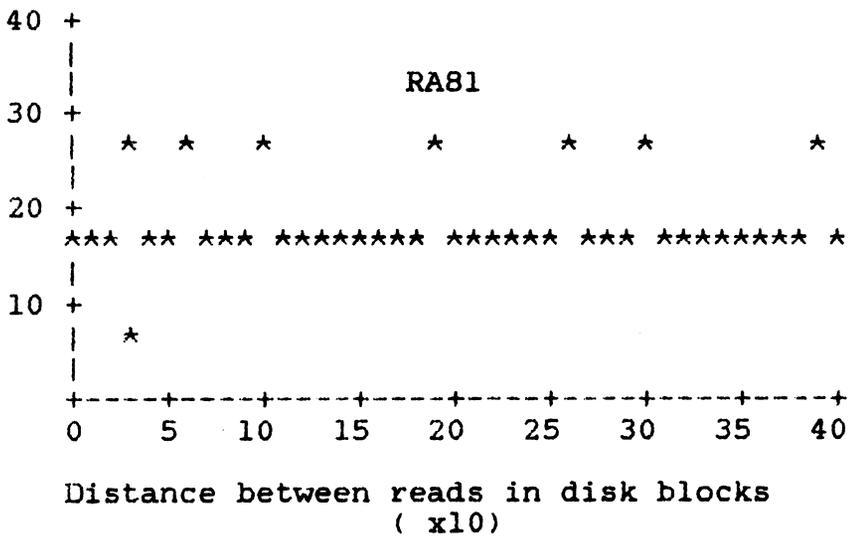
The following curves are the data from the 10 block increments. The tests were run four times, from different starting block locations. Take my word for it, these curves are more or less representative.



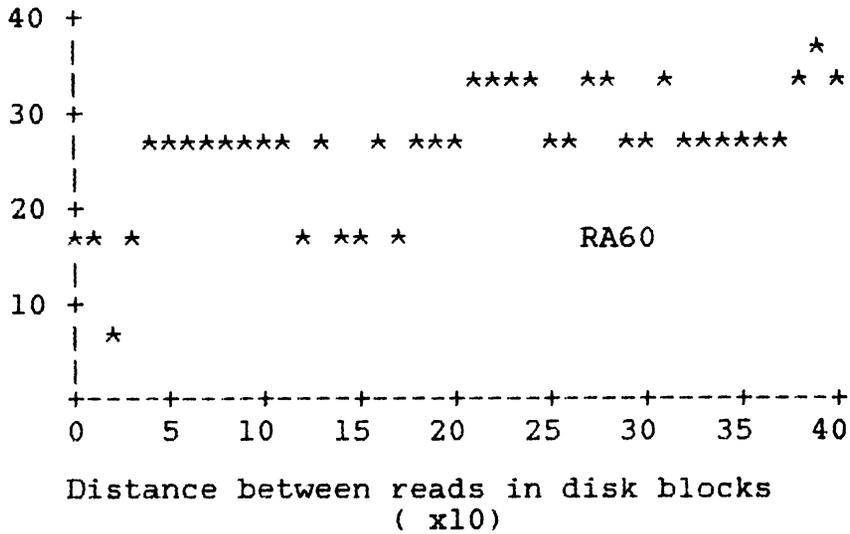
Time in milliseconds



Time in milliseconds



Time in milliseconds



These figures are not as exciting as the ones above, but indicate the importance of disk geometry. The RA80 and RA81 have more or less linear curves over the range of blocks tested, with outliers 16.7/2 or about 8.3 ms away from the line at 16.7 ms (the rotational latency). The RM02 shows a similar curve, except that it is centered on the 25 ms latency of that drive. However, the RA60 shows a substantial degradation of performance even over as short a range as 400 disk blocks. The access times increase from 16.7 for a 0 block distance to more than 33 ms for a 400 block distance.

Conclusions

From this information it is evident that each of the drives show slightly different performance characteristics. The RM02 was used as a standard, as it was previously used for our application. The RA80 and RA81 have relatively good performance as defined for the purposes of this investigation. The RA60 has performance closer to that of the RM02 than that of the winchesters. If you don't need removeable media, stay away from the RA60s. The RA81 has much better performance, reliability, and storage capacity. The RA80 probably will not be around much longer. When higher capacity winchesters are announced, their performance will probably be closer to that of the RA81, which is pretty good.

I hope this is of some value to your readers out there in DeVIAS-land. You can see that the bottom line is no different from that gained from reading the drive specs, and why I called

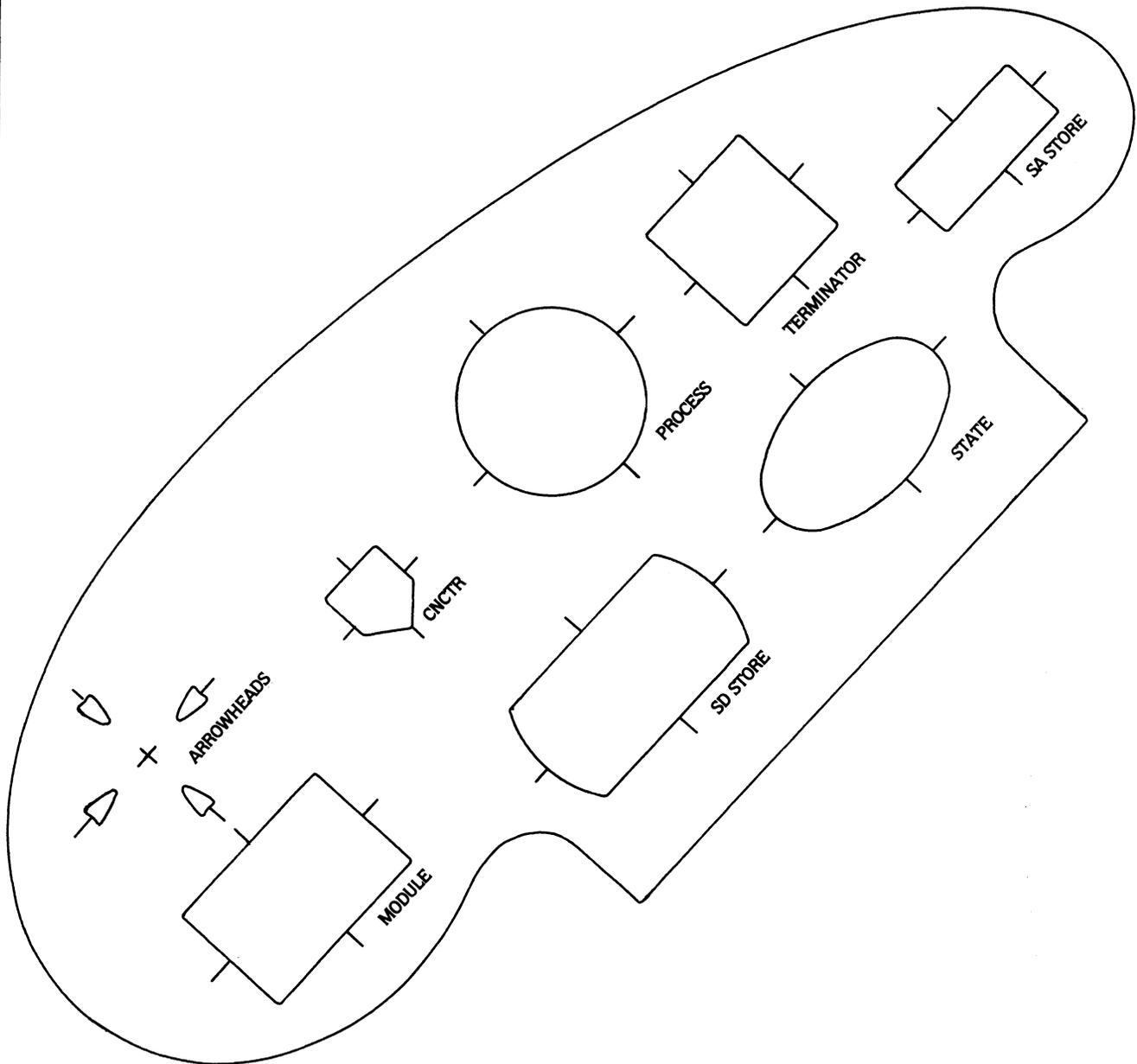
this "Discovering the Obvious." The theoretical treatment of disk geometry and performance is left to the reader.

I heard that they were coming out with a "combined" newsletter. I can't wait to see it. I hope to make it to Anaheim this fall. If I don't, please say hello to Bob Curley for me.

Sincerely yours,

Jeff Mackenzie

“LEVERAGE”



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Editor's Notes

The new production schedule for the newsletters has left me a little disoriented; I missed having this material ready for the last issue on time, and almost missed having it for this issue too. Judging from the number of submissions I've gotten lately, though, everyone else is a little confused also. My need for articles, letters, and what not has not diminished, please give thought to helping out. Note that my lead time for any individual issue is longer than it used to be. I must get material to the DECUS office a month in advance, i.e., by November 1st for the December issue, so you must get submissions to me even earlier than that.

In this issue are a number of items dealing with TeX and LaTeX, thanks to Sam Whidden, our TeX coordinator. Also, descriptions of the pre symposium seminars to be offered by the L&T SIG are included. These should have been published last month to give you some time to consider them, my apologies for the mixup.

Derek Hatley of Lear Siegler has submitted his trip report from the STARS methodology workshop. I believe this type of information can be of interest to our readers, and since most of you have to write trip reports anyway, it wouldn't hurt too much to send the information here, also.

Finally, don't forget Earl Corey's column, fun with DCL.

Well, that's about all for now. Please send your letters, articles, or animadversions directly to me. If you have questions about format or suitability, I'd be more than happy to discuss the details.

LANDIS & GYR

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August 3, 1985

DECUS Languages and Tools SIG
Mr. Alan L. Folsom, Jr., Editor
DEPT. 431, Fischer & Porter Company
E. County Line Road
Warminster, PA 18974

Dear Alan:

Re Mr. Klammer's response to the DEC/IBM objections to the FORTRAN-8X FIB-1. Mr. Klammer expresses some valid concerns when he feels "shackled to dinosaurous language constructs" by the constraints of upward compatibility. However, the obvious answer is to simply program in the language of his choice. Why feel "shackled" to FORTRAN at all?

The upward compatibility of the FORTRAN-8X proposal is an unresolved question, from what I've read. Although compatibility is not the primary objection to the proposed changes, it does deserve consideration.

The millions of lines of FORTRAN code currently being supported, significant portions of which were written in the 1960s and 1970s, make the task of conforming to a compiler which does not support upward compatibility staggering. Faced with such a situation, I would predict that the industry as a whole would abandon the standard before it would comply with the changes. The ANSI committee would no longer be useful.

Of a much more serious nature, the very concept of officially deprecated features shows that the current committee has lost sight of its role in standards development. Most of us today are aware of good design and implementation practices. We don't have the option of making 15 years of accumulated software conform to the current fashions. If the individual committee members feel the need to comment on programming technique, that should be done outside the context of the standards committee.

There are many other individual issues in the FORTRAN-8X FIB-1, but, summarizing the attitude of the majority of the attendees at the FORTRAN-8X session in New Orleans, the planned addition of useful constructs as integrated extensions to the existing FORTRAN standard has always been welcomed. Major departures from an existing standard are not welcome because of the economic impact involved. Paraphrased, "If we want some language besides FORTRAN, we'll use it. Don't try to make FORTRAN into a different language."


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October 14 1985

DECUS NEWSLETTER: Languages
Alan Folsom, Jr.
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East Country Line Road
Warminster PA 18974

RE: MERGED DECUS NEWSLETTERS

Dear Mr. Folsom,

I am writing regarding the recent decision to merge the DECUS newsletters. From my vantage point, it is a major turning point for DECUS. A broad range of information is being made easily accessible to ALL members of DECUS. This will strengthen the society by broadening the knowledge of all members who subscribe and thus help unify the diverse membership. I have little doubt that readers will start offering solutions in areas that they never before considered - it is impossible to resist browsing through the other newsletters once they are sitting in our hands.

May I suggest that the editors and readers stop complaining about this turn of events and start to take advantage of it?

Yours sincerely,

Doug Quine
Douglas B. Quine, Ph.D.
Associate Biophysicist
DECUS # 196649

xc: BUSINESS APP, DAARC, GRAPHICS, EDUSIG, HMS,
LARGE SYSTEMS, NETWORKS, PERSONAL COMPUTER,
RSX, VAX SYSTEMS, RT

FUN WITH DCL

This column is a feature of the Language & Tools section of the combined newsletter. Each month I will present some DCL commands or command procedures that have been found to be useful by me (or you) in software development. Useful hints and tricks that may be done with DCL will be included.

I am not restricting this to VAX/VMS. RT-11, RSTS/E, RSX-11M, all have DCL to some level. I encourage each of you to send us any DCL procedures, symbols, one-liners, etc that you find to be useful. Address your suggestions to me or Al Folsom, the Leverage newsletter editor.

This month I have a trick that I found in the V4 documentation on cluster management. It should be of use to most of you. Following is a segment of a command procedure to start a queue from a common command procedure on several nodes in a VAX cluster.

```
$ Node = F$getsysi("NODENAME") ! Find the name of the executing node
$ If_Moe = "!" ! Initialize node MOE name string
$ If_Larry = "!" ! Initialize node LARRY name string
$ If_Curley = "!" ! Initialize node CURLEY name string
$ If_'Node' = "" ! Cancel the initialization for
$ ! this node
$ If_Moe Define/system Sys$print Moe_Print
$ If_Larry Define/system Sys$print Larry_Print
$ If_Curley Define/system Sys$print Curley_Print
```

In this example the strings If_Moe, If_Larry, If_Curley are initialize to "!". The initialization is cancelled in the If_'Node' statement for the particular node on which the command procedure is executing. In the last three lines, the statement is treated as a comment if it is not the present node.

This technique may be used in many places, for example in SYLOGIN.COM to have sections of code specific to individual users. In this case, the user name could be substituted for the node name.

Earl S. Cory

366 North Nueve Court
Camarillo, California 93010

TEX Update

This article, by Pierre MacKay, will appear in Volume 6, Number 3 (November, 1985), of *TUGboat*, the newsletter of the TEX Users Group (TUG). Professor MacKay served as President of TUG from 1983 to 1985. TEX is a computer typesetting language written by Donald Knuth of Stanford. Versions of TEX are available for all DEC operating systems; all are in the public domain and information on how to obtain them is available through TUG.

The Languages and Tools SIG has sponsored several DECUS sessions on TEX. A number of SIG members have used the language extensively for technical typesetting. A facility for using TEX for composition of DECUS proceedings articles will be described in a session at Anaheim (LT008, Monday, 1:00-2:00 pm). DEC itself employs TEX as part of the system producing VMS V4 documentation.

Leslie Lamport, of DEC in Palo Alto, Calif., has authored an extension of TEX, called L^ATEX, designed especially for formatting of technical documents containing difficult material like tables and marginal notes. Dr. Lamport will teach a presymposium seminar on L^ATEX, sponsored by the SIG, in Anaheim on Sunday, December 8.

The Languages and Tool SIG believes that TEX and its related programs constitute an important new software tool. The SIG urges attendance at these TEX-related sessions, and is pleased to reprint Professor MacKay's article—which is really addressed to TEX users and members of the TEX Users Group. The SIG encourages participation in TUG, and a membership form is reproduced along with this article.

Professor MacKay is a professor of Classics at the University of Washington.

MESSAGE FROM THE OUTGOING PRESIDENT

Pierre MacKay

The August 1985 meeting of the TEX Users Group gave evidence of how fast TEX has matured since its coming out party in 1983. Rather to our surprise there was the announcement that a genuine bug had been found a month or so before and that a new, corrected version of TEX was to be made available as a result. That brings us up to version 1.5 and, since the bug was in a rather obscure corner of the code, it will have affected few users. (It involved the expansion of a `\toks` string in an `\edef` or `\xdef`.) Otherwise, the problems of programming and installation which were once so much a part of every TUG meeting were largely reduced to assurances of success. Even in the case of METAFONT it is no detraction from our deep appreciation of the work currently being done to provide working change files if we note that most of the success with the WEB system, and its constant refinement through experience with TEX, will carry over to METAFONT. We can expect the official release of METAFONT version 1.0 some time in October, and the ports to various systems should come soon after. We look forward most especially to the creation of interactive interfaces to METAFONT which are being developed by our pioneers.

By the time of the TUG meeting, METAFONT had already reached version 0.96 at Stanford, and some external ports were up to version 0.91 or above. The full set of new Computer Modern fonts (these will restore use of the designation CM) was nearing completion. Since Don has a sabbatical planned, he aims to have METAFONT, the CM fonts, and the METAFONTbook finished when he leaves Stanford. We shall not be left entirely without guidance during his absence, however. For a while at least, David Fuchs will continue to ensure the health of T_EX, METAFONT, and their close relatives as he has throughout the entire history of T_EX.

The most noticeable change in the focus of interest this year was the evidence of widespread commercial interest in T_EX. It was not that there were more vendor exhibits than before, but rather that all the exhibits seemed to cohere into the promise of an ever richer environment for the T_EX user. It is still a bit hard to get used to the idea that a program once criticized for its complexity, inaccessibility and sheer size is now being made available on the larger class of personal computer systems, but here it is. Owners of the IBM AT, or the larger versions of the IBM PC have the choice of two different implementations of T_EX and an implementation for the Macintosh was also shown. There are more output devices every year, and the quality tends to improve. Access to genuine typesetting is also becoming easier, though there is a great deal to be achieved still in that line. It is clear, however that the T_EX community has established itself as a significant market both here and overseas. Each new computer, display system, laser-printer system or typesetter that includes T_EX among its capabilities adds to the general range of capabilities for all of us, and we welcome all such developments enthusiastically.

These new developments, however, will bring a clearer responsibility to TUG and its members. As commercial developments proliferate, it will be up to TUG to maintain the standards and quality of the software. One of the most important functions of this organization will be to ensure that anything which is called T_EX (or METAFONT) genuinely is T_EX (or METAFONT). The mechanism for validation exists, and has been used to establish the credentials of the products mentioned above. I do not at present know of any problems of substandard T_EX except for those left over from T_EX78, but it would be surprising indeed if none ever developed.

Perhaps even more important than the maintenance of T_EX standards will be our insistence on the general character of T_EX and METAFONT as public domain software. The T_EX system in its largest sense is one of the most significant additions to the library of public domain software that has ever been offered. Every site coordinator is aware of the astonishment that often results from the simple reminder that T_EX is and has always been in the public domain. The ports of T_EX to small personal systems are examples of the sort of commercial development that TUG must support and encourage, but we must never forget that T_EX was given to us free. We are the beneficiaries of seven years of intense development effort, the results of which have been distributed throughout the computing world without restrictions. We can best show our appreciation by continuing to enhance the T_EX environment with supporting contributions of free public domain software.

I should like to close this message with a mention of the special support that has been given to TUG by Kellerman and Smith, who will be offering the Macintosh version of T_EX. They have already made other contributions to support TUG, and have now arranged to set aside a royalty on each sale for the further support of TUG. In addition, they have offered to fund the first of the Donald Knuth scholarships for the attendance at a T_EX training course in the coming year. I echo here the deep appreciation that was expressed by the the TUG membership at the business meeting this August.

L^AT_EX Update

Announcement of L^AT_EX Version 2.09

by Leslie Lamport

The end is in sight. L^AT_EX Version 2.09 is now available. This is the final, last, terminal, ultimate version. No more new features. Bugs will be fixed as usual. Some time soon, after people have had a chance to find bugs, this version will be renumbered to be Version 3.0, which sounds much more final than 2.09.

The L^AT_EX manual is now in production, and Addison-Wesley should have it in your local bookstore around the middle of October. Meanwhile, LERRATA.TEX will tell you what has changed. There's not too much that's new in Version 2.09. However, there are a lot of changes in the procedure for obtaining and setting up new versions, so read on.

The primary source of L^AT_EX files is now the <TEX.LATEX> directory on SU-SCORE. My new Arpanet address is lamport@decwrl. (I assume that people will be able to figure out what to append to this address when the net is fully fragmented.)

Users who read the new manual will have some new expectations. Installers will have to see that they are met, or they'll have some unhappy customers. The file LATEX.INS describes what must be done, but here's a short description.

The primary innovation is a *Local Guide* — a document that gives the site-specific information they need for using L^AT_EX. The file LOCAL.TEX contains the L^AT_EX input to produce the document in use at DEC's System Research Center in Palo Alto. The installer must modify this document for their site and arrange for its distribution. (It would be really neat if university book stores could provide the *Local Guide* along with the L^AT_EX manual.) Since LOCAL.TEX is written for an Ultrix system, it will be fairly easy to modify it for an Ultrix or Unix site.

There are also two short files that provide quick introductions to L^AT_EX. The shorter, SMALL.TEX, covers only the most elementary things. It contains a pointer to on-line documentation of how to use L^AT_EX at the specific site. The installer must modify that pointer and create the pointed-at documentation. The file SAMPLE.TEX is a more complete tutorial.

Another goodie that's in this release is the `proc` document-style option. It produces double-column conference proceedings format on 8¹/₂ × 11 paper. (Instead of sending in your camera-ready copy on those large sheets that they reduce by 25%, you can produce it on a high-quality output device and send it to them at its actual size.)

It has come to my attention that some installers have modified the standard document styles. **THIS IS STRICTLY FORBIDDEN.** The only changes to these styles that should be made are those necessitated by the use of different fonts. If you don't have a font that's called for in the standard style, do the best you can. If this produces noticeably different results, mention the difference in the *Local Guide*. Users expect the standard styles to produce the same output at different sites. If you must create local styles, give them different names and describe them in the *Local Guide*. The new manual describes what happens when SAMPLE.TEX is run with some modifications. Users will be unhappy if changes to the document style produce different results than is claimed in the book.

Speaking of document styles... before creating a document style for anyone else to use, talk to a typographic designer. People with no training in design who do their own formatting invariably do a rotten job. This is discussed in the new manual.

Enjoy.

(Reprinted from *The TUGboat*, the newsletter of the T_EX Users Group, Vol. 6, No. 3, November 1985.)

L^AT_EX: A PRESYMPOSIUM SEMINAR AT ANAHEIM

Among several Presymposium Seminars offered by The Languages and Tools SIG in Anaheim will be one entitled "Using L^AT_EX for Text Formatting". L^AT_EX is the document formatting version of Donald Knuth's powerful T_EX¹ typesetting system. And L^AT_EX's author, Leslie Lamport himself, has generously agreed to teach it!

The L^AT_EX manual, titled *L^AT_EX: A Document Preparation System*, has been published by Addison-Wesley. Seminar attendees will receive—free—a copy of this 240-page manual. Here's what Addison-Wesley says about it (from the back cover of the manual²):

L^AT_EX

A DOCUMENT PREPARATION SYSTEM

LESLIE LAMPORT

Do you write technical documents—articles, books, manuals, reports, theses? Do you use a computer for writing? Is the professional appearance of your work important?

If you answered yes to any of these questions, then L^AT_EX may well be of interest to you.

L^AT_EX is a special version of Donald Knuth's T_EX program for computer typesetting, a program particularly suited for producing high-quality documents with mathematical text. L^AT_EX is actually a collection of high-level commands, called "macros", which simplify the use of T_EX and make typesetting relatively easy. With L^AT_EX, users can concentrate more on their writing than on formatting detail, and still benefit from the sophisticated functionality of Knuth's system.

Leslie Lamport's development of the L^AT_EX system began three years ago. It has since gone through several revisions and is currently installed at a large number of T_EX sites around the world. There are L^AT_EX implementations for a wide variety of mainframe and minicomputers, and versions are even available for microcomputers.

L^AT_EX: A Document Preparation System describes the final version of L^AT_EX. The book is, at once, a definitive user's guide and a reference manual for L^AT_EX. It introduces readers to L^AT_EX, shows them how to get started with it, then gradually leads them through more advanced techniques. The book contains numerous examples that help explain system particulars. It also includes appendices on how to prepare slides (SLI_TE_X) and a bibliography database (BIB_TE_X), and how to use Knuth's own Plain T_EX commands. Like Knuth's guide and manual, *The T_EXbook*, also published by Addison-Wesley, this one is delightfully illustrated by Duane Bibby.

L^AT_EX: *A Document Preparation System* was typeset by the author with L^AT_EX.

Leslie Lamport is a computer scientist specializing in the area of parallel processing. Currently, he works at Digital Equipment Corporation in Palo Alto, California. Prior to this, he was at SRI International. He holds a Ph.D in mathematics from Brandeis.

ADDISON-WESLEY PUBLISHING COMPANY

ISBN 0-201-15790-X

SIGN UP NOW FOR THE PRESYMPOSIUM SEMINAR, "USING L^AT_EX FOR TEXT FORMATTING"—FIRST COME, FIRST SERVED.

¹T_EX is a trademark of the American Mathematical Society

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**ANAHEIM:
GREAT NEW ITEMS AT THE DECUS STORE!!**

You've noticed, no doubt, that the name of this SIG's newsletter is new. It used to be called "The HEAP", but that's been changed to "LEVERAGE" to reflect the SIG's new logo. The new logo, showing the Earth being moved by industrious programmers using a lever made of software tools, appears on the SIG's t-shirt, available in popular sizes at the DECUS Store. Be sure to get one and wear it everywhere! **LET THE WORLD KNOW: EVEN THE BEST OF PROGRAMMERS IS NAKED WITHOUT LANGUAGES AND TOOLS!**

Also at the Store you'll find the SIG's 3-hole binder to hold all your Session Notes. The binder's cover carries the LEVERAGE logo, too, and has a place to write in the name of the SIG whose Notes you put in it. When the Symposium is over, slide the cover insert out, take the binder home, and use it to hold whatever you like. Remember, **IF IT'S WORTHY OF NOTE, IT BELONGS IN THE NOTEWORTHY BINDER FROM LANGUAGES AND TOOLS!**

COME TO ANAHEIM! VISIT THE STORE!

Trip Report

STARS Methodology Workshop

22-26 July 1985

Colorado Springs.

Derek Hatley
Lear Siegler/Instrument Div

September 10, 1985

[Editors Note: This article contains sections of a trip report on the STARS (Software Technology for Adaptable, Reliable Systems) Methodology Workshop. Derek Hatley, the author, will be teaching a seminar on real time structured analysis at the Fall Symposium].

1 Overview

This Workshop was organized by the Methodology Working Group of the STARS Committee. It was the second meeting of this group (I did not participate in the first one), and was their first step towards selecting a development methodology or methodologies compatible with the Ada language. The whole selection process is expected to take several years.

The workshop consisted of:

- A 1-day comparative evaluation of three methods (Jackson, Orr, PPI)
- Six 1-day tutorials, spread over a three-day period, on specific methods (Jackson, TRW Sysrem, Yourdon Real-Time, Orr, HOS, Parnas)
- A 1½-day “workshop-within-a-workshop” applying each of the six methodologies to a single set of problems
- a ½-day comparison of the results of the six exercises

I attended the three-method evaluation; the Sysrem, Yourdon, and Parnas tutorials; and the Parnas workshop. I was unable to stay for the comparison session on the last day (Saturday).

This was an excellent meeting. The participants were pre-screened for their qualifications to contribute to the proceedings, so unlike most seminars, everyone was knowledgeable and there was lively debate in all sessions.

Of the sessions I attended, I was most impressed with the TRW Sysrem method, its major drawback being its complexity, and the Parnas method, which is much simpler, but not graphic. Parnas was the originator of the concepts of information hiding and abstraction, so is very highly

regarded. The principles are generally applicable to many methods. Many people there said they had heard of the LSI method and would like to learn more about it.

The next step in this activity is not yet established. There will probably be another meeting in about six months, but the format is TBD.

Most people there were not aware of the Structured Development Forum, so I had a short notice about it typed up, copied and distributed. I will similarly notify the sponsors of the next SDF of the STARS Methodology Working Group. *[Editor's Note: the Structured Development Forum is a user's group dedicated to promoting structured methodologies. More information can be obtained through: Garant and Associates; 45 Via Navarro; Greenbrae, CA 94904; (415)461-8244]*

2 Comparative Software Methodologies

This full-day session for the whole group was intended to give an overview of three methodologies followed by a panel and group discussion of their relative merits. The panel consisted of:

Grady Booch	Moderator	
Michael Jackson		Michael Jackson Systems Ltd.
Tom Love		Productivity Products International Ltd.
Ken Orr		Ken Orr & Associates
Bill Riddle	Conference Organizer	Rocky Mountain Inst. of Software Eng.

Michael Jackson's going-in position is that "top-down is no good"! This certainly caught people's attention, but did not win him many friends. His method (JSP/JSD... Jackson Structured Program Design/Jackson System Development), is oriented towards "problems for which the real world has strong sequential characteristics". Consistent with his no-top-down philosophy, the methods start by defining processes, then builds them up into a system. A key part of the methods seems to be to represent regular expressions in a diagrammatic form.

Ken Orr presented his familiar method: viewing the world through a network of brackets. It is (in my view) applicable only to systems which are virtually 100% data base manipulators.

Tom Love's method is really a structured programming method... Object Oriented Programming. He has developed an Object Oriented Compiler for the C language. A major (and very worthy) goal of his method is to create reusable software components. He gave examples which were all generic screens which could be customized for specific applications. His "objects" seem to be very analogous to well-defined black-box modules in SD, where the contents are hidden from the user.

The panel/group session became something of a free-for-all, with each "expert" extolling the merits of his method at the expense of the others. Grady Booch (author of a text on Ada) observed that the speakers had exhibited "active indifference" to Ada; this gave rise to some "active hostility" towards the language from the panel. It seems not everyone believes it is the answer to all our programming problems.

Booch suggested establishing a list of attributes by which methods should be evaluated. They included:

scope

application orientation

property orientation
extensibility
automatability
languages supported
usability/trainability
team/individual orientation
composition/decomposition
hardware/software trade-offs
(there were others I didn't catch)

No earth-shattering conclusions came out of this session, but it did air a lot of issues that would continue through the rest of the week.

3 An Integrated Data/Control Flow Specification Technique— Mack Alford, TRW Inc.

Alford is Chief Scientist at TRW, Huntsville.

This method, or set of methods, was developed over a ten-year period by TRW under contract to the Army. The original method is SREM (Software Requirements Engineering Methodology), which is now supplemented by SYSREM (you guess!), and a system of automated tools is being developed to support these methods. The final output of the method is a set of RNETs (Requirements NETs): flow graphs showing processes, decisions and control.

Alford's goal is a highly integrated methodology which does *everything* in one fell swoop! Two results arise out of this goal: first, although the names contain the word "requirements", the first step is to nail down design modules to an exact function and performance which must be rigidly followed throughout the rest of the process; second, since he tries to do so much, the method is *very* complicated. I challenged him on the first point; his response was essentially that you can't allow those designers all that freedom. On the second point, I and several others tried to get some idea of the total training time and the time to come up to speed for a beginner in the method. We never really did get an answer on this.

Despite these negative aspects, he has apparently achieved his objectives of a fully comprehensive method which encompasses both functional and performance specification, and has complete built-in traceability from start to finish. I don't believe any other method can claim that. It would, however, be very difficult to introduce it from scratch to another organization; the training cost and learning curve would be prohibitive.

We gathered too that the method is far from being universally used throughout TRW.

4 Software Cost Reduction Methodology—Paul Clements, Naval Research Laboratory

This is more commonly known as the Parnas method, after D. Parnas who originally developed it in the early 70s.

This is the original method employing abstraction and information-hiding on which so many methods and languages are now based.

There are three steps to the method, which is entirely textual:

1. specify requirements
2. divide the system into parts
3. abstract the interfaces

Specifying the requirements consists of filling out a standard form for each system output. The philosophy here is that once you have defined the output requirements you have defined the system requirements. They claim this philosophy prevents you from wasting time on unnecessary requirements...the only things considered are those directly related to a specific output. (This is an interesting idea worth thinking about whether you agree with it or not).

Dividing the system into parts is where the abstraction/information hiding part comes in. They recommend starting by considering factors related to the hardware, those related to the external behavior, and those related to the software, and to make those the three highest-level modules. Each module is considered a work assignment, not a system function, and each has an external specification on *what* it does, and a “secret”...the hidden information on *how* it does it.

Abstracting the interfaces consists of defining the rules by which the modules will communicate with each other. This is the essence of how the hidden information is kept hidden; only the interfaces are visible to users of a given module.

The people at NRL are currently applying the method to an experimental redesign of the software for the A7 Nav Computer. This system has been flying for a long time, and the records of the original design have been lost, so a comparison of man-hours will not be possible, but program size and performance will be compared.

The only thing wrong with this method is that it is not graphic, but I believe it easily could be made so. Many of the principles are used in other methods, including ours, but the idea of concentrating on output definition might be well worth considering, at least as a guideline. Clements brought along real, complete examples of the specifications, and they look very well organized.

5 Exercise Sessions

This was the culmination of the previous sessions...applying each of the six presented methods to a common set of problems. The group divided into six, each sub-group being joined by the advocate of one of the methods. A set of three problems were handed out:

- The Widget Warehouse Company—data processing type problem
- Cruise Control—embedded processing

- Spelling Checker—about equal data and control processing

I chose to join the Parnas group because that method seemed to be both practical and reasonably simple. We decided immediately that in the $1\frac{1}{2}$ days available there would only be time to address one of the problems, and we chose the cruise control one. (Later we learned that most of the other groups had made the same decision). As expected, listening to a talk on a method, and applying it to a real problem are two very different things. After a few prompts from Clements we got started and proceeded fairly smoothly. Everyone found it difficult to avoid using diagrams to get a handle on the problem, in fact we found ourselves drawing a state transition diagram very early on.

The method does force you to apply a rigid discipline to defining the requirements; through the use of specification forms which must be completely filled out before proceeding to the next step.

I had to leave before this exercise was complete, and missed the comparative evaluation of the six methods, but will be getting a report on it.

Languages and Tools Offers Five Seminars at Fall Symposium

In response to requests from the user community, the Languages and Tools SIG has arranged for two new seminars covering important aspects of software development. In addition, three popular seminars will be taught again. All seminars are being taught by leaders in their field. Because of limited enrollment, many seminars often fill up quickly. If you are interested in attending one of these seminars, or any of the seminars offered by other SIGs, be sure to send in your registration early. *The final cutoff date for all applications is November 11.*

- **Developing Medium Scale Applications using VAX Ada** – This seminar explains how to use the VAX Ada¹ compiler in the context of the VMS development environment, including library management, multi-tasking, debugging, efficiency and portability considerations, interfacing with non-Ada programs, use with CMS and LSE, and a wealth of other practical nuts-and-bolts information that will be invaluable for anyone contemplating applications development with VAX Ada. The seminar will be taught by Bevin Brett, a member of the VAX Ada development team.
- **Using LaTeX for Text Formatting** – LaTeX is a sophisticated and easy to use text formatting environment, based on the typesetting language TeX.² TeX was written by Donald Knuth of Stanford University, and is widely acclaimed for its ability to do high quality formatting, from complex mathematical equations to tables to overall page layout. It is in the public domain, and is in wide use throughout the world. One of its main drawbacks, however, is that it is very difficult to learn. The LaTeX environment is a set of macros built on

¹Ada is a trademark of the DoD

²TeX is a trademark of the American Mathematical Society

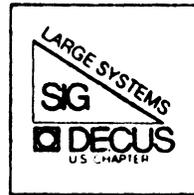
top of T_EX that shields the user from this complexity, while still providing the excellent formatting and layout capabilities T_EX is famous for. L_AT_EX also includes a package for formatting overhead transparencies, called SliT_EX. The L_AT_EX environment was developed by Leslie Lamport, and, by special request of the Languages and Tools SIG, he will be the one presenting this seminar. *[Editors Note: The paper on the STARS Methodology Working Group, elsewhere in this issue, was typeset with L_AT_EX. So was this article.]*

- **Software Development Tools** – This seminar will cover the types of software tools that are available to support all portions of the software life cycle. It will also give practical advice on how to obtain, support, and convince people to use these tools. The seminar will discuss tools for several systems, including VAX/VMS, VAX/UNIX,³ and RSX. Methodology support tools, rapid prototyping tools, code and configuration management tools, static analysis tools, testing tools and documentation tools are some of the topics that will be covered. Specific sources for obtaining tools, and actual case histories of tool use will be given. This seminar will be taught by Kathy Hornbach, Chair of the Languages and Tools SIG.
- **Structured Analysis for Real Time Systems** – This seminar describes a version of the Yourdon/DeMarco Structured Analysis method, with extensions for real time systems. An overview of the basic SA method is given, followed by a description of extensions to the basic method for handling the additional control requirements of real time systems. This extended method has been successfully applied to several large, complex real-time system developments. The method makes use of some well-known principles from finite-state machine theory, and combines them with the SA method in a way which retains the advantages of both. A number of automated tools are now commercially available for the basic SA method, and some of them are being extended to incorporate this real-time version. These tools will also be described. The seminar will be taught by Derek Hatley, of

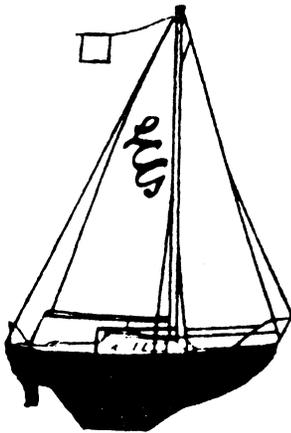
³UNIX is a trademark of Bell Labs

Lear Siegler/Instrument Division, the chief architect of the real time extensions.

- **Managing Software Projects with CMS and MMS** - DEC's Code Management System and Module Management System are powerful tools for managing source code during software development. A source code librarian like CMS helps to manage all versions of your project's source code; a module management tool like MMS will automatically rebuild your software correctly and efficiently. An overview of how the DEC/Test Manager can be used with CMS/MMS will also be presented. This seminar will discuss how these tools work, stressing how they fit into the software development process, rather than the details of particular commands. Strategies for tool introduction, and statistics on potential benefits are also given. Many examples are drawn from actual case histories. The seminar is being taught by Robert Gable, of Lear Siegler/Instrument Division, who was in charge of implementing CMS use on several large projects at LSI.



DIGITAL EQUIPMENT COMPUTER USERS SOCIETY



AT LARGE

The Newsletter of the Large Systems SIG

LARGE SYSTEMS

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Chairperson's Message

Leslie Maltz
Large Systems SIG

Summer seems to have departed for another year. Others could observe the fall foliage to determine the change in seasons; I can tell by the noticeable increase in usage of my DEC-10. Fall is here and thoughts turn to getting ready for the Fall Symposium and the other activities we often put off until after the summer. The Large Systems Menu and Ballot were mailed to all SIG members a while back; many ballots have been returned and the results tabulated. We thank those of you who took the time to contemplate the issues and indicated your priorities on the ballot. We will be presenting the results at the Symposium in Anaheim.

Early in October the SIG Steering Committee met to begin planning our activities for the rest of the fiscal year including the Dallas Symposium that will be held in April. Our agenda ranged from immediate issues related to the activities that we will be sponsoring in Anaheim to in-depth discussions of future directions for the SIG. We are evaluating alternative strategies and hope to begin charting a specific course in the coming months. Your input to this process is most desired. Please think about this issue and share your thoughts with us. We believe that we have some excellent ideas on how to continue to serve the needs of today's user community. Our commitment to today's installations will not waver. DEC-10 and -20 users are not disappearing from DECUS and neither will our support. Looking out into the future, we see opportunities for growth that will help us evolve over time into an even stronger SIG in the future.

On some more immediate issues, I think you'll see some new types of articles starting to appear in our section of the combined newsletter. We're sharpening our pencils (and our keyboards?) to begin preparing some articles that will become regular parts of our offering. We hope you will enjoy them and find them informative.

Let me whet your appetite for Anaheim. We are sponsoring a pre-symposium seminar on networking that should be of interest to many of you. Our symposium sessions are scheduled and ready to present. But the big surprise will be found at the DECUS Store. I urge you to visit the Store and look for our special item. It is a shirt with some incredible artwork and appropriate text. You'll have to see it for yourself. If you are not going to be attending the Symposium, you might ask someone who is to buy one for you. It's going to be a classic that you won't want to miss.

See you in Anaheim.

From The Editor

The SIG is planning several new and exciting ideas for At Large in the coming months. The first of these is a regular column by the world famous Doctor TOPS. He (or is it she?) will answer question sent in from your readers. The first appearance of this great column follows in this issue! Turn to page LS-14 and begin to appreciate the wealth of knowledge to come in future months.

If you have a question you would like to ask the good doctor just jot a note to me at the address below and I will make sure that he (she) gets it. Be looking for the column and the answer to the question you were brave enough to ask. And if you're not brave enough to ask, turn to it to see if you can benefit from someone else's question.

We are always looking for a articles of interest to Large Systems users. If you would like to write an article such as the one written by Betsy Ramsey please submit it to the address below.

See you in Anaheim.

Send questions and articles to:

Michael D. Joy
First Church of Christ, Scientist
Christian Science Center A-41
Boston, MA 02115

Spring 85 Menu Results

SUMMARY TABULATION OF THE SPRING 85 DECUS LARGE SYSTEMS SIG MENU by Chuck Bacon

This is the final summary of votes. All of the ballots have been proofread. 142 ballots were counted. Three ballots contained more than 25 votes (26+26+28 votes), and 23 contained less, averaging 18 votes. No adjustment was made for either; the instructions were clear enough, and the over-25 ballots were numerically unimportant.

Please remember that the integer part of the item number designates which part of the ballot the item is coming from. The four parts are: 1) Marketing, 2) Monitor/Network, 3) Layered Products, and 4) Integration. Some menu items may seem vague, but become clearer when their context is remembered.

The "suggested amount" part of item 1.7 was entered on 18 ballots with a total of \$346500, or an average of \$19250.

If any conclusions are to be reached, it is that the concerns of the majority of the members of the Large Systems SIG are clearly with the future of VMS. The top six menu items were all about VMS, and the bottom nine were all TOPS wishes. Shows where most of our members are going!

Column 1 is the ranking of the item.

Column 2 is the total votes cast for the item, and is the sort field.

Column 3 is the total number of ballots cast for this item.

Column 4 and beyond is the menu item as listed in the ballot.

1	151	57	4.7	Create a GALAXY-like environment for VMS
2	146	58	4.1	Support a foreign tape utility for VMS
3	134	49	4.3	Create a COMND JSYS equivalent as part of VMS
4	120	61	4.17	Provide timestamps in VMS batch log files
5	114	48	4.15	Improve tape/disk management in VMS
6	109	38	1.5	When TOPS-20 devel. ends, provide sources to all customers
7	109	54	4.9	Implement COMPIL-class commands in VMS
8	102	43	1.10	Extend KL trade-in offer annually
9	96	44	4.4	Implement a TOPS-20-like CLI for VMS
10	92	36	1.3	Continue providing TOPS training courses
11	88	37	1.8	Extend KL trade-in offer to other parts of the system
12	82	30	4.10	DEC-supported TCP/IP on VMS
13	76	30	1.7	TOPS third party license fee of \$80,000 is too much
14	70	28	4.18	VMS memory management in real time
15	69	29	2.8	Prevent ctrl-C or modification of LOGIN.COMD on -20
16	66	36	4.22	Support IBM standard label tapes (EBCDIC) in RMS
17	64	31	1.6	Reduce HSC-50 price to TOPS customers
18	64	31	2.10	Allow TOPS systems to boot from and swap to RAXX disks
19	63	25	4.8	Create Micro-VAX clusters on Ethernet or other medium
20	63	34	4.14	Extend VMS usernames to 39 characters
21	59	22	3.4	Extended addressing in TOPS-10 COBOL, FORTRAN and LINK
22	56	16	3.1	COBOL-8x on TOPS-10

23	55	30	2.13	Partial recognition of leading parts of filenames
24	53	18	1.12	Improve PULSAR reliability
25	52	28	1.2	Strong national or regional LCG sales support in lieu of local
26	52	29	1.9	Extend KL trade-in offer to other upgrades, not just 8600
27	50	26	1.4	Bring back the RP07. Reason: performance
28	50	21	4.20	Support TCP/IP over TTY lines
29	49	20	3.11	Autopatch should have REL files for vanilla sites
30	46	21	2.3	UDA-50-type interface for KL's; Cheaper than HSC
31	44	18	2.16	Don't drop FACT files in TOPS-10
32	44	18	3.5	Extended addressing for TOPS-10 utilities like SORT, LINK, DDT
33	44	25	4.13	Project accounting on VMS with independent billing identifiers
34	42	26	4.6	Produce an Integration Planning Guidebook
35	42	19	4.11	Add workload capability to SPM
36	41	17	2.7	Provide for EXEC based on username when directory is created
37	41	26	4.16	Enhance VAX TYPE command to include line and column ranges
38	39	29	2.5	TOPS-20 DELETE should allow DIRECTORY-like selection
39	37	23	3.12	LINK-20 should be made native
40	37	20	4.2	Create a HELP system on VMS based on TOPS keywords
41	36	23	2.12	Network support from COPY command on -20
42	35	12	4.5	Develop and support a TOPS-to-ULTRIX integration effort
43	32	15	3.3	Language Sensitive Editors for TOPS similar to VMS LSE
44	32	14	3.10	Provide support for long symbols in TOPS compilers, DDT
45	32	24	4.12	Give VMS MAIL the power to send to tree-structured usernames
46	30	7	3.2	Provide structured programming constructs in COBOL-10
47	29	12	2.2	Add /COLUMN, /LINE, etc. to TOPS-20 TYPE
48	28	15	2.4	Finish DECNET-10 DDP device implementation, to save DN20 cost
49	28	15	3.6	Tape and disk catalog for TOPS-20
50	27	13	2.1	Implement global ENQ/DEQ on clustered TOPS-20 systems
51	27	23	2.17	Relative directory addressing in TOPS-20
52	26	12	4.19	DEVELOP a TOPS-20 shell for ULTRIX
53	25	15	2.18	Customer-defined terminal support in EDT-20
54	24	14	3.7	Multiforking DDT for TOPS
55	23	13	4.21	Low-cost VAX attachment for TU72 tape drives
56	21	13	2.11	Supply MIC and PCL sources to source sites
57	20	13	2.21	Add AUTHOR specifier to DIRECTORY command
58	19	14	2.14	User groups on 20 as SIXBIT words instead of integers
59	17	7	1.1	Local sales staff need AI-based configuration tools
60	15	9	2.6	Accounting functions on -10 should be kept in a single program
61	13	4	2.22	Enhance Datatrieve-20 to support DBMS-20
62	13	5	3.8	Add network file access support to RMS-10
63	8	5	2.9	TA78 support from TOPS-20 clusters
64	6	5	2.15	Enhance date-time parsing in TOPS-20 to equal of TOPS-10
65	6	5	2.19	Implement PURGE command on TOPS-20
66	4	3	2.20	Allow GALAXY queues on non-PS: structures
67	3	3	1.11	Separate maintenance charges for MF20 into its component parts
68	3	2	3.9	DBMS-20 should support remote access from DATATRIEVE-32

Get Ready for Anaheim

by Robert McQueen

While everyone is preparing for Anaheim, I'm getting set for the Spring Symposium in Dallas, but first Anaheim. Upcoming at Anaheim the Large Systems SIG sessions will be starting on the second day, Tuesday. This was done to allow members a chance to attend the opening sessions given by other SIGs. The VAX SIG (in cooperation with the Large Systems SIG) is sponsoring the major VAXcluster sessions on Monday.

Tuesday will start off with the Large Systems SIG Roadmap session to be followed by the Product Panel. The rest of the day is devoted to comparisons of the VAX 8600 processor and integration sessions. Wednesday is TOPS-10 day, followed by Thursday TOPS-20 day. The final day of the symposium is Friday the 13th devoted to hardware and networks.

The SIG will also be sponsoring a pre-symposium seminar on Ethernet Planning. This seminar will cover the various Ethernet technologies, planning for an Ethernet, what you do when it breaks and some of the programming interfaces found in high end systems. If there is a large demand for the session, it may be repeated for the Dallas symposium. We are currently looking for topics for a pre-symposium seminar at Dallas. If you have one that you may be of general interest please contact either myself or Leslie Maltz.

While we are on the subject of Dallas, the deadline for submissions of sessions is December 17th. The SIG would like to see more user sessions, on any topic of interest to Large System users. The subject of the session could range from the XYZ mail system for TOPS-20 to how to deal with third party software vendors.

Anaheim at a Glance:

Tuesday, December 10, 1985

0900-1000	Large Systems SIG Roadmap
1000-1230	Large Systems Product Panel
1230-1330	Integration Working Group Meeting
1330-1430	Benchmarking the 8600: A DEC-20 User make the move to VAXland
1430-1500	TOPS/VMS Performance Comparison
1530-1600	Hardware Planning for Integration Customers
1600-1700	Alternative Migration Strategies for Large Systems
1700-1800	Integration Planning and Implementation - A Case Study

Wednesday, December 11, 1985

0900-1030	TOPS-10/20 Layered Products Update
1030-1100	LISP on 36-bit Systems: Past History and New Developments
1100-1200	TOPS-10 System Directions
1200-1300	TOPS-10 Utility Closet
1300-1430	TOPS-10 7.02 to 7.03 Technical Comparison

1430-1530 TOPS-10 7.03 User Panel
 1530-1700 TOPS-10 Crash Analysis
 1600-1730 VMS for TOPS Users: Watching Your VAX
 1700-1900 TOPS-10 Question and Answer
 1730-1800 TOPS-10/20 and VMS Product Comparisons
 1900-2000 Migration of FORTRAN Engineering Applications from TOPS to
 VMS
 2000-2100 TOPS-10/20 and Integration Documentation Status
 2130-2300 VMS Question and Answer Session for TOPS Users

Thursday, December 12, 1985

0900-1000 TOPS-20 System Directions
 1000-1100 TOPS-20 v6.1 for System Administrators
 1100-1200 TOPS-20 v6.1 for Users
 1200-1300 TOPS-20 v6.1 for System Programmers
 1330-1430 TOPS-20 Utility Closet
 1430-1600 TOPS-20 v6.1 Crash Analysis
 1600-1700 Large System SIG Town Meeting
 1700-1800 TOPS to VMS Business Application - Migration Case Study and
 Performance Comparison
 1700-1800 TOPS-20 v6.1 User Panel
 1800-1830 Converting Traffic-20 Applications to VAX/VMS in one easy
 Step
 1800-2000 TOPS-20 Question and Answer
 1830-2000 VMS for TOPS Users: System Management
 2000-2130 Managing a Large VAX Time-Sharing Environment
 2000-2100 Using Personal Computers with SYSTEM-1022
 2100-2200 Converting COBOL Applications from TOPS-10/20 to VAX/VMS
 2200-2230 Using a DBMS to Track Auction Price Flucuations

Friday, December 13, 1985

0900-1000 Connecting Laser Printers to Digital's Large Systems
 1000-1030 Integration Working Group Wrap-Up
 1000-1100 Personal Computers and Digital's Large Systems
 1030-1200 VMS for TOPS Users: End User Interface
 1100-1130 Ethernet Planning Session, TOPS-10/TOPS-20/VMS
 1200-1300 Integration Tools for TOPS customers
 1230-1300 Alternate Uses of DN20s with Ethernets
 1300-1430 VMS for TOPS Users: Program Development
 1300-1400 TOPS-20 TCP/IP
 1400-1500 TOPS-20 SNA Gateway User Panel
 1430-1530 Integration/Migration User Panel
 1530-1600 DIL/DIU User Panel

Coping Without Jupiter

by Betsy Ramsey

The purpose of this article is to inform the DEC-10/20 community of how one site, the American Mathematical Society, is dealing with the issue of how to proceed when our KL processors become saturated. It is the hope of the Society that other sites will also share their plans with the community through this (or some other) forum.

In 1983, the Computer Services Division (which was at that time the Information Systems Development department) of the American Mathematical Society undertook the reimplementation of its business data processing system. This project is known internally as AMS DB. The current system was written in the early 1970's in Cobol and was designed for a non-interactive batch processing computer, the RCA Spectra/70. In 1978, the Society had replaced their Spectra with a DECSYSTEM-2020, which was in turn replaced by a DECSYSTEM-2060 in 1980. In 1983, a second DECSYSTEM-2060 was added. The business system had simply been converted to operate on the DEC-20. The original intent of AMS DB was to redevelop the applications under a database management system that would run on the DEC-20.

CSD realized at the time that the two DEC-20s would not provide sufficient processing power for the new interactive system they planned to develop, but through non-disclosure meetings with Digital, they knew that a new high-end processor was in the works. When DEC cancelled the Jupiter project and the entire 36-bit line with it, CSD's AMS DB plans had to change.

Since it was no longer feasible to implement the new system on the DEC-20s, the Society decided to acquire new hardware for AMS DB. By this time, the initial user interviews for AMS DB had been done and a conceptual model of the database completed. The next step was to acquire a database management system and hardware on which to run it so that the logical model of the database could be developed.

Rather than choose the data base management system first, CSD elected to select the hardware, then the dbms. Of equal importance to the system (especially in light of DEC's Jupiter decision) were the qualifications of the vendor and the hardware. The vendor had to supply adequate support and commitment to the computer line, and the hardware had to provide sufficient power, a growth path, easy connection to other systems, and a good price/performance ratio. CSD intended to stay with the chosen vendor's equipment for the foreseeable future, so the choice was a critical one.

The details of the Society's search for a new system will be presented by Samuel Whidden, head of CSD, in his session "Benchmarking the 8600: A DEC-20 User Makes the Move to VAXland" at the fall DECUS symposium in Anaheim. Suffice it to say here that the field of six vendors who responded to our detailed RFP was narrowed to three (Digital, IBM and Data General), and then to one: Digital. The reasoning behind this choice is given in Whidden's session, which will be published in the "Proceedings of the Digital Equipment Computer User's Society".

The Society has purchased a VAX 8600 with 12 megabytes of memory running VMS, and has tentative plans to purchase another in 1987. The VAX 8600 will be used almost exclusively for AMS DB software development in 1986. When the first phase of that project is complete, users will begin to migrate from the DEC-20s onto the VAX.

In the meantime, the Society will purchase an additional megaword of MG-20 memory for one of its DEC-20s, bringing both systems up to 2MW. It plans to purchase one MCA-25 cache/pager upgrade to make the performance on the more heavily-loaded of the two systems more tolerable.

When TOPS-20 V6.1 is released, NIA-20s will be installed on both DEC-20s and they will join the VAX 8600 as DECnet nodes on the Society's newly-installed Ethernet local area network.

To ease the present shortage of DEC-20 computer ports, and to eliminate the need for hardware switch boxes, the Society has also purchased DEC's Ethernet terminal servers. One 32-line server was installed with the VAX 8600, and another will be installed in early 1986 as a port selector for the DEC-20s. Additional terminal servers will be purchased as they are required.

When the Society purchases a second VAX 8600 (or whatever VAX is most suitable at the time), the VAXs will be clustered together. For now, however, the RA disks are dedicated to the single VAX.

The Society plans to be independent of the DEC-20s by 1989. At about the time a second large VAX is required, CSD expects that one DEC-20 can be eliminated. By 1989, no production work will be performed on the DEC-20s.

Tape Copy

by Betsy Ramsey

At each symposium, various TOPS-20 programmers make their software utilities available through the tape copy process. These users submit their programs to the TOPS-20 Tape Copy Coordinator, who then collects them into a single volume. This tape is submitted to the National LUG Organization which assumes responsibility for its distribution. Users can get copies of the most recent tape from their Local Users Group. Copies of back symposium tapes are available from the DECUS Library.

The current (Spring 1985) TOPS-20 symposium tape is being prepared by Steve Attaya, the TOPS-20 Tape Copy Coordinator. By the time this issue is published, he will have sent the tape to the NLO for distribution. He will also submit a copy of the tape to the DECUS Library.

The "U.S. Chapter 1985/1986 DECUS Program Library Software Catalog" lists the back symposium tapes through Fall 1983. These tapes are numbered 20-SP-nn.

The Spring 1984 and Fall 1984 tapes are also available through the DECUS Library, although their abstracts did not make it into the 1985/86 catalog. The contents of these tapes are listed below.

20-SP-7 Symposium Tape from the DECSYSTEM-20 SIG, Spring 1984, Cincinnati (one 2400' reel)

various utilities including AMORT, DECLIB, FIND, KILLER, MERLIN, SPACE, UDIRECTORY and VTAPE from Peter Gergely, (Canadian) Defence Research Establishment Atlantic.

a logical name editor from Randy Weeton, Teradyne.

WINDOW (a screen-oriented job controller), UNITS2, LEARN- TERMINAL-TYPE and LOGOPR from Tad Marshall, Bankers Trust.

class scheduling utilities from Dave Edwards.

FIND and PCL routines from Dan Graham, NYU.

Bliss-36 utilities from Pat Farrell, American Management Systems.

KERMIT distribution from Columbia.

20-SP-8 Symposium Tape from the DECSYSTEM-20 SIG, Fall 1984, Anaheim
(two 2400' reels: utilities on one, KERMIT on the other)

various utilities including RFILL1 and TAPELL from Berkley
Shands, Emerson Electric.

GNOSIS (20-74 in the Program Library) CAI programs from Doug
Bickford, University of Vermont.

SYSLIB (a set of callable routines) and USR from Gregory
Scott, Energy Enterprises.

ANAL crash dump analysis program and monitor patch for GTJFN
enhancement from Andy Sweer, SUMEX.

KERMIT distribution from Columbia.

A DECUS Program Library Order Form is available in the 1985/86 catalog.
Orders will also be accepted at the Anaheim symposium.

Version 7 C Compiler

by Gregory Titus
New Mexico Tech Computer Center

The Computer Center of the New Mexico Institute of Mining and Technology, in Socorro, New Mexico, has recently finished production of a full version 7 C compiler and library for TOPS-20 KL systems.

The compiler runs in native mode under the TOPS-20 EXEC, and produces relocatable modules as output, instead of the assembly language one receives from the various PCC-based C compilers for the DEC-20. The speed of compilation tends to run between 15,000 and 40,000 lines of source code per CPU minute; the speed is of course strongly dependent upon how long the source lines are, but it is nevertheless fairly fast.

The compiler's scanner includes a full C preprocessor, and has the ability to separately list a C program as it is being compiled. If a listing is being made, switches allow a user to control the removal of white space and comments from it, and even to not run the preprocessor, if desired (this last capability is available only when the compiler is listing without producing an object file). All of the standard C preprocessor commands (#ifdef, etc.) are supported, with some restriction on the form of the expression for #if.

The parser is table-driven, using tables produced from an LALR grammar for C. It is quite strict about finding semantic errors, in fact almost as strict as is a Lint processor. Despite complaining about these errors, however, it can still produce correct code in nearly all cases. In a production compiler, this is preferable to the laissez faire attitude towards semantics usually found in C compilers.

Syntax errors are more troublesome to a compiler than errors in meaning. The parser uses a recently-developed algorithm to attempt to correct small syntax errors using the surrounding context, and only if this fails does it fall back on the usual "panic mode" recovery. Experience with this algorithm shows that it is quite good at fixing common problems in C programs, such as missing semicolons, without generating reams of spurious error messages.

A complete C standard library is included in the New Mexico Tech C system. The following table summarizes the major parts of the library:

Library Component	Available Functions
file-level I/O	open(), close(), read(), write(), lseek(), unlink(), and others

stream-level I/O	fopen(), fclose(), getchar(), putchar(), getc(), putc(), gets(), puts(), getw(), putw(), ftell(), fseek(), [f/s]printf(), [f/s]scanf(), and others; disk streams use PMAP% for speed.
dynamic memory allocation	malloc(), calloc(), realloc(), palloc(), free(), cfree()
string handling	strlen(), strcpy(), strcmp(), strncpy(), strncmp(), index(), rindex(), and others
time and date	date(), daytime(), adate(), idate(), walltime(), cputime()
subforking	execl(), execs()
interrupt handling	enapsi(), dispsi(), defsic(), enasic(), dissic()
COMND% jsys support	csb setup(), flddb (), and others
sys support	tb build(), tb luk(), tb add(), tb del()

In addition to the above, there are functions to execute a jsys, change the connected directory, set a file's protection, build a DEC-20 byte pointer, and a host of other operations. The library as a whole contains over 120 functions.

Users who need mathematical functions can call routines in DEC's FORTRAN library. The compiler recognizes the storage class specifier 'fortran' as being synonymous with 'extern', and generates the proper FORTRAN calling convention code to perform calls to functions declared this way. Users can also write their own FORTRAN functions and subroutines, then call them from their C programs.

This version 7 C package unfortunately does not include a symbolic debugger, like the one DEC's FORTRAN has. It does have some support for runtime debugging, though, over and above the use of debug writes and DDT. A feature of the compiler allows the user to generate traceable code for his program. With the aid of some routines in the library, the program can then report all function calls and returns as they are executed. Each call report gives the values of the arguments passed to the function, and each return report tells the returned value. The trace log can be sent to any stream (stderr is the default), and can be turned off and back on or changed to another stream, all at runtime. Slight modifications to the traced program are required to perform these last three operations; the modifications consist of adding code to call tracing-control functions in the library.

Planned future enhancements to this C package include providing support in the compiler for extended addressing, and ANSI conformance for the compiler. Extended addressing is now provided for FORTRAN programs, and greatly eases memory restrictions imposed by 18-bit addressing. C programs should also be able to take advantage of the larger available address space. ANSI conformance will obviously have to wait until there is an actual standard, but should not require a huge effort to perform.

TOPS-10 support is not planned. New Mexico Tech does not have a TOPS-10 machine, and so would be unable to test a -10 version of the package. Possibly some other site could perform the necessary changes and produce a TOPS-10 version that would also run on non-KL processors.

Documentation for the system includes complete user guides for the compiler and library, and a smaller help file for the compiler. Future documentation will include technical internals manuals for the compiler and library, as well.

New Mexico Tech C has been distributed to 14 other sites as of this writing. Support for the system is semi-formal; since the compiler and library are in fairly heavy use, they will certainly be actively maintained. Updates are sent out via either U.S. mail or USENET.

For more information on New Mexico Tech C, contact:

Greg Titus	..!ucbvax!unmvax!nmtvax!c20 (uucp)
NM Tech Computer Center	..!cmcl2!lanl!nmtvax!c20 (uucp)
Box W209 Campus Station	c20@nmt (CSnet)
Socorro, NM 87801	c20.nmt@csnet-relay (arpa)
(505) 835-5735	

Dear Doctor TOPS

Dear Doctor Tops,

I have a rather large disk farm at my site. My BACKUP listings can take 1/2 a box of paper at a shot. The listings should be shot, since my operators MUST manually thumb through the listings starting at page #1 to find the files they need to restore. If they are not carefull, they will miss a tape change header and spend several hours waiting for BACKUP to tell them they mounted the wrong tape (or worse, tell them BACKUP didn't find the file!). Isn't there a way to keep track of the tape numbers and save set names so that they aproximate the usefullness of a DUMPER or BACKUP listing from KL land?

Bitten By Backup

Dear Bitten,

You are very fortunate, for I have made that same discovery about BACKUP. Since the VAX never crashes or destroys its disks, it must be the user that caused the loss of files (RIGHT?). While it is very slow and boring to look though a BACKUP listing, it has to be done. After a few tries, I produced a simple program to format the BACKUP listings into something USEFULL! It includes save-set-name, date, and tape number. It is very interesting to note that BACKUP numbers tapes starting at ZERO. Every time you make a new save set, the number is reset. If you use three total tapes in a save, with the first save set going 1.5 tapes, BACKUP claims you are on tape #1. The second save set on that tape restarts numbering at tape #0. Oh, well, we worked around that. Included here are a few command files that make system backups a lot easier.

Dr. Tops

```

$ set noon
$ write sys$output " "
$ write sys$output "*****"
$ write sys$output "Backing up VMS4:"
$ write sys$output "*****"
$ write sys$output " "
$ set proc /name="Now on VMS4:"
$ reply/all/bell "BACKUP now working on VMS4:"
$ backup/ignore=interlock/record/list=vms4.lis -
VMS4:[*...] tape0:fullVMS4/block=16896
$ write sys$output " "
$ write sys$output "*****"
$ write sys$output "Backing up WORK:"
$ write sys$output "*****"
$ write sys$output " "
$ set proc /name="Now on WORK:"
$ reply/all/bell "BACKUP now working on WORK:"
$ backup/ignore=interlock/record/list=work.lis -
WORK:[*...] tape0:fullWORK/block=16896
$ write sys$output " "
$ write sys$output "*****"
$ write sys$output "Backing up cdm:"
$ write sys$output "*****"
$ write sys$output " "
$ reply/all/bell "BACKUP now working on cdm:"
$ set proc /name="Now on cdm:"
$ backup/ignore=interlock/record/list=cdm.lis -
cdm:[*...] tape0:fullcdm/block=16896

```

```

$! This file is tapeList.com
$! It processes the listings produced by the BACKUP/LIST command
$!
$ set noon
$ tape_number := 0001
$ inquire save_type "Enter Type of save"
$ if save_type .eqs. "" then $ save_type := General Tape Save
$ inquire input_file "Enter the listing name"
$ if input_file .eqs. "" then $ input_file := backup.lis
$ inquire save_set "Enter the save set name"
$ if save_set .eqs. "" then save_set := Fullsave.bck
$ backup/rew/list='input_file mfa0:'save_set/save
$ run mgr:fullsave
$ exit

```

```
#! This file is LISTINGS.COM
#! It processes the listings produced by the fullsave command file.
#!
$ tape_number := one
$ save_type := FullSave
$ input_file := vms4.lis
$ run fullsave
$ input_file := work.lis
$ run fullsave
$ input_file := cdm.lis
$ run fullsave
$ i o
#!delete *.lis;*
$ logo
```

```
#! This file is LISTINGS.COM
#! It processes the listings produced by the XINCSAVE command file.
#!
$ tape_number := 0001
$ save_type := Daily Incremental
$ input_file := vms4.lis
$ run fullsave
$ input_file := work.lis
$ run fullsave
$ input_file := cdm.lis
$ run fullsave
$ i o
$ delete *.lis;*
$ logo
```

```
#! This file is LISTINGS.COM
#! It processes the listings produced by the fullsave command file.
#!
$ tape_number := 0001
$ save_type := Weekly Fullsave
$ input_file := vms4.lis
$ run fullsave
$ input_file := work.lis
$ run fullsave
$ input_file := cdm.lis
$ run fullsave
$ i o
#!delete *.lis;*
$ logo
```

```

C
C THIS PROGRAM WILL CONVERT THE ORIGINAL FULLSAVE LISTINGS INTO
C SOME FORM OF READABLE LISTING.
C
integer termc,page,lines,tape,savelen
character*15 ttape
character*1 record(128)
character*128 rcrd
character*39 saveset
character*25 date
character*256 infile
character*32 savetype
equivalence (record(1),rcrd(1:1))
logical ok

C
C tape = 0
C page = 1
C ok = .true.

C
C get tape #
C
call lib$get_symbol('Tape_Number',ttape)
decode(4,1234,ttape)tape
1234 format(lz4)
C
C OPEN FILES
C
infile = ' '
call lib$get_symbol('input_file',infile,inlen)
if (inlen.le.0) then
    infile = 'backup.lis'
    inlen=10
endif
savetype = 'Fullsave'
call lib$get_symbol('save_type',savetype)
if (savetype.eq.' ') savetype = 'Fullsave'

C
open (unit=1, name=infile(1:inlen), status='old', readonly,
3 access = 'sequential', carriagecontrol='list')
infile(5:256) = infile(1:252)
infile(1:4) = 'lpt:'
C
open (unit=3, name='output.lis', status='new')
open (unit=3, name=infile(1:inlen+4), status='new')

C
C
C
1 read(1,100, end=9999) i,record
100 format(q,l28al)
C

if((rcrd(:1).eq.'[').or.(i.gt.0 .and. rcrd(:1).eq.' ')) then
    ok = .false.
    goto 2
else if(i.le.0) then
    goto 1
endif

C
C ELSE CONTINUE
C

```

```

if(rcrd(:4).eq.'Save')then
  saveset = rcrd(20:59)
  savelen = index(saveset,'volume')
  if(savelen .ne. 0) tape = tape + 1
  goto 1
else if(rcrd(:5).eq.'Date:')then
  date = rcrd(20:45)
  goto 1
else if(rcrd(:5).eq.'Buffe')then
  read(1,100, end=9999) i,record
  read(1,100, end=9999) i,record
  lines = 0
  goto 2
else if(rcrd(:8).eq.'Total of')then
  goto 9000
end if
goto 1

c
c WRITE HEADERS TO TOP OF PAGE
c
2   if (ok.ne. .false.) then
200  write(3,200) saveset,date,tape,page,savetype
1   format('LSaveset Name : ',a39,' Date : ',a25,' Tape ',
i3,' Page: ',i4,/, ' Type of save: ',la32,/)
  page = page + 1
  lines = 0
  endif
  ok = .true.
  goto 4

c
c PROCESS RECORDS. 57 LINES PER PAGE
c
3   read(1,100, end=9999) i,record
c
c
4   if((rcrd(:1).eq.'[').or.(i.gt.0 .and. rcrd(:1).eq.' ')) then
300  write(3,300)(rcrd(j:j),j=1,i)
  format(lx,l28al)
  lines = lines + 1
  else if (i.le.0) then
  goto 1
  endif

c
  if (lines.ne.57) then
  goto 3
  end if
  read(1,100, end=9999) i,record
  goto 2

c
9000 write(3,9010) (rcrd(j:j),j=1,i)
9010 format(/,lx,l28al)
c
9999 continue
  close (unit=1)
  close (unit=3)

c
  encode(4,1235,ttape)tape
1235 format(lz4)
  call lib$set_symbol('Tape_Number',ttape)
c
end

```

```

$ set nocontrol=y          !prevent breakins
$ set noon                 !no errors will cause death
$ !       This file performs an incremental save at 'P1' BPI
$ ! which saves all files since the last backup. Listing is to the
$ ! lineprinter
$ !
$ gj = ""                 !user name
$ gt = "terminal"
$ gx = f$getjpi(gj,gt)
$ if gx .nes. "OPA0:" then goto not_console
$!
$! set priority UP to get this done FAST
$!
$ set proc/priv=altpri
$ set proc/prio=6
$ x := define
$!
$! change system message
$!
$ x /system sys$announce "@sys$manager:incsave.txt"
$ reply/all/bell "System INCSAVE backup starting"
$!
$! compute name of saveset
$!
$ P3 = F$time()
$ d1 = f$extract(0,1,P3)
$ d2 = f$extract(1,1,P3)
$ if D1 .eqs. " " then D1 = "0"
$ P3 := 'D1''D2
$ set control=y          !allow ^Y to stop us now
$!
$! check for new tape, which needs a label
$!
$ Set proc /priv=all
$ inquire P2 "Is this a VIRGIN incsave tape? (Y, N, <CR>=N)"
$ if P2 .eqs. "" then P2 = "NO"
$ if P2 .eqs. "y" then P2 = "Y"
$ if P2 .eqs. "yes" then P2 = "Y"
$ if P2 .eqs. "Y" then init/den=6250/over=(acc,own,exp) tape0: incsav
$ mou/for tape0:
$ write sys$output "*****"
$ write sys$output "*"
$ write sys$output "*    Backing up VMS4:          *"
$ write sys$output "*"
$ write sys$output "*****"
$ set proc /name="Now on VMS4:"
$ backup/ignore=interlock/list=lca0:vms4.lis/record VMS4:[*...]/since=backu
tape0:VMS4in'P3/block=16800
$ write sys$output "*****"
$ write sys$output "*"
$ write sys$output "*    Backing up work:          *"
$ write sys$output "*"
$ write sys$output "*****"

```

```

$ set proc /name="Now on work:"
$ backup/ignore=interlock/list=lca0:work.lis/record work:[*...]/since=backup
  tape0:workin'P3/block=16800
$ write sys$output "*****"
$ write sys$output "*"
$ write sys$output "*    Backing up cdm:"
$ write sys$output "*"
$ write sys$output "*****"
$ set proc /name="Now on cdm:"
$ backup/ignore=interlock/list=lca0:cdm.lis/record cdm:[*...]/since=backup -
  tape0:cdmin'P3/block=16800
$!
$! clean up extra versions to free space on the disk
$!
$ pu VMS4:[*...]
$ pu work:[*...]
$ dism tape0:
$ show error
$!
$! restore system message
$!
$ x /system sys$announce "@sys$manager:announce.txt"
$ reply/all/bell "System INCSAVE backup complete"
$ logout/br
not_console:
$ write sys$output "INCSAVES must be performed on the console only"
$ logout/br

```

```

$ set nocontrol=y          !prevent funny stuff
$ set noon                 !disable error checking
!       This file performs a full save online at 'Pl' BPI
! with listing on the line printer
!       Pl = density
$ gj = ""                 !process name
$ gt := Terminal
$ gx = f$getjpi(gj,gt)
$ if gx .nes. "OPA0:" then goto not_console
$ set control=y           !return to usual ^Y mode
$ set proc/priv=all
$!
$! Disable logins during fulsave
$!
$ set logins /interactive=0
$ x := define
$ x /system /exec sys$announce "@sys$manager:fullsave.txt"
$!
$! show hardcopy of system status
$!
$ show users
$ show device
$ show error
$!
$! force a label on the tape
$!
$ init/den=6250 tape0: fulsav /over=(exp,own,acc)
$ mou/for tape0:
$ write sys$output " "
$ write sys$output "*****"
$ write sys$output "Interlock and Verify errors may be ignored"
$ write sys$output "*****"
$ write sys$output " "
$!
$! do the actual tape save now
$!
$ @backup
$!
$! clean up after the show
$!
$ dism tape0:
$ write sys$output "*****"
$ write sys$output "Now Purging multiple generations *****"
$ write sys$output "*****"
$ set proc /name="Now purging..."
$ purge vms4:[*...]
$ purge work:[*...]
$!
$! turn logins back on
$!
$ set login /interactive=64
$ x /system /exec sys$announce "@sys$manager:announce.txt"
$ show error
$ submit listings.com
$ logout/full
not_console:
$ write sys$output "Full saves must be done from the console"
$ logout/br

```

MUMPS



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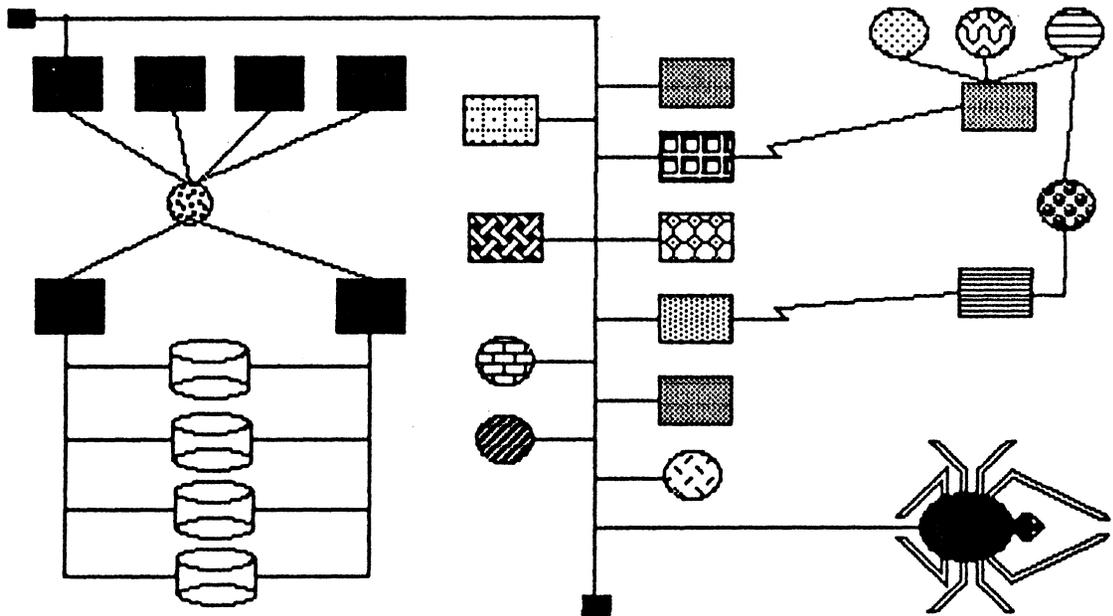
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The Networks Special Interest Group (SIG) is one of 23 SIG's within in Digital Equipment Computer User's Society (DECUS). The main purpose of the Networks SIG is to promulgate information concerning the use, development, and standardization of network products that function or involve Digital Equipment Corporation systems. Additional functions of the SIG include the coordination and scheduling of symposia sessions, providing methods for free-flow communications, publication of the Networks SIG newsletter NETWords, participation in domestic and international standards committees, input to Digital for new products and corrections to existing products, promotion of working groups for special network needs and topics, and many, many other functions.

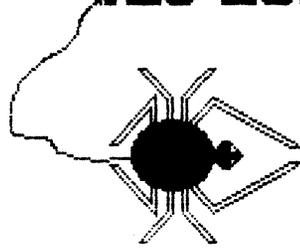
The Networks SIG Steering Committee invites you to participate in the Networks SIG. There are many ways that you can help the Networks SIG. Some of those include chairing sessions at symposium, participation in the various Networks SIG working groups, participation in special research projects, and others. If you are interested in devoting your time and expertise, contact any of the steering committee members.

DECUS is run entirely by volunteer leadership. Help us make DECUS and the Networks SIG better - take an active part in **your** SIG!

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The Editor's Cobwebb



By Vickie Hancock

This month we have a wide variety of articles to soothe your network palate. Starting with this issue, a column called The End Node will be appearing each month. The End Node will cover a wide variety of network-related topics, problems, and solutions. You are encouraged to submit questions and problems to The End Node in care of little 'ole me.

First off, thanks to all of you who have been so kind and sent in your notes and articles. If you do not see your article in this issue, don't panic! We have a limitation on the number of pages we are allowed to publish so don't get discouraged and keep them coming in!

As you read this, I'm sure that you will be making final preparations for the Anaheim symposium. I'm looking forward to it as I'm sure those of you who will be attending will be as well. However, even though we are close to Anaheim, it's time to start getting ready for Dallas. There is a short time window between Anaheim and Dallas, so if you plan on attending Dallas, get your corporate people in the loop now and get your Call for Participation (CFP in DECUS lingo) in if you plan on presenting a paper in Dallas.

If you are still debating on whether or not to attend the Dallas symposium, let me assure you that you will be missing out on an experience that is not soon to be repeated. For Dallas, Sandy Traylor has lined up Commodore Grace Murray Hopper, USN (yes, Ms. COBOL herself), and our own Bill Hancock as keynote speakers. Also, we understand that there will be some very special exhibitions, events, and "souvenirs," so there will be a lot going on and you won't want to miss out!

See you next issue!!

VH

How to Submit an Article

NETWords is a monthly publication of the Digital Equipment Computer Users Society (DECUS) Networks Special Interest Group (SIG). Readers are urged to **contribute their articles, hints, bugs, patches, and other network related literature and information to:**

Vickie Hancock
NETWords Editor
2510 Limestone Ln.
Garland, Texas 75040
(214) 495-7353

We can accept **clear, readable hardcopy** or **any of the following media:**

Magnetic tape (800, 1600 or 6250 BPI)
RX01 floppy disk
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We prefer that media other than Mackintosh disks be in **VMS BACKUP** format, **EXCHANGE (FLX)**, or **ODS II** structured disks. If sending in a Mackintosh disk, please send your submission in MACWrite, MACPaint or, MACDraw. We can also accept JAZZ format or EXCEL format.

DECUS and the Networks SIG reserve the right to edit or modify any submissions to NETWords for any reason without prior notification to the author. Additionally, while DECUS and the Networks SIG continually strive for technical and literary accuracy in articles published, neither are responsible for technical or literary errors that may be printed. We regret that we cannot accept copyrighted articles for publication, however copyrighted software listing or hardware diagrams are acceptable provided the submitter is the author of the work and a signed note authorizing reproduction by NETWords is included.

Submissions should be in English, where possible, but any language is acceptable. We can provide translation for Spanish, German, Italian, French, Portuguese, Japanese, some Slavic and some middle eastern languages. Please specify on your submission if you wish your submission to be translated.

And from DECUS Europe...

At the European DECUS Symposium (17-20 September 1985) at Cannes, France, the Networks SIG acted on a suggestion presented at its annual business meeting concerning a coordinated DEC pricing policy for the Coloured Book Software from UWIST. The concern has arisen for two main reasons: firstly, the importance of widely available and reasonably priced networking software in accordance with OSI standards has already attained universal recognition and support. Secondly it has been discovered that in some European countries academic discounts are being applied generally, whereas in other countries the commercial price is being strictly enforced.

The membership of the European Networks SIG voted to accept the following resolution to be forwarded by the SIG Chairman for direct action by DEC:

"The European DECUS Networks SIG requests that DIGITAL provide a coordinated pricing policy on networking software, particularly DCS, within Europe. This is particularly important for new and upgraded products, as OSI and interim standards are implemented by DEC."

It should be noted that the resolution goes further than just the Coloured Book Software originally envisioned, as the membership attaches great importance to this issue.

F.T. Parkel
Networks SIG Chairman
19 September 1985

KERMIT VAX-TO-SEL

Bob Wilson of General Electric presented this **First Place** tale of woe at the Network SIG Magic session in New Orleans.

Last year, some of our application programmers began working with a SEL-32. But the SEL-32 is a good-news, bad-news system; thought fast, it gives wrong answers. For example, SEL FORTRAN allows "ENDDO" with "DO UNTIL" and "DO WHILE" but generates bad code with "DO I=1,n" without an error message.

The SEL programmers use the VAX for RUNOFF and the EDT editor. Initially, they transferred their code generated on the VAX to the SEL via tape. I proposed using KERMIT between the VAX and the SEL to avoid the tape handling.

I soon discovered the SEL terminal handler violates two KERMIT preconditions - it always echoes characters and can not read ASCII control codes (i.e., MARK). Though this explained the absence of a SEL based KERMIT, I knew the VAX KERMIT could work-around both problems.

The VAX would treat its' echoed packets as noise if different MARK characters, packet start, were used for the SEL and VAX. Even though the SEL can not read the VAX MARK character, tacking it on the front of the buffer allows calculation of the CRC code to verify the data.

So I wrote a simple Kermit server for the SEL making frequent references to the KERMIT PROTOCOL MANUAL from Columbia University. After connecting two VAX ports with a NULL modem cable, I debugged most of the code, ported the software to the SEL, corrected the FORTRAN differences, and began integration only to find one unforeseen problem.

Five or more KERMIT packets would cross the link when the SEL server would abort by halting with the message, "ABORT, DEBUG, OR CONTINUE". This message indicates the SEL received a BREAK key which is somewhat like the VAX CONTROL-Y, it halts or suspends a program. But BREAK is not an ASCII character and the VAX terminal driver has no BREAK function. The VT100 BREAK key ties the terminal line to ground for a

Note:

The author would like to thank the panel for illuminating the problem with their excellent hand waving which represented the line voltage levels.

For the work-around, the VAX KERMIT scans the packets for "?" before transmission. Should it find a "?" in the packet, all characters preceeding are sent, the VAX pauses, the "?" character is sent, the VAX pauses, and the remaining packet text is sent. Though a little slower, KERMIT's ACK/NAK handshake keeps the VAX from over-running the SEL during file transfers.

I only implemented server-mode, text file transfers from the VAX to the SEL. The SEL is so user hostile, no one has developed software on it worth transferring to the VAX.

I later discovered the SEL treats parity errors as BREAK which further reduces KERMIT's error handling after line errors.

Note:

If you should be cursed with a SEL-32, either send a tape with return postage or send me a dial-up number, unprivileged account id (i.e. BWILSON bwilson) on a system with KERMIT to:

Bob Wilson
General Electric Company
4701 Forbes Blvd.
Lanham MD, 20706
(301) 459-2900

Lou Briscoe
Monsanto - mail zone V2D
800 N. Lindbergh Blvd.
St. Louis, MO 63167

June 21, 1985

Vickie Hancock
NETWORKS Newsletter Editor
2510 Limestone Ln.
Garland, Texas 75040

Dear Vickie,

Sorry for the delay, but here's my *award winning* second place story:

My name is Lou Briscoe, and I'm system manager for Monsanto Agricultural Research's laboratory data collection systems. Quite a while ago we were having problems with this communications controller. It sits out in a hallway near the side. We were getting these intermittent crashes ever since we installed it in that hallway. We investigated the problem, and after quite a lot of work we discovered that it only crashed when someone walked down the hallway on that same side of the hall. So then we started checking grounding problems, and static electricity problems; and nothing turned up. Well, to make a long story short, out of exasperation we started digging into the schematics for the controller itself, and one of our sharp electrical engineering types discovered that they used a light sensitive diode in the works. So whenever someone walked down the hallway on that side of the hall, they cut off the light to the controller and the diode didn't function the same way, and the controller crashed. True to American ingenuity we came up with a brilliant fix - we installed a light inside the controller.


Lou Briscoe

The End Node

The Politics of Networking

In my earlier days of technical absorbence, I spent most of my time worrying about whether I was doing the right technical "thing" or not. Many times I would spend many hours contemplating the ultimate protocol or the ideal network application. This, of course, would many times fall on deaf management ears which is something I found very hard to understand. Why was it that management rarely paid attention to my grandiose ideas and lofty thoughts? Worse yet, why was it that it seemed that I was constantly avoiding corporate politics?

Technical people tend to sneer loudly and longly at corporate politics. It would be nice if there were none, but companies seem to thrive on politics so ignoring them does nothing but compound the problem of dealing with politics. In the networked environment, however, politics take on a whole new role.

In my years of networking experience, I have spent many hours explaining the networks I design and implement over and over again to corporate management structures. The reason for the re-explanation is frequently due to the diversity of corporate management at different locations the network connects to. Fred, for instance, in Denver has a computer room full of VAXen and PDP's. John, in Tucson, has a similar set-up. Jeff in L.A. again, like the good corporate man he is, insists on equal treatment and has a like configuration. Now Charles, the president of the company, sends out an edict that all computers will communicate with each other and that said communication will be in the most efficient method possible. Enter me. My responsibility was to a) configure a least-cost network, and b) implement same. Sounds good on paper, right? That's about as far as it got for a long time.

When designing and configuring networks, funny things creep in that make no logical sense, have no basis for reasonable reality, and are of questionable use. These things are called politics. Many companies seem to have this implicit check list: network design, check; documentation, check; politics, double check (got make sure to get that included, just for excitement). Anyway, this network was no difference. Because of a deal the company had set up with a long distance phone carrier, the cheapest phone line route was to connect LA to Tucson and Tucson to Denver, utilizing Tucson as a routing point for traffic to/from Denver. From a network configuratiuon point of view, the situation was inexpensive, throughput was reasonable, queueing delay tolerable, and maintainability was reasonable. That, unfortunately, was the easy part. Implementation, well, that turned out to be a different story.

It seems that good 'ole Fred in Denver and John in Tucson are not the best of friends. As a matter of fact, there was very little love lost between the two and both tended to avoid one another like the plague. As a result, the use of the Tucson facility as the routing point was absolutely unacceptable to good 'ole Fred. Not that the routing was a bad thing or that the financials were bad. No, that wasn't it at all. The problem was that Fred's data was dependent upon John's center routing data to and fro and Fred did not feel comfortable with that idea. Also, Fred was paranoid enough to feel that John might deliberately try to cause general communications problems that

could disrupt, severely, Fred's ability to do business and look wonderful in the management eye. Such is the nature of politics: an emotional response to a business situation. Fred, intellectually, understands that the best method to set up the network is through Tucson, but he does not like the idea of depending upon John to provide him his data communications reliability. John, on the other hand, understands the kind of hold that he would have over Fred and, as such, was urging that the network be configured and installed as quickly as possible so that it would be configured as drawn up. This way, John would have some control over Fred, further enhancing his position in the company and also control the inter-corporate "rival."

What we have just seen is not all that unusual. The more nodes a network has, the better the chance of politics invading the design and operations of the network. This is especially prevalent where there is competition between the various centers networked together and the centers are dependent upon each other for technical support and assistance. Worse yet is when each of the centers are contributing "funds" towards operation of the network and/or systems they use. In that type of environment, each center can develop either pro-support services or anti-support services depending upon the management flavor of each center or the competency (at least the perceived competency) of the support staff. Another problem of the central support with contributed funds issue is the problem of machine ownership. Ultimately, all machines are owned by the corporate. However, since each center manager is graded based upon his/her performance and fiscal prudence, they will get very possessive over the systems and resources they have a day-to-day interest in using. As a result, soon the systems that are "owned" by the corporation are now "owned" by the center and corporate support staff have to get permission to "work on OUR machines." The OUR machine syndrome is caused by upper corporate management not understanding the "who owns what" problem and keeping the ownership and support issues controlled by corporate policy or edict. Center managers then develop turfish attitudes towards "their" systems and network components and can be very difficult to deal with if they are not getting good corporate systems and network support.

Distribution of locations, a common trait of larger networks, increases the political problem of network design and management. Systems design is usually done by someone familiar with local applications or needs (possibly even the local support personnel are involved). Networks, however, have to look at the corporate problem and sometimes the corporate need is outweighed by the individual center's need, much to the chagrin of the individual center. As a result, the networking support types are looked upon with disdain by the maligned center and things go downhill from there. Geographical dispersion also precludes the use of good, solid communications between PEOPLE. Many times, body english, gestures, attitudes, and other traits are easily recognized in a face-to-face that are not recognized in electronic mail or over the phone conversations. It is, therefore, very important to set up a good, solid rapport with the management of each geographical location so that everyone knows each other and a good feeling of support is available across all centers the network touches. Users at all locations will talk to each other and if one center is being treated like the bastard child, you can bet that the remainder of the users at the other locations will know about it in a short amount of time. Bad news travels fast.

In summary, politics and networks go hand-in-hand. There is no way to avoid it and avoiding network politics will do nothing but increase the political problem as a whole. To help you keep

the politics to a minimum, consider the following items for prospective network managers and support personnel:

1. Communications between people is all-important. Always spend a great deal of time describing and documenting for the user base what you are doing and why.
2. Always get the local management at each location involved. Non-involvement will increase the local paranoia (which is always there).
3. Don't underestimate the most lowly of user on the network. Secretaries can wreak more havoc than anyone when maligned. Keep all users content, where possible and reasonable, and remember that the boss's secretary uses the network too.
4. Good rapport is all-important when dealing with various locations. Get to know the users and management at all locations and keep everyone in the loop. They WILL talk to each other, so don't be surprised to find out that an off-hand comment in Denver end up being an ISSUE in L.A.
5. Taking an attitude of "I'm technical and don't do politics" will do nothing but increase your political problems. In the networked environment, politics are part of the design and support so get used to it.
6. If possible, get some sensitization training. There is nothing worse to a user than a surly answer from the support organization. Always be empathetic for the user, but keep the sympathy to a minimum.
7. If you do not write well, get some training. If your secretary writes well (many are very good), let him/her clean up any corporate communications you issue. Written communication is very important to tracing problems in the political structure.
8. If a political situation arises take ACTION but, under no circumstances, REACT to the situation. Many political moves happen due to power plays, inconsideration, or just to stir things up. If one arises, never let your emotions get in the way of solid, logical reasoning and fact. It's real easy to get caught up in the flurry of politics if one is not very careful. Be ever watchful, however, to identify a political problem from a real problem. If there is a system down, that's a real problem and don't escalate it into a political one.

Using DECnet for System Management

David W. Bynon
Private Systems Consultant
Washington, D.C.

I recently completed installing a 30-node DECnet (Ethernet-based) network, comprised of a 4-node VAXcluster (785's) and VAXstation 1's. The VAXstation's were selected for their multi-window capability and are provided to each user as a personal work station. All connections to the VAXcluster are made via VAXstation local connections and Ethernet. No local terminals exist on the 785's.

As System Manager, most of my time was consumed maintaining the VAXstation's. Generally, when one of the MicroVAX's needed an update and/or management, they all did. Setting HOST to each machine was not only boring but time consuming as well.

To help solve my dilemma, I designed two simple command procedures to do the dirty work for me: "**NETSYSMGR**" and "**SYSMGRJOB**".

NETSYSMGR

The Network System Manager procedure uses a data base of node names (NODES.DAT by default) and a job procedure (SYSMGRJOB.COM) file to perform most routine system management functions. An error log (NETSYSMGR.LOG) is produced for nodes that could not be reached or failed.

The function of NETSYSMGR is to copy the job file to each node in the data base and invoke it remotely from the System Manager's node. The job is displayed on the System Manager's display as it executes.

NETSYSMGR accepts an alternate node name data base as a parameter. Example:

```
@NETSYSMGR ACCOUNTING.DAT
```

SYSMGRJOB

The System Manager Job procedure is modified, in a special area, each time it is used. When invoked, by the remote task NETSYSMGR, SYSMGRJOB directs its output to SYS\$NET then executes the statements entered by the system manager. When SYSMGRJOB has completed it deletes its self.

NODE NAME DATA BASE

The node name data base is simply a text file, created with EDT, containing the node names to be managed. For example:

```
SPLASH
DUCK
MOON
BOSTON
.
.
.
BYNON
WILLIS
```

Each entry must be on a separate line, without leading or trailing spaces.

SET UP

The account (normally the system manager's) being used to execute NETSYSMGR must have proxy privileges set up on each node it tries to access. The proxy data base is built with AUTHORIZE, using the /PROXY switch.

NETSYSMGR.COM

```

$!-----!
$! Network System Manager v1.1  5 Oct, 1985      !
$! Copyright(c), David W. Bynon, 1985          !
$!-----!
$
$
$   goto setup
$ START:
$
$! Set up the display
$
$   CLR
$   SAY BOLD,ESCAPE,"1;27H-- Network System Manager --"
$   SAY ESCAPE,"3;24r"           ! Set up scrolling region
$
$! Open the node data base file and define an error trap
$
$   IF ""P1"" .EQS. "" THEN GOTO OPEN_DEFAULT
$   OPEN/READ INFILE 'P1'
$   GOTO ERROR_SETUP
$ OPEN_DEFAULT:
$   OPEN/READ INFILE NODES.DAT
$
$! Set up where to go if an error occurs
$
$ ERROR_SETUP:
$   ON WARNING THEN GOTO NODE_PROBLEM
$
$! Main processing loop
$
$ MAIN_LOOP:
$   READ/END_OF_FILE=EXIT INFILE NODE
$   CLB
$   SAY BOLD,"Copying SYSMGRJOB.COM to "NODE":...",NORM
$   COPY SYSMGRJOB.COM 'NODE':SYS$MANAGER:
```

```

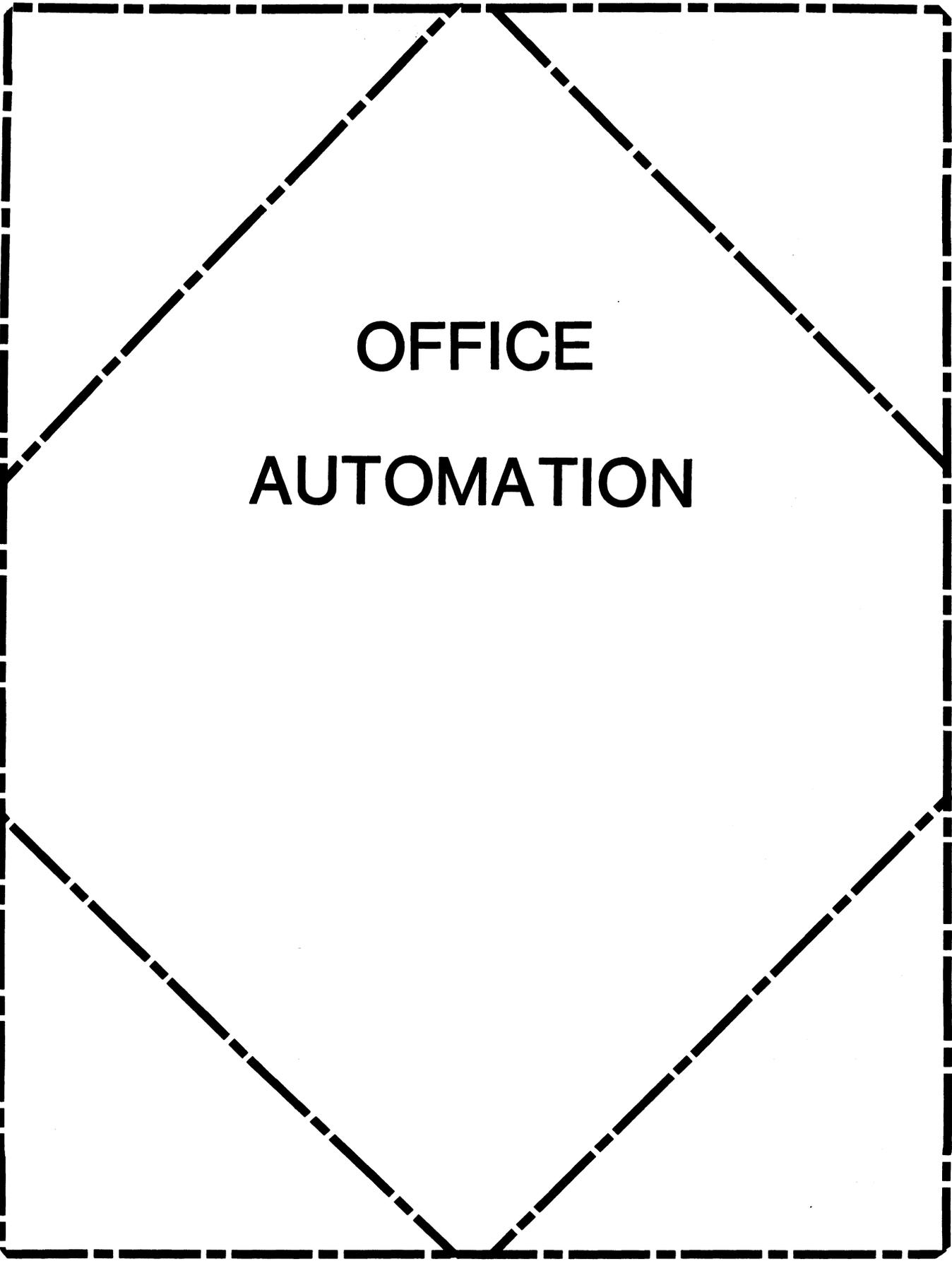
$ SAY BOLD,"Executing the procedure...".norm
$ TYPE 'NODE':"TASK=SYSMGRJOB"
$ GOTO MAIN_LOOP
$
$! Log the node name and time a problem occurred
$
$ NODE_PROBLEM:
$ IF F$SEARCH("NETSYSMGR.LOG") .EQS. "" THEN CREATE NETSYSMGR.LOG
$ OPEN/APPEND OUTFILE NETSYSMGR.LOG
$ TIME = F$TIME()
$ WRITE OUTFILE "ERROR REACHING/MANAGING NODE 'NODE' AT 'TIME'"
$ CLOSE OUTFILE
$ GOTO MAIN_LOOP
$
$ Before exiting, close the data file and reset the display
$
$ EXIT:
$ CLOSE INFILE
$ SAY ESCAPE,"1,24r" ! Restore full screen
$ CLR
$ SAY "Remote System Manager completed."
$ EXIT
$
$ SETUP:
$
$! Define some escape sequences for terminal control
$
$ X = F$GETDVI("TT","DEVTYPE")
$ TERM = ""
$ IF X .EQ. 96 THEN TERM="VT100"
$ IF X .EQ. 110 THEN TERM="VT240"
$ IF TERM .EQS. "" THEN EXIT
$ CSI[0,8]== 155
$ ESC[0,8]== 27
$ BRACKET := [
$ ESCAPE == ""
$ IF TERM .EQS. "VT100" THEN ESCAPE == ESC+BRACKET
$ IF TERM .EQS. "VT240" THEN ESCAPE == CSI
$ CLR == "write sys$output ESCAPE,""H"",escape,""J""
$ CLB == "write sys$output escape,""4,1H"",escape,""J""
$ SAY == "write sys$output"

```

```
$ norm == ""escape'0m"esc'5"  
$ bold == ""escape'1m"  
$  
$ GOTO START
```

```
+-----+  
| SYSMGRJOB.COM |  
+-----+
```

```
$ goto setup  
$ JOB:  
$! -- ENTER THE JOB HERE --  
$  
$  
$! -- the LEAVE STATEMENTS BELOW HERE ALONE --  
$!  
$!-----!  
$! System Manager Network Job Procedure v1.0 !  
$! Copyright (c), David W. Bynon, 1985 !  
$!-----!  
$  
$ delete sys$manager:sysmgrjob.com;*  
$ exit  
$ SETUP:  
$ if f$mode().nes. "NETWORK" then logout/brief  
$ define sys$output sys$net  
$ goto job
```



**OFFICE
AUTOMATION**



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CHAIRMAN'S CHAT

While office automation continues its impact as a catalyst for change, its meaning, scope, implementation, and value continue to be challenged. There are stunning successes and disappointing disasters along the office productivity path we are traveling. As in many other situations, we can learn from others who have done or are trying to do what we are doing in automating the offices we support. The need to share knowledge about the implications of OA and its tools led to the formation of this SIG. Being a forum for information exchange remains our only purpose.

A unique aspect of our endeavors is the management orientation of many of our activities. While we provide technical information to those who need it, the SIG focuses on the even greater need for all levels of management to realize the pervasiveness of the change that OA can generate. Therefore, the Office Automation SIG has established a multi-level program which provides a Digital co-sponsored senior executive, one day seminar at each Symposia. In addition to mid-level management and first line supervisor sessions which are presented throughout Symposia week, detailed technical sessions are presented for those who need to know the inner workings of the various products and tools that are available.

Coupled with this newsletter and local user group activities, the Symposia completes and is the most significant part of our office automation information exchange program. We hope it is helping you. Remember, the SIG Steering Committee members can usually put you in touch with someone who can provide you assistance. If you have any suggestions, we'd are very interested in hearing them. Please call, write, or talk to us at Symposia.

ONE FINAL NOTE: An election will be held for a new OA SIG Chair at the beginning of the Anaheim Symposia. I will remain a member of the OA SIG Steering committee but I feel that it is time for a new chairperson to bring fresh ideas and renewed energy to your service. We have reached many of the goals I had in mind when I started this SIG four years ago after a meeting of similarly inclined individuals at the December Los Angeles Symposia(1981) and we are well along in reaching even more ambitious objectives. It is time to let someone else try their hand at this. The transition will take place over the next few months and will be complete by the Dallas symposia.

Thank you for your ever-growing support.

TOM

OFFICE AUTOMATION SIG NEWSLETTER

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FROM THE EDITOR

This is our third issue of the OASIG newsletter as part of the combined newsletter offering from DECUS for all subscribers. So far, from the perspective of this editor, all is going quite well.

This issue contains several important topics of information.

1. The list of sessions scheduled for Anaheim on page OA-2.
2. The announcement of the Executive Track at the Symposium on OA-4.

Please look for our OASIG SIR in the Questionnaire Section at the back of this issue. This is a key way for us the users to get feedback to Digital. This is YOUR opportunity to make a difference.

Effective November 1, 1985, I have accepted an appointment on LDEC, so I will be leaving the OASIG's positions as Communications Representative and Newsletter Editor. As a user, I'll still be around to say hi and brainstorm as well as cuss and discuss the state of the world. Take care--



SYMPOSIUM COORDINATES

MESSAGE FROM THE SYMPOSIUM COODINATORS

Yes it's that time again...

Anaheim Symposium

To help you justify your trip to California this December we are including the OA SIG Sessions at a Glance. We have over 50 hours of both managerial and technical sessions. In addition, we have several outstanding Pre-symposium seminars lined up. We are also co-sponsoring with Digital a one day Executive Track Program. (See the announcement in this newsletter.)

We look forward to seeing you in Anaheim!!!

Kit & Mitch

MONDAY

TIME	LOC	TITLE	NUMBER
9:00am- 9:30am	MR1	OASIG Roadmap	0014
9:30am-10:30am	MR1	Office Automation SIG Keynote	0030
10:30am-11:30am	MR1	SUCCESSFUL OFFICE AUTO.-THINGS BOOK NEVER	0009
11:30am-12:30pm	MR1	WHY ALL-IN-1 IS NOT OFFICE AUTOMATION	0006
12:30pm- 2:00pm	MR1	WORD AND DOCUMENT PROCESSING UPDATE	0018
2:00pm- 3:30pm	MR1	Office Automation Products Update	0039
3:30pm- 4:30pm	MR1	CUSTOMIZATION & APPLICATION INTEGRATION	0013
4:30pm- 5:30pm	MR1	WHAT'S NEW WITH DECALC	0005
7:00pm- 7:30pm	SB	THE ENGINEERING WORK STATION: MORE THAN DT	0001
7:30pm- 9:00pm	SB	OFFICE WORKSTATIONS UPDATE	0021
9:00pm-11:00pm	SB	OFFICE SERVER PANEL	0022

TUESDAY

TIME	LOC	TITLE	NUMBER
9:00am-10:00am	CDE	STRATEGIC DIRECTIONS FOR BUS. OFC. SYS.	0017
10:00am-11:00am	CDE	MAIL STRATEGY	0040
10:00am-12:30pm	SC	DAMPER - The Data Analysis Game	0062
11:00am-12:00pm	CDE	MESS. ROUTER V2.0 THE HIGH LEVEL INTERFACE	0041
12:00pm- 1:00pm	CDE	OASIG GENERAL MEETING	0015
1:00pm- 2:00pm	CDE	GET YOUR DATA TOGETHER: PROVIDING SOLUTION	0003
2:00pm- 3:00pm	CDE	EXTERNAL DOCUMENT EXCHANGE	0042
3:00pm- 4:00pm	CDE	COMPOUND DOCUMENTS & HIGH QUALITY OFC PUB.	0019
4:00pm- 5:00pm	CDE	HUMAN FACTORS FOR OFC. PRODUCTS	0047
5:00pm- 6:00pm	CDE	OFFICE WORKSTATION SUPPORT IN ALL-IN-1	0044

WEDNESDAY

TIME	LOC	TITLE	NUMBER
9:00 am-10:00 am	AV	ALL-IN-1 ON VAXCLUSTERS	0043
10:00 am-11:00 am	AV	CDROM--OFFICE APPLICATIONS	0052
11:00 am-12:00 pm	AV	ALL-IN-1 AS AN APPLICATION GENERATION TOOL	0033
12:00 pm- 1:00 pm	AV	USER COMMUNICATIONS: PROBLEMS & SOLUTIONS	0031
1:00 pm- 3:00 pm	AV	ALL-IN-1/WPS-PLUS PERFORMANCE UPDATE	0054
3:00 pm- 4:00 pm	AV	OPTIMIS - AN ALTERNATIVE OFFICE AUTO SYS.	0008
4:00 pm- 6:00 pm	AV	OFFICE AUTOMATION Q & A	0048
6:00 pm- 7:00 pm	AV	INVITING THE DEVIL TO TEA: PLAN FOR OA	0064
7:00 pm- 9:00 pm	CDE	MANAGEMENT PLANNING FOR OA SYSTEMS	0055
9:00 pm- 9:30 pm	CDE	ALL-IN-1 & IBM COMMON ELEC. MAIL SYS: REQ	0057
9:30 pm-10:00 pm	CDE	ALL-IN-1 & IBM COMMON ELEC. MAIL SYS: IMPL.	0058

THURSDAY

TIME	LOC	TITLE	NUMBER
9:00 am-10:00 am	CDE	ORGANIZING USER SUPPORT GROUPS	0053
10:00 am-10:30 am	CDE	A TRAINING PROGRAM FOR ALL-IN-1 VERSION 2	0056
10:30 am-11:00 am	CDE	ALL-IN-1 VERSION 2.0--ONE YEAR OF OPER.	0051
11:00 am-12:00 pm	CDE	DIGITAL'S OFFICE ARCHITECTURE	0020
12:00 pm- 1:00 pm	CDE	PRINTING WITH DIGITAL OFFICE PRODUCTS	0046
1:00 pm- 2:00 pm	CDE	TAKING ADV. OF NEW FEATURES IN VAX VTX 2	0026
2:00 pm- 3:00 pm	CDE	DIST. VIDEOTEX INFOBASES IN OFC. & CORP.	0027
3:00 pm- 4:30 pm	CDE	UNLOCKING THE VAX/VALU TREASURE CHEST	0028
4:30 pm- 5:30 pm	CDE	VTX - VALU APPLICATION DESIGN	0034
5:30 pm- 6:30 pm	CDE	PROJECT MANAGEMENT IN THE MINI/MICRO WORLD	0061

FRIDAY

TIME	LOC	TITLE	NUMBER
9:00 am-10:00 am	AV	SUCCESSFUL OA IMPLEMENTATION	0002
10:00 am-11:00 am	AV	INFORMATION SYSTEM ARCHITECTURES	0050
11:00 am-12:00 pm	AV	OA WISH LIST	0049
12:00 pm- 1:00 pm	AV	PRODUCTIVITY MEASUREMENTS AND OFC. AUTOM.	0007
1:00 pm- 2:00 pm	AV	OASIG WRAPUP	0016

THE FORUM

The Office Automation Special Interest Group of DECUS

and the

Digital Equipment Corporation

present the second

EXECUTIVE TRACK

December 12, 1985

Anaheim--DECUS

One of the greatest challenges we face is educating our senior management on what office automation can do for our organizations. To address this challenge, the OA SIG and Digital co-sponsored the first Executive Track series.

This day brought nationally known consultants together with senior managers and executives who had defined the leading edge of OA for their organizations. The result was an opportunity for executives to share insights and develop new ideas for their company's office automation.

Look over the following agenda and if you would like your senior management to participate please contact us for invitations:

Kit Trimm
6892 East Dorado Ct.
Tucson, AZ 85715
(602) 886-5563

Mitch Brown
170 Tracer Lane
Waltham, MA 02254
(617) 890-4900

EXECUTIVE SEMINAR

DECUS Management Track

"Information Technology: Its Impact on Senior Executives"

Agenda

- 7:30 a.m. Registration
- 8:00 Program Introduction
Craig Zamzow
Moderator
Digital Equipment Corporation
- 8:30 "O/A: Why Bother?"
Dr. James H. Carlisle
President
Office of the Future, Inc.
- 9:45 Break
- 10:00 User Perspectives:
Rainer F. Paul
Vice President
Avon Products, Inc.
Jerry L. Wassen
Lieutenant Colonel
U.S. Air Force
- 12:00 p.m. Lunch
- 1:00 A Vendor Perspective
Gene Hodges
Manager, Market Development
Office & Information Systems
Digital Equipment Corporation
- 2:00 Break

2:15 "Planning and Implementing Successful
Office Systems: Lessons Learned from Pilots
and Major Installations"

Robert McDowell
National Director
Arthur Young and Company

3:30 Break

3:45 "Management Implications of the Trends
in Information Technology"

John J. Walsh
President
Integrated Strategies, Inc.

5:00 End of Program

TIME TO VOTE !

The SIR process is just getting off the ground; therefore, the SIR list is fairly abbreviated. Also, our only SIR's are the result of the Wish List session at the New Orleans Symposium. You will notice that there is only an abstract (no description) and that the SIR's are heavily skewed to ALL-IN-1. I envision these characteristics changing as you, the user community, begin to submit your own SIR's.

But, in the meantime, your vote NOW is important! Please return your ballot as soon as possible to allow Digital time to respond. Ballots received after NOVEMBER 8 cannot be counted. The results of the voting and Digital's responses will be given at a session at the Fall 1985 DECUS Symposium in Anaheim.

The SIR's are grouped by category. You have 100 points to allocate among the SIR's on the ballot. You may assign any point value in either a positive or negative sense: a high positive value would strongly encourage change, and a low negative value would discourage the change. For example, if the positive points total 80 and the negative points total 20, the allowed 100 points have been fully utilized. Remember, only one ballot per DECUS member will be accepted!

ALL-IN-1 (Electronic Mail/Messaging)

SIR #	Abstract
185001	The capability to delete or file before reading or selecting a message.
185002	The capability for system-wide nicknames.
185003	A mass delete function for the mail messages.
185004	Provide the ALL-IN-1 system manager with the ability to manipulate mail messages.
185005	Add an integrated phone message function.

ALL-IN-1 (Editor)

SIR #	Abstract
185006	The capability to change or add tab stops in the DPE editor.
185007	A search capability in the editor that will allow you to search for embedded punctuation, tap stops, etc.

ALL-IN-1 (Printing)

SIR # Abstract

185008 Incorporate the following printer enhancements:

1. Full LNO3 support.
2. Standard type fonts for the LNO3.
3. Stop print queue.
4. Host control of your DECmate printer.
5. A selection form for printing to select various options (ie. what's available on the DECmate Print Menu).

185009 Treat DPE or WPS+ documents the same when printing (i.e. the same print settings, the same printers available, etc).

ALL-IN-1 (Time Management)

SIR # Abstract

1850010 Do not allow meetings that you have declined to attend to continue to be posted on your calendar.

1850011 The capability in your calendar to schedule conference rooms, audio visual devices, etc.

1850012 Provide a timer or alarm system to remind you of meetings or appointments. This timer or alarm should go off a few minutes before the meeting or appointment.

ALL-IN-1 (File Cabinet)

SIR # Abstract

1850013 Search capabilities that allow you to search through your memos and documents:

1. By phrase or full text database search.
2. By time frame: either within a range of dates, before a date or after a date.
3. For the addressees on the memo.

1850014 Provide real shared file cabinet facilities, especially with a thought towards teams or groups.

1850015 Provide an option on your file cabinet menu to allow the transfer of an entire file cabinet folder to another user.

1850016 Provide a DEC-supplied archival system for ALL-IN-1.

ALL-IN-1 (Customization/Applications Integration)

SIR #	Abstract
1850022	Expand the user defined process (UDP) capabilities to incorporate loops, and the ability to stop during processing to obtain user input.
1850023	Include an additional 80-bytes in the user profile for customer specific use.
1850024	Promote the ALL-IN-1 applications development capabilities by providing the following: <ol style="list-style-type: none">1. A DSAB for Rdb applications.2. Easy end-user application development facilities.
1850025	Better integration of ALL-IN-1 with the following product: <ol style="list-style-type: none">1. DECslide2. DECgraph3. DECalc
1850026	Have other applications that integrate with ALL-IN-1 use the ALL-IN-1 keypad. (i.e. VTX).
1850027	Provide customization capabilities for the MicroVAX, rather than forcing customization on a larger VAX for downloading to the MicroVAX.
1850028	Offer a pre-DECUS symposium on ALL-IN-1 applications integration and development.

ALL-IN-1 Aids

SIR #	Abstract
1850029	Provide a conversion utility telling you what's been changed in your current ALL-IN-1 system.
1850030	Firmly establish a DEC policy that there will be no uni-directional conversions. (i.e. from the old DX to the new DX). In other words, provide a bi-directional conversion for all products where conversions are required.

ALL-IN-1 System/Security

SIR #	Abstract
1850031	Access control on the business applications menu that would do the following:

1. Allow a user to know what applications are available to him/her under ALL-IN-1.
2. Provide a mechanism to specify the security levels available to each user.

1850032 Develop a networkable pocket VAX that has ALL-IN-1 running on it.

WPS

SIR # Abstract

1850017 Clean up and simplify the CX interface for the DECmate; make it more user friendly.

Generic Communications

SIR # Abstract

1850018 Provide an updated office interconnect guide that will clearly and easily outline what capabilities work in what environments.

1850019 Provide full intelligent modem support, including looping and if-then-else capabilities.

New Office Workstation Software

SIR # Abstract

1850020 Put the PRO Office Workstation software on the MacIntosh.

1850021 Full office workstation support for the IBM PC.

Miscellaneous

SIR # Abstract

1850033 The Atlanta Hotline should provide comprehensive user support. If the Atlanta Hotline cannot answer a question and feels it is a responsibility of Colorado Springs, Atlanta should contact Colorado directly and pursue the problem with Colorado, rather than tell the customer to call Colorado.

1850034 The Atlanta Hotline should provide comprehensive user support. If the Atlanta Hotline's response to a customer problem is that there is "no work around" then Atlanta should generate the SPR for the problem.

FEATURED ARTICLES

APPLES, ORANGES, AND OFFICE AUTOMATION

or

WHY ARE MY NUMBERS ALL SCREWED UP?

GIL FAIR

THE GOOD OLD DAYS

0 36 MONTH EDP PROJECTS

[PATIENCE IS THE ROOT OF ALL EVILS]

0 FISH BOWLS

[IF GOD WANTED US TO BE PROGRAMMERS,
WE'D ALL BE BORN WITH SANDALS, BEARDS, AND SARAPES]

0 8 FOOT HIGH "REPORTS"

[ITS NATIONAL ARBOR DAY; TAKE A TREE TO LUNCH]

0 GETTING YOUR RESULTS

[LET'S PLAY "FIND THE NUMBER"]

0 MAKE A DECISION - QUICK

[READY, FIRE, AIM]

THE GOOD NEW DAYS

0 PROTOTYPING - PARTICIPATIVE DEVELOPMENT

 ["QUICK AND DIRTY" IS OKAY NOW]

0 THE TOOLS ARE HERE

 [15TH GENERATION LANGUAGES]

0 A PICTURE IS WORTH 1000 WORDS

 [A GRAPH IS WORTH 1000 NUMBERS]

0 YOUR REPORTS ARE NOW DIFFERENT

 [THE 7 F'S]

 -FAST (SECONDS AFTER THE INPUT)

 -FAMILIAR (IN A FORM YOU UNDERSTAND)

 -FRIENDLY (EASY TO REQUEST)

 -FACTUAL (THEY COME FROM A COMPUTER, DIDN'T THEY?)

 -FANCY (COLOR VT, PRINTER/PLOTTER, ETC.)

 -FLEXIBLE (CHANGE FORMS OF DISPLAY)

 -FRIGHTENING (NOW YOU HAVE TO MAKE A DECISION

 EVENTUALLY!)

BUT WAIT A MINUTE !!!!!!!

DOES "THE NUMBER" MAKE SENSE ??????

NO !!!!!!!!

AND WHY NOT?

EXAMPLES OF GOOD NEW DAYS NONSENSE

0 FIELD SERVICE MEANTIME-TO-REPAIR (MTR)

0 JAPAN "SALE"

0 TO SHIP OR NOT TO SHIP, THAT IS THE QUESTION

0 DOES THE SALES REP HAVE A NAME, OR EVEN A NUMBER?

SO WHAT DO YOU DO NOW !?!?!?

(I.E. WHO GETS FIRED?)

0 MIS THEY SET UP THE SYSTEMS & SOFTWARE APPLICATIONS

0 DATA INPUT THEY DIDN'T UNDERSTAND THE IMPACT
(SALES, ENGINEERING, MANUFACTURING, PERSONNEL, ETC.)

0 DATA CENTER THEY HOLD ALL OF THE "INFORMATION"

0 FINANCIAL MGMT THAT PERSON IS RESPONSIBLE FOR "THE NUMBERS"

0 YOU !!!!! (YES?!)

THE ANSWER IS THAT

OFFICE AUTOMATION

IS NOW MAKING YOU, THE MANAGER,
RESPONSIBLE FOR THE DATA AND THE
INFORMATION NECESSARY TO RUN YOUR
BUSINESS.

(JUST LIKE THE GOOD OLD DAYS)

YOU RUN YOUR BUSINESS !!!!!!!

YOU ARE RESPONSIBLE FOR

- 0 DATA DEFINITIONS (WHAT DOES IT DEFINE)
- 0 DATA SOURCE (WHO GETS TO INPUT THE VALUES)
- 0 DATA FLOW (WHERE CAN/MUST THE DATA GO)
- 0 DATA CORRECTION (WHO GETS TO CHANGE THE DATA)
- 0 DATA USE (WHO GETS TO REFERENCE THE DATA)
- 0 DATA RETIREMENT (WHEN SHOULD DATA BE ARCHIVED)

SOME CONCEPTS TO APPRECIATE

- 0 YOUR SYSTEMS ARE BETTER THAN EVER (OR AT LEAST AS GOOD AS THEY'VE EVER BEEN) [YOUR KID JUST ROBBED A BANK]

- 0 THE ONLY WAY IS "UP"; NOW THAT YOU CAN GET TO THE VALUES, WHY NOT TRY TO GET TO THE RIGHT VALUES [SINCE YOU NOW KNOW HOW TO DANCE, PICK AN ATTRACTIVE PARTNER]

- 0 MIS CAN HELP WITH TOOLS, BUT YOU MUST DRIVE IT [3RD LEVEL NORMALIZATION FOR ONE AND ALL]

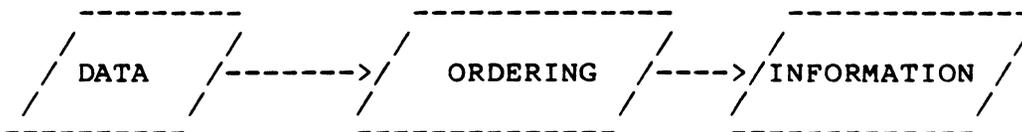
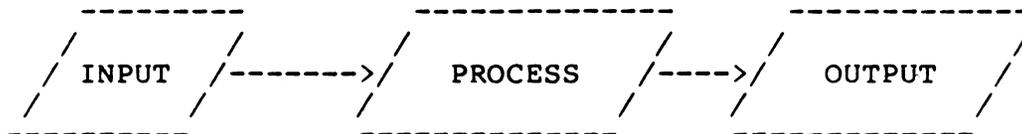
- 0 INFORMATION IS SIMPLY UNDERSTOOD DATA ORGANIZED THE WAY YOU WANT IT (WHOEVER "YOU" MIGHT BE TODAY) [BEAUTY IS IN THE EYES OF THE BEHOLDER]

- 0 COMPUTERS DON'T GIVE YOU "BETTER" INFORMATION; THEY JUST GIVE YOU "PRETTIER" INFORMATION [SERVE IT WITH A GLASS OF WINE AND ANYONE WILL EAT IT]

YOU MUST START TO UNDERSTAND

- 0 INFORMATION VERSUS DATA
- 0 CORPORATE TRANSACTION SYSTEMS (SHARABLE VERSUS PRIVATE)
- 0 INFORMATION CENTERS
- 0 THE DATA BACKROOM
- 0 DATA FILTERS/CHECKS
- 0 THE NEED FOR MORE DATA

THE PROCESS

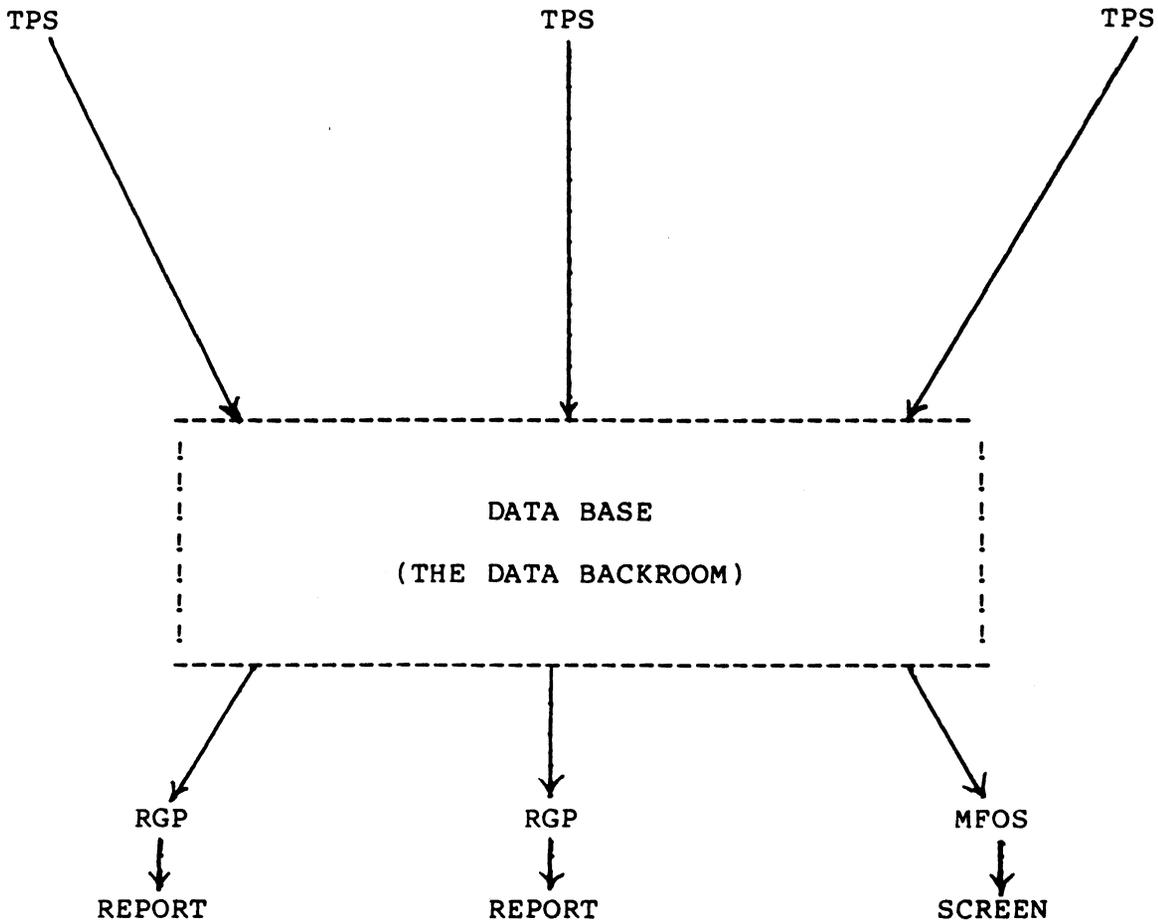


THE DATA BACK ROOM

TRS = TRANSACTION PROCESSING SYSTEM

RGP = REPORT GENERATION PROCESS

MFOS = MULTI-FUNCTION OFFICE SYSTEM



A MODEL TO STUDY

- 0 TRANSACTION SYSTEM (CAPTURE THE DATA)
- 0 REPORTS COME (TAP THE TRANSACTION SYSTEM)
- 0 MULTI-TRANSACTION SYSTEMS (CAPTURE MORE OF THE DATA)
- 0 MANY REPORTS COME (TAP EACH TRANSACTION SYSTEM)
- 0 THE ESTABLISHMENT OF AN INFORMATION CENTER (TAP ALL OF THE
TRANSACTION SYSTEMS)
- 0 THE ESTABLISHMENT OF SEVERAL INFORMATION CENTERS (TAP THE
TRANSACTION SYSTEMS PLUS SOME "OTHER SOURCES")
- 0 THE INVENTION OF FILTERS ON THE "OTHER SOURCES" (PURIFICATION)
- 0 THE DIFFERENCE IN FILTERING (IMPURE PURIFICATION)
- 0 SOURCES = FLOPPIES (AND THE FLOPPIES SHALL SET THEM FREE)
- 0 THE DRIVE IS FOR MORE DATA, BUT NOT GOOD FILTERS
- 0 A "DATA BACKROOM/UNDERGROUND" IS ESTABLISHED (GOOD DATA CHEAP)
- 0 DIFFERENT SOURCES FOR "THE SAME DATA" GIVE DIFFERENT DATA
- 0 NOW THE DATA IS ALL SCREWED UP!

SO WHAT CAN YOU DO ????????

(HINTS)

- 0 REMEMBER: INFORMATION IS GOOD AND VALUABLE WHEN ITS SOURCE IS "GOOD" AND ITS EASY TO GET AT.
INFORMATION IS DANGEROUS WHEN ITS EASY TO GET AT, AND ITS SOURCE IS INACCURATE; DON'T CONFUSE THE TWO.
- 0 DON'T ASSUME THAT "ITS FROM THE COMPUTER SO ITS GOOD"
- 0 OA IS HOW PEOPLE LOOK AT THINGS, NOT WHAT ARE THEY LOOKING AT.
MAYBE WE'RE AT STAGE 1 OF OA; STAGE 2 OF OA IS WORRYING ABOUT THE CONTENT RATHER THAN THE FORM.
- 0 FORCING CONSISTENCY BY DEFINING FORMAT (SPREADSHEETS ON FLOPPIES) IS ONLY STEP ONE. ITS THE DATA ON THE FINAL DATA BASE THAT MAKES SENSE. ITS THE DATA, NOT THE FORM, THAT MUST BE DEFINED.
- 0 OCCASIONALLY, TRACE A NUMBER YOU REALLY KNOW IS RIGHT.
- 0 THE MORE HIGH-LEVEL EXECUTIVES GET EXPOSED TO THE SITUATION, THE QUICKER IT WILL GET SOLVED. SO LET YOUR BOSS SEE THE PROBLEM, BUT DON'T GET BLAMED.
- 0 BELIEVE THAT THE DATA/INFORMATION IS YOURS
- 0 STRESS DATA DEFINITIONS (INITIALLY) AT POINTS OF DATA MOVEMENT (RATHER THAN DATA CREATION/INPUT)
- 0 STRESS LATER DATA DEFINITIONS AT POINTS-OF-CAPTURE/CREATION

STEPS

- 0 RUN YOUR BUSINESS
- 0 READ YOUR NEW REPORTS, AND WORRY
- 0 RUN YOUR BUSINESS
- 0 MAKE DATA EXCHANGE RULES
- 0 RUN YOUR BUSINESS
- 0 CHECK KNOWN NUMBERS
- 0 RUN YOUR BUSINESS
- 0 STRESS DATA DEFINITIONS AT CREATION POINTS
- 0 RUN YOUR BUSINESS
- 0 STRESS CORPORATE COOPERATION
- 0 RUN YOUR BUSINESS

AND

- 0 RUN YOUR BUSINESS

DECmate WPS

Product Update



Spring DECUS

May 1985

Cathy Jo Butler

Distributed Office Workstations Program

DECmate WPS V2.0

Shipped 18-Feb-85

23,000 customer updates

30,000 total kits shipped

DECmate WPS International

English

UK

USA

Canada

Australia

New Zealand

French

German

Spanish

Italian

Nordics

Sweden

Finland

Denmark

Norway

DECmate WPS V2.0

Major features

- Technical/scientific characters
- Column cut and paste
- Indent tabs
- Wide (238) documents
- Hard disk resident system
- U.K. Date and currency
- 100 U.D.K's
- Graphics mode in CX
- Autodial utility
- DECspell improvements
- Footnoting

DECmate WPS V2.0

New Editor Features

- Technical/scientific character editing
- Column cut and paste
- Indent tabs
- Search and replace CR and TAB
- 238 column wide documents
- Screen width control
- Column position in status line
- New key definitions in function row

DECmate WPS V2.0

System and utilities

- Hard disk support
- Hard disk resident system
- 200 to 2000 block volumes
- Install Utility
- Master Menu V1.1
- System conventions menu
- Date format/currency symbol, device
- and document defaults
- 100 UDK's

DECmate WPS V2.0

Communications Enhancements

- Graphics terminal emulation
- DECmate III integral modem
- Autodial utility
- VT200- 7bit terminal emulation

DECmate WPS V2.0

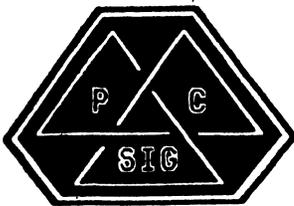
DECspell enhancements

- **Increased Personal Dictionar**
- **Performance Improvements over V1.5**
- **Larger database (+3000) words**

DECUS

PERSONAL COMPUTER

SIG NEWSLETTER



=====

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DECUS Personal Computer SIG Questionnaire

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FROM THE EDITOR
=====

From my vantage point, it looks like things are looking up for the Rainbow. With an installed base that is approaching 300,000, there are a significant numbers of Rainbows in place already, and sources at DEC have confirmed that there have been some large orders recently. Despite everything, CORPORATIONS CONTINUE TO BUY THE RAINBOW. Individuals and small businesses still buy them, but it is very tough for them to FIND Rainbows to buy.

Rumors abound about what DEC will announce next (see the Grapevine column for the latest that I have heard). But in the meantime, the Rainbow seems to be having a Renaissance of sorts. True, not much new software is being announced. But in the last couple of months, significant third party hardware has for the Rainbow has begun to appear. And DEC has, finally announced a larger hard disk--a 20 megabyte half height drive. See the Counterpart's corner for the details.

For starters, there is now a stab at IBM compatibility! Yes, that's what I said--IBM compatibility! I have not seen or tested any of these products, but I have discussed them with others who have. Here's what is available, or soon to be available as I write this (October 30).

--48 TPI disk drives which attach to the Rainbow, and allow you to take a formatted IBM disk and use it in the drive as you would a Rainbow formatted disk in the DEC Rainbow. From two different sources, at prices from about four hundred to eight hundred. I'll be testing the I-Drive, from Suitable Solutions, 467 Saratoga Avenue, Suite 319, San Jose, CA 95129, 408-725-8944, or 408-247-8775.

--A product called "The Link" which, for thirteen hundred, provides a hardware and software combination which should give IBM compatibility with the majority of programs. It is essentially an outboard IBM which is attached to the Rainbow so that you use your Rainbow and Keyboard monitor along with it. I'll be testing this product. For more information, contact DiskTech One, 849 Ward Drive, Santa Barbara, CA 93111, (805) 964-3535.

--A software product which will allow some IBM programs to run on the Rainbow, for about six hundred. I don't have many details about this, but will be testing it soon. For more information, contact Operating Scientists, Inc., 202 East Main Street, Smithtown, NY 11787, (516) 724-7002.

As you can see, there is a glimmer of hope on the horizon. Things are getting better for hard disks, too. (Just in time, since once again I have messed up the disk. Thanks to J. R. Westmoreland, of Utah, At least I know why!) Three companies are offering or will be offering sorely needed backup devices:

--CHS is offering a removable ten magabyte winchester cartridge drive for the Rainbow, which allows it to back up in about 3 minutes. Contact CHS, (617) 897-1368.

--Univation is offering a 20 megabyte hard disk with a removable ten megabyte removable winchester cartridge drive. Contact Univation, Inc., 1037 N. Fairoaks Avenue, Sunnyvale, CA 94089, (408) 745-0180.

--Rainbow Data is offering the DM110 tape cartridge backup. Backup with a 1/4" tape cartridge takes about 18 minutes. Contact Rainbow Data Limited, Suite 2011, 8726 S. Sepulveda Blvd., Los Angeles, CA 90045, (213) 202-7130. By the way, Rainbow Data is the place to contact for the upcoming Rainbow

battery driven clock.

Other interesting products are on the way. I don't know what this renewed interest means for the Rainbow... All of the companies jumping into the third party market are small, some are individual entrepreneurs.

At the same time, a number of software companies are jumping ship and dropping Rainbow versions of software. And important packages are not being ported over. If you are concerned about Lotus 1-2-3's new version, sent a letter to Lynn Jarrett, whose address is on the Steering Committee list. She'll make sure that the information gets to DEC.

DEC is planning an on-line PC information database which will list all know software and hardware for the PCs, whether from DEC or OEMs. The number will be a toll number, but may eventually become toll free.

A lot of PC SIG members comment on the missing prices in the Newsletter. In true DECUS fashion, committees are being formed to look into the matter. I'm hoping that the prices will be in the next newsletter.

Be sure to look for the Contact list at the back of the Newsletter--and send me your name, number and specialty! Networking isn't just for computers!

--Caroline Mack
Editor
October 30, 1985

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HOW TO SUBMIT ARTICLES TO THE PC SIG NEWSLETTER:

If you write an article for the newsletter, please send me a hard copy by mail (my address is above). Also, if the article is more than 2 pages long, or has anything which is difficult to type, send me your articles in one of the following formats (let me know which it is!):

- o WordPerfect on an MS-DOS formatted floppy disk
o WordStar on an MS-DOS or CP/M formatted floppy disk
o Samna on an MS-DOS formatted floppy disk
o ASCII on an MS-DOS formatted floppy disk--remove all formatting commands first, please, or I'll have to strip them out one by one
o Hard copy (typed or printed out)
o Via modem using DECMINI (call first)
o Via DCS (DECUS)
o Upload to the WASH-A-RUG FIDO Bulletin Board (703) 359-6549

I expect the next PC SIG newsletter to be published in March unless something unusual happens. The deadline for submissions to that issue will be January 10, 1986.

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GREETINGS FROM THE CHAIRMAN

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As you read this Anaheim is probably upon us. The PC SIG will be experiencing a few firsts. Many new sessions were scheduled. Look for panel discussions, including one on the Atlanta Hotline. Unlike the past, the majority of the sessions are user presentations. We hope that you will be able to join us both to share your experiences and participate in the social activities we have planned.

Sunday night will be the general reception. There will be a table in the reception area where folks with PC interests can gather. We'll be soliciting wish list items for the Rainbow, Decmate, and Pro, so be sure to write down items you would like to see corrected or implemented. We will also be soliciting a response to the question of whether you want the new Lotus upgrade implemented for the rainbow. Comment slips will be available throughout the week.

The PC Sig will have a campground. If you would like to plan a Birds of a Feather (BOF) or special meeting, see the campground coordinator or a member of the steering committee. Several scheduled activities will be posted and announced in the Roadmap session.

Equipment will be on display in the campground and new software will be available for demonstrations. Equipment includes two Rainbows, a Pro, and a Decmate. The machines will also be available for public domain software contributions.

The Sig will be offering several public domain software diskettes for a modest media charge. A set of eight pre-prepared Rainbow public domain diskettes will hopefully be available through the Decus Store. If not, they may be obtained at the suite. In addition, 14 more public domain diskettes will be available in the campground. These include 10 for the Rainbow, two for the Decmate and two for the Pro. Details of the diskette distribution and sale will be announced at the roadmap session.

Our first official T-Shirt will be available. It is really sharp, so plan to pick one up at the store. Another first is the PC mascot and the PC logo. It took some time for all to settle on the final rendition. Buttons for campground volunteers should be ready in time for Anaheim. Speaking of volunteers we need your help for the Campground. If you are willing to spend time in the campground and earn a button, let me know or talk to any member of the steering committee. Schedules will developed before and during the roadmap session.

Another new item is the Session Notes. Included in the notes is documentation for the public domain software as well as invaluable session information. Notes go on sale in the store Monday.

Several fun activities are planned as well. Monday night is the PC Pub. This is the time to come and socialize with cohorts. Wednesday will be Developer night. We will have several Digital developers on hand to answer questions and assist with problems. Thursday is our first ever MAGIC session. You won't want to miss it! We will be soliciting submissions for the magic session throughout the week. Several nice prizes are planned for different categories of stories. Begin now to collect your props and tales so that you can share them with us Thursday evening. Most of these activities will be in the campground.

Even though we are all focusing on Anaheim it is important to give some thought to the next Symposium, which will be held in Dallas. The call for papers for Dallas has begun and the final submission deadline is shortly after Decus. Please plan to submit CFP's now or at Anaheim. We will look forward to seeing you there.

Barbara A. Maaskant
Chairman

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POINT OF VIEW: GUEST EDITORIAL

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WHY BUY A RAINBOW?

Like the Maytag Repairman, the DEC Rainbow owner sometimes is lonely. A Rainbow owner sometimes is lonely. A Rainbow owner may be asked, in disbelief, why anyone would buy a Rainbow instead of an IBM clone. Well folks, there are many good reasons to buy a Rainbow instead of an IBM toy. (You see my Bias is beginning to sneak through.)

The Rainbow is one of DEC's three PC lines that are designated to follow international standards and to be familiar to users of other DEC equipment. Read the last sentence as compatible. DEC's goal from the start has been to make compatible equipment. They did not try to reinvent the wheel. They follow ANSI 3.64 standards that have been defined and agreed upon by the major computer companies, including IBM. IBM, on the other hand, developed a machine in a vacuum that should never have been foist on the public. They followed minimal standards and have created a machine that is too similar to the Commodore 64. The only difference between the Commodore 64 and the IBM PC is the price.

I am going to list some differences between the PCs that I think are important enough to favor DEC when making a decision to buy.

If you need help with DEC equipment, there is an 800 number available. If you need help with the IBM line, you must dial a long distance number and be put on hold while you are paying for the call.

All of DEC equipment meets current international ANSI/ISO peripheral standards and NTSC video standards. On the Rainbow, all the characters that are defined in the ANSI standard are where they are supposed to be. And that includes control characters. The character set on the IBM looks very much like the Commodore 64. IBM does not meet any standards, including its own EBCDIC character set. The IBM PC is not compatible with any preexisting computer, terminal, or printer.

More and more terminals that are being made meet ANSI 3.64 standards. Nearly all of these include the DEC VT100 line-drawing character set with the same escape sequences for accessing them. Of course the Rainbow works the same way, and of course, the IBM PC does not. (Notice all of the software packages that are advertised to make the IBM PC VT100 compatible.) The closest you come to the ANSI standard on the IBM PC is an ANSI subset software device driver that does not work well.

Because of the compatibility with the VT100 and VT200 series, one knows how the function keys work on the Rainbow. All of the keys on the keyboard generate predefined escape sequences. All you need to know to use and write programs that use them is to know what these sequences are. You don't have to know assembler. You don't have to know the keyboard scan sequence. You don't have to use "peeks" and "pokes." IBM's function keys (which include the cursor keys) do not generate characters. To use these keys on the IBM PC you must write machine dependent code! The keyboard of the IBM PC suggest that the available characters will always be limited to 256. Because the keyboard of the DEC Rainbow uses ANSI escape sequences, the number of characters that can be potentially made available has no limit. (Notice the the number of character sets that are built into the VT100 series of terminals). It should be pointed out that there is a clear distinction between where the characters logically are as compared to where the characters physically are. How the programmer interacts with the character set is machine independent since the programmer need not know where the characters are located physically on the ROM. To the programmer the characters are in the same logical places as they are in the ANSI standard and in the DEC terminal and printer

charts. On the IBM PC, you must know where the characters are located physically in order to use them. Any code that is written is thus dependent on the architecture of the particular IBM computer family.

In the ANSI 3.64 standard a suggestion is made in one of the appendices that the backspace key should have two modes, set/reset. One mode would be the normal mode, in that backspacing and typing another character over it destroys the previous character. The alternate mode would be that a backspace and another character would cause the second character to overlay the first one and compose a new one. DEC comes closer to this suggestion does IBM, by offering the Compose key.

The ports on computers are generally either serial or parallel. If serial, they normally meet RS-232 standards, and generally terminate in a DB-25 plug. IBM actually didn't blow this one. If parallel, the port normally is a Centronics plug. Guess what, IBM made their parallel port look like a serial port. It has a DB-25 plug. Their ports are not labeled. If you connect the wrong device to an IBM PC does it go puff? DEC uses two serial ports that terminate in DB-25 plugs. No danger here. There is an advantage to having a serial port for the printer. You can connect an auxiliary terminal to it, instead of a printer, so that you can use a specialized terminal such as APL or Tektronix.

Both the black and white and color monitor for the Rainbow meet NTSC RS-170 standards. In other words, the RGB color signals are analog and are compatible with television studio standards. Analog RGB signals allow any color combinations that the computer can generate using only three cables. Analog monitors are used on good computer systems. Low grade computer systems use TTL, or digital signals. In the TTL system the number of cables constrain the number of colors that can be displayed. In other words, if three cables go to the monitor, you can only display three colors. (If sixteen cables go to the monitor, you can display 16 colors.) Most TTL systems use three colors. Most TTL systems use three cables. IBM, as usual, chose not to use either the low grade (cheap) three cable TTL system nor the good (expensive) RS-170 system. IBM reinvented the wheel, again, with a four cable (three color plus "intensity") TTL system.

On the IBM, software tends to be dependent on which kind of monitor and graphics card is installed. Many word processors for the IBM PC (including IBM's own) work strangely when you use a monitor that the software doesn't recognize. Needless to say, no such problems exist on the Rainbow. Notice too, that on the IBM, low resolution mode is only 40 characters per line and that high resolution is 80 characters, whereas on DEC equipment, low resolution mode is 80 characters per line, and high resolution is 132. This is because DEC's equipment is better. The bandwidth of the black and white monitor, as well as the color monitor, is in the neighborhood of 18-20 Mhz. An IBM color monitor is typically 1/2 to 1/3 less.

In talking about graphics quality, I would like to quote from a book by Bruce Artwick (he wrote Flight Simulator). In Microcomputer Displays, Graphics, and Animation (1985), he talks about the NEC μ PD7220 graphics controller on chip. On page 112, he states, "It is easy to get interested and excited about such a high-performance chip, but in most everyday applications, this chip offers too much performance for too much money; separate display memories, shift registers, video mixers, and DMA controller chips must be used. This adds to overall system size and cost. The 7220 belongs in high-performance systems and should be used accordingly." I bet you have already guessed which PC, the IBM or the Rainbow, uses this chip on their graphics board.

Some other interesting observations are as follows: The DEC keyboard is consistent throughout all of the DEC product line. The keyboard design on the IBM products seems to be dependent upon the phases of the moon. The DEC screen has the standard 24 lines. The IBM has an oddball 25. The DEC Rainbow

can have up to 896K of memory. The IBM PC is much less. The DEC diskettes hold more information on one side than IBM holds on two. IBMs come with one or two disk drives, Rainbows with two or four. DEC has a smooth scroll feature; IBM does not. DEC has both the comma and the period in lower-case as well as upper-case positions, thereby making it easier and faster to type. IBM does not. (This is particularly annoying on the IBM PC since you must enter the date and time with both upper case characters and lower case numbers. The characters and numbers aren't even in the same keyboard quadrant on the IBM.) The "native" mode of the DEC Rainbow is the terminal mode so that you can interface with external machines and talk to the outside world. The "native" mode on the IBM PC is BASIC so that it can act like a Commodore 64.

In conclusion, the reason to buy an DEC Rainbow is because it is compatible with the real world, whereas the IBM PC is compatible with nothing outside its own self-contained world. Yes folks, I am happy I bought a Rainbow!

--Sanford Hersh

[This commentary was published previously in Granotes, The Newsletter of the Greater Rochester Area Local User's Group.]

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RAINBOW INFORMATION, ANNOUNCEMENTS AND REVIEWS

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THE RAINBOW CORNER

By Katrina Holman
DEC Counterpart for the Rainbow

20 Megabyte Hard Disk Announced

There are several new products which have been announced for the Rainbow over the last few months. Rainbow users whose hard disks seem to be shrinking in size will be pleased to learn that Digital has announced a 20 megabyte half height hard disk for the Rainbow. As of October 1, 1985, all Rainbow 100+ and 190 units have been shipped with a half-height 20 megabyte hard disk instead of the 10 megabyte hard disk. There has been no change in the Rainbow's prices. The new unit doubles disk storage capacity, is more reliable, and is 22% faster than the 10 megabyte hard disk.

Add-On Units are also available:

RCD31-BB \$----

For Rainbow 100A units which currently do not have a hard disk, RCD31-BB includes a new power supply as well as the hard disk, controller, cable, Winchester utility program, and installation manual.

RCD31-BA \$----

For Rainbow 100B units which currently do not have a hard disk, RCD31-BA includes the hard disk, controller, cable, Winchester utility program, and installation manual. (The B unit already has a sufficient power supply.)

RD31-BA \$----

To upgrade a unit with an existing DEC hard disk, order RD31-BA, which includes only the 20 megabyte hard disk, Winchester utility program, and manual. It does not include a controller or cable. The existing controller and cable can be used without modification.

As of October 1, Digital no longer offered the 10 megabyte RD51 hard disk. No trade in program has been announced.

The 20 megabyte hard disk can be used with the existing CP/M-86/80 and MS-DOS operating systems. (MS-DOS requires customer installation of a simple patch which is included. The disk also comes with a new hard disk utility program. Once the hard disk is physically installed, the user must initialize and partition the RD31 using the menu driven hard disk utility program.

Partitions may be made in the following ways:

Half and Half: MS-DOS 8/2 or 5/5 and CP/M 8/2 and 5/5 or

All MS-DOS: 8/8/4 or 8/4/4/4 or 5/5/5/5 or

All Concurrent CP/M: 8/8/4 or 8/4/4/4 or 5/5/5/5.

CP/M cannot utilize more than 10 megabytes so the other half of the disk should be used for another operating system. Concurrent CP/M can be partitioned with MS-DOS or CP/M by using HDPART, a utility provided with CCP/M.

Currently only one half height disk per system is supported. No plans to provide a half height streaming tape back up were revealed. It is possible to utilize a "leftover" 10

megabyte hard disk in a serial arrangement since the controller can be used for up to four hard disks.

The 20 meg hard disk, considered by DEC to be a generation of disk drive technology, will be used in other DEC products.

Rainbow Regis Patch

Have you run into the problem of getting an "invalid terminal type" message when trying to access host system ReGIS software from your Rainbow?

That's because the original Rainbow ReGIS software send a terminal identifier to the host computer that tells it this device is a "Rainbow running ReGIS"--which is not acceptable to many ReGIS software packages. Many of these will only talk with a VT240 or VT125 compatible terminal.

Digital now offers a software patch for Rainbow ReGIS designed to alleviate the problem when software requires a certain terminal device. The patch allows Rainbow ReGIS to respond as any of the following terminals: VT102, VT125, VT240, or the Rainbow personal computer running Regis. Emulation of the VT102, VT125 and VT240 terminals is limited, and in most cases, designed only to allow Rainbow ReGIS users to respond as the particular terminal type that the software is requesting.

With this patch, you can now configure several different versions on the ReGIS software with the following names: ReGIS, ReGIS102, ReGIS125, or ReGIS240. The filenames reflect which terminal ID ReGIS will send. The original file will still send the ID, "Rainbow running ReGIS."

The Rainbow ReGIS patch is available from Digital's Customer Support Center in Atlanta, (800) DEC-8000, FREE OF CHARGE. A support specialist from the Graphics Unit will issue the software patch verbally over the telephone. There is no need to exchange diskettes or mail anything back to Digital.

Rainbow/NAPLPS

Rainbow/NAPLPS (QAAU0-C3) is a DCS software product which gives Rainbow users the ability to display information encoded in the ANSI and CSA industry-standard North American Presentation Level Protocol Syntax (NAPLPS). NAPLPS is the videotex graphics protocol used by many of the public and private videotex services throughout North America. The information can be displayed in a choice of resolutions in full color.

Some of the key features are:

- o Level of NAPLPS implementation meets or exceeds the ANSI/CSA general Service Reference Model (SRM)
- o Dual resolution capability, 320x225 or 256x200
- o 16 simultaneous colors from a palette of 4096 (4 colors from 1025 on Rainbow 100A)
- o Continuously scalable vector text font and smooth spline capability
- o Full unprotected field editing functions
- o Software status line and software border capability
- o Input from disk or serial port
- o Auto-dial capability with Digital DF03 and DF112 modems
- o Can be used with Digital's VAX VTX software

With Rainbow NAPLPS, some of the things you will be able to access are:

- o A stock market database that uses graphics to display market trends and daily high/low information
- o An on-line product catalog with parts diagrams and performance data in graphic form
- o In-house corporate databases with information about corporate news, new product announcements, and employee activities
- o A business-to-business videotex service created for the manufacturers and users of electronic components, equipment, and services
- o An agricultural information system that provides commodity futures markets and weather reports

Rainbow/NAPLPS requires the graphics option board (PC1XX-BA) and 256K memory, and MS-DOS 2.05 or 2.11 operating systems. It costs \$---.

CD Reader

The Compact Disc Reader, introduced on the MicroVax last May, will soon be available for the Rainbow and IBM personal computers. People who use Rainbow personal computers connected to VAXes can implement compact disk applications throughout their organizations now.

The CD Reader for the Rainbow uses the same CDRom discs as the MicroVax. All CD Readers use the Uni-File (TM) format for structuring data on a CDRom disc, a file structure developed by Digital specifically for use with read-only media.

CDROM is being used now as a new publishing medium; Uni-File ensures that professional information providers need only master a single version of a CDRom disc that can be read by VMS and MS-DOS based computers. This CDRom compatibility will simplify the electronic publishing process and allow information providers to capitalize on the low cost of replicating discs in large volume. It also enables MS-DOS to address files as large as the CDRom disc's 600MB capacity.

With the CD Reader:

- o Very large databases can be stored locally so users can retrieve and work with information to generate reports
- o Technical documentation can be reduced from volumes of paper documents to a compact, easy to store disc
- o Businesses can distribute information--such as catalogs, price lists, product data, market research reports, and census and demographic data--in a cost-efficient manner throughout their organization

CD Readers for the Rainbow will be available from Tecmar, Inc. For information on prices and local Tecmar distributors, call (216) 349-0600.

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FUTURE OF THE RAINBOW

By Lynn Jarrett
PC SIG Rainbow Working Group Chairman

Currently there is much speculation on what is happening to the Rainbow. The machine's future is of utmost importance to a multitude of businesses that have stuck with the Rainbow through good times and bad times.

Digital has been working on some positive things recently, such as the Rainbow to VAX connection which gives users a more flexible VAX connection. Good features include a simple

menu interface, ability to use your own word processor, automatic, unattended backup and restoration of the Winchester disk on VAX/VMS, local mail creation and automatic mail pickup and delivery and easy-to-use communication procedures for both interactive and unattended operation.

Another positive thing that DEC has been working on is DECnet on the Rainbows and IBM PCs. This opens up a whole new world to PC users. They can access files on the network, share resources with others on the network, exchange information with others, and so on.

Another great feature is that it allows a user to have up to four 10 megabyte virtual disks on the VAX, handled just like the one that is on the Rainbow.

Yes, DEC has offered some positive accomplishments, but what about the negatives?

My pet peeve, and a very serious one, is that of the Lotus update. DEC has not made an agreement, as of the date that this was written, to update the Rainbow version of Lotus 1-2-3 to Lotus 1-2-3 to Version 2. This is a very serious issue, and I'm afraid it won't be updated. This fall Lotus announced the update for the IBM and others. What about the Rainbow???? All the enhancements, including a larger worksheet, may not be made for the Rainbow at all! What a shame!! This is going to seriously impede the marketing of the Rainbow and it shows that DEC is really not seriously supporting its present Rainbow owners as they promised they would.

Another company, Software Publishing Corporation who produced the PFS series of software is following Lotus' lead in that they are not updating their software either for the Rainbow--only for other PC's. I personally called them to ask them why and they said they had not reached a contractual agreement with DEC for an update. This is unfortunate because PFS:file and PFS:report run on the Rainbow, but other PC's now have the ability to use newly written PFS:write which enables users to print form letters from their PFS:file records.

Here I'm talking about DCS products--Digital Classified Software--LOTUS and PFS. Do you see where it's going? Nowhere, unless DEC does something about it. Users need support, but I don't know where that's going at this time.

DEC, help!!!

Lynn Jarrett is with the The San Diego Union-Tribune Pub. Co.

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RAINBOW BACK IN PRODUCTION

According to Joe Codispoti, of DEC Public Relations, the Rainbow is back in production in small quantities, at a plant in the Far East. The plant is turning out Rainbow B's, 100+'s, and 190's.

TRUMP PROGRAM STILL AVAILABLE!
CONVERT YOUR "A" MOTHERBOARD TO A "B" MOTHERBOARD CHEAPLY
Jay Bassin, Chairman
Washington Area Rainbow Users Group

Every now and again, someone at DEC does something that astonishes and bedevils the Rainbow community; provides excellent and knowledgeable end-user support. Mike Major, the Branch Support Engineer at DEC's Whitestone, NY office, seems to be running a one-stop public relations/technical assistance program, and I sincerely hope it's contagious. Many of you probably read Ted Needleman's column in last month's Hardcopy, and learned that he upgraded his "100-A" to a "100-B" for \$240 (plus \$19.80 NY sales tax and shipping) through Mike's TRUMP program. As the retail price for a "B" motherboard is around \$1,500, Ted was rather understating it when he called this one of DEC's better deals. However, be aware that few DEC offices offer the trade-up program. We asked the local DEC office if they would sponsor a similar program, and they refused. Being a confirmed DEC skeptic, I called Mike Major in New York. To my surprise, not only was the offer still good, but Mike took the time to explain all the details and promised (after I expressed concern over being without my computer for very long) that he'd ship the new board the same day he received my old one. He is as good as his word: I shipped my old board Federal Express on a Thursday evening; the next morning he called to say he got it; that evening he called again to say he shipped the new one (again Federal Express; I paid the shipping) and by Saturday morning, 40 hours after seeing the old board off, I had a newly upgraded Rainbow 100B. Not only that, but Mike called me the next Monday to ask if I got the board and if it was in good shape.

He advised me that the "Diagnostics Diskette" that came with my 100A would not work properly (I had discovered that), and promised to send me a new diagnostics disk (no charge). You can't ask for more than that!

The "B" board offers several advantages. First, it comes with 128Kb on-board memory. That means that you will get 64Kb of extra memory regardless of your current "A" system. For example, I had 256Kb (including a Univision 192Kb memory board) on my system, and I now have 320Kb. Second, the "B" board enables you to boot directly off a hard disk. The older "A" made you boot off a floppy, even if you had a Winchester installed. Third, you get more color resolution (if you have a color monitor) and sixteen shades of gray (instead of only four) with a monochrome monitor. Fourth, you don't need the \$ "memory adaptor" if you want to increase RAM beyond 256Kb--the new board automatically senses how much memory you have. You can increase RAM all the way to 896Kb, if you need to. I'm sure that there are other advantages, but those are the main ones.

I suggest first calling Mike Major at 718/670-3551. You must ship him your "A" Board (it must be in working condition--take off the disk controller and any enhancement boards that may be plugged into it) together with payment made out to Digital in the amount of \$ plus return shipping. His address is:

Digital Equipment Corporation
17-20 Whitestone Expressway
3rd Floor
Whitestone, NY 11357

SPECULATION: THE VAX-PC: DEC'S NEW PC?
By Terry Shannon

A few months ago, DEC ran an eye-catching advertisement for its low end VAXes in a number of scientific and technical journals. The heading emblazoned across the two-page spread posed the question, "SUPPOSE YOU HAD A VAX OF YOUR OWN?" While the MicroVAX II opens up a huge new market for DEC, the price of the latest VAX keeps it well out of reach of the average personal computer owner. For most of us, the idea of staking a claim to virtual space is nothing more than wishful thinking. It appears that wishful thinking will soon become a thing of the past, for a VAX PC is currently under development at DEC. I haven't actually seen the machine myself, but I know at least one person who has seen and used a prototype version of the new box. This individual, who happens to be the custodian of a large VAX installation, was quite impressed with the concept of VMS for the rest of the world.

It's thought that the real reason behind the Rainbow assembly line shutdown early this year was the need to retrofit to produce the VAX PC. This would be symbolically appropriate; the VAX PC will share one of the Rainbow's unique attributes--dual operating systems. Not only is the VAX PC reputed to run full MicroVMS, it will allegedly support an IBM-compatible MS-DOS bridge option as well. The combined availability of industry standard IBM PC software and a broad array of VAX applications at the desktop level doubtlessly will have a profound impact on personal computing and Digital's niche in a marketplace presently dominated by the Big Blue monolith.

Information gleaned from a variety of sources at the Spring 1985 DECUS Symposium and elsewhere indicates that DEC's solution to the IBM PC problem is based on a portion of the MicroVAX III architecture. The MicroVAX III, code named SCORPIO, reportedly will consist of several tightly coupled MicroVAX II 78032 chip sets arranged on the BI bus, the as yet unannounced 32-bit replacement for the Q-bus. The VAX PC will be a scaled down single processor version of the MicroVAX III system.

DEC's rule of thumb is to remain tight lipped about unannounced products, and the VAX PC is no exception to corporate philosophy. However, hints and allusions to this new class of personal computer have surfaced in a number of expected (and unexpected) places. When the MicroVAX II was announced back in May, the New York Times included in its coverage, a statement to the effect that DEC soon would announce a VAX-like personal computer priced in the \$5000 range. In a more recent interview, Digital President Ken Olsen implied that future product announcements will bear proof that his firm has not abandoned the PC market. And a highly placed source within DEC has stated anonymously--but emphatically--that the Rainbow, Professional, and Micro-11 marketing groups are readying themselves for the projected impact of the VAX PC announcement.

When will we have a VAX of our own? This is still a matter of conjecture, but chances are that the VAX PC will become reality within the next twelve months. Considering that IBM already offers a PC that supports three megabytes of memory and runs VM/370, and that Data General will soon unveil a desktop 32-bit supermicro with virtual memory, Digital can't afford to be very far behind.

(c) 1985 by Terry Shannon
[This article was previously published in the Washington Area Rainbow Users Group Newsletter.]

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SOFTWARE REVIEW: READY TO RUN ACCOUNTING WITH LOTUS 1-2-3 AND SYMPHONY

by Paul Vince

Ready to Run Accounting, from Alfred Publishing Co., Inc., was advertised and favorably reviewed in the premier (May) issue of LOTUS magazine as a "general ledger and financial reports software package designed to run on 1-2-3 or Symphony". It was attractively priced at \$49.95 and I decided to try it. My call to their toll-free number connected me with an order clerk who said that I must have an IBM PC or compatible. I then spoke with Steve Manus, Vice-President of Alfred Publishing Co., who said that the software consisted entirely of 1-2-3 and Symphony keyboard macros. We agreed that these should work on the Rainbow. The 1-2-3 and Symphony versions are usually supplied on a double-sided diskette but Steve said that he could copy either set onto a single sided IBM-formatted diskette for the list price. If I wanted both sets I could pay an additional \$1.50 for the second diskette (since they did not have the DEC quad-density diskettes). This seemed reasonable so I placed the order and the package arrived about a week later.

There were some initial problems. Because of monitor differences unrelated to the software, the IBM monitor displays 20 lines of the Lotus worksheets whereas the Rainbow displays 19 lines. Since 7 of the spreadsheets were designed with windows at Row 19 which would not display on the Rainbow monitor they were deleted by the publisher for the "Rainbow version" of Ready to Run Accounting. Unfortunately, the window is necessary for the proper operation of these spreadsheets. It causes the proper placement of information the data entry program and in other spreadsheets the window is cleverly used to keep the command menu on the screen while the data manipulation occurs mostly out of sight in the 1 line lower window. The lower windows also contain column width settings (different from the upper window settings) which cause the various reports to print properly. After many hours of worksheet reconstruction, I was able to modify the 7 dual-window spreadsheets to run properly on the Rainbow. I reached an agreement with Alfred Publishing Co. to provide my changes to them in both hardcopy and Rainbow diskette versions, so they should now be able to supply a working Rainbow version of Ready to Run Accounting for Lotus 1-2-3. I do not know if they have prepared a Symphony version for the Rainbow.

Ready to Run Accounting for Lotus 1-2-3 and Symphony consists of a series of 15 integrated worksheets which run on Lotus 1-2-3 or Symphony. The two versions are supposed to be virtually identical in operation with the only differences being the actual macros. Ready to Run requires the MS-DOS operating system (I used 2.05), a copy of Lotus 1-2-3 (Version 1a) and a minimum of 256K RAM or a copy of Symphony and a minimum of 448K RAM. Since these are the 1-2-3 and Symphony system requirements, nothing additional should be needed if you already have either program. Ready to Run is not copy protected and can be run on a hard disk. Since the Lotus products run from Drive A:, you will need Drive B: or a hard disk for the Ready to Run software. These worksheets will generate another 12 or 13 worksheets, one for each accounting period. According to the documentation, it is not uncommon for an entire year of data to fit on one diskette, but if it doesn't, you can keep keep the current period on the program diskette and store data from other periods on another diskette. With a hard disk system, there should be no problem.

Customer support is moderate. There is no toll-free number and the staff is unfamiliar with the Rainbow and so uses IBM keyboard designations. They will, however, be able to answer questions regarding the program operation. Alfred Publishing had considerable difficulty with the first Rainbow owners who purchased the package, for the reasons outlined in paragraph 2. (Also, because the distribution diskette was IBM formatted, Rainbow owners needed MS-DOS v2.05 or 2.11, since earlier

versions could not read that format.) However, it certainly appears that Alfred Publishing Co. is committed to a Rainbow version of their software. Since their experience with Ready to Run Accounting began with the initial release of the IBM version in May, they have done better than many in attempting to provide a true Rainbow compatible package.

The book and software come in a cardboard sleeve which contains the distribution diskette(s), the Ready to Run Accounting book, an addendum (containing additional information and corrections) and literature about other products supplied by Alfred Publishing Co., Inc. The Ready to Run Accounting book is a softcover, catalog-style manual of about 220 pages. The manual is generally good although it lacks an index, which would be helpful. It is written using the IBM function key designations so you need to be familiar with the Rainbow equivalents for the IBM keys. (This information is available in the July Newsletter, in area 12 of the WASH-A-RUG Bulletin Board, and may now be provided with the Rainbow version of the program). Otherwise, it is straightforward and easy to read and contains listings of the actual macros and cell contents for all but one of the spreadsheets. The book includes a good discussion of general accounting principles and a very thorough chapter on Lotus 1-2-3 and Symphony functions and macros. The book and the disk were originally offered separately but are now sold only as a set.

The software consists of a series of separate but integrated worksheets for cash receipts, cash disbursements, accounts payable, accounts receivable and journal entries as well as a series of printed reports including a chart of accounts, a trial balance, accounts payable, accounts receivable, general ledger detail, the updating journal entries, and financial statements (balance sheet and income statement with supporting schedules). There is also a spreadsheet for printing monthly bills from the accounts receivable information.

Ready to Run is set up for an accrual-based accounting system and a service business. However, it can be easily modified for a cash-based system and/or a product-oriented business. The package is supplied with numbers assigned for 20 vendors and 20 customers with room to expand to 100 of each. If this is not enough, the chart of accounts can be expanded to 1000 by renumbering according to clear instructions. The preassigned numbers are somewhat annoying in that the trial balance and the bills will print with each unused account number followed by a string of zeros. Most of the worksheets are for data manipulation, so to "customize" the chart of accounts, changes need be entered in only two worksheets. The instructions could be more explicit but the changes can be accomplished without much difficulty.

Alfred Publishing now offers a separate module to allow the user to customize the chart of accounts, financial statements, trial balance and bills. This eliminates the zeros described above and offers much greater flexibility. (It sells for \$19.95 additional and is available in a Rainbow version.)

Ready to Run will accommodate either 12 months or 13 financial periods, whether on a calendar or fiscal year. A significant advantage of the system is that it permits entries to be made to prior periods while maintaining a clear audit trail. This is particularly convenient in an accrual system when bills or arrive after a period has been closed. Rather than making the entry in a subsequent accounting period, it is possible to make a correcting entry in the proper period and reprint the financial statements for that period.

The system includes well-written instructions for installation on either a dual-floppy or hard disk system. Since there is an autoexecuting batch file for start-up of the Ready to Run system, I find it easier to keep the whole system in a subdirectory. This eliminates the execution of the batch file every time I enter Lotus 1-2-3. To get into the Ready to Run spreadsheets, simply use the Lotus file directory command to define the appropriate subdirectory as the "current directory".

Since the Ready to Run Accounting System is a template program for Lotus 1-2-3 or Symphony, the same Rainbow function keys are used. The Lotus utility programs for printing graphs, file translation, and file management can be used (and graphs can be displayed if you have a graphics board).

The system is entirely menu-driven using the Lotus interactive macros which allow choices based upon keyboard input. An initial "Main Menu" screen allows you to enter data, update the general ledger or print reports and each choice brings up additional menus by calling up other worksheets. All menus offer a "quit" option which returns you to the main menu (from the sub-menus) or to the Lotus program (from the main menu). The standard Lotus commands such as "print" can be invoked by using the <Break> key to exit from the menu commands. (I have entered control sequences for all printed reports to use 12 char. per inch pitch and customized page headings.) Each worksheet contains a handy macro to re-start the menu after using the <Break> key.

The only caveat with Ready to Run, as with any other Lotus application, is memory. A large enough spreadsheet could conceivably exceed the minimum 256k requirement, although in practice, our largest spreadsheet contains the financial statements and is less than 30k (well within the limits).

Ready to Run Accounting is an excellent bargain at \$ plus \$ for the customizer, which I'd recommend. It has all the attributes of much more expensive packages plus will print bills. One of its greatest strengths is its ease of operation. With a rudimentary knowledge of accounting and Lotus 1-2-3, you can have the system operational in relatively short period of time. For more information, contact Alfred Publishing Company, 15335 Morrison Street, P. O. Box 5964, Sherman Oaks, CA, 91413, (800) 292-6123, or (818) 995-8811.

(c) 1985 by Paul Vince
[This article was previously published in the WARUG Newsletter.]
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PRODUCT REVIEW: WPS-80 WITH LIST/MAIL By George Chamberlain

WPS-80 is a full function word processing program developed by Exceptional Business Solutions, Inc. for the Rainbow. WPS-80 is a clone of the popular DECmate Word Processing program which Digital has been selling for several years. EBS developed WPS-80 in response to user requests for a DECmate compatible word processing program for the Rainbow.

In addition to the Rainbow, WPS-80 is available for the Robin (VT-180), DECmate III, and the PRO series micros. WPS-80 supports the standard DEC printers as well as a wide variety of non-Digital printers.

WPS-80 is keystroke compatible with the WPS family of word processing programs, including WPS-8, Word-11, CT*OS, DECword, and WPS-PLUS. WPS-80 provides the same document formatting and printing functions. Users already familiar with one of the other programs can use WPS-80 with no additional training.

Some of the most important features of WPS-80 are:

- o Full screen editing capability. The cursor is not locked on the 24th line as it is with other programs in the WPS family.
- o Context Sensitive Help. When the user presses the Help key, it delivers a message which pertains to the current situation. Help is never selected from a Help Menu.
- o Ten cut and paste buffers. WPS-80 has 10 buffers for moving text within a document, or from one document to another. The size of the buffers is limited only by the available disk space.

- o "Oops" key. WPS-80 stores the last 1000 characters that you delete. The Oops key lets you restore text many levels back.
- o On screen bolding and underlining.
- o 132 column wide screen mode for wide documents.
- o Superscripts, subscripts, and over strike. WPS-80 supports these properly even on printer such as the LA100, which do not reliably reverse the paper.
- o Floating footnotes.
- o User-defined macro keys. WPS-80 provides 10 user defined keys. Each stores up to 132 keystrokes. UDKs can be nested.
- o Library document. Often used boilerplate text and abbreviations can be stored in a library for quick insertion into a document with just a few keystrokes.
- o Search and replace. WPS-80 can provide both single and global search and replace.
- o Calculator. WPS-80 provides a four-function calculator with 14-digit precision.
- o Typewriter mode. WPS-80 lets you type directly to the printer, either in character by character mode, or line by line mode.
- o CP/M file conversions. WPS-80 can convert any standard CP/M file into a WPS-80 document, or from a WPS-80 document to a CP/M document. If desired, hard carriage returns can be stripped.

The latest version of WPS-80 includes LIST/MAIL, also known as list processing or mail merge. This feature allows you to produce customized form letters from a mailing list of names. The user can define the format of the list and the form. LIST/MAIL can, in fact, be used as a small, but powerful, database. Using the selection specification, the user can select from a list only those records which satisfy specific criteria, such as zip code range, specific city or states, and so on. LIST/MAIL is designed to be fully compatible with DECmate WP list processing, except for math and sort.

WPS-80 now supports fully-formatted document communication using standard Digital DX and CX document transfer. A Rainbow using WPS-80 can now transfer documents to any other computer using standard DX protocol, including DECmates, WS-78s, POP-11s, VAXes, and, of course, other Rainbows. A VAX equipped with DEC/DX can serve as a file server for a network of Rainbows using WPS-80. CX mode can be used to send and receive electronic mail.

For those with a mix of DECmates and Rainbows, WPS-80 also includes a utility program which allows conversion of DECmate documents on RX50 floppy disks to WPS-80 documents and back. Documents are converted fully formatted.

The latest version of WPS-80 lets you bury printer escape sequences in a document. Using this feature, you can invoke special features of your printer, such as graphics, which are normally not supported by WPS-80. Future enhancements now in the works include a spelling checker, a sort utility, and version for the IBM-PC, as well as an MS-DOS version for the Rainbow. For more information, contact Exceptional Business Solutions, Inc., 2210 Wilshire Blvd., #119, Santa Monica, CA 90403, (818) 760-8921.

[This review appeared previously in the Rainbows Pacific Local User Group Newsletter.]
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SOFTWARE REVIEW: IN SEARCH OF A SHARPER "IMAGE"
by Ken Geremia

IMAGE is a CP/M based program which integrates basic word processing and graphics functions in a single package. The program, which retails for \$295 (plus \$7 shipping and handling) operates on the DEC Rainbow, Pro 350, and DECmate (the PRO and DECmate must have the CP/M option). IMAGE for the Rainbow requires 128K RAM, for the PRO and DECmate, 64K RAM. It does not require a graphics board.

Problems in learning the software should be minimal. MicroArt has done a superb job in organizing, writing and indexing the 130 pages of documentation contained in a 9" x 12" loose-leaf binder. It reads easily and clearly. This chalks up a real plus for IMAGE for first-time or "scared-stiff" computer users. Typing in "SHOWME" gives you a go-at-your-own-pace demonstration of IMAGE's features.

Image will operate with minimum memory but requires both floppy drives to function. Drive A (or a hard disk drive) is used to start-up the program. After start-up, drive A must be used for your text files. A second disk, which must be in drive B, is used as a "scratch pad" for IMAGE to keep track of what's going on in its virtual memory. This drive-specific limitation is the result of a Z80 assembly language program operating on CP/M 86/80 v.2.xx. According to Jim Wolfston of MicroArt, there is apparently a "function 37" problem that has never been corrected by DEC. Consequently, the program is unable to take advantage of a hard disk and has a maximum document size of 39 pages.

IMAGE is entirely menu-driven. Clear prompts and simple graphic HELP screens guide the user through its operations. Whenever a slip of a finger might cause you to lose or seriously alter your work, IMAGE prompts for a confirming "Y/N" response. That's a friendly touch that IMAGE appears to have put in most of the right places. (After awhile, however, you get the feeling there are too many right places.)

Although IMAGE is not a "powerhouse" word processor in the same league with WordStar, WordPerfect, or Samna, it has many attributes that outdistance rivals in its price class. With IMAGE you can center text, boldface, underline, enter super- and subscripts, change printer fonts and adjust your margins with simple menu selections. Margins may be left- or right-justified, or both.

Search and replace functions allow easy word or phrase changes. IMAGE allows you to move to any page in your file almost immediately. A strip which always appears at the bottom of the screen facilitates editing of characters, phrases, sentences, and even paragraphs. The menu strip is cleverly designed so it appears (in normal use) right above Rainbow's function keys (6-20) so that the screen menu and keyboard are visually aligned. Obviously, you can't limit your menu to 15 function keys and still do a whole heckuva lot, so the MicroArt folks use the function 6 key as sort of a "rotary switch" that allows you to flip through 6 sets of menus that can be associated with the keys.

MicroArt put some thought into their menu/keyboard selections. For the most part, they are grouped functionally. Editing functions are clustered in one bank while copy and movement commands are in another. Margins, justification and centering commands are in still another, while printing control commands and graphics commands fall into other groups.

Graphics commands! That's right, and they're a lot of fun-- as well as very practical. IMAGE owes its name and its real value to its graphics capability. This is the only word processing program I know of that has integrated graphics functions. (How come no one else has done this?)

Bar graphs (horizontal or vertical), organization charts, flow charts, or just plain doodling are quickly and

easily produced. Twelve of Rainbow's graphic characters can be used as "pen tips" and drawn on the screen by way of the cursor arrows. Literally, only a few minutes of reading and practice can let you do some very practical visual enhancements to your text. Boxing or bordering of headings, paragraphs or titles can be easily accomplished. Boxed-off fill-in-the-blank business forms can be created without any fuss. In conjunction with IMAGE's "FIELD" command, the forms created can be filled in by using the TAB to move to each entry position.

Graphic shapes such as boxes, bars and other rectangular depictions can be quickly copied and placed on the screen (and ultimately on your hard copy printout). This facilitates the construction of organization charts and other graphics that are comprised of repeated elements. (The graphics accompanying Bob Catt's article in the January, 1985 issue of the PC SIG newsletter were produced with IMAGE.)

Don't expect miracles, however. Diagonal lines are impossible, except for those which can be made with the slash or backslash keys. If you have any kind of serious graphic applications, the stair-stepping diagonals produced with IMAGE are not for you. (Remember, the Rainbow screen is not bit-mapped unless you have the graphics option; therefore, slanted lines are not easy to make.)

There are no stored graphic fonts available as might be found in LOTUS 1-2-3 or Graphwriter. (Some people want everything!) However, stylistic block lettering can be fashioned with IMAGE, although it's a tedious process. But it can be well worth the trouble if you want to create eye-catching special effects.

One method to save a few hours of your creative efforts would be to produce all the characters of a font; store the font in a separate file; and then call it up in a "window" to copy into your current file. This can be done for letterheads or other oft-repeated graphics as well. Neat results, but laborious.

IMAGE's window command allows you to scroll display a portion of any other page from your current file, or from another file, along with the text (or graphics) you're working with. Once located and marked, blocks identified in the window can be positioned and copied.

IMAGE directly supports four printers -- the LA50, LA100, LQP02 and the Diablo 630 (and compatibles). I suspect the LN03 laser printer can be driven under the LQP02 commands. IMAGE's printer drivers can control pitch selection as well as proportional spacing for characters and/or words. Continuous or form feed printing is under program control as are text and font selection for headers, footers and page numbering.

Graphics/text integration works superbly on the LA50 and is absolutely stunning on the LQP02. However, registration problems can occur on both the LA100 and the letter quality printers when you start using fonts other than 10-pitch. Nonetheless, a very professional looking presentation can be prepared as long as you plan carefully and do a little testing before you run your final copy. MicroArt composed its own documentation package with IMAGE and the Diablo printer.

For all its virtues: windows, graphics, simplicity--IMAGE has some serious drawbacks for those looking for a primary word processing package. Because it is all menu-driven, it can be slower to operate than command-driven programs. Routine operations for creating/editing files and printing files cannot be chained or concatenated, so even after you have learned IMAGE's sequence of prompts, you're stuck having to wait for each of them to appear before you can make your entry. Because of its virtual memory structure, IMAGE is often interrupted by calls to the file disk and the "scratchpad" disk.

This may not be as noticeable to those who are not "spoiled" by the speed of hard disk or RAM disk operations. Filenames can be up to 8 characters long ONLY. IMAGE will not allow you to enter file extensions. If you do a lot of word processing, this can really tax your imagination or severely

limit the cataloging of your files.

If you need to reformat the copy in your file to different margins, forget it. Even the nice folks at MicroArt admitted that the procedure, though possible, is cumbersome compared to other word processors. This is apparently a trade-off for some of the graphics and editing gymnastics that are made possible through the use of virtual memory.

Back up your IMAGE distribution disk right away. Our program arrived on a Wabash SS/DD disk with a HUB RING. Apparently DEC has never passed the word to MicroArt (as well as to so many others) that this is a "no-no." Jim Wolfston said MicroArt is now using SPECTRUM disks for distribution, and he will be contacting DEC for their latest advisory on hub rings. IMAGE has a couple of utility commands that enhance its versatility in working with other programs. The "MAKEIMG" command will convert files from other word processors to an IMAGE file so you can edit and print in the IMAGE format. Also, there's an "ASCII" command that converts IMAGE files to straight ASCII text files, handy for data transmission or for conversion back to another word processor.

IMAGE is one of the nicest introductory word-processing programs I've seen. It is the only word/graphics program I know of for the Rainbow, and as such, it is worthy of consideration if your writing needs are not imposing, or if your graphics and/or business form requirements warrant the purchase of a supplemental program that can easily produce some striking results.

It's a shame that no further changes are currently planned for MicroArt's IMAGE (at least in the CP/M format). A few enhancements and a little honing could turn this software into a truly powerful tool that would be hard to beat even in the big leagues of word processing.

IMAGE is produced by MicroArt Corporation, 200 Market Building, Suite 961, Portland, Oregon 97201, (800) MICROART. A demo disk is available for \$ or a demo and documentation for \$1. MicroArt has released version 4.03 of its IMAGE word/graphics processor program. Older editions (2 years old) can upgrade by calling Gloria at 800-MICROART for details. The cost is \$. Gloria also helps oldtimers and newcomers to IMAGE with any problems they may encounter.

(c) Ken Geremia

[This article appeared previously in the WARUG Newsletter.]

SOFTWARE REVIEW: PERSONAL PLANNER
By Ken Gordon

Personal Planner is a tax aid--a program which helps you analyze what effect various financial decisions will have on your Federal income tax. Not intended to be a tax preparation or investment management program, it is low in cost and limited in its capabilities.

Personal Planner could be helpful in considering retirement planning, investing, IRA contributions, home buying, or even checking your Federal income tax return. It calculates the tax consequences of various alternate assumptions and actions for a particular tax year. Taxes can be calculated for up to four alternatives in a single year, and for as many as four successive years. The program contains preset parameters based on current tax regulations for 1984 through 1987, but the proposed major changes in the tax law which Congress is considering, if passed, would make 1986 and 1987 incorrect.

Two types of tax reports are available. One compares tax liabilities based on four assumptions in a single year; the other compares the taxes resulting from one or more assumptions in four successive years. Assuming you provide the data needed, it calculates values for Form 1040, income tax averaging, earned income credit, and alternative minimum tax. Operation is straight forward, but the CPAids documentation is minimal.

How worthwhile is the program to the average Rainbow user? It can be a convenience, but it definitely is not a substitute for understanding your tax situation or for the actual calculations that go on the tax forms. The bulk of the work for any tax analysis is collecting the required data and estimating future financial values. Personal Planner helps you to organize that process, but does not make it less burdensome. Once you collect the information, you need to enter into the program. Personal Planner does not accept information from other sources, such as Lotus spreadsheets, and does not allow you to transfer the information typed in to another spreadsheet. The cost of the program is low (\$49, recently reduced from \$99), but I don't think the benefits of the program are balanced by the effort of collecting and entering the data required. You can make the judgement for your own situation.

Personal Planner is available in both MS-DOS and CP/M for \$ from CPAids, Inc., 1061 Fraternity Circle, Kent, OH 44240.

[This article previously appeared in the WARUG Newsletter.]

PRODUCT REVIEW: PRIVACY PLUS
By Arthur T. McClinton Jr.
Mitre Corporation

In the past, mainframe users assumed that their data was secure from other users since mainframe disk protection schemes kept most users out of one another's data. With the advent of personal computers, data is no longer protected. A person simply has to power up the machine and insert a floppy disk, whether the computer is an IBM PC, PC look-alike, or a DEC Rainbow. All suffer from the same problem-- ANY ONE WHO HAS THE DISKETTES AND A MACHINE OF THE SAME TYPE CAN GET THE DATA THAT YOU WANT TO KEEP TO YOURSELF!

The first solution, proposed several years ago, was simple enough--lock up the diskettes when they are not in use. Thus the control of the media protects the data. But personal computer users soon discovered that the 400K bytes of data space on a diskette were insufficient, and that accessing a diskette took 3 seconds, which seemed like a long time. The development of the Winchester disk solved both problems, first with 5 and 10 megabyte versions, later in 33 and 70 megabyte versions. But hard disk storage led to a new problem--the media was no longer removable. Again it was necessary to keep others from being able to access the data.

The immediate solution is to control the access to the machine. Some companies have installed power-up locks on their machines. IBM provides them as a standard option on the PC/AT. Third party vendors sell an array of locks for the DEC Rainbow and other machines. Because the power switch can be by-passed, however, locks don't really protect stored data. It is very easy to remove the entire hard disk from the computer, and haul it away. This takes less than 30 seconds in the DEC Rainbow, a little longer in an IBM PC/AT.

How can a user effectively protect data from the snooping eyes of others? Two obvious methods are:

- o Encrypting the data in the file so that the data is not understandable
- o Hiding the existence of the file to the person who does not know that it exists

PrivacyPlus, by United Software Security, is a program which allows the user to lock or unlock any file through the use of data encryption. (Once a file has been locked, no one can use it without the password--including the user himself. If you forget your password, you will not be able to access the file.)

PrivacyPlus allows the user to choose between two methods of encryption.

The first method is compatible with the National Bureau of Standards' DATA ENCRYPTION STANDARD (DES). The other is extremely fast, therefore ideal for use on large files. To encrypt this report on my Rainbow 100 with a 5 megabyte hard disk took 3 seconds using the fast method and 5 seconds using the DES method. The method used to lock the file is remembered automatically. When you unlock a file you give only the password. PrivacyPlus determines the method of encryption you used.

Another feature of PrivacyPlus is the ability to generate an encrypted file that may be transmitted over an electronic mail system. Files locked using the TEXT format contain only printable characters with no more than 72 characters per line. Files generated are about 65% larger than the original file. Files that are encrypted using the NORMAL format are only occupy only slightly more disk space than the original file. Once again PrivacyPlus remembers the file format during decryption so that it can be successfully UNLOCKED without the user having to re-enter format information.

Files, whether they have been encrypted or not, can be marked as HIDDEN or VISIBLE. This is a characteristic which allows them to be included in a normal directory file listings. All LOCKED files are marked as READONLY in the master directory and cannot be deleted by normal DOS commands. They can, however, be deleted by the PrivacyPlus ERASE command or some of the public domain "wash" programs.

PrivacyPlus is designed to allow the user to remove the input file from the disk so that someone can not use a disk utility program to scavenge the disk looking for the "deleted" input files. The options available to PrivacyPlus users for input file disposition are: LEAVE, DELETE, and ERASE. The ERASE disposition zeros every character in the input file and then deletes the file. ERASE takes longer but is considerably more secure. The standard default is LEAVE but may be changed by the user.

PrivacyPlus does allow the user to store an ID with each locked file. This is in plain text and is available to aid in the identification of the data with in the file. Obviously the ID should not contain the password or the entire purpose of encryption is defeated.

PrivacyPlus has many other little switches that make it a very useful and user-friendly program. However, the first time that you forget your password you will not consider it very friendly. There is no way to recover your file. Other switches allow the user to specify what to do if the output file already exists; that the command is running in BATCH mode; that multiple locks are being performed on the file (could be used to require two people to be present while the file is accessed); and whether the password should be echoed on the screen.

PrivacyPlus provides two help files on the program diskette. PP is the PrivacyPlus program. The PPCONFIG program can be used to set the defaults of the various switches in the manner that suits your normal style of the use of the program. Remember, do not lock PrivacyPlus itself. You will not be able to use it to unlock itself.

PrivacyPlus is available in versions for the DEC Rainbow and the IBM PC. The product is not sold as a stand alone program, so it the price will be too high for most individual users. The product is sold by site licensing. The price depends on the length of the license and the size of the site. For more information, contact United Software Security Inc., 6867 Elm Street, McLean, Va. 22101, (703) 556-0007.

[Editor's note: If you want the Rainbow version, you will need to be persistent. Not all United Software employees are aware that the DEC version can be sold.]

[This article previously appeared in the WARUG Newsletter.]
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PRODUCT REVIEW: NEWSPAPER SYSTEMS NS200 TERMINAL AND SOFTWARE

By Patricia E. Smith
The San Diego Union

The NS200 terminal and version 2.0 software, both from Newspaper Systems, Support and Engineering Associates, of San Diego, emulates Digital's VT71, VT72, and VT173 TMS-11 editing systems with nearly identical features and speed. NSSEA's MS-DOS version 2.11 based software permits newspaper reporters and editors to use NS1200 (DEC's popular Rainbow) terminals either as remote bureau workstations or as extensions to the host. In addition to providing all the features of the VT71, VT72, and VT173 terminals, NSSEA's package has a few extras, too.

The package comes with a well-written, easy to understand manual; however, newspaper users may want to extract the larger documents into a few pages of brief instructions for reporters and editors. At the San Diego Union, these brief instructions and approximately fifteen minutes of one-on-one training have been sufficient to train users already familiar with the VT71, VT72, and VT173 terminals.

As a bonus, the NS200 offers 64 user-definable keys instead of 32 or 52, and its keyboard and amber monitor are pleasant to use. At the San Diego Union and Tribune newspapers, NS200's operated off line in local mode have provided a way to add reporter work stations when no other kind of expansion was possible. At these newspapers, reporters and editors far outnumber the available terminals. Together, the two newspapers use NSSEA's software in nearly 50 NS200's installed since March, 1985.

Because NSSEA's package is built on a standard PC in the industry, users need not fear that the terminals--like DEC's VT71 and VT72--will be discontinued by the manufacturer at some point in the future. And in addition to emulating TMS, the NS200 can operate like most PCs, to access outside data bases and run popular programs such as Lotus 1-2-3, Graphwriter, and MASS-11.

For more information on NS200, contact Newspaper Systems, Support, and Engineering Associates, 10225 Barnes Canyon Road, Suite 105, San Diego, CA 92121, (619) 587-3779.

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SOFTWARE REVIEW: INFOCOM'S DEADLINE

by Bill Gavelis

After hearing that I was hooked on the old mainframe text adventure game, ADVENTURE, a friend gave me DEADLINE, by Infocom, to see what I thought of it. My first impression is that this genre of programs has become quite sophisticated in what kind of input it will understand. My second impression is that INFOCOM has become very sophisticated in its marketing of the games.

DEADLINE is a murder mystery. It comes with background interviews of the characters, police lab reports of the evidence, and even a photograph of the scene of the crime. This particular game is time dependent. You only have a certain number of moves to arrest the murderer. However, you also have to accumulate evidence to prove the motive, the feasibility, and the method of the murderer.

I started off wandering around inside and outside of the victim's house. This requires that you make a map and keep it handy when you play the game. The first rule of text adventure games is that everything is there for a reason. Do not pass by anything or anybody without looking at it and asking lots of questions about it. I had the murdered pegged from the first time I played, but the judge kept letting the murderer go because I could not prove the motive. I knew that there had to be some important papers around the house somewhere and that they would

probably be in a safe. However, all the characters were very unhelpful when I asked about these things.

In the course of my investigation, which extended over a few weeks of intermittent activity, one of my suspects got murdered. The next time I played the game I tried to position myself so that I could prevent the murder, or at least see the murderer. As a result I ended up getting murdered!! I was stumped. Fortunately, while scanning a computer bulletin board in New Jersey, I happened on a hints file for INFOCOM games. I succumbed to curiosity and read it.

I could have kicked myself! I had overlooked a very crucial and very obvious piece of evidence early on in my investigation of the murder scene. Oh well... But now, the big question is: If I had paid \$ for this game, would I have been satisfied with the amount or entertainment which it provided? My answer is that I am not sure.

[This review was originally printed in the University of Pennsylvania Campus DEC Rainbow User's Group Newsletter.]
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VUSOFT RELEASES SWITCH-IT

VuSoft, which developed the popular program Do-It, has announced Switch-It, a dual tasking windowing environment for the DEC Rainbow. The program can run two applications on a Rainbow at the same time and also gives the user the ability to transfer data from one application to another using a cut and paste facility.

Switch-It allows the user two have two independent full screen consoles and to switch between two application windows at any time. For instance, the user can run a Lotus 1-2-3 spreadsheet in one window, and communicate with another computer in the second window. He can then pick up data from the spreadsheet and transfer it to the other computer, print the other computer's screen on his local printer, and switch back to 1-2-3 with just a few keystrokes.

When running only one application, the other window is available as a standard MS-DOS console in which the user can format a floppy disk, delete, rename, or view files, or print a file in the background.

Switch-It it also has a print screen facility which allows the user to print the screen or save it in a file to be merged with a word processor.

Switch-It is compatible with virtually all applications available on the Rainbow. It requires at least 256K of memory and MS-DOS 2.05 or 2.11. Switch-It costs \$ and can be installed on a hard disk. For more information, contact Vu-Soft, Inc., 248 Tower Rd., Lincoln, MA 01773, (800) 628-2828, ext. 887 or (617) 259-0686.
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PRODUCT UPDATE: MEDIA MASTER VERSION 3.0

Media Master is a program which enables you to format, read and write disks from a number of other computers on the Rainbow. Intersecting Concepts, 4573 Heatherglen Court, Moorpark, CA 93021, (805) 529-5073] previously known as MDG & Associates) markets Media Master. Version 3.0 requires CP/M-80, and 128Kb. It costs \$. The program is also available for the IBM-PC (and clones), Osborne, Kaypro, Zenith and Sanyo computers, as well as the Rainbow.

Version 3.0 is a definite improvement over the earlier version. Disk formatting and disk conversion programs which were formerly separate have been combined into a single program. Additionally, Media Master can now be used with hard disks and RAM disks, in addition to the CP/M user numbers. Menu display has been updated. The documentation improved and rewritten. The number of supported formats has increased from 24 to 43. By sending in the original distribution disk to the address

above, owners of previous versions of Media Master will get a \$75 credit towards the price of the new version.

Below is a list of the supported formats:

Actrix
Cromemco CDOS
Cromemco w/Int'l Term
DEC Rainbow CP/M-86/80
DEC Rainbow MS-DOS
DEC VT-180 (Robin)
DECmate II CP/M
Facit DTC
H/Z Z90 40 track 1k blk
H/Z z90 40 trk 2k blk
Heath Zenith z90 80 track
Heath w/Magnolia CP/M
IBM CP/M-86 SSDD
IBM MS/PC-DOS 1.0
IBM MS/PC-DOS 2.0
Idea Britelex
Insight Dev.
IO-120
Ithaca
Kaypro II
LNM-80
Lobo Max-80
Lobo Max-80 512
MacSym 350
Monroe QC8P20
Morrow MC2
NEC PC-8001A
Olympia ETX II
Osborne DD
Osborne Osmosis
Phillips 3000
Reynolds and Reynolds
S-100 40 track
Superbrain, Jr.
Systel II CP/M
Teletek (40 track)
TRS-80 FEC CP/M
TRS-80 III Hurr. Labs
TRS-80 III Memory Merchant
TRS-80 IV Mont. Micro
TRS-80 IV CP/M+
Xerox 820 II DD
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PRODUCT UPDATE: WORDPERFECT 4.1; DUE DATE FOR RAINBOW VERSION UNCERTAIN

WordPerfect version 4.1 has been announced by Satellite Software International of Orem, Utah. The date for the Rainbow version has not been set, but SSI believes it will be available within two months. The upgrade will cost \$. For more information, contact SSI at (800) 321-4566. Already an excellent word processor, WordPerfect has added the following features, in addition to a new manual and template:

- o windows and split screen editing
- o ability to exit to DOS or Word Perfect Shell
- o ability to perform a sort on lines, paragraphs, and secondary merge text (previously the Sort program was a separate option, and cost \$95)
- o the ability to undelete up to three previous versions
- o ability to protect text, ie., keep certain text blocks or columns together on a page
- o line drawing
- o ability to see up to five columns side by side in column mode

- o an online 50,000 word multi-level thesaurus (alternate word choices are displayed on screen and can be inserted into the text with a single keystroke)
- o the WordPerfect Dictionary has been expanded from 90,000+ words to 115,000 words
- o memory caching (up to the amount of available RAM; makes the program operate much faster)
- o macro pause which allows pauses to be built into macros so that user input can be solicited and delays can be added; visible execution
- o an automatic screen rewriting mode
- o the ability to center and flush right a block of lines
- o the ability to cut and paste rectangular blocks of text
- o displays the status of caps lock
- o enhanced repeat function
- o enhanced cursor movement for columns and repositioning
- o enhanced critical error handling and back-up text saving
- o ability to access List Files from the Retrieve Text Function
- o ability to copy from List Files, or perform a word search
- o ability to change directories in List Files
- o ability to view text normally in Reveal Codes
- o ability to super- or sub-script a block of text
- o type through printing by character or line, so that the computer can be used as a typewriter
- o typographical spelling error correction
- o word count
- o paragraph level specification for paragraph numbers

DO RAINBOW OWNERS NEED LOTUS 1-2-3 RELEASE 2?

Despite the interest of high volume corporate Rainbow 1-2-3 users, it appears that neither DEC nor Lotus have any intention of making the new version of 1-2-3 available for the DEC Rainbow. Lotus has told interested Rainbow users that it is up to DEC to arrange for the program to be ported to the Rainbow. DEC denies that any effort is being made to transport Release 2 for the Rainbow.

Incorporated in Release 2 are features of Symphony, as well as 1-2-3 enhancements, such as a larger spreadsheet, improved file-sharing capabilities, new mathematical and string functions, a macro-command language similar to that in Symphony, and improved performance. Release 2's new macro language, which includes 40 new commands, is compatible with Symphony files. With the exception of macro commands which cause the cursor to be repositioned, Symphony files can be utilized in 1-2-3 Release 2. Additionally, Lotus has retained the command language in Version 1A, so existing Lotus files can be used as is.

The size of the spreadsheet has been increased to 256 columns by 196 rows. Memory management on the worksheet has been enhanced so that worksheets consume much less memory. (PC Week cites an example where a 1A worksheet which requires 369K used only 34K of memory.) The program now warns that you are running out of memory as it happens rather than after the fact.

Release 2 supports the 8087 math co-processor, which increases calculation speed.

The Lotus Transport program, which is easy to use, has been enlarged to incorporate all currently existing Lotus file types, including Jazz and Symphony. It also includes a conversion utility for DIF and dBase II files.

The Lotus Filemanager, a useful utility program, has been removed. Release 2 allows password protection of individual files. Additionally, individual cells, ranges, or complete worksheets can be "hidden." Lotus has still not added a null function to Release 2.

For IBM users, the upgrade costs \$

[Information on Lotus 1-2-3 Release 2 was excerpted from the October 1, 1985 PC Week,]

PRODUCT UPDATE: CORRECTSTAR
by Paul Vince

CorrectStar is an excellent spelling checker which MicroPro developed to replace SpellStar. It contains 65,000 words (vs. SpellStar's 20,000) and offers a phonetic spelling check which suggests alternatives to misspelled or unrecognized words. In operation, CorrectStar actually uses 3 dictionaries. The 65,000 word Main Dictionary serves as a backup if the word is not found in the Internal or Personal Dictionaries. The Internal Dictionary contains 9000 words representing about 83% of the words found in an average document. The Personal dictionary is created by the user during the spelling check and contains up to 1500 words (usually names or specific terms) commonly encountered by the user. Multiple Personal Dictionaries can be created if 1500 words are not enough. Different Personal Dictionaries can be created for different functions (personal terms, work-specific terms, etc.) and they can be edited by the user to periodically remove words and names no longer needed. CorrectStar is considerably faster than SpellStar v. 3.3 and represents a dramatic improvement.

CorrectStar is available only in an MS-DOS version and requires WordStar 3.31 to operate. (This is NOT the DEC Classified version. See below.) For CP/M WordStar users, there is a new SpellStar v.4 which does not correct, but has an enlarged dictionary of 55,000 words and is supposed to evaluate words "in context".

A problem for DEC WordStar users: apparently version 3.31 of MS-DOS WordStar is required to run CorrectStar version 3.31. (CorrectStar, along with MailMerge and StarIndex, forms the WordStar Professional Options Package.) Unfortunately, according to the May 1985 Rainbow Product Guide distributed at a recent WARUG meeting, the DEC Classified version of MS-DOS WordStar is v.3.30. Version 3.31 is available directly from MicroPro. The "Y3" version sold by MicroPro refers to the DEC Rainbow FORMAT and is unrelated to the VERSION.

Question for DEC: If they are indeed committed to the Rainbow, why can't they supply the latest version of the software or an enhancement like CorrectStar. The DEC Classified MS-DOS Professional Options Package is version 3.30 and contains SpellStar rather than CorrectStar. It would seem logical to have an arrangement with MicroPro and other third-party suppliers so that Rainbow owners don't have to go to outside sources to get the latest software versions. However, based upon prices, this present arrangement may be best: the MS-DOS WordStar Professional package (version 3.30) mentioned above lists for \$ from DECdirect. The SAME software is available from 800-SOFTWARE in Berkeley, CA for \$299, which is 57% less than through DEC. The argument that DCS software carries DEC's technical support seems weak since BOTH MicroPro and 800-SOFTWARE also offer technical support. In addition, the only apparent difference between DCS and third party WordStar (besides the price) is the color of the package. Even though WordStar uses a number of Rainbow function keys, the documentation has not been revised to reflect this. Instead, the DEC-supplied documentation contains the generic WordStar commands and includes a chart of Rainbow function keys, which is also supplied with the third-party version. C'mon DEC--for an additional \$ PER COPY, you could at least revise the documentation to reflect the Rainbow keys!!!

(c) 1985 by Paul Vince
[This article previously appeared in the WARUG Newsletter.]

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EXCHANGING CP/M VERSIONS OF WORDSTAR AND dBASE II FOR MS-DOS
VERSIONS

by Paul Vince

At the May WARUG meeting Katrina Holman, of DEC's Rainbow Marketing Group, stated that there was a clear trend toward the MS-DOS operating system and that new DEC classified and distributed software would reflect this trend. She proceeded to describe DESQ, windowing software which can integrate various MS-DOS packages such as Wordstar, dBase II, Lotus 1-2-3, Multiplan and others (see May Newsletter). I called MicroPro (WordStar, SpellStar, MailMerge and StarIndex) and Ashton-Tate (dBase II) for information on how to exchange my CP/M software for MS-DOS versions (NOTE: if you have the DEC Classified versions of this software you should contact DEC directly).

Micropro

MicroPro requests that you send the original diskettes, the appropriate fee (see below) and a letter requesting a "media exchange to the Y3 format" ("Y3" is their MS-DOS format which specifically supports the DEC Rainbow.) The package should be sent by insured mail to:

MicroPro International Corp.
ATTN: Customer Update
P.O. Box 4960
San Rafael, CA 94913

The CP/M Wordstar ProPack (also called Wordstar Professional) included WordStar, SpellStar, Mailmerge and StarIndex. In the MS-DOS version now available, SpellStar has been replaced with CorrectStar which they claim runs faster and contains 65,000 words rather than SpellStar's 20,000. Depending upon which programs you want to exchange, fees are as follows:

- CP/M Wordstar to MS-DOS Wordstar \$
CP/M Wordstar to MS-DOS Wordstar ProPack \$
CP/M Wordstar ProPack to MS-DOS ProPack \$
CP/M SpellStar to MS-DOS CorrectStar \$

The latest CP/M version of Wordstar is 3.33, which supports operation from a hard disk. The latest (and equivalent) MS-DOS version is 3.31. For additional information, call MicroPro customer update toll-free at (800) 227-5609 from 8-10:30AM and 12-2:30PM, Pacific time. The lines are usually busy. The exchange is supposed to take up to two weeks, which it did, exactly.

Before spending \$60.00 to exchange WordStar alone, you may wish to try the AME86 program found in Volume 28 of the Public Domain Library as well on some local Bulletin Boards. This will allow you to run Wordstar and other CP/M programs in MS-DOS. I was not entirely satisfied since I couldn't run SpellStar with AME86 and Wordstar with AME86 would frequently exit to the operating system instead of loading a file to edit. I exchanged the CP/M Wordstar ProPack for the MS-DOS version. The price was the same as for exchange of SpellStar for CorrectStar, a phonetic spelling checker with over 65,000 words. After trying CorrectStar I feel that the replacement of SpellStar alone would have been worth the price.

Ashton-Tate

According to Ashton-Tate's technical support technicians, the Rainbow IS supported on the MS-DOS version of Dbase II. A "format exchange" from CP/M to MS-DOS is available for \$100.00. They request that you return all original diskettes and all documentation with a letter stating that you have retained no additional copies of the software. You will have to

call Customer Update at (213) 204-5570 (ask for Marva Patterson) to get a Return Authorization (RA) Number which MUST appear on the shipping label or Ashton-Tate will not accept the return. NOTE: When calling Ashton-Tate, you will need your system serial number, which appears on the system diskette and at the upper right corner of the Software License Agreement which came with the software.

The software and documentation should be sent by insured mail or UPS to:

Ms. Marva Patterson
Customer Update
Ashton-Tate
10111 West Jefferson Blvd.
Culver City, CA 90230

Note that this is NOT the same street address as the administrative offices at 10150 West Jefferson Blvd. The exchange was supposed to take about 2 weeks, but took over 8 (see below).

PRODUCT UPDATE: A SAD TALE OF dBASE II FOR THE RAINBOW
by Paul Vince

About a year ago I purchased a CP/M version 2.40 of dBase II which was the only available DEC Rainbow version. About two months later, I called Ashton-Tate to find out why I had not received the utility disk which was supposed to be sent upon their receipt of my warranty registration card. I was advised that the utility was no longer available but that they would send me version 2.41 of dBASE II (which had a better indexing system than version 2.4) plus a screen editor as a no charge update. So far, so good. I received the update in late September.

In December, Ashton-Tate sent a letter announcing version 2.43 which featured improved indexing and corrected some KNOWN INDEXING BUGS in version 2.41, which I could order for \$25.00 if I acted before January 31, 1985. While I was not delighted at the thought of paying to correct the free improvement to my original purchase, I sent in the order. In March, I called to find out about version 2.43 and was told that it had been recalled after the discovery that it had worse indexing bugs than the version which it was supposed to replace. Shortly thereafter, a form letter arrived from Ashton-Tate offering a choice of a refund of the money paid for 2.43 or to await the corrected version which should be available soon. I decided to wait for 2.43. In May, I decided to exchange my CP/M version of dBASE II for an MS-DOS version and followed Ashton-Tate's instructions to return the original diskettes plus all documentation and a letter stating that I had retained no copies along with a check for \$. The "Format Exchange" as they called it, was expected to take "a couple of days" but no more than two weeks.

Two weeks later, I began calling to try to find out what happened to my order. At five weeks, I was told that the matter had been turned over to a supervisor because of the long and unexplained delay. At seven weeks, after the supervisor failed to return my calls, I sent an overnight letter to Edward Esber, president of Ashton-Tate describing the situation and requesting cancellation of my order and return of my software, documentation and check. At eight weeks, after no response from Mr. Esber, I attempted to reach him by phone and was advised to call Linda Bearcroft.

Linda called the following day to apologize for the delay and said that they would immediately ship an MS-DOS version 2.41 by Federal Express at no charge and that I would also receive version 2.43 at no charge, as soon as it was available. I suggested that version 2.40 would be preferable to avoid the known bugs in 2.41, but was told that it was no longer available and that Ashton-Tate did not have a master disk to copy. (Linda

also said that version 2.41 in MS-DOS for the Rainbow was not routinely stocked and they had to make a special copy from the master disk to send to me.) The problem was explained in a later phone call to someone else in the update dept who did not know who I was. Apparently the long awaited version 2.43 was finally released in mid-June. At the time of the release, all previous versions of dBASE II were discontinued (which included my order even though it had been received in mid-May). The only problem with this executive decision is that the Rainbow version 2.43 is NOT yet available and may not be for some time. So, Rainbow owners, the old dBase II version 2.40 (which works) is not available, the most recent version 2.41 (although buggy) has been discontinued and the new version 2.43 has not yet been released. At 8 1/2 weeks after I mailed my software to Ashton-Tate, I received a copy of MS-DOS version 2.41 of dBASE II for the DEC Rainbow, and am fervently hoping that the once-recalled version 2.43, when available for the Rainbow, will justify Ashton-Tate's decision to discontinue all previous versions.

I must confess that I am not reassured by the fact that they sent me two copies of a screen editor diskette, one of which carries a version number that Ashton-Tate says does not exist. I am also extremely unhappy with Ashton-Tate's policy of requiring the return all software and documentation. The "no charge" replacements are small consolation for losing the use of software (for which I had paid) for 8 1/2 weeks. It seems to me that such a policy carries a firm responsibility for prompt and effective customer service.

To give credit where due, however, I must commend Ms. Marva Patterson of the Update Dept. for her concern and attention, Jack from Technical Support who tried to sort out the screen editor confusion and I am particularly grateful to Ms. Linda Bearcroft for accomplishing in two days what no one else had been able to manage in two months. Unfortunately, Ashton-Tate is exhibiting many symptoms of a company whose growth has outstripped its capabilities and I cannot avoid the impression that employees whose performance is noteworthy are acting in spite of Ashton-Tate's organization and policies rather than because of them.

[The two articles above were published previously in the WARUG Newsletter.]

PRODUCT UPDATES: WORDSTAR, DBASE, SMARTKEY

By Guy Stefan-Romano
Amnion Help Line
San Francisco

WordStar

More on the WordStar puzzle brought up by Paul Vince in his article on CorrectStar: after getting several calls over the past few months at the Amnion Help Line, I attempted to get a simple explanation of the differences between the MicroPro and DEC versions of WordStar. To illustrate the difficulty of my quest, I offer a simple arithmetic problem. . . I live 14 miles from MicroPro, but since it is across the Golden Gate Bridge, there is a minimal zone charge of 3.5 cents per minute. My phone bill for calls to MicroPro on this one search came to \$41.83!!! But I do have the facts now.

Here's how it all goes. Once MicroPro grants licenses to OEM's (Original Equipment Manufacturers), like DEC, to market their software, as long as the OEM does not alter the basic functions of the programs, MicroPro does not care how or whether the OEM alters the code, because MicroPro no longer has any responsibility or commitment to support the product. (This is true not only with DEC, but all other OEM situations involving non-IBMcompatible computers.) To complicate our lives, there are two versions of MicroPro products [as mentioned by Paul Vince in the article above]. The Y3 version is actually a disk format.

What I am talking about here is a version sold by MicroPro for a specific machine, and a version sold by the machine's manufacturer. THESE TWO VERSIONS ARE USUALLY TOTALLY INCOMPATIBLE WITH EACH OTHER. What this means is that if you buy WordStar from DEC and later want to get MailMerge, you must buy the DEC version of MailMerge. If you buy the MicroPro version then you will have to stick with MicroPro for all of the various WordStar related add-ons if you want the programs to work with each other. CorrectStar will work with any version of WordStar version 3.30 or above--as long as it is from the same source. The hitch is that DEC does not plan to bring out CorrectStar.

The advantage to buying the MicroPro versions of WordStar and friends is that you can get the newer updates in a more timely fashion, and that you are assured that all the programs will work in an integrated manner.

If you are a WordStar aficionado, Underground WordStar is a "must have" product. I say "product" because for the fantastically low price of \$20 you get not only the book mentioned above, but a disk of programs. In a clear and easy way, the book will help you customize WordStar.

It is also chock full of great tips, shortcuts, and many things which are not found in the manuals, but make WordStar more useful and productive. The disk has some very nice programs, which require GW Basic and some minor rewriting since they were written for use on the IBM. You'll need to remove "SOUND" and "LOCATE" statements, if you seriously use WordStar, you'll find this a great asset. It's available from

Hard/Soft Press
Box 1277-Z
Riverdale, NY 10471

for \$ plus \$ postage.

Smartkey

It is now confirmed that Software Research Technologies, the company that sells SmartKey, has decided to let DEC owners fall by the wayside. You can still buy the program complete with debilitating bugs. [Editor's note: SmartKey suggests buying the product for Rainbow 100Bs and 100+ only.] Unfortunately you will only be able to get version 2.11 while the rest of the world is buying version 5.0! It is a shame because aside from program bugs, including those in SmartPrint, which comes with it, the two programs are excellent and a true bargain. They are still worth getting for the Rainbow, despite their shortcomings, if you need a keyboard enhancer at a low price.

(By the way, if you use SmartPrint and WordStar, you'll be disappointed to learn that MicroPro's WordStar and related programs won't work with it. In fact, the system will hang up unless you trick it. Even then, data being sent to the printer will ignore SmartPrint.)

DBase III

DBase III woes. . . I have just spent six weeks going through an evaluation copy of DEC's version of this product. Yes, the new program is all it is cracked up to be. For the novice, the Assistant is a boon. All the new features and the expansions really make the program more productive and useful. Since I don't have a franchise with the Social Security Administration, I ponder the value of having the power to store in excess of 2 billion records per datafile. Maybe some of you need files that large.

But this is not a review of dBase III. It is about the DEC version that is currently available. The program is severely hampered by its keyboard hypersensitivity. When using it, you must be extremely careful not to hit a direction key, like "Next

Screen", twice or more in rapid succession. The system goes berserk and the only way out is to reboot (with data files still open!!!). Listing all records can be dangerous. If you hit ESCAPE to stop it, the display goes into a locked loop. If you must have dBase III now, just be very careful with keyboard input and wait for each screen change before hitting a key again.

Another little tidbit--if you buy dBase III for any other computer, you receive, in addition to the programs and dConvert, a wonderful utility called dFormat, which allows you to create custom screens in a flash. You will not find it on the DEC dBase III disks. A call to the DEC Product Manager's Office got me this reply: "DEC has not decided to adapt dFormat for the Rainbow because most owners are business customers who will most likely buy custom programs and templates for use with dBase." So how do you like them apples, individual owners? Finally, as always, DEC has not implemented the use of color with the programs.

[This article previously appeared in the WARUG Newsletter.]

PRODUCT UPDATE: DBASE III
By Pierre Hahn
SUNY, Stony Brook

I have been using Dbase III since the DECUS Symposium in New Orleans, and found it to be vastly superior to DBase II. Having more than 32 fields has been a great boon. I also welcome the increase in indexing files.

DBase has added two field types, a date field and a memo field. The date field (mm/dd/yy) can easily be manipulated arithmetically. For instance, if bdate hold the birth date, and tdate is today's date, in that format, the age can be calculated with the following command: AGE = (TDATE-BDATE)/365.25).

However, despite all the new features, DBase III has a SERIOUS FAULT. There is great danger of losing all your data. The problem arises when you try to stop a printing command (e.g., list structure to print) with the F11 (Escape) Key. This causes the system to crash which requires rebooting via SET-UP/CONTROL SET-UP. If the ".DBF" files have not been previously saved, the headers of the ".DBF" files will be corrupted and no longer readable by DBase III, even though both DIR and LIST STRUCTURE show the full number of records and the appropriate file size.

When this occurred to me, I was able to recover my data by using the following procedure:

1. I wrote a BASIC program to read a direct access file (the .DBF file), and to output the results to a sequential file after stripping away all control characters. I kept the line length of the sequential output file at 60 characters to make it easy to see on screen.
2. I input the sequential file into a word processor (you could also use an editor), which automatically wraps lines. I removed all the Header information and set up my left and write margins to match my record length. I then RE-WRAPPED the file to show the data in a columnar arrangement.
3. In DBase II, I copied all the structure of my defunct file to the new file. I appended the EDITED file, with the space delimited.

The procedure worked. I recovered 3 files of about 100,000 bytes with 1500 records in about 4 hours. I spent an hour with the Atlanta Hotline, a half hour using BASIC and the manual to write and debug the program, a half hour for the .DBF to .TXT file transfers, an hour of editing, and a half hour for coffee. The rest of the time was spent getting the files back to DBase III.

In conclusion, close and reopen data files before you decide to do any printing which may be interrupted with an <Escape> or a power outage. The SELECT n capability allows multi files to be open, which is where I got caught--without a backup, and without having closed the files after an hour of updating.

PRODUCT UPDATE: USE GSX GRAPHICS WITH TURBO PASCAL

Professor Sapago, in the Engineering Department at Trinity College in Hartford, has developed routines for using GSX graphics with Turbo Pascal. The routines are on two disks. To get them, send a check for \$ made payable to Trinity College to the Engineering Department, Trinity College, Hartford, Ct 06106. If you have questions, the phone number is (203) 527-3151 (x399).

[Thanks to NECRUG, the Northeastern Connecticut Rainbow User's Group for this information.]

PRODUCT UPDATE: POPCOM X100 MODEMS
by David Jacobson

Popcom x100 modems with firmware prior to revision F have difficulty handling xmodem protocol. The problem doesn't come up all the time, only when "certain" modems are at the other end. We purchased 10 of these modems at work, and first discovered the problem about four months after we started using them, when we began to communicate with some different remote sites. The vendor, Prentice corporation, replaced the modems...The new modems have different firmware. If you have any problems, contact your dealer or Prentice corporation.

[This article appeared previously in the WARUG Newsletter.]

BOOK/PROGRAM REVIEW: PASCAL Programs for Data Base Management
by Dennis K. Fitzgerald
Computer Sciences Corporation

PASCAL Programs for Data Base Management, by Tom Swan, is an unusual combination of user's guide, programmer's guide, and program source listing. It describes a complete relational data base system written in PASCAL. The book is available in two versions: one with the book only, the other with two diskettes containing a TurboPascal version of the programs.

After hearing the book and disk praised at DECUS, I decided to get a copy and get it running on the Rainbow using TurboPascal version 3.01b under MS-DOS v2.11. The person who mentioned it at DECUS said it needed changing in "seven places" to make it run on the Rainbow. I haven't counted how many places I changed, but it was significantly more than seven. The remainder of this review will address the book, the data base management system, and my efforts to get it running on the Rainbow.

The Book

PASCAL Programs for Data Base Management (Hayden Book Company, 1984) consists of ten chapters, three appendices, and an index. The first seven chapters describe the PASCAL Data Base System (PDBS) from the user's point of view. Each chapter introduces several related programs, describes how they are used, and then lists the text of each program. The data base for an imaginary company is used as the basis for a series of examples. The examples form a tutorial for the PDBS, in that each example can be tried on the computer. The last three

chapters discuss the PDBS from "the computer's point of view." These chapters introduce the various routines that form the superstructure of the PDBS. Each collection of routines is discussed and then the PASCAL source is listed. Chapter 10 describes how these routines can be used in a custom application program.

The programs, as listed in the book, are written in Apple PASCAL. An appendix describes how to modify the programs to be compatible with UCSD PASCAL IV.1 for the IBM PC. The programs on disk are written in TurboPascal for the IBM PC. A small manual is included with the disk version to describe how the programs on disk vary from the listings in the book.

I found the book easy to read. The examples were comprehensive, including exact copies of the user input and computer output. Once you learn how to set up a data base, subsequent examples give only the structure of the data base and assume you can create the required data base without further examples. Each concept is well illustrated, yet not obscured by needless repetition of previous concepts.

The Programs

Each PDBS command is implemented by a single program. As a result, the executable images (.COM files) take up over 800K bytes of disk space. Each command can be executed repeatedly without having to run the program again. The commands allow you to create a data base, enter/modify data, sort and/or index the data, and generate reports. The relational join and project operators are available to combine (join) two relations and extract (project) fields from one relation to create a new relation. Reports can be simple listings of data or can be structured with headers, footers, and column headings. One particularly nice feature is the ability to divide a long field on word boundaries to produce readable output on multiple lines. Totals and subtotals can be computed and printed. A full-screen editor is available for entering new data and/or modifying existing records.

Overall, I was favorably impressed with the PDBS. It provides most of the functionality of a program like DBASE II in a very inexpensive form. Since the complete source is provided, you can easily customize the existing commands, combine them together to form more complex operations, and/or program your own application programs. Since the version of PDBS that I tested was written in TurboPascal, it was possible to compile each program for fast execution.

PDBS on the Rainbow

Modifying the IBM PC TurboPascal version of PDBS to run on the Rainbow was not very simple. The first problem I ran into was that the disks are double sided. I took them to an IBM PC at work and copied them to single-sided disk. I then copied the single-sided disks to DEC disks.

The disk version of PDBS was written using TurboPascal v. 2. I found at least one problem that was the result of using TurboPascal v. 3. (I checked this out and the same problem was evident on an IBM PC when the PDBS was compiled using TurboPascal version 3.)

One file, PROJECT.PAS, had errors in two routines. In both cases, the routine is a function that returns an error code.

One path through the routine does not contain code to set the function value. I assume that previous versions of TurboPascal masked this error by initializing function returns to zero.

Several of the screen control subroutines had to be modified. These modifications were simple except for the routines that return the cursor x and y positions. The way to get the cursor position on a Rainbow is by sending an escape sequence (<esc>[6n) to the terminal and then reading the reply (<esc>[line];<col>R). I tried many times to get this to work, but was not successful until I turned Control-C checking off by

using the TurboPascal %C- switch. This was also required in any routine that interprets keyboard input one character at a time. I ended up turning Control-C checking off in all programs, but I probably could have gotten by with only a few.

Modifying the editor program was the major challenge. The original PDBS used control characters to control the editor. The IBM PC version uses IBM PC function keys. The algorithm used to interpret the characters is inappropriate for the multi-character escape sequences sent by Rainbow function keys. Since I had already written a routine in TurboPascal that read the keyboard using the level 1 (16-bit) console in ROM function, I used that to read single characters and determine whether they are function keys or normal keys. It would also be possible to parse the escape sequences and avoid the direct ROM I/O calls. An unnecessary, but useful, modification was adding a backspace and delete function and associating it with the <delete> key on the Rainbow.

The REPORT program assumes that the printer is "PRN:". TurboPascal wants you to reference the printer as "LST:".

Except for the %C- that I put in every program, the following modules were changed: EDITOR, EDITOR1, EDITOR2, EDITOR3, PDBSGLBL, PDBSUNIT, PROJECT, REPORT2, and TESTUNIT.

Summary: I like PDBS. For the price, it is a very capable and efficient data base system. However, modifying it for the Rainbow is not a job for a beginner. Before tackling this program, you should have a good understanding of TurboPascal and of the Rainbow's VT102 emulation. The full set of programs will not fit on two disks. Thus, I recommend this more highly to those with hard disk systems.

(c) Dennis Fitzgerald
[The article appeared previously in the WARUG Newsletter.]
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THE TWO FACES OF MS-DOS: A REVIEW OF BOOKS

By Steven Stewart
Computer Sciences Corporation

MS-DOS has two distinct personalities. One is evident to all who use the operating system. It takes the form of a command language which performs the housekeeping chores that are expected of an operating system such as copying, listing, and organizing files. It also includes the familiar A> prompt and all of the messages and output that we are used to seeing in response to the MS-DOS commands we enter at the keyboard.

The other face of MS-DOS is only apparent to programmers, and usually only to assembly language programmers at that. It takes the form of an entire library of special functions which may be executed from within an assembly language program. These functions form a buffer between the programmer who, for example, may only want to read a keystroke from the keyboard, and the computer, which must execute literally scores of hardware-specific instructions before such a seemingly simple endeavor may take place. MS-DOS also has a number of other convenient aids which can considerably simplify the task of the programmer. Virtually all operating systems include such programming aids, but it is the unique programming features of MS-DOS that give it its distinct personality to programmers.

The following books are ones that I have found especially useful in exploring both personalities of MS-DOS. These books will supplement the user's guides that come with your operating system, and the MS-DOS technical documentation for the Rainbow that you can special-order from DEC. There are now many books available on MS-DOS, and many of them are very much alike.

In particular, most of them are specific to the IBM PC's version of MS-DOS, called PC-DOS. In the short reviews below I have tried to identify those books which I have found to be the most useful to Rainbow users. I have also reviewed books which, while oriented towards the IBM PC, I have found to be particularly useful in certain areas.

Devoney, Chris MS-DOS User's Guide (Indianapolis: Que Corp., 1984).

This is the most generic description of MS-DOS commands I have been able to find on the bookshelves. Almost all other introductory texts are heavily slanted towards users of the IBM PC, including continual reference to the specific features of the IBM PC keyboard. Fortunately for Rainbow owners, Devoney's Guide is a pretty good book. The novice computer user will want to start from chapter one which introduces vocabulary found in much microcomputer literature (e.g., CPU, RAM, ROM, buses, boards, slots, etc.). Following this introductory material, Devoney methodically presents all of the features and commands of MS-DOS. The intermediate-level reader may want to skip directly to the middle of the book which discusses topics such as batch files and configuring MS-DOS with the CONFIG.SYS file. The last 100 or so pages of the book list each MS-DOS command in alphabetical order with an extensive description of each one. I find this book more thorough and easy to understand on most topics than the user's guides that come with the Rainbow MS-DOS operating system. However, you will want to keep the Rainbow documentation nearby while you are reading so that you can alert yourself to the few differences and enhancements that are present in the Rainbow implementation of MS-DOS.

Wolverton, Van Running MS-DOS (Bellevue, WA: Microsoft Press, 1984).

This is one of the books that assumes you are sitting in front of an IBM PC while you are trying the examples. For that reason, I hesitate to recommend it to a novice computer user who may be confused by the specific references to the IBM keyboard and a very few commands that are somewhat different in the IBM implementation of MS-DOS. Other than that, this is a very good book from which the beginner may learn MS-DOS. Most of the book is a tutorial, providing examples on each page that readers should try on their own computers. For those who are already familiar with most MS-DOS commands, much of the book is devoted to such issues as how to best organize your files on a hard disk and how to use batch files to create your own custom MS-DOS commands. Towards the end of the book there are numerous examples of useful batch files from which even the most experienced MS-DOS user might benefit.

King, Richard Allen The MS-DOS Handbook (Berkeley, CA: Sybex, 1985).

This is an unusual book. The first half of the book is written for assembly language programmers who need an introduction to programming the 8088 processor under MS-DOS. The second half discusses MS-DOS at the command level from the user's point of view. This book is not a discussion of each MS-DOS command, but is meant to be a supplement to the user's guide that comes with your system. The book discusses the difference between version 1 and 2 of MS-DOS, both from the programming and the command language points of view. It discusses how to use the EDLIN and DEBUG programs. It has other chapters on such topics as how disk space is organized, how to perform character I/O from MS-DOS assembly language programs, and how dates and times are used in MS-DOS, to name just a few. There is a lengthy chapter containing nothing but miscellaneous tables and memory maps which I often reference. This book is heavily oriented towards users of the IBM PC, but that should not be too much of a problem for intermediate to advanced users who are ready for this type of book. The book is awkwardly organized and not particularly outstanding in any one area, and yet I find myself returning to it time and again because it often provides me with interesting hints or little tidbits of information that I have not found elsewhere.

Lafore, Robert Assembly Language Primer for the IBM PC & XT (New York: New American Library, A Plume/Waite Book, 1984).

The good news is that DEC provides the Microsoft Macro Assembler on the distribution diskette with the rest of MS-DOS at no extra charge. The bad news is that DEC documentation for it costs extra. The Technical Documentation Kit for MS-DOS, which includes documentation on the Macro Assembler, DEBUG, the Linker, and other programming aids, has been long awaited and is finally available. However, as handy as that documentation might be, if you expect it to teach you step by step how to program in assembly you will be sorely disappointed. Unfortunately, assembly language programming is an ominous topic for many otherwise confident computer enthusiasts, and the situation is aggravated by so-called "introductory" 8086/8088 assembly language texts and user's guides which seem to assume you have been programming in assembly language all your life. Lafore's book is the only one I have seen that presents the information in such a way that beginners at assembly language programming can progress at their own pace and even have fun learning. However, it will help to have had some previous experience with a higher level language such as BASIC or Pascal just to get the feel of programming before starting with this book.

Lafore's book is a well-written tutorial which starts you out writing short programs using the DEBUG utility that comes with your operating system. The text shows you line by line exactly what you must type into your computer to make the programs work and exactly what you should expect to see each step of the way. It goes on to teach you the basics of using other programs that come with your operating system, including the Macro Assembler, Linker, and EXE2BIN. Throughout the book new assembler instructions and MS-DOS function calls are introduced as they are needed in the examples. There are also useful diversions about how the 8088 processor works, how files are structured, how the computer's memory is used, and so forth.

As you might expect from the title, parts of the Primer are oriented towards IBM PC users. For example, the very first program you learn to write in the book is supposed to display a tiny "happy face" on the screen. This is a character in the IBM's character set which is not available on the Rainbow, but you can easily make the same program display other special characters in the Rainbow character set. A few other sections in the book discuss how to generate special sounds on the speaker (which you cannot do on the Rainbow), how to write directly to the video memory (which works differently on the Rainbow) and how to use special IBM ROM BIOS function calls (which will not work at all on the Rainbow). However, by reading through these sections anyway you will not only learn a few more assembly language instructions, but you will also learn a lot about how computers accomplish their work, which will give you the understanding necessary to tackle the Rainbow's technical documentation.

Once you have read part way through Lafore's Primer you will find that, while it is an excellent tutorial, it is a poor reference book. In the first place it is not comprehensive; there are a number of assembler instructions and MS-DOS functions which are not presented. In the second place, the instructions and functions are not organized alphabetically or in any other orderly fashion. The following books are primarily technical reference books and will provide you with well-organized, detailed information that you will need once you start writing your own assembly language programs.

Abel, Peter Assembler for the IBM PC and PC-XT (Reston, VA: Reston Publishing Company, 1984).

This book, like the one above, teaches you assembler language programming from the beginning, but is oriented towards the more experienced programmer. I believe the above Primer to be a better tutorial on assembler language programming, but

Abel's book would make an excellent supplement to the Primer for the beginner or intermediate assembler language programmer. It provides reasonably clear discussions and examples of topics which are only briefly introduced or not mentioned at all in the Primer. However, the main reason I am recommending this book is for the several sections it devotes to the special features of the Microsoft Macro Assembler and its special "pseudo-op" and macro instructions. Indeed, the "official" documentation for the Macro Assembler only briefly describes many of these commands and gives virtually no useful extended examples of their use. Other assembler language books often omit many of these commands altogether because they are not available in other assembler available for the 8088 processor. After reading and rereading the Macro Assembler documentation, I found that this book cleared up many of my own notions about how the Macro Assembler's special commands work, why they are needed, and how I can use them to great advantage in my own programs.

Jump, Dennis. Programmer's Guide to MS-DOS (Reston, VA: Reston Publishing Company, 1984).

This book assumes that you already know at least a little assembly language programming. It consists almost entirely of a complete description of each of the many MS-DOS system calls, organized into chapters of related functions. It also contains a chapter concerning more general topics of programming under MS-DOS and another about creating your own device drivers. The book's cover contains the words "for the IBM PC" under the title, but all of the IBM-specific information is tucked away in the last chapter. Indeed, most of the book promotes writing generic programs that will run on any MS-DOS system. There is little in this book that is not already in the MS-DOS technical reference manuals for the Rainbow, but I still like the book for its readability and organization.

Rector, Russel & Alexy, George. The 8086 Book (Berkeley, CA: Osborne/McGraw Hill, 1980).
Coffron, James W. Programing the 8086/8088 (Berkeley, CA: Sybex, 1983).

These books have nothing to do with MS-DOS, or even with a particular computer such as the IBM PC or the Rainbow, but you will eventually need a book like one of these to do serious assembly language programming on an 8088-based computer like the Rainbow. There are several books like these on the market, but the two above are my favorites. These are very comprehensive books about all of the instructions available on the 8086 and 8088 microprocessors. They include such details as exactly how long each instruction takes to execute and how each instruction is represented in binary. They also contain information on the architecture of the 8086/8088 microprocessor. Of the two, the first is the more technical, including several chapters of interest mainly to hardware designers.

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BOOK REVIEW: USING WORDPERFECT
By Caroline Mack

Beacham, Deborah and Beacham, Walton. Using WordPerfect. Indianapolis: Que Corporation, 1985.

WordPerfect is a popular word processing package, noted for ease of use, but confusing and inadequate documentation. While version WordPerfect version 4.0 offers much better documentation, as well as a tutorial, only real aficionados use this powerful program to its utmost.

For those who can wring every drop out of dry computer documentation, a book such as Using WordPerfect is superfluous.

For the rest of us, who dislike reading documentation, and who do not enjoy experimentation for its own sake, the book does have something to offer. In a readable style, the authors discuss the major aspects of WordPerfect, from getting started to the chaining of complicated Macros.

Unfortunately the authors discuss WordPerfect in terms of the IBM PC and the TI Professional, not the Rainbow, and were not able to discuss the changes in version 4.0, which were announced at about the same time the book went to press. However, the book still has much to offer.

The authors start at the beginning with WordPerfect, explaining the differences between the screen and a typewriter, how to move the cursor, how to make corrections, and how to move and insert text. Not much here for the experienced user, although I was unaware that pressing select once, then the up arrow, moves the cursor to the top of the page, or that pressing select once, then the left arrow, moves the cursor to the left end of the line it is on. These are small time savers which I had somehow missed in the program's documentation.

They then cover use of the speller and printing. Configuring the printer has always been confusing with WordPerfect's instructions. (When doing it myself, I always end up calling the hotline.) The book's instructions, which are for version 3.0 do not help especially. However, the detailed discussions of various printer options are helpful.

Their explanation of the "Reveal Functions" option is useful, but the Hot Zone explanation is insufficient. They do not explain, for instance, that unless you have a proportional printer, you need to set the hotzone to zero on the right, or you will have a ragged edge even when the text is right justified.

The book details the range of formatting and printing options in WordPerfect. Their instructions on how to print mailing labels are much clearer than those in the WordPerfect documentation. They also offer basic information on printer "trouble-shooting", which is useful no matter what word processing program you use.

Merging, one of the most useful aspects of WordPerfect, is covered in depth. Merges can be done either from the keyboard (the primary document can be programmed to stop every time you need to enter something) or from a database (merges are done automatically once they are correctly set up). They also explain how to use WordPerfect to fill in pre-printed forms. Other chapters discuss the sort options and math features.

The book is worth its \$16.95 price for several reasons. First of all, it is much easier to find things in the book than the documentation. Second, it explains many aspects of WordPerfect in more detail than the documentation. Third, it gives you a good idea of just what you can do with WordPerfect. In one of the final chapters, the authors describe how to create a program (they call it a "complex operation"), which allows a financial consultant to create a database of clients and stocks, sort through the client's records to determine whether they prefer blue chip stocks and whether they prefer long or short range investments, whether they already own the stocks being recommended, send letters in which the information about the stocks which meet the clients' needs is merged, then print the letters and mailing labels. The letter incorporates spreadsheets created with the WordPerfect math function. The authors assume that the user also has the SSI Sort Program. They note that using WordPerfect in this manner may not be as efficient as using a Database program.

Using WordPerfect can help you to get more out of an already excellent word processing program. The book is available at some local bookstores, or from Que Corporation, 7399 Knue Road, Indianapolis, IN 46250, (800) 428-7162 or (317) 842-7162.

(c) 1985 by Caroline M. Mack
[This article was previously published in the WARUG Newsletter.]

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RAINBOW TECHNICAL INFORMATION

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CREATE FRACTALS ON A RAINBOW!
by Frank Shephard

If you have ReGIS and MicroSoft Basic, you can "draw" fractals, which are detailed repeating patterns, using your Rainbow. The program below, based on Greg Turk's article in the September '84 Byte, will do it. You can start by trying 0,1 for LX,LY and 4 for SC.

```

10 CX=400:CY=240
20 X=.50001:Y=0:NN=1000
30 INPUT "WHAT IS LAMBDA (X,Y)";LX,LY
40 S=LX*LY+LY*LY
50 LX=4*LY/S
60 LY=4*LX/S
70 INPUT "WHAT IS SCALE";SC
80 PRINT CHR$(27)+"Pp"
90 PRINT "s(e)"
100 SC=2*CX/SC
110 FOR I=1 TO NN
120 TX=X:TY=Y
130 X=TX*LX-TY*LY
140 Y=TX*LY+TY*LX
150 X=1-X
160 T=Y
170 S=SQR(X*X+Y*Y)
180 X=SQR((X+S)/2)
190 IF T<0 THEN X=-X
200 IF RND<.5 THEN X=-X:Y=-Y
210 X=1-X
220 X=X/2:Y=Y/2
230 PX=SQR(X-.5)+CX:PY=CY-SC*Y
240 PY=INT(PX):YP=INT(PY)
250 SX$=STR$(PX):SY$=STR$(PY)
260 A$=CHR$(112)+CHR$(91)+SX$+CHR$(44)+SY$+CHR$(93)
270 PRINT A$
280 PRINT "v["
290 NEXT I
300 PRINT CHR$(27)+"\"
310 END

```

=====

SIMPLE BASIC PROGRAM TO CREATE A SCREEN PATTERN GENERATOR
by Val Herzfeld

The Rainbow can generate interesting screen patterns, even if you do not have a color monitor or graphics board. Since the Rainbow has poor graphics characters, I selected those which I thought were best. The graphics characters are displayed in lines 60 through 100. You can change the pattern by changing the CHR\$ assignments to A\$. Line 50 actuates the beeper. The formulae which control the screen pattern are shown in lines 300 through 312 (such as, W=ROW+COLUMN). To experiment with different screen patterns, replace the existing formulae with your own.

```

10 'MONOCHROMATIC SCREEN GRAPHICS PROGRAM
20 DIM A$(4).
30 X=300
40 SCRWIDTH=80
50 PRINT CHR$(7):PRINT CHR$(7)
60 A$(0)=CHR$(34)
70 A$(1)=CHR$(24)
80 A$(2)=CHR$(180)
90 A$(3)=CHR$(182)

```

```

100 A$(4)=CHR$(187)
110 PRINT CHR$(180)
120 FOR ROW=1 TO 24
130 FOR COL=1 TO SCRWIDTH
140 ' CHANGE THE FOLLOWING LINE
150 ' TO GET DIFFERENT PATTERNS
160 IF X=300 THEN GOSUB 300
161 IF X=302 THEN GOSUB 302
162 IF X=304 THEN GOSUB 304
163 IF X=306 THEN GOSUB 306
164 IF X=308 THEN GOSUB 308
165 IF X=310 THEN GOSUB 310
166 IF X=312 THEN GOSUB 312
167 IF X=314 THEN GOSUB 320
170 PRINT A$(ABS(W)MOD 5);
180 NEXT
185 PRINT
190 NEXT
195 X=X+2
200 GOTO 40
300 W=ROW+COL
301 RETURN
302 W=ROW*COL
303 RETURN
304 W=LOG(ROW)-LOG(COL)
305 RETURN
306 W=LOG(ROW^2+COL^2)
307 RETURN
308 W=5*SIN((ROW+COL)/10)
309 RETURN
310 W=SQR((2*(ROW-12))^2+(COL-40)^2)
311 RETURN
312 W=(ROW-12)^2+(COL-40)^2
313 RETURN
320 PRINT CHR$(7):PRINT CHR$(7):PRINT CHR$(7):PRINT CHR$(180)
322 PRINT CHR$(7):PRINT CHR$(7):PRINT CHR$(7):PRINT CHR$(180)
330 END

```

[This article was originally published in the St. Joseph's University (Philadelphia, PA) Rainbow User's Group Newsletter]

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DBASE III TO LOTUS 1-2-3 AND LOTUS 1-2-3 TO DBASE III

I. dBase III to Lotus 1-2-3

Transferring data between dBase III and Lotus 1-2-3 is a relatively easy task. It may be quite useful to move data held in dBase III, such as inventory prices, and then load the data into a spreadsheet in 1-2-3.

The first step in producing a Lotus-usable file from dBase III is to make a copy of the database in a delimited form. To do this, you need to type in:

COPY TO <filename>.PRN DELIMITED

where <filename> is the name of the file you want to put your 1-2-3 formatted data in. You need the PRN extension when you import the file into 1-2-3. The DELIMITED command formats the information in your database into a form that 1-2-3 can understand, with commas between pieces of information, and quotes around character data.

The next step is to get out of dBase III and bring up 1-2-3. From 1-2-3, go to the File options commands list. Select Import then Numbers. 1-2-3 will display all the files with the PRN extension and ask you to select a file to load into memory. 1-2-3 will take the data and load it into the worksheet. The complete 1-2-3 key sequence is:

/File Import Numbers

The data will begin loading into 1-2-3 at the position where the cursor is located. All quoted data will be treated as labels, all numbers treated as numbers, and anything else will be ignored. One dBase record will appear in each 1-2-3 row. The column length will stay the same, no matter how long the data is in the imported file. This means that if your data is bigger than the column length, it will look chopped in the case of text, and you will get an overflow (...) indication for numbers. This is easily solved by making your column length longer.

II. Lotus 1-2-3 to dBase III

Moving information from Lotus 1-2-3 to dBase III is a bit more complex. In Lotus, go to the Print Menu. From there, choose the File option (to print to a file.) Lotus will ask for a filename and show all files on the current disk with a PRN extension, like FILENAME.PRN. Type in the name of the file you want to convert. When you have done that, you will be in the print menu.

From the print menu, go to the Options menu and select Margins. Change the Left margin to 0 (zero), and the Right margin to the length of the range you wish to print. The Top and Bottom margin should also be set to 0. If you don't change the margins, dBase will interpret any blank spaces as "printed" to the file as data.

Exit from the Options menu and set the Range of data, then press Go to print the file to the disk. Keep in mind every time you press go, more information is added to the file on disk.

The full sequence of keystrokes in Lotus is:

```
/Print File
<type in filename at prompt>
Options Margins
<Set top, bottom, left and right margins>
Range Go
```

Before you leave Lotus 1-2-3, note how long the columns are. When you exit 1-2-3 and go into dBase III, you will have to create a database to hold the data from 1-2-3. Each field should be as long as the corresponding 1-2-3 column, and there should be as many fields as there are columns in the 1-2-3 PRN file. When calculating fields, it is helpful to already have a listing of the 1-2-3 spreadsheet you are trying to import. Call labels "CHAR/TEXT" data, and numbers "NUMERIC" data.

After you have created your database, type in dBase:

```
APPEND FROM <filename>.PRN SDF
```

The dBase III program will pull in the information from the PRN file one line at a time, taking each line and dividing it into parts. Each part is then put into the respective fields. (Note: the Lotus PRN file can also be pulled into a word processing program such as WordPerfect or WordStar and merged into a letter or document.)

[Editor's Note: Thanks to Roy VanDusen of WARUG, for these instructions, which he got from the Washington, D. C. area DBase User's Group.]

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WORD PERFECT: ON BEYOND ZEBRA
by Kim Brody Salazar
New York Institute of Technology
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Dr. Seuss might have been thinking of word processing when he proposed an imaginary alphabet beginning with the letter "z". We too can begin there and go on. Control and escape

sequences similar to those described in last month's issue can unlock the 14 alphabetic character sets available on your LA-50.

These 14 character sets are divided into 12 alphabets with special punctuation and symbols customized to specific languages. In addition, there is a Multinational character set consisting entirely of letters with special punctuation marks and supplemental symbols; and a VT100 Special Line Graphics set that includes ruled and intersecting lines, and editing symbols. The chart at the end of the newsletter illustrates some of the different characters available.

WordPerfect (and other programs that enable you to enter printer control sequences) can be used to retrieve the characters. First you need to select which of the alternate character sets you want: From WordPerfect, use the "Print Format" option (Key F17 for WP version 4.0 users, Shift-F2 for version 3.0 users). Type "A" for "Insert Printer Command". Pick the alternate you want and type the appropriate escape sequence [that's one of the series beginning with a <27> on the chart]. End the series with a carriage return. When you get to where you want an alternate character to appear, use the "Print Format"; "A" choice again. This time type <14> and hit return to toggle the alternate character set on; type the letter corresponding to the alternate you desire. <15> and a carriage return bring back the standard alpha by toggling off the alternate.

One drawback of using these alternate symbols is that they appear only on the printed copy. The on-screen representation is the character of the key pressed. The chart is arranged so that all the characters produced by pressing each key are grouped together. As an aside -- the escape sequence: <27><0 is supposed to produce on-screen VT100 Special Line Graphic characters but is not acknowledged from inside WordPerfect.

Although the foreign language sets are useful to those few who regularly do bilingual work, the VT100 Special Graphics set is a real find. The █ can be used to make bar charts. The corners, J, r, L can be combined with straight lines _ |, _ and intersections +, |, +, + to make forms and graphs. Even the Katakana character set can be useful to non-Japanese speakers. It includes a D. Very handy for those constructing ballots and questionnaires!

There are other, more complex ways of invoking alternate characters with WordPerfect. They may also be selected as the default in the WordPerfect Printer Initialization supplemental program; or may be specified by your printer DIP switches (those annoyingly tiny white toggles inside your printer). Most of the characters present in the Multinational set can also be specified as official alternates in the WordPerfect Set-up procedure. I do not recommend using these other procedures unless you plan to use specific alternate characters very frequently.

(See chart at the end of the newsletter.)

(c) 1985 by Kim Brody Salazar
[This article appeared previously in the WARUG Newsletter.]

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CONDOR TO SAMNA TRANSFERS
by Alexander Garbera
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In Perspective, Vol 3, Number 1, an article appeared on how to take a file from DBASE III and use it in SAMNA 2 mailmerge. Since Condor III also produces information in "fixed field" formats, it seemed logical that someone could do the same with this package. After several attempts, and much head scratching, it finally worked. I hope my preliminary observations will be of use to those who may have these two popular packages and didn't know that they could transfer the information from Condor to Samna.

Step One: Product Information from a Condor dataset

First we need a list of information that we can use for our Samna mailmerge. In most cases this will be names, addresses, and so on--but it doesn't have to be. How about using the information from Condor to produce invoices or inventory reports? What is needed is a dataset that contains only the information we want to use in Samna. With a large dataset this can be accomplished using Condor's "Project" command. Whatever method is used to create the dataset, we should check that the information is correct and contains only what is needed for Samna mailmerge. We should then determine the sizes of the field names either by printing a copy of the data dictionary after it was created or by looking at the data dictionary by typing:

```
List dataset.DEF
```

The information in the dataset must be transformed into a style (format) that Samna can use. Samna can only read the information in "fixed fields." To produce the information from Condor, the following command must be used, substituting the name of your actual dataset and the filename that you wish to create. I recommend that the ".asc" file extension be used to remind us that we are creating an ASCII data file.

```
WRITE dataset filename.asc[R]
```

Having done this, we can exit Condor and look at each field by using the "TYPE" command.

Step Two: Create the Samna Definition File

The trick in Samna mailmerge is to create a definition file with the insert marker "i" and specifying the fixed field size. We would press the "MARK" key, "i", the number of the field size, and then press return. The key, here is to make certain that the order of the field names and their corresponding sizes matches what is in the file transferred from Condor. The "standard document" can then be created using the definition file created above. When inserting field names into the form, be sure to use the insert marker "i" as done previously.

Step Three: Perform the Automatic Merge

The last step is the easiest. When you select the Automatic Merge option, Samna prompts you for the definition file, the standard document, and then gives the printing options. After you press return, it asks for the ASCII file name to be used. I have found that it is essential to specify the drive label before the file name; for example, use "E:\file.nam". If the merge doesn't work, chances are that the fixed field lengths were incorrect in Samna's definition file. This must be corrected, and the procedure repeated. Or, it may be that the ASCII file is in a different operating system, as would be the case when Condor III was in CP/M and the Samna programs are in MS-DOS. This can be solved by transferring the CP/M data file to a MS-DOS data file with DOSFLX or communications utility. My recommendation is to create a very simple, small database with Condor, writing it to an ASCII file with the option [R], and then using that file in a simple Samna mailmerge.

[This article was originally published in the Meriden, CT, Business Center Update.]
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PREPARING A VIDEOPROMPTER SCRIPT

by Ken Geremia

Scriptwriting is a regular part of my work. Whether the scripts be for slide shows, films or videotapes, I use WordStar to crank out the copy.

TV scripts usually require the copy to be read by on-camera talent. One method is to use cue cards or "idiot" cards held next to the camera lens. Another way is to use a TelePrompter.

A TelePrompter is like an electro-mechanical scroll. The script, which has been typed in a large font on a long roll of paper, is unrolled from the bottom of the scroll and rolled up at the top. The speed of the scroll is controlled by an operator who coordinates the position of the text in front of the reader with how fast the words are being read.

Modern prompters put the text right in front of the camera lens by using a TV monitor and mirror arrangement hung on the front of the camera. The words of the script are scrolled in front of a small video camera that feeds the monitor and is, in turn, reflected onto a glass plate in front of the lens.

In order to put your script on the prompter scroll, you would ordinarily have to use a special typewriter to transfer the script to the paper roll.

Now, using an LA50 printer (or nearly any other dot-matrix printer) and a couple of simple commands from your Rainbow, WordStar can be made to produce a prompter script.

The first step is to have WordStar reformat the narrative portion of the script to prompter-size margins. Margins should be 20 characters wide. Also, the prompter contraction works most easily if the left margin is near the middle of the paper.

I've found a setting of 35 and 54 for left and right margins to work fine. Do not justify the right margin. Do not hyphenate any words. Enter your text in solid caps.

Next, put the following commands at the top of your script: ".MTD" and ".MBO". Those are the "dot" commands that tell WordStar that you want zero margins at the top and bottom. This results in a continuous run of your script without page breaks or numbering.

Now put in the control commands ^PB and ^PD for bold and double-strike, respectively. If you have a new ribbon in the printer you may be able to leave out the double-strike command. That will cut down the time it takes to print the script. (Keep in mind, though, you want to get as black an image as possible.)

Load the LA50 with a roll of continuous pin-feed paper. It works best, especially for long scripts. Fanfold tractor paper can be used, but is more prone to separate at the perforations. That can cause a real problem. Also, use the printer's default font and pitch (unenhanced, 10 pitch).

You will want some additional spacing between lines of text on your prompter script. If you ask WordStar to give you double-spacing, the lines are separated too much for good readability. Single-spacing is too close. Don't worry, the LA50 can give you an intermediate spacing that works just fine. Use .fo to set it up.

After you have reformatted for your prompter script with single-spacing, exit WordStar. When you see the system prompt E> or A> type in the following:

```
PIP LST:=CON: <CR>
```

Then hit the Escape key, F11, followed by "[6z <CR>". The last entry is Control/Z, ^Z.

According to the DEC folks at the Atlanta 800 hotline number, the above sequence tells the printer to receive the escape command calling for it to print at 4 lines per inch. The

^Z tells the computer you've finished talking to the printer (LST:).

There you have it: a quick and simple way to prepare a videoprompter script without the expense and time delays of sending it out.

A big thanks to John and Martha at Capitol Prompting Service, Inc., Cheverly, MD. They are old pros (well, not that old) at making folks look good on TV -- from firsttimers to U.S. presidents.

A personal note: If any of you know a simple way to do two-column editing and formatting with WordStar, please contact me at (301) 249-5486. A simple procedure to handle the video and audio columns for a script would be a real help.

(c) 1985 by Ken Geremia
[This article appeared previously in the WARUG Newsletter.]

PSUEDO MACRO SORT USING WORDSTAR 3.33 AS A PROGRAMMING LANGUAGE
ON THE DEC RAINBOW
by Herman Hinitz

Introduction

It is possible to use WordStar 3.33 (MicroPro Corp. or DEC DCS) together with the user defined function keys on the DEC Rainbow to obtain a sort routine. This procedure allows similar pieces of information to be brought together from different parts of a data base file listing, so that at the end of the sorting process, the individual items have been moved to the end of the file into the appropriate or desired order. This sequence is programmed into WordStar through the installation procedure. This sorting sequence is implemented by pressing the function keys in the correct order. It has the flexibility to allow additional instructions and modifications at any point. There is the possibility that others have constructed this type of routine previously, since it is relatively simple. But no literature search was performed, since this procedure was required, prepared, and de-bugged during tax season.

Programming of User-Defined Function Keys

The installation of WordStar 3.33 is performed in the following manner: Make two copies of the original WordStar floppy disk, using the DISKCOPY instructions of the CP/M or MS-DOS operating system. Place one copy in Drive A, and the second copy in Drive B. Use drive A as the logged drive. Type WINSTALL to begin the installation procedure. Eventually you are asked to tell the program where the WordStar files will be during the process. Type A: and then <Return>. At a later point, you are asked to provide a name for the WordStar program that you are installing. If not previously installed, this program would be WSU (WordStar Uninstalled). If you are making modifications to a previously installed form of WordStar, then provide the name of the already existing WordStar program. [Editor's note: If you have already designated the function keys for WordStar functions, you should give this version a different name.] The installation program provides the suggested name "WS", however, any name is possible, such as WSSORT, WSA, WSB, WSTXS1, WSTXS2, etc. Each of these names is different and refers to a different variation of the original WordStar program, which is not influenced or affected by the presence or absence of the others on the disk. As an extension of this idea, it should be possible to employ the user-defined patches, ^PW, ^PE, ^PR, ^PQ, for the printer instructions, to provide different instructions, besides the default values, in each of the variations of WordStar, to obtain more control over printer operation. In addition, a document file can be prepared with one variation, WSA, for example, and printed with another, such as WSD.

After selection of the name, A: WSSORT, for example, a menu is provided with the notation,

E. Menu of WordStar Features

Selection of this option allows access to a subsequent menu:

S. Function Key Installation

Up to four separate keystroke instructions may be assigned to each of the function keys. On screen instructions are provided for the exact procedures. It is recommended that the Control key be held down for the appropriate ^ entries, although this step is not essential. For example, the ^KC instruction could also be written, ^K^C. (The ^ character above the 6 is not meant to be used here in place of the Control key.)

The following function key assignments are useful for WSSORT:

F4	^KD	(Save file; unchanged from the original default setting)
F6	INTERRUPT	Changed from ^U to ^QS (Move cursor to left end of the line)
F7	RESUME ^KS^QP	(Save file, return to current location; unchanged)
F8	CANCEL	Changed from ^KQ to ^QD (Move cursor to right end of line)
F9	MAIN SCREEN	Changed from ^QS^QE TO ^KC (Copy marked block)
F10	EXIT	Changed from ^KX to ^KV (Move marked block)
F13	LINE FEED	^J (No change, you cannot change the default on this)
F14	ADDITIONAL OPTIONS ^KH	(Hide/Show marked block toggle; unchanged)
F15	HELP	Changed from ^J to ^L (Go to next find)
F16	DD	Changed from ^Q^Q^B to ^QS ^KB (Left end line, mark beginning of block)
F17		Changed from ^QL to ^QD ^KK (Right end of line, mark end of block)
F18		Changed from ^OR to ^QC ^KV (End of file, move marked block)
F19		Changed from ^PS to ^QD ^N (Right end of line, Return [^M, DD])
F20		Changed from ^PB to ^KH^ QV (Hide marked block, previous find)

In the case of the instructions for the F19 key, in order to provide the instruction, ^N (insert a return and provide a blank line), it is necessary to enter this information in hexadecimal form (as indicated in the on-screen installation prompt instructions), as

,0D

(that is, comma, zero, capital D) so that the instruction is accepted and performed by the program. In some instances, ^N is shown as ^M in the installation listings, but it can perform the insertion of a return satisfactorily. The remaining function keys, PF1 - PF4, FIND, etc., were not changed from their default settings.

Using the Pseudo Macro Sort Routine

At the operating system prompt, A), type WSSORT. The data base file listing may be prepared with this variation of WordStar or another, if desired. [Editor's note: it could also be an ascii file which has been converted to WordStar.] In order to use the sort routine effectively, each categorized data base record in the data base listing (consisting of several

appropriate fields) should be entered on a separate line, together with its associated information and accompanying explanatory notes, such as dates, places, people, amounts spent, amounts received, etc. The N (non-document) edit mode is more useful in preparing this listing. The same file can be processed at a later time in either the N or D (document) editing mode, as needed. More than one line can be used as a single data base record, but the entire record should be subsequently moved as a complete unit or block (instead of one line at a time), as described below.

To go through the listing and arrange the records into the desired groupings, the following keys are pressed in this order:

```
PF3      Start at beginning of file
FIND     Indicate a common term which will be found in
         the records you want to group together
DO--F17--F18--F19--F20
HELP--DO--F17--F18--F19--F20
HELP--DO--F17--F18--F19--F20
HELP--DO--F17--F18--F19--F20 etc.
```

The repetitive sequence pattern, HELP--DO--F17--F18--F19--F20, moves the individual line records to the end of the file, into homogeneous groupings, according to the criteria established by the FIND instruction. Additional instructions can be inserted at any place in the sequence. For example, the sequence F15 (HELP)--F16 (DO)-- move cursor one line down with the down arrow key--F17--PF4--F19--F20 can be used to move more than one line of record information at a time down to the end of the file. In some instances, when the right end of a line of text is close to or beyond the right margin (on the screen), the ^QD instruction may not move the cursor to extreme right end of the line. If the highlighted area on the screen does not include the entire line, press the F17 key a second time before continuing with the F18--F19--F20 key sequence.

Setting Up the Data Base

This pseudo macro sort routine is not an automatic DO loop, as with BASIC, FORTRAN, or a single key user defined macro instruction set. It relies on the dexterity (and durability) of the typist's fingers, but it does provide a degree of flexibility that is not found in some data base management programs. The field widths are not restricted. Explanatory comments, or any allowed length, can be added or moved, as required. As a practical upper limit to the size of the file in the N edit mode, the file size should not exceed 30,000 file characters, or about 32K of memory. This value will provide a cushion of about 6000 file characters, for additional items, explanations, and subsequent insertions, up to the approximate upper limit of 36,000 file characters, which is about 36K. Sufficient room should be left on the disk for three times the working file size, to allow room for the working file, its backup file, and the temporary backup file which is used in the intermediate steps. For example, a file size of 32K should have at least 100K available on the disk in order to avoid the unpleasant message, "DISK FULL".

It is helpful to use descriptive abbreviations at the beginning of each data base record line. For example, when dealing with medical records, the following might be used: MHA, MHB, MHC, MC1B, MC2D, MW1. The terms are defined in the following manner:

```
M      Medical Expenses
H      Husband
W      Wife
C1     First Child
C2     Second Child
A      Doctor A
```

B Doctor B T Transportation Expenses

and so on. The same letters may be used more than once, depending on their relative positions in various categories.

Once the descriptive abbreviations are added, it is simple to use the FIND instruction to quickly and efficiently move and group information together at the end of the file. Special characters may also be used to make the FIND file search process more efficient. The ^KC (F9) and ^KV (F10) instructions can be used to bring homogeneous or related groupings into the final desired arrangement.

The particular line items which are found and brought to the end of the file depend directly on the information provided to the FIND screen prompts. The more specific the information provided in the search for the desired line items, the more accurate the groupings will be.

The procedures described here can be effectively used even when you are not paying full attention, since the keys are pressed in sequence. These procedures can probably be adapted to other machines and word processing programs with minimal effort and a familiarity with the installation procedures and available options.

[This article was previously published in the Delaware Valley DEC Personal Computer User Group Newsletter.]

TRICKS YOU CAN PLAY WITH THE MS-DOS PROMPT by Dennis K. Fitzgerald

Not many of us are familiar with the capabilities of the MS-DOS PROMPT command to customize the prompt. Full details are available in the MS-DOS Advanced User's Guide, but here are some handy tricks.

What directory am I in? The PROMPT command can be used to display the directory as well as the disk. To do so, type:

```
PROMPT %p%g
```

Instead of E>, you'll get something like

```
E:\MYDIR>
```

What time is it? You can use the PROMPT command to display the time in reverse video in front of the normal MS-DOS prompt by typing:

```
PROMPT %e[7m%t%e[m %n%g
```

This will give you a prompt like:

```
16:06:51.75 E>
```

with the time in reverse video.

Personalize your prompt. Try this one on for size:

```
PROMPT What can I do for you, Mary?
```

This will give you a long, but interesting prompt.

Be creative! I've given you a few ideas. Try them out, read the manual, and have fun!

[This article previously appeared in the WARUG Newsletter.]

WORKING WITH .BAT FILES
By Guy-Stefan Romano
Amnion Help Line

Famous (well, maybe someday) one-liners. . . Here is a little one line .BAT file that you may find useful. With it you can copy all files from the default drive that do not already exist on the destination drive. Save it with a name like "EZBAK.BAT".

```
: FOR %%F IN (%1) DO IF NOT EXIST    %%F COPY %%F %2
```

(type all of the above on a single line with a single space between exist and %%F)

If you then enter

A: EZBAK *.TXT B:

at the A: prompt, all the TXT files on A: that do not yet exist on B: will be copied to B:. Of course, dropping the NOT will do just the opposite if you want! Have fun with it.

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RAINBOW WISH LIST

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Lynn Jarrett constructed the Wish List from Wish Lists compiled by several people. If you want to add to it or comment on it, send your comments to Lynn Jarrett or the Newsletter Editor.

1. The new updated version of Lotus with a decent implementation of the new version, 132 column implementation.
2. A clock and a date board, with battery back-up.
3. Fix the RX50 disk drive problems.
4. Print Drivers for non-DEC printers on all software.
5. Larger memory upgrades and removable hard disks at a reasonable price.
6. IBM compatibility.
7. A cheaper board for 8087 support.
8. Double-sided 48TPI floppy drive to aid in sharing floppies in a mixed vendor environment.
9. Formatter capable of formatting hard disks of larger capacity than 10MB.
10. Ability to share hard disks with several users.
11. A second COMM port that doesn't require you to disconnect the hard disk controller to put it in.
12. Controller for the RD53.
13. More software packages.
14. 33 and 70 meg hard disks.
15. Implement the print screen key.
16. Ability to update from a 100A to 100B inexpensively.
17. Ability to format a single-sided IBM-PC disk under MS-DOS.
18. Full graphics capability under All-In-One.
19. Rainbow LAN without the need for a VAX.
20. MS-DOS 3.0.
21. Borland's Sidekick version for the Rainbow.
22. GW-BASIC Compiler.
23. On-line bulletin board system for users and DEC to use to inter-react and discuss problems, solutions and issues.
24. Coordination between local DEC Field Service offices and Atlanta Hotline Support.
25. Genealogy software.
26. Framework and Thinktank in Rainbow versions.
27. Q-Bus for the Rainbow.
28. Drivers for the LN03 from WPS+ and graphics.
29. Larger print buffer built into printers.
30. TPU
31. Terminal mode to support the additional keys of the LK201 keyboard rather than just beep.
32. Develop software and hardware interface necessary to use CD-ROM drives.
33. MS-DOS installable graphics driver similar to GSX-86.
34. DEC hardware and software sold in stores.
35. Rainbow Draw and Paint.
36. Software for Children.
37. Take copy protection off of DCS and DDS programs.
38. Concurrent MS-DOS.

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DECMATE SOFTWARE INFORMATION AND REVIEWS
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LASER PRINTER STUNS AND ASTOUNDS
By Roberta Crishkoff
Chemical Bank
New York, New York

We here at the editorial offices of All Hands on DEC have been very preoccupied lately. We were fortunate enough to be selected as a field test site for the DECmate WPS Version 2.1 software. One of the new improved features of this software is that it make the DECmate fully compatible with Digital's laser printer.

We've been testing the laser printer for several months, but only now can you print all types of documents on it. For example, multicolumn didn't work under the 2.0 software. Now it does.

The laser printer is very similar to a photocopier. For example, it uses dry toner for ink. It feeds from a paper tray, and it ejects the printout. You can put letterhead or plain bond in the paper tray. It's not as wide as the LQP02, but it is taller. It's very quiet--it makes a sort of purring sound when it prints--and it's very fast. It prints 8 pages per minute!

There are no printwheels. You choose a typeface, or font, by creating a control block in the document itself. The "vanilla" version of the laser printer comes with three fonts: Courier 10, Prestige Elite, and Courier 15. In order to get other font cartridges, you will need to buy them. Proportionally spaced fonts are available.

Proportionally spaced means that each character takes up a different amount of space. For example, "i" takes up less space than "w". Overall, when you use a proportionally spaced typeface, you can squish a lot more text in the same amount of space than you can with a monospaced (all letters take the same amount of space) typeface.

Limitations

Not all is wine and roses with proportiona1 fonts. The problem is that the screen doesn't display text the way it appears in the printout. The screen is still monospaced, even though the output is not. So you never know how its going to look until you get your printout.

This is not much of a problem when you're creating just "straight" text. But anything remotely complicated, such as tabbed columns with headings--or even SOLID CAPS or bolded text--can really screw things up. It can take much measuring, many printouts, and finally "cheating" in order to get your document to print out the way you want it to.

But don't worry; we're giving Digital's software engineers lots of feedback. That way they'll be sure to make things more user-friendly in the final release!
Price

Surprisingly enough, the laser printer, with two additional fonts, depending on corporate discount, can cost less than an LQP02 with sheetfeeder and hood!

Landscape Printing

Like a photocopier, the laser printer uses paper trays. It can print on 8 1/2 by 11 paper only. So what happens when you want to rotate the page 90 degrees, as you would for a wide document, such as a budget? Then you create a control block that tells the printer to print the document in landscape. This means that your text will print horizontally across the page. Landscape printing is available only with the purchase of an additional cartridge. Since the laser printer can take 8

1/2" by 11" paper only, it seems like a wise investment.

Don't worry about being limited to 8 1/2" by 11" paper. Remember, with proportional fonts you can fit a lot more text on the page. For example, when I create ordinary documents on the laser printer, I see the R in my Ruler at 106--instead of at 65 for 10 pitch, or 78 for 12 pitch. That's quite an increase. You can fit nearly twice as much on a page as you can printing in 10 pitch on the LQP02. If you really need a lot of space, you can always print in teeny tiny type in landscape!

[This article was previously published in Chemical Bank's newsletter, All Hands On DEC.]

DECMate II CP/M 2.2 OPERATING SYSTEM
by Felecia Bowles

DECMate II CP/M 2.2 was developed by Digital Research, Inc. around 1983. CP/M, which stands for Control Program for Microcomputers, is available on all of our personal computers--including the Rainbow and Professional 300 series, but in different varieties. For example, in the Rainbow series, CP/M uses a dual processor which gives the Rainbow the ability to use 8-bit and 16-bit CP/M programs. On the other hand, DECMate II's version of the CP/M 2.2 Operating System is an operating system specifically tailored for the DECMate II personal computer and uses a single processor known as the Z80 Auxiliary Processing Unit. What this boils down to is the fact that with a Z80 processor, you can only use 8-bit CP/M programs (i.e., MULTIPLAN-80 where the 80 stands for the Z80 processor).

With a floppy disk and/or hard disk storage system, CP/M provides for program construction, storage (including storage for the operating system) and editing, along with assembly and program debugging facilities. CP/M for the DECMate II also includes a text editor, Z80-microprocessor-compatible assembler, debugger, and file utility programs.

If you currently have word processing on your DECMate II under the WPS (Word Processing System) operating system, there is even a program called WPS Convert which gives you the capability of transferring files from CP/M to WPS and vice versa.

With this capability, you can take a spreadsheet created from a CP/M software package like MULTIPLAN-80, and merge it into a word processing file without retyping any of the information. You can also take specific database records from DBMS, pull the information needed into the WPS List Processing format, and then through the use of WPS Convert, make it a WPS word processing document ready for list processing. This is very beneficial not to mention convenient for companies who have databases that have outgrown WPS List Processing capabilities.

For programmers, the CP/M monitor provides access to programs through a file management package. The file subsystem supports a named file structure allowing allocation of file space as well as sequential and random file access. Programs can be stored in both source and machine executable form.

And just what kind of media does DECMate II CP/M 2.2 support? DECMate II CP/M 2.2 supports CP/M files on RX50 5 1/4" diskettes, RX01 8" diskettes when an RX01 or RX02 drive is attached to the DECMate II, an installed RCD51 10MB hard disk, and can read VT180-format 5 1/4" diskettes.

It is nice for Rainbow and DECMate II users who have a mixture of both machines in their offices to know that although you cannot boot Rainbow CP/M with a DECMate II CP/M system diskette, you can read all of the 8-bit programs on either machines. Please keep in mind there may be slight differences and using a program tailored for one computer on another is not technically supported.

If you are not sure if you have 16-bit or 8-bit programs, there are a couple of ways of checking. One way is to look on the box the software and documentation came in. If it says "...-80/86", it uses a dual processor like the Rainbow CP/M

system program. "...-80" tells you that it is a 8-bit program such as Data Base Management System for CP/M-80, and "...-86" tells you it is a 16-bit program such as Select-86. The second way of checking is by looking in your directory. If the file extension is ".CMD", more than likely it is a 16-bit program. ".COM" means in most cases that it is an 8-bit program. MULTIPLAN files is a good example of a program that can run on either machine smoothly.

SOFTWARE FOR DECmate II CP/M 2.2 OPERATING SYSTEM*

- o Advanced Legal Software (ALS) - Legal Time and Billing
- o BPI General Accounting
- o BPI Accounts Receivable
- o BPI Personal Accounting
- o BPI Job Cost
- o BPI Payroll
- o Condor 3 Database Manager
- o Contractors Management Systems EasyEst
- o Daisy-Aids Graphics Package
- o Data Base Management System (DBMS)
- o Dbase II
- o Digital Accounting System (DAS) General Ledger
- o Digital Accounting System (DAS) Payroll
- o Digital Accounting System (DAS) Accounts Receivable
- o Digital Accounting System (DAS) Accounts Payable
- o Digital Accounting System (DAS) Sales Analysis
- o IMS Mailing List
- o Matrix-Aids Graphics Package
- o MBASIC
- o Money Decisions I AND II
- o MULTIPLAN
- o POLY-XFER CP/M COMMS Communication
- o RM COBOL
- o Target Financial Modeling
- o Target Task
- o Zork Game
- o Tycoon Game
- o Witness Game
- o Planetfall Game
- o Millionaire Game

*NOTE: Although the software listed above is supported by Digital Equipment Corporation, there may be a few packages that are no longer available.

Using DECmate CP/M 2.2 gives you additional flexibility in general -- especially for WPS users who want to run a special application package they saw running on a Rainbow....

PRODUCT REPORT: SOURCE CODE GENERATOR FOR DECMATE II By Clark Kaulkins General Electric Co.

At the Spring DECUS in New Orleans (actually, DEXPO), I ran into an add for a "source code generator" for CP/M on a DECmate II. I could not find anybody within DEC who knew anything about this, but I gave it a try anyway, and it worked. I used a DECmate II with the Z80 CP/M option and RX02 (8") floppies. The C. C. Software Source Code Generator prepared a disk file called CPM22.ASM, which appears to be a complete assembly source file for the memory image of CP/M. I am not sure what I will do with this, but it is interesting and nice to have. And it is pretty cheap!

The program produces commented and labeled source code for the CCP and BOOS areas. Code can then be modified by editing and assembling with ASM. The cost is CP/M 2.2 is \$, plus \$ postage. For more information, contact C. C. Software, 1907 Alvarado Ave., Walnut Creek, CA 95596, (415) 939-8153.

DECMATE TECHNICAL ARTICLES

USING WPS AND WPSCONV TO CREATE AND EDIT MBASIC PROGRAMS by Howard H. Heflin Kirkland, WA

The small business which does not have a staff programmer does have a tool that aids in the development of MBASIC programs on the DECmate II word processor. The tool is the standard WPS word processing program. Programs developed using WPS can be designed with a less structured approach to the project than would normally be possible in CP/M M-BASIC.

With WPS, the user needs to know the proper format and keywords for MBASIC, but does not need to learn the special <line> EDIT commands normally required to develop and edit programs.

The first step is to develop an MBASIC program on WPS. Create a WPS document in the <filename> form without any extension. The user will need to number each line since the AUTO command is not available in WPS. Write a program statement for each line. The number of characters on each line should not exceed 65, including the line number. Using this method, the user can write the program as he or she normally would. The standard program convention which leaves about ten numbers between lines (i.e., 10, . . . 20, . . . 30), is still a good practice, since it makes editing easier later. After the program is written the user can move about the screen to edit as necessary.

Using a typical editor with MBASIC, the user must delete a line which is in the wrong place, then retype it in the correct place. With WPS, it is possible to move sections of code easily via the cut and paste facilities. Although it is not necessary to renumber the lines at this point, you must be cautious in using SUBroutines when identifying to location of GOTO <line number> commands.

To find a specific phrase or command in your program, use the GOLD "Search" command. It is possible to move directly to any location in the developing program without having to resort to LIST <line number> or <line number sequence> while hunting for an elusive line. While using WPS, the user will be able to use any of the GOLD keys and other special word processing and arrow keys.

Once the document/program is in its final form, it can be converted to an MBASIC program. Remove the WPS system diskette and start up CP/M. The user may choose to remove the document diskette at this point, but it is not necessary.

Call up WPSCONV and move the program document to the CP/M diskette, changing the programs name to the <filename.BAS> form. The program is now on the CP/M diskette in ASCII. Call MBASIC, LOAD the new program, SAVE the program, RELOAD the program. This sequence changes the stored code from ASCII to binary code. RENUMBER the program in the according to the usual conventions. Run the program and debug it as necessary. If care was exercised in using the proper keywords and writing the code, the program should run the first time.

The major advantages to this method of program development are that it allows a less structured approach to the process and makes it very easy to edit the program during its development. While this may seem like heresy to some, it does allow the user freedom to develop the program using his or her own logic without the inherent limits and restraints of MBASIC procedures.

It is also possible to edit existing MBASIC programs, whether your own or other open code and public domain programs, using the same technique. The key requirement is that the program must be SAVED in ASCII in order for it to work using WPSCONV. To accomplish this task, LOAD the program in MBASIC, then SAVE <filename,A> to put the program in ASCII. Then simply follow the menu through the WPSCONV program to change it to a WPS

document with any program name. Use the normal keyboard editing commands including the GOLD key, in the same manner as above. This allows you to move about in the program while you customize or debug it.

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DECIMATE QUESTIONS AND ANSWERS

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From Perspective magazine:

Q. In CP/M how can I print an ASCII file to the screen from the CP/M operating level?

A. TYPE <filename>.<extension>
This command works for ASCII files only.

Q. In CP/M, how do I adjust the baud rate for communications and the printer baud rate for communications and the printer baud rate?

A. In the Terminal Characteristics Menu, press the Set-Up key and then use the Arrow key to advance through the available selections. Press the Select key on the Mini Keypad (above the arrow keys) to make necessary changes, then press DD twice.

Q. How can I add three columns across and print the total in the fourth column?

A. Press GOLD:COMMAND
type WPSMATH <Return>
type BEGIN <RETURN>
type FORMULA (space)
<:D1> + <:D2> + <:D3> = <:4><RETURN>

press GOLD:COMMAND.

This will be all that is necessary in the formula area. In the ruler, use decimal tabs in order for WPSMATH to operate. The numbers after D in the formula area each refer to a decimal tab position. In order to allow the formula to work properly, tab to each decimal tab position and hit each decimal tab position and hit RETURN after you enter the third number.

Once you depress RETURN, the answer will appear in the fourth position. If you edit any of the entries, depress GOLD:T then GOLD:Advance to recalculate the entries.

Q. While list processing addresses to envelopes, I find that long names are going to the next line all the way over to the left margin. What can I do to prevent this?

A. Remember that the same factors which cause a word wrap in play when list processing is done into a format that you specify. The right margin in your form document must be extended to the right, in order to keep those long names from wrapping.

Q. Can you transfer programs and data between the DECmate I and II?

A. Using the RX01/02 Adapter board in the DECmate II, you can access files and documents on DECmate I RX01/02 diskettes. Through the connection of the DECmate I floppy drive cable into the back of the DECmate II (the RX01/02 connector), the "additional" two or four 8" diskettes are accessed by WPS-8 as drives 4, 5, 6, and 7. CP/M-80 calls these drives E, F, G, and H. Files can be read from and written to the 8" diskettes in the identical way that the same operations are done with 5.25" diskettes.

The only operations not allowed with 8" diskettes on DECmate II are backing up 5.25" to 8" and the creation of a bootable disk on 8" media; the DECmate II must "boot" from either a 5.25" diskette or from the integral 10MB hard disk. It is important to understand that the use of the RX01/02 diskette adaptor module precludes the simultaneous use of the integral hard disk. You must choose which mass storage configuration (external 8" or internal hard disk) you wish to use at any given time. The conversion from one operation board to the other is straightforward and takes about 15 minutes to accomplish.

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DECMATE WISH LIST
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If you have items you want to include on the wish list, send them either to the editor of the newsletter, or the DECmate Working Group Chairman, Cheryl Johnson.

- 1. Global search and replace: the ability to do more than one search and replace string at a time.
2. Text wrap: text should automatically wrap when editing so that the user doesn't have to advance through it.
3. Additional paste buffers: the ability to save and rearrange multiple segments of text at the same time.
4. Spelling error detection: the ability to check spelling of text easily and accurately without using CP/M (to be included on DECmate word processing software, possibly as an optional feature), or rearranging document in any way.
5. Simple math logic: the ability to have five-function math (addition, subtraction, multiplication, division and percentages) on DECmate word processing software, possibly as an optional feature.
6. UDKs: the ability to actually do the UDK as the user is setting it up, not just displaying the typed keystrokes.
7. UDKs: the ability to edit existing UDKs which have already been filed.
8. ENTER key: would like it moved closer to the normal typing keyboard.
9. Print specific pages: the ability to print any specified page when reset pages are used; i.e., print section 11, page 8.
10. Graphics: the ability to easily draw vertical and horizontal lines around text that will print out to form boxes and charts, to be an inclusion in DECmate word processing software.
11. Background transmission: the ability to continue to use the system while transferring documents from the VAX, converting documents, using list processing and other foreground functions.
12. Working with a "COPY" document on disk, not the actual copy, so that if the user makes an error, the original can be recalled and used again.
13. Multiple wraps: the ability to have multiple wraps so the user doesn't have to keep changing rulers; possibly by using the GOLD TAB to indicate the specific tab wrap that you desire at that time.
14. Sub- and superscripts displayed: show sub- and superscripts on the screen by actually moving the character up and down.
15. Printer stop: the printer should have the ability to detect when the ribbon breaks (not just runs out), and stop.
16. Printer detects paper out: the ability for the printer to detect when no paper is in the printer so it will not print on the platen.

- 17. Hard disk volumes: the ability to choose the size of segments on the hard disk, instead of having to break it up into 7 small volumes.
18. Software "q" problem: the ability to use GOLD SEARCH PAGE or GOLD PAGE BOTTOM without worry that a hidden "q" will be put in the document to cause various problems.
19. Screen scrolling: have screen scroll a single character at a time in wide documents, rather than jump.
20. Local software support: provide local support to help with special set-ups and problems. Sometimes you need someone to actually be there and share ideas with, not just a voice over the phone.
21. Wide screen setting to stay with the document: With version 2.0, giving users the ability to change the size of the screen. 2.0 does not allow the wide screen to be stored with the document. The chosen setting should stay with the editor menu (narrow or wide), to be stored with the document.
22. Cutting text of any size: to have the ability to cut any amount of text, possibly by making saving and cutting separate functions. That way, since the system wouldn't be saving it, the size of the text to be cut would not matter.
23. Replacement character on draft printer: the ability to print replacement characters on a draft printer going through communications, particularly double underscores.
24. Advance forward: to be able to advance directly to the end of a word, sentence, or segment of text.
25. Document view while printing: the ability to view or edit a document while other pages of it are being printed.
26. Multiple simultaneous print queue: the ability to queue several non-consecutive pages of a document to the printer at the same time; i.e., queue pages 2, 6, and 8, or at least to be able to send page 8 of a document to the printer while page 2 of the same document is printing, so you can then work on something else.
27. Underlines recognized as part of a word: the ability for the DECmate to recognize underlines before text that are entered using select and the "UNDERLINE" key to be recognized as part of that word, i.e., 846. This would make the system back up at the beginning of the underlines when "BACKUP WORD" is pressed at the end of the word/number or delete the word/number with underlines consecutively when "DEL WORD" is pressed.
28. Larger capacity in DEC DX account: the ability to put more than 200 documents in a DEC DX account, up to 999 or so, if limited by three digits.
29. Recreate index: the ability to automatically recreate the index of a DEC dx account if it becomes corrupted.
30. Caps lock sound recognition: a different key sound when the LOCK key is on to signal the operator the lock key is on.
31. Replacement character view: the ability to see numbers/characters which have replacement characters, such as double underscores, onscreen.
32. Gold GRT DOCMT PAGE: use GOLD GET DOCMT to get only certain specified pages of a document.
33. Page markers: not removed when rulers or text are changed.

34. Delete page key: the ability to delete an entire page at a time, allowing the operator to verify deletion of the page.
35. Double underscore with decimal tabs: the ability to use double underscoring with decimal tabs without having the text move over.
36. Simple column logic: the ability to set up multiple columns on a page by putting more than one set of margins on a page, also, allowing the use of the sheetfeeder during multi-column printing, since the page would not be going up and down.
37. Column centering: the ability to easily center headings over a column of text.
38. A place to get detailed information addressing software for wierd applications, such as PDS real time data acc replacement.
39. VT131 and VT2XX support.
40. A way to split out DX and compile it into OS278 (DECUS version).
41. Address comm port under COS 310.
42. Ability to use print screen with FMS forms that have line drawings.
43. Full compatibility with the LA210 and LN03.
44. Elimination of hard returns when transferring a WPS+ document from the VAX to the DECmate.
45. Capability to put escape sequences in a document, e.g., print a line at 5 characters per inch, then print the next one at 10 characters per inch, etc.
46. Support printer as a local printer, such as "VT100 printer port escape sequence."
47. Gold Q for Quit on DECmate and Rainbow WPS+.
48. The new 'search forward or backward' is great, but the user can't change direction after it is chosen. Go back to the old way.
49. Ability to use non-DEC printers.
50. The ability to call up the index in alphabetical order by document name.
51. The ability to use the system while doing list processing.
52. The ability to add information on to the end of a paste buffer before pasting, ie., cut a paragraph, then on the next page, add that to another paragraph, cut again, and past both paragraphs elsewhere, in one operation.

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PRO TECHNICAL TIPS

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ACCESSING P/OS MENUS FROM DCL
By Steve Kirschner

How to invoke P/OS menus from DCL:

```

;
RUN C$DUTL Disk services
RUN C$FUTL File services
RUN C$VUTL View messages
RUN C$SUTL Set up
RUN C$PUTL Print services
RUN C$COPY Diskette copy
RUN DTE Terminal emulation
RUN C$AREM Applications group menu (remove application)
RUN C$AINS Install application
RUN C$FILEX PRO to PRO file transfer
RUN C$PHONE Phonebook menu
RUN CALCON Call services

```

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USING PIP UNDER POS
By Steve Kirschner

PIP switches that that work ok on P/OS are as follows. To run PIP type

```

R $PIP:
/BR Directory with filenames only
/CO Files copied contiguously. Examples:OUT.LIS=*.*LIS/CO
      OUT.LIS=IN1.LIS,IN2.LIS/CO
/DE Delete specified files
/LI Directory
/PU Purge specified files
/RE Rename files: NEW.LIS=OLD.LIS/RE
/SD Selective delete. PIP prompts for Y/N
/TR Tuncate unused blocks from end of specified file
  Non working PIP switches:
/CD Creation date. Default is already creation date when files
  are copied.
/SP Files cannot be spooled to line printer.

```

=====

BACKGROUND PRINTING UNDER P/OS
By Steve Kirschner

Here's how to print files as a background task from DCL. First edit your [ZZAP00002]START.COMD file to include the following line:

```
INSTALL/TASKNAME:PIPTT2 $PIP
```

Next create in the system library ([1,2]) the following file named P.COMD

```

.ENABLE QUIET
.DISABLE DISPLAY
.ASKS XXXXX Filename?
COPY XXXXX [1,2]PPPPPP.TMP
SPAWN RUN/COMMAND:"CHAIN @[1,2]PRINT" PIPTT2
.DISABLE QUIET
;

```

Finally, create in the library the following file named PRINT.COMD

```
TT2:=[1,2]PPPPPP.TMP
```

```
[1,2]PPPPPP.TMP;*/DE
```

;

To use, simply type "@p". Hint: if you use a great number of ESC sequences in your print file, you may need to increase your buffer size by typing "set terminal:tt2:width:254". Larger buffer size seems to confuse PIP.

[The previous three notes were all downloaded from the Beach City FIDO BBS.]

PRO QUESTIONS AND ANSWERS

Q. Are there any bulletin boards which have PRO software or users on them?

A. There are several. One FIDO which has some PRO users/software are Beach City RB (see the question below). The San Francisco DEC PC LUG serves both PRO and Rainbow Users. You may want to try that board at (415) 981-3325. Use that board only between 6pm and 8am, western time, on weekdays, any time on weekends. Two other boards which have PRO Software are the PDL Board, featured in an article in the last PC SIG Newsletter, and the DEC Market Board. For the phone numbers and details of how to use those two boards, check the list of DEC-oriented boards at the end of this newsletter.

From the Beach City FIDO (213) 376-9567

Q. I have tried to download .TSK files several times from the Pro area of this FIDO BBS and have been unsuccessful. What is the trick? Also are you aware of any comm support for the pro CP/M softcard? I have not had any success trying to find the comm port address from the CP/M environment on the Pro and can't find any other reason to justify even having the board. Any suggestions will be greatly appreciated. Lastly, as you have figured out I too have a Pro 350 with the hard drive and would be interested in chatting with you from time to time since us "Pro" types seem to be few and far in between. See you later.

A. To transfer a .TSK file you must first select IMAGE transfer mode, COMM port for COMM line option, and set your speed. See PRO bulletin #7. All of these options are selected by first selecting SET from the KERMIT main menu. To use CP/M communications programs, you must first design a comm line driver using CP/M assembly language. This should hook into CP/M in the conventional manner, but instead of writing to a hardware port, it will read/write to a common memory area. There should be a way of causing an asynchronous interrupt on the cp/m board via P/OS. If not, then you will be very limited in what you can do with it. On the P/OS side, you need to write a MACRO program which will talk to the hardware port, write data through the common area, and pass async interrupts on to the cp/m card. MACRO is the only language that I know will handle hardware asynchronous interrupts. However, it may be that BASIC+2 can handle port interrupts using the ONKEY statement. You will have to look into that if you want to go that route.

I don't know of any ready-to-go software that will do the job. I don't think there is enough call for it for a big company to go to the trouble, and if you do it you will probably have a unique software product. Good luck.

From Perspective Magazine

Q. I have backed up a file using the P/OS Backup utility, but I am having difficulty restoring this file. What is the problem?

A. Either the original directory name has been deleted or the disk has been reinitialized. P/OS requires that the original directory exist before a restore operation is performed. To determine the original directory of the backed up file, insert the diskette which contains the backed up files into the top drive and, at the DCL \$ prompt, type

```
TYPE DZ1:[ZZBACKUP]filename.type
```

Place your finger on the HOLD SCREEN key to see what has been embedded in the file's first line. In most cases, the file's directory name is seen here, usually preceded by an upper case "T". For example,

```
TMAILLIST
```

In this case, the original directory was MAILLIST. To restore this file on the disk, first create the directory, then restore the file.

Q. Why does EDT hang or crash for no apparent reason?

A. Check for the number of defined keys. EDT has a limited heap space and performs erratically if too many keys are defined. A suggested limit is five key definitions over what has already been defined in [1,2]EDTSYS.EDT.

Q. I am in the middle of an editing session and would like to set my character width to 132 columns. Is there a way of doing this without having to code an escape sequence?

A. Yes, simply exit out of the file by typing CTRL Z. This will bring you to the '*' prompt. At this prompt, type in the command

```
SET SCREEN 132
```

Then, to return to your file, type:

```
CH
```

Various EDT line mode commands can be found in the EDT Quick Reference Guide, which is supplied with the PRO 300 Series Hard Disk System software package.

Q. What do I have to do to use my HP7470A plotter with RS/1?

A. Type the following commands at the RS/1 prompt:

```
Plotter='HP7470A'
```

```
Plotter_file='TT2:'
```

Then use the PLOT command to plot a graph.

Q. I receive a Common Block Not Loaded error when I try to run a successfully written, compiled, and linked PRO/Tool program. Can you explain this error message?

A. A Common Block Not Loaded error message usually indicates a reference in the program to a library that has not been installed into memory. First check the cluster libraries selected in the cluster line of your .CMD file, then, verify that these libraries are installed by typing SHOW COMMON <CR> at the '\$' prompt. This command displays all libraries which are currently installed in memory. If one of the libraries you've selected in your .CMD file is not installed, then you must install it before rerunning your program. For example, if you had coded CGLFPU in your CLSTR (cluster) line, you need to install the library by typing:

```
$INSTALL [ZZSYS]CGLFPU
```

Note that the majority of all libraries available for use reside in the directory [ZZSYS].

Q. I receive the following error message, Illegal Memory Limits, when I try to run a successfully written, compiled, and linked PRO/Tool Kit language program.

A. P/OS issues an Illegal Memory Limits error message when a task size exceeds the maximum size allowable (usually 48KB to 64KB, depending on the language). In most cases, you will need to break up the task into two or more separate tasks and then OVERLAY these tasks. Two helpful hints when overlaying:

1. In the source code, the main task should call the subtasks in an independent manner, that is, when subtask A is called by main task, it should return to main task before subtask B is called. Since each of these subtasks is an independent routine, each needs to be compiled separately.

2. In the .ODL file, you need to explicitly indicate overlaying of these subtasks. For a detailed description of overlaying principles, see Volume 5 of the PRO/Tool Kit documentation, Task Building Manual.

Q. When installing ATHENA/Graph, what do I do if the installation fails?

A. Check for sufficient free and contiguous space (approximately 1100 free blocks are required). To properly install ATHENA/Graph, three files of approximately 240, 160, and 30 contiguous blocks must be placed on the hard disk. The remaining space need not be contiguous.

Q. Why doesn't my ATHENA/graph chart print on the printer? I have chosen Printer as the device for display in "Set Visual Characteristics."

A. The printer must be turned on before you enter ATHENA/Graph. Also, check to be sure you selected the correct printer during setup.

Q. When I print out my pie chart on the LA100, the print is distorted. Why?

A. Switch #5 on Switch Pack #1 must be in a closed position.

Q. Can I change the size of my chart displayed on my monitor, printer, or plotter?

A. No, the chart always uses the entire display surface (screen or paper).

Q. Using CT*OS on the PRO 350, I would like to do a two-wheel pass on my Diablo 1640 printer, so that the Greek/Math character set will print out on the second pass.

A. Access CT*OS Manager and choose L to list default printers. The system will ask for a device name and put in XE40 which is the device name assigned to the Diablo 1640 printer. Display the printer characteristics. Make a note of them so that you can enter a new printer device name to enable you to define a two-wheel pass. For example, enter XE41, and enter all the printer characteristics the same as XE40, except ALLTYP. Enter this setting as 2 to enable the printer to accept a two-wheel pass. Reenter CT*OS Word Processing and set AC (alternate character set) to multinational. When creating the document, use the alternate character key (hyphen key on the editing keypad) prior to entering the alternate character text. This text will print on the second pass. At the print menu, be sure to put the new printer device name as the destination printer.

Print the first pass, change the printwheel, then scroll the page back to the beginning and go back to the system and type R to resume printing. The alternate character text will print on the second pass.

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BOOKS AVAILABLE ON THE PRO

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Digital Press carries two books related to the PRO:

Hands On Basic for the DEC Professional Computer, by Herbert Peckham, with Wade Ellis and Ed Lodi. Co-published with McGraw-Hill Book Co., 1984. 312 pages, paper.

The latest in the Computer Literacy series. Shows first time programmers how to use PRO/BASIC to solve simple problems on a Professional 300 Series computer. Also provides instruction in the use of graphics and file facilities.

Designing Application for the Professional 300 Series: A Developer's Guide, by John Lucas, 1984. 200 pages, paper.

A comprehensive discussion of the feature and strategies which developers can use to write applications for the PRO 325 and 350. Discusses the issues which arise in the development of any personal computer application and gives advice for solutions. Includes source code for a fully debugged and documented sample graphics application.

Also available: "Designing Applications Software," a diskette with the code for the application above.

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PRO SERIES WISH LIST
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REQUEST FOR PRO-300 SERIES ENHANCEMENTS

by Thomas R. Hintz
Chairman, PRO Working Group

Use of the PRO-300 series microcomputer continues to grow. The PRO finds its way into many diverse areas and has found favor with many users because of its ability to support several languages, and provide both the experienced and inexperienced user with a comfortable environment in which to work. Many existing applications can be easily ported to this machine.

Along with its use, however, comes an increasing number of requests for modification and upgrade. Since all PRO-users have a common interest in the future development of the PRO-300 series of micros, the PC SIG has started a wish list. Since a public list does not exist, I have been collecting wish list requests over the last month. During the New Orleans DECUS Symposium, the list has almost doubled in size. The variety of requests shows a desire for a broad range of future product enhancements. The broad spectrum of interest for the PRO was evidenced by the large number of SIGs which sponsored sessions related to the PRO. A total of eight SIGs gave more than 35 presentations.

The list below is presented in its entirety, but is NOT prioritized. Most of the requests are quite specific. Where the meaning was not clear, the wishes are listed as they were submitted. If you wish to clarify a particular item, please feel free to add to the description. We will continue to add to the list as new items are submitted. Any items that are important to you which are not on the list should be sent to me for inclusion. To continue this process we need to bring some order to this random list of suggestions. You, as a user of the PRO, should have an opportunity to determine their order of importance. Now is your chance. At the end of this newsletter is a form (ballot) to cast your votes. Each item is numbered. Number each wish to show what you consider to be the items of highest priority. Vote for as many items as you like, but number them from highest (1) to lowest priority. After the ballots have been returned, the results will be tallied, reported in the DECUS PC SIG Newsletter, and presented to DEC for their review. Now is your chance to be heard. VOTE TODAY before you forget.

WISH LIST ITEMS

- 1. RT-11 emulator executing under P/OS
2. BUS extension to provide more expansion slots
3. Streaming tape backup
4. Standalone backup
5. External disk(s)
6. Wild card specification for PFT
7. Warm restart for P/OS
8. Startup detect of battery backup status
9. Instructions for deleting unused application options to conserve disk space
10. Menu item to execute infrequently used applications from disk so that install/deinstall is not required
11. UAX server for cluster of PROs
12. Terminal emulation with full VT24X (e.g. downloadable characters, etc.)
13. DECNET command terminal should be compatible with VMS 4.x (e.g. should allow command line editing)
14. DECNET support for the communications port
15. Ability to spawn a BASIC compilation
16. Batch spooling facility on toolkit for compilation/link
17. Ability to connect two hard disks to the bus, preferably

- utilizing the same controller.
18. Ability to dial into the TMS and the communications port from a remote terminal
19. PRO/FMS compatible with VMS/FMS
20. More compatibility between FMS screen control keys (function keys) and the P/OS menu control keys (e.g. P/OS uses the HELP key for help while FMS uses the PF2 key, etc.)
21. Disk formatting capability
22. Access to the DZ driver or the ability to use the other track/sector combinations supported by the RX50 controller
23. Disk compression utility
24. A method of finding out what files to move to recover contiguous disk space so that a complete reload is not required to unfragment the hard disk
25. A search command similar to what exists on VMS for finding text strings in a file or files
26. TPU (Text Processing Utility) for P/OS like the announced but not yet delivered text editor for VMS.
27. A more elaborate PRO/COMMUNICATIONS that makes full use of the TMS and voice box
28. Full window/multi-task support for user developed applications (i.e. SIDEKICK)
29. Enhanced CAD software (not Design Graphics Executive!)
30. DCL sources on Toolkit
31. Reliable PASCAL compiler
32. Complete documentation and listing of the VT102 and GIDIS (TFW) code
33. Graphics from VAX using PRO/COMMUNICATIONS V2.x
34. Maintain color setting when going between menus
35. A better DEC LANDER!
36. Asynchronous dial-up DECNET
37. Full VT125 emulation
38. Full DECGRAPH/DECSLIDE support
39. MENU sources
40. Output CORE graphics to GIDIS files (from PRO/BASIC)
41. PRINT SCREEN to a GIDIS file
42. Image backup of Winchester disk
43. Removable hard disk
44. Virtual terminal support
45. BATCH processing support
46. I D space support for 325 and 350
47. Supervisor mode support for 325 and 350
48. Larger buffer for drawing complex filled figures
49. Warm restart of P/OS
50. SIGHT-rotation of figures and text
51. GIDIS to/from NAPLPS conversion
52. GIDIS to REGIS conversion
53. HELP on floppy, less on hard disk
54. Master index to toolkit documentation
55. Complete documentation set, etc. on laser disk (with cross index)
56. Extending graphics for PRO/BASIC
57. Graphics support over DECNET
58. FPJ-11 floating Point for 380
59. Videotex creation
60. SIGHT-convert multiple objects into single one
61. Coexistence of multiple OS on a single hard disk for each to run in native mode
62. DECNET support under RT-11
63. Do not clear screen after logoff with PRO/COMM TMS

(Tom Hintz is an entomologist with the University of Florida, and long-time chairman of the Pro Working Group.)

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ROBIN (VT-180) NOTES

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VT-180 SOFTWARE ON BBS

The Newton, MA Z-Node RBBS is a bulletin board that specializes in VT-180 software and has special areas for the support of ZCPR2/ZCPR3 MULTISYSTEM, and the other Robin-oriented software. The Sysop is Jay Sage, who is a VT-180 aficionado and knows a lot about the CP/M and VT-180 internals.

The Z-Node board is frequented by hotshot programmers and is a rich source of systems lore of all kinds. Jay also sells/supports Ken Heyda's MULTISYSTEM (the disk translation utility that lets you swap software with other computers), so those of you who either have it or want it can check out the system by dialing the board and reading the documentation about it.

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DBASE II UTILITIES

The strong interest in DBase II for database management continues in the Robin community, even though Ashton-Tate is not supporting CP/M. An add-on industry has developed around DBase II, with an emphasis on some new and powerful application-generation utilities that minimize the complexities for inexperienced users--specifically in application programming. Here is a list of available programs that operate in CP/M (though not necessarily in the VT-180 disk format.)

o DGEN--the Luis Castro application generators distributed with Version 4.1; includes file-maintenance, menu, and mailing label generation programs that automatically create DBase II Command (CMD) files (programs), from an existing DBase II application.

o DSORT--the powerful 32-field external sorting utility that offers V. 4.1 users ascending/descending order for any field, alphanumeric character specification, and disk space testing prior to sorting.

o DRECOVER, DSHRINK, DVERIFY--are database maintenance programs to fix damaged databases, debug applications, handle database integrity. Available for \$145 from Pacer Business Automation, Inc., 2605 West Valley Highway North, Auburn, WA 98001, (206) 833-4411.

o DWINDOW--an application menu-generation program, available from Liberty Bell Publishing, Dept. C, Portland, OR 97201, (503) 221-1806.

o DPLAN--DBase II project management application software, available from C. A. Home Services (303) 596-7841.

o CHECK, REPAIR, DECODE/RECODE--DBase II programming utilities that offer program debugging, corrupted database repair, unscrambling or DBase II RUNTIME CMD files. Available for \$49 each, or three for \$99 from Hilco Software, 304 North 17th Street, Mt. Vernon, WA, 98273, (206) 428-0475.

o DB GENERAL LEDGER--accounting software for \$295, from Texhoma Computers, 238 Blair House, Wichita Falls, TX 76306.

o DB BUSINESS PAC--accounting software package including A/R, A/P, GL, inventory, Customer Lists, Reports, Checks, Purchase Orders; \$89 from Software Developers, 5305 Buffalo Avenue, Van Nuys, CA 91401, (818) 789-0173.

o DBASE II PROGRAMMER'S COMPANION--programming/debugging

toolkit, \$29.95 from Computer Publications, 717 Copeland Court, Suite 3, Santa Monica, CA 90405, (213) 396-1321.

o DBX TRANSLATION SYSTEM--conversion system to the "C" language--under UNIX System V, XENIX, or MS-DOS; translates databases/programs, offers screen handlers, sort utility. From AI, Box 640, Norwalk, CT 06856.

o DBDECODER/COMPILER--converts compiled CMD programs back to source form and then recompiles them. \$69.95 from Dataglobe Systems, 30 Burnhill Road, Suite 803, Scarborough, Ontario, CA.

o DBCOMILER--translates DBase II command files to runtime programs. From Wordtech Systems, P. O. Box 1747, Orinda, CA 94563, (415) 254-0900.

o PRINTBAR--prints bar-code labels from DBase II or BASIC programs. \$149 from Bear Rock Software, P. O. Box 212, Placerville, CA 95667, (916) 622-4640.

o DB-C INTERFACE--converts DBase II to Lattice C. From Lattice C, Inc., P. O. Box 3072, Glen Ellyn, IL 60138, (312) 858-7950.

o DB-POWER PACK--Utilities that convert character fields to memo fields; Soundex Lookups, Printer Abort, Math, Trigonometric Functions. From Gryphon Microproducts, P. O. Box, 6543, Silver Spring, MD 20906.

[These articles were previously published in the ROG News, the Robin Owner's Group Newsletter.]

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GENERAL INFORMATION
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CAPITOL PC USER'S GROUP DEVELOPS BILL OF RIGHTS FOR SOFTWARE USERS

The Capitol PC User's Group, of Washington, D. C., under the direction of Dave Browning, director of Vendor Relations, has sent a 5-point user's Bill of Right to ADAPSO (Association of Data Processing Service Organizations). The Bill of Rights contains the following points:

- o Right to Software Product Quality
"The User has the right to expect a software product to perform with a level of quality consistent with industry specified or implied standards."
o Right of Functionality
"The User has the right to expect a software product to perform basic functions common to the generic program type, with any exceptions or caveats fully disclosed prior to purchase."
o Right of Continuous Service
"The user has the right to have on hand sufficient backup of program packages and authorization devices to continue operations uninterrupted by loss of or damage to the primary package or authorization device."
o Right to Program Support
"The user has the right of access to information from the software manufacturer concerning known errors, fixes, or temporary work-arounds. The user also has the right to reasonable updates to the released versions for the correction of errors."
o Right of System Integration
"The user has the right to integrate software products into his or her system environment without undue constraint or interference from copy-protection, software authorization, or other extraneous program functions."

CPCUG hopes that the Bill of Rights will be endorsed by other user's groups and adopted by software vendors. Its intention is to provide a code of ethics for software vendors.

POINTS OF ETIQUETTE

Ms. Motherboard

Dear Ms. Motherboard,

I'm so thrilled!!! Daddy got a great deal on a new Rainbow 100+, so he has agreed to let me take his old Rainbow 100A with me when I go back to college this year. It only has 256K of memory, but that's plenty, since I can play HACK on it.

I'm really looking forward to writing brilliant term papers, even though I'm only getting Dad's old copy of WordStar. I know I'll be able to polish my prose since I won't have to retype everything. Or maybe I should say, um, pay to have

someone retype everything. Here's my problem: Dad let me have the 100A on condition that I learn to type well enough to do my own typing--no more two finger stuff. (I used to get my boyfriend to do it, but we broke up last year.) Now I need a typing tutor program fast! Where can I find one?

Bumblefingers

Dear (soon to be) Nimblefingers,

Typing is an extremely useful skill in the information age. Ms. Motherboard is pleased that you intend to learn it. Unfortunately, the most popular typing programs are not available for the Rainbow. But there is at least one: Touch Typist, by NewLine, like most typing programs, combines lessons with drills. It also covers the numeric keypad. It is available in CP/M, MS-DOS, and Concurrent CP/M versions for \$79 (plus \$3 shipping) from NewLine Software, P. O. Box 289, Tiverton, RI 02878 (401) 624-3322. MEC Software, of Parkersburg, West Virginia, carries it for \$59. Their number is (304) 485-9126.

A much cheaper alternative is to buy a standard typing text book, and use it. They'll be available at your college bookstore. No matter which method you choose, be sure to do the drills. They'll help you gain good typing habits and eventually increase your speed.

Ms. Motherboard wishes you luck in developing your ability to type. Her father forced her to take typing in high school. Although she flunked it at the time, she has not regretted having the ability to type, even though she types at a slow and ladylike pace.

Dear Ms. Motherboard,

Praise the heavens above! You provide a fine upstanding model of etiquette, restraint, and moral fortitude for our young computer scientists. I read your column faithfully and admire your patience, wit, and wisdom.

I have an idea which the heavens visited upon me last evening, and I would like your opinion on it. My congregation graciously supplied our growing church with a Rainbow (bless them and their generosity!) this year, and our dear Miss Lightbalm is doing our weekly newsletter on it. (I told her to read your column in your exemplary paper for some tips, and she tells me that the format of your newsletter has also given her many ideas.) Our deacon, Mr. Tower, is generating mailing labels from this fascinating and miraculous machine. Miss Lightbalm suggested I store my weekly sermons on it, so I can stockpile several texts for future use. An enlightened ideal!

A vision came to me in my dreams last night which I believe is a sign for me to expand my business. I understand that there is a mysterious product called DecTalk which will speak the holy word electronically. What a marvelous tool for spreading the good word to those I cannot reach each Sunday! I thought I might record my sermons and have many Rainbows available for rental to those congregations of my denomination that do not yet have a resident minister. Even better, I could provide such services as weddings and funerals to churches that need my services at the same time that I am needed elsewhere. Our heavenly hosts teach us that we cannot be in two places at one time, but DecTalk may be the miracle I have been praying for! Just think, my followers could be married by my words even though their church is miles into a secluded forest; the sudden loss of a dearly beloved can be mourned in proper fashion despite the fact that I am on vacation; a congregation with an ill minister can have a guest sermon without the bother of sending for me. What do you think, my dear Ms. Motherboard? I value your opinion highly, and know you are closer to the hearts and souls of our fellow computing brothers and sisters than I. Would

these services be received in the proper spirit? Would they make a lot of money for me? Bless your soul for taking the time to respond to your humble servant.

Yours faithfully in the spirit of love and altruism,

The Most Reverend Ewing

Dear Reverend,

Visions notwithstanding, Ms. Motherboard has some reservations about using DECTalk to supplant ministerial obligations. While DECTalk could certainly be useful in religious matters (for instance, to occasionally liven up sermons, especially those for young people, or to relay messages to your congregants), it does not have the ability to comfort a spiritually or physically ailing person the same way another human can. You are certainly forward thinking, and will undoubtedly find many uses for DECTalk (it might be useful for moneyraising telathons, perhaps). But Ms. Motherboard doubts that your congregants are ready to accept DECTalk instead of a minister.

On the other hand, your idea of having Rainbows for church members to use is excellent. (Anything to get more Rainbow users out there

..Ms. Motherboard prays that DEC will miraculously start marketing them properly.) You might want to develop several different programs to sell to your satellite churches and to church members. Other ministers would probably appreciate having programs, such as the one you use for generating mailing labels, spreadsheets for keeping track of the Sunday collections and church expenses, and a database which could keep useful information about the members.

You could really make money --er, that is, expand the church coffers--with--dare Ms. Motherboard suggest such a blasphemous thing-- Biblical video games. They could be a great hit.

Dear Ms. Motherboard,

In your column I've seen letters dealing with all sorts of computer related problems. I've read your answers with great interest, especially those dealing with the reaction of other family members to the computer. My problem may be unique.

Our two dogs are very jealous of the computer. They don't seem to mind if my husband and I watch television--they can easily side up for some scratching behind the ears. But when either of us uses the computer (or worse, if we work together), we can count on assault from all sides. One dog will crawl under the computer table and stick her nose up to be petted. (This definitely destroys keyboard technique.) The other dog "attacks" from the rear, jumping up, putting her paws on my shoulders, and sticking her nose in my hair. Of course, I stop and pay attention to them both, but almost as soon as I get back to work, they reverse positions and beg for more affection. I've tried keeping them out of the office, but they whine piteously and, soft-hearted fool that I am, I let them back in.

Now they seem to have escalated into a war against the computer. The older dog began by grabbing UPS packages (which usually have software in them) and running off with them. The younger moved on to shredding the computer magazines and newspapers that I carelessly left within her reach (not the WARUG Newsletter, however!). Then, last month, while my husband and I were at the WARUG meeting, the younger ATE a diskette. (She didn't get sick from it.)

Ms. Motherboard, I dread thinking about what they'll do next. I love my dogs but I am contemplating dogicide. What can I do?

--In the Doghouse

Dear Doghouse,

It appears that your dogs are indeed jealous of the computer. However, the problem is not their jealousy. . .it is a dreadful lack of training. Well trained dogs do not jump up on anyone--whether or not the individual is seated at a computer. You do not mention the age of your dogs, but it appears that at least one is still a puppy. (Only a puppy would find a diskette chewable.) Ms. Motherboard suggests several solutions, all of which will help to alleviate your problems. First, take the dogs to dog obedience school. They definitely need to learn some manners. Second, whenever possible, keep the dogs outside while you are computing. Third, invest in a large supply of chew bones, and keep the magazines out of reach. The trick here is to keep your eyes on the dogs, so that you can stop right at the beginning of a potentially destructive or unacceptable act. Finally, when the dogs are nearby, take a short break every hour or so to give them the attention they crave. That also gives you a break from looking at the screen. The time you spend now in training your dogs will be repaid many times over their lifetime, and you will be much less frustrated.

Dear Ms. Motherboard:

Birthday parties for youngsters are getting pretty expensive lately. Danny, my 8 year old, has been to parties at the Pizza Time Theater, to the horseback riding farm, to the local hamburger and ice cream parlor, and even to the movies and miniature golf. It's so expensive, but I hated to disappoint Danny by throwing him an old-fashioned at-home party. I had an idea which really worked out well for us which some of your readers might appreciate.

Danny's school has a computer lab for the children which is equipped with Ataris, Apples, and DEC's. They open up the lab on Saturday morning for children who have scheduled half-hour sessions. I managed to schedule a two-hour block of time at 10 AM for ten children. It was free! We took Danny and his friends down there to play games and to program for a while, and then served cake and ice cream in the cafeteria at lunch time. It was a big hit! And some of the children even learned something!

Hostess with the Mostess

Dear Hostess,

What an imaginative idea. Ms. Motherboard abhors the Chuckie Cheese sort of birthday party, which is very expensive and certainly not very edifying. What a shame children are too sophisticated for the old fashioned birthday parties with simple games like Pin The Tail On The Donkey and Spin The Bottle.

Finding perplexing parity errors? Questions related to computer etiquette and the effect of computers in your life should be sent to Ms. Motherboard care of the Newsletter Editor. Naturally, whenever possible, letters should be sent on tasteful buff micro-perf bond with matching envelopes, but enhanced dot matrix printing is acceptable.

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THE GRAPEVINE

. . . Don't try to save money by buying a 20 megabyte hard disk of the RD31 variety on the open market. . . the DEC version has proprietary chips on the base. . . The surplus Rainbow market appears to be drying up. . . there may be fewer bargains in the future. . . DEC may be hoarding Rainbows to encourage a shortage. . . possibly to encourage sales of their VT200 series terminals. . . DEC still has a lot of Rainbow As, reportedly will offer employees a discount on A models only. . . MS-DOS 3.10 for the Rainbow may be announced within the next two months. . . DEC is field testing an IBM PC-AT compatible computer which utilizes an 80286 processor. . . the machine, with a single disk drive, 512K, and no room for expansion modules, may be positioned as a terminal rather than a PC. . . no word on whether Ken Olsen will allow it to be released or will scuttle it as he did the PC/Rainbow compatible Rainbow 50. . . if released, the machine may not be competitive with the Rainbow after all. . . Look for a Rainbow compatible Bernoulli Box to be released in mid-February by an OEM. . . DEC has finished work on a patch to correct bugs in dBase III, but has not announced it yet. . . some dBase III buyers are so frustrated that they have suggested that DEC downgrade it to dBase II. . . A GW Basic compiler for the Rainbow is currently being tested. . . DEC sources have confirmed rumors that there has been a resurgence of interest in the Rainbow. DEC has gotten several large orders recently. Individual buyers are continuing to buy, but have difficulty finding Rainbows. . . DEC-NET Rainbow is scheduled to be released this month. . . Univation has confirmed that it plans to offer a 768K memory board within a few months. . . expected price will be \$695 to \$895, fully populated. . . Univation is also developing a product which will make DECNET and Ethernet software compatible. . . DEC is conducting talks with Lotus to port the new version of Lotus 1-2-3 to the Rainbow. . . Total number of Rainbows sold is estimated to be near 300,000. . . An OEM is reputed to be working on a multi-user operating system for the Rainbow. . . DEC will soon announce MS-DOS version 3.x. . . Image, the word processor reviewed in this issue, may become available in an MS-DOS version. . . a popular game maker is adapting its database program for the Rainbow. . . no release date is set. . . Emulate 84, a program which is supposed to allow Rainbows to run IBM PC off the shelf software, has still not been released. . . Mark Williams Co. has cancelled the planned release of a Rainbow MS-DOS version of C. . . Also not available for the Rainbow. . . Borland's Turbo Editor Toolbox. . .

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SHORT NOTES

--PC PURSUIT is GTE Telenet's new service for avid BBS-electronic mail-electronic database users. For \$25 a month, PC users get unlimited access to other computers in any of twelve cities: Atlanta, Boston, Chicago, Dallas, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, San Francisco, and Washington, DC. Users must have an auto answer modem (300 or 1200 baud). There is a one-time registration fee of \$25 in addition to the monthly fee. Once registered, users dial up the service, give a number (apparently the line the modem is on), and give the number which they want to call. GTE dials the number and calls back the modem. The call proceeds from there. Each connection can last up to 60 minutes; calls can be made between 6 PM and 7 AM, Monday through Friday, and from 6 PM Friday to 7 AM Monday. For more information, call PC Pursuit at (800) 368-4215.

--Software Solutions, Inc., now offers Dataease Training Courses for novices and advanced users. Dataease is an easy to use database program. Currently, no courses are scheduled for the Washington area, but Software Solutions can arrange training at your site. For more information, contact Scott Berger, Customer Service Manager, 12 Cambridge Drive, Trumbull, CT 06611, (203) 374-8000, or (800) 243-5123.

--Is there a trick to getting good computer data lines? In some cities, if a new phone line is specified as a computer data line, it is routed through the oldest and least reliable exchanges. Matt Kanter, sysop of DEC-WARE, a popular New York City FIDO, was able to get good data lines by ordering a new phone line with extras such as call waiting, call forwarding, and so on, then cancelling them a few days later.

--The DEC Professional magazine now has a bulletin board. If you want to get information on advertisers, or send them a letter to the editor or message on line, call (215) 542-9458. The board is not a FIDO.

--Computer Industry Daily, a proposed Ziff-Davis newspaper, has been cancelled before deliveries to subscribers were to begin. Esther Dyson, editor and publisher characterized the CID as a "vapor paper." The newspaper was cancelled because too few subscribers were willing to pay the \$1000 annual subscription fee. Dyson will resume publishing Release 1.0.

--The Samna International User's Group publishes a monthly newsletter, the Samna Pipeline. It features national and international news and Samna related hints. Subscription to the Newsletter is \$25. For more information, contact The Samna International User's Group, 1088 Bishop Street, Suite 407, Honolulu, HI 96813.

--DEC recently opened a new manufacturing plant in Chihuahua, Mexico to assemble MicroVax II products. DEC estimates that the market in Mexico will grow to \$500 million within three years. Products will also be exported to South America. Mexican law requires that companies which sell there manufacture and export from within Mexico.

--DECnet-Rainbow and DECnet-DOS are expected to be available in October. The two DECnet programs allow Rainbows and IBM-PCs to be networked together with PDP-11s, VAXes, and DECsystem 10 and 20 mainframes. They also provide a gateway to IBM's SNA environment. The Rainbows and PCs become end-nodes in the network, can transfer files, share peripheral devices, including printers, and disks, share common data files, and use electronic mail. According to DEC, DECnet-DOS and DECnet-Rainbow combine

micro to mainframe connection with personal computer networks. A user on any node can command the full resources of the entire network, even interact with programs running on other Rainbows or PCs. DECnet-Rainbow requires 256K RAM and a null modem, and does not support Ethernet. The expected price is \$

--From a recent Washington Post article which discussed rejection letters sent by various companies to job applicants: DEC's rejection "letter" was considered the least polite. Sent on a postcard, it read, "Dear _____, (name scrawled in) Thank you for your interest in Digital Equipment Corporation. The volume of inquiries which will be received this year precludes personal acknowledgement. If there is an interest in your qualifications and an appropriate position becomes available, we will contact you."

--Sue Pari, of Jackson, MS, has written to recommend the MAC INKER, available from Computer Friends, 6415 SW Canyon Court, Suite #10, Portland, OR 97221, (503) 297-2321. She says, "Running a small business with a Rainbow and an LA50 printer can be tough enough without having to buy a dozen ribbons every time you turn around. I was originally buying DEC ribbons, but they were so costly that I went to a mail order replacement ribbon. The quality was poor on both types of ribbons and I was having to review each piece of hard copy to be sure the print was adequate. The solution came in the form of the MAC INKER, which is available for all types of printers. MAC INKER works like a charm. If you purchase good quality ribbons and re-ink them as needed, the print quality gets better each time. I have ribbons that I know I have re-inked over 30 times and they show no signs of wear yet. For the cost of about 10 DEC replacement ribbons you can get better hard copy and a lot less aggravation."

--Intel has introduced the 80386 chip, a 32 bit microprocessor which allows simultaneous use of several applications programs which are in entirely different operating systems. The chip allows not only several users, but multitasking for each of the users. 8086 programs can run unmodified on the chip, which has the ability to address 4 gigabytes (64 trillion bytes) of virtual memory. AT&T plans to port the popular Unix System V to the 80386. Currently the chip is priced at \$. A limited number are available, but the 80386 will not be produced in quantity until mid-1986.

--Satellite Software International, producers of WordPerfect, have announced a volume discount program. As few as twenty copies, ordered by separate offices of the same company, can be discounted. WordPerfect, which retails at \$. drops to \$ per package for 20 copies; to \$ each for 100 packages, to \$ each for 500 copies, and \$ each for 10,000 copies. The discounts, which do not constitute a site license, will be handled through local dealers. Volume purchasers are required to pay an annual update fee or 10%. Other SSI programs, such as MathPlan, SSIData, and Personal WordPerfect are also discounted. For more information, contact SSI, 288 W. Center Street, Orem, UT 84057, (801) 227-4020.

--Sanford Corporation's new marker, Diskribe, is designed to allow you to safely write directly on disk sleeves (the black plastic outer cover). Available in two colors, silver and gold, it is dries quickly and has been tested for permanence. It does not affect the information on the disk. Another new product, the Sanford Label Pen, available in red, blue, and black, has been designed to write on hard-to-mark places, such as plastic cassettes.

--Software Solutions, Inc., makers of DATAEASE, a database program which runs on the Rainbow, has a new address: Software Solutions, Inc., 12 Cambridge Drive, Trumbull, CT 06611, (203) 374-8000. Their 800 number remains the same: (800) 243-5123

--A "Home Computer Center" furniture kit is available from the Craftsman's Corner Woodcraft Collection. The roll top cabinet/desk closes, to keep the computer out of site. Space for monitor, keyboard, system unit, printer, paper supply, and a limited number of disks and manuals in pigeonholes in the top. The kit is of solid oak and veneered oak with pre-cut, pre-grooved, numbered parts, including extension slides, hardware, and instructions. Overall measurements are 55" high by 36 1/2" wide by 23" deep. The keyboard area slides out. The kit number is 3590, cost is \$589.95, shipping cost \$49.00. The company also offers other oak furniture, including desks and old fashioned office chairs. For more information, contact Craftsman's Corner, Woodcraft Collection, 4012 N. E. 14th Street, Box AP, Des Moines, IA 50302, (800) 247-2160.

--Apply for a job via PC. Computer Science Corporation offers current information on positions available through the CSC Career Line. You can look through the openings, and send your resume on-line. To use the Career Line, dial (617) 275-4112, press return, enter the password, "CSC", press return again.

--DO-IT, Vu-Soft's versatile desk top program, is on sale until the end of the year. The versatile program is \$75 for any person who mentions that he or she is taking advantage of the USER GROUP PROMOTION. Normally Do-it retails for \$125. To take advantage of this 40% reduction in price, contact Vu-Soft at (800) 628-2828, x887. Members of all Rainbow User Groups and DEC PC LUGs are eligible.

--From the Newsletter of the Integrated Software Federal User's Group comes this note: Ashton-Tate, publishers of dBase II and III, and eventually Multimate, are beginning to publish two journals. The first is TechNotes, a monthly containing "insider" technical information, such as programming tips, samples, reference section with more detail than the manuals, explanations of commands, addenda, and "work-arounds" to software anomalies (bugs). Cost is \$50 annually. The second is the Ashton-Tate Quarterly, for "the professional" person, featuring comprehensive and tutorial explanations of product commands, in-depth case studies, product info from A-T, and highlights from the more expensive TechNotes. The cost is \$20. For more information, contact:

Ashton-Tate Quarterly or
Ashton-Tate Tech Notes
P. O. Box 3729
Escondido, CA 92025-0929
(617) 747-1666

--Some excellent software discounts are available from 800-SOFTWARE in Berkeley, CA. Toll Free Number for orders is 800-227-4587. They maintain their own technical support staff for software they sell.

--The SSI User Support Group, now under the name, "The WordPerfectionist" is alive and well in Baltimore. Supporting WordPerfect, SSIData, and Mathplan, it provides a monthly newsletter with information on new releases, bugs, problem solving, and integrating WordPerfect with other applications. There is also a [non-FIDO] bulletin board at (301) 889-7895 (300/1200/2400 baud, 8 bits, no parity), which contains an online software library. Membership is \$36/year (12 issues). Also available are a compilation of issues 1-7 (with updates as necessary), \$13.50 for members, \$19.50 for non-members (5% tax for MD residents), and a Macro Editor disk for \$10 or a formatted 360K double-sided disk in a prepaid return mailer. For more information, contact The WordPerfectionist, SSI User Support Group, P. O. Box 1577, Baltimore, MD 21203.

--In order to get an account with CompuServe, you must buy a CompuServe "Consumer Information Kit." The kits, which generally offer 5 hours of connect time, typically cost about \$40. (Kits bought at Radio Shack have only one hour of connect time.) They are available for \$19.95 plus \$5.00 shipping charge, from Computer Mail Order, 477 E. Third Street, Williamsport, PA 17701, (800) 233-8950.

--Software goes from DEC to IBM! RS/1, from BBN Software Products Corporation, of Cambridge, MA, a lab analysis product, was originally developed for the DEC PDP-11, then ported to the VAX and the DEC Professional, has now been adapted to run on IBM PCs and mainframes.

--John Rose, Group Manager for the Personal Computing Systems Group at DEC, is conducting a survey of members of various user's groups. Ostensibly the survey is to get input from users. Among those called were WARUG's Chairman and Newsletter Editor. Both gave DEC extensive information about the wants and needs of DEC users. The survey covered a number of areas, including products and software that users would like to see, as well as the direction of the Rainbow.

--Many of the Norton Utilities work on the Rainbow, including Un-Erase (tm), which can retrieve deleted files. Version 3.0 of the Norton Utilities is available for \$99.95 from Computerland, or directly from Peter Norton, 2210 Wilshire Boulevard, Santa Monica, CA 90403, (213) 399-3948.

--According to Safeware, a specialized computer insurance agency, the most common insurance claims, are, in order of frequency, theft, power surges, fire, and accidental damage. For information about Safeware's computer insurance, contact Safeware, The Insurance Agency, Inc., 2929 North High Street, Columbus, OH, 43202, (800) 848-3469. Typical rates: for \$5000 worth of equipment and software, \$69 a year, for \$8000 worth of equipment and software, \$89 a year. They will insure up to \$17,000 in value, whether it is for a business or home computer.

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SOFTWARE AND HARDWARE

PRO

--Forte Communications offers the FortePro 327X Emulator/Adaptor for the PRO 350 and 380. The equipment allows 327x terminal emulation, on a coaxial connection, but adds screen capture, screen print, as well as bi-directional file transfer capability. The system requires 256K memory, and can be used with either the VENIX or P/OS operating system. The company also offers Forte Net. For more information, contact Forte Communications, Inc., 2205 Fortune Drive, San Jose, CA 95131, (408) 945-9111.

--Applied Software Techniques offers SMM-300, a multi-user, multi-tasking ANSI implementation of MUMPS for the PRO 350 and 380. Developed in Scotland, the basic hardware configuration supports three devices. A real time interface can be added to support two more devices. For more information, contact Applied Software Techniques, 234 North Central Avenue, Suite 112, Phoenix, AZ 85004.

RAINBOW

--CAIRS, Computer Assisted Information/Library Retrieval Systems, a sophisticated text information processing system used on minicomputers and mainframes, is now available for the DEC Rainbow. CAIRS requires MS-DOS, at least 256K, and a 10 megabyte hard disk. Depending on the configuration, costs start at \$. For more information, contact InfoDoc, Box 17109, Dulles International Airport, Washington, DC 20041, (800) 336-0800 or (703) 979-5363.

--Prolifix, Inc., offers two utility programs, Rainbow-Backup and Rainbow Diskette Toolbox. Rainbow-Backup, which runs under CP/M, the company claims, allows the user to make backups of all disks, including those which are copy protected (for CP/M, MS-DOS, and PRO operating systems). The Diskette Toolbox provides the ability to analyze RX50 tracks, including inter-sector gaps. It can also facilitate copying sector by sector; displaying tracks or sectors, in hexadecimal or ascii; and modifying sectors. The utilities also make it possible to create and investigate copy

protection schemes, and perform non-standard formatting (including the creation of sectors with bad data, bad sectors, sectors other than 1 through 10, and with unusual sizes). It also allows the recovery of deleted files. The two programs come on a single disk for \$ (plus tax in Kentucky). For more information, contact Prolix, Inc., P. O. Box 43358, Middletown, KY 40243, (502) 425-9946.

--Applied Business Technology Corporation has announced release 2.1 of Project Manager Workbench, which is available for the Rainbow. The program allows text processing in addition to project scheduling. A free Demo disk is available. For more information, contact ABT Corp., 365 Broadway, New York, NY 10013, (212) 219-8945.

--Medical Manager is medical office management program for physicians and chiropractors. It is available for the DEC Rainbow 100+ in either CP/M or MS-DOS. For more information, contact Burton Iwata, Private Practice, 200 S. San Pedro St., Suite 302, Los Angeles, CA 90012, (213) 620-0439.

--Computer Ingenuity Associates offers a "teaching and playing" chess system which runs on the DEC Professional, the Rainbow, the Microvax, and the IBM PC. Available for \$ from CICA, 4513 Flintlock Drive, Louisville, KY 40216, (502) 448-2719.

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LETTERS TO THE EDITOR

Dear Ms. Mack:

Your Personal Computer SIG Newsletter is filled with interesting and useful information, and is, for me, the highlight of the DECUS SIG Newsletters Book. However, there is one error in it which I would like to clear up.

The FNCYFNT programs and typefonts which you used on your title page were designed, written, and documented by me (originally for a VT180). Mr. Movshon ported my public domain programs to MS-DOS on the Rainbow, and provided some enhancements. I have contacted Mr. Movshon, and he will acknowledge me as the author in the future. Would you please publish a correction in the next newsletter?

You might also note that the package is available for the VT180 with the LA100, LA50, and the extended LA34 printers. I'm sure Robin users would be happy to hear about a useful program package for their machine. Both Robin and Rainbow versions are available in Bernie Eiben's microcomputer program library on the DEC Market System [Editor's note: for the bulletin board's number, see the BBS list at the end of this newsletter. Look for three FNCYFNT files.]

A. Christopher Hall
Marlborough, MA

Dear Mr. Hall,

I have made the correction you requested. By the way, thanks for a nifty program!

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Dear Caroline,

I have today received the DECUS Personal Computer SIG Publication. Pricing information is very important to us in the U. K., basically as a check against Digital's U. K. price list which is expensive!

The support from Digital in the U. K. for Rainbow users is poor or non-existent. There are no publications which

specifically cover Rainbows, apart from the magazine, DEC User, which covers all DEC products.

Incidentally, with regard to times for bulletin boards, it would be useful for us foreigners if you could publish wither your time zone or hours after G.M.T., 'coz it gets very awkward as we also run another time zone like your "Daylight Saving Time"--e.g., B.S.T., "British Summer Time."

Anyway, keep up the excellent work, and if I can be of any help on the U. K. front, let it be known. I apologize for the scrawl, but I must buy another printer, non-DEC if I can find one which works properly with Lotus 1-2-3 as supplied by DEC.

David K. Low
Bishops Stortford
Hertfordshire, England

Dear David,

The PC SIG, along with other persons in DECUS US have asked that the DECUS US reconsider the current restrictive commercialism policy. I personally feel that the newsletter is far less useful without the prices. Here in the U. S., there are no publications which specialize in the Rainbow and/or other DEC PC's either. It is very difficult to get information in a timely manner. Hope that you continue to find the PC SIG Newsletter useful.

As for the bulletin boards, most of them are open 24 hours a day, so, with the exception of the time that they are used for FIDO mail (between 2 and 5 am, Eastern Standard Time or Daylight Savings Time) you should be able to call them when it is convenient for you. On the boards which are not open 24 hours, I will try to put the time zone.

If you decide to use a non-DEC printer with the Rainbow and Lotus, I suggest you get a copy of LOTUS.DLB, which is in the public domain, thanks to Lotus. It is the IBM version of the Lotus printer library. It is also available through the Washington Area Rainbow User's Group Public Domain Library. For a copy of it, write to Bob Scott, 2308 Bedes Court, Reston, VA 22091, USA. Send him \$12 (\$5 for a library fee, \$5 for the volume, ask for Volume 55, and \$2 for postage.) The library currently has 67 diskettes of software for the Rainbow, one for the PRO.

Editor

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Greetings

It seems DECUS is going to force us out. The rationale for combining its newsletters escapes me. I thought one advantage of computerized mailing lists was avoiding such waste.

Although I have been told there are several hundred Rainbows in the Portland area, apparently most were installed as little more than semi-intelligent work stations. If there is a local user group, not even DEC's local field service office or business center are aware of it. The only other admitted local Rainbow user I have been able to find sells IBM PCs; he uses the RB at home on an erstwhile basis. Without a modem, and since I prefer the printed page, FIDO is not an option.

The June SIG newsletter did not reach me until the end of July. I don't know when it was mailed or put to bed. The New Republic's solution to such uncertainty has been to print the closing date for copy on its contents page. The Association for Asian Studies' Newsletter notes the week it is being mailed, (thereby finessing Postal Service prohibitions on non-first class mail). I suggest both to you if the PC SIG Newsletter is continued.

Larry Meissner
Portland, OR

Dear Larry,

The June PC SIG newsletter was originally mailed to DECUS in May. DECUS' insistence on removing the prices, late in June, slowed down that issue considerably. Currently, the newsletter has to arrive at DECUS by the last day of the month to be put in the issue dated two months ahead. Thus, this issue had to reach the DECUS office by October 31 to be included in the December issue. In the future, the date the issue is submitted will be at the bottom of the "From the Editor" section.

Editor

Dear Ms. Mack,

Enclosed is the complete PC SIG questionnaire. I would like to add the following comments and questions:

1. I recently joined DECUS and was about to quit because I saw little attention being paid to the Rainbow. Now that I know about the PC SIG, I am encouraged, and would like to join. Could you tell me how?
2. I have been calling into the FIDO net recently and would like to obtain some of the software, but the only communications software that I have is Polycom, which is not supported. I need a program like DECMINI in order to transfer software--how can I obtain DECMINI on disk?
3. The Rainbow is a good solid computer and I have never been sorry that I bought it. The problems are that DEC probably could not sell "the better mousetrap" (even if they had it) because of their marketing techniques (or lack of) and that they do not have a clue on how to deal with a customer who is not a Fortune 500 company. In short, I sometimes wish that IBM sold the Rainbow.
4. I am by no means an expert, but I work a lot with TurboPascal on CPM-86. If I can contribute to the PC SIG, I would be more than willing to.
5. I just upgraded my Rainbow to 512K with a 256K chip set that cost \$--, --DEC sell the same thing for \$---. I know DEC sells quality stuff, but 20 times the market price?

I enjoyed the PC SIG Newsletter very much and I am going to subscribe. Thank you for your assistance.

Thomas R. La Bone
Hudson, NH

Dear Mr. LeBone,

Sending back the questionnaire is a good way to join the PC SIG. As with any other DECUS SIG, and DECUS itself, joining the PC SIG is free.

The easiest way to get DECMINI is to get a copy from a friend or your local user group, if there is one. But there are a couple of other ways, as well. You can order volume 34 from the WARUG library, which contains DECMINI, LCTERM, and MS-KERMIT. (You should be ready for almost anything then!) As mentioned above, send \$12 to Bob Scott, 2308 Bedes Court, Reston, VA 22091. Ask for the library form at the same time. If you don't want to spend that much, some of the FIDO boards, including the Wash-A-Rug FIDO [phone number is in the bulletin board list at the end of this newsletter], offer a method for downloading DECMINI or other compatible programs. On Wash-A-Rug, the directions are found in File Area 11, Communications Programs. Here are the directions:

If you do not have a communications package, use ASCII to download MBOOT and recompile it under MS-DOS. Then call back and download one of the better comm packages. (If the only communications package you have is Poly-XFR you will need MBOOT since Fido does not support any of the Poly-XFR protocols.)

Good Luck!

Editor

Dear Ms. Mack:

I was very pleased and impressed by the Personal Computer Newsletter that arrived last week, enclosed in what appeared to be a phone directory. I was also disappointed to learn that I apparently cannot subscribe to the PC SIG Newsletter without getting those of groups in which I have no interest. I also agree with you that the policy of deleting prices is ludicrous.

It was especially satisfying to know that there are many others who share many of my concerns about the Rainbow. Because mine is exclusively for home use, I have felt left out of DEC's company--and systems managers--oriented universe.

I had not been aware previously that there was a Personal Computer SIG Newsletter. In fact, my DECUS application form (sent in August 1984) did not mention the Rainbow, CP/M, or MS-DOS.

The Newsletter came as a breath of fresh air. Is there a way to subscribe (say for \$10 a year or so) without getting the \$35 book?

Carl D. Weinburger
Los Osos, CA

Dear Mr. Weinburger,

There are definitely a lot of "home" and "small office" (ie, not connected to Vax) Rainbows. In the Washington Area Rainbow User's Group, the percentage of "home" computers (by number of members) is about half. (If you determine the percentage by computers, not people, it is much lower. Some members represent as many as 400 corporate Rainbows.) In the SIG Newsletter, I try to balance the interests of all DEC Personal Computer Users.

Editor

From: Lynn Jarrett

TO: PC STEERING COMMITTEE (@PC STEERING COMMITTEE)
TO: RAINBOW DISTRIBUTION LIST (@RAINBOW)

Subject: Help for Switzerland

Today I received a letter from a Rainbow user in Switzerland. He informed me that he enjoys reading the US-Newsletters, edited by Caroline Mack, but he cannot understand why all price information is stricken from the text.

In addition, he has had a problem for over a year now and cannot get an answer from Digital Research in USA or Munich. I don't have an answer for his problem as I am not a CP/M user, but one of you may know. His problem is he cannot boot his 100+ system from the Wini using CCP/M 2.5. I know you cannot boot the system

from a 100A, but his letter says he has a 100+. Is it possible he's not formatting his disk properly? Or What? Any ideas, suggestions or actual 1st hand knowledge would be appreciated.

Thanks,

Lynn

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Dear Ms. Mack

I would be grateful if you could publish the following call for help in the Newsletter:

We are looking for a FAST screen dump program (routine) which would allow us to dump graphics to an LA50 and/or an LA100 in GW-BASIC.

Thank you very much in advance.

Franz W. Maier
Universitat Salzburg
Zentrum fur EDV
Petersbrunnstrasse 19
A-5020 Salzburg AUSTRIA

Tel. 844511 Klappe 547

Readers, what is available?

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Text of a Letter sent the the DECUS Board of Directors:

DECUS Board of Directors
c/o DECUS
249 Northboro Road (BP01)
Marlboro, MA 01752

October 9, 1985

Ladies and Gentlemen:

I have just received my copy of the U. S. Chapter SIG Newsletters, and while, as the owner of a Rainbow, I am thrilled at receiving the information in the PC Sig section, I must register my complaint on the Decus commercialism policy.

It is extremely difficult to obtain any information regarding the Rainbow from any source. With the limited coverage available from the DEC oriented magazines and Digital Equipment's refusal to allow subscriptions to "Perspective" unless a software maintenance agreement is purchased, my only two sources are the Sig Newsletter and the purchase of tapes from Decus Symposia. Although these may seem costly for an individual PC owner, it is the only way to keep in touch with what is available.

The elimination of price information may be well founded for the larger systems, and perhaps causes no difficulty for the institutional and large corporate personal computer owners, but it is a handicap for the individuals and small businesses that have invested in DEC equipment. What may be a reasonable price for the Department of the Navy is not necessarily reasonable for me.

I am hopeful that the board will see fit to review the commercialism policy, at least with regard to the personal computer information. Thank you for your time and interest.

Sue Pari
Jackson, MS

Editor's note: Along with her very eloquent plea to the DECUS Board of Directors, Sue sent a note mentioning that she had received both a first and second request to subscribe to the "Big One"--the SIGs Newsletter, before actually receiving the first copy itself. . . .

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CONTACT LIST

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If you have a question about the hardware or software listed, feel free to call the persons below. Questions should be the sort that can be answered over the telephone in a few minutes. Contacts cannot be expected to act as consultants, nor can they be expected to return long distance phone calls. (Volunteers who would like to be added to the contact list should contact the editor with their name, specialties, and a phone number.)

ALL-IN-1, V. 1 & 2	Andrew L. Max	(212)	701-5231
BASIC	Guy Stefan-Romano	(415)	753-5581
COMMUNICATIONS/PRO	John R. Lynn	(714)	620-6667
		(after 7 PM PST)	
CORVUS OMNIDRIVE	Kenneth Lemay	(219)	483-0001
DBASE	Guy Stefan-Romano	(415)	753-5581
DBASE II	Paul Bottone	(516)	928-0933
		(after 7 PM EST)	
	Kenneth Lemay	(219)	483-0001
DBL (DIBOL TYPE)	Philip Rice	(503)	369-2706
DECMATE	Cheryl Johnson	(515)	236-2570
DECSPELL	Gary Swarthout	(607)	974-3152
ECONOMETRIC PROGRAMMING	Cheryl Johnson	(515)	236-2570
FCS-EPS	Jeff Mackie-Mason	(617)	253-8717
GRAPHWRITER	Mark Lewis	(212)	563-5656
HARD DISK/Rainbow	Lynn Jarrett	(619)	293-1130
HARDWARE/PRO 350	Kenneth Lemay	(219)	483-0001
	John Pratchios	(703)	385-5880
		x3887	
HARDWARE/Rainbow	Bob Catt	(717)	794-2430
LOTUS 1-2-3	Lynn Jarrett	(619)	293-1130
	Joseph L. Marks	(404)	875-9211
	Miles Bridgford	(312)	496-4582
	John R. Lynn	(714)	620-6667
LOW LEVEL I/O ON PRO	Lynn Jarrett	(619)	293-1130
LVP-16 PLOTTER	Lynn Jarrett	(619)	293-1130
MASS-11	J. Kaufman	(201)	937-7816
MEDICAL OFFICE APPL/DM	Tom Tugman	(703)	280-4404
MEMORY ADDITIONS	Caroline Mack	(703)	280-4404
MULTIPLAN	Guy Stefan-Romano	(415)	753-5581
P/OS	Dr. Homer Baker	(602)	251-3830
PRO APPLICATIONS	Tom Hintz	(904)	392-5180
PRO OFFICE WORKSTATIONS	Carol Britton	(805)	277-4808
PRO SERIES	Tom Hintz	(904)	392-5180
ROBIN (VT180)	John Comella	(617)	897-3922
SAMNA II	P. Chmielewski	(203)	777-5537
SCIENTIFIC PROGRAMMING	Jeff Mackie-Mason	(617)	253-8717
	Thomas R. LeBone	(603)	880-9097
STATISTICAL PROGRAMMING	Jeff Mackie-Mason	(617)	253-8717
TKFILES	Miles Bridgford	(312)	496-4582
TKSOLVER	Miles Bridgford	(312)	496-4582
TURBO PASCAL	Thomas R. LeBone	(603)	880-9097
UCSD PASCAL	Guy Stefan-Romano	(415)	753-5581
WORDPERFECT	Caroline Mack	(703)	280-4404
WORDSTAR	Guy Stefan-Romano	(415)	753-5581
WPS	Cheryl Johnson	(515)	236-2570

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USER GROUP COLUMN

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Editor's Note: I will try to update this column in each issue. If you know of a DEC PC user's group that is not listed, please send me the name, address, telephone number and a contact person. Also, please let me know of any changes in the information here. Thanks. --ED

CALIFORNIA

BAKERSFIELD

Librarian:
Glenna S. Cochran
2900 Whitley Drive
Bakersfield, CA 93309
(805) 397-4676

INLAND EMPIRE PC LUG

Chairman:
Jan Snyder
General Dynamics
380 Veronica Street
Upland, CT 91786
(714) 620-7511, x 1118/1101

SACRAMENTO VALLEY LUG
RAINBOW SIG

Chairman:
Robert Walraven
1309 Notre Dame Drive
Davis, CA 95616
(916) 752-3300

RAINBOWS PACIFIC LOCAL USER'S GROUP

Co-chairmen:
Steve Jack
1623 Granville, Apt. 10
West Los Angeles, CA 90025
office (213) 207-8310
home (213) 820-4724

Richard Davis
home (213) 941-7059
office (714) 732-9308

(meets in Covina, CA)

SAN DIEGO AREA RAINBOW LOCAL USER'S GROUP

Chairman:
Rick Eliopoulos
Advanced Software Applications
5258 Vickie Drive
San Diego, CA 92109
(619) 488-2116/5258

SAN FRANCISCO BAY AREA DEC PC USER GROUP
P. O. Box 12561
Northgate Station
San Rafael, CA 94913-2561

Chairman:
Dale W. Miller
(415) 472-6531

SANTA BARBARA AREA DEC PC LUG

Chairman:
Rick Vincent
253 Aspen Way
Santa Barbara, CA 93111
(805) 964-9744

SILICON VALLEY DEC PC USER'S GROUP

Chairman:
Seth Goldberg
P. O. Box 7309
Menlo Park, CA 94026
office (415) 854-3300, x 2874
home (415) 365-7223

SOUTHERN CALIFORNIA PC LUG

Chairman:
Bill C. Davis
GoodGames
1457 1/2 West 219th Street
Torrance, CA 90501
(213) 618-1083

COLORADO

DENVER RAINBOW USER'S GROUP

Brad Paulsen
Denver Aurora Community College
DACC
Box 250
Denver, CO 80204
(303) 556-2966

CONNECTICUT

HARTFORD RAINBOW USER'S GROUP
P. O. Box 10387
West Hartford, CT 06110

Chairman:
Reginald Dionne
(203) 725-6000, x 5248
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COMPUSERVE

The VAXSIG has an active group of DEC PC users. (As of this writing, it appears that a separate Rainbow SIG is forming.) Compuserve subscribers can type GO PCS-16 at the ! prompt and select sub-area 6. A real time conference is held every Wednesday at 9:30 PM EST. Also has a bulletin board and software area.

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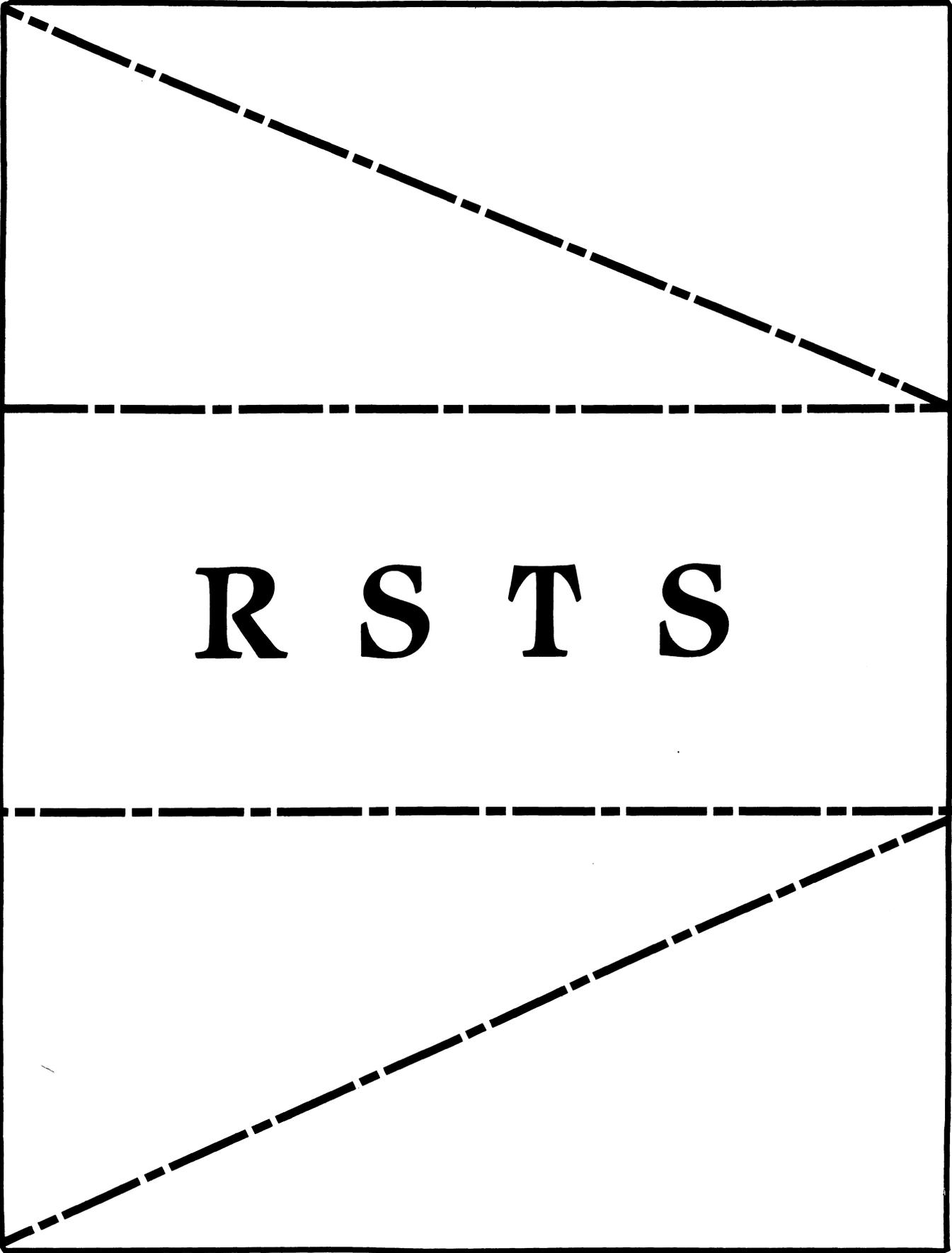
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Bulletin Boards are believed to be open 24 hours unless noted. Unless noted, all accept 300 and 1200 baud rates; some accept 2400 baud. This list of DEC-oriented bulletin boards may not be complete. If you know of other bulletin boards with a DEC PC orientation, contact the editor.

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(617) 467-7437	DEC MARKET		Marlboro, MA	Bernard Eiben	Login: Type <Return> to start. At the @ prompt, type "LOG LCG.KERMIT KERMIT". The last word will not show on the screen.
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From The RSTS Chair:

RSTS/Awe is alive and well, despite our recent absence from these pages. For those of you to whom I am a new name, the Steering Committee chose me at the Spring '85 Symposium to chair the SIG. I have been a RSTS user since 1974, at which time I ran Version 4, which was memorialized at the New Orleans meeting. Makes a fellow feel almost ancient.

I am excited about the future for your and my favorite multi-user operating system. The PDP-11/84 processor, a slightly faster follow-on to the 11/70 is being shipped and RSTS is there with Version 9.0, a thoroughly modern version that provides, among other goodies, full DCL support and a VAX compatible fast backup facility. Rumor is that Version 9.1 is nearing its release point and that there are "point" releases (i.e. 9.2, 9.3, etc.) in the pipeline that will keep RSTS a live and lively product for some time to come.

Anaheim, Fall '85 DECUS Symposium, promises to be a busy one for RSTS attendees. If you have not read the list of sessions and pre-symposium offerings you owe it to yourself to do so. Please get your registration in as soon as possible. Pre-registering saves you both money and hassles at check-in time. It also helps us plan things like how many copies of session hand-outs to bring and how many funky RSTS buttons to make!

In future issues, watch for informative articles about futures, bug fixes, success (and failure) stories, and applications, nifty DCL command procedures and other good stuff. We also urge you, as part of the user-to-user sharing that is the heart of DECUS, to share with us your use of RSTS, any neat things you have written to solve a problem or just do something fancy.

For the many RSTS users unable to make it to Symposia, we hope to make these newsletter pages a source of useful information to the RSTS community. Send your submission to Charles W. Mustain, Stark County Dept. of Ed., 7800 Columbus Rd. N.E., Louisville, Ohio 44641-9799.

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MULTI-TASKER



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RSX Multitasker

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How to Contribute to the Multitasker

The Multitasker publishes articles and notes on all topics dealing with or relating to RSX based systems. If you are doing something new or innovative with RSX we would like to hear from you.

Please send all correspondence for publication in machine readable form. A list of acceptable media and formats follow. If these formats are a problem for someone, please call. Alternate arrangements such as electronic transfer may be possible.

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RSX Kermit-11 Note

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The RSX KERmit-11 on the Fall 1984 RSX SIG Tape will crash with the SET LINE command. Version 2.27 will coreect this. The required change is in the ASSDEV routine in K11M41.MAC. The fix moves the label 1\$ to the SAVE macro from the QIOW\$\$ macro call.

```
ASSDEV:: TST      PROFLG
         BEQ      1$
         CLR      RO
         RETURN
1$:      SAVE     <R1,R2,R3>
         QIOW$$  #IO.DET,#LUN.AS,#EF.TT ; Detach possible old device
```

The Bag of Tricks: MACRO-11

Bruce R. Mitchell
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This column covers MACRO-11 bag-of-tricks routines, as stated in previous issues of the Multi-Tasker. It appears as space permits. All MACRO programmers are encouraged to submit their favorite routines to the Multi-Tasker so that these useful, interesting, or just plain bizarre tricks can be put out before the SIG in general for the admiration and edification of all.

In this month's column, we have some truly interesting (and dangerous) code to do a very interesting thing. The code presented here sets its host terminal to fully privileged!

RSX MULTITASKER

The code here assumes that the task calling WHEEL is built privileged (probably /PR:5) so that it can map the Executive. Remember that this puts constraints on how large the task can be, since the lower 5 APRS are dedicated to mapping the Executive.

Once the routine has obtained information on its TI: (on LUN TTYLUN), it switches to system state and maps the Exec, hunting for the DCB and UCB for its host terminal. Once it finds them, it sets the privilege bit for its TI: and returns to the caller (... with nobody the wiser?)

Of course, for this code to do any good, much less work, the host task must be installed so that unprivileged users can invoke it. And since a privileged user must install the task, I can't just offhand see of any use for this code ... right? ("Right, J.P.!")

Because the author tends to separate data and code structures in his programs, the labels have been made so that the data and code can be readily separated within a single source file.

```
.PAGE
.SBTTL  WHEEL      Set Privilege Bit
```

```
;  WW      WW  HH      HH  EEEEEEEEEEE  EEEEEEEEEEE
;  WW      WW  HH      HH  EEEEEEEEEEE  EEEEEEEEEEE
;  WW      WW  HH      HH  EE            EE
;  WW      WW  HH      HH  EE            EE
;  WW      WW  HHHHHHHHHH  EEEEEEEEE  EEEEEEEEE
;  WW      WW  HHHHHHHHHH  EEEEEEEEE  EEEEEEEEE
;  WW  WW  WW  HH      HH  EE            EE
;  WW  WW  WW  HH      HH  EE            EE
;  WWWW  WWWW  HH      HH  EE            EE
;  WWWW  WWWW  HH      HH  EE            EE
;  WWW      WWW  HH      HH  EEEEEEEEEEE  EEEEEEEEEEE
;  WWW      WWW  HH      HH  EEEEEEEEEEE  EEEEEEEEEEE
```

```
;  WHEEL - Set Privilege Bit for TI:
;
;  This subroutine sets the privilege bit for TI:, effectively
;  making the user on TI: a fully privileged user.  Whee!
;
;  Inputs:  None
;
;  Outputs:  None
;
;  Register dispositions:  None modified
;
;  Variable dispositions:  LUNBUF modified
```

3X MULTITASKER

```

LUNBUF: .BLKW    6                ; Buffer for LUN information

;      Find out about the host terminal

WHEE:  GLUN$$   #TTYLUN,#LUNBUF   ; Get terminal LUN information
        CMPB    $DSW,#IS.SUC     ; Did it succeed?
        BMI     60$              ; If not, simply return

;      Set the privilege bit for the invoking terminal

        SWSTK$  60$              ; Switch to system state; return
                                   ; from it at 60$

;      When called back here, task is at system state
;      and maps the Executive

        MOV     $DEVHD,R0         ;; R0 points to DCB listhead

;      Seek through DCBs looking for the one which serves
;      the host terminal

10$:   CMP      D.NAM(R0),LUNBUF+G.LUNA ;; Is DCB for TI:'s device type?
        BNE    20$              ;; If not, go get a new DCB address

        MOVB   D.UNIT(R0),R1      ;; R1 is now lowest unit number on DCB
        CMPB   R1,LUNBUF+G.LUNU   ;; Could this DCB handle TI:?
        BGT    20$              ;; If not, go examine the next one

        MOVB   D.UNIT+1(R0),R3    ;; Highest unit number served by DCP
        CMPB   R3,LUNBUF+G.LUNU   ;; Does this DCB handle TI:?
        BGE    30$              ;; If so, go look for its UCB

20$:   MOV     D.LNK(R0),R0       ;; R0 now points at next DCB in list
        BNE    10$              ;; If not list termination, loop back

        RETURN                    ;; Safety valve - "just in case"

;      This DCB handles TI: . Now find TI:'s UCB

30$:   MOVB   LUNBUF+G.LUNU,R2    ;; Load TI: terminal number in R2
        SUB    R1,R2             ;; R0 is UCB number on this DCB now
        MOV    D.UCB(R0),R1      ;; R1 points to first terminal's UCB

;      Loop through the units on this DCB until TI:s UCB is found

40$:   TST    R2                 ;; Is this the UCB in question?
        BEQ    50$              ;; If so, go zap the thing

        ADD    D.UCBL(R0),R1     ;; R1 now points at next UCB on DCB
        DEC    R2               ;; Looking at next UCB next time
        BR     40$              ;; Loop until we hit it!

```

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```
;      R1 now points at TI:'s UCB.  Zap the privilege bit in and exit.
50$:   BIS      #U2.PRIV,U.CW2(R1)      ;; Set privileged terminal flag
      RETURN                                ;; Return to user state

;      Back at task state - return to the caller
60$:   RETURN                                ; Return to the caller

.END
```

A FORTRAN Callable CSI Interface for RSX11

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INTRODUCTION

In a recent issue of the DECUS Multi-Tasker, an editorial comment indicated a need for a FORTRAN callable CSI command line interface. This article is written in response to that need, and serves to document a portion of this author's submission to the RSX SIG tape at the New Orleans DECUS Symposium.

The command line interface described here allows the user to develop FORTRAN application and utility programs that are driven by command lines, either interactively or from a command file. In short, a FORTRAN program using this interface package can operate in the same way as any standard DEC supplied RSX utility.

INTERFACE PACKAGE FACILITIES

The interface package provides a number of items that permit a programmer to easily integrate an application program with standard DEC-supplied command line processing software. The first element in the package is a set of macro definitions that permit the user to easily describe the syntax and semantics of commands for his program. These macros permit easy creation of the GCML and CSI data structures needed by the DEC standard software. Other macros permit simple definition of switches and switch values, and provide the means to define default file specifications and to service

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error signalling.

Additional elements of the interface package provide the command processing facilities needed to integrate FORTRAN applications with the DEC supplied software. Two different versions of the interface code are provided. One version uses an internal command line buffer, that is normally not accessible to the application program, while the second version uses a command line buffer that is supplied by the caller.

The first version is simpler to use, and is designed to support applications that process all command lines the same way. This version is suited to language processors and other programs that perform the same basic file processing operations on each command line. The second version of the interface permits the application program to partially process or parse the command line to determine what processing function is to be performed. Once this information has been determined, the remaining portion of the command line can be processed by the interface software.

Both versions of the interface provide the facility to acquire a command line from the user's terminal, from the MCR CLI or from an indirect command file. Additional facilities are provided to check command syntax, extract individual input or output file specifications and to process switch specifications. Finally, an entry point is provided to allow the application program to reset the command line scan so that multiple pass applications can re-process commands. The rest of this article discusses the design and use of these routines and their supporting macros.

DESIGN OF THE INTERFACE SOFTWARE

The basic design of the interface software provides a standard assembly language module that is tailored to each individual program by including a user-written command line definition table. Writing the command line definition portion of the interface is simplified by the use of the macro definitions included in the package.

Each of the basic interface modules, CSINTF and CSINTR, is supplied as the first of two MACRO-11 assembly source files that are assembled together with a command line definition file to form a complete object module for a particular program. In this way, each program using the interface has a consistent set of command processing services to call upon. Only the data associated with defining command semantics varies between each module.

USING THE INTERFACE MODULES

The use of the functions provided by each interface module is documented in the header commentary of each module. What is presented here is a summary of the function and use of the module entry points.

CSINTF - The Internal Buffer Interface Module

CSINTF is the interface module that uses an internal command buffer to process user supplied command lines. In order for a program to process commands using this interface module, the application should include a CALL to the GETCMD entry point. When called at this entry point, the interface will return to the caller only after acquiring a syntactically correct command line. All error detection and user message notification is handled within the interface. Further, if commands are being serviced at command level zero, i.e. directly from a user terminal, or from an indirect command file, and the module encounters an end-of-file, the module causes the program to exit normally.

The GETCMD entry point uses no arguments, and returns no numeric result. When GETCMD returns to its caller, a valid command line is available, and the application program can begin to process it. During the processing of a command, the program must parse the file specifications in the input line. In order to do this, the program should call the integer function entry point GETFIL. This entry point produces two output arguments and an integer function result, using a single input argument to specify whether an input or an output file specification is to be returned. Both input and output file specifications are returned in the order they appear in the command line. The first output file call returns the first file on the left side of the equal sign in the command line. The second output file call returns the second output file and so forth. The first input file call returns the first file on the right side of the equal sign in the command, etc.

The only exceptions that apply to this rule are explained below. First, if a call to GETFIL is made for an output file that does not exist in the command line, the routine returns a file name string referring to the null device (NL:). In this way, an application program need not be concerned with determining if a particular program output file name exists in a command line. The program can simply generate all output data; the null device will receive all the output that the application program user is unconcerned with. Secondly, a call to GETFIL for an input file that does not exist returns a specific integer error code value that can be used by the application to determine when all input files have been processed. With this approach, an application can process a variable number of input files in each command line.

Whenever a file specification is returned to the caller, the file name string has the following characteristics. First, an explicit device name field is included in the string. This device name will be either, SY: if the user has not yet specified an explicit device name, or it will be the last user specified input or output device name in the command. Secondly, an explicit user file directory (UFD) specification will be included in the file name string. This UFD will be either the user's current default directory if the user has not specified an explicit directory, or

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it will be the last user specified input or output directory in the command. There are no default rules for the file name appearing in the returned file name string, however, the file type, or file name extension field, is defaulted according to the information provided in the interface data base. The FTYPDF macro is used to specify defaults for the file name extensions. Further information on how this macro is used is provided below. Lastly, the file version number is included in the file name specification returned by GETFIL only if there is a version number explicitly included in the command line being parsed. In all cases, the file name specification returned by GETFIL is terminated by a null or zero byte, and is suitable for passing directly to a FORTRAN OPEN statement.

The second output parameter returned by the GETFIL entry of CSINTF is a two word summary of the switches present on the file specification returned from the call. Each word in the pair contains a set of 16 individual flag bits. The first word of the pair has a bit set if the corresponding switch was specified with the file name, while the second word contains a summary of the switch polarity, zeroes for negated switches and ones for asserted switches. The bit mask associated with a particular switch is determined by the order in which the switches are defined in the interface data base. The first switch specified in the data base has its mask in bit 0, or the least significant bit, of the words, while additional switches move the mask bit to the left across the word pair.

Numeric and ASCII text values associated with the switches defined in the interface data base are parsed from the file specification, converted according to the specified radix, and stored in a FORTRAN accessible common named SWTVAL. The individual values stored in SWTVAL are determined by the order and number of values associated with the switches defined in the interface data base. The detailed organization of the SWTVAL common is discussed below, and is documented in the commentary to the SWTVAL macro definition.

RSTCMD, the last functional entry point in the CSINTF module is used to reset scanning of the current command line to the state that existed immediately after the call to GETCMD returned the command to the application program. By including a CALL RSTCMD in the application, a given command can be re-scanned without requiring that the user supply the same command line either interactively or within a command file more than once.

Additional details regarding some customizing features in the baseline interface modules are presented later in the discussion on preparing a typical data base for the interface.

CSINTR • The External Buffer Interface

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CSINTR is the interface module that uses a caller supplied or external command buffer to process user supplied command lines. The routine has similarly named entry points for performing command processing functions as does CSINTF. However, since CSINTR uses an external data buffer, these entry points use different calling sequences and produce slightly different results. These differences are discussed below and are documented in detail in the source code of the CSINTR module.

The GETCMD entry point to CSINTR performs the same basic function as it does for CSINTF. However, the GETCMD entry point to CSINTR is called as an integer function with three arguments. The first and second arguments describe the address and size in bytes of the caller supplied buffer to be filled with the next command. The buffer is filled by the call, and the third argument value returned contains the number of characters at the start of the command buffer that should be ignored when starting to parse the user's command. This parameter will return a non-zero value when the command line is returned to the caller from an MCR command buffer. In these cases, the application program name is included at the start of the command buffer and must be skipped or ignored before starting to scan the actual user command. The function value returned by GETCMD is the net length of the user command, and it excludes the number of characters at the start of the command buffer that should be ignored. If the function value returned is negative ten (-10.), an end-of-file has been encountered. No command is available, and the calling program should normally exit when this condition occurs. Note that unlike CSINTF, the occurrence of an end-of-file when reading a command line causes CSINTR to return an error code, rather than exiting from within the command interface code.

Another difference between CSINTF and CSINTR has to do with how individual commands are checked for syntax errors. In the CSINTF module, a call to the RSX11 syntax checking routine .CS11 is included in the GETCMD function. If the syntax check is successful, the CSINTF GETCMD function will return with a syntactically valid command line. The GETCMD function in CSINTR returns a command line if one is available, but does not attempt to check its syntax with .CS11. This permits an application to input a command, and to perform any application specific syntax and parsing operations on the command before performing any standard RSX syntax checking.

To provide a .CS11 based syntax checking facility in CSINTR, the CHKSYN integer function entry point is provided. The CHKSYN entry point uses two parameters to define the address and length of the command line to be examined for syntax errors. The starting location of the command line passed to CHKSYN should reflect the possibility of characters at the beginning of the command buffer that should be ignored. This information is provided by the third parameter value returned by the GETCMD function call. The command line length passed to CHKSYN is the function value returned by

GETCMD less any characters parsed off by the application. CHKSYN performs a call to .CSII to compress the command line, eliminating any unnecessary blank or tab characters, and to check for syntax errors in the resulting command. The function value returned by CHKSYN is the length of the compressed command line. If the result returned is negative, it indicates that a syntax error was encountered in the command. The magnitude of the function value indicates where in the compressed command the error was found. This information can be used to show the user where the error was found in the command being processed by the program.

Once a command has been read into a user data buffer with GETCMD, and validated with CHKSYN, the CSINTR entry point GETFIL can be used to retrieve input and output file specifications and to process switches and switch values. The CSINTR version of GETFIL works identically the same way as the CSINTF version with respect to default values for the individual fields of a file specification. The use of the switch summary and direction parameters to GETFIL are also the same as in the CSINTF version of the GETFIL function.

Because of the possibility that the application program using this routine will implement a command language of its own, each command with its own set of valid switches and switch syntax definitions, this version of GETFIL supports an additional parameter to specify which table of switch definitions is to be used when processing file specifications in a command. This parameter, together with the data base macro definitions, allows a full set of legal switch definitions to be implemented and used to support a complex language for an interactive, command driven application program. The details of setting up multiple switch tables for CSINTR is illustrated later.

The CSINTR module, since it does not use an internal data buffer for commands, has no entry point to reset the command scanning operation. To re-scan a command line using CSINTR, it is necessary to call the CHKSYN entry point a second time for the same command buffer, with the same address and length parameters as was used in the first call to the CHKSYN function. The length passed to CHKSYN for a re-scan syntax check should be reduced to the residual length remaining after .CSII compressed the command from the first call to CHKSYN.

The CSINTR version of the command line interface provides a means for a calling program to extract switch parameter values from a command without needing explicit knowledge of the location or organization of the command processing data structures. This entry point, GETSWT, is called as a logical function operating upon nine parameters. The input arguments to the function include the switch masks returned by GETFIL, the switch table number defining the legal switches, the switch name about which information is being requested, and a set of default values for the numeric values defined for the switch. The function value returned by GETSWT is

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.TRUE. if the requested switch was present in the file specification, and .FALSE. if not present. The polarity of the switch, if present, is provided as an output parameter. Three output parameter vectors are returned by the function. The vectors provide control information (VKEY) about the type and location of numeric or ACSII string values associated with the switch, the binary numeric switch values (VWRD), and the ASCII string values (VBYT) specified in the command. The type of each switch value is determined by the SWTVAl data base definition macro. Full details of how to interpret the parameters returned by the GETSWT function of CSINTR are provided in the module's documentation header.

THE DATA BASE DEFINITION MACROS

Included in the command string interface package is a set of macro definitions that allow a programmer to easily define a command syntax data base to be used in processing command input to an application program. These macros allow the user to establish the required data structures to interface with the RSX11M library routines GCML, .CSI1, and .CSI2. Additional macros are available to define the legal switches for an application and their associated values. A macro is also provided to allow the programmer to define the default file extensions for input and output files processed by the program. Finally, macros are provided to build customized messages pertaining to indirect command file processing and command syntax errors. By using these macro definitions, a data base to support a simple application can easily be defined in less than 20 lines of assembly language source. The details of using these macros is presented below.

GCMLDF - Generate GCML and CSI Control Blocks

The GCMLDF macro is called to build the required data structures to interface the application to the RSX11M system library routines GCML, .CSI1, and .CSI2. The macro accepts one mandatory and four optional parameters. A full macro call is explained below:

GCMLDF TSK,PNAME,CSIPST,BUFNAM,BUFLEN

TSK is an ASCII string defining the prompt that GCML will output whenever a command line is read from the user's terminal. This is the only mandatory parameter.

PNAME is the name of the program section or PSECT to which the macro will return the assembly process when finished. If this parameter is missing, control is returned to the blank PSECT.

CSIPST is the name of a program PSECT to be used to store the GCML and CSI data structures. The principal use of this parameter is to place these data structures in a PSECT that can be linked into the ROOT segment of an overlaid program so that the interface code can be overlaid and

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re-loaded without losing the context of a partially scanned command. If this parameter is not supplied, the data structures are generated in the CSINTF's or CSINTR's contribution to the \$VARS PSECT.

BUFNAM is a macro symbol name that will be globally defined at the base address of the command line buffer. If not supplied, no global access is provided to the buffer.

BUFLLEN is a macro symbol name that will be globally set to the size of the command line buffer in bytes. If not supplied, the length of the buffer is defined only within the interface module.

TMSGDF - Generate GCML Error Messages

The TMSGDF macro is called to build the text buffers containing the error messages that will be output by the interface code if an error is encountered while attempting to read a new command line. The macro has one mandatory and one optional parameter. A typical macro call is illustrated below:

TMSGDF TSK,PNAME

TSK is a ASCII string defining the name of the application program. This string is included in the text of the error messages so that the user will be able to tell what program encountered an error. This parameter should always be provided.

PNAME has the same purpose and effect as the PNAME parameter to the GCMLDF macro.

CERRDF - Generate Command Syntax Error Message

The CERRDF macro is called to build a text buffer for storing syntactically invalid commands, together with explanatory text to tell the user when a syntax error has been detected by the interface. This macro is used only with programs incorporating the CSINTF form of the interface, since this interface module checks for syntax errors automatically during the GETCMD function. The CHKSYN function in the CSINTR interface returns an error indication to the caller. It is the calling programs responsibility to announce syntax errors when using CSINTR. A macro call is illustrated below. The macro parameters have the same meaning as the parameters to TMSGDF.

CERRDF TSK,PNAME

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FTYPDF - Generate Default File Name Extension Table

The FTYPDF macro is provided to permit the application programmer to define a list of file name extensions that should be used as defaults for any input or output files specified in a command line that does not include an explicit extension field. A typical macro call is illustrated below, with an explanation of how the individual file extensions are used by the interface module.

```
FTYPDF <EX1,EX2,EX3,...>,PNAME
```

The PNAME parameter has the same meaning as used with the macros defined earlier. The first parameter to the macro is a list of file name extensions, each at most three characters in length, enclosed in the Macro-11 list delimiting angle braces. The FTYPDF macro builds a table from these file name extensions that is used during file name parsing in the GETFIL routine. When parsing an input file name from a command line, the first element in the list will be used as the input file default file name extension. Subsequent elements in the list will be used as the default file extensions for the first, second, third (and so on) output files. Referring to the example above, the macro call would define an input file extension of .EX1, and output file extensions of .EX2, and .EX3. Thus, for a program XYZ, the command line:

```
XYZ A,A=A
```

would be equivalent to the following line:

```
XYZ A.EX2,A.EX3=A.EX1.
```

One last comment is in order. If the program should open more output files than there are default extension definitions available, the last defined output default will be re-used. Thus XYZ A,A,A=A would generate two versions of A.EX3 if the program attempted to open a third output file. In a properly designed application, this case should not occur.

A default output file name extension should be defined for each output that a program would generate.

SWITCH DEFINITION SUPPORT

There are four macros provided to permit the user to define the syntax of the legal switches and switch values permitted for a particular application. The SWTSRT and SWTEND macros, each called with a single PNAME parameter, are used to mark the beginning and the end of a switch table. All switches must be defined between a

```
SWTSRT PNAME
```

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and a

SWTEND PNAME

macro call in the data base definition source code. The CSINTF interface supports only a single switch table, while the CSINTR module can support multiple switch tables, each delimited by calls to SWTSRT and SWTEND. The switch number parameter to GETFIL is used to select which of the switch tables defined for CSINTR is to be used to interpret switch data for a particular command line. The two remaining switch definition support macros, SWTNEG and SWTVAL, are discussed below.

SWTNEG - Define Bipolar Switches

The SWTNEG macro is used to define a set of simple control switches. These are command switches whose presence and polarity provide sufficient information for the application program to properly execute its function. An example of this type of switch is the spool switch (/SP) to PIP. The spooling function is determined solely by whether the switch is present in a command line.

The SWTNEG macro should be used once in each switch table to define a set of switches of this type. An example SWTNEG call is presented:

```
SWTNEG <AS,LI,SP,...>,PNAME
```

This example defines a list of "bipolar" switches, starting with /AS, /LI, and /SP. The information regarding these switches is returned by the GETFIL function call in the ISWIT vector parameter. The first word, ISWIT(1), has a bit set for each defined switch that is attached to a file specification. The second word, ISWIT(2), will indicate which switches are asserted (1 bit) and which are negated (0 bit). This is all the information that is available for a SWTNEG defined switch.

The PNAME parameter to SWTNEG follows the same convention as the PNAME parameter to the other macros discussed thus far.

SWTVAL - Define a Switch with Values

The SWTVAL macro is called a number of times in each switch table, each time to define a single switch that can have a number of ASCII or numeric values associated with it. The macro accepts three arguments, two of which are mandatory. The basic structure of the macro call is shown below:

```
SWTVAL SW,PARLST,PNAME
```

SW is an ASCII string of characters defining the name of the switch.

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PARLST is a list of lists of parameters defining the type, size, and number of switch values to be associated with the switch. A detailed discussion of this parameter follows.

PNAME is the same, familiar parameter seen in the other macro definitions.

The value parameter list, PARLST, is a list of lists of the following form:

```
<<TYP,LEN,NVAL>,<TYP,LEN,NVAL>,...>.
```

The individual elements in the list, each itself a three element list, are explained below. Using this parameter list structure, a programmer can independently specify the characteristics of multiple switch values.

The TYP sub-element in each list defines the type of value to be accepted by the switch. This may be either 'ASCII' for a string value, or 'NUMERIC', 'OCTAL', 'DECIMAL', or 'HEX' for a numeric value. (Note that the 'HEX' option is supported only on those RSX11M systems that have been modified with the changes presented at the 1985 Spring DECUS Symposium at New Orleans in the paper "Hexadecimal Command Line Numerics".) Using one of these numeric radix specifiers determines the default radix that is used during the conversion of the command line switch value string to a binary value.

The LEN sub-element in each list defines the number of bytes of memory to be reserved for storing the switch value. For numeric values, LEN is normally equal to 2, while for ASCII values, LEN specifies the maximum number of bytes to be reserved for the value string. (Note that each value will occupy LEN+1 bytes if LEN is odd.)

The NVAL element in each parameter sub-list specifies the number of TYP and LEN characterized values being defined for the switch. For ASCII type values, NVAL is the number of strings to permit, each LEN bytes long, in the switch value list. For numeric type values, NVAL is a list (enclosed in <...>) of initial numeric values to set up for the switch.

An example serves to illustrate this information. Consider the following SWTVAL macro call:

```
SWTVAL XY,<<HEX,2,<0,-1>>,<DECIMAL,2,<10.>>,<ASCII,4,1>>
```

This call can be described as follows: The XY switch permits up to four values. The first two values will be converted using a default hexadecimal radix, the third with decimal radix, and the fourth is a four character ASCII string. Initial values for the three numerics are 0, -1, and 10. Final assembly control will be

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returned to the blank PSECT, since the PNAME macro argument is missing.

This completes the discussion of the data base definition macros supplied in the CSI interface package. While there are additional macro definitions included in the package, these macros are used internally by the other macros described here.

USER DEFINED SYMBOLS IN THE DATA BASE FILE

There are a number of assembly time symbols that can be defined in the data base definition source file. These symbols determine some operational characteristics of the interface. These symbols are listed below, together with a brief explanation of what the symbol means within the interface. The first four symbols should always be defined; the last three are optional.

SYMBOL	USAGE
NSTLVL	This symbol defines the maximum level to which indirect command files may be nested. NSTLVL=4 is the standard value.
CMDLUN	This is the logical unit number that GCML will use to read commands from the user or from a command file.
TILUN	This is a logical unit number that should be assigned to the user's terminal so that error messages will be sent to the user.
QIOEFG	This is the event flag number that will be used to synchronize error message output QIO's to the user's terminal.
COMENT	If this symbol is defined (i.e. COMENT=0) in the interface data base source file, comment lines encountered in an indirect command file will be returned to the program calling GETCMD. If this feature is enabled, it is the responsibility of the calling program to recognize the comment line and act appropriately. This feature is only useful for CSINTR based programs since this version of the interface does not call the syntax check routine (.CSII) unless CHKSYN is used by the calling program. Using this feature in a CSINTF based program could produce unpredictable results if a comment is passed to .CSII by GETCMD.
LOCASE	If this symbol is defined (i.e. LOCASE=0) in the interface data base source file, command lines read directly from the user or from an indirect command file will permit lower case characters rather than forcing all alphabets to upper-case. If a command is passed to a program by MCR, upper-case conversion is performed by the

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CLI, and all the program will receive is upper-case characters. The LOCASE feature will be ineffective in this case.

MULTAB If this symbol is defined (i.e. MULTAB=0) in the interface data base source file, conditional code is assembled into the interface module that will permit switch tables to be built that contain more than 16 switches. This feature is useable only if the SYSLIB routine .CSI2 has a corresponding enabling patch installed in it. This .CSI2 MULTAB patch is provided as an appendix.

HANDLING CONTEXT SENSITIVE FILE NAME EXTENSIONS

The FTYPDF macro provides a convenient way to specify a single default file name extension for each program input and output file. In some applications, this may not be sufficient, since the presence of a switch on a file specification may change its meaning and therefore its default file name extension. A good example of this is the MACRO /ML switch that causes the assembler to look for a .MLB file instead of a .MAC file.

Handling this type of context sensitive situation with these interface modules requires use of a modified call to the FTYPDF macro, and an additional subroutine built into the application. First, the list of default file name extensions to FTYPDF should use a '\$\$\$' extension for files that could be context sensitive. By using this default, the program can determine if the user supplied an explicit extension, or if the interface code inserted a default value (\$\$\$). In the first case, the user's specification should take precedence regardless of context. In the second case, the application must determine the proper extension, based upon other switches present in the command line.

Once the application determines the correct extension for the current command context, the SETEXT subroutine can be used to set the default extension into the file specification returned from GETFIL in place of the '\$\$\$'. The code for SETEXT is provided as an appendix. Note that the default extension may be forced into the file name, overriding the user's explicit extension is present, or the default may be inserted only if the '\$\$\$' extension is found. This is controlled by the FORCE logical argument.

ASSEMBLING THE INTERFACE MODULES

In order to include one of the command line interface modules described here in an application program, one of the following assembly commands should be used. Given that LB:[a,b] contains the source files and macro library for the interface and SY:[x,y] contains the source file (SY:CSIPGM.MAC) for a program interface data base, assemble the correct interface with:

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```
MAC>CSIPGM=LB:[a,b]CSINTFDEF/ML,CSINTF,SY:[x,y]CSIPGM
```

or

```
MAC>CSIPGM=LB:[a,b]CSINTFDEF/ML,CSINTR,SY:[x,y]CSIPGM
```

Note that the order of the .MAC files in these commands should not be changed. The CSINTx.MAC files start the modules as assembly prefix files, while the CSIPRM.MAC file terminates the assembler source input stream with an .END directive.

The object file CSIPRM.OBJ produced by one of these commands should be linked into the user task as a normal object file. If inserted into an object library, the module name that must be used to load the module into a task is either CSINTF or CSINTR, depending upon the interface module chosen at assembly time.

USAGE OF THE CSI INTERFACE

This section discusses two examples of using the CSI interface package described in the paper. They were selected from a number of examples included in the RSX SIG Tape submission made at the New Orleans DECUS Symposium. They are discussed here to illustrate how easily a command processing data base can be developed for use with these modules.

CSISCN.MAC is the command line data base definition for a string search program called SCN. The file illustrates the use of the four mandatory assembly symbols NSTLVL, CMDLUN, TILUN, and QIOEFG. Additionally, lowercase characters are permitted in commands since the optional symbol LOCASE is defined in the data base source. The \$VARS PSECT is defined at the start of the module and is used as the PNAME parameter to each of the data base generation macros used in the file. The three mandatory macros GCMLDF, TMSGDF, and FTYPDF are called. In addition, since this example is based upon the CSINTF version of the interface, the macro CERRDF is also called to properly support this program. Note that the program name SCN is specified for GCMLDF, TMSGDF, and CERRDF. This name is used to set the command line prompt and to customize error messages returned to the user. The FTYPDF macro reads input files with default extension .SRC and generates output files with default extension .DAT. The SCN program uses a single switch, /SS, to specify the search string. The SWTVL macro is used to define the switch with a single ASCII string value, up to 20 characters long.

```
;  
; CSI Interface Data Base for SCN Program  
;  
; Assembly Command Line:  
; MAC CSISCN=LB:[200,201]CSINFTDEF/ML,CSINTF,SY:[x,y]CSISCN  
;  
NSTLVL=4 ;Maximum IND command file nesting  
CMDLUN=5 ;GCML command LUN number
```

RSX MULTITASKER

```

TILUN=4                ;LUN assigned to TI:
QIOEFG=1              ;Error message QIO event flag
LOCASE=1              ;Defined to permit lower case in command
    .PSECT    $VARS
    GCMLDF    SCN,$VARS
    TMSGDF    SCN,$VARS
    CERRDF    SCN,$VARS    ;Used only with CSINTF assemblies
    FTYPDF    <SRC,DAT>,$VARS
;
; Switch tables start here
;
    SWTSRT    $VARS
    SWTVAL    SS,<<ASCII,20.,1>>,$VARS
    SWTEND    $VARS
;
; Switch tables end here
;
    .END

```

CSICAD.MAC is the command line data base definition for an interactive, command language driven program called CAD. The basic command driven structure of this program is reflected by the presence of an individual switch table for each command, a total of nine tables in the example. Note that the same name switch in each table can have a different definition for switch values. In particular, the MC switch for the DU command (table 1) and the IC command (table 9) have a different number and type of switch values. While viewed by the program user as the same switch, the interface package actually keeps both switches and their associated values as completely separate entities. The overall structure of the file is the same as the first example, except that the CERRDF macro is not used for a CSINTR based interface. Note also that the program uses the context dependent default file name extension technique discussed earlier. This is evidenced by the \$\$\$ file name extensions in the FTYPDF macro call. The three symbols ARMXBP, LABLEN, and CNDLEN are application specific to the program from which this example is taken, and are not needed for other programs.

```

;
; CSI interface data base for CAD program
;
; Assembly command line:
; MAC CSICAD=LB:[200,201]CSINTFDEF/ML,CSINTR,SY:[X,Y]CSICAD
;
NSTLVL=4                ;Maximum IND command file nesting
CMDLUN=5                ;GCML command LUN number
TILUN=4                ;LUN assigned to TI:
QIOEFG=1              ;Error message QIO event flag
ARMXBP=974.
LABLEN=10.

```

RSX MULTITASKER

```

CNDLEN=10.
  .PSECT  $VARS
  GCMLDF  CAD,$VARS
  TMSGDF  CAD,$VARS
  FTYPDF  <$$$,$$$>,$VARS
;
; Switch tables start here
;
; Switch table #1 for the DU command.
;
  SWTSRT  $VARS
  SWTVAL  MC,<<HEX,2,<-1,0>>,<DECIMAL,2,<0>>>,$VARS
  SWTVAL  PE,<<HEX,2,<-1,0>>,<DECIMAL,2,<0>>>,$VARS
  SWTVAL  IO,<<HEX,2,<-1,0>>,<DECIMAL,2,<0>>>,$VARS
  SWTVAL  AM,<<ASCII,LABLEN,1>>,$VARS
  SWTVAL  BP,<<HEX,2,<ARMXBP>>,$VARS
  SWTVAL  RG,<<ASCII,4,11.>>,$VARS
  SWTVAL  RB,<<ASCII,2,1>,<DECIMAL,2,<0,7>>>,$VARS
  SWTVAL  RO,<<DECIMAL,2,<0,127.>>>,$VARS
  SWTVAL  CO,<<DECIMAL,2,<0,127.>>>,$VARS
  SWTVAL  R,<<DECIMAL,2,<32.>>>,$VARS
  SWTVAL  I,<<DECIMAL,2,<16.>>>,$VARS
  SWTVAL  C,<<DECIMAL,2,<16.>>>,$VARS
  SWTVAL  H,<<DECIMAL,2,<4.>>>,$VARS
  SWTVAL  O,<<DECIMAL,2,<6.>>>,$VARS
  SWTVAL  B,<<ASCII,2,1>,<DECIMAL,2,<16.>>>,$VARS
  SWTEND  $VARS
;
; Switch table #2 for the CO,HA,RE,SS,ST and TR commands.
;
  SWTSRT  $VARS
  SWTNEG  <ALL>,$VARS
  SWTVAL  MC,<<HEX,2,<-1>>,<DECIMAL,2,<0>>>,$VARS
  SWTVAL  PE,<<HEX,2,<-1>>,<DECIMAL,2,<0>>>,$VARS
  SWTVAL  IO,<<HEX,2,<-1>>,<DECIMAL,2,<0>>>,$VARS
  SWTEND  $VARS
;
; Switch table #3 for the AL command.
;
  SWTSRT  $VARS
  SWTVAL  AD,<<HEX,2,<ARMXBP>>,<DECIMAL,2,<0.>>>,$VARS
  SWTVAL  RO,<<DECIMAL,2,<0,127.>>>,$VARS
  SWTVAL  CO,<<DECIMAL,2,<0,127.>>>,$VARS
  SWTVAL  R,<<DECIMAL,2,<32.>>>,$VARS
  SWTVAL  I,<<DECIMAL,2,<16.>>>,$VARS
  SWTVAL  C,<<DECIMAL,2,<16.>>>,$VARS
  SWTVAL  H,<<DECIMAL,2,<4.>>>,$VARS
  SWTVAL  O,<<DECIMAL,2,<6.>>>,$VARS
  SWTVAL  B,<<ASCII,2,1>,<DECIMAL,2,<16.>>>,$VARS
  SWTNEG  <LI,RD,WR,DE>,$VARS
  SWTEND  $VARS
;
; Switch table #4 for the LD command.

```

RSX MULTITASKER

```

;
SWTSRT  $VARS
SWTVAL  MC, <<HEX, 2, <-1>>, <DECIMAL, 2, <0>>>, $VARS
SWTVAL  PE, <<HEX, 2, <-1>>, <DECIMAL, 2, <0>>>, $VARS
SWTVAL  GO, <<HEX, 2, <-1>>, <DECIMAL, 2, <0>>>, $VARS
SWTEND  $VARS
;
; Switch table #5 for the DI command.
;
SWTSRT  $VARS
SWTNEG  <ST, PP>, $VARS
SWTVAL  CS, <<DECIMAL, 2, <1>>>, $VARS
SWTVAL  MC, <<HEX, 2, <-1>>, <DECIMAL, 2, <0, 0>>, <ASCII, CNDLEN, 1>>, $VARS
SWTVAL  PE, <<HEX, 2, <-1>>, <DECIMAL, 2, <0, 0>>, <ASCII, CNDLEN, 1>>, $VARS
SWTEND  $VARS
;
; Switch table #6 for the BR and SR commands.
;
SWTSRT  $VARS
SWTNEG  <LI>, $VARS
SWTVAL  SE, <<DECIMAL, 2, <0>>>, $VARS
SWTVAL  RE, <<DECIMAL, 2, <0>>>, $VARS
SWTVAL  MC, <<HEX, 2, <-1>>, <DECIMAL, 2, <0, 0>>, <ASCII, CNDLEN, 1>>, $VARS
SWTVAL  PE, <<HEX, 2, <-1>>, <DECIMAL, 2, <0, 0>>, <ASCII, CNDLEN, 1>>, $VARS
SWTVAL  IO, <<HEX, 2, <-1>>, <DECIMAL, 2, <0, 0>>, <ASCII, CNDLEN, 1>>, $VARS
SWTEND  $VARS
;
; Switch table #7 for the SA command.
;
SWTSRT  $VARS
SWTVAL  MC, <<HEX, 2, <-1, 0>>, <DECIMAL, 2, <0>>>, $VARS
SWTVAL  PE, <<HEX, 2, <-1, 0>>, <DECIMAL, 2, <0>>>, $VARS
SWTVAL  IO, <<HEX, 2, <-1, 0>>, <DECIMAL, 2, <0>>>, $VARS
SWTVAL  AM, <<ASCII, LABLEN, 1>>, $VARS
SWTVAL  BP, <<HEX, 2, <ARMXPBP>>>, $VARS
SWTVAL  RG, <<ASCII, 2, 1>>, $VARS
SWTVAL  RB, <<ASCII, 2, 1>>, $VARS
SWTVAL  CO, <<DECIMAL, 2, <0, 127.>>>, $VARS
SWTVAL  RO, <<DECIMAL, 2, <0, 127.>>>, $VARS
SWTVAL  E, <<HEX, 2, <-1>>>, $VARS
SWTNEG  <RD, WR>, $VARS
SWTEND  $VARS
;
; Switch table #8 for WA command.
;
SWTSRT  $VARS
SWTNEG  <ON, OFF>, $VARS
SWTEND  $VARS
;
; Switch table #9 for the IC command.
;
SWTSRT  $VARS
SWTVAL  MC, <<HEX, 2, <-1>>, <DECIMAL, 2, <0>>>, $VARS

```

RSX MULTITASKER

```

SWTVAL PE,<<HEX,2,<-1>>,<DECIMAL,2,<0>>>,$VARS
SWTVAL IO,<<HEX,2,<-1>>,<DECIMAL,2,<0>>>,$VARS
SWTVAL AM,<<ASCII,LABLEN,1>>,$VARS
SWTVAL BP,<<HEX,2,<ARMXBP>>>,$VARS
SWTVAL RG,<<ASCII,4,11.>>,$VARS
SWTVAL RB,<<ASCII,2,1>,<DECIMAL,2,<0>>>,$VARS
SWTVAL RO,<<DECIMAL,2,<0>>>,$VARS
SWTVAL CO,<<DECIMAL,2,<0>>>,$VARS
SWTVAL R,<<DECIMAL,2,<32.>>>,$VARS
SWTVAL I,<<DECIMAL,2,<16.>>>,$VARS
SWTVAL C,<<DECIMAL,2,<16.>>>,$VARS
SWTVAL H,<<DECIMAL,2,<4.>>>,$VARS
SWTVAL O,<<DECIMAL,2,<6.>>>,$VARS
SWTVAL B,<<ASCII,2,1>,<DECIMAL,2,<16.>>>,$VARS
SWTEND $VARS

```

```

;
; Switch tables end here
;
.END

```

APPENDIX A

The SETEXT routine, used for setting context dependent file extensions is illustrated below. The program is written in RATFOR but can be easily converted to FORTRAN 77.

```

# SETEXT - Routine to place a default file extension into a file name
#
# Purpose: Place a default extension into a file spec if the the user did
#          not provide one in the command line
#
# Call:    CALL SETEXT(FILE,EXT,FORCE)
#
# Inputs:  FILE = A character string containing a file spec from GETFIL
#          EXT  = A 3 character file extension to be placed into FILE
#          FORCE = A logical flag, .TRUE. to force EXT into FILE,
#                .FALSE. inserts EXT into FILE only if user did not
#                specify an explicit extension.
#
# Outputs: The extension, EXT, is inserted into the file spec, FILE, if
#          the extension in the file spec is $$$ or if FORCE is .TRUE..
#
# Programmer: Carl T. Mickelson
#            Goodyear Aerospace Corporation
#            1210 Massillon Road
#            Akron, Ohio 44315
#
# Date: April 1983
#
##
DEFINE (EOS,0)

```

RSX MULTITASKER

```

SUBROUTINE SETEXT(FILE,EXT,FORCE)

BYTE FILE(1),EXT(1)
LOGICAL FORCE
INTEGER DOT
INTEGER SEMI,NULL,DIFF

# Locate the period in the file spec string
FOR (DOT=1; FILE(DOT).NE.'.' .AND. FILE(DOT).NE.EOS; DOT=DOT+1) ;
IF (FILE(DOT) .EQ. '.') $ # If period is found
  # Locate the semi-colon
  FOR (SEMI=DOT+1; FILE(SEMI).NE. ';' .AND. FILE(SEMI).NE.EOS; SEMI=SEMI+1) ;
  # Then find the null at the end of the file spec
  IF (FILE(SEMI) .EQ. EOS) NULL = SEMI
  ELSE FOR (NULL=SEMI+1; FILE(NULL).NE.EOS; NULL=NULL+1) ;
  DIFF = 4 - (SEMI - DOT) # Compute length of string to move
  IF ((DIFF .GT. 0) .AND. FORCE) # Move the string residue to make room
    FOR (I=NULL; I .GE. SEMI; I=I-1) FILE(I+DIFF) = FILE(I)
  DO I=1,3 $ # Change the next three characters
    IF ((FILE(DOT+I) .EQ. '$') .OR. FORCE) FILE(DOT+I) = EXT(I)
  ↑
  ↑ # End period found block
RETURN
END

```

APPENDIX B

This appendix presents the multiple switch group patch that must be applied to the RSX11M V4.1 Update D version of .CSI2. This object module is located in SYSLIB, and should be patched if a CSI command interface requires more than 16 switch definitions in a single switch table. By using the patched .CSI2, together with an interface/data base assembly having the symbol MULTAB defined will permit a program to define any number of switches, allocated in groups of 16. The ISWIT parameter vector passed to GETFIL must be sized with two words for each group of 16 or fewer switches defined in the largest switch table. This vector will contain a two word set of switch presence/polarity flags for each group of defined switches. When calling GETSWT, the pair of mask words passed to the routine must correspond to the switch group in which the switch being tested is defined. Thus ISWIT(1) would be passed to GETSWT for switches 1 to 16, ISWIT(3) for switches 17 to 32, ISWIT(5) for switches 33 to 48, etc.

File: MULTABMOD.CMD

```

.ENABLE SUBSTITUTION
.SETS SAVUIC "'<UIC>'"
;
; This file applies a patch to the standard RSX11M .CSI2
; module to allow for processing command language syntax

```

SX MULTITASKER

```

; definitions with more than 16 switch definitions.
;
.ASKS [0:5:"'<SYSDEV>':" ] KIT What device contains the SYSLIB to be patched
.IF KIT EQ "" .SETS KIT "'<SYSDEV>':"
ASN 'KIT'=KTO:
.ASKS [0:5:"'<SYSDEV>':" ] MOD What device contains the CSI2 modification kit
.IF MOD EQ "" .SETS MOD "'<SYSDEV>':"
ASN 'MOD'=MDO:
.ASKS [0:9: "'SAVUIC'"] UIC What UIC contains the CSI2 modification kit
.IF UIC EQ "" .SETS UIC "'SAVUIC'"
SET /UIC='UIC'
.;
.; Install required utilities if needed
.;
.SETF INSPIP
.IFNINS PIP .SETT INSPIP
.IFT INSPIP INS $PIP
.SETF INSMAC
.IFNINS MAC .SETT INSMAC
.IFT INSMAC INS $MAC
.SETF INSLBR
.IFNINS LBR .SETT INSLBR
.IFT INSLBR INS $LBR
.SETF INSPAT
.IFNINS PAT .SETT INSPAT
.IFT INSPAT INS $PAT
.;
.; Delete files that will be rebuilt
.;
PIP MDO:CSIDEL.CMD;*/DE/NM
.OPEN #0 MDO:CSIDEL.CMD
.ENABLE DATA #0
MDO:CSI2.*;*/DE/NM
.DISABLE DATA #0
.CLOSE #0
PIP @MDO:CSIDEL
.;
.; Create source file for CSI2 modification patches
.;
.OPEN #0 MDO:CSI2.PAT
.ENABLE DATA #0
.TITLE .CSI2
.IDENT /B16V2A/
.MCALL CSI$
CSI$
.PSECT $$CSI$,RO,I,LCL,REL,CON
$$$=.

.=$$$+274
JSR PC,PAT001 ; Overlay CLR C.MKW2(R0)

.=$$$+604
JSR PC,PAT002 ; Overlay BIS (R1),(R3) and TSTB (SP)

```

RSX MULTITASKER

```

.PSECT  PATCHS,RO,I,LCL,REL,CON
PAT001:
  CLR      C.MKW2(R0)      ; Replace original instruction
  MOV      C.SWAD(R0),R1   ; Get switch table address
  BEQ      40$             ; If zero, no switches, finish
  MOV      R2,-(SP)        ; Save scratch register
10$:
  TST      (R1)+           ; Test switch name word
  BEQ      30$             ; If zero, end of table
  BMI      10$             ; If negative, more name
  TST      (R1)+           ; Skip switch mask value
  MOV      (R1)+,R2        ; Get switch mask word address
  BIC      #1,R2           ; Clear negated sense flag
  BEQ      20$             ; If zero, no mask address, continue
  CLR      (R2)+           ; Else, clear mask presence
  CLR      (R2)            ; and polarity words
20$:
  TST      (R1)+           ; Skip value table address word
  BR       10$             ; Do next switch
30$:
  MOV      (SP)+,R2        ; Restore scratch register
40$:
  RTS      PC              ; Return

PAT002:
  BIS      (R1),(R3)+      ; Set switch present mask bit
  BIS      (R1),(R3)       ; Set switch polarity mask bit
  TSTB     2(SP)           ; Test switch polarity under return address
  RTS      PC              ; Return

.END
.DISABLE DATA #0
.CLOSE #0
.;
.; Assemble the CSI2 patch source
.;
MAC MDO:CSI2.POB=MDO:CSI2.PAT
.;
.; Preserve original SYSLIB
.;
SET /UIC=[1,1]
.TESTFILE KTO:SYSLIBOLB.VGN
.IF <FILERR> EQ 1 .GOTO CNT1
PIP KTO:SYSLIBOLB.VGN;*/RE=KTO:SYSLIB.OLB;*
PIP KTO:SYSLIB.OLB=KTO:SYSLIBOLB.VGN
.CNT1:
SET /UIC='UIC'
.;
.; Extract original .CSI2 module
.;
LBR MDO:CSI2.OBJ=KTO:[1,1]SYSLIBOLB.VGN/EX:.CSI2
.;

```

SX MULTITASKER

```
.; Patch the original module with CSI2.POB
.;
PAT MD0:CSI2.OBJ;2=MD0:CSI2.OBJ;1/CS:145351,CSI2.POB/CS:020403
.;
.; Replace patched module in library
.;
SET /UIC=[1,1]
LBR KTO:SYSLIB/RP=MD0:'UIC'CSI2.OBJ;2
SET /UIC='SAVUIC'
.;
.; Remove any utilities installed at start
.;
.IFT INSPIP REM ...PIP
.IFT INSMAC REM ...MAC
.IFT INSPAT REM ...PAT
.IFT INSLBR REM ...LBR
;
; This completes application of the CSI2 patches
;
```

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CSI

ODT

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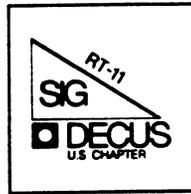
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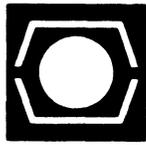
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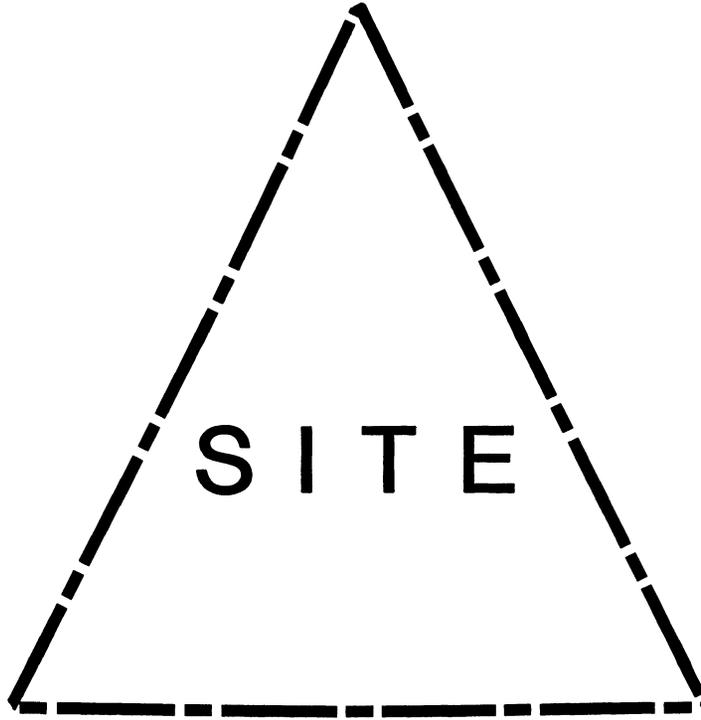
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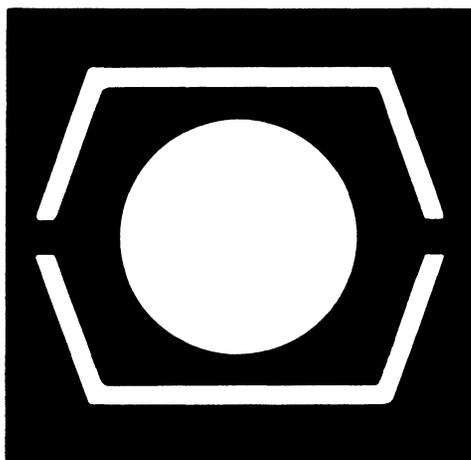
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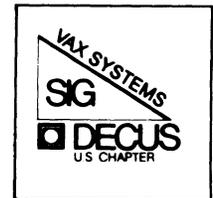
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Editor's Workfile

by Larry Kilgallen, Pageswapper Editor

No rest for the weary -

Having finished a week of upgrading various systems to VMS V4.2, I thought I would settle down to some quiet word-processing (it being Pageswapper deadline time) away from the cares and woes of the world. Was I ever in for a surprise. It turns out that Runoff under VMS V4.2 introduced an "undocumented and undesired feature" (hereinafter abbreviated as "bug") which caused it to apply sticky filespecs to include files.

Bookstore reincarnation -

As soon as I got a flyer in the mail saying that the DEC Bookstore in Bedford was back in business, I hot-footed it out there (hot-car?, no that has a different meaning in Massachusetts) to try for a VMS V4.2 documentation update. They had one right there, and they still take credit cards (the Pageswapper does not mention prices, but the set cost more than I generally carry in cash), so I was in business. Their hours are considerably restricted (only open three mornings a week), but consider the alternative:

Not obtaining documentation from the DEC Electronic Store -

The day after last month's Pageswapper went to production, I got a reply from the DEC Electronic Store regarding the Pascal documentation set I had ordered on July 10. It seems my order for computer documentation had been lost "due to communication problems between order processing systems", but if I was still interested in obtaining what I ordered I should contact them. I have replied that I am interested in obtaining what I ordered (that is generally why I order things).

As yet I have not gotten it, but stay tuned during coming months as the saga unfolds (you might want to make sure your Pageswapper subscription is renewed for another year; we make no guarantee as to when the final episode will be published).

Letters

John B. Ferguson
S.A.I. Corporation
505 Marquette Avenue, N.W.
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October 4, 1985

Mr. Larry Kilgallen, PAGESWAPPER Editor
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Dear Larry,

Let me begin by offering some flattery. Your continued support of the VAX SIG by editing the newsletter is most appreciated by the rest of us in DECUS. Most of us are too lazy to volunteer.

I have just finished my SIR ballot and noticed that many entries involved changes to DCL which would increase its usage as a poor substitute for a programming language. Perhaps it is again time to remind the VMS community (or perhaps just the new users):

1. DCL is slow because of image activation (among other reasons).
2. DCL is not a programming language, despite the IF-THEN construct and the GOTO statement (Egad!).
3. An appropriate high-level language will always be faster, better structured, more versatile and easier to modify than DCL command procedures (at least for bit-twiddling applications and number crunching).
4. DCL is meant to handle I/O at the file level, not at the record level. Go write a COBOL program.

I use DCL command procedures extensively, and I like them. But I do not expect them to replace applications programs written in high-level or assembly languages.

Yours truly,

John B. Ferguson

Some Suggested System Changes

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In the May 1985 PAGESWAPPER, Allen Watson published an article entitled, "A VMS Version 5 Wish List" and in June, Larry Kilgallen published an article entitled "Labeled Tape Shops in New Orleans". This article is my contribution to the ongoing effort of DECUS to try to tell DEC just what we want in an operating system.

Since these suggestions cover a much broader scope than the two original articles, I thought it might be best to publish them in the PAGESWAPPER where they might generate additional ideas from other people. Then later they could be formulated into SIRs.

FILE CATALOGS

As Larry suggested in his article on labeled tape shops, almost everyone wants a computerized list of what all the tapes are. I would like to see two lists. One list would keep track of the tapes volumes themselves: The internal label, storage location, owner, last date cleaned, scratch date, etc. This list might contain a general entry regarding contents and maybe even format (BACKUP, ANSII, DOS, RT-11, etc) but no detailed file list.

The second list would be a file catalog, which - given a file name - would return the volume label of the tape that contained the file. But why limit this catalog to tapes? Why not generalize it to be a catalog of any file anywhere on the system?

This concept is not that different from a directory. A directory is a file that contains a list of file names and where those files can be found. However the files listed in a directory must reside on the same volume as the directory. Furthermore, the volume must be accessible in order to read the directory in order to find out what files are on the volume.

Files listed in the catalog could reside on volumes other than the volume that contained the catalog. A file so cataloged could reside on tape, offline disk pack, or online disk. Since one would probably want to use both directories and a catalog, cataloged files would first have to be listed in a directory or

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Some Suggested System Changes

the system would have to allow for cataloged files to reside on a disk without the file being listed in a directory and without being considered "lost". Perhaps a flag in the header could note a file as being a cataloged file.

The user wishing to use such a cataloged file would simply open the file as something like "SYS\$CATALOG:FOO.BAR". The system would find the file, request that an operator mount any necessary volume(s), and make the file available to the user. If a device was not available on which to mount the volume, the user would receive a suitable message. Those of you who have worked on "I've Been Misled" computers will recognize the concept.

When creating cataloged files, the system could be allowed to place the file on the most empty disk. The user could even specify that particular files are not to reside on the same disk. On the other hand, the user could create a file in his own directory - then later catalog it. This would be similar to a volume set, except that the volumes would not be tightly bound as in a volume set.

For management and performance purposes, the catalog could be subdivided. For example: SYS\$CATALOG:[JENKINS.PAYROLL]FOO.BAR would refer to a file in the payroll section of Jenkins' section of the catalog.

Disk space quota management is an area that needs some discussion. We have mentioned that the system could be allowed to control file placement of cataloged files. Would this require that the poor system manager create a disk quota entry for every user on every disk that has disk quota enabled? This would put the burden on the system manager, but might be the most straight forward way to do things. However, if the system is restricted to placing files only on disks where the user has sufficient quota, what do you do when a file grows too big for a quota on one disk, but the user has sufficient quota on another disk and the user doesn't care where the file goes? Move it? Probably not.

Another option would be to give users a "total quota" that would limit their total disk space usage (not the usage on any particular volume). This total quota could be specified in a system-wide location such as the authorize file or a system wide quota file. Disk volumes could merely be flagged as having quota enabled or disabled. If quota on a disk was disabled, then the quota system would not restrict the amount of data a user could store on the disk. If a volume had quotas enabled, the total quota would limit the amount of data he could store on all such disks.

But what would one do if there was a total quota for each user and a particular disk had a QUOTA.SYS, and a user had no entry in QUOTA.SYS? Would he be allowed to use the disk based on his total quota or would he be restricted from using the disk? I tend to favor the latter, but what do others think?

There might also be a need to limit the number of files a particular user could catalog in the system catalog. This would prevent obnoxious users from filling the system catalog with thousands of versions of FOO.BAR or some other such nonsense.

DEVICE ALLOCATION

If an interactive user wants to use a tape drive they either walk down to the computer room to see if a tape drive is available or call the operators or just allocate the drive and see if they get it. Some of these activities are difficult for batch jobs to perform. I am sure that many of us have written batch procedures that attempt to allocate a tape drive and if it is not available, the job either waits 10 minutes and tries again or resubmits itself to run later. However this is far from optimal.

Ideally, one would like for all of the resources that a batch job needs to be guaranteed as available before the job even begins execution. I would suggest that a facility be implemented in VMS that would allow the submitter of a batch job to specify certain resources (tape drives) that will be needed during the execution of that job. The system would not release the job for execution until those resources were available. The system should even "pre-allocate" the resources prior to releasing the job to prevent another user from allocating the resource between the time the job was released and the time it actually began using the resource.

Obviously "resource" as used here could refer to more than just a tape drive. Why not expand the concept to any non-shareable resource such as private disk drives, non-spooled printers, card readers and punches (perish the thought) and even resources like physical memory ("Don't run this job unless it can get at least a 3000 page working set.") If this feature were implemented along with a file cataloging system, the submitter could specify the files needed, and if any of them were on tape, the job would not be run until enough tape drives were available. It would be nice if DEC could also implement a "Don't run this job unless the system will be up for at least 45 hours without crashing" feature, but I won't hold my breath while waiting for it.

BATCH JOB CHAINING

There are situations where multiple batch jobs need to run in a specified sequence. My suggestion is that DEC implement a /PARENT=jobnumber switch to the SUBMIT command that would cause the new job to be held until the parent job finished execution. There should be no limit to the length of the job chain and multiple offspring jobs should be able to chain to a single parent job.

A facility should also be included that would cause a child job to be deleted from the batch queue if the parent job either does not finish normally or is deleted. Eg., /PARENT=(jobnumber,[NO]DELETE).

In order for a command file to submit a chain of jobs, it is necessary for the command file to somehow be able to retrieve the job number of the parent job when it is submitted. That way the parent's job number could be used in the /PARENT= switch when the offspring jobs are submitted.

CONCLUSION

I am sure that I am not the first one to think of these ideas. I would encourage others to submit their ideas to the PAGESWAPPER and find out what others see as their needs. Perhaps then we can zero in on some more specific suggestions to DEC.

MicroVAX vs PDP11 Performance

At the PDP-11 Performance Panel in Anaheim on Wednesday, December 11, 1985, we will be comparing the PDP-11s with MicroVAXen for performance in various applications and configurations. Anyone with performance data comparing these processors is invited to bring that material to the session. You can be prepared to present it yourself, or we can present it for you. If there are any questions, call Tom Provost at (617) 245-6600.

Defending Against Trojan Horses

by Larry Kilgallen

Trojan Horse

A computer program with an apparently or actually useful function that contains additional (hidden) functions that surreptitiously exploit the legitimate authorizations of the invoking process to the detriment of security. For example, making a "blind copy" of a sensitive file for the creator of the Trojan horse.

- US Government Computer Security
Glossary
NCSC-WA-001-85

Some months ago I was preparing a list of computer security threats for a client along with recommendations as to what steps should or could be taken. For some items I listed exotic hardware devices which I knew were not practical in the situation, but which indicated to the client how far away from practicality the nearest solution was to be found.

Then on Trojan horses, I got stuck. I just could not come up with anything for this typical commercial firm (no security classifications here) other than "train your users", and relying on that certainly didn't make me happy.

At a government-sponsored computer security conference in October, one talk described a technique which seems to me to offer great hope in the area of defense against Trojan horses. The paper was prepared by W. E. Boebert and C. T. Ferguson of the Honeywell Secure Computing Technology Center in Minneapolis, and was entitled "A Partial Solution to the Discretionary Trojan horse Problem".

The Non-discretionary Access Control Solution

For organizations like the military which have divided their data into security levels (secret, top secret, confidential, etc.) and categories (atomic, crypto, etc.) a computer system which enforces non-discretionary access controls will naturally prevent data from being copied outside permitted classifications by a Trojan horse. But the use of the non-discretionary security mechanism called "integrity levels" can guard against a Trojan horse scrambling data even within a single classification. Running in the opposite direction from security levels (secret, confidential and the like) which are designed to quantify the sensitivity of data, integrity levels are designed to quantify the trustworthiness of data. While with security levels the rule is that data cannot be copied from a more-secure level to a less-secure level, the handling of integrity levels is the opposite. Copying information from a set of data which are judged "more accurate" to a set judged "less accurate" harms nothing, but copying in the other direction would pollute what had been trustworthy data, so such action is not permitted.

The integrity level approach to Trojan horse defense involves ascribing various integrity levels to PROGRAMS which are run (and are, after all, just a particular sort of input data to the CPU). Consider defining VMS software itself as having the highest integrity level. In fact, you more-or-less HAVE TO define VMS as having the highest integrity level, since it is used to modify all other files on the system. You could then define DEC layered products at the same level or a lower one. Then your user files. If all your user files were at a lower integrity level than VMS, and if you had your operators log in at the VMS integrity level, then operators could not run a user-supplied Trojan horse from their privileged account.

C. Douglas Brown of Sandia Laboratories (VAX SIG Security Working Group Chair) has done some experimentation with latent non-discretionary access control support in VMS version 4, and last year at the Fall Symposium in Anaheim he described his experience with using integrity levels. Doug was concentrating on how one avoids painting oneself into a corner doing everyday things like booting VMS. Consider how much more complicated it must be trying to accomplish your organization's business in such an environment.

Above we were considering protecting against Trojan horse attacks directed at privileged users. That may be most common, but it is not the only such attack possible. Do you run accounts payable inhouse? Would the accounts payable manager like a nice spreadsheet package? FREE? To protect against the possibility that the accounts payable manager would like such a package, are you prepared to divide all of your organization's

computing activities into 256 integrity levels in such a way to make sure that accounts payable is at a higher level than any would-be "spreadsheet" provider? Well, the VMS data structures also allow for 64 integrity "categories", so maybe you can divide your business that way. In my opinion though, the non-discretionary access control approach to Trojan horse defense promises to be quite difficult for protecting privileged users and impossible for protecting general users at typical commercial sites.

Boebert and Ferguson's Discretionary Access Control Technique

The environment used by Boebert and Ferguson is a "Secure Ada Target" (SAT) machine that Honeywell is working on in cooperation with the US military. While Honeywell was the first vendor to reach the highest possible ("A1") US government security rating for an entire computer system, the SAT team at Honeywell is interested in seeing if they can go beyond the A1 criteria far enough to force the government to declare an "A2" category. So this operating system in which they work has been designed from the ground up with security in mind. (In contrast, they don't have a lot of layered products, and they only have one customer lined up, albeit a big one.)

The SAT environment has some security features not present in VMS, but I think the basic approach they propose might be worth considering in a VMS context. It would not be so bulletproof, but might be considerably better than the Trojan horse defense we have today.

In the talk (which differed somewhat from the paper) Mr Boebert described a sort of "access control list" that one would attach to data for the purposes of Trojan horse defense. That list would restrict what PROGRAMS were permitted to access the data. (It would be in addition to the normal controls as to which USERS were permitted access.) The list of programs would call them out not by name, but by PROGRAMMER IDENTITY. In the SAT environment library modules are handled much as shareable images are in VMS, retaining their individual identity at run time. In the scheme outlined, then, all such modules as well as the main program must be from "acceptable" authors as specified in the list associated with the data.

Could this approach be used in VMS?

The description given of the SAT environment indicates a much stronger concept of file ownership than VMS; there is no possibility for an owner to mistakenly protect a program world-write to allow someone else to modify it. If DEC were to attempt such support in the VMS linker, how could one be sure that an executable image had not been modified to misrepresent the source of certain subroutines? According to the description, SAT maintains an audit trail of every instance of their version of SET FILE/OWNER.

Still, there may be some approach possible along this line under VMS for defense against Trojan horses. The philosophical basis which makes a similar approach difficult is that VMS presumes programs are inherently untrustworthy and carries out critical operations (like image activation and fixup) with no assumption made that the image is other than a synthesized bit pattern devised by a malevolent individual to take over the machine. Given that approach, the concept of protecting programs so that even their owner cannot modify them (ala SAT) is obviously quite foreign to VMS. There is support for "trusted" programs provided in the installation mechanism, but providing Trojan horse defenses only against installed programs certainly would address the wrong end of the spectrum.

Information embedded in the file system at first blush seems a possible approach. The attributes of file owner and File ID are examples of data which users cannot modify at will even for their own files. But the file system only receives its information from user-mode programs, and whatever calls are made by compilers and the linker could be made by less honorable programs as well. Potentially the "authorship" attributes of a file could be such that they could only be set with privilege, and then trusted utilities and language processors could be installed with that privilege.

Is there anything which can be done using encryption techniques? Is there a way by which authorship information could be included in executable images in a manner which defied forgery, perhaps like digital signatures? I am not a mathematician, but I hope those who are will realize that even imperfect algorithms have the potential of giving us considerably better protection than the nothing we have today.

That is my call to action, contributions to a continuing discussion are welcome.

DEC Responses to 1985 European VAX SIG SIRs

by Alan Silverman
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CH-1211, Geneva 23 Switzerland

1. FIRST CHOICE: 2402 points. (Also choice voted for most.) Appeared 53 times as first choice.

30. EDITING should support split screen editing.

When editing, it is extremely useful to be able to see different screen windows simultaneously. This simplifies the moving of text between windows and makes the comparison of two versions quite simple.

This facility is available on some other operating systems (not specified in suggestion) and there editing is speeded up very greatly. At least if EDT used windows, it would be extremely practical to be able to display two files or two buffers in separate windows.

ANSWER:

This feature is available in the new VMS editor VAXTPU. VAXTPU is programmable and can be used to form the basis of other product interfaces. VAXTPU provides two interfaces, EDT and EVE. The EDT interface does NOT utilize multiple editing windows (it is an EDT emulator), but does provide EDT-like multiple buffers. EVE was specifically designed to be used in either a single editing window or double editing window environment.

2. SECOND CHOICE: 2335 points. (Also choice voted for second most often.) Was MOST POPULAR FIRST CHOICE - it appeared 85 times as first choice.

50. On-line Disk Compression.

The increasing use of single Winchester disks as system devices with different disk sizes and types for subsidiary storage makes it increasingly impractical to use BACKUP to consolidate the free blocks on a disk. As disks get larger, using tape as an intermediary to store a disk's contents before restoring it begins to take too long.

A utility is needed that will allow disk compression and consolidation of free blocks. If this can be provided just for non-system disks only at present this would be preferable to no utility at all.

ANSWER:

While the importance of an on-line disk compression is obvious in retrospect, this is a new request for us in that it has never appeared this prominently in past SIR ballots. We do not have any current plans to build such a facility. However we understand its importance, and we understand that its importance will increase as time goes on. There are a number of difficult problems to deal with, including coordinating ongoing file activity with compression, and solving the performance problem on large disks, since disk reorganization is inherently an n-squared order problem. We will investigate this for future VMS development.

3. THIRD CHOICE: 2167 points. (Also choice voted for third most often.) Was 5th most often placed as first choice - It appeared 49 times.

30. Supported timeout and automatic logging out of inactive terminals.

It would be desirable from a security point of view if terminals which were not running any specific image and had had no I/O for a settable period were to be logged out by the system.

The request suggests that this is effective against uncooperative users and has security advantages since unattended terminals will not be left logged on for longer than the few minutes. It will also be able to release lines with some types of terminal concentrator unit where modem control signals are used to clear lines.

ANSWER:

On the face of it, this appears to be a fairly simple problem. However, when one starts to investigate the details of how to ascertain that a terminal is inactive, the problem becomes increasingly complex. Because of the difficulty in establishing a reasonable general model of inactivity, and the fact that this sort of facility can be added to VMS by users with

systems programming expertise, we have so far not provided it with VMS. We are interested in discussing the details with users in an attempt to develop a model that would be suitable for implementation as part of VMS.

4. FOURTH CHOICE: 1785 points. Was SECOND most often placed as first choice - it appeared 74 times.

30. BATCH Checkpointing.

It is requested that BATCH jobs could be stopped in some way that they can be held during a bootstrap or similar shutdown and restarted afterwards.

Some installations need to shutdown to run disk to disk backups. Often a possible risk of a crash or power fail may be known in advance. If a batch job has a life of more than a few days it may have to be restarted a number of times before it can finally complete. A simple checkpoint command which places the process in a state similar to a swap-out but with all necessary registers and headers saved as well, would be adequate.

ANSWER:

This is a much requested feature, and is also one of the most difficult to provide in VMS. There are many aspects of the state of a general purpose batch job that we do not yet understand how to save and restore successfully, foremost among them being open files and I/O in progress. We have had under development a checkpoint facility that allows jobs to declare explicitly checkpoints at which they can be restarted. The non-transparency of these checkpoints greatly simplifies the I/O problems. We expect this facility to be available in the future. We will continue to investigate the feasibility of a more general checkpoint mechanism.

5. FIFTH CHOICE: 1722 points. (Was also choice voted for 5th most often.)

30. DISK QUOTA by groups.

It should be possible to allocate disk quota by GROUP UIC as well as by individual UIC. This is a common request. System managers have reported that between 30% and 100% of USER accounts have

to share disk space and that the current solutions are to set many accounts to the same UIC or to switch off quota completely.

It is more convenient to allow [project1,*] to occupy a certain number of blocks on a disk than to have all programmers of "project1" using the same UIC.

ANSWER:

We believe that the identifier mechanism provided in VMS V4, and the ability to charge resources to identifiers, should provide most of what is desired. This mechanism allows users to set up project libraries under which files are charged to the project instead of the individual contributors. If there are situations that this mechanism does not handle adequately, we would be interested in discussing them.

1985 European VAX SIG SIR Full Results

by Alan Silverman
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This is a summary of the votes cast by members of the European DECUS VAX Special Interest Groups in the 1985 "System Improvement Request" (SIR) ballot. Only a simple title is given for each SIR; the full description appeared in the ballot paper sent to all VAX SIG members in Europe.

Number of voting papers returned - 766

SIR number	Votes Cast
30	2402 EDITING should support split screen editing.
50	2335 On line Disk Compression.
76	2167 Supported Timeout and automatic logging out of inactive terminals.
5	1785 BATCH Checkpointing.
26	1722 DISK QUOTA by groups.
2	1671 BACKUP should be able to copy save-set to save-set, both local and over DECnet.
15	1467 SHOW SYMBOL should have the same wildcards as DIR etc.
44	1402 PRINT should be supported fully across networks.
31	1337 EXCHANGE should be able to read and write IBM formatted tapes (also EBCDIC) and to make ASCII copies of EBCDIC tapes and the reverse.
49	1259 Escape to DCL to create a subprocess without losing the running process.
58	1007 There should be an EBCDIC magtape ACP to allow writing and reading of IBM Tapes
71	995

- Support some limitations of CPU
intensive, interactive jobs.
- 61 960
Two Terminals in software parallel mode.
(Tops-20 "Advise mode")
- 75 927
Temporary Files, Temporary Directories.
- 12 877
Sysgen Parameter for a timeout for DCL
- 63 792
Pipes for VMS
- 8 717
It should be possible to CALL all file
manipulating utilities via DCL from any
running process.
- 3 706
BACKUP should be able to copy BACKUP
formatted tapes to another drive as
savesets.
- 16 631
SHOW TERM /TTCn should show the current
speed of a terminal, even if the
terminal is allocated to another user.
- 45 592
PRINT should be able to reject files
with non printing attributes.
- 41 584
MOUNT /FOREIGN with labels.
- 70 559
Improved Scheduler.
- 29 558
EDT (or new Editor) SORT ability.
- 42 541
MOUNT /HOLD command to queue a mount
until a drive is free.
- 56 527
A method of entering at high priority to
stop looping realtime processes.
- 17 519
Cluster Wide SHOW USER
- 62 519
Ability to OPEN a Logical Unit to more
than one output device.
- 40 508
MAIL to Non-VAX and Non-DEC systems
- 57 501
I/O redirection in one line, UNIX
fashion.
- 1 462
BACKUP /CLUSTERSIZE and other switches
for initialising disks
- 22 412
DEBUG: Set Scope /FOLLOW, Set Module

/FOLLOW
59 404
SYS\$USERNAME, SYS\$PASSWORD
53 402
File OPEN for READ should also update
the Revision date
25 390
Provide DIR option for a user to select
UIC in numerical form.
32 385
Fortran variables should be allocated
from STACK storage at run time instead
of statically.
11 341
DCL: READ Switch /TIMEOUT=deltatime
64 338
Authorized privileges should be
inherited by Sub-Processes
36 336
INSTALL should be able to set a WSEXTENT
that is greater than the user's process
WSEXTENT
24 301
Make DEC-SLIDE and DEC-GRAPH device
independent and not restricted to REGIS
terminals. GKS support is suggested.
18 294
Full support for Pseudonyms, files
entered in more than one directory.
43 282
PRINT /DEVICE= to select routing from a
Generic Print Symbiont
10 269
DCL should have a function which allows
it to get the full "device + directory
+ filename" of the command file that it
is currently executing.
10 261
VAX BASIC source should be viewable from
the debugger.
37 241
All DEC languages should do I/O via the
SMG package.
13 241
RUN /Commandline = "text" in DCL
33 236
GETDVI should be able to return all
devices of a given class.
14 228
SET TERMINAL /INQUIRE should use the
"device attributes" capabilities defined
in TERMTABLES.EXE by the SMG routines
7 212

	SUBMIT /PASSWORD=xxxx to submit jobs by proxy	
20		212
	Debug should support SET EventFlag (number), SHOW Eventflag	
69		204
	Run a job from a mailbox	
47		195
	VAX-11 RSX to support RSX11M-PLUS	
68		178
	Complete the support of RIGHTS for project work.	
73		177
	Daylight-Saving-Time and The Time of Year Clock.	
4		162
	VAX BASIC should support the datatype DATE (8 bytes) to be consistent with CDD	
39		160
	Include a "plain" version of LSE with VMS and add language elements as "optional" products	
9		
	More ways of sorting within F\$SEARCH	
23		158
	DEBUG SYMBOLS within shareable libraries.	
28		157
	DSR should include MACROS as in NROFF, etc.	
6		156
	BATCH deadlock avoidance.	
51		152
	Directory Errors should be distinguished from other File Errors.	
55		149
	\$GETSYI should be able to supply more executive data items	
60		143
	MAXDETACH limit of ZERO should mean no detached processes rather than unlimited.	
67		124
	Restriction of a Username to one or more hosts of a Heterogenous Cluster.	
38		121
	LINK /IDENTIFIER = xxxx so as to indicate that users of an image should be granted one or more identifiers that are held by the owner of the image file.	
48		105
	Document the package used for command qualifier support.	

21	99	Documented interface to allow integration of third party compilers into DEBUG. Possible DEC integration for standard languages such as RTL/2.
66	91	Overdrafts for more VMS quotas
27	80	DSR .FIGURE DEFERRED should take a parameter, FIGURECAPTION
72	79	SETSYI and SETJPI system services
35	78	A documented ability to call the same module several places within a help file.
54	73	\$GETJPI should be able to read the event flag cluster being used in an LEF wait.
34	55	HELP should print a user defined message when HELP is entered without a topic
78	51	A new modifier for the terminal driver WRITEVBLK function which causes the output (or prompt?) string to be placed in the typeahead buffer.
74	51	System support of Time Zones / Zone time.
77	50	System Update Option, no new functionality.
52	34	The error message generated from the implicit purge caused by exceeding a file's version limit should indicate that the limit was exceeded.
46	25	VAX-11 RSX, calling native mode code from RSX code.

Spring 1985 VAX SIG Symposium Tape

by Joseph L. Bingham
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Distribution was started on the Spring 1985 VAX SIG Symposium tape in August. The package contains material submitted for the Tape Copy Project at the Spring 1985, New Orleans, DECUS symposium. It consists of two tapes organized as follows: The first tape has two save-sets, VAX000 and VAX85A. The second tape has one save-set, VAX85B. [VAX000] contains general information about the tape and concatenated copies of all the AAAREADME.TXT files. [VAX000.INDEX] contains an index of this tape and a consolidated index of all of the VAX SIG Symposium tapes. (The index was missing from the Fall 1984 tape but is back with this tape. In order to save space we have not generated an index of just the Fall 1984 tape and have not redistributed individual indexes of the preceding tapes.) [VAX85A...] contains all of the submissions except the largest ones which are in [VAX85B...].

Thanks go to Glenn Everhart, RCA, for doing most of the editing work on this tape and generating the summary printed below and to Tom Gerhard for producing the indexes.

The tape is available from the Decus Program Library and is being distributed to LUG Chairmen/Librarians by the NLO.

Some of the material on this tape is specific to VMS version 3.x and some of it is specific to VMS version 4.x. The tape can be loaded on to a version 3 system - file names do not contain "\$" or "_" and are no longer than 9 characters and the sub-directory level does not exceed eight. However, the sub-directory level is at the maximum for a version 3 system in [VAX85B.PRAXIS]. For that reason it is recommended that the sub-directory level not be increased when you unload the tape. i.e., the unloading command should be something like \$BACKUP/LOG MTA0: [*...].

Following is a brief description of the submissions to the tape. All of the subdirectories are in [VAX85A...] unless otherwise noted.

[.AMBY]

By Don Amby
Large collection of utilities. Includes DM which allows screen examination of directories/files and moving within a directory tree; revised SD; archiver commands; personal log maintain; Pascal pretty-printer; do DCL command to all files in a specification;

whereami; whoami; convert stream to standard text file; remove control characters from file;UNIX like tools like cat, cd, ls, od, echo,wc.

[.ARIZONA]

By Joel Snyder
EDT able to spawn DCL; break key daemon for VMS V4; editor for Fortran character arrays in memory.

[.BATTELLE]

By Gary Grebus
Cleandisk, to remove old files of given types FAST; Handlesmb, modified print symbiont for special burst pages; Haspsmb, HASP symbiont for Comboard RJE link; Monitorjob, system use monitor; SETNODEID to make an ID corresponding to nodename; program to let nonprivileged users install shared images; DTR definition of UAF records; VARY to mark devices offline; symbiont for Xerox laser printer.

[.CLEMENT]

By John Clement
Latest Bonner Lab Runoff, large superset of DSR. Learn it and use it. Much better than DSR. Still compatibility mode but a native mode version is coming.

[.DFWLUG]

Dallas/Fort Worth LUG
Macros supporting V4 SMG\$ calls from Macro-32; cross checker to check directories on disks and cross reference to UAF; output of space left on mounted disks.

[.DWIM]

By Karl Johnson
Partial DO WHAT I MEAN for VMS V4. Keeps track of context of your commands and remembers files you're working on.

[.ERI]

By Bob Goldstein, Daniel Smith
Command files for VMS usage; MACSnVAX file transfer between Macintosh running MacTerminal and VMS.

[.EROS]

By Thomas Bodoh
BOUNCER, Idle terminal killer with variable time limit and also keeps a report of idle but nonkilled terminals.

[.FINGER]

By Richard Garland
This is Finger for VMS V4. Note the readmes. Many new features have been added and DECnet support is now supplemented by support for some other networks too.

- [.GRAY] By Thomas Gray
Advanced Users' LOGIN allowing DCL symbols to be defined within a single image and with easy mods. For VMS V4.
- [.HUGHESCG] By Kevin Caruso and Gordon Howell
PTYDRIVER - Pseudo terminal driver for VMS V4. Implements ALL VMS terminal I/O functions.
UUCPMAIL - sample foreign mail protocol for vaxmail. Interfaces to locally done VMS-UUCP (available to UNIX source licensees free from K.C.)
Stratego - resubmittal of 2 terminal STRATEGO game for VMS V4. OPERATOR - captive operator procedure.
- [.KERMIT] is in [VAX85B...] Tree
[.KERMIT] By Nick Bush and Brian Nelson New VMS Kermit for V3 or V4 fixing some bugs. New PDP11 (RSX/RSTS/POS/RT11) Kermit.
- [.KMSKIT] is in [VAX85B...] Tree
[.KMSKIT] By J. Downward
Numerous system management aids, graphics packages, TVG sources. The famous Vax Professional Workstation, an office automation toolkit which does what All-In-One does, just better, faster, and more cheaply. Now supports more graphics, windows, etc. and has full VMS V4 support.
- [.LILUG] By John Hasstedt and Al Scholldorf
Program to dump retrographics graphics to a laserprinter. Program for making custom VT100 characters. Magtape to magtape format-independent copy. TEX sources for handling QMS Laserprinter. Tape utilities.
- [.LJK] By Larry Kilgallen
Pageswappers since the Fall '84 symposium.
- [.MACPRINT] By Bob Wilson
Converts MacIntosh printer output to VAX printer compatible form.
- [.MILLER] by Robin Miller
Two major submissions: VAXNET revised for V4 and supporting several new modem types, and a new version of VTL which is a super file lister. VAXNET currently supports VAXNET and XMODEM file protocols; Kermit will be added later. Script mode operation has also been added. This has been used for sending via Easylink.

- [.MORSE] By Kathy Morse
Slides for some of the sessions given by the VAX/VMS developers at Spring DECUS in New Orleans.
- [.NSWC] By Alan Zirkle
Better queue delete command; another SD command; LET as a replacement for ASSIGN and DEFINE; Reminder utility with source (NOTE: AT+T Reminder from VAX84 fall tapes will break soon! It has a timebomb in it. Get into a replacement like this ASAP!) Documentation on SMG\$.
- [.NU] By Rand Hall
Fast login.com and tuning statistics gatherer; utility to allow non-privileged users to do many things in a controlled way.
- [.OAKLEY] By Mark Oakley
Files: quickly find files based on ownership and size, revised for VMS V4. GRANTID: software to grant and revoke system rightslist IDs.
- [.PANEL] By Brian Lockrey
Utility to make it easy to make menu systems under VMS using DCL and FMS.
- [.POTTER] By Andrew Potter
VMS V4 utilities. NEWS, alternative to sys\$welcome. CD - fast change directory. GMAIL - general purpose public bulletin board facility. NETCOPY - preprocessor for copy that asks (without echo) for password. NETUSERS - shows user and batch jobs on up to 5 nodes on VT125 or GIGI (or use VT100 version also supplied). NODESHOW allows users to look at other DECnet nodes without actually logging onto them. TRMPRNT allows print to VT102 printers similar to VMS PRINT. EDTSPN allows spawning DCL inside EDT. USERSET - allow user to change his name, UIC, acct name, etc. (but not process JOB logical name table).
- [.PRAXIS] is in [VAX85B...] Tree
[.PRAXIS] By LLNL This tree contains full source and executable distribution of compilers for the PRAXIS language, native VMS, native RSX, and VMS cross to RSX. Also included are a number of tools including an automatic translator of PASCAL to PRAXIS. Praxis is a structured language somewhat similar to Pascal or Ada but with realtime, multitasking, and information

hiding primitives along Ada lines but more cleanly done and more comprehensive (and slightly lower level for the multitasking). The compiler is said to produce good VAX native mode code. This kit was released to the DECUS library also.

[.PRC]

By Jim Noble
BACKUP - commands for doing backups consistently. KERMIT - Fixes for VAX Kermit 3.0.052 (obsoleted by V3.1.066 in [.KERMIT] distribution). Documentation on terminal driver parity flags fields.

[.QUEST]

By Owen Anthony
The game QUEST, a dungeons-and-dragons type game.

[.RCA]

By Glenn Everhart, Rick Eesley, and Brian Griffin
BBASE - small DBMS for RSX or VMS CPMRSX - Utility to read/write CP/M disks on RX01 or RX02
DTC - souped up DTC from C. Garman. VERY nice now for all kinds of calendar maintenance and much more flexible. Superior in some ways to VPW version (inferior in others). General area has DDT, BGL2 super banner builder for printer, FIGEDT figure drawer, FGE.ARC figure editor archive plus LXyl1 postprocessor (both use ordinary VT100), misc. BASIC programs for PERT chart, critical path method, etc., extended LISTRs multicolumn printer utility. Figure editors are contributed by others in the area, not GCE. PortaCalc object libraries (if you don't have a usable Fortran). Portacalc for PDP11 or VAX, VAX version in [pccpdp] has DTR-32 interface. PortaCalc spreadsheet for VAX without DTR interface, but faster than last time's (and faster on VMS than most commercial spreadsheets). Some IBM PC and generic 8088 codes including PCVT, a VT100/VT102/VT52 emulator for IBM PC clones, small C, and a FORTH for MSDOS, and a Z80 Focal. A super squeeze/unsqueeze that works better than the SQ/USQ presented last time, using a more sophisticated algorithm, by Martin Minow and others. A mod of a TAR floppy read/write utility that gives access to TAR format RX01, RX02, and RX50 floppies. WINDOW, a VMS V4 window system that allows you to have up to 10 "glass TTY" windows simultaneously on an ordinary VT100 and control sizes, positions, which is "in front", etc. complete with full

sources. WINDOW is by Rick Eesley. YASS, a souped up continuous system status monitor. Yass is by Brian Griffin.

- [.SASLAM] By Sohail Aslam
A plotting program that works as a picture editor. A DCL preprocessor that allows one to write structured DCL.
- [.SCREEN] By Jeff Burch
EDT-LIKE screen editing from Fortran. Complete sources present; requires VT100. Can be used for FMS type applications also.
- [.SENDNET] By J. Dutertre
SENDNET - aid to keeping VAX network under control by simplifying software updates across a net. Does store/forward for propagating updates. For VMS V4.X.
- [.SKUNK] By Dennis Jensen
SETDEF for VMS V3 or V4; EDT able to spawn DCL.
- [.STREAMCVT] By Thomas Danforth
Convert stream-LF or Stream-CR files into normal implied carriage control files.
- [.SZEP] By Steven Szep
Homebrew account manager for managing user accounts in an academic environment.
- [.VEVLE] By Mark Vevle
RMDemo - dynamic user display
GRADE - class grading program, with screen graphics
SMAUG - CPU hog cutter-down. If n users, none gets over 1/n of the CPU without having his priority lowered.
- [.WATCHDOG] By George Walrod.
An idle terminal killer. Tested in VMS V3.X only.
- [.WATSON] By Allen Watson
COM - many command procedures used in DECUS talks
VAXDOC - word processing system using Runoff and EDT including spell checking, archiving, source control, automatic indexing etc.
TALKS - notes from several talks including
Adjusting work set parameters
Nifty Things with DCL
Comparison of 2 versions of EMACS

Intro to TECO
plus other items.

[.WENDY] By Wendy Koenig
VMS version 4 update of SD a set default
program.

[.WENTZ] By Eric Wentz
Interface between DCL and FMS to allow command
procedures to be menu driven.

[.XLISP] By David Betz
Experimental object oriented LISP. Full sources
of V1.4 are here.

SIZES: VAX000: 2 Directories, 23 Files, 10340 Blocks
VAX85A: 168 Directories, 3717 Files, 51557 Blocks
VAX85B: 128 Directories, 4824 Files, 63190 Blocks

FUTURE TAPES

Your submissions keep the Tapecopy Project a valuable
source of public domain software. Please keep the following in
mind when you are preparing them:

1. Help people find things of interest.
 - a. Provide an AAAREADME.TXT in the top level directory
with a very short description of the submission. A
few words should be sufficient - the AAAREADME.TXT
is only to let users know that there is something
in the submission in which they might be
interested. If you do not provide an AAAREADME.TXT
or if we consider yours too long we will insert one
and we probably will not describe your submission
as well as you can.
 - b. Come to the Tapecopy User's Forum and describe your
submission. People want to know what is coming out
on the next tape. Here is your chance to tell the
audience - and the buyers of the audio tape - about
your submission.
 - c. Include similar information on the Tapecopy Release
Form. If you do not show up at the Tapecopy User's
Forum the information on the release form is
usually all I can tell people about your submission
at that time.

2. Help people use your package.
 - a. Your audience ranges from novice to guru. Try to provide documentation with useful information for the entire range.
 - b. Include your address and/or phone number. Nobody expects you to provide extensive support for public domain software but it is nice to know that you care enough about your submission to make yourself available for questions. Also you might get some useful feedback from users.
3. What should you submit? Basically anything which you think others would find useful which you have
 - a. developed or
 - b. improved. If feasible consult with the original author - he may be working on similar changes, may offer help and almost certainly is interested in what you are doing. Give the original author credit for his part of the work.
4. How should you organize your submission?
 - a. Large submissions should be in a directory tree with an AAAREADME.TXT on the top level directory and documentation in appropriate sub-directories.
 - b. Sources. Users are frequently as interested in how you did something as they are in what you did. There are security issues also. Please include sources.
 - c. You may include a copyright notice but it must not restrict distribution of the material by Decus or Decus members.
5. What should you not submit?
 - a. Do not submit non-public domain software. You may submit patches to VMS or layered products but do not include the original or modified versions of the products.
 - b. Do not submit "Freeware". That is, do not ask for a contribution from users of the software. Do not submit packages with a "Time Bomb" in them. The VAX SIG tape is for public domain software.

- c. Do not feed back large amounts of material which is readily available from previous SIG tapes. We may have to trim material which appears superfluous to keep the tape size within reasonable bounds.

6. Turn in your tapecopy submission at the Library Booth in the Exhibit Hall at the next Decus Symposium on Monday or Tuesday. You may at the same time submit it to the Decus Library. Pick up your tape at the Library Booth on Thursday or Friday.

Your comments and suggestions are welcome.

Joe Bingham
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INPUT/OUTPUT

A SIG Information Interchange

A form for INPUT/OUTPUT submissions is available at the back of the issue.

INPUT/OUTPUT 469

Caption: UNIVAC 1100 Level 5 COBOL to VAX 11/750 COBOL

Message: We are looking for a COBOL translator. We have a package written in UNIVAC 1100 COBOL with DBS level 8 for schema and subschema (DMU record type), and would very much like to convert it to VAX format. We do not have DBMS on our system but we do have DTR. This package is very important to our company, please help us!!!!

Contact: Maria Pop
The Hamilton Street Railway Company
18 Wentworth Street North
Hamilton, Ontario
L8L 5V1
Canada
Telephone (416) 527-4441 ext. 225

Date: September 10, 1985

Pageswapper editor's comment

If you get no takers and decide to write your own translator, you might consider the SCAN language just released by DEC. It is designed for writing translators.

INPUT/OUTPUT 470

Caption: RT11 tape support on VAX -- Reply to I/O # 423

Message: I have routines that will read and write RT11 format tapes on a VAX. They work fine for ASCII files provided the filename is exactly six characters long. For binary data we write using non-file structured mode on RT11, and a special input routine on the VAX.

Contact: Dr. P. A. Elcombe
The Cavendish Laboratory (HEP group)
Madingley Road
Cambridge CB3 0HE
England
Telephone 0223-66 77

Date: September 12, 1985

INPUT/OUTPUT 471

Caption: Remote printing on a VAX network -- Reply to I/O # 428

Message: We have written some stuff to do this. We use a DCL command to get the file and node name with a subset of the PRINT command qualifiers allowed (/QUEUE, /FEED, etc.). The function is implemented as a command procedure spawned by an installed image which provides NETMBX privilege. This image also gives us privileged procedures with execute-only access to the world. We use it to run interactive EDT sessions at priority 5, and to ship DCL SHOW commands for execution on other nodes, amongst others.

Contact: Phillip Gaisford
Swiss Institute for Nuclear Research
CH-5234 Villigen
Switzerland
Telephone +41 99 36 17

Date: September 25, 1985

INPUT/OUTPUT 472

Caption: I/O redirection and STR\$MATCH

Message: 1. How can I input SYS\$QIO from a file instead of the keyboard to support automatic testing of FORTRAN programs?

2. VMS V4 RTL function STR\$MATCH does not seem to work with asterisk (*), although percentage sign is interpreted correctly. Is this a VMS bug? If not, could someone please provide an example of correct usage in a FORTRAN program. (I receive the Pageswapper with a considerable delay. I would appreciate it if any answers could be airmailed).

Contact: Ben Livson
Israel Aircraft Industries, Limited
Department 4526
Ben-Gurion International Airport
Israel 70100
Telephone (03) 9713111

Date: October 2, 1985

INPUT/OUTPUT 473

Caption: EDT on foreign terminals with TERMTABLE

Message: I would like to talk to anyone who has used TERMTABLE to set up foreign terminals so they can run screen mode EDIT/EDT. I am interested in knowing what foreign terminals can use the TERMTABLE to support the screen mode EDIT/EDT and which terminals can not.

Contact: Qingzhou Wang
Sakowitz Computer Laboratory
6535 Fannin, M/S B409
Houston, TX 77030
Telephone (713) 790-3285

Date: October 10, 1985

Pageswapper Editor's comment

I was under the impression that EDT does not use VMS foreign terminal support. Your best bet might be to hope that the TPU editor gets upgraded to do so, since if that were done you could use the EDT emulator in TPU.

INPUT/OUTPUT 474

Caption: DRV11-JP driver for MicroVAX

Message: I am interested in obtaining a device driver for the DRV11-JP module in a MicroVAX II running MicroVMS.

Contact: Jeffrey A. Mathews, D450B
The Goodyear Tire and Rubber Company
1144 East Market Street
Akron, OH 44316
Telephone (216) 796-6617

Date: October 11, 1985

INPUT/OUTPUT 475

Caption: Determining physical CPU on a homogeneous cluster

Message: At the Spring 1985 DECUS Symposium, I asked a Q/A panel how one could determine on which physical CPU of a homogeneous cluster he was executing. This is helpful for hardware error detection, mounting devices remotely, etc. Nodename is not the answer on our cluster because we may reshuffle software systems (nodes) on the cluster at any time. No really satisfactory answer was given at the Q/A session. Several people expressed the same interest to me, but I have since lost their cards. I have written a simple command procedure which accomplishes this very nicely by capturing the CI Port Number. If you would like a copy, let me know.

Contact: Robert Benner
Lukens Steel Company
ARC Building Section A700
Modena Road
Coatesville, PA 19320
Telephone (215) 383-3010

Date: October 14, 1985

INPUT/OUTPUT 476

Caption: VMS 4.2 Upgrade Problem

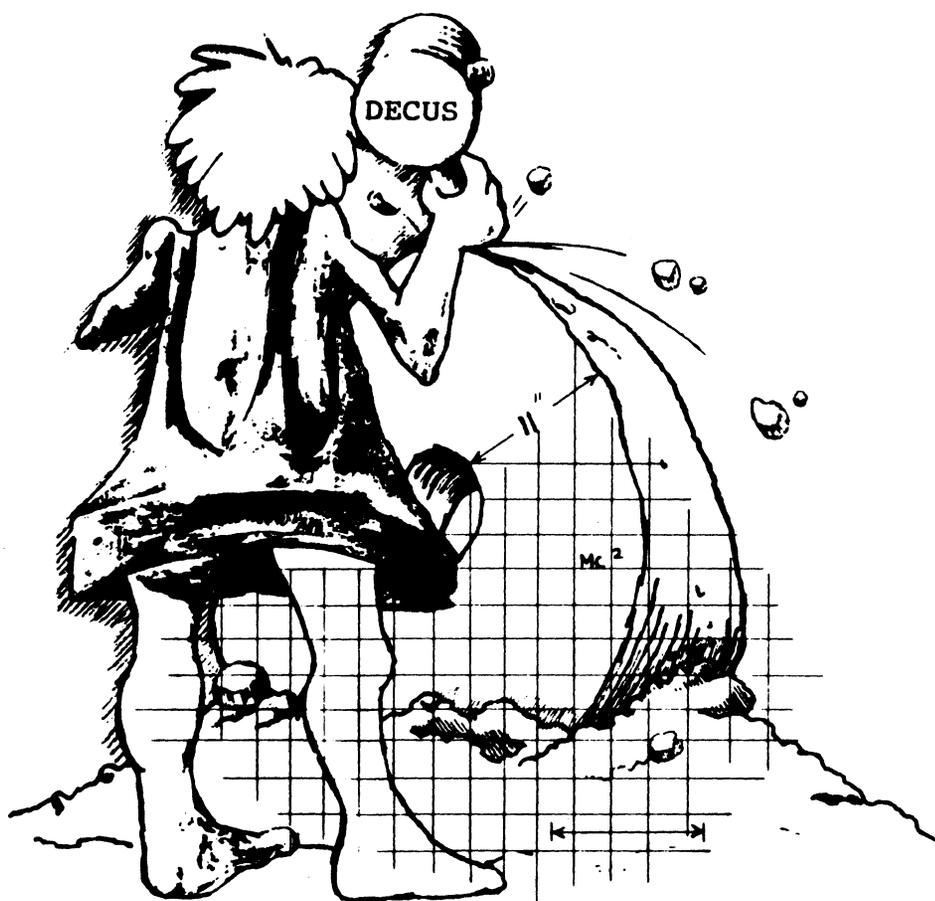
Message: We have an 11/750 with 2.75 Mb and an RA80. We are currently running VMS V4.1 and had no problems at all upgrading to 4.1. We have tried many times now to upgrade to V4.2, and every time the upgrade procedure hangs in Phase I at the point where it says: "Working on files in [SYS0.SYSLIB]. HELP!

Contact: Allied Corporation
Bendix Kansas City Division
Attention: Brad Gault, D/922, MC45
Post Office Box 1159
Kansas City, Missouri 64141
Telephone (816) 997-2037

Date: October 21, 1985



LIBRARY



**HINT AND NOTES
ON THE SYMPOSIUM TAPE FROM THE VAX SIG
SPRING 1985, NEW ORLEANS
DECUS PART NO V-SP-46**

Do you have questions on the many programs included on the New Orleans VAX SIG Tape ? Hopefully this will answer some of your questions.

Some of the material on this tape is specific to VMS version 3.x, and some of it is specific to VMS version 4.x. Tape should be readable by both versions.

***ED1** - Version of EDT which is able to spawn DCL, MAIL, or PHONE. Also implements file locking. ***MACSNVAX** - Utility for uploading, downloading and transferring Macintosh files via a Vax. All Macintosh files, including applications, formatted MacWrite files, MacPaint files, fonts, etc. can be successfully transferred. Tested with VMS V3.X only.

***FINGER** - This is a "show system" like program (tell you who's logged in, etc.) for VMS V4. It supports in-bound and out-bound DECnet, in-bound and out-bound jnet (BITnet) and out-bound TCP/IP.

***MTCOPY** - RSX Compatibility Mode magtape to magtape copy program. Completely format independent, with options to skip over EOF markers and ignore parity errors. Also works on RSX.

***VTI** - Program lists files on a VT100 family terminal, one screen at a time for easy viewing.

***QUEST** - A dungeons and dragons type of game.

***SENDNET** - Aid for keeping VAX network under control by simplifying software updates across the net. Does store/forward for propagating updates. For VMS V4.x. Main purpose is to have all Vaxes of a network up to date.

***GRADE** - A class grading program. Calculates class overall average as well as class average for each score. Has various types of printouts.

***WATCHDOG** - Monitors interactive processes and logs processes off that have been inactive for some time period.

***XLISP** - Object-oriented dialect of LISP, V1.4.

***KERMIT** - New VMS Kermit for VMS V3 or V4, which includes bug fixes for V4. Also includes the new RSX/RSTS/POS/RT11 Kermit.

***VPW** - V4.1 of the Vax Professional Workstation. Many changes were required from last release to make everything work on V4.x.

***PRAXIS** - The PRAXIS language was designed as a simpler more usable replacement for Ada before Ada was ever implemented but after the design had become known. Three compilers exist, a native PDP11 one, a PDP11 compiler on Vax, and a native Vax compiler.

***TVG** - Powerful utility program used to create neat, professional-looking view-graphs. A series of commands used to make a slide may be saved and re-used or modified.

***ZEUS** - Monitors utilization of CPU. It lowers cpu bound interactive processes to a priority lower than the interactive priority.

***SWAP** - Makes one user look like another. Handy for a priviledge user to do some work in another users account and then return to their own account.

***BONNER LAB RUNOFF** - Latest version of this text processor.

DECUS Program Library CHANGES:

- For DECUS Order Number: 8-701, STKMKT, the Catalog lists the media as a Writeup and Listing (DA). This is incorrect, it should list a Writeup (AA). All other media stays the same.
- For DECUS Order Number: 11-668, Poor Man's Pgrm, the Catalog lists the media as Floppy Diskette (KA), Format: FILES-11, 600' Magtape (MA), Format: DOS 11. This is incorrect, it should list both Floppy Diskette (KA) and 600' Magtape (MA) as Format: FILES 11.
- For DECUS Order Number: 11-669, On-Line Utility, the Catalog lists the media as Floppy Diskettes (KB), Format: FILES-11, 600' Magtape (MA), Format: DOS-11. This is incorrect, it should list both Floppy Diskette (KB) and 600' Magtape (MA) as Format: FILES 11.
- For DECUS Order Number: 11-691, PRM-11 PASCAL, the Catalog lists the media as Floppy Diskette (KA) Format: FILES-11, 600' Magtape (MA) Format: DOS-11. This is incorrect, it should list both Floppy Diskette (KA) and 600' Magtape (MA) as Format: FILES 11.
- For DECUS Order Number: 11-756, FORTRAN IV-PLUS, the Catalog lists the media as DEctape (HA), Floppy Diskette (KA), 600' Magtape (MA) Format: DOS-11. This is incorrect, it should list both Floppy Diskette (KA) and 600' Magtape (MA) as Format: FILES-11.

ORDER NUMBER: 20-128

TITLE: COPYMT

PROGRAM STATUS: NO LONGER AVAILABLE

DATE: AUGUST 1985

LIB-1

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PROFESSIONAL-300 SERIES OF COMPUTERS

DECUS ORDER NO:PRO-143 Title: RT on P/OS, Version: V2, August 1985

Author: Chester Wilson, Charleville, Australia, **Operating System:** RT-11 V5, **Source Language:** MACRO-11, **Other Software Required:** P/OS, **Special Hardware Required:** Professional-350.

Abstract: RT on P/OS allows a PRO-350 to run RT-11 from a contiguous file on a portion of the hard disc set up for P/OS. The "DC" handler is actually a modified "DW" handler, with an ability to allow the user to specify a "device" size and offset position within the hard disc. The distribution is provided as a bootable DZ (RX50) disc with an FB monitor. For details, see the manual DC.DOC on the distribution disc.

Documentation on magnetic media. Media (Service Charge Code): 5 1/4" Floppy Diskette (JA), **Format:** RT-11

DECUS ORDER NO:PRO-144 Title:Exam Score Record Package, Version:V1.0, June 1985

Author: Dan W. Schlitt, Lincoln, NE, **Operating System:** PRO/VENIX, **Source Language:** C, **Other Software Required:** The UNIX utilities AWK, sed, sort, and fgrep. PRO/VENIX graphics programs hist and pscreen are useful.

Abstract: The Exam Score Record Package is a suite of programs which can be used to create and maintain an exam score record file. Programs are included to generate grade distributions and summary reports. The programs are mostly Bourne shell scripts. The work of the programs is done by three C programs and by sed, fgrep, sort, and AWK. The exam score record file is in a form which can be used by AWK to generate custom reports. Programs are included that use PRO/VENIX graphics programs to display data.

Documentation on magnetic media. Media (Service Charge Code): 5 1/4" Floppy Diskette (JA), **Format:** TAR

NEW LIBRARY PROGRAMS AVAILABLE FOR CP/M

DECUS ORDER NO: CPM-263, Title:BIN:A Program to Send Escape Sequences to an Active Paper Bin, Version: June 1985

Author: Stephen Withers, University of Melbourne, **Operating System:** CP/M-86/80, **Source Language:** PASCAL/MT+, **Memory Required:** 64K, **Special Hardware Required:** LQP02 with LQPX2-SF

Abstract: BIN is a program that sends appropriate escape sequences to change the active paper bin on a LQP02 daisywheel printer fitted with an LQPX2-SF sheet

feeder. It will be of particular interest to users of word processing packages that do not support the sheet feeder (e.g. Select-86).

Documentation on magnetic media. Media (Service Charge Code): 5 1/4" Floppy Diskette (JA)

DECUS ORDER NO: CPM-264, Title:VOUGCAT:Disk Catalog Utilities, Version:October 1984

Author: Various, **Submitted By:** Dr. R. P. Learmonth, Melbourne University, Victoria, Australia, **Operating System:** CP/M-86/80, **Source Language:** ASSEMBLER, **Memory Required:** 64-128KB

Abstract: The following is a brief description of the programs to be found on this disk.

CATALOG	Contents of this volume. VOUGCAT.DOC Documentation and notes for the cataloging programs. NCAT.COM Multi-Disk cataloging program. Version 3.2. Creates a master catalog of files on all disks in a collection.
NCAT.DOC	Documentation for NCAT.COM XCAT.COM It makes a new cross-reference file which can be immediately printed, or put to file. This is version 3.6.
XCAT.DOC	Documentation for XCAT.COM.
D.COM	If placed on each disk, will tell you what has been added or deleted from the disk file directory since last "set".
D.DOC	Documentation for D.COM.
CAT.COM	Reads MAST.CAT. Allows searches for particular disks or filenames. Does a better job of formatting the output for screen display and printout. Together with FIND.COM (see below) covers nearly all search parameters.
FIND.COM	Can be used to search for any ASCII string. Most useful for rapidly determining which disks have spare file space.
FIND.DOC	Documentation for FIND.COM.
SD.CMD	Super Directory (SD-43) program that allows search for filenames on both disk drives automatically and creation of a filename directory on disk for later printing.
SD-43.DOC	Documentation notes on the use of SD.CMD (version 4.3)
MAST.CAT	The master catalog you make yourself -placing exclusions within brackets, then by having NCAT.COM add to it by reading your labeled disks.

Note: Developed for CP/M-80 computers - has been tested and runs on the Rainbow 100.

Complete sources not included. Documentation on magnetic media. Media (Service Charge Code): 5 1/4" Floppy Diskette (JA)

NEW LIBRARY PROGRAMS AVAILABLE FOR THE PDP-11 COMPUTER FAMILY

DECUS ORDER NO:11-803 Title:Kermit for IAS, Version: May 1985.

Author: Marek Ring, Paris, France, **Operating System:** IAS V3.1, **Source Language:** 1 FORTRAN IV, MACRO-11, **Memory Required:** 124K or greater.

Abstract: IAS Kermit was originally written in RATFIV. This version is based on the Unix Kermit written in C language by Columbia University, version 1983. It is designed to run under IAS version 3.1 (was compiled by FORTRAN 2.6). This Kermit package consists of 4 MACRO subroutines (MACRO-11) and a RATFIV set of subroutines and program. For people who don't have the RATFIV preprocessor on their IAS system, we have provided the corresponding FIN versions.

Contents of package:

KER.RAT - main Kermit and subroutines in RATFIV.
KER.FTN - corresponding FIN version.
COM.RAT - file called by the "include" statement in KER.RAT.
STRING.RAT - string operation subroutines in RATFIV.
STRING.FTN - corresponding FIN version.
ECRIT.MAC - write subroutine on TTn line.
LITN.MAC - timed read subroutine on TTn line.
CNNCT.MAC - connect to remote host routine.
LOOKLP.MAC - subroutine to parse files on disk.
HELP.DOC - help file used by Kermit.
AAAREADME.1ST - this file.
KERINS.CMD &
KERELD.CMD - command files to build IAS Kermit.

Documentation on magnetic media. Media (Service Charge Code): Floppy Diskette (KA), 600' Magtape (MA), Format: FILES-11

DECUS NO:11-805 Title:Six Video Games for RSTS/E, Version: March 1985.

Author: David Spencer, Independent Video Inc., Sacramento, CA, **Operating System:** RSTS/E V8.0, **Source Language:** BASIC-PLUS, BASIC-PLUS2, MACRO-11, **Memory Required:** Between 10K to 26K, **Special Hardware Required:** VT100 compatible terminal.

Abstract: Included in this package are:

BLKADE: As many as eight players, each sitting at their own terminal, may play this game. Each player builds a growing fence to enclose and trap the other players. If there aren't enough human players available, robot players can be asked to take their place.

INVADE: A version of the popular arcade invaders from space game.

PACKER: A version of the popular maze game, with some fun twists.

STRWRS: Battle Darth Vader and his Imperial fighters to get close enough to destroy the Death Star.

SUBS: Two players, each at their own terminal, battle to sink the other's submarine.

WIGGIT: Hunt Wiggits in a Martian maze. Beware that they might clone and cause double trouble.

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape (MA), Format: DOS-11

DECUS NO:11-806 Title: SYSCOM: RSTS to RSTS Communications Utility, Version:V1.5, March 1985.

Author: David Spencer, Independent Video Inc., Sacramento, CA, **Operating System:** RSTS/E V8.0, **Source Language:** MACRO-11, **Memory Required:** 11 KW, **Special Hardware Required:** VT100 compatible terminal.

Abstract: SYSCOM manages terminal lines connected between two RSTS computers. With SYSCOM, the user may either enter virtual terminal mode and become an interactive terminal on the remote system, or go in file transfer mode. In file transfer mode file attributes, creation date, protection code, run-time system name, and contiguity are all copied. In addition, SYSCOM will accept wildcard file specifications to allow transfer of multiple files with one command. Additional features include the ability to create a log of the virtual terminal session, force mode to type through files to the remote system, and indirect command support for unattended batch operation.

Documentation on magnetic media. Media (Service Charge Code): Floppy Diskette (KA) Format: RT-11, 600' Magtape (MA) Format: DOS-11

DECUS ORDER NO:11-807, Title:SCAN: A Directory Scan Utility, Version:V1, March 1985.

Author: David Spencer, Independent Video Inc., Sacramento, CA, **Operating System:** RSTS/E V8, **Source Language:** MACRO-11, **Memory Required:** 5KW, **Special Hardware Required:** VT100 compatible terminal.

Abstract: SCAN lets the user step through directories interactively. The options available include advancing to the next file, going back to the last file, jumping to the top of the directory, dropping to the bottom, printing the file to the terminal, spooling the file on the printer, making

a copy, renaming the file, deleting the file, chaining to the file, etc. Written entirely in MACRO-11, SCAN runs in only 5KW. It is highly efficient and respects all RSTS file protection mechanisms. Gone are the days of repeated DIRectories and PIPS!

Documentation on magnetic media. Media (Service Charge Code): Floppy Diskette(KA) Format: RT-11, 600' Magtape (MA) Format: DOS-11

DECUS ORDER NO:11-808, **Title:** Cross - Reference Utility, **Version:**July 1985.

Author: Ron Knoll, Bank of Canada, Ottawa, Ontario, Canada, **Operating System:** RSX-11 M-PLUS V2.1 C, **Source Language:** FORTRAN 77, **Memory Required:** Two tasks: IMXREF= 22016 Words, MTXREF= 17216 Words, **Other Software Required:** Sort Directory Utility (SRD) helpful, but not required.

Abstract: This cross-reference utility produces four cross reference reports for modules and include files, and tasks and modules. The information is useful when trying to determine the impact of a change to an include file or common module. The reports that are produced list:

- all include files used by each FORTRAN routine
- for each include file, all FORTRAN routines that use it
- all user written routines (common and task specific used within each task
- for each common routine, all tasks that use it

Restrictions: The Include File/Module X-ref utility ignores any routines not written in FORTRAN. However, the Module/Task X-ref utility should work for all languages.

Documentation on magnetic media. Media (Service Charge Code): Floppy Diskette(KB), 600' Magtape (MA), **Format:** FILES-11

NEW LIBRARY PROGRAMS AVAILABLE FOR THE VAX/VMS FAMILY OF COMPUTERS

DECUS NO: V-SP-44, Title: Symposium Tape from the OA SIG, Spring 1985, New Orleans, Version: Spring 1985.

Author: Various, **Operating System:** VAX/VMS V4.0, **Source Language:** VAX-11 DCL, VAX-11 PL/1, ALL-IN-1.

Abstract: The first OA SIG Symposium Swap Tape contains ALL-IN-1 software. It is hoped that future tapes will contain software from all the various office automation interests that make up the OA SIG. Contributors to the first OA SIG Symposium Swap Tape include:

GMF Robotics

ALL-IN-1 V1.4 to VAX/VMS 4.0 Mail transfer "Set Host" ALL-IN-1 application
ALL-IN-1 Shared Mailing List application
ALL-IN-1 Attached Printer application

GenRad Corporate MIS

"Print it there" ALL-IN-1 application
CMI Net Mail monitor for ALL-IN-1

DIGITAL

Local LA50 printer routine
Version 1 file cabinet utility

Ford Motor Company

Watchdog idle job killer

ARA Services

Access restriction procedures
IBM/XT/AT and ALL-IN-1 file transfer
Search, delete and refile of ALL-IN-1 documents
LA100 and LQP02 printer control routines
Version 1 file conversion routines

U.S. Air Force

"When read" mail message system
Escape, and sheet feeder procedures

No guarantees are made as to the completeness, usability or quality of the programs on the tape and the material has not been checked or reviewed.

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape(MS), **Format:** VMS/BACKUP (Blocked at 8192)

NEW LIBRARY PROGRAMS AVAILABLE FOR THE VAX/VMS FAMILY OF COMPUTERS

DECUS ORDER NUMBER: V-SP-46, **Title:** Symposium Tape from VAX SIG, Spring 1985, New Orleans, Version: Spring 1985

Author: Various, **Submitted By:** J. L. Bingham, Mantech Services Corporation, Alexandria, VA, **Operating System:** VAX/VMS V3 or V4, **Source Language:** VAX-11 BASIC, BLISS-32, C, DCL, VAX-11 FORTRAN, MACRO-32, PASCAL, TECO

Abstract: This package contains material submitted for the Tape Copy Project at the Spring 1985, New Orleans DECUS Symposium. The package consists of two tapes organized as follows: The first tape contains [VAX000] and [VAX85A]. The second tape contains [VAX85B]. [VAX000] contains general information about the tape and concatenated copies of all the AAAREADME.TXT files. [VAX000.INDEX] contains an index of this tape and a consolidated index of all of the VAX SIG Symposium tapes.

[.AMBY] Large collection of utilities.
[.ARIZONA] EDT able to spawn DCL; break key daemon for VMS V4; editor for FORTRAN character arrays in memory.
[.BATTELLE] Cleandisk, to remove old files of given types FAST;
[.CLEMENT] Latest Bonner Lab Runoff, large superset of DSR.
[.DFWLUG] MACROS supporting V4 SMG\$ calls from MACRO-32.
[.DWIM] Partial DO WHAT I MEAN for VMS V4. Keeps track of context of your commands and remembers files you're working on.
[.ERI] Command files for VMS usage.
[.EROS] BOUNCER, Idle terminal killer with variable time limit.
[.FINGER] This is Finger for VMS V4.
[.GRAY] Advanced User' LOGIN allowing DCL symbols to be defined within a single image and with easy mods. For VMS V4.
[.HUGHESSCG] PTYDRIVER - Pseudo terminal driver for VMS V4. UUCPMAIL - sample foreign mail protocol for Vaxmail.
[.KERMIT] New VMS Kermit for V3 or V4 fixing some bugs.
[.KMSKIT] Numerous systems management aids, graphics packages, TVG sources.
[.LILUG] Program to dump retrographics graphics to a laserprinter.
[.LJK] Pageswappers since Fall '84 Symposium.
[.MACPRINT] Converts MacIntosh printer output to VAX printer compatible form.
[.MILLER] VAXNET revised for V4 and a new version of VTL.
[.MORSE] Slides for some of the sessions given by the VAX/VMS developers at Spring DECUS in New Orleans.
[.NSWC] Better queue delete command; another SD command; LET as a replacement for ASSIGN and DEFINE.
[.NU] Fast login.com and tuning statistics gatherer.
[.OAKLEY] Files: quickly find files based on ownership and size, revised for VMS V4.
[.PANEL] Utility to make it easy to make menu systems under VMS using DCL and FMS.
[.POTTER] VMS V4 utilities.
[.PRAXIS] This tree contains full source and executable distribution of compilers for the PRAXIS language, native VMS, native RSX, and VMS cross to RSX.
[.PRC] BACKUP - commands for doing backups consistently. KERMIT - Fixes for VAX Kermit 3.0.052.
[.QUEST] The game QUEST, a dungeons-and-dragons type game.
[.RCA] BBASE, CPMRSX, DTC, BASIC programs for PERT chart. PortaCalc object libraries. PortaCalc for PDP-11 or VAX, VAX version in [pccpdp] has DTR-32 interface. Some IBM PC and generic 8088 codes including PCVT, a VT100/VT102/VT52 emulator for IBM PC clones, small C, and a FORTH for MS/DOS and Z80 Focal.
[.SASLAM] A plotting program that works as a picture editor.
[.SCREEN] EDT-LIKE screen editing from FORTRAN. Complete sources present; requires VT100.
[.SENDNET] SENDNET - aid to keeping VAX network under control by simplifying software updates across a net.
[.SKUNK] SETDEF for VMS V3 or V4; EDT able to spawn DCL.
[.STREAMCVT] Convert Stream-LF or Stream-CR files into normal implied carriage control files.
[.SZEP] Homebrew account manager for managing user accounts in an academic environment.
[.VEVLE] RMDEMO-dynamic user display GRADE-class grading program SMAUG-CPU hog cutter-down.
[.WATCHDOG] An idle terminal killer. Tested in VMS V3.X only.
[.WATSON] COM, VAXDOC, EDT
[.WENDY] VMS V4 update of SD a set default program.
[.WENTZ] Interface between DCL and FMS to allow command procedures to be menu driven.
[.XLISP] Experimental object oriented LISP. Full sources of V1.4 are here.

No guarantees are made as to the completeness, usability or quality of the programs on the tape and the material has not been checked or reviewed.

Note: Specific version of VMS may be required for some programs, but tape should be readable by VMS V3 or V4.

Restrictions: None known. Some programs will work only on VMS V3.X systems; others only on VMS V4.X systems. Most will work on either. Tape should load on either if it is loaded in a manner not to increase the directory depth.

Complete sources not included. Documentation on magnetic media. Media (Service Charge Code): 2400' Magtape (PB), Format VMS/BACKUP (Blocked at 8192)

DECUS NO:VAX-142, Title: Differential Equations Software Package, Version:August 1985.

Author: Mike Ely and Joellyn Shull, Hope College, Holland, MI, **Submitted By:** William K. Anderson, Hope College, Holland, MI, **Operating System:** VAX/VMS V4.1, **Source Language:** VAX-11 BASIC, DCL, **Memory Required:** 740,000 Bytes, **Special Hardware Required:** VT101 or VT220 terminal.

Abstract: The Differential Equations software package is a series of BASIC programs which aids the user in learning differential equations. This Differential Equations package is usable as a stand-alone package, but is better used with the accompanying textbook: "Ordinary Differential Equations with Numerical Techniques", by John L. Van Iwaarden, Harcourt, Brace and Jovanovich, Publishers, San Diego, CA(c) 1984. Specific features of the Differential Equations package include the ability to edit a BASIC program to solve the problem, execute the HELP library from within the package, and request graphs of the solution to be either displayed on the terminal screen or printed. Associated Documentation: Van Iwaarden, John L. "Ordinary Differential Equations with Numerical Techniques", Harcourt, Brace and Jovanovich, Publishers, San Diego 1984.

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape(MA), **Format:** VAX/BACKUP (Blocked at 8192)

DECUS ORDER NUMBER: VAX-145, Title: IDSS: Interactive Decision Support System, Version:V1.4.2, July 1985

Author: David I. Audet, Management & Planning Software Group, Ontario, Canada, **Operating System:** VAX/VMS V3.7, **Source Language:** VAX-11 FORTRAN, **Special Hardware Required:** VT100 Compatible Terminal

Abstract: IDSS is a spreadsheet based decision support system. An integrated data dictionary allows data to be referenced by name (rather than by position), allows separation of data from calculations, and makes a model self documenting. Features include: concurrent access to a model by several users, Report Writer - bilingual reporting capability, multi-level consolidation, pseudo English calculation language, device independent business graphics, restricted access based on passwords and security levels, automated sensitivity and risk analysis, fullscreen worksheet editor, complete on-line help, menu definition facility, and RMS and DIF file interface.

The size of the spreadsheet is restricted to a combined total of 75 rows and columns.

Restrictions: Restricted to small spreadsheet.

Sources not included. Documentation on magnetic media. Media (Service Charge Code): 600' Magtape (MA), **Format:** VMS/BACKUP (Blocked at 8192)

DECUS ORDER NUMBER: VAX-146, Title: WATCHDOG, Version:V2.0, May 1985

Author: George Walrod III, American Satellite Company, Rockville, MD, **Operating System:** VAX/VMS V3.7 to V4.X, **Source Language:** VAX-11 FORTRAN, MACRO-10

Abstract: WATCHDOG is a program which monitors interactive process for being inactive, a loss out process after a defined interval. An inactive process is indicated by no change in CPU time or buffered I/O count within defined interval. Messages will be sent to the inactive process at a defined interval until the maximum inactive time limit is reached. When the maximum inactive time limit is reached, a final message is sent to the user and a message is sent to the central notifying that a user is being stopped. Other options are ignoring a group of users. Many of the messages, and operation notifications are optional. Other options exist and are documented sources. Further release will have optional lostfile capabilities.

Restrictions: Spawn A subprocess, then suspend main process. When WATCHDOG tries to resume main process and delete Spawn, main process does not resume.

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape(MA) **Format:** VMS/BACKUP (Blocked at 8192)

DECUS ORDER NUMBER: VAX-147, Title: Cherry Tree Workstation Bookings System, Version:V1, May 1985

Author: Paul Clarke, Bedford College of Higher Education, Bedfordshire, UK, **Operating System:** VAX/VMS V4.1, **Source Language:** PASCAL, **Memory Required:** 30KB

Abstract: The Cherry Tree Bookings System is an interactive system for entering and maintaining workstation bookings. It can typically be used where a room contains specialist equipment which is booked out to groups on a demand basis. At Bedford College of Higher Education, a room of 16 VT131 VAX terminals is booked out to one or more groups at a time. However, the program can be used to book out other sorts of workstations, e.g. typewriters or lathes. The program is designed to cater primarily for class bookings, no special provision has been made for single users.

Where bookings are made frequently, there is a need to have fast access to up-to-date information. Using clerical methods, it is a difficult and painstaking task to ensure that information is kept up-to-date, that timetables are accurate and that double bookings are not made. We have found that maintaining timetable information is much easier using this system than performing a paper search. Double bookings are prevented, timetables and class/lecturer lists can easily be printed.

We have been able to provide a faster and more reliable service using the system, removing some of the hazards and labor involved. Although we do not offer any guarantees, we believe the system should run on any machine running VMS(4.1) or the MicroVMS equivalent. Lecturer and class codes maintained using library calls to EDT, must be maintained separately using EDT by users running VMS3.7 (unless the relevant PASCAL routine is modified).

Note: VMS V4.0 or higher needed as callable EDT is used.

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape (MA), **Format:** VMS/BACKUP (Blocked at 8192)

**NEW LIBRARY PROGRAMS AVAILABLE
FOR THE DECsystem-10
FAMILY OF COMPUTERS**

DECUS ORDER NO: 10-SP-9, Title: Symposium Tape from the TOPS-10 SIG, Spring 1985, New Orleans, Version: Spring 1985

Author: Various, **Submitted By:** Jack Stevens, The Gillette Company, Boston, MA, **Operating System:** TOPS-10, **Source Language:** MACRO-10, **Memory Required:** Various, **Other Software Required:** MODEM7/XMODEM software for communicating microcomputer, **Special Hardware Required:** Various, including dial-out modems, 6250 BPI tape drives

Abstract: The TOPS-10 Spring 1985, DECUS Symposium tape includes software contributed by users for tape copy at the New Orleans DECUS Symposium. It consists of submissions by the University of Washington (micro/mainframe file transfer) and the Canada Centre for Remote Sensing (modifications to Backup/Direct for 6250 BPI tape drives).

No guarantees are made as to the completeness, usability, or quality of the programs on the tape and the material has not been checked or reviewed.

Note: Modifications to DEC sources are included in the form of correction files.

Complete sources not included. Documentation on magnetic media. Media (Service Charge Code): 600' Magtape (MS)

**NEW LIBRARY PROGRAMS AVAILABLE
FOR THE DECSYSTEM-20
FAMILY OF COMPUTERS**

DECUS PROGRAM ORDER NUMBER: 20-183, Title: ANSIMT: A Utility to Transfer 7-Bit ASCII Files, Version: V1.02-2, July 1985

Author: Nelson Kanemoto, University of Hawaii, Honolulu, Hawaii, **Submitted By:** Jeffrey Blomberg, University of Hawaii, Honolulu, Hawaii, **Operating System:** TOPS-20 release 5.1, **Source Language:** PASCAL **Memory Required:** 24,000 Words, **Other Software Required:** Rutgers PASCAL version 14 Edit 331, with PASCAL COMMD jsys interface, (only required for recompilation). **Special Hardware Required:** 800 BPI, 1600 BPI or 6250 BPI Tape Drive

Abstract: ANSIMT is a TOPS-20 tape utility whose function is to easily transfer 7-bit ASCII files between disk storage and 9-track magnetic tape. ANSIMT supports fixed formatted tape files on 800/1600/6250 BPI ANSI standard labelled tapes and can also read from EBCDIC labelled tapes. Features include stripping trailing blanks while restoring from magtape, padding tabs while storing to tape, and producing directory listings of the tape. ANSIMT is intended for batch environment, but may also be used interactively.

Restrictions: Must compile using Rutgers Pascal (at least Version 14 Edit 331) because it uses CMD jsys; program cannot write to EBCDIC tape; PASSEG.EXE required in SYS:

Documentation on magnetic media. Media (Service Charge Code): 600' Magtape (MA)

REVISIONS TO LIBRARY PROGRAMS

DECUS NO: PRO-140, Title: CGS: Common Graphics System for the Professional - 300 Series, Version: V2, May 1985.

Submitted By: John F. Davis, **Operating System:** RT-11 V5.1, **Source Language:** FORTRAN IV, MACRO-11, **Memory Required:** Application dependent, **Other Software Required:** FORTRAN, MACRO, RUNOFF (to generate documentation)

Abstract: The Common Graphics System (CGS) is a library of FORTRAN callable subroutines that provide general purpose graphics primitives across a variety of main frame computers. RT CGS supports the same set of user-visible primitives on the PRO-300 series. The RT CGS library includes a metafile driver. Metafile format is fully documented. Other device drivers, including user-written drivers, can be linked but this capability has not yet been implemented. Examples of utilities to plot metafiles on the PRO screen and on a pen plotter are provided. Complete sources and documentation are provided for the RT CGS Library, but only sources are given for the main utility routines. Object modules are furnished so that the utility examples can be modified and relinked. **Restrictions:** 2-D primitives only. I/O via metafiles and translator utilities.

Documentation on magnetic media. Media (Service Charge Code): 5 1/4" Floppy Diskette (JB), Format: RT-11

DECUS NO: 11-495, Title: TTLIB: VT100 Library Routines, Version: V5, August 1985.

Author: Chester Wilson, Charleville, Australia **Operating System:** RT-11 V5, **Source Language:** MACRO-11.

Abstract: TTLIB is a library of routines for controlling a VT100 terminal using ANSI escape sequences. Routines are available for almost all the functions provided on a VT100. TTLIB provides an easy user interface to these functions from programs written in MACRO-11, FORTRAN or DECUS C. The C section of the library has been rewritten in C itself, and provides for output either to the terminal or to a file. As TTLIB is a library, only the functions which are actually required by a program are linked into that program, providing a considerable saving in memory over packages which contain all the routines in one module. **Changes and Improvements:** "C" language support, with all relevant routines written in C. Generally tidied up.

Documentation on magnetic media. Media (Service Charge Code): Floppy Diskette (KA), 600' Magtape (MA), Format: RT-11

HOW TO SUBMIT TO A SPECIFIC SECTION OF THE NEWSLETTER

The following is a listing of the Newsletter Editors with their addresses and phone numbers. All submissions to the newsletter should be submitted directly to the appropriate Editor.

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SUBMITTING ARTICLES TO THE HMS SIG NEWSLETTER

The purpose of the HMS SIG Newsletter is to serve as a forum to share information related to DEC hardware with the members of the SIG. As such, the existence of the newsletter is entirely dependent on your contributions. If you have an HHK item, a better or safer way to do something, product news, a tutorial article of general interest, etc., we are interested in publishing it in the newsletter. It is intended that the HMS SIG Newsletter be published at least four times a year.

There are several ways to submit material for the newsletter:

- o The Hardware Submission Form in the back of the newsletter can be used for brief items (there is not enough room if you have a lot to say).
- o You can send me camera-ready hard-copy (this saves me a lot of typing).
- o I will accept submissions on floppys. I can handle RX50's or 8" diskettes (either density, single or double sided). I prefer RT-11 format, if possible, but I can probably handle RSX or VMS stuff somehow. I will return your diskette(s), of course.
- o Those of you that have access to DCS can send things to username WALKER. I check DCS daily.
- o I am also on CompuServe as "Bill Walker 71066,24".

In any event, if you have anything to submit, send it! If it is a mess, but I can read it, I will get it in the newsletter somehow. Finally, if you have any question about submitting material, call me. My telephone number is listed below.

Contributions can be sent to:

HMS Editor		William K. Walker
DECUS	OR	Monsanto Research Corp.
BPO2	==	P.O. Box 32 A-152
249 Northboro Road		Miamisburg, OH 45342
Marlboro, MA 01752		(513) 865-3557

If you need to get something to me quickly, send it to my work address.



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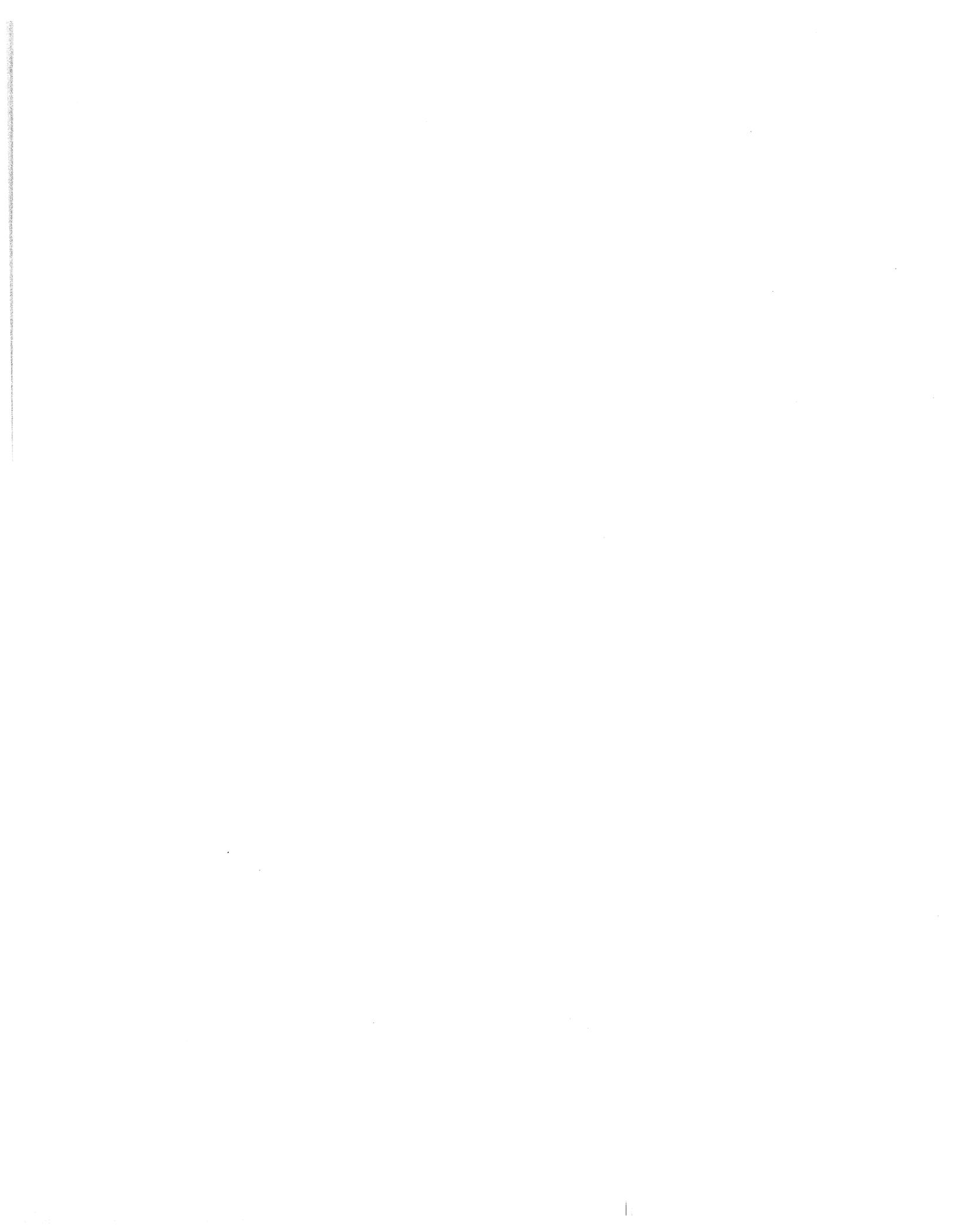
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- 21 ACCOUNTANCY
- 7 BANK
- 64 BUSINESS/COMMERCIAL
- 74 BUSINESS/INFORMATION SYSTEMS
- 57 CHEMISTRY
- 54 CLINICAL LABORATORY
- 63 COMPUTATION
- 11 CONSUMER ELECTRONICS
- 18 CONSULTANT
- 72 DATA ACQUISITION
- 52 DATA COMMUNICATIONS
- 13 DATA PROCESSING SERVICES
- 71 DATA REDUCTION
- 17 DIGITAL EMPLOYEE-ENGINEERING
- 15 DIGITAL EMPLOYEE-MARKETING
- 16 DIGITAL EMPLOYEE-SERVICE GROUP
- 60 EDUCATIONAL ADMINISTRATION
- 1 EDUCATION/PRIMARY
- 2 EDUCATION/SECONDARY
- 61 EDUCATION-TECHNOLOGY
- 3 EDUCATION/UNIVERSITY
- 67 ENGINEERING
- 65 FINANCE/ACCOUNTING
- 77 GOVERNMENT
- 75 GRAPHICS
- 4 HOSPITAL
- 62 INDUSTRIAL
- 55 LABORATORY/SCIENTIFIC
- 14 LIBRARY
- 58 LIFE SCIENCES
- 70 MANUFACTURING
- 79 MARKETING
- 59 MEDICAL RESEARCH
- 6 MILITARY INSTALLATION
- 73 NUMERICAL CONTROL
- 68 OEM-COMMERCIAL
- 78 OEM-TECHNICAL
- 56 PHYSICAL SCIENCES
- 20 RESEARCH/DEVELOPMENT
- 10 RETAIL
- 76 SOFTWARE DEVELOPMENT
- 53 TELECOMMUNICATIONS
- 19 TELEPHONE/UTILITIES
- 51 TIMESHARING
- 80 TRAINING/INSTRUCTION
- 66 TYPESETTING/PUBLICATION

SPECIAL INTEREST GROUP (SIGs) ENROLLMENT

I wish to participate in the following DECUS U.S. Chapter Special Interest Groups.

- 33 APL SIG
- 2 COMMERCIAL LANGUAGES
- 6 DATA MGMT.SYS.
- 5 DATATRIEVE
- 7 BUSINESS APPL
- 8 EDUSIG
- 10 GRAPHICS APPL
- 11 HARDWARE AND MICRO
- 35 IAS
- 31 DAARC(LABS)
- 27 LARGE SYSTEMS
- 16 LANG. AND TOOLS
- 14 MUMPS
- 15 NETWORKS
- 34 OFFICE AUTOMATION
- 36 PERSONAL COMPUTER
- 18 RSTS/E
- 17 RSX
- 19 RT-11
- 32 SITE MGMT.& TRNG
- 21 UNISIG
- 26 VAX SYSTEMS

JOB TITLE/POSITION - Please check:

- 1 CORPORATE STAFF
- 2 DIVISION OR DEPARTMENT STAFF
- 3 SYSTEMS ANALYSIS
- 4 APPLICATIONS PROGRAMMING
- 5 SYSTEMS ANALYSIS/PROGRAMMING
- 6 OPERATING SYSTEM PROGRAMMING
- 7 DATABASE ADMINISTRATION
- 8 DATA COMMUNICATIONS/TELECOMMUNICATIONS
- 9 COMPUTER OPERATIONS
- 10 PRODUCTION CONTROL
- 101 CORPORATE DIRECTOR OF DP/MIS
- 102 ADMINISTRATIVE ASSISTANT
- 103 TECHNICAL ASSISTANT
- 104 SERVICES COORDINATOR
- 105 MANAGER
- 106 ANALYST
- 107 PROGRAMMER
- 108 DATABASE MANAGER
- 109 DATABASE ADMINISTRATOR
- 110 MANAGER OF DP OPERATIONS

CITIZEN OF UNITED STATES OF AMERICA? Yes No Country: _____

Signature: _____ Date: _____

Forward To:

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PHONE: (617) 480-3418

OFFICE AUTOMATION SIG
SYSTEM IMPROVEMENT REQUEST SUBMISSION FORM

Name _____ Address _____
Firm _____
Telephone _____

INSTRUCTIONS: System Improvement Requests (SIR) can be either hardware or software; please check the category addressed by this SIR. Under ABSTRACT, give a brief definition of the capability you would like. In the DESCRIPTION section, give a detailed description and examples of what you want. Be specific; don't assume that we know how other products function. Justify the usefulness of the capability and give an example of its use.

HARDWARE IMPROVEMENT

SOFTWARE IMPROVEMENT

DECmate _____	ALL-IN-1 _____	WPS _____
PRO-Series _____	CP/M (DECmate) _____	P/OS _____
Rainbow _____	CP/M (Rainbow) _____	MS-DOS _____
Other _____	Other _____	

ABSTRACT _____

DESCRIPTION _____

**E. Catherine Ditamore
ARA Services
Corp MIS
Independence Square West
Philadelphia, Pa. 19106**

**E. Catherine Ditamore
ARA Services
Corp MIS
Independence Square West
Philadelphia, Pa. 19106**

INPUT/OUTPUT Submission Form

A SIG Information Interchange

Please reprint in the next issue of the Pageswapper

If this is a reply to a previous I/O, which number? _____

Caption: _____

Message: _____

Contact:

Name _____

Address _____

Telephone _____

Signature _____ Date _____

Mail this form to: Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station, Cambridge, MA 02139-0901, USA

PAGESWAPPER - December 1985 - Volume 7 Number 5
INPUT/OUTPUT Submission Form

Tear out to submit an I/O item

Larry Kilgallen, PAGESWAPPER Editor
Box 81, MIT Station
Cambridge, MA 02139-0901
USA

System Improvement Request Submission Form

Page 1 of _____

Submittor: _____ Firm: _____
Address: _____ Phone: _____

How to write an SIR:

Describe the capability you would like to see available on VAX systems. Be as specific as possible. Please don't assume we know how it's done on the XYZ system. Justify why the capability would be useful and give an example of its use. If you wish, suggest a possible implementation of your request.

Abstract (Please limit to four lines):

Description and examples (use additional pages if required)

PAGESWAPPER - December 1985 - Volume 7 Number 5
System Improvement Request Submission Form

Tear out to submit an SIR

Gary L. Grebus
Battelle Columbus Laboratories
Room 11-6011
505 King Avenue
Columbus, Ohio 43201-2693
USA

PRO 300 SERIES WISH LIST BALLOT

Use this ballot to show which items on the Wish List are most important to you. Put the number of the most important item on the list in space 1, the next most in space 2, etc.

1	11	21	31	41	51	61
2	12	22	32	42	52	62
3	13	23	33	43	53	63
4	14	24	34	44	54	64
5	15	25	35	45	55	
6	16	26	36	46	56	
7	17	27	37	47	57	
8	18	28	38	48	58	
9	19	29	39	49	59	
10	20	30	40	50	60	

Please add the following to the wish list:

Comments:

RETURN BALLOTS TO:

Thomas R. Hintz
University of Florida
IFAS Computer Network
Building 810
Gainesville, FL 32611

(fold here)

stamp

Thomas R. Hintz
University of Florida
IFAS Computer Network
Building 810
Gainesville, FL 32611

(fold here)

DECUS PERSONAL COMPUTER SIG QUESTIONNAIRE

General:

I would like information on _____
I would like to see an article _____
in the newsletter on _____
I would like to see a symposium _____
session on _____

I am willing to write an article(s) on: _____
I am willing to be contacted by PC SIG members by telephone to give
assistance/advice on: _____
Phone number to call: Area Code () # _____ Times _____

I attend DECUS Symposiums: _____ always _____ sometimes _____ never
I expect to attend these symposiums _____ Fall 85 _____ Spring 86 _____ Fall 86

I use/own: _____ Rainbow(s) _____ PRO(s) _____ DECmate(s) _____ Robin _____ Other _____
I use the machine(s) checked above: _____ at work _____ at home _____ both
If at work, total number of DEC PC's at your site: _____
I also use: _____ VAX _____ IBM or other mainframe _____ IBM/other PC
Type of use: _____ business _____ educational _____ government _____ other _____
Primary Operating System: _____ MS-DOS _____ CP/M _____ both equally
_____ P/OS _____ UNIX _____ other _____

I belong to a local DEC PC User Group: _____ yes _____ no
There is a user group in my geographic area: _____ yes _____ no
I would like information on starting a user group: _____ yes
I use a modem: _____ often _____ reluctantly _____ never
_____ for work _____ for pleasure _____ both

Here is information on the DEC PC User Group I belong to or know of:

Name of Group _____
Name of Contact Person _____
Address _____
Telephone () _____
Supports _____ Rainbow _____ PRO _____ Decmate _____ Robin _____ LUG _____ Gold Key

Here is a DEC oriented bulletin board not on your list, or new information on a listed board:

Name of Board _____
Full name of Sysop _____
Address if known _____
City and State _____
Telephone Number _____
Other Info: _____
Supports _____ Rainbow _____ PRO _____ Decmate _____ Robin

The subjects of greatest interest to me are:

_____ word processing _____ project management
_____ spreadsheets _____ specialized vertical software
_____ database _____ (type) _____
_____ graphics _____ Other: _____
_____ communications _____ Rainbow _____
_____ programming _____ PRO _____
_____ software reviews _____ DECmate _____
_____ technical articles _____ Robin _____
_____ DEC Gossip and News _____ Other: _____

If I had it to do over again, I:
_____ would buy another DEC Rainbow/PRO/DECmate (circle one)
_____ might buy another Rainbow/PRO/DECmate if it was a bargain (circle one)
_____ would not buy another Rainbow/PRO/DECmate (circle one)

Will you continue to subscribe at the new price of \$35/year? _____ yes _____ no
Feel free to enclose another page(s) with comments!
Do you feel that leaving the prices out of the newsletter:

is appropriate
 is very annoying
 makes the articles less useful

Do you feel that Decus should revise its (anti)commercialism policy?
 yes
 no

Name _____
Company _____
Address _____
City/ST/ZIP _____
Work Phone () _____
Home Phone () _____

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9007 Mears Street
Fairfax, VA 20031

fold here, flap under-----

stamp

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Fairfax, VA 22031

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DATAGRAM

DATAGRAMs are short messages, comments, requests, or answers that are published in NETwords. Please fill in the sections below and send the DATAGRAM to:

**Vickie Hancock
NETWords Editor
2510 Limestone Ln.
Garland, Tx. 75040**

Title: _____

Message: _____

Your Name: _____

Address: _____

Telephone: _____

If this is a reply to a previous DATAGRAM, what #? _____

Signature: _____ **Date:** _____

**Place
Stamp
Here**

**Vickie Hancock
NETWords Editor
2510 Limestone Ln.
Garland, Tx. 75040**

Fold Here

Request for Information

The T_EX Users Group maintains a database and publishes a membership list containing information about the equipment on which members' organizations plan to or have installed T_EX, and about the applications for which T_EX would be used. This list is updated periodically and distributed to members with TUGboat, to permit them to identify others with similar interests. Thus, it is important that the information be complete and up-to-date.

Please answer the questions below, in particular those regarding the status of T_EX and the hardware on which it runs or is being installed. (Operating system information is particularly important in the case of IBM mainframes and VAX.) This hardware information is used to group members in the listings by computer and output device.

If accurate information has already been provided by another TUG member, you may indicate that member's name, and the information will be repeated.

If your current listing is correct, you need not answer these questions again. Your cooperation is appreciated.

- *Send completed form with remittance* (checks, money orders, UNESCO coupons) to:
T_EX Users Group
P. O. Box 594
Providence, Rhode Island 02901, U.S.A.
- *For foreign bank transfers*
direct payment to the T_EX Users Group,
account #002-031375, at:
Rhode Island Hospital Trust National Bank
One Hospital Trust Plaza
Providence, Rhode Island 02903-2449, U.S.A.
- *General correspondence*
about TUG should be addressed to:
T_EX Users Group
P. O. Box 9506
Providence, Rhode Island 02940-9506, U.S.A.

Name: _____
Home _____
Bus. Address: _____

QTY	ITEM	AMOUNT
	1986 TUGboat Subscription/TUG Membership (Jan.-Dec.) - North America New (first-time): [] \$25.00 each Renewal: [] \$35.00; [] \$25.00 - reduced rate if renewed before January 31, 1986	
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TOTAL ENCLOSED: _____
(Prepayment in U.S. dollars required)

* * * *

Membership List Information

Institution (if not part of address):

Title:

Phone:

Network address: [] Arpanet [] BITnet
[] CSnet [] uucp

Specific applications or reason for interest in T_EX:

My installation can offer the following software or technical support to TUG:

Please list high-level T_EX users at your site who would not mind being contacted for information; give name, address, and telephone.

Date:

Status of T_EX: [] Under consideration
[] Being installed
[] Up and running since
Approximate number of users:
Version of T_EX: [] SAIL
Pascal: [] T_EX82 [] T_EX80
[] Other (describe)

From whom obtained:

Hardware on which T_EX is to be used:
Computer(s) Operating Output
 system(s) device(s)

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