


```

SSSSSSSS TTTTTTTTT RRRRRRRR PPPPPPPP 000000 SSSSSSSS EEEEEEEEEE XX XX TTTTTTTTTT
SSSSSSSS TTTTTTTTT RRRRRRRR PPPPPPPP 000000 SSSSSSSS EEEEEEEEEE XX XX TTTTTTTTTT
SS      TT      RR      RR PP      PP 00      00 SS      EE      XX      XX TTTT
SS      TT      RR      RR PP      PP 00      00 SS      EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SS      EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SS      EE      XX      XX TT
SSSSSS   TT      RRRRRRRR PPPPPPPP 00      00 SSSSSS  EE      XX      XX TT
SSSSSS   TT      RRRRRRRR PPPPPPPP 00      00 SSSSSS  EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SSSSSS  EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SSSSSS  EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SSSSSS  EE      XX      XX TT
SS      TT      RR      RR PP      PP 00      00 SSSSSS  EE      XX      XX TT
SSSSSSSS TT      RR      RR PP      PP 000000 SSSSSSSS EEEEEEEEEE XX      XX TT
SSSSSSSS TT      RR      RR PP      PP 000000 SSSSSSSS EEEEEEEEEE XX      XX TT

```

```

LL      IIIIII SSSSSSSS
LL      IIIIII SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      IIIIII SSSSSS
LL      IIIIII SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      IIIIII SSSSSSSS
LLLLLLLLLL IIIIII SSSSSSSS
LLLLLLLLLL IIIIII SSSSSSSS

```

```

....
....
....
....

```

```

1 0001 0 MODULE STR$POS_EXTR (           ! Extract a substring by position
2 0002 0
3 0003 0             IDENT = '1-012' ! File: STRPOSEXT.B32  Edit:  RKR1012
4 0004 0
5 0005 0             ) =
6 0006 1 BEGIN
7 0007 1
8 0008 1 *****
9 0009 1 *
10 0010 1 *  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
11 0011 1 *  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
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26 0026 1 *  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
27 0027 1 *
28 0028 1 *
29 0029 1 *****
30 0030 1
31 0031 1
32 0032 1 **
33 0033 1 FACILITY: String support library
34 0034 1
35 0035 1 ABSTRACT:
36 0036 1
37 0037 1 This module extracts a substring according to the BASIC-PLUS-2
38 0038 1 syntax. It finds the substring of a main string starting at the
39 0039 1 character position specified by the second input parameter and
40 0040 1 continues for the number of characters specified by the third
41 0041 1 input parameter. This substring is copied to the destination
42 0042 1 string.
43 0043 1
44 0044 1 ENVIRONMENT: User mode, AST level or not or mixed
45 0045 1
46 0046 1 AUTHOR: R. Will, CREATION DATE: 21-Feb-79
47 0047 1
48 0048 1 MODIFIED BY:
49 0049 1
50 0050 1 R. Will, 28-Feb-79: VERSION 01
51 0051 1 1-001 - Original
52 0052 1 1-002 - Change linkage and call to COPY routine. 15-Mar-79 RW
53 0053 1 1-003 - Make the string linkages start with STR$. JBS 04-JUN-1979
54 0054 1 1-004 - Change call to STR$$COPY. JBS 16-JUL-1979
55 0055 1 1-005 - Change name to STR$, string cleanup. RW 1-Nov-79
56 0056 1 1-006 - Correct psect name. JBS 02-NOV-1979
57 0057 1 1-007 - Change to new interlock macros. JBS 06-NOV-1979

```

STR\$POS_EXTR
1-012

F 1
16-Sep-1984 01:44:44 VAX-11 Bliss-32 V4.0-742
14-Sep-1984 12:40:12 [LIBRTL.SRC]STRPOSEXT.B32;1

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```

: 58      0058 1 | 1-008 - Use string interlocks in CALL entry. RW 15-Nov-79
: 59      0059 1 | 1-009 - String speedup, remove edit 8. RW 8-Jan-1980
: 60      0060 1 | 1-010 - Enhance routine to recognize additional classes of descriptors
: 61      0061 1 |           by using $STR$GET_LEN_ADDR to extract length and address
: 62      0062 1 |           of 1st byte of source descriptor. Remove string interlocking
: 63      0063 1 |           code. RKR 21-APR-81.
: 64      0064 1 | 1-011 - Speed up code. RKR 7-OCT-1981.
: 65      0065 1 | 1-012 - Use STR$COPY R RB for copying operation. Use
: 66      0066 1 |           $STR$SIGNAL FATAL instead of $STR$CHECK_STATUS.
: 67      0067 1 |           RKR 18-NOV-1981.
: 68      0068 1 | --
: 69      0069 1 |
: 70      0070 1 | !<BLF/PAGE>
```

ST
1-

STRSPOS_EXTR
1-012

H 1
16-Sep-1984 01:44:44
14-Sep-1984 12:40:12

VAX-11 Bliss-32 V4.0-742
[LIBRTL.SRC]STRPOSEXT.B32;1

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(2)

:	129	1321	1	EXTERNAL LITERAL	
:	130	1322	1	STRS_NORMAL	: successful completion
:	131	1323	1	STRS-ILLSTRSPE;	: illegal string specification
:	132	1324	1	STRS-ILLSTRPOS;	: illegal string position

```

134 1325 1 GLOBAL ROUTINE STR$POS_EXTR (           ! substring by position
135 1326 1
136 1327 1     DEST_DESC,           ! Pointer to destination descriptor
137 1328 1     SRC_DESC,           ! Pointer to source descriptor
138 1329 1     START_POS,       ! First character to be included
139 1330 1     END_POS,         ! Last character position to include
140 1331 1
141 1332 1           ) =
142 1333 1
143 1334 1 ++
144 1335 1 FUNCTIONAL DESCRIPTION:
145 1336 1
146 1337 1     This routine extracts the characters starting at the
147 1338 1     character position in the source string specified by the 3rd
148 1339 1     input parameter and continuing to the character position in the
149 1340 1     source string specified by the 4th input parameter, and copies
150 1341 1     that substring to the destination string (by JSB to
151 1342 1     STR$COPY_R_R8) according to the syntax of the class of the
152 1343 1     destination string.
153 1344 1     If the starting position is < 1, 1 is used.  If the ending
154 1345 1     position is > length of the source string, the length of the
155 1346 1     source string is used.  If the starting position > the ending
156 1347 1     position, a null string is returned.  The call entry point is
157 1348 1     implemented by JSBing to the JSB entry point.
158 1349 1
159 1350 1 FORMAL PARAMETERS:
160 1351 1
161 1352 1     DEST_DESC.wt.dx     pointer to destination string descriptor
162 1353 1     SRC_DESC.rt.dx      pointer to source string descriptor
163 1354 1     START_POS.rl.r      character position in src to start
164 1355 1                       substring
165 1356 1     END_POS.rl.r        character position in src to end
166 1357 1                       substring
167 1358 1
168 1359 1 IMPLICIT INPUTS:
169 1360 1
170 1361 1     NONE
171 1362 1
172 1363 1 IMPLICIT OUTPUTS:
173 1364 1
174 1365 1     NONE
175 1366 1
176 1367 1 COMPLETION CODES:
177 1368 1
178 1369 1     $$$ NORMAL         Success
179 1370 1     STR$_ILLSTRPOS     Character position reference outside of string
180 1371 1     STR$_ILLSTRSPE     End pos < start pos, or length too long
181 1372 1     STR$_NEGSTRLEN     Negative length supplied, 0 used
182 1373 1     STR$_TRU           Truncation occurred in copying to destination
183 1374 1                       (Warning)
184 1375 1
185 1376 1 SIDE EFFECTS:
186 1377 1
187 1378 1     May signal:
188 1379 1     STR$_FATINTERR     Fatal internal error
189 1380 1     STR$_ILLSTRCLA     Illegal (or unsupported) string class
190 1381 1     STR$_INSVIRMEM     Insufficient virtual memory for

```

STR\$POS_EXTR
1-012

J 1
16-Sep-1984 01:44:44
14-Sep-1984 12:40:12

VAX-11 Bliss-32 V4.0-742
[LIBRTL.SRC]STRPOSEXT.B32;1

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```

: 191      1382  1  |
: 192      1383  1  |
: 193      1384  1  |
: 194      1385  1  |
: 195      1386  2  |
: 196      1387  2  |
: 197      1388  2  |
: 198      1389  2  |
: 199      1390  2  |
: 200      1391  2  |
: 201      1392  2  |
: 202      1393  2  |
: 203      1394  2  |
: 204      1395  2  |
: 205      1396  1  |

```

reallocation of dynamic string

```

BEGIN
MAP
  SRC_DESC : REF $STR$DESCRIPTOR,
  DEST_DESC : REF $STR$DESCRIPTOR;
RETURN STR$POS_EXTR_R8 ( DEST_DESC [0,0,0,0],
                        SRC_DESC [0,0,0,0],
                        ..START_POS,
                        ..END_POS);
END;

```

!End of STR\$POS_EXTR

.TITLE STR\$POS_EXTR
.IDENT \1-012\

.EXTRN STR\$COPY_R_R8, LIB\$STOP
.EXTRN STR\$_NORMAL, STR\$_ILLSTRSPE
.EXTRN STR\$_ILLSTRPOS

.PSECT _STR\$CODE, NOWRT, SHR, PIC, 2

```

.ENTRY STR$POS_EXTR, Save R2,R3,R4,R5,R6,R7,R8
MOVL @END_POS, R3
MOVL @START_POS, R2
MOVQ DEST_DESC, R0
BSBW STR$POS_EXTR_R8
RET

```

: 1325
: 1393
: 1396

```

          01FC 0000
53      10  BC  D0 00002
52      0C  BC  D0 00006
50      04  AC  7D 0000A
          0000V 30 0000E
          04 00011

```

: Routine Size: 18 bytes, Routine Base: _STR\$CODE + 0000


```

207 1397 1 GLOBAL ROUTINE STR$POS_EXTR_R8 (      ! extract substring by position
208 1398 1
209 1399 1     DEST_DESC,      ! Pointer to destination descriptor
210 1400 1     SRC_DESC,      ! Pointer to source descriptor
211 1401 1     START_POS,    ! First character to be included
212 1402 1     END_POS,      ! Last character position to include
213 1403 1
214 1404 1     ) : STR$JSB_POS_EXT =
215 1405 1
216 1406 1
217 1407 1     **
218 1408 1     FUNCTIONAL DESCRIPTION:
219 1409 1
220 1410 1     This routine extracts the characters starting at the
221 1411 1     character position in the source string specified by the 3rd
222 1412 1     input parameter and continuing to the character position in the
223 1413 1     source string specified by the 4th input parameter, and copies
224 1414 1     that substring to the destination string (by JSB to
225 1415 1     STR$COPY_R_R8) according to the syntax of the class of the
226 1416 1     destination string.
227 1417 1     If the starting position is < 1, 1 is used.  If the ending
228 1418 1     position is > length of the source string, the length of the
229 1419 1     source string is used.  If the starting position > the ending
230 1420 1     position, a null string is returned.
231 1421 1     FORMAL PARAMETERS:
232 1422 1
233 1423 1     DEST_DESC.wt.dx    pointer to destination string descriptor
234 1424 1     SRC_DESC.rt.dx     pointer to source string descriptor
235 1425 1     START_POS.rl.v     character position in src to start
236 1426 1                   substring
237 1427 1     END_POS.rl.v       character position in src to end
238 1428 1                   substring
239 1429 1
240 1430 1     IMPLICIT INPUTS:
241 1431 1
242 1432 1     NONE
243 1433 1
244 1434 1     IMPLICIT OUTPUTS:
245 1435 1
246 1436 1     NONE
247 1437 1
248 1438 1     COMPLETION CODES:
249 1439 1
250 1440 1     SSS_NORMAL        Success
251 1441 1     STR$_ILLSTRPOS    Character position reference outside of string
252 1442 1     STR$_ILLSTRSPE    End pos < start pos, or length too long
253 1443 1     STR$_NEGSTRLEN    Negative length supplied, 0 used
254 1444 1     STR$_TRU          Truncation occured in copying to destination
255 1445 1                   (Warning)
256 1446 1
257 1447 1     SIDE EFFECTS:
258 1448 1
259 1449 1     May signal:
260 1450 1     STR$_FATINTERR    fatal internal error
261 1451 1     STR$_ILLSTRCLA    Illegal (or unsupported) string class
262 1452 1     STR$_INSVIRMEM    Insufficient virtual memory for
263 1453 1                   reallocation of dynamic string

```



```

321 1511 2
322 1512 2
323 1513 2
324 1514 2
325 1515 2
326 1516 2
327 1517 2
328 1518 2
329 1519 2
330 1520 2
331 1521 2
332 1522 2
333 1523 2
334 1524 2
335 1525 2
336 1526 2
337 1527 2
338 1528 2
339 1529 2
340 1530 2
341 1531 2
342 1532 2
343 1533 2
344 1534 2
345 1535 2
346 1536 2
347 1537 1

```

```

IF .LENGTH LSS 0 THEN
    BEGIN
    LENGTH = 0;
    RETURN_STATUS = STR$_ILLSTRPE;      ! START_POS > END_POS
    END;                                ! null string, remember
                                        ! error

!+
Copy to destination descriptor for length as computed above.
Input pointer is the sum - 1 of the source pointer and input
start position ( which must be > 0).

COPY_STATUS =
    STR$COPY_R_R8 ( .DEST_DESC, .LENGTH,
                   CH$PLOS (.IN_ADDR, .ACTUAL_START - 1) );

IF .COPY_STATUS NEQ S$$ NORMAL
THEN RETURN_STATUS = .COPY_STATUS;    ! copy truncated,
                                        ! return truncate
                                        ! instead of previous
                                        ! status

STR$SIGNAL_FATAL (RETURN_STATUS);    ! signal fatal errors
RETURN .RETURN_STATUS;
END;                                  !End of STR$POS_EXTR_R8

```

.EXTRN STR\$ANALYZE_SDESC_R1

```

56          50  D0 00000 STR$POS_EXTR_R8::
          01  DD 00003  MOVL   R0, R6          : 1397
          02  03  A1  91 00005  PUSHL  #1          : 1471
          09  09  1A 00009  CMPB   3(SRC_DESC), #2      : 1476
          50  61  3C 0000B  BGTRU  1$
          55  04  A1  D0 0000E  MOVZWL (SRC_DESC), IN_LEN
          0C  11 00012  MOVL   4(SRC_DESC), IN_ADDR
          50  51  D0 00014  1$:  MOVL   SRC_DESC, R0
          00  00 16 00017  JSB   STR$ANALYZE_SDESC_R1
          55  51  D0 0001D  MOVL   R1, R5
          54  52  D0 00020  2$:  MOVL   START_POS, ACTUAL_START      : 1478
          53  50  D1 00023  Cmpl  IN_LEN, END_POS      : 1486
          09  18 00026  BGEQ  3$
          6E 00000000G 8F  D0 00028  MOVL   #STR$_ILLSTRPOS, RETURN_STATUS : 1489
          03  11 0002F  BRB   4$          : 1491
          50  53  D0 00031  3$:  MOVL   END_POS, R0          : 1495
          52  D5 00034  4$:  TSTL  START_POS          : 1501
          0D  14 00036  BGTR  5$
          6E 00000000G 8F  D0 00038  MOVL   #STR$_ILLSTRPOS, RETURN_STATL : 1504
          54  01  D0 0003F  MOVL   #1, ACTUAL_START      : 1505
          52  01  D0 00042  MOVL   #1, R2          : 1503
          50  52  C2 00045  5$:  SUBL2  R2, R0          : 1500
          51  01  A0  9E 00048  MOVAB  1(R0), LENGTH      : 1498
          09  18 0004C  BGEQ  6$          : 1512

```

6E	00000000G	51	D4	0004E	CLRL	LENGTH	:	1514
52	FF A445	8F	D0	00057	MOVL	#STR\$ ILLSTRSPE, RETURN_STATUS	:	1515
50	00000000G	56	D0	0005C	MOVAB	-1(ACTUAL_START)[IN_ADDR], R2	:	1527
01		00	16	0005F	JSB	STR\$COPY R R8	:	
		50	D1	00065	CMPL	COPY_STATUS, #1	:	1529
		03	13	00068	BEQL	7\$:	
6E		50	D0	0006A	MOVL	COPY_STATUS, RETURN_STATUS	:	1530
10		6E	E8	0006D	BLBS	RETURN_STATUS, 8\$:	1535
03		00	ED	00070	CMPZV	#0, #3, RETURN_STATUS, #4	:	
		09	12	00075	BNEQ	8\$:	
		6E	DD	00077	PUSHL	RETURN_STATUS	:	
	00000000G	00	01	FB 00079	CALLS	#1, LIB\$STOP	:	
		50	8E	D0 00080	MOVL	RETURN_STATUS, R0	:	1536
			05	00083	RSB		:	1537

: Routine Size: 132 bytes. Routine Base: _STR\$CODE + 0012

:	348	1538	1		
:	349	1539	1	END	!End of module
:	350	1540	1		
:	351	1541	0	ELUDOM	

PSECT SUMMARY

Name	Bytes	Attributes
_STR\$CODE	150	NOVEC, NOWRT, RD, EXE, SHR, LCL, REL, CON, PIC, ALIGN(2)

Library Statistics

File	Total	Symbols Loaded	Percent	Pages Mapped	Processing Time
_\$255\$DUA28:[SYSLIB]STARLET.L32;1	9776	7	0	581	00:00.7

COMMAND QUALIFIERS

BLISS/CHECK=(FIELD, INITIAL, OPTIMIZE)/NOTRACE/LIS=LIS\$:STRPOSEXT/OBJ=OBJ\$:STRPOSEXT MSRC\$:STRPOSEXT/UPDATE=(ENH\$:STRPOSEXT)

: Size: 150 code + 0 data bytes

STR\$POS_EXTR
1-012

B 2
16-Sep-1984 01:44:44

VAX-11 Bliss-32 V4.0-742

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ST
1-

: Run Time: 00:06.1
: Elapsed Time: 00:31.3
: Lines/CPU Min: 15257
: Lexemes/CPU-Min: 32683
: Memory Used: 87 pages
: Compilation Complete

:
:
:
:

This image displays a grid of 100 small program icons, each representing a different utility or program available in the VAX/VMS V4.0 environment. The icons are arranged in a 10x10 grid. Each icon typically features a small graphic (such as a bar chart, a document, or a specific symbol) and a text label identifying the program. The labels include:

- STRPOSIT LIS
- STRUNDEQ LIS
- STRPOSEXT LIS
- STRREPLAC LIS
- STRSRCHM LIS
- STRRIGHT LIS
- STRTRIM LIS
- STRUPCASE LIS
- STRTRANSL LIS
- STRPREFIX LIS
- LINKER LIS
- LINKER
- LINK MAP
- PREFIX REQ
- ISDSORT LIS
- DATBAS MDL
- TIRALX REQ
- TSGENC REQ
- DATBAS LIS

The icons are small and densely packed, with each cell containing a distinct visual element and text. The overall appearance is that of a software catalog or a menu of available utilities.