


```

1 0001 0 MODULE STR$POSITION (          ! Find the position of a substring
2 0002 0
3 0003 0          IDENT = '1-014' ! file: STRPOSIT.B32   Edit: RKR1014
4 0004 0
5 0005 0          ) =
6 0006 1 BEGIN
7 0007 1
8 0008 1 *****
9 0009 1 *
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27 0027 1 *
28 0028 1 *
29 0029 1 *****
30 0030 1
31 0031 1
32 0032 1 **
33 0033 1 FACILITY: String support library
34 0034 1
35 0035 1 ABSTRACT: This module takes 2 input strings of any supported class and
36 0036 1 dtype and returns the position of the substring in the main
37 0037 1 string starting at an input position
38 0038 1
39 0039 1 ENVIRONMENT: User mode, AST level or not or mixed
40 0040 1
41 0041 1 AUTHOR: R. Will, CREATION DATE: 10-Mar-79
42 0042 1
43 0043 1 MODIFIED BY:
44 0044 1
45 0045 1 R. Will, 10-Mar-79 : VERSION 01
46 0046 1 1-001 - Original
47 0047 1 1-002 - Fix bug with starting pos > searched string length.
48 0048 1 RW 14-Jul-79
49 0049 1 1-003 - Correct a typo in edit 002. JBS 25-JUL-1979
50 0050 1 1-004 - Make POS agree with DEC BASIC Standard Proposal.
51 0051 1 RW 23-Sept-79
52 0052 1 1-005 - Change name to STR$, string cleanup. RW 1-NOV-79
53 0053 1 1-006 - Correct the psect name. JBS 02-NOV-1979
54 0054 1 1-007 - Use the new interlock macros. JBS 06-NOV-1979
55 0055 1 1-008 - Return only after freeing interlocks. RW 9-Nov-79
56 0056 1 1-009 - Use interlocks in Call entry. RW 15-Nov-79
57 0057 1 1-010 - String speedup. Remove edit 9. RW 8-Jan-1980

```

STR\$POSITION
1-014

E 2
16-Sep-1984 01:45:34 VAX-11 Bliss-32 V4.0-742
14-Sep-1984 12:40:12 [LIBRTL.SRC]STRPOSIT.B32;1

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: 58      0058 1 : 1-011 - Remove improper declaration and use of ACTUALCOUNT from
: 59      0059 1 : STR$POSITION_R6.
: 60      0060 1 : Add comments to indicate argument registers. SBL 10-Dec-1980
: 61      0061 1 : 1-012 - Enhance to recognize additional classes of descriptors by
: 62      0062 1 : using $STR$GET_LEN_ADDR to extract length and address of
: 63      0063 1 : first data byte from the given descriptors. Remove string
: 64      0064 1 : interlocking code. RKR 21-APR-81
: 65      0065 1 : 1-013 - Fix bug relating to START_POS. SBL 28-Sep-1981
: 66      0066 1 : 1-014 - Speed up code. RKR 19-OCT-1981.
: 67      0067 1 : --
: 68      0068 1 :
: 69      0069 1 : <BLF/PAGE>
```

ST
1-

```

: 71      0070 1  |
: 72      0071 1  | SWITCHES:
: 73      0072 1  |
: 74      0073 1  |
: 75      0074 1  | SWITCHES ADDRESSING MODE
: 76      0075 1  |           (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
: 77      0076 1  |
: 78      0077 1  |
: 79      0078 1  | LINKAGES:
: 80      0079 1  |
: 81      0080 1  |
: 82      0081 1  | REQUIRE 'RTLIN:STRLNK';           ! Use require file with string linkages
: 83      0266 1  |
: 84      0267 1  |
: 85      0268 1  | TABLE OF CONTENTS:
: 86      0269 1  |
: 87      0270 1  |
: 88      0271 1  | FORWARD ROUTINE
: 89      0272 1  |     STR$POSITION,           ! find substring position
: 90      0273 1  |     STR$POSITION_R6 : STR$JSB_POSIT; ! find substring position, JSB
: 91      0274 1  |
: 92      0275 1  |
: 93      0276 1  | INCLUDE FILES:
: 94      0277 1  |
: 95      0278 1  |
: 96      0279 1  | REQUIRE 'RTLIN:RTLPSECT';       ! Declare PSECTS code
: 97      0374 1  |
: 98      0375 1  | REQUIRE 'RTLIN:STRMACROS';     ! use string macros to write code
: 99      1291 1  |
: 100     1292 1  | LIBRARY 'RTLSTARLE';          ! STARLET library for macros and symbols
: 101     1293 1  |
: 102     1294 1  |
: 103     1295 1  | MACROS:
: 104     1296 1  |
: 105     1297 1  |     NONE
: 106     1298 1  |
: 107     1299 1  | EQUATED SYMBOLS:
: 108     1300 1  |
: 109     1301 1  |     NONE
: 110     1302 1  |
: 111     1303 1  | PSECT DECLARATIONS
: 112     1304 1  |
: 113     1305 1  | DECLARE_PSECTS (STR);
: 114     1306 1  |
: 115     1307 1  | OWN STORAGE:
: 116     1308 1  |
: 117     1309 1  |     NONE
: 118     1310 1  |
: 119     1311 1  | EXTERNAL REFERENCES:
: 120     1312 1  |
: 121     1313 1  |
: 122     1314 1  | EXTERNAL LITERAL
: 123     1315 1  |     STR$_ILLSTRCLA;           ! Illegal string class
: 124     1316 1  |

```

```

126 1317 1 GLOBAL ROUTINE STR$POSITION ( ! find position of substring
127 1318 1
128 1319 1     SRC_DESC, ! descriptor of string to search
129 1320 1     SUB_DESC, ! descriptor of string to find
130 1321 1     START_POS ! value of position to start search
131 1322 1
132 1323 1 ) =
133 1324 1
134 1325 1
135 1326 1 **
136 1327 1 FUNCTIONAL DESCRIPTION:
137 1328 1     This routine takes two source strings of any supported
138 1329 1     dtype and class and finds the position of the substring in the
139 1330 1     source string starting at the input starting position. The
140 1331 1     routine returns the position of the substring in the source
141 1332 1     string.
142 1333 1     The first character of the source string is at position 1.
143 1334 1     The call entry point is implemented by JSBing to the JSB entry.
144 1335 1
145 1336 1 FORMAL PARAMETERS:
146 1337 1
147 1338 1     SRC_DESC.rt.dx pointer to descriptor of string to be
148 1339 1     searched
149 1340 1     SUB_DESC.rt.dx pointer to descriptor of string to find
150 1341 1     START_POS.rl.r position in source to begin
151 1342 1     search [optional arg, default = 1]
152 1343 1
153 1344 1 IMPLICIT INPUTS:
154 1345 1
155 1346 1     NONE
156 1347 1
157 1348 1 IMPLICIT OUTPUTS:
158 1349 1
159 1350 1     NONE
160 1351 1
161 1352 1 ROUTINE VALUE:
162 1353 1
163 1354 1     FIND_POS.wlu.v value of start position of substring in
164 1355 1     source string. 0 ==> not found.
165 1356 1
166 1357 1 SIDE EFFECTS:
167 1358 1
168 1359 1     May signal STR$_ILLSTRCLA
169 1360 1 --
170 1361 1
171 1362 2 BEGIN
172 1363 2
173 1364 2 BUILTIN
174 1365 2     ACTUALCOUNT;
175 1366 2
176 1367 2 LOCAL
177 1368 2     ACTUAL_START; ! if no START_POS then 1
178 1369 2
179 1370 2 MAP
180 1371 2     SRC_DESC : REF $STR$DESCRIPTOR,
181 1372 2     SUB_DESC : REF $STR$DESCRIPTOR;
182 1373 2

```

STR\$POSITION
1-014

H 2
16-Sep-1984 01:45:34
14-Sep-1984 12:40:12

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

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: 183 1374 3
: 184 1375 2
: 185 1376 2
: 186 1377 2
: 187 1378 2
: 188 1379 2
: 189 1380 2
: 190 1381 2
: 191 1382 2
: 192 1383 1

```
IF (ACTUALCOUNT () EQL 2)
  THEN
    ACTUAL_START = 1
  ELSE
    ACTUAL_START = ..START_POS;
RETURN STR$POSITION_R6 ( SRC_DESC [0,0,0,0],
                        SUB_DESC [0,0,0,0],
                        .ACTUAL_START);
END;
```

!End of STR\$POSITION

.TITLE STR\$POSITION
.IDENT \1-014\

.EXTRN STR\$_ILLSTRCLA

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

.ENTRY STR\$POSITION, Save %2,R3,R4,R5,R6
CMPB (AP), #2
BNEQ 1\$
MOVL #1, ACTUAL_START
BRB 2\$
MOVL @START_POS, ACTUAL_START
MOVQ SRC_DESC, R0
BSBW STR\$POSITION_R6
RET

```
02          007C 00000
           6C  91 00002
           05  12 00005
52          01  D0 00007
           04  11 0000A
52          0C  BC D0 0000C 1$:
50          04  AC 7D 00010 2$:
           0000V 30 00014
           04 00017
```

: 1317
: 1374
: 1376
: 1378
: 1381
: 1383

: Routine Size: 24 bytes, Routine Base: _STR\$CODE + 0000

```

194 1384 1 GLOBAL ROUTINE STR$POSITION_R6 (      ! find position of substring
195 1385 1
196 1386 1     SRC_DESC,      ! descriptor of string to search
197 1387 1     SUB_DESC,      ! descriptor of string to find
198 1388 1     START_POS     ! value of position to start search
199 1389 1
200 1390 1     ) : STR$JSB_POSIT =
201 1391 1
202 1392 1  +-+
203 1393 1  FUNCTIONAL DESCRIPTION:
204 1394 1
205 1395 1      This routine takes two source strings of any supported
206 1396 1      dtype and class and finds the position of the substring in the
207 1397 1      source string starting at the input starting position.
208 1398 1      The routine returns the position of the substring in the source
209 1399 1      string.
210 1400 1      The first character in the source string is at position 1.
211 1401 1
212 1402 1  FORMAL PARAMETERS:
213 1403 1
214 1404 1     SRC_DESC.rt.dx = R0     pointer to descriptor of string to be
215 1405 1                        searched
216 1406 1     SUB_DESC.rt.dx = R1     pointer to descriptor of string to find
217 1407 1     START_POS.rl.v = R2    value of position in source to begin
218 1408 1                        search
219 1409 1
220 1410 1  IMPLICIT INPUTS:
221 1411 1
222 1412 1     NONE
223 1413 1
224 1414 1  IMPLICIT OUTPUTS:
225 1415 1
226 1416 1     NONE
227 1417 1
228 1418 1  ROUTINE VALUE:
229 1419 1
230 1420 1     FIND_POS.wlu.v     value of start position of substring in
231 1421 1                        source string. 0 ==> Not found.
232 1422 1
233 1423 1  SIDE EFFECTS:
234 1424 1
235 1425 1     may allocate or deallocate dynamic string space
236 1426 1     may signal STR$_ILLSTRCLA if not an acceptable string class
237 1427 1
238 1428 1  --
239 1429 1
240 1430 2  BEGIN
241 1431 2
242 1432 2  LOCAL
243 1433 2     MAIN_IN_LEN,      ! length of main string
244 1434 2     MAIN_IN_ADDR,   ! addr of 1st data byte of main string
245 1435 2     SUB_IN_LEN,      ! length of substring
246 1436 2     SUB_IN_ADDR,   ! addr of 1st data byte of substring
247 1437 2     START_OFFSET,  ! Offset into string of start position
248 1438 2     FIND_POINTER,   ! position of substring in source string
249 1439 2
250 1440 2  MAP

```



```

251 1441 2 SRC_DESC : REF $STR$DESCRIPTOR,
252 1442 2 SUB_DESC : REF $STR$DESCRIPTOR;
253 1443 2
254 1444 2 +
255 1445 2 | Set START_OFFSET based on START_POS. Note that offset is 0-origin.
256 1446 2 -
257 1447 2
258 1448 2 START_OFFSET = .START_POS - 1;
259 1449 2 IF .START_OFFSET LSS 0
260 1450 2 THEN
261 1451 2 START_OFFSET = 0;
262 1452 2
263 1453 2 +
264 1454 2 | Extract the length and address of 1st data byte of strings involved.
265 1455 2 | Signal if we find any errors.
266 1456 2 -
267 1457 2 $STR$GET_LEN_ADDR (SRC_DESC, MAIN_IN_LEN, MAIN_IN_ADDR );
268 1458 2 $STR$GET_LEN_ADDR ( SUB_DESC, SUB_IN_LEN, SUB_IN_ADDR );
269 1459 2
270 1460 2 +
271 1461 2 | Adjust length of source string for starting offset. Make
272 1462 2 | sure that the length doesn't go negative.
273 1463 2 -
274 1464 2
275 1465 2 IF .START_OFFSET GTR .MAIN_IN_LEN
276 1466 2 THEN
277 1467 2 START_OFFSET = .MAIN_IN_LEN;
278 1468 2 MAIN_IN_LEN = .MAIN_IN_LEN - .START_OFFSET;
279 1469 2
280 1470 2 +
281 1471 2 | Find the address of the substring in the string described by
282 1472 2 | starting at START_OFFSET in the source string
283 1473 2 -
284 1474 2 FIND_POINTER = CH$FIND_SUB (
285 1475 2 .MAIN_IN_LEN, ! len of string to search
286 1476 2 CH$PLOS (.MAIN_IN_ADDR, .START_OFFSET), ! ptr to string to search
287 1477 2 .SUB_IN_LEN, ! len of str being searched for
288 1478 2 .SUB_IN_ADDR); ! ptr to str being searched for
289 1479 2
290 1480 2 +
291 1481 2 | Return 0 if the substring was not found, otherwise return the position
292 1482 2 | of the substring, 1-origin.
293 1483 2 -
294 1484 2
295 1485 2 RETURN (
296 1486 2 IF CH$FAIL (.FIND_POINTER)
297 1487 2 THEN
298 1488 2 0
299 1489 2 ELSE
300 1490 2 CH$DIFF (.FIND_POINTER, .MAIN_IN_ADDR) + 1
301 1491 2 );
302 1492 2
303 1493 2 1 END;

```

!End of STR\$POSITION_R6

.EXTRN STR\$ANALYZE_SDESC_R1

53		51	D0 00000	STR\$POSITION_R6::	MOVL R1, R3	1384
02		52	F4 00003		SOBGEQ START_OFFSET, 1\$	1448
		52	D4 00006		CLRL START_OFFSET	1451
02	03	A0	91 00008	1\$:	CMPB 3(SRC_DESC), #2	1457
		09	1A 0000C		BGTRU 2\$	
55		60	3C 0000E		MOVZWL (SRC_DESC), MAIN_IN_LEN	
54	04	A0	D0 00011		MOVL 4(SRC_DESC), MAIN_IN_ADDR	
		0C	11 00015		BRB 3\$	
	00000000G	00	16 00017	2\$:	JSB STR\$ANALYZE_SDESC_R1	
55		50	D0 0001D		RO, R5	
54		51	D0 00020		MOVL R1, R4	
02	03	A3	91 00023	3\$:	CMPB 3(SUB_DESC), #2	1458
		09	1A 00027		BGTRU 4\$	
56		63	3C 00029		MOVZWL (SUB_DESC), SUB_IN_LEN	
51	04	A3	D0 0002C		MOVL 4(SUB_DESC), SUB_IN_ADDR	
		0C	11 00030		BRB 5\$	
50		53	D0 00032	4\$:	MOVL SUB_DESC, R0	
	00000000G	00	16 00035		JSB STR\$ANALYZE_SDESC_R1	
56		50	D0 0003B		MOVL R0, R6	
55		52	D1 0003E	5\$:	CMPB START_OFFSET, MAIN_IN_LEN	1465
		03	15 00041		BLEQ 6\$	
52		55	D0 00043		MOVL MAIN_IN_LEN, START_OFFSET	1467
55		52	C2 00046	6\$:	SUBL2 START_OFFSET, MAIN_IN_LEN	1468
6244	55	61	56 39 00049		MATCHC SUB_IN_LEN, (SUB_IN_ADDR), MAIN_IN_LEN, -	1478
					(START_OFFSET)[MAIN_IN_ADDR]	
		03	13 0004F		BEQL 7\$	
53		56	D0 00051		MOVL SUB_IN_LEN, R3	
53		56	C2 00054	7\$:	SUBL2 SUB_IN_LEN, R3	
		04	12 00057		BNEQ 8\$	1486
		53	D4 00059		CLRL R3	
		05	11 0005B		BRB 9\$	
53		54	C2 0005D	8\$:	SUBL2 MAIN_IN_ADDR, R3	1490
		53	D6 00060		INCL R3	
50		53	D0 00062	9\$:	MOVL R3, R0	1485
		05	00065		RSB	1493

: Routine Size: 102 bytes. Routine Base: _STR\$CODE + 0018

```

: 304      1494  1
: 305      1495  1 END
: 306      1496  1
: 307      1497  0 ELUDOM

```

:End of module

PSECT SUMMARY

Name	Bytes	Attributes
_STR\$CODE	126	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	4	0	581	00:00.8

COMMAND QUALIFIERS

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

: Size: 126 code + 0 data bytes
: Run Time: 00:06.0
: Elapsed Time: 00:25.9
: Lines/CPU Min: 15095
: Lexemes/CPU-Min: 34255
: Memory Used: 82 pages
: Compilation Complete

