


```

1 0001 0 MODULE STR$TRANSLATE (          ! copy source to dest and translate
2 0002 0
3 0003 0          IDENT = '1-008' ! File: STRTRANSL.B32  Edit: PDG1008
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:
36 0036 1
37 0037 1 This module takes strings of any supported class or dtype and
38 0038 1 copies the source string to the destination string, replacing
39 0039 1 any character in the source string that matches a character in
40 0040 1 the match string by the corresponding character in the replace
41 0041 1 string.
42 0042 1
43 0043 1 ENVIRONMENT: User mode, AST level or not or mixed
44 0044 1
45 0045 1 AUTHOR: R. Will, CREATION DATE: 1-Dec-79
46 0046 1
47 0047 1 MODIFIED BY:
48 0048 1
49 0049 1 R. Will, 1-Dec-79: VERSION 01
50 0050 1 1-001 - Original
51 0051 1 1-002 - String speedup, get status from macro. RW 11-Jan-1980
52 0052 1 1-003 - Make trans-table byte, fix signal macro. RW 11-Feb-1980
53 0053 1 1-004 - Enhance to recognize additional classes of descriptors by
54 0054 1 using $STR$GET_LEN_ADDR to extract length and address of
55 0055 1 first byte of data from descriptor. Remove string
56 0056 1 code. RKR 29-APR-1981
57 0057 1 1-005 - Expand translate table to 256 bytes so we can accommodate

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.. 58      0058 1  | full 256 character set. RKR 13-MAY-1981
.. 59      0059 1  | 1-006 - Speed up code. RKR 7-OCT-1981.
.. 60      0060 1  | 1-007 - Use STR$COPY R R8 for copy operation. Use $STR$SIGNAL_FATAL
.. 61      0061 1  | instead of $STR$CHECK_STATUS. RKR 18-NOV-1981.
.. 62      0062 1  | 1-008 - Fix bug introduced by edit 6. Speed up code. Use DECR in creating
.. 63      0063 1  | translation table; thus, if a character occurs several times in the
.. 64      0064 1  | match string, the first is used for translation. Use STR$COPY_DX_R8
.. 65      0065 1  | for the copy operation. PDG 31-Dec-1981
.. 66      0066 1  | --
.. 67      0067 1  |
.. 68      0068 1  | !<BLF/PAGE>
```

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70 0069 1 |
71 0070 1 | SWITCHES:
72 0071 1 |
73 0072 1 |
74 0073 1 | SWITCHES ADDRESSING MODE
75 0074 1 | (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
76 0075 1 |
77 0076 1 |
78 0077 1 | LINKAGES:
79 0078 1 |
80 0079 1 |
81 0080 1 | REQUIRE 'RTLIN:STRLNK';           ! Use require file with string linkage
82 0265 1 |
83 0266 1 |
84 0267 1 | TABLE OF CONTENTS:
85 0268 1 |
86 0269 1 |
87 0270 1 | FORWARD ROUTINE
88 0271 1 | STR$TRANSLATE;                   ! translate routine
89 0272 1 |
90 0273 1 |
91 0274 1 | INCLUDE FILES:
92 0275 1 |
93 0276 1 |
94 0277 1 | REQUIRE 'RTLIN:RTLPSECT';        ! Declare PSECTS code
95 0372 1 |
96 0373 1 | REQUIRE 'RTLIN:STRMACROS';       ! use string macros to code
97 1289 1 |
98 1290 1 | LIBRARY 'RTLSTARLE';             ! STARLET library for macros and symbol
99 1291 1 |
100 1292 1 |
101 1293 1 | MACROS: NONE
102 1294 1 |
103 1295 1 |
104 1296 1 |
105 1297 1 | EQUATED SYMBOLS: NONE
106 1298 1 |
107 1299 1 |
108 1300 1 |
109 1301 1 | PSECT DECLARATIONS
110 1302 1 |
111 1303 1 |
112 1304 1 | DECLARE_PSECTS (STR);
113 1305 1 |
114 1306 1 |
115 1307 1 | OWN STORAGE: NONE
116 1308 1 |
117 1309 1 |
118 1310 1 |
119 1311 1 | EXTERNAL REFERENCES:
120 1312 1 |
121 1313 1 |
122 1314 1 | EXTERNAL ROUTINE
123 1315 1 | LIB$STOP,                         ! Signal errors
124 1316 1 | STR$COPY_DX_R8 : STR$JSB_COPY_DX ; ! Routine to do the copy
125 1317 1 |
126 1318 1 | EXTERNAL LITERAL

```

STRSTRANSLATE
1-008

; 127 1319 1 STRS_NORMAL;

N 6
16-Sep-1984 01:49:28
14-Sep-1984 12:40:16

YAX-11 Bliss-32 V4.0-742
[LIBRTL.SRC]STRTRANSL.B32;1

Page 4
(2)

! successful completion

STF
1-(

:
:
:
:
:
:
:

```

129 1320 1 GLOBAL ROUTINE STRSTRANSULATE (           ! translate
130 1321 1
131 1322 1     DEST_DESC,           ! Pointer to destination descriptor
132 1323 1     SRC_DESC,           ! Pointer to source descriptor
133 1324 1     TRANSLATE_DESC,      ! Pointer to translation string desc
134 1325 1     MATCH_DESC,        ! pointer to match string desc
135 1326 1
136 1327 1           ) : =
137 1328 1
138 1329 1 ++
139 1330 1     FUNCTIONAL DESCRIPTION:
140 1331 1     This routine copies the input string to the output string and
141 1332 1     translates all characters in the source string which are also in
142 1333 1     the match string to the corresponding character in the
143 1334 1     translate string.  If the translate string is shorter than the
144 1335 1     match string, the replace string is expanded to the length of
145 1336 1     the match string with blanks.
146 1337 1
147 1338 1     FORMAL PARAMETERS:
148 1339 1
149 1340 1     DEST_DESC.wt.dx      pointer to destination string descriptor
150 1341 1     SRC_DESC.rt.dx       pointer to source string descriptor
151 1342 1     TRANSLATE_DESC.rt.dx pointer to translate string descriptor
152 1343 1     MATCH_DESC.rt.dx    pointer to match string descriptor
153 1344 1
154 1345 1     IMPLICIT INPUTS:
155 1346 1
156 1347 1     NONE
157 1348 1
158 1349 1     IMPLICIT OUTPUTS:
159 1350 1
160 1351 1     NONE
161 1352 1
162 1353 1     COMPLETION CODES:
163 1354 1
164 1355 1     $$$ NORMAL          Success
165 1356 1     STR$_TRU            Truncation occurred.  Warning.
166 1357 1
167 1358 1     SIDE EFFECTS:
168 1359 1
169 1360 1     May signal:
170 1361 1     STR$_FATINTERR      Fatal internal error
171 1362 1     STR$_ILLSTRCLA      Illegal (or unsupported) string class
172 1363 1     STR$_INSVIRMEM      Insufficient virtual memory for
173 1364 1                       reallocation of dynamic string
174 1365 1
175 1366 1 --
176 1367 1
177 1368 2     BEGIN
178 1369 2
179 1370 2     LOCAL
180 1371 2     MATCH_LEN,           ! length of match string
181 1372 2     MATCH_ADDR,         ! addr of 1st byte of
182 1373 2                       match string
183 1374 2     TRANS_LEN,           ! length of translate
184 1375 2                       string
185 1376 2     TRANS_ADDR,         ! addr of 1st byte of

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```
186 1377 2          ! translate string
187 1378 2          ! length of destination
188 1379 2          ! string
189 1380 2          ! addr of 1st byte of
190 1381 2          ! destination string
191 1382 2          !
192 1383 2          ! status from STR$COPY
193 1384 2          ! table to do translate
194 1385 2
195 1386 2
196 1387 2          MAP
197 1388 2          DEST_DESC      : REF $STR$DESCRIPTOR,
198 1389 2          SRC_DESC       : REF $STR$DESCRIPTOR,
199 1390 2          TRANSLATE_DESC : REF $STR$DESCRIPTOR,
200 1391 2          MATCH_DESC     : REF $STR$DESCRIPTOR;
201 1392 2          +
202 1393 2          ! compute length and address of 1st data byte of strings involved
203 1394 2          ! and signal if any fatal errors result
204 1395 2          -
205 1396 2          $STR$GET_LEN_ADDR ( MATCH_DESC, MATCH_LEN, MATCH_ADDR ) ;
206 1397 2          $STR$GET_LEN_ADDR ( TRANSLATE_DESC, TRANS_LEN, TRANS_ADDR ) ;
207 1398 2
208 1399 2          +
209 1400 2          ! Copy source to the destination string and signal fatal errors.
210 1401 2          -
211 1402 2
212 1403 2          RETURN_STATUS = STR$COPY_DX_R8 ( .DEST_DESC, .SRC_DESC ) ;
213 1404 2
214 1405 2          $STR$SIGNAL_FATAL ( RETURN_STATUS ) ;
215 1406 2
216 1407 2          +
217 1408 2          ! Get length and addr of 1st byte of destination after copy operation.
218 1409 2          -
219 1410 2          $STR$GET_LEN_ADDR ( DEST_DESC, DEST_LEN, DEST_ADDR ) ;
220 1411 2          +
221 1412 2          ! The copy is finished, now create the translate table
222 1413 2          -
223 1414 2
224 1415 2          BEGIN          ! This block does the equivalent of:
225 1416 2          ! INCR I FROM 0 TO 255 DO TRANSLATE_TABLE[I]=.I ;
226 1417 2          ! but does it a longword at a time
227 1418 2          LOCAL
228 1419 2          X: REF VECTOR;
229 1420 2          X = TRANSLATE_TABLE;
230 1421 2          X[0] = %X'03020100';
231 1422 2          DECR I FROM 256/%UPVAL-2 TO 0 DO      ! initilize to translate to self
232 1423 2          BEGIN
233 1424 2          X[I] = .X[0] + %X'04040404';
234 1425 2          X = .X + %UPVAL;
235 1426 2          END;
236 1427 2          END;
237 1428 2
238 1429 2          MIN_LEN = MINU(.MATCH_LEN, .TRANS_LEN);
239 1430 2
240 1431 2          INCR I FROM .MIN_LEN TO .MATCH_LEN-1 DO
241 1432 2          TRANSLATE_TABLE [CH$RCHAR (CH$PLUS (.MATCH_ADDR, .I))] =
242 1433 2          STR$K_FILL_CHAR;
```


243 1434 2
244 1435 2
245 1436 2
246 1437 2
247 1438 2
248 1439 2
249 1440 2
250 1441 2
251 1442 2
252 1443 2
253 1444 2
254 1445 2
255 1446 2
256 1447 2
257 1448 2
258 1449 2
259 1450 2
260 1451 2
261 1452 2
262 1453 1

```
DECR I FROM .MIN_LEN-1 TO 0 DO ! fill in users translate
TRANSLATE_TABLE [CH$RCHAR (CH$PLUS (.MATCH_ADDR, .I))] =
CH$RCHAR (CH$PLUS (.TRANS_ADDR, .I));
```

Now translate the destination string in place.

```
CH$TRANSLATE (
TRANSLATE_TABLE, ! ASCII translation table
.DEST_LEN, ! from destination
.DEST_ADDR,
STR$K_FILL_CHAR, ! never used since same string
.DEST_LEN, ! to destination
.DEST_ADDR);
```

```
RETURN .RETURN_STATUS;
END; !End of STR$TRANSLATE
```

.TITLE		STR\$TRANSLATE	
.IDENT		\1-008\	
.EXTRN		LIB\$STOP, STR\$COPY DX R8	
.EXTRN		STR\$NORMAL, STR\$ANALYZE_SDESC_R1	
.PSECT		_STR\$CODE, NOWRT, SHR, PIC, 2	
.ENTRY		STR\$TRANSLATE, Save R2,R3,R4,R5,R6,R7,R8,-	1320
		R9,R10,R11	
		MOVAB -264(SP), SP	
		MOVL MATCH_DESC, R0	1396
		CMPB 3(R0), #2	
		BGTRU 1\$	
		MOVZWL (R0), MATCH_LEN	
		MOVL 4(R0), MATCH_ADDR	
		BRB 2\$	
		JSB STR\$ANALYZE_SDESC_R1	
		MOVL R0, 4(SP)	
		MOVL R1, R10	
		MOVL TRANSLATE_DESC, R0	1397
		CMPB 3(R0), #2	
		BGTRU 3\$	
		MOVZWL (R0), TRANS_LEN	
		MOVL 4(R0), TRANS_ADDR	
		BRB 4\$	
		JSB STR\$ANALYZE_SDESC_R1	
		MOVL R0, (SP)	
		MOVL R1, R11	
		MOVL DEST_DESC, R9	1403
		MOVL SRC_DESC, R1	
		MOVL R9, R0	
		JSB STR\$COPY DX R8	
		MOVL R0, RETURN_STATUS	
		BLBS RETURN_STATUS, 5\$	1405

OFFC 00000			
	5E	FEF8	CE 9E 00002
	50	10	AC DO 00007
	02	03	A0 91 0000B
			0A 1A 0000F
04	AE		60 3C 00011
	5A	04	A0 DO 00015
			0D 11 00019
		00000G00G	00 16 0001B 1\$:
04	AE		50 DO 00021
	5A		51 DO 00025
	50	0C	AC DO 00028 2\$:
	02	03	A0 91 0002C
			09 1A 00030
	6E		60 3C 00032
	5B	04	A0 DO 00035
			0C 11 00039
		00000000G	00 16 0003B 3\$:
	6E		50 DO 00041
	5B		51 DO 00044
	59	04	AC DO 00047 4\$:
	51	08	AC DO 0004B
	50		59 DO 0004F
		00000000G	00 16 00052
	56		50 DO 00058
	10		56 EB 0005B

04	56	03	00	ED	0005E	CMPZV	#0, #3, RETURN_STATUS, #4		
			09	12	00063	BNEQ	5\$		
	00000000G	00	56	DD	00065	PUSHL	RETURN STATUS		
		02	01	FB	00067	CALLS	#1, LIB\$STOP		
		03	A9	91	0006E	5\$: CMPB	3(R9), #2	1410	
			09	1A	00072	BGTRU	6\$		
		54	69	3C	00074	MOVZWL	(R9), DEST_LEN		
		51	A9	DO	00077	MOVL	4(R9), DEST_ADDR		
			0C	11	0007B	BRB	7\$		
		50	59	DO	0007D	6\$: MOVL	R9, R0		
	00000000G		00	16	0008C	JSB	STR\$ANALYZE_SDESC_R1		
		54	50	DC	00086	MOVL	R0, R4		
		50	08	AE	9E	7\$: MOVAB	TRANSLATE_TABLE, X	1420	
	03020100	60	8F	DO	0008D	MOVL	#50462976, (X)	1421	
		52	3E	DO	00094	MOVL	#62, I	1422	
60		80	04040404	8F	C1	8\$: ADDL3	#67372036, (X)+, (X)	1424	
		F5		52	F4	SOBGEQ	I, 8\$	1422	
		50		04	AE	DO	000A2	1429	
		6E		50	D1	000A6	CPL	R0, TRANS_LEN	
				03	1B	000A9	BLEQU	9\$	
		50		6E	DO	000AB	MOVL	TRANS_LEN, R0	
		52		50	DO	000AE	9\$: MOVL	R0, MIN_LEN	
		50		FF	A2	9E	000B1	MOVAB	-1(R2), I
				09	11	000B5	BRB	11\$	
		53		604A	9A	000B7	10\$: MOVZBL	(I)[MATCH_ADDR], R3	
	08 AE43		20	90	000BB	MOVB	#32, TRANSLATE_TABLE[R3]		
	F2		50	04	AE	F2	000C0	11\$: AOBLS	MATCH_LEN, I, TOS
			50	52	DO	000C5	MOVL	MIN_LEN, I	
				0A	11	000C8	BRB	13\$	
		52		604A	9A	000CA	12\$: MOVZBL	(I)[MATCH_ADDR], R2	
	08 AE42		604B	90	000CE	MOVB	(I)[TRANS_ADDR], TRANSLATE_TABLE[R2]	1437	
		F3		50	F4	000D4	13\$: SOBGEQ	I, 12\$	
08 AE		20	6.	54	2E	000D7	MOVTC	DEST_LEN, (DEST_ADDR), #32, -	
			61	54		000DD		TRANSLATE_TABLE, DEST_LEN, (DEST_ADDR)	
			50	56	DO	000DF	MOVL	RETURN_STATUS, R0	
				04	000E2	RET		1452	
								1453	

: Routine Size: 227 bytes, Routine Base: _STR\$CODE + 0000

: 263 1454 1
: 264 1455 1 END
: 265 1456 0 ELUDOM

!End of module

PSECT SUMMARY

Name	Bytes	Attributes
_STR\$CODE	227	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	6	0	581	00:00.7

COMMAND QUALIFIERS

BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LISS:STRTRANSL/OBJ=OBJ\$:STRTRANSL MSRCS:STRTRANSL/UPDATE=(ENHS:STRTRANSL
)

: Size: 227 code + 0 data bytes
: Run Time: 00:06.5
: Elapsed Time: 00:27.5
: Lines/CPU Min: 13378
: Lexemes/CPU-Min: 34980
: Memory Used: 110 pages
: Compilation Complete

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