


```

FFFFFFFFF 000000 RRRRRRRR EEEEEEEEEE XX XX IIIIII TTTTTTTTTT HH HH AAAAAA
FFFFFFFFF 000000 RRRRRRRR EEEEEEEEEE XX XX IIIIII TTTTTTTTTT HH HH AAAAAA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FFFFFFFFF 00 00 RRRRRRRR EEEEEEEEEE XX XX II TT HH HH AA AA
FFFFFFFFF 00 00 RRRRRRRR EEEEEEEEEE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 00 00 RR RR EE XX XX II TT HH HH AA AA
FF 000000 RR RR FEEEEEEEEE XX XX IIIIII TTTTTTTTTT HH HH AA AA
FF 000000 RR RR EEEEEEEEEE XX XX IIIIII TTTTTTTTTT HH HH AA AA

```

```

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

```



```

1 0001 0 MODULE FOR$EXIT_HANGL (%TITLE, 'FORTRAN exit handler'
2 0002 0 IDENT = '1-013' ! File: FOREXITHA.B32 Edit: STAN1013
3 0003 0 ) =
4 0004 1 BEGIN
5 0005 1
6 0006 1 *****
7 0007 1 *
8 0008 1 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY *
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25 0025 1 *
26 0026 1 *
27 0027 1 *****
28 0028 1
29 0029 1 ++
30 0030 1 FACILITY: FORTRAN support library - Exit handler
31 0031 1
32 0032 1 ABSTRACT:
33 0033 1
34 0034 1 This module is used when the image exits to do
35 0035 1 FORTRAN post processing. It purges I/O buffers
36 0036 1 and closes files with proper disposition.
37 0037 1
38 0038 1 ENVIRONMENT: User access mode; mixture of AST level or not.
39 0039 1
40 0040 1 Author: John Sauter, Creation date: 23-JAN-1979
41 0041 1
42 0042 1 MODIFIED BY:
43 0043 1
44 0044 1 1-001 - Original from FOROPEN. JBS 23-JAN-1979
45 0045 1 1-002 - Call OT$$$PURGE IOBU to flush any "dirty" buffer. JBS 24-JAN-1979
46 0046 1 1-003 - Move call to OT$$$PURGE IOBU to OT$$CLOSE_FILE. JBS 24-JAN-1979
47 0047 1 1-004 - Change linkage for OT$$PUSH_CCB to JSB CB_PUSH and for
48 0048 1 OT$$POP_CCB to JSB CB_POP. JBS 25-JAN-1979
49 0049 1 1-005 - Use two dollar signs for non-user entries. JBS 26-JAN-1979
50 0050 1 1-006 - Add OT$$CLOSE ALL. JBS 04-JUN-1979
51 0051 1 1-007 - Change to FORTRAN-specific exit handler. JBS 16-AUG-1979
52 0052 1 1-008 - Clear FOR$$L XIT LOCK when EXIT_HANDLER is called. This
53 0053 1 allows exit handler I/O to be cleaned up properly. SBL 29-Apr-1980
54 0054 1 1-009 - Request page alignment for the OWN PSECT when invoking
55 0055 1 DECLARE_PSECTS, to ensure that EXIT_BLOCK will not occupy the
56 0056 1 same page as a user variable that is being WATCHed, and thus
57 0057 1 be unwriteable when $DCLEXH is called. JAW 19-FEB-1981

```

```
: 58      0058 1 : 1-010 - Declare LIB$STOP external. SBL 30-Nov-1981  
: 59      0059 1 : 1-011 - Reflect changes of OTS$$ structures to FOR$$ SBL 26-Oct-1982  
: 60      0060 1 : 1-012 - Reflect use of ISB$A PREVIOUS LUB instead of second longword in  
: 61      0061 1 :          FOR$$AA_CUR_LUB. SBL 2-Dec-1982  
: 62      0062 1 : 1-013 - Remove informational error. STAN 24-Jul-1984.  
: 63      0063 1 : --  
: 64      0064 1 : --
```

```

66      0065 1 |
67      0066 1 | PROLOGUE FILE:
68      0067 1 |
69      0068 1 |
70      0069 1 | REQUIRE 'RTLIN:FORPROLOG';          | FOR$ definitions
71      0135 1 |
72      0136 1 |
73      0137 1 | TABLE OF CONTENTS:
74      0138 1 |
75      0139 1 |
76      0140 1 | FORWARD ROUTINE
77      0141 1 |     FOR$$DECL_EXITH : NOVALUE,      | Declare EXIT handler
78      0142 1 |     EXIT_HANDLER : NOVALUE,        | Exit Handler
79      0143 1 |     FOR$$CLOSE_ALL : NOVALUE;      | Close all files
80      0144 1 |
81      0145 1 |
82      0146 1 | MACROS:
83      0147 1 |
84      0148 1 |     NONE
85      0149 1 |
86      0150 1 | EQUATED SYMBOLS:
87      0151 1 |
88      0152 1 |     NONE
89      0153 1 |
90      0154 1 | OWN STORAGE:
91      0155 1 |
92      0156 1 |
93      0157 1 | GLOBAL
94      0158 1 |     FOR$$L_XIT_LOCK : INITIAL (0);  | Clear if no handler linked yet
95      0159 1 |
96      0160 1 |
97      0161 1 | EXTERNAL REFERENCES:
98      0162 1 |
99      0163 1 |
100     0164 1 | +
101     0165 1 | The following structure is used for addressing FOR$$AA_LUB_TAB.
102     0166 1 | It is similar to VECTOR, but offsets the index so that
103     0167 1 | negative logical unit numbers can be used.
104     0168 1 | -
105     0169 1 |
106     0170 1 | STRUCTURE
107     0171 1 |     FOR$$LUB_TAB_ST [I; N, LB, UNIT = 4, EXT = 0] =
108     0172 1 |         [N*UNIT]
109     0173 1 |         (FOR$$LUB_TAB_ST + ((I - LB)*UNIT))<0, %BPUNIT*UNIT, EXT>;
110     0174 1 |
111     0175 1 | EXTERNAL
112     0176 1 |     FOR$$AA_LUB_TAB : VOLATILE FOR$$LUB_TAB_ST ! Table of LUB addresses
113     0177 1 |         [-LOB$K_ILUN_MIN + LUB$K_LUN_MAX + 1, LUB$K_ILUN_MIN],
114     0178 1 |     FOR$$A_CUR_LUB;                       ! Current LUB
115     0179 1 |
116     0180 1 | EXTERNAL ROUTINE
117     0181 1 |     FOR$$CB_FETCH : NOVALUE,          | Load register CCB, no push
118     0182 1 |     FOR$$CB_PUSH : JSB_CB_PUSH NOVALUE, | Load register CCB
119     0183 1 |     FOR$$CB_POP : JSB_CB_POP NOVALUE,   | Done with register CCB
120     0184 1 |     FOR$$GET_VM,                       | Get virtual memory
121     0185 1 |     FOR$$NEXT_LUN : NOVALUE,          | Get next LUN that might be open
122     0186 1 |     FOR$$CLOSE_FILE : CALL_CCB,       | Internal file closer

```

FOR\$EXIT_HANDL FORTRAN exit handler
1-013

~~10-Sep-1984~~ 00:22:06
~~14-Sep-1984~~ 12:31:58

VAX-11 Bliss-32 V4.0-742
[FORRTL.SRC]FOREXITHA.B32;1

Page 4
(2)

FOF
2-(

: 123 0187 1 FOR\$SIGNAL: NOVALUE;
: 124 0188 1

! Signal non-fatal error

```

126 0189 1 GLOBAL ROUTINE FOR$$DECL_EXITH          ! Declare VMS EXIT handler
127 0190 1   : NOVALUE =                          !
128 0191 1
129 0192 1 !++
130 0193 1 ! FUNCTIONAL DESCRIPTION:
131 0194 1
132 0195 1     Declares VMS EXIT handler for FORTRAN.
133 0196 1
134 0197 1 ! CALLING SEQUENCE:
135 0198 1
136 0199 1     IF (NOT .FOR$$L_XIT_LOCK) THEN FOR$$DECL_EXITH ( )
137 0200 1
138 0201 1 ! FORMAL PARAMETERS:
139 0202 1
140 0203 1     NONE
141 0204 1
142 0205 1 ! IMPLICIT INPUTS:
143 0206 1
144 0207 1     NONE
145 0208 1
146 0209 1 ! IMPLICIT OUTPUTS:
147 0210 1
148 0211 1     NONE
149 0212 1
150 0213 1 ! COMPLETION CODES:
151 0214 1
152 0215 1     NONE
153 0216 1
154 0217 1 ! SIDE EFFECTS:
155 0218 1
156 0219 1     Declares VMS EXIT handler.
157 0220 1 !--
158 0221 1
159 0222 2   BEGIN
160 0223 2
161 0224 2
162 0225 2   !+
163 0226 2   ! Allocate and fill in the control descriptor block.
164 0227 2   !-
165 0228 2
166 0229 2   LOCAL
167 0230 2     EXITH_CONTROL_BLOCK: REF VECTOR [, LONG];
168 0231 2
169 0232 2     EXITH_CONTROL_BLOCK = FOR$$GET_VM (20);      ! 5 longwords
170 0233 2     EXITH_CONTROL_BLOCK [1] = EXIT_HANDLER;      ! Routine address
171 0234 2     EXITH_CONTROL_BLOCK [2] = 1;                ! 1 additional longword
172 0235 2     EXITH_CONTROL_BLOCK [3] = EXITH_CONTROL_BLOCK [4]; ! Reason for exit
173 0236 2     $DCLEXM (DESB[K=EXITH_CONTROL_BLOCK [0]]); ! Assume success
174 0237 2     FOR$$L_XIT_LOCK = 1;                          ! Handler declared
175 0238 2
176 0239 2   RETURN
177 0240 1   END;

                                .TITLE FOR$$EXIT_HANDL FORTRAN exit handler
                                .IDENT \1-013\

```

.PSECT _FOR\$DATA,NOEXE, PIC,2

00000000 00000 FOR\$\$L_XIT_LOCK::
.LONG 0

.EXTRN FOR\$\$AA LUB TAB
.EXTRN FOR\$\$A CUR LUB, FOR\$\$CB FETCH
.EXTRN FOR\$\$CB PUSH, FOR\$\$CB POP
.EXTRN FOR\$\$GET_VM, FOR\$\$NEXT_LUN
.EXTRN FOR\$\$CLOSE_FILE
.EXTRN FOR\$\$SIGNAL, SY\$\$DCLEXH

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

00000000G 00 0000 0000
04 A0 0000V 14 DD 00002
08 A0 01 FB 00004
0C A0 01 9E 0000B
10 A0 01 D0 00011
50 DD 0001A
00000000G 00 01 FB 0001C
00000000' EF 01 D0 00023
04 0002A

.ENTRY FOR\$\$DECL_EXITH, Save nothing : 0189
PUSHL #20 : 0232
CALLS #1, FOR\$\$GET_VM :
MOVAB EXIT_HANDLER, 4(EXITH_CONTROL_BLOCK) : 0233
MOVL #1, 8(EXITH_CONTROL_BLOCK) : 0234
MOVAB 16(RO), 12(EXITH_CONTROL_BLOCK) : 0235
PUSHL EXITH_CONTROL_BLOCK : 0236
CALLS #1, SY\$\$DCLEXH :
MOVL #1, FOR\$\$L_XIT_LOCK : 0237
RET : 0240

: Routine Size: 43 bytes, Routine Base: _FOR\$CODE + 0000

: 178 0241 1


```

: 180      0242 1 ROUTINE EXIT_HANDLER (           ! Exit Handler
: 181      0243 1     EXIT_REASON             ! Reason
: 182      0244 1     ) : NOVALUE =
: 183      0245 1
: 184      0246 1 |++
: 185      0247 1 | FUNCTIONAL DESCRIPTION:
: 186      0248 1 |
: 187      0249 1 |     This is the exit handler for FORTRAN. Its only function is to
: 188      0250 1 |     close all files.
: 189      0251 1 |
: 190      0252 1 |     Upon entering, it clears FOR$$L_XIT_LOCK. This allows user
: 191      0253 1 |     exit handlers to have their I/O cleaned up.
: 192      0254 1 |
: 193      0255 1 | FORMAL PARAMETERS:
: 194      0256 1 |
: 195      0257 1 |     EXIT_REASON.rl.r      not used
: 196      0258 1 |
: 197      0259 1 | IMPLICIT INPUTS:
: 198      0260 1 |
: 199      0261 1 |     NONE
: 200      0262 1 |
: 201      0263 1 | IMPLICIT OUTPUTS:
: 202      0264 1 |
: 203      0265 1 |     FOR$$L_XIT_LOCK is set to zero
: 204      0266 1 |
: 205      0267 1 | ROUTINE VALUE:
: 206      0268 1 | COMPLETION CODES:
: 207      0269 1 |
: 208      0270 1 |     NONE
: 209      0271 1 |
: 210      0272 1 | SIDE EFFECTS:
: 211      0273 1 |
: 212      0274 1 |     Closes all files by calling OTS$$CLOSE_ALL.
: 213      0275 1 | --
: 214      0276 1 |
: 215      0277 2 | BEGIN
: 216      0278 2 | FOR$$L_XIT_LOCK = 0;           ! Clear exit handler interlock
: 217      0279 2 | FOR$$CLOSE_ALL ();
: 218      0280 1 | END;                           ! of routine EXIT_HANDLER

```

```

                                0000 0000 EXIT_HANDLER:
                                .WORD   Save nothing           : 0242
                                CLRL    FOR$$L_XIT_LOCK         : 0278
0000V CF 00000000' EF D4 00002   CALLS #0, FOR$$CLOSE_ALL   : 0279
                                00 FB 00008                     : 0280
                                04 0000D   RET

```

: Routine Size: 14 bytes, Routine Base: _FOR\$CODE + 002B

```

220 0281 1 ROUTINE FOR$$CLOSE_ALL : NOVALUE = ! Close all files
221 0282 1
222 0283 1 !++
223 0284 1 ! FUNCTIONAL DESCRIPTION:
224 0285 1
225 0286 1 Find every existing LUB (with a linear search through the LUB
226 0287 1 table). For each LUB, if the file is open, purge its I/O
227 0288 1 buffers and close it. If the file has been marked for PRINT
228 0289 1 or DELETE, this will cause proper disposition of the file.
229 0290 1 RMS will close all open files at image exit, but it doesn't know
230 0291 1 about the above two DISPOSE conditions. We couldn't set them at
231 0292 1 OPEN time, since the user is allowed to specify a different
232 0293 1 DISPOSE option at close time (with the CLOSE statement).
233 0294 1
234 0295 1 FORMAL PARAMETERS:
235 0296 1
236 0297 1 NONE
237 0298 1
238 0299 1 IMPLICIT INPUTS:
239 0300 1
240 0301 1 NONE
241 0302 1
242 0303 1 IMPLICIT OUTPUTS:
243 0304 1
244 0305 1 NONE
245 0306 1
246 0307 1 ROUTINE VALUE:
247 0308 1 COMPLETION CODES:
248 0309 1
249 0310 1 NONE
250 0311 1
251 0312 1 SIDE EFFECTS:
252 0313 1
253 0314 1 Closes all files.
254 0315 1 May signal FOR$_CLOERR.
255 0316 1 --
256 0317 1
257 0318 2 BEGIN
258 0319 2
259 0320 2 GLOBAL REGISTER
260 0321 2 CCB = K_CCB_REG : REF $FOR$CCB_DECL;
261 0322 2
262 0323 2 LOCAL
263 0324 2 AST_STATUS, ! Status from $SETAST
264 0325 2 FLAG,
265 0326 2 LUN;
266 0327 2
267 0328 2 !+
268 0329 2 ! Disable ASTs.
269 0330 2 !-
270 0331 2
271 0332 2 AST_STATUS = $SETAST (ENBFLG=0);
272 0333 2
273 0334 2 !+
274 0335 2 ! Scan through the table of LUNs, looking for allocated CCBs.
275 0336 2 !-
276 0337 2

```

```
277 0338 2 FLAG = 0; ! Initialize loop
278 0339 2
279 0340 2 WHILE 1 DO
280 0341 2 BEGIN
281 0342 2
282 0343 2 |*
283 0344 2 | Get next unit number that has an allocated CCB.
284 0345 2 |
285 0346 2 |
286 0347 2 FOR$NEXT_LUN (FLAG, LUN);
287 0348 2 IF NOT .FLAG
288 0349 2 THEN
289 0350 2 EXITLOOP;
290 0351 2
291 0352 2 |*
292 0353 2 | Get the CCB address for this unit.
293 0354 2 |
294 0355 2 |
295 0356 2 CCB = 0; ! Make BLISS understand that CCB is set.
296 0357 2 FOR$CB_FETCH (.LUN);
297 0358 2 FOR$A_CUR_LUB = .CCB; ! Make this LUB the current one
298 0359 2
299 0360 2 |*
300 0361 2 | We have an allocated CCB. See if it has an open file. If
301 0362 2 | so, try to close it. If the close fails, signal "close error",
302 0363 2 | but with E severity so that execution continues.
303 0364 2 |
304 0365 2 |
305 0366 2 IF .CCB [LUB$V_OPENED]
306 0367 2 THEN
307 0368 2 BEGIN
308 0369 2 IF NOT FOR$CLOSE_FILE ()
309 0370 2 THEN
310 0371 2 BEGIN
311 0372 2 LOCAL
312 0373 2 CLO_ERROR: BLOCK [4, BYTE]; ! Condition to signal
313 0374 2 CLO_ERROR = FOR$CLOERR;
314 0375 2 CLO_ERROR [ST$V_SEVERITY] = ST$K_ERROR;
315 0376 2 FOR$SIGNAL (.CLO_ERROR);
316 0377 2 END;
317 0378 2 END;
318 0379 2
319 0380 2 |*
320 0381 2 | Zero the CCB address in the table of CCBs/LUBs. This prevents
321 0382 2 | anything else from happening to this incarnation of the file.
322 0383 2 |
323 0384 2 |
324 0385 2 FOR$AA_LUB_TAB [.LUN] = 0;
325 0386 2 END;
326 0387 2
327 0388 2 |*
328 0389 2 | If ASTs were previously enabled, re-enable them.
329 0390 2 |
330 0391 2 |
331 0392 2 IF .AST_STATUS EQL S$WASSET
332 0393 2 THEN
333 0394 2 $SETAST (ENBFLG=1);
```

```

: 334      0395  2
: 335      0396  2   RETURN;
: 336      0397  1   END;

```

! of routine FOR\$\$CLOSE_ALL

.EXTRN SYS\$SETAST

```

                                080C 00000 FOR$$CLOSE_ALL:
                                .WORD Save R2,R3,R11 ; 0281
53 00000000G 00 9E 00002 MOVAB SYS$SETAST, R3
5E          08 C2 00009 SUBL2 #8, SP
          7E D4 0000C CLRL -(SP) ; 0332
63          01 FB 0000E CALLS #1, SYS$SETAST
52          50 D0 00011 MOVL R0, AST_STATUS
          04 AE D4 00014 CLRL FLAG ; 0338
          5E DD 00017 1$: PUSHL SP ; 0347
          08 AE 9F 00019 PUSHAB FLAG
00000000G 00 02 FB 0001C CALLS #2, FOR$$NEXT_LUN ; 0348
41          04 AE E9 00023 BLBC FLAG, 3$ ; 0356
          5B D4 00027 CLRL CCB ; 0357
          6E DD 00029 PUSHL LUN
00000000G 00 01 FB 0002B CALLS #1, FOR$$CB_FETCH
00000000G 00 5B D0 00032 MOVL CCB, FOR$$A_CUR_LUB ; 0358
          1F FC AB E9 00039 BLBC -4(CCB), 2$ ; 0366
00000000G 00 00 FB 0003D CALLS #0, FOR$$CLOSE_FILE ; 0369
          15 50 E8 00044 BLBS R0, 2$
50 001880E4 8F D0 00047 MOVL #1605860, CLO_ERROR ; 0374
          00 02 F0 0004E INSV #2, #0, #3, CLO_ERROR ; 0375
          50 DC 00053 PUSHL CLO_ERROR ; 0376
00000000G 00 01 FB 00055 CALLS #1, FOR$$SIGNAL
          50 6E D0 0005C 2$: MOVL LUN, R0 ; 0385
00000000G0040 D4 0005F CLRL FOR$$AA_LUB_TAB+32[R0]
          AF 11 00066 BRB 1$ ; 0340
          09 52 D1 00068 3$: CMPL AST_STATUS, #9 ; 0392
          05 12 0006B BNEQ 4$
          01 DD 0006D PUSHL #1 ; 0394
          63 01 FB 0006F CALLS #1, SYS$SETAST
          04 00072 4$: RET ; 0397

```

; Routine Size: 115 bytes, Routine Base: _FOR\$CODE + 0039

```

: 337      0398  1 END
: 338      0399  1
: 339      0400  0 ELUDOM

```

! End of FOR\$EXIT_HANDL module

PSECT SUMMARY

Name	Bytes	Attributes
_FOR\$DATA	4	NOVEC, WR1, RD, NOEXE, NOSHR, LCL, REL, CON, PIC, ALIGN(2)

: _FOR\$CODE 172 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	00:01.0
\$_\$255\$DUA28:[FORRTL.OBJ]FORLIB.L32;1	711	184	25	52	00:00.6
\$_\$255\$DUA28:[FORRTL.OBJ]RTLLIB.L32;1	36	0	0	8	00:00.1

COMMAND QUALIFIERS

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

: Size: 172 code + 4 data bytes
: Run Time: 00:06.9
: Elapsed Time: 00:21.9
: Lines/CPU Min: 3488
: Lexemes/CPU-Min: 9723
: Memory Used: 90 pages
: Compilation Complete

A grid of 180 small terminal window screenshots, arranged in 15 rows and 12 columns. Each window displays a different screen from the VAX/VMS operating system, including various system commands, error messages, and utility outputs. The screens are densely packed and cover most of the page area.

FORFIND
LIS

FORFMTINT
LIS

FOREXITHA
LIS

FORENODEF
LIS

FORENCOMF
LIS

FORIDATE
LIS

FORENDFIL
LIS

FORERRSNS
LIS

FOREXIT
LIS

FORERROR
LIS

FORFMTCP
LIS

FORENCOMO
LIS

FORINIDES
LIS