


```

FFFFFFFFF  000000  RRRRRRRR  DDDDDDDD  EEEEEEEEE  FFFFFFFFFF  IIIIII  NN      NN  EEEEEEEEE
FFFFFFFFF  000000  RRRRRRRR  DDDDDDDD  EEEEEEEEE  FFFFFFFFFF  IIIIII  NN      NN  EEEEEEEEE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FFFFFFFFF  00      00  RRRRRRRR  DD      DD  EEEEEEEE  FFFFFFFF  II      NN      NN  EEEEEEEE
FFFFFFFFF  00      00  RRRRRRRR  DD      DD  EEEEEEEE  FFFFFFFF  II      NN      NN  EEEEEEEE
FF          00      00  RR  RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR  RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          00      00  RR      RR  DD      DD  EE          FF          II      NN      NN  EE
FF          000000  RR      RR  DDDDDDDD  EEEEEEEEE  FF          IIIIII  NN      NN  EEEEEEEEE
FF          000000  RR      RR  DDDDDDDD  EEEEEEEEE  FF          IIIIII  NN      NN  EEEEEEEEE

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          II      SS
LLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLL  IIIIII  SSSSSSSS

```



```
1 0001 0 MODULE FOR$DEFINE_FILE (          ! FORTRAN DEFINE FILE Statement
2 0002 0 IDENT = '1-004'                  ! File: FORDEFINE.B32
3 0003 0 ) =
4 0004 1 BEGIN
5 0005 1
6 0006 1 *****
7 0007 1 *
8 0008 1 *  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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24 0024 1 *  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
25 0025 1 *
26 0026 1 *
27 0027 1 *****
28 0028 1
29 0029 1
30 0030 1 ++
31 0031 1 FACILITY: FORTRAN Support Library, user callable
32 0032 1
33 0033 1 ABSTRACT:
34 0034 1
35 0035 1     Contains routines FOR$DEF FILE W and FOR$DEF FILE,
36 0036 1     implementing the FORTRAN DEFINE FILE statement with
37 0037 1     word-length and longword-length associate variable arguments.
38 0038 1
39 0039 1 ENVIRONMENT: Mixture of AST level or not.
40 0040 1
41 0041 1 AUTHOR: Jonathan M. Taylor, CREATION DATE: 4-OCT-77
42 0042 1
43 0043 1 MODIFIED BY:
44 0044 1
45 0045 1     Jonathan M. Taylor, 4-OCT-77 : VERSION 0
46 0046 1 0-1 - original
47 0047 1 0-2 - Fix MAXREC and RECORDSIZE bugs JMT 19-OCT-77
48 0048 1 0-3 - Call FOR$SCB_POP not RET! JMT 19-OCT-77
49 0049 1 0-4 - Use FOR$K abcmno4yz as E4TERNAL LITERALS. TNH 27-Oct-77
50 0050 1 0-5 - remove MAXREC checking here. JMT 22-Feb-78
51 0051 1 0-9 - RECORDSIZE max is 64K. JMT 22-Feb-78
52 0052 1 0-10 - Global register CCB. JMT 8-Apr-78
53 0053 1 0-11 - Change REQUIRE files for VAX system build. DGP 28-Apr-78
54 0054 1 0-12 - Use JSB linkages. TNH 22-May-78
55 0055 1 0-13 - Pass OPEN$K_LON_MIN to FOR$SCB_PUSH. TNH 22-May-78
56 0056 1 0-14 - Change file name to FORDEFINE.B32, and change the names of
57 0057 1 the REQUIRE files similarly. JBS 14-NOV-78
```

FOR\$DEFINE_FILE
1-004

M 14
16-Sep-1984 00:16:28 VAX-11 Bliss-32 V4.0-742
14-Sep-1984 12:31:45 [FORRTL.SRC]FORDEFINE.B32;1

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(1)

```
: 58      0058 1 | 1-001 - Update version number and copyright notice. JBS 16-NOV-78
: 59      0059 1 | 1-002 - Change REQUIRE file names from FOR... to OIS... JBS 06-DEC-78
: 60      0060 1 | 1-003 - Change OPEN prefix to LUB. JBS 13-DEC-78
: 61      0061 1 | 1-004 - Change FOR$K_RECSPEERR to FOR$K_INCRECTYP. JBS 24-SEP-1979
: 62      0062 1 | --
: 63      0063 1 |
: 64      0064 1 | <BLF/PAGE>
```



```

66      0065 1 |
67      0066 1 | SWITCHES:
68      0067 1 |
69      0068 1 |
70      0069 1 | SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
71      0070 1 |
72      0071 1 |
73      0072 1 | LINKAGES:
74      0073 1 |
75      0074 1 |
76      0075 1 | REQUIRE 'RTLIN:OTSLNK';           ! Define all linkages
77      0504 1 |
78      0505 1 |
79      0506 1 | TABLE OF CONTENTS:
80      0507 1 |
81      0508 1 |
82      0509 1 | FORWARD ROUTINE
83      0510 1 |     FOR$DEF_FILE_W : NOVALUE,      ! DEFINE FILE with one-word assvar
84      0511 1 |     FOR$DEF_FILE : NOVALUE,       ! DEFINE FILE with long-word assvar
85      0512 1 |     COMMON_DEF_FILE : NOVALUE;    ! DEFINE FILE common code
86      0513 1 |
87      0514 1 |
88      0515 1 | INCLUDE FILES:
89      0516 1 |
90      0517 1 |
91      0518 1 | REQUIRE 'RTLML:FORERR';           ! FORTRAN error number definitions
92      0586 1 |
93      0587 1 | REQUIRE 'RTLML:OTSLUB';           ! Logical Unit Block definitions
94      0727 1 |
95      0728 1 | REQUIRE 'RTLML:FORPAR';           ! Intermodule definitions
96      0751 1 |
97      0752 1 | REQUIRE 'RTLIN:OTSMAC';           ! Macros
98      0946 1 |
99      0947 1 | REQUIRE 'RTLIN:RTLPSECT';        ! Define DECLARE_PSECTS macro
100     1042 1 |
101     1043 1 |
102     1044 1 | MACROS:
103     1045 1 |     NONE
104     1046 1 |
105     1047 1 | EQUATED SYMBOLS:
106     1048 1 |
107     1049 1 |
108     1050 1 | LITERAL
109     1051 1 |     K_UNIT = 4,                   ! offset from AP to find parameters
110     1052 1 |     K_MAX_REC = 8,
111     1053 1 |     K_REC_SIZ = 12,
112     1054 1 |     K_ASS_VAR = 16;
113     1055 1 |
114     1056 1 |
115     1057 1 | OWN STORAGE:
116     1058 1 |
117     1059 1 |     NONE
118     1060 1 |
119     1061 1 |
120     1062 1 | EXTERNAL REFERENCES:
121     1063 1 |
122     1064 1 |
```



```
: 123      1065 1 EXTERNAL ROUTINE
: 124      1066 1   FOR$ERR_ENDHND,           ! error condition handler for ERR=, END=
: 125      1067 1   FOR$$SIGNAL STO : NOVALUE, ! convert error number and signal
: 126      1068 1   FOR$$CB_PUSH : JSB_CB_PUSH NOVALUE, ! create LUB/ISB/RAB, if needed
: 127      1069 1   FOR$$CB_POP : JSB_CB_POP NOVALUE; ! return I/O system to previous state
: 128      1070 1
: 129      1071 1 !
: 130      1072 1 ! PSECT DECLARATIONS:
: 131      1073 1 !
: 132      1074 1 DECLARE_PSECTS (FOR);      ! declare PSECTS for FOR$ facility
: 133      1075 1
```



```
135 1076 1 GLOBAL ROUTINE FOR$DEF_FILE_W (UNIT, MAX_REC, REC_SIZ, ASS_VAR) : NOVALUE =
136 1077 1
137 1078 1 ++
138 1079 1 FUNCTIONAL DESCRIPTION:
139 1080 1
140 1081 1 Call Common routine to perform DEFINE FILE for one-word
141 1082 1 associated variable. The argument list is passed in toto.
142 1083 1
143 1084 1 FORMAL PARAMETERS:
144 1085 1
145 1086 1 UNIT.rl.v Logical unit number
146 1087 1 MAX_REC.rl.v Maximum record number
147 1088 1 REC_SIZ.rl.v Record buffer size
148 1089 1 ASS_VAR Address of associated variable
149 1090 1
150 1091 1 IMPLICIT INPUTS:
151 1092 1
152 1093 1 See description of COMMON_DEF_FILE
153 1094 1
154 1095 1 IMPLICIT OUTPUTS:
155 1096 1
156 1097 1 See description of COMMON_DEF_FILE
157 1098 1
158 1099 1 ROUTINE VALUE:
159 1100 1 COMPLETION CODES:
160 1101 1
161 1102 1 NONE
162 1103 1
163 1104 1 SIDE EFFECTS:
164 1105 1
165 1106 1 See description of COMMON_DEF_FILE
166 1107 1
167 1108 1 --
168 1109 1
169 1110 2 BEGIN
170 1111 2
171 1112 2 BUILTIN
172 1113 2 AP;
173 1114 2
174 1115 2 COMMON_DEF_FILE (.AP, 0);
175 1116 1 END;
```

```
.TITLE FOR$DEFINE_FILE
.IDENT \1-004\

.EXTRN FOR$SERR ENDHND
.EXTRN FOR$$$IGNAL STO
.EXTRN FOR$$$CB_PUSH, FOR$$$CB_POP

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

.ENTRY FOR$DEF_FILE_W, Save nothing
CLRL -(SP)
PUSHL AP
CALLS #2, COMMON_DEF_FILE
RET
```

```
0000 00000
7E D4 00002
5C DD 00004
02 FB 00006
04 0000B

0000V CF
```

```
: 1076
: 1115
:
: 1116
```


FOR\$DEFINE_FILE
1-004

D 15
16-Sep-1984 00:16:28
14-Sep-1984 12:31:45

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

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(3)

; Routine Size: 12 bytes, Routine Base: _FOR\$CODE + 0000

; 176 1117 1


```
178 1118 1 GLOBAL ROUTINE FOR$DEF_FILE (UNIT, MAX_REC, REC_SIZ, ASS_VAR) : NOVALUE =
179 1119 1
180 1120 1 ++
181 1121 1 FUNCTIONAL DESCRIPTION:
182 1122 1
183 1123 1     Call Common routine to perform DEFINE FILE for longword
184 1124 1     associated variable. The argument list is passed in toto.
185 1125 1
186 1126 1 FORMAL PARAMETERS:
187 1127 1
188 1128 1     UNIT.rl.v      Logical unit number
189 1129 1     MAX_REC.rl.v   Maximum record number
190 1130 1     REC_SIZ.rl.v  Record buffer size
191 1131 1     ASS_VAR       Address of associated variable
192 1132 1
193 1133 1 IMPLICIT INPUTS:
194 1134 1
195 1135 1     See description of COMMON_DEF_FILE
196 1136 1
197 1137 1 IMPLICIT OUTPUTS:
198 1138 1
199 1139 1     See description of COMMON_DEF_FILE
200 1140 1
201 1141 1 ROUTINE VALUE:
202 1142 1 COMPLETION CODES:
203 1143 1
204 1144 1     NONE
205 1145 1
206 1146 1 SIDE EFFECTS:
207 1147 1
208 1148 1     See description of COMMON_DEF_FILE
209 1149 1
210 1150 1 --
211 1151 1
212 1152 2 BEGIN
213 1153 2
214 1154 2 BUILTIN
215 1155 2     AP;
216 1156 2
217 1157 2 COMMON_DEF_FILE (.AP, 1);
218 1158 1 END;
```

```
0000 00000
01 DD 00002
5C DD 00004
0000V CF 02 FB 00006
04 0000B
```

```
.ENTRY FOR$DEF_FILE, Save nothing
PUSHL #1
PUSHL AP
CALLS #2, COMMON_DEF_FILE
RET
```

```
: 1118
: 1157
: 1158
```

; Routine Size: 12 bytes, Routine Base: _FOR\$CODE + 000C

; 219 1159 1


```
221 1160 1 ROUTINE COMMON_DEF_FILE (OLD_AP, FLAG) : NOVALUE =
222 1161 1
223 1162 1 ++
224 1163 1 FUNCTIONAL DESCRIPTION:
225 1164 1
226 1165 1 Get a LUB for this unit and set some LUB entries according
227 1166 1 to values passed to our caller.
228 1167 1
229 1168 1 FORMAL PARAMETERS:
230 1169 1
231 1170 1 OLD_AP Address of the arg list that was passed
232 1171 1 to our caller
233 1172 1 FLAG Length of users associated variable:
234 1173 1 0 - word
235 1174 1 1 - longword
236 1175 1
237 1176 1 IMPLICIT INPUTS:
238 1177 1
239 1178 1 LUB$V_DIRECT This unit as previously been specified
240 1179 1 for direct access by an OPEN statement or
241 1180 1 DEFINE FILE.
242 1181 1 LUB$V_OPENED This unit has already been opened by
243 1182 1 OPEN statement or default open.
244 1183 1
245 1184 1 IMPLICIT OUTPUTS:
246 1185 1
247 1186 1 LUB$V_DIRECT 1
248 1187 1 LUB$V_UNFORMAT 1
249 1188 1 LUB$V_ASS_VAR L set to the value of FLAG
250 1189 1 LUB$A_ASSOC_VAR address of associated variable
251 1190 1 LUB$L_REC_MAX set according to MAX_REC parameter passed
252 1191 1 LUB$W_RBUF_SIZE set from REC_SIZ parameter passed
253 1192 1
254 1193 1 ROUTINE VALUE:
255 1194 1 COMPLETION CODES:
256 1195 1
257 1196 1 NONE
258 1197 1
259 1198 1 SIDE EFFECTS:
260 1199 1
261 1200 1 SIGNAL_STOPs:
262 1201 1 FOR$_UNIALLOPE if the unit is already open
263 1202 1 FOR$_DUPFILSPE if a define file has already been done on this unit
264 1203 1 FOR$_INCRECTYP if the REC_SIZE parameter is out of range
265 1204 1 FOR$_RECNUMOUT if the MAX_REC parameter is invalid.
266 1205 1
267 1206 1 --
268 1207 1
269 1208 2 BEGIN
270 1209 2
271 1210 2 GLOBAL REGISTER
272 1211 2 CCB = K_CCB_REG : REF BLOCK [, BYTE];
273 1212 2
274 1213 2 LOCAL
275 1214 2 L_UNWIND_ACTION : VOLATILE, ! Unwind action code (FOR$K_UNWIND{POP or NOP})
276 1215 2 L_UNWIND_DEPTH : VOLATILE, ! Number of additional frames to unwind if error
277 1216 2 A_ERR_ADR : VOLATILE, ! Indicates to error handler that
```



```
278      A_END_ADR : VOLATILE;                ! there are no ERR and END= addresses
279
280      ENABLE
281      FOR$$ERR_ENDHND (L_UNWIND_ACTION, A_ERR_ADR, A_END_ADR, L_UNWIND_DEPTH);
282
283      ! pass info to error handler
284
285      !+ Set up error handler conditions in case CB_PUSH bombs
286      !-
287      L_UNWIND_ACTION = FOR$K_UNWINDNOP;
288      L_UNWIND_DEPTH = 1;
289      A_ERR_ADR = A_END_ADR = 0;
290
291      !+ Get a LUB for this logical unit.
292      !- On return, CCB points to current control block.
293
294      FOR$$CB_PUSH (.(OLD_AP + K__UNIT), LUB$K_LUN_MIN);
295
296      !+ Unwind action (if an error occurs) is now to pop a LUB.
297      !-
298      L_UNWIND_ACTION = FOR$K_UNWINDPOP;
299
300      !+ Check the LUB for errors...
301      !-
302
303      IF .CCB [LUB$V_OPENED] THEN FOR$$SIGNAL_STO (FOR$K_UNIALROPE);
304
305      IF .CCB [LUB$V_DIRECT] THEN FOR$$SIGNAL_STO (FOR$K_DUPFILSPE);      ! DEFINE FILE after DEFINE FILE
306
307      !+ Place appropriate information in the LUB from users parameters.
308      !-
309      CCB [LUB$V_DIRECT] = 1;
310      CCB [LUB$V_UNFORMAT] = 1;
311      CCB [LUB$V_ASS_VAR_L] = .FLAG;                ! FLAG says longword assvar or not
312      CCB [LUB$A_ASSOC_VAR] = .(OLD_AP + K__ASS_VAR);
313      CCB [LUB$L_REC_MAX] = .(OLD_AP + K__MAX_REC);
314
315      IF (.(OLD_AP + K__REC_SIZ)*2 GTRU 65535) THEN FOR$$SIGNAL_STO (FOR$K_INCRECTYP);
316
317      CCB [LUB$W_RBUF_SIZE] = .(OLD_AP + K__REC_SIZ)*2;
318
319      !+ Return the I/O system to its previous state.
320      !-
321      FOR$$CB_POP ();
322      RETURN;
323      END;
324
```

! of routine COMMON_DEF_FILE

081C 00000 COMMON_DEF_FILE:

54	00000000G	00	9E	00002	.WORD	Save R2,R3,R4,R11	
5E		0C	C2	00009	MOVAB	FOR\$\$SIGNAL_STO, R4	
	04	AE	D4	0000C	SUBL2	#12, SP	
					CLRL	L_UNWIND_DEPTH	

; 1160

; 1208

			7E	D4	0000F	CLRL	A_END_ADR		
		04	AE	D4	00011	CLRL	A_ERR_ADR		
		0C	AE	D4	00014	CLRL	L_UNWIND_ACTION		
	6D	0069	CF	DE	00017	MOVAL	4\$, (FP)		
0C	AE		01	D0	0001C	MOVL	#1, L_UNWIND_ACTION		1226
08	AE		01	D0	00020	MOVL	#1, L_UNWIND_DEPTH		1227
			6E	D4	00024	CLRL	A_END_ADR		1228
		04	AE	D4	00026	CLRL	A_ERR_ADR		
	53	04	AC	D0	00029	MOVL	0CD_AP, R3		1233
			50	D4	0002D	CLRL	R0		
	52	04	A3	D0	0002F	MOVL	4(R3), R2		
		00000000G	00	16	00033	JSB	FOR\$\$CB_PUSH		
		0C	AE	D4	00039	CLRL	L_UNWIND_ACTION		1237
	52	FC	AB	9E	0003C	MOVAB	-4(CCB), R2		1242
	05		62	E9	00040	BLBC	(R2), 1\$		
			22	DD	00043	PUSHL	#34		
	64		01	FB	00045	CALLS	#1, FOR\$\$SIGNAL_STO		
05	62		04	E1	00048	BBC	#4, (R2), 2\$		1244
			15	DD	0004C	PUSHL	#21		
	64		01	FB	0004E	CALLS	#1, FOR\$\$SIGNAL_STO		
	62	0210	8F	A8	00051	BISW2	#528, (R2)		1250
62	01		AC	F0	00056	INSV	FLAG, #12, #1, (R2)		1251
		DC	A3	D0	0005C	MOVL	16(R3), -36(CCB)		1252
		E4	A3	D0	00061	MOVL	8(R3), -28(CCB)		1253
	53	0C	01	78	00066	ASHL	#1, 12(R3), R3		1255
		0000FFFF	53	D1	0006B	CMPL	R3, #65535		
			05	1B	00072	BLEQU	3\$		
			2C	DD	00074	PUSHL	#44		
	64		01	FB	00076	CALLS	#1, FOR\$\$SIGNAL_STO		
	D2	AB	53	B0	00079	MOVW	R3, -46(CCB)		1257
		00000000G	00	16	0007D	JSB	FOR\$\$CB_POP		1261
				04	00083	RET			1263
				0000	00084	.WORD	Save nothing		1208
	50	08	AC	D0	00086	MOVL	8(AP), R0		
	50	04	A0	D0	0008A	MOVL	4(R0), R0		
		F8	A0	9F	0008E	PUSHAB	L_UNWIND_DEPTH		
		F0	A0	9F	00091	PUSHAB	A_END_ADR		
		F4	A0	9F	00094	PUSHAB	A_ERR_ADR		
		FC	A0	9F	00097	PUSHAB	L_UNWIND_ACTION		
			04	DD	0009A	PUSHL	#4		
			5E	DD	0009C	PUSHL	SP		
	7E	04	AC	7D	0009E	MOVQ	4(AP), -(SP)		
	00000000G	00	03	FB	000A2	CALLS	#3, FOR\$\$ERR_ENDHND		
				04	000A9	RET			

; Routine Size: 170 bytes, Routine Base: _FOR\$CODE + 0018

: 325 1264 1 END
: 326 1265 1
: 327 1266 0 ELUDOM

!End of module FOR\$DEFINE_FILE

FOR\$DEFINE_FILE
1-004

I 15
16-Sep-1984 00:16:28
14-Sep-1984 12:31:45

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

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(5)

PSECT SUMMARY

```
:
:      Name              Bytes              Attributes
:
:  _FOR$CODE            194  NOVEC,NOWRT, RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
```

COMMAND QUALIFIERS

```
:
:  BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LISS:FORDEFINE/OBJ=OBJ$:FORDEFINE MSRC$:FORDEFINE/UPDATE=(ENHS:FORDEFINE
:  )
```

```
: Size:                194 code + 0 data bytes
: Run Time:            00:09.3
: Elapsed Time:       00:38.8
: Lines/CPU Min:      8132
: Lexemes/CPU-Min: 38832
: Memory Used: 105 pages
: Compilation Complete
```


0179 AH-BT13A-SE
VAX/VMS V4.0

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LIS

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LIS

FORDECOMP
LIS

FORDELETE
LIS

COMRAD50
LIS

COMUSEREX
LIS

FORBITOPS
LIS

FORDEFINE
LIS

FORBACKSP
LIS

FORCUTR
LIS

FORDISPA
LIS