


```
FFFFFFFFF 000000 RRRRRRRR SSSSSSSS EEEEEEEEE CC CCCCCC NN NN DDDDDDDD SSSSSSSS
FFFFFFFFF 000000 RRRRRRRR SSSSSSSS EEEEEEEEE CC CCCCCC NN NN DDDDDDDD SSSSSSSS
FF 00 00 RR RR SS SS EE EE CC CC NN NN DD DD SS SS
FF 00 00 RR RR SS SS EE EE CC CC NN NN DD DD SS SS
FF 00 00 RR RR SS SS EE EE CC CC NN NN DD DD SS SS
FFFFFFFF 00 00 RRRRRRRR SSSSSS EEEEEEE CC CC NN NN DD DD SSSSSS
FFFFFFFF 00 00 RRRRRRRR SSSSSS EEEEEEE CC CC NN NN DD DD SSSSSS
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```

(2)	48	HISTORY	; Detailed Current Edit History
(3)	59	DECLARATIONS	
(4)	89	FOR\$SECNDS -	get delta system time

```
0000 1 .TITLE FOR$SECNDS - GET DELTA TIME
0000 2 .IDENT /1-002/ ; File: FORSECNDS.MAR
0000 3
0000 4
0000 5 :*****
0000 6 :
0000 7 :* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0000 24 :
0000 25 :
0000 26 :*****
0000 27 :
0000 28
0000 29 : FACILITY: MATH LIBRARY
0000 30 :++
0000 31 : ABSTRACT:
0000 32 :
0000 33 :
0000 34 :--
0000 35 :
0000 36 : VERSION: 0
0000 37 :
0000 38 : HISTORY:
0000 39 :
0000 40 : AUTHOR:
0000 41 : Jonathan Taylor, 29-Jun-77 : Version 0
0000 42 :
0000 43 : MODIFIED BY:
0000 44 :
0000 45 :
0000 46 :
```

FORSSECNDS
1-002

L 15
- GET DELTA TIME
HISTORY ; Detailed Current Edit History

16-SEP-1984 00:02:24 VAX/VMS Macro V04-00
6-SEP-1984 11:00:23 [FORRTL.SRC]FORSECNDS.MAR;1

Page 2
(2)

0000 48 .SBTTL HISTORY ; Detailed Current Edit History
0000 49
0000 50
0000 51 ; Edit History for Version 0 of FORSECNDS
0000 52 ;
0000 53
0000 54 : 0-5 - Add 86400 if negative for midnight. TNH 7-June-78
0000 55 : 0-6 - Remove FOR\$FLAG_JACKET. TNH 11-July-78
0000 56 : 1-001 - Update version number and copyright notice. JBS 16-NOV-78
0000 57 : 1-002 - Add "_" to the PSECT directive. JBS 22-DEC-78

```
0000 59      .SBTTL  DECLARATIONS
0000 60
0000 61 :
0000 62 : INCLUDE FILES:
0000 63 :     NONE
0000 64 :
0000 65 :
0000 66 : EXTERNAL SYMBOLS:
0000 67 :     NONE
0000 68 :
0000 69 :
0000 70 : MACROS:
0000 71 :     NONE
0000 72 :
0000 73 :
0000 74 : PSECT DECLARATIONS:
0000 75 :
00000000 76      .PSECT  _FOR$CODE      PIC, SHR, LONG, EXE, NOWRT
0000 77      ; FOR$ code section
0000 78
0000 79 :
0000 80 : EQUATED SYMBOLS:
0000 81 :
00000004 82      arg      = 4      ; offset of addr of users' arg
0000 83
0000 84 :
0000 85 : OWN STORAGE:
0000 86 :
0000 87
```

```
0000 89      .SBTTL FOR$SECNDS - get delta system time
0000 90
0000 91 :++
0000 92 : FUNCTIONAL DESCRIPTION:
0000 93 :
0000 94 :     Routine FOR$SECNDS returns the system time in seconds as
0000 95 :     a single precision floating point value minus the value
0000 96 :     of its single real argument.
0000 97 :
0000 98 : CALLING SEQUENCE:
0000 99 :
0000 100 :     Time_difference.wf.v = FOR$SECNDS( time_origin.rf.r)
0000 101 :
0000 102 : INPUT PARAMETERS:
0000 103 :
0000 104 :     The time_origin parameter is single precision floating point
0000 105 :     and called by reference.
0000 106 :
0000 107 : IMPLICIT INPUTS:
0000 108 :     NONE
0000 109 :
0000 110 : OUTPUT PARAMETERS:
0000 111 :     NONE
0000 112 :
0000 113 : IMPLICIT OUTPUTS:
0000 114 :     NONE
0000 115 :
0000 116 : COMPLETION CODES:
0000 117 :     NONE
0000 118 :
0000 119 : SIDE EFFECTS:
0000 120 :
0000 121 :     Integer Overflow can occur (but it shouldn't)
0000 122 :     Floating Underflow and Overflow can occur.
0000 123 :
0000 124 :--
```

```

      4000 0000 126      .ENTRY FOR$SECNDS,      ^M<IV>
      5E 10  C2 0002 127      SUBL      #2*8, SP      ; make an 8 word work space
      50 5E  D0 0005 128      MOVL      SP, R0      ; for $NUMTIM
      5E 06  C0 0013 130      $NUMTIM_ S      (R0)      ; R0 -> work space
      50 3C 8E A5 0016 131      ADDL      #2*3, SP      ; get system time values
      50 50 8E A0 001A 132      MULW3     (SP)+, #60, R0      ; SP -> "hour of day"
      50 50 3C C4 001D 133      ADDW      (SP)+, R0      ; R0 = hours * 60
      50 50 3C C4 0020 134      MOVZWL    R0, R0      ; add in "minutes of hour"
      51 8E 3C 0023 135      MULL       #60, R0      ; get more precision
      50 51  C0 0026 136      MOVZWL    (SP)+, R1      ; so this doesn't overflow
      50 50 4E 0029 137      ADDL       R1, R0      ; convert "seconds of minute"
      51 6E 4D 002C 138      CRTL      R0, R0      ; and add to total time
      51 50 8F 46 002F 139      CMTWF    (SP), R1      ; convert to floating
      50 51 40 0036 140      DIVF       #100, R1      ; R1 = "hundredths of seconds"
      50 04 BC 42 0039 141      ADDF      R1, R0      ; make a fraction
      50 04 BC 42 003D 142      SUBF      @arg(AP), R0      ; add in hundredths
      50 07 18 003D 143      BGEQ       10$,      ; and get delta time from
      50 C00048A8 8F 40 003F 144      ADDF      #86400., R0      ; users' argument
      04 0046 146      RET      ; branch if not negative
      04 0047 147      .END      ; must have gone by midnight
      0047 148      ; so add # of seconds in 1 day.
      0047 149      ; R0 = delta time
```

FOR\$SECNDS
Symbol table

- GET DELTA TIME

C 16

16-SEP-1984 00:02:24 VAX/VMS Macro V04-00 Page 6
6-SEP-1984 11:00:23 [FORRTL.SRC]FORSECNDS.MAR;1 (5)

ARG = 00000004
FOR\$SECNDS 00000000 RG 01
SYSS\$NUMTIM ***** G 01

+-----+
! Psect synopsis !
+-----+

PSECT name	Allocation	PSECT No.	Attributes														
ABS	00000000 (0.)	00 (0.)	NOPI	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE				
FOR\$CODE	00000047 (71.)	01 (1.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG				

+-----+
! Performance indicators !
+-----+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	35	00:00:00.09	00:00:01.09
Command processing	141	00:00:00.56	00:00:03.47
Pass 1	102	00:00:00.56	00:00:04.04
Symbol table sort	0	00:00:00.00	00:00:00.01
Pass 2	42	00:00:00.34	00:00:01.33
Symbol table output	1	00:00:00.01	00:00:00.02
Psect synopsis output	3	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	326	00:00:01.58	00:00:09.98

The working set limit was 1050 pages.
2004 bytes (4 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 3 non-local and 1 local symbols.
149 source lines were read in Pass 1, producing 11 object records in Pass 2.
2 pages of virtual memory were used to define 2 macros.

+-----+
! Macro library statistics !
+-----+

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	2

13 GETS were required to define 2 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:FORSECNDS/OBJ=OBJ\$:FORSECNDS MSRC\$:FORSECNDS/UPDATE=(ENH\$:FORSECNDS)

0183

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