


```

MM      MM      TTTTTTTTTT  HH      HH      AAAAAA      IIIIII      NN      NN      TTTTTTTTTT
MM      MM      TTTTTTTTTT  HH      HH      AAAAAA      IIIIII      NN      NN      TTTTTTTTTT
MMMM    MMMM      TT          HH      HH      AA          AA      II          NN      NN      TT
MMMM    MMMM      TT          HH      HH      AA          AA      II          NN      NN      TT
MM      MM      TT          HH      HH      AA          AA      II          NNNN     NN      TT
MM      MM      TT          HH      HH      AA          AA      II          NNNN     NN      TT
MM      MM      TT          HHHHHHHHHH  AA          AA      II          NN      NN      TT
MM      MM      TT          HHHHHHHHHH  AA          AA      II          NN      NN      TT
MM      MM      TT          HH      HH      AAAAAAAAAA  II          NN      NNNN     TT
MM      MM      TT          HH      HH      AAAAAAAAAA  II          NN      NNNN     TT
MM      MM      TT          HH      HH      AA          AA      II          NN      NN      TT
MM      MM      TT          HH      HH      AA          AA      IIIIII     NN      NN      TT
MM      MM      TT          HH      HH      AA          AA      IIIIII     NN      NN      TT

```

```

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
LLLLLLLLLLLL  IIIIII      SSSSSSSS
LLLLLLLLLLLL  IIIIII      SSSSSSSS

```

```

....
....
....
....

```

(2)	50	HISTORY	; Detailed Current Edit History
(3)	66	DECLARATIONS	
(4)	99	MTHSAINT	Real to Real truncation
(5)	144	MTHSAINT_R2	JSB entry point

```

0000 1      .TITLE MTHSAINT - FLOATING TRUNCATION
0000 2      .IDENT /1-006/           ; File: MTHSAINT.MAR Edit: JAW1006
0000 3
0000 4
0000 5 :*****
0000 6 :*
0000 7 :*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
0000 8 :*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
0000 9 :*  ALL RIGHTS RESERVED.
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0000 17 :*
0000 18 :*  THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
0000 19 :*  AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
0000 20 :*  CORPORATION.
0000 21 :*
0000 22 :*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
0000 23 :*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 24 :*
0000 25 :*
0000 26 :*****
0000 27
0000 28
0000 29 : FACILITY: MATH LIBRARY
0000 30 :+
0000 31 : ABSTRACT:
0000 32 :   This module contains routine MTHSAINT:
0000 33 :   truncate a floating-point number.
0000 34
0000 35
0000 36 :--
0000 37
0000 38 : VERSION: 0
0000 39
0000 40 : HISTORY:
0000 41
0000 42 : AUTHOR:
0000 43 :   Jonathan M. Taylor, 30-Jul-77: Version 0
0000 44
0000 45 : MODIFIED BY:
0000 46
0000 47
0000 48

```

```
0000 50 .SBTTL HISTORY ; Detailed Current Edit History
0000 51
0000 52
0000 53 ; Edit History for Version 0 of MTHSAINT
0000 54 :
0000 55 : 0-3 - Remove MTH$FLAG_JACKET. TNH 5-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 21-DEC-78
0000 58 : 1-003 - Add a JSB entry point. JBS 16-AUG-1979
0000 59 : 1-004 - Make the primary JSB entry MTHSAINT R2 so that it can
0000 60 : disable and restore IV. SBL 26-Sep-1979
0000 61 : 1-005 - Remove MTHSAINT_R1, since the BASIC compiler has converted to
0000 62 : the R2 entry point. JBS 26-NOV-1979
0000 63 : 1-006 - Mask all bits except IV when restoring PSW. JAW 14-Jul-1981
0000 64 :
```

```
0000 66      .SBTTL DECLARATIONS
0000 67
0000 68 :
0000 69 : INCLUDE FILES:
0000 70 :
0000 71 :     NONE
0000 72 :
0000 73 : EXTERNAL SYMBOLS:
0000 74 :
0000 75 :     NONE
0000 76 :
0000 77 :
0000 78 : MACROS:
0000 79 :
0000 80 :     $PSLDEF                      ; PSL Macros
0000 81 :
0000 82 :
0000 83 :
0000 84 : PSECT DECLARATIONS:
0000 85 : .PSECT _MTH$CODE          PIC, SHR, LONG, EXE, NOWRT
0000 86 :
0000 87 :
0000 88 : EQUATED SYMBOLS:
0000 89 :
0000 90 :     NONE
0000 91 :
0000 92 :
0000 93 :
0000 94 : OWN STORAGE:
0000 95 :
0000 96 :     NONE
0000 97 :
```

```

0000 99      .SBTTL MTHSAINT      Real to Real truncation
0000 100
0000 101    :++
0000 102    : FUNCTIONAL DESCRIPTION:
0000 103    :
0000 104    :       Return the arguments with zeroes to the right of the decimal
0000 105    :       point.
0000 106    :
0000 107    : CALLING SEQUENCE:
0000 108    :
0000 109    :       Truncation.wf.v = MTHSAINT (arg.rf.r)
0000 110    :
0000 111    : INPUT PARAMETERS:
0000 112    :
0000 113    :       The one argument is a single-precision floating-point value
0000 114    :       and is call-by-reference.
0000 115    :
0000 116    : IMPLICIT INPUTS:
0000 117    :
0000 118    :       NONE
0000 119    :
0000 120    : OUTPUT PARAMETERS:
0000 121    :
0000 122    :       NONE
0000 123    :
0000 124    : IMPLICIT OUTPUTS:
0000 125    :
0000 126    :       NONE
0000 127    :
0000 128    : COMPLETION CODES:
0000 129    :
0000 130    :       NONE
0000 131    :
0000 132    : SIDE EFFECTS:
0000 133    :
0000 134    :       Reserved Operand and Floating Underflow exceptions can occur.
0000 135    :
0000 136    :--
0000 137    :
0002 138    .ENTRY MTHSAINT,      ^M<>
0006 139    MOVF @4(AP), R0      ; R0 = arg
000C 140    EMOVF R0, #0, #1, R1, R1 ; R1 = fraction_part(R0)
000F 141    SUBF R1, R0      ; R0 = integer_part(R0)
0010 142    RET

```

```

51 51 08 50 04 BC 0000 50
51 51 08 50 04 BC 0002 54
51 51 08 50 04 BC 0006 54
51 51 08 50 04 BC 000C 42
51 51 08 50 04 BC 000F 04
51 51 08 50 04 BC 0010 04

```

```

0010 144 .SBTTL MTHSAINT_R2 JSB entry point
0010 145
0010 146 :++
0010 147 : FUNCTIONAL DESCRIPTION:
0010 148 :
0010 149 : Return the arguments with zeroes to the right of the decimal
0010 150 : point.
0010 151 :
0010 152 : CALLING SEQUENCE:
0010 153 :
0010 154 : Truncation.wf.v = JSB MTHSAINT_R2 (arg.rf.v)
0010 155 :
0010 156 : INPUT PARAMETERS:
0010 157 :
0010 158 : The one argument is a single-precision floating-point value
0010 159 : and is call-by-value.
0010 160 :
0010 161 : IMPLICIT INPUTS:
0010 162 :
0010 163 : NONE
0010 164 :
0010 165 : OUTPUT PARAMETERS:
0010 166 :
0010 167 : NONE
0010 168 :
0010 169 : IMPLICIT OUTPUTS:
0010 170 :
0010 171 : NONE
0010 172 :
0010 173 : COMPLETION CODES:
0010 174 :
0010 175 : NONE
0010 176 :
0010 177 : SIDE EFFECTS:
0010 178 :
0010 179 : Reserved Operand and Floating Underflow exceptions can occur.
0010 180 :
0010 181 :--
0010 182
0010 183
0010 184 MTHSAINT R2::
0010 185 MOVPSL R2 ; R0 = arg
0010 186 BICPSW #PSLSM_IV ; Save current PSL
0010 187 EMOVF R0, #0, #1, R1, R1 ; Disable integer overflow
0010 188 SUBF R1, R0 ; R1 = fraction_part(R0)
0010 189 BICW #^C<PSLSM_IV>, R2 ; R0 = integer_part(R0)
0010 190 BISPSW R2 ; Clear all buf IV
0010 191 RSB ; Restore previous IV
0010 192 ; Return to caller
0010 193 .END

```

```

51 51 08 00 50 54 0014 187
52 FFDF 8F AA 001D 189
52 05 0022 190
0024 191
0025 192
0025 193

```


MTHSAINT
Symbol table

- FLOATING TRUNCATION

J 6

16-SEP-1984 01:02:35 VAX/VMS Macro V04-00
6-SEP-1984 11:20:14 [MTHRTL.SRC]MTHAINT.MAR;1

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(5)

MT
2-

MTHSAINT 00000000 RG 02
MTHSAINT_R2 00000010 RG 02
PSLSM_IV = 00000020

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
\$ABSS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
_MTHSCODE	00000025 (37.)	02 (2.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	31	00:00:00.09	00:00:01.08
Command processing	134	00:00:00.45	00:00:02.16
Pass 1	113	00:00:01.00	00:00:04.01
Symbol table sort	0	00:00:00.03	00:00:00.03
Pass 2	46	00:00:00.46	00:00:02.13
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	330	00:00:02.06	00:00:09.44

The working set limit was 1050 pages.
4117 bytes (9 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 41 non-local and 0 local symbols.
193 source lines were read in Pass 1, producing 13 object records in Pass 2.
8 pages of virtual memory were used to define 7 macros.

! Macro library statistics !

Macro library name Macros defined

_ \$255\$DUA28:[SYSLIB]STARLET.MLB;2 4

98 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:MTHAINT/OBJ=OBJ\$:MTHAINT MSRCS:MTHAINT/UPDATE=(ENHS:MTHAINT)

