


```

MM      MM      TTTTTTTTTT  HH      HH      HH      HH      FFFFFFFFFF  LL      000000  000000  RRRRRRRR
MM      MM      TTTTTTTTTT  HH      HH      HH      HH      FFFFFFFFFF  LL      000000  000000  RRRRRRRR
MMMM    MMMM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MMMM    MMMM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM  MM  MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM  MM  MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HHHHHHHHHH  HHHHHHHHHH  FFFFFFFF  LL      00      00      00      00      RRRRRRRR
MM      MM      TT      HHHHHHHHHH  HHHHHHHHHH  FFFFFFFF  LL      00      00      00      00      RRRRRRRR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LL      00      00      00      00      RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LLLLLLLLLL  000000  000000  RR      RR
MM      MM      TT      HH      HH      HH      HH      FF      LLLLLLLLLL  000000  000000  RR      RR

```

```

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
LLLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLLL  IIIIII  SSSSSSSS

```

(2)	57
(3)	87
(4)	146

DECLARATIONS
MTH\$HFLOOR - greatest integer H_D floating routine
MTH\$HFLOOR_R7 - greatest integer H_D floating routine

```

0000 1      .TITLE MTH$HFLOOR - Great: t integer routine for H floating
0000 2      .IDENT /1-002/ ; File: MTHHFLOOR.MAR EDIT: RH1002
0000 3
0000 4
0000 5 :*****
0000 6 :*
0000 7 :*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0000 17 :*
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0000 21 :*
0000 22 :*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
0000 23 :*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 24 :*
0000 25 :*
0000 26 :*****
0000 27 :
0000 28 :
0000 29 :++
0000 30 : FACILITY: Math Library
0000 31 :
0000 32 : ABSTRACT:
0000 33 :
0000 34 :     This routine finds the largest integer less than the input
0000 35 :     value, i.e. it truncates toward negative infinity
0000 36 :     for data type H_floating.
0000 37 :
0000 38 : ENVIRONMENT: User Mode, AST Reentrant
0000 39 :
0000 40 : --
0000 41 : Author: John Sauter, Creation date: 27-JUL-1979
0000 42 :
0000 43 : MODIFIED BY:
0000 44 :
0000 45 : VERSION 00
0000 46 : 1-001 - Original, from MTH$GFLOOR.
0000 47 : 1-002 - CALL entry was modified to return the result in the address
0000 48 :         specified by the leftmost argument in order to conform to the
0000 49 :         calling standard for return values larger than 64 bits. The
0000 50 :         original version returned the results in R0-R3.
0000 51 :         JSB entry was modify to correct typos: The last two operands
0000 52 :         of the EMODH instruction and the operand of the TSMH instruction
0000 53 :         were changed from R2 to R4.
0000 54 :         Comments were changed to eliminate an erroneous calling sequence.
0000 55 :         RNH 9-DEC-1980

```

MTH
Syn

MTH
MTH
PSL

PSE

\$AE
_M1

Pha

In1
Com
Pas
Syn
Pas
Syn
Pse
Crc
Ass

The
410
The
193
8 p

Mac

_S2

98

The

MAC

```
0000 57      .SBTTL  DECLARATIONS
0000 58      :
0000 59      : INCLUDE FILES:
0000 60      :
0000 61      :
0000 62      :
0000 63      : EXTERNAL DECLARATIONS.
0000 64      :
0000 65      :      .DSABL  GBL                      ; Prevent undeclared
0000 66      :                                          ; symbols from being
0000 67      :                                          ; automatically global.
0000 68      :
0000 69      : MACROS:
0000 70      :
0000 71      :
0000 72      :
0000 73      : EQUATED SYMBOLS:
0000 74      :
0000 75      :
0000 76      :
0000 77      : OWN STORAGE:
0000 78      :
0000 79      :
0000 80      :
0000 81      : PSECT DECLARATIONS:
0000 82      :
00000000 83      :      .PSECT _MTH$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 84      :      EXE, RD, NOWRT, LONG
0000 85      :
```

```

0000 87      .SBTTL MTH$HFLOOR - greatest integer H_floating routine
0000 88      :++
0000 89      : FUNCTIONAL DESCRIPTION:
0000 90      :
0000 91      : This routine finds the floor by truncating, and then if the
0000 92      : input value is negative and not an integer subtracting 1.
0000 93      :
0000 94      : CALLING SEQUENCE:
0000 95      :
0000 96      : CALL MTH$HFLOOR (result_int.wh.r, input.rh.r)
0000 97      :
0000 98      : INPUT PARAMETERS:
0000 99      :
00000008 0000 100      input_addr = 8          ; address of the H_floating number
0000 101      :                               ; to get the floor of
0000 102      :
0000 103      : IMPLICIT INPUTS:
0000 104      :
0000 105      : NONE
0000 106      :
0000 107      : OUTPUT PARAMETERS:
00000004 0000 108      :
0000 109      : output_addr = 4
0000 110      :
0000 111      : IMPLICIT OUTPUTS:
0000 112      :
0000 113      : NONE
0000 114      :
0000 115      : FUNCTION VALUE:
0000 116      : COMPLETION CODES:
0000 117      :
0000 118      : NONE
0000 119      :
0000 120      : SIDE EFFECTS:
0000 121      :
0000 122      : NONE
0000 123      :
0000 124      :--
0000 125      :
00FC 0000 126      .ENTRY MTH$HFLOOR, ^M<R2, R3, R4, R5, R6, R7> ; entry point
0002 127      :
54 54 08 50 08 BC 70FD 0002 128      MOVH @input_addr(AP), R0          ; R0/R3 = input argument
0007 129      EMODH R0, #0, #1, R4, R4          ; R4/R7 = fraction_part (arg)
000E 130      SUBH2 R4, R0                      ; R0/R3 = integer_part (arg)
0012 131      :
0012 132      BGTR 40$                          ; if > 0, have correct answer
0014 133      :
0014 134      TSTM R4                          ; look at fraction part
0017 135      BGEQ 40$                          ; if > 0 then 0 < input < 1 and
0019 136      :                               ; we have the correct answer
0019 137      :                               ; if = 0 then input was integer
0019 138      :                               ; and we have correct answer
0019 139      :
0019 140      SUBH2 #1,R0                        ; subtract 1 from truncated
001D 141      :                               ; negative non-integer
001D 142      :
04 BC 50 70FD 001D 143 40$: MOVH R0, @output_addr(AP) ; move result to output address

```

MTSHFLOOR
1-002

- Greatest integer routine for H₁floatin 16-SEP-1984 01:36:01 VAX/VMS Macro V04-00
MTSHFLOOR - greatest integer H₁floatin 6-SEP-1984 11:24:55 [MTHRTL.SRC]MTHHFLOOR.MAR;1 Page 4
04 0022 144 RET (3)

MTSH
2-C

```

0023 146      .SBTTL MTH$HFLOOR_R7 - greatest integer H_floating routine
0023 147      :++
0023 148      : FUNCTIONAL DESCRIPTION:
0023 149      :
0023 150      :     This is the JSB entry point to MTH$HFLOOR.
0023 151      :
0023 152      : CALLING SEQUENCE:
0023 153      :
0023 154      :     JSB MTH$HFLOOR_R7
0023 155      :
0023 156      : INPUT PARAMETERS:
0023 157      :
0023 158      :     R0 through R3 contain the input value
0023 159      :
0023 160      : IMPLICIT INPUTS:
0023 161      :
0023 162      :     NONE
0023 163      :
0023 164      : OUTPUT PARAMETERS:
0023 165      :
0023 166      :     R0 through R3 contain the result value
0023 167      :
0023 168      : IMPLICIT OUTPUTS:
0023 169      :
0023 170      :     NONE
0023 171      :
0023 172      : FUNCTION VALUE:
0023 173      : COMPLETION CODES:
0023 174      :
0023 175      :     NONE
0023 176      :
0023 177      : SIDE EFFECTS:
0023 178      :
0023 179      :     NONE
0023 180      :
0023 181      :--
0023 182
0023 183 MTH$HFLOOR_R7::
0023 184      : entry point
54 54 08 00 50 74FD 0023 185      EMODH  R0, #0, #1, R4, R4      ; R4/R7 = fraction_part (arg)
54 54 08 50 54 62F2 002A 186      SUBH2  R4, R0          ; R0/R3 = integer_part (arg)
002E 187
002E 188      BGTR   40$          ; if > 0, have correct answer
0030 189
0030 190      TSTH  R4          ; look at fraction part
04 04 18 0033 191      BGEQ  40$          ; if > 0 then 0 < input < 1 and
0035 192      ; we have the correct answer
0035 193      ; if = 0 then input was integer
0035 194      ; and we have correct answer
0035 195
50 08 62FD 0035 196      SUBH2  #1,R0          ; subtract 1 from truncated
0039 197      ; negative non-integer
0039 198
0039 199 40$:  RSB
003A 200
003A 201      .END

```


MTH\$HFLOOR
Symbol table

- Greatest integer routine for H_floatin 16-SEP-1984 01:36:01 VAX/VMS Macro V04-00 Page 6
6-SEP-1984 11:24:55 [MTHRTL.SRC]MTHHFLOOR.MAR;1 (4)

MTH
2-C

INPUT_ADDR = 00000008
MTH\$HFLOOR 00000000 RG 01
MTH\$HFLOOR R7 00000023 RG 01
OUTPUT_ADDR = 00000004

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes														
ABS	00000000 (0.)	00 (0.)	NOPIC	USR	CCN	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE				
_MTH\$CODE	0000003A (58.)	01 (1.)	PIC	USR	CCN	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG				

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	31	00:00:00.13	00:00:01.98
Command processing	128	00:00:00.51	00:00:07.16
Pass 1	72	00:00:00.54	00:00:01.82
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	50	00:00:00.47	00:00:02.05
Symbol table output	2	00:00:00.00	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	287	00:00:01.69	00:00:13.07

The working set limit was 900 pages.
2169 bytes (5 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 4 non-local and 2 local symbols.
201 source lines were read in Pass 1, producing 11 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.

! Macro library statistics !

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

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

MTHSIGN LIS

MTHFLOOR LIS

MTHSIGN LIS

MTHMINI LIS

MTHLOG LIS

MTHHTAN LIS

MTHIDNNT LIS

MTHIHNT LIS

MTHHSORT LIS

MTHIMAX0 LIS

MTHHINT LIS

MTHHSINH LIS

MTHHTANH LIS

MTHHINT LIS

MTHMAX1 LIS

MTHHSINCO LIS

MTHMOD LIS

MTHIGNNT LIS