

SIGN FOR THE FLOATING MULTIPLY AND DIVIDE ROUTINES

REGISTERS ON ENTRY:

(H,L) = ADDRESS OF ONE OPERAND  
 (H,B) = ADDRESS OF OTHER OPERAND  
 (H,C) = ADDRESS OF RESULT

REGISTERS ON EXIT:

A,D,E = GARBAGE  
 B,C,H,L = SAME AS ON ENTRY

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006151 315 171 014 CSIGN: CALL MSFH ;SET A-SIGN(H,L), E=SIGN(H,B)
006154 253 XRA E ;EXCLUSIVE OR SIGNS TO GET NEW SIGN
006155 315 161 014 CALL CSTR ;STORE SIGN INTO RESULT
006160 311 RET ;RETURN
    
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SUBROUTINE CSTR  
 STORES VALUE IN A IN  
 CPTR 2  
 PUTS LPTR IN E

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006161 135 CSTR: MOV E,L ;SAVE LPTR IN E
006162 151 MOV I,C ;CPTR TO L
006163 054 INR I ;CPTR 2
006164 054 INR L ;TO L
006165 054 INR I ;***TP
006166 167 MOV M,A ;STORE ANSWER
006167 153 MOV L,E ;LPTR BACK TO L
006170 311 RET
    
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SUBROUTINE MSFH

THIS SUBROUTINE FETCHES THE SIGNS OF THE MANTISSAS  
 OF THE FLOATING POINT NUMBERS POINTED TO BY (H,L)  
 AND (H,B) INTO THE A AND E REGISTERS RESPECTIVELY.

REGISTERS ON EXIT:

A = SIGN OF MANTISSA OF (H,L)  
 E = SIGN OF MANTISSA OF (H,B)  
 B,C,D,H,L = SAME AS ON ENTRY

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006171 135 MSFH: MOV E,L ;SAVE LPTR
006172 150 MOV L,B ;BPTR TO L
006173 054 INR L ;BPTR 2
006174 054 INR L ;***TP
006175 054 INR L ;TO L
006176 176 MOV A,M ; BPTR 2->TO A
    
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006177 346 200 ANI 128 ;SAVE MANT SIGN
    
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006201 153      MOV L,E          ;LPTR BACK TO L
006202 137      MOV E,A          ;STORE BPTR MANT SIGN
006203 054      INR L           ;LPTR 2
006204 054      INR L           ;****TP
006205 054      INR L           ;TO L
006206 176      MOV A,M          ; LPTR 2>TO A
006207 346 200  ANI 128         ;SAVE LPTR MANT SIGN
006211 055      DCR L           ;LPTR BACK
006212 055      DCR L           ;TO L
006213 055      DCR L           ;****TP
006214 311      RET

;
; SUBROUTINE BCTL
; MOVES BPTR CHAR TO LPTR CHAR
; DESTROYSE
BCTL:  MOV L...          ;LPTR TO E
      MOV L,B          ;BPTR TO L
      INR L            ;BPTR 2
      INR L            ;****TP
      INR L            ;TO L
      MOV A,M          ;BPTR CHAR TO A
      MOV L,E          ;LPTR TO L
      INR L            ;PTR 2
      INR L            ;TO L
      INR L            ;****TP
      MOV M,A          ;STORE BPTR CHAR IN LPTR CHAR
      MOV L,E          ;LPTR TO L
      RET

;*****
; ///SQUARE ROOT
; *****
; THE L REG PTS TO THE TO BE
; OPERATED ON.
; THE B REG PTS TO THE LOC WHERE
; THE RESULT IS TO BE STORED
; THE C REG PTS TO 17(10) SCRATCH
; AREA.
; WHERE:
; C = ITERATION COUNT
; C+1 = L REG
; C+2 = B REG
; C+3 TO C+6 = INTRL REG 1
; C+7 TO C+10 = INTRL REG 2
; C+11 TO C+14 = INTRL REG3
; C+15 =
;*****
006232 175      DSORT: MOV A,L          ;STORE L IN
006233 151      MOV L,C          ;2ND WRD SCRATCH
006234 066 000  MV! M,0         ;INITIALIZE ITER CCUNT
006236 054      INR L
006237 167      MOV M,A

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006240 054      INR L           ;STR B IN 3RD
006241 160      MOV M,B          ;WRD OF SCRATCH
006242 054      INR L           ;SET C TO INTRL
006243 115      MOV C,L          ;REG 1
006244 157      MOV L,A          ;SET L PTR AT
006245 174      MOV A,H          ;SET REGS FOR COPY

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006246	315 210 016	CALL COPY	;CPY TC INTRL REG1
006251	315 046 016	CALL GCHR	;PUT CHR IN A
006254	107	MOV B,A	;MAKE COPY
006255	346 200	ANI 200Q	;CK NEG
006257	302 031 015	JNZ ERSQ	
006262	170	MOV A,B	
006263	346 100	ANI 100Q	;CK NEG EXP
006265	170	MOV A,B	
006266	312 302 014	JZ EPOS	
006271	037	RAR	;DIV BY 2
006272	346 177	ANI 177Q	
006274	366 100	ORI 100Q	;SET SIGN BIT
006276	167	MOV M,A	;SAVE 1ST APPROX
006277	303 306 014	JMP AGN4	
006302	037	RAR	;DIV BY 2
006303	346 177	ANI 177Q	
006305	167	MOV M,A	;SAVE 1ST APPROX
006306	151	MOV L,C	;SET REGS
006307	171	MOV A,C	;TO COPY 1ST
006310	306 004	ADI 4	;APPROX
006312	117	MOV C,A	;INTO INTRL REG 2
006313	174	MOV A,H	;FRM INTRL REG1
006314	315 210 016	CALL COPY	
006317	171	MOV A,C	
006320	326 004	SUI 4	;MULTIPLY INTRL REG 1
006322	157	MOV C,A	
006323	101	MOV B,C	;TIMES INTRL REG2
006324	306 010	ADI 10Q	;PLACE RESULT IN
006326	117	MOV C,A	;INTRL REG 3
006327	315 137 012	CALL LMUL	
006332	171	MOV A,C	
006333	326 010	SUI 10Q	;COPY ORG INTO
006335	117	MOV C,A	;INTRL REG 1
006336	326 002	SUI 2	
006340	157	MOV L,A	
006341	156	MOV L,M	
006342	174	MOV A,H	
006343	315 210 016	CALL COPY	
006346	171	MOV A,C	
006347	306 010	ADI 10Q	;ADD INTRL
006351	157	MOV L,A	;REG3 TO
006352	101	MOV B,C	;INTRL REG1
006353	306 004	ADI 4	;ANS TO INTRL
006355	117	MOV C,A	;REG3
006356	315 134 011	CALL LADD	

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006361 175             MOV A,L
006362 326 004        SUI 4             ;DIV INTRL REG 3
006364 107           MOV B,A             ;BY INTRL REG 2
006365 326 004        SU: 4             ;PUT ANSW IN INTRL
006367 117           MOV C,A             ;REG1
006370 315 000 011    CALL LDIV
006373 315 046 016    CALL GCHR
006376 326 001        SUI 1
006400 346 177        ANI 177D
006402 167           MOV M,A
006403 171           MOV A,C
006404 326 003        SUI 3             ;C PTS TO INTRL REG 1
006406 157           MOV I,A             ;GET ITER
006407 106           MOV B,M             ;COUNT NOW INCR
006410 004           INR B
006411 160           MOV M,B
006412 170           MOV A,B
006413 376 005        CPI 5             ;IF = 5 RTN ANS
006415 302 306 014    JNZ AGN4             ;OTHERWISE CONT
006420 151           MOV L,C
006421 055           ALDN: DCR L             ;COPY ANS INTO
006422 116           MOV C,M             ;LOC REQUESTED
006423 054           INR L
006424 174           MOV A,H
006425 315 210 016    CALL COPY
006430 311           RET
006431 151           ERSQ: MOV L,C
006432 315 215 013    CALL WZER             ;WRITE A FLOATING ZERO
006435 303 021 015    JMP ALDN
;
;                                     C+1 = L REG
;
; .....
; /// 5 DIGIT FLOATING PT. OUTPUT
; .....
;
; *****ROUTINE TO CONVERT FLOATING PT.
; *****NUMBERS TO ASCII AND OUTPUT THEM VIA A SUBROUTINE
; *****CALLED OTR - NOTE: THIS IS CURRENTLY SET
; *****TO ODT'S OUTPUT ROUTINE
;
006440 315 332 012 CVR1: CALL ZCHK             ;CHECK FOR NEW ZERO
006443 302 070 015    JNZ NNZRO             ;NOT ZERO
006446 014           INR C             ;IT WAS, OFFSET C BY 2
006447 014           INR C
006450 151           MOV L,C

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006451 315 215 013          CALL WZER          ;WRITE ZERO
006454 315 031 016          CALL SIGN          ;SEND SPACE ON POS ZERO
;
;
006457 054                INR L                ;PNT TO DECIMAL EXPONENT
006460 054                INR L
006461 054                INR L
006462 054                INR L
006463 257                XRA A                ;SET IT TO ZERO
006464 167                MOV M,A
006465 303 227 015        JMP MDSKP          ;OUTPUT IT
006470 126                MOV D,M            ;/GET THE NUMBER TO CCNVERT
NNZRO:
006471 054                INR L
006472 106                MOV B,M
006473 054                INR L
006474 136                MOV E,M
006475 054                INR L                ;/4 WORD***TP
006476 176                MOV A,M            ;/***TP
006477 014                INR C                ;/OFFSET SCRATCH POINIER BY 2
006500 014                INR C
006501 151                MOV L,C            ;/L NOT NEEDED ANY MORE
006502 162                MOV M,D            ;/SAVE NUMBER IN SCRATCH
006503 054                INR L
006504 160                MOV M,B
006505 054                INR L
006506 163                MOV M,E            ;/***TP
006507 054                INR L            ;/***TP
006510 107                MOV B,A            ;/SAVE COPY OF CHAR & SIGN
006511 346 177            ANI 177Q          ;GET ONLY CHAR.
006513 167                MOV M,A            ;/SAVE ABS(NUMBER)
006514 376 100            CPI 100Q          ;CK FOR ZERO
006516 312 125 015        JZ NZRO
006521 326 001            SUI 1            ;/GET SIGN OF DEC. EXP
006523 346 100            ANI 100Q          ;/GET SIGN OF CHAR.
006525 007                NZRO: RLC          ;MOVE IT TO SIGN POSITION
006526 054                INR L            ;/MOVE TO DECIMAL EXP.
006527 167                MOV M,A            ;/SAVE SIGN OF EXP.
006530 170                MOV A,B            ;/GET MANT. SIGH BACK
006531 315 031 016        CALL SIGN          ;/OUTPUT SIGN
006534 056 235            MVI L,(TENS AND 377Q) ;/TRY MULT. OR DIV. BY 100000 FIRST
006536 315 172 016        CALL COPT          ;/MAKE A COPY IN RAM
006541 315 046 016        TSTB: CALL GCHR          ;/GET CHAR. OF NUMBER
006544 107                MOV B,A            ;/SAVE A COPY
006545 346 100            ANI 100Q          ;/GET ABSOLUTE VALUE OF CHAR
006547 170                MOV A,B            ;/INCASE PLUS
006550 312 156 015        JZ GOTV          ;/ALREADY PLUS
006553 076 200            MVI A,200Q        ;/MAKE MINUS INTO PLUS
006555 220                SUB B            ;/PLUS=200B-CHAR
006556 376 022            GOTV: CPI 22Q          ;/TEST FOR USE OF 100000
006560 372 174 015        JM TRY1          ;/WONT GO
006563 315 054 016        CALL MORD          ;/WILL GO SO DO IT

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