Applesoft: Internals--Floating Point Math Package (2 of 3)

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FLOATING POINT REGISTER MOVE ROUTINES


MOVFM           EAF9
Moves the number in memory Y,A points to into FAC.  On exit A and Z reflect
FACEXP.


MOV2F           EB1E
Pack FAC and temporarily moves it into register 2.  On exit A and Z reflect
FACEXP.


MOV1F           EB21
Pack FAC and moves it temporarily into register 1.  On exit A and Z reflect
FACEXP.


MOVML           EB23
Pack FAC and move it into zero page area starting at X.  On exit A and Z
reflect FACEXP.


MOVMF           EB2B
Pack FAC and move it into memory pointed to by Y,X.  On exit A and Z reflect
FACEXP.


MOVFA           EB53
Move ARG into FAC.  On exit A and Z reflect FACEXP.


MOVAF           EB63
Move FAC into ARG.  On exit A and Z reflect FACEXP.


CONUPK          E9E3
Load ARG from memory pointed to by Y,A.  On exit A and Z reflect
FACEXP.


SUMMARY OF MOVES:


 FAC    => (Y,A)  EB2B    MOVMF
 FAC    => (0,X)  EB23    MOVML
 FAC    => TEMP1  EB21    MOV1F
 FAC    => TEMP2  EB1E    MOV2F
 FAC    =>  ARG   EB63    MOVAF


 ARG    =>  FAC   EB53    MOVFA
```

```
 (Y,A) => FAC    EAF9    MOVFM
 (Y,A) => ARG    E9E3    CONUPK
```

FLOATING POINT OPERATORS

The following routines require that A and Z reflect FACEXP. Even though FAC
move routines set up A and Z, a LDA $9D will insure their proper values.

FMULT   E97F
Multiply the FAC by the number in memory pointed to by Y,A.

FMULTT   E982
Multipy FAC and ARG. On entry A and Z must reflect FACEXP.

FDIV   EA66
Divide the number in memory pointed to by Y,A by FAC.

FDIVT   EA69
Divide ARG by FAC. On entry A and Z must reflect FACEXP.

FADD   E7BE
Add the number Y,A points to in memory to FAC.

FADDT   E7C1
Add FAC and ARG. On entry A and Z must reflect FACEXP.

FSUB   E7A7
Subtract FAC from the number Y,A points to in memory.

FSUBT   E7AA
Subtract FAC from ARG. On entry A and Z must reflect FACEXP.

TRANSCENDENTAL OPERATORS

FPWRT   EE97
Raise ARG to the FAC power. On entry A and Z must reflect the value of
FACEXP.

SQR   EE8D
Takes the square root of FAC

LOG   E941
Log base e of FAC

EXP   EF09
Raise e to the FAC power

COS   EFEA
Returns the cosine of the FAC in radians.

SIN   EFF1
Returns the sine of the FAC in radians.

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TAN             F03A
Returns the tangent of the FAC in radians.


ATN             F09E
Returns the inverse-tangent of the FAC in radians.


                   OTHER OPERATORS


SGN             EB90
Modifies the value of the FAC depending on its value on entry.  On exit:


     FAC =  1  if FAC was greater than 0
     FAC =  0  if FAC was equal to 0
     FAC = -1  if FAC was less than 0


ABS             EBAF
Absolute value of FAC.  If FAC is less than 0 then FAC = -FAC.


INT             EC23
Greatest integer value of FAC.  Uses QINT and floats the result.


RND             EFAE
Form a pseudo-random number in FAC and update RND at 00C9.


SIGN            EB82
Set A according to the value of FAC.  On exit:


     A = 1  if FAC is positive
     A = 0  if FAC = 0
     A = FF if FAC is negative


FCOMP           EBB2
Compare FAC and a packed number in memory pointed to by Y,A.  On exit:


     A = 1  if (Y,A) < FAC
     A = 0  if (Y,A) = FAC
     A = FF if (Y,A) > FAC


NEGOP           EED0
FAC = -FAC


FADDH           E7A0
Add 1/2 to FAC


DIV10           EA55
Divide FAC by 10. Returns positive numbers only.


MUL10           EA39
Multiply FAC by 10.  Works for both positive and negative numbers.
Apple Tech Notes



Keywords:   <None>
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19960215 11:05:19.00

Tech Info Library Article Number: 75