

mathfp

COLLABORATORS

	<i>TITLE :</i> mathfp		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		July 18, 2024	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

1	mathffp	1
1.1	mathffp.doc	1
1.2	mathffp.library/SPAbs	1
1.3	mathffp.library/SPAdd	1
1.4	mathffp.library/SPCeil	2
1.5	mathffp.library/SPCmp	3
1.6	mathffp.library/SPDiv	3
1.7	mathffp.library/SPFix	4
1.8	mathffp.library/SPFloor	4
1.9	mathffp.library/SPFlt	5
1.10	mathffp.library/SPMul	5
1.11	mathffp.library/SPNeg	6
1.12	mathffp.library/SPSub	6
1.13	mathffp.library/SPTst	7

Chapter 1

mathffp

1.1 mathffp.doc

SPAbs()	SPCmp()	SPFloor()	SPNeg()
SPAdd()	SPDiv()	SPFlt()	SPSub()
SPCeil()	SPFix()	SPMul()	SPTst()

1.2 mathffp.library/SPAbs

NAME

SPAbs -- Obtain the absolute value of the fast floating point number.

SYNOPSIS

```
fnum2 = SPAbs(fnum1)
D0          D0
```

```
float SPAbs(float fnum1);
```

FUNCTION

Accepts a floating point number and returns the absolute value of said number.

INPUTS

fnum1 - floating point number.

RESULT

fnum2 - floating point absolute value of fnum1.

BUGS

None

SEE ALSO

1.3 mathffp.library/SPAdd

NAME

SPAdd -- Add two floating point numbers.

SYNOPSIS

```
fnum3 = SPAdd(fnum1, fnum2)
D0          D1      D0
```

```
float SPAdd(float fnum1, float fnum2);
```

FUNCTION

Accepts two floating point numbers and returns the arithmetic sum of said numbers.

INPUTS

fnum1 - floating point number to add.
fnum2 - other floating point number to add.

RESULT

fnum3 - floating point number, sum of fnum1 and fnum2.

BUGS

None.

SEE ALSO

1.4 mathffp.library/SPCeil

NAME

SPCeil -- Compute Ceil function of a number.

SYNOPSIS

```
x = SPCeil(y)
D0          D0
```

```
float SPCeil(float y);
```

FUNCTION

Calculate the least integer greater than or equal to x and return it. This identity is true. $\text{Ceil}(x) = -\text{Floor}(-x)$.

INPUTS

y - Motorola Fast Floating Point Format Number.

RESULT

x - Motorola Fast Floating Point Format Number.

BUGS

None.

SEE ALSO

SPFloor()

1.5 mathffp.library/SPCmp

NAME

SPCmp -- Compares two floating point numbers.

SYNOPSIS

```
result = SPCmp(fnum1, fnum2)
D0          D0      D1
```

```
int SPCmp(float fnum1, float fnum2);
```

FUNCTION

Accepts two floating point numbers and returns the condition codes set to indicate the result of said comparison. Additionally, the integer functional result is returned to indicate the result of said comparison.

INPUTS

fnum1 - floating point number.
fnum2 - floating point number.

RESULT

Condition codes set to reflect the following branches:

```
GT - fnum2 > fnum1
GE - fnum2 >= fnum1
EQ - fnum2 = fnum1
NE - fnum2 != fnum1
LT - fnum2 < fnum1
LE - fnum2 <= fnum1
```

Integer functional result as:

```
+1 => fnum1 > fnum2
-1 => fnum1 < fnum2
0 => fnum1 = fnum2
```

BUGS

None.

SEE ALSO

1.6 mathffp.library/SPDiv

NAME

SPDiv -- Divide two floating point numbers.

SYNOPSIS

```
fnum3 = SPDiv(fnum1, fnum2)
D0          D1      D0
```

```
float SPDiv(float fnum1, float fnum2);
```

FUNCTION

Accepts two floating point numbers and returns the arithmetic division of said numbers.

INPUTS

fnum1 - floating point number.
fnum2 - floating point number.

RESULT

fnum3 - floating point number.

BUGS

None.

SEE ALSO

1.7 mathffp.library/SPFix

NAME

SPFix -- Convert fast floating point number to integer.

SYNOPSIS

```
inum = SPFix(fnum)
D0          D0

int SPFix(float fnum);
```

FUNCTION

Accepts a floating point number and returns the truncated integer portion of said number.

INPUTS

fnum - floating point number.

RESULT

inum - signed integer number.

BUGS

None.

SEE ALSO

1.8 mathffp.library/SPFloor

NAME

SPFloor -- compute Floor function of a number.

SYNOPSIS

```
x = SPFloor(y)
```

D0 D0

```
float SPFloor(float y);
```

FUNCTION

Calculate the largest integer less than or equal to x and return it.

INPUTS

y - Motorola Fast Floating Point number.

RESULT

x - Motorola Fast Floating Point number.

BUGS

None.

SEE ALSO

SPCeil()

1.9 mathffp.library/SPFlt

NAME

SPFlt -- Convert integer number to fast floating point.

SYNOPSIS

```
fnum = SPFlt(inum)
```

D0 D0

```
float SPFlt(int inum);
```

FUNCTION

Accepts an integer and returns the converted floating point result of said number.

INPUTS

inum - signed integer number

RESULT

fnum - floating point number

BUGS

None.

SEE ALSO

1.10 mathffp.library/SPMul

NAME

SPMul -- Multiply two floating point numbers.

SYNOPSIS

```
fnum3 = SPMul(fnum1, fnum2)
D0          D1      D0

float SPMul(float fnum1, float fnum2);
```

FUNCTION

Accepts two floating point numbers and returns the arithmetic multiplication of said numbers.

INPUTS

```
fnum1 - floating point number
fnum2 - floating point number
```

RESULT

```
fnum3 - floating point number
```

BUGS

None

SEE ALSO

1.11 mathffp.library/SPNeg

NAME

SPNeg -- Negate the supplied floating point number.

SYNOPSIS

```
fnum2 = SPNeg(fnum1)
D0          D0

float SPNeg(float fnum1);
```

FUNCTION

Accepts a floating point number and returns the value of said number after having been subtracted from 0.0.

INPUTS

```
fnum1 - floating point number.
```

RESULT

```
fnum2 - floating point negation of fnum1.
```

BUGS

None

SEE ALSO

1.12 mathffp.library/SPSub

NAME

SPSub -- Subtract two floating point numbers.

SYNOPSIS

```
fnum3 = SPSub(fnum1, fnum2)
D0          D1      D0
```

```
float SPSub(float fnum1, float fnum2);
```

FUNCTION

Accepts two floating point numbers and returns the arithmetic subtraction of said numbers.

INPUTS

fnum1 - floating point number.
fnum2 - floating point number.

RESULT

fnum3 - floating point number.

BUGS

None.

SEE ALSO

1.13 mathffp.library/SPTst

NAME

SPTst - Compares a float against zero (0.0).

SYNOPSIS

```
result = SPTst(fnum)
D0          D1
```

```
int SPTst(float fnum);
```

FUNCTION

Accepts a floating point number and returns the condition codes set to indicate the result of a comparison against the value of zero (0.0). Additionally, the integer functional result is returned.

INPUTS

fnum - floating point number.

RESULT

Condition codes set to reflect the following branches:

```
EQ - fnum = 0.0
NE - fnum != 0.0
PL - fnum >= 0.0
MI - fnum < 0.0
```

Integer functional result as:

```
+1 => fnum > 0.0
-1 => fnum < 0.0
```

0 => fnum = 0.0

BUGS

None.

SEE ALSO
