

mathieeesingbas

COLLABORATORS

	<i>TITLE :</i> mathieeesingbas		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
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REVISION HISTORY

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Chapter 1

mathieeesingbas

1.1 mathieeesingbas.doc

IEEESPAbs()	IEEESPCmp()	IEEESPFloor()	IEEESPNeg()
IEEESPAdd()	IEEESPDiv()	IEEESPFlt()	IEEESPSub()
IEEESPCeil()	IEEESPFix()	IEEESPMul()	IEEESPtst()

1.2 mathieeesingbas.library/IEEESPAbs

NAME

IEEESPAbs -- compute absolute value of IEEE single precision argument

SYNOPSIS

```
x    = IEEESPAbs( y );
d0                   d0
```

```
float    x,y;
```

FUNCTION

Take the absolute value of argument y and return it to caller.

INPUTS

y -- IEEE single precision floating point value

RESULT

x -- IEEE single precision floating point value

BUGS

SEE ALSO

1.3 mathieeesingbas.library/IEEESPAdd

NAME

IEEESPAdd -- add one single precision IEEE number to another

SYNOPSIS

```

    x      = IEEESPAdd(  y  ,  z  );
    d0      d0      d1

```

```

float    x,y,z;

```

FUNCTION

Compute $x = y + z$ in IEEE single precision.

INPUTS

```

y -- IEEE single precision floating point value
z -- IEEE single precision floating point value

```

RESULT

```

x -- IEEE single precision floating point value

```

BUGS

SEE ALSO

IEEESPSub

1.4 mathieeesingbas.library/IEEESPCeil

NAME

IEEESPCeil -- compute Ceil function of IEEE single precision number

SYNOPSIS

```

    x      = IEEESPCeil(  y  );
    d0      d0

```

```

float    x,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 -- IEEE single precision floating point value

```

RESULT

```

x -- IEEE single precision floating point value

```

BUGS

SEE ALSO

IEEESPFloor

1.5 mathieeesingbas.library/IEEESPCmp

NAME

IEEESPCmp -- compare two single precision floating point numbers

SYNOPSIS

```

    c   = IEEEPCmp(  y   ,   z   );
    d0          d0   d1

```

```

float    y,z;
long     c;

```

FUNCTION

Compare y with z. Set the condition codes for less, greater, or equal. Set return value c to -1 if y<z, or +1 if y>z, or 0 if y == z.

INPUTS

```

y -- IEEE single precision floating point value
z -- IEEE single precision floating point value

```

RESULT

```

c = 1   cc = gt       for (y > z)
c = 0   cc = eq       for (y == z)
c = -1  cc = lt       for (y < z)

```

BUGS

SEE ALSO

1.6 mathieeesingbas.library/IEEESPDiv

NAME

IEEESPDiv -- divide one single precision IEEE by another

SYNOPSIS

```

    x   = IEEESPDiv(  y   ,   z   );
    d0          d0   d1

```

```

float    x,y,z;

```

FUNCTION

Compute x = y / z in IEEE single precision.
 Note that the Motorola fast floating point Div routine reverses the order of the arguments for the C interface, although the dividend is still in d0 and the divisor is in d1.

INPUTS

```

y -- IEEE single precision floating point value
z -- IEEE single precision floating point value

```

RESULT

```

x -- IEEE single precision floating point value

```

BUGS

SEE ALSO

IEEESPMul

1.7 mathieeesingbas.library/IEEESPFix

NAME

IEEESPFix -- convert IEEE single float to integer

SYNOPSIS

```
x    = IEEESPFix( y );
d0                   d0
```

```
long    x;
float   y;
```

FUNCTION

Convert IEEE single precision argument to a 32 bit signed integer and return result.

INPUTS

y -- IEEE single precision floating point value

RESULT

```
if no overflow occurred then return
    x -- 32 bit signed integer
if overflow return largest +- integer
    For round to zero
```

BUGS

SEE ALSO

IEEESPFlt

1.8 mathieeesingbas.library/IEEESPFloor

NAME

IEEESPFloor -- compute Floor function of IEEE single precision number

SYNOPSIS

```
x    = IEEESPFloor( y );
d0                   d0
```

```
float   x,y;
```

FUNCTION

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

INPUTS

y -- IEEE single precision floating point value

RESULT

x -- IEEE single precision floating point value

BUGS

SEE ALSO

IEEESPCeil

1.9 mathieeesingbas.library/IEEESPFlt

NAME

IEEESPFlt -- convert integer to IEEE single precision number

SYNOPSIS

```
    x    = IEEESPFlt(  y  );
    d0           d0
```

```
float    x;
long     y;
```

FUNCTION

Convert a signed 32 bit value to a single precision IEEE value and return it in d0. No exceptions can occur with this function.

INPUTS

y -- 32 bit integer in d0

RESULT

x is a 32 bit single precision IEEE value

BUGS

SEE ALSO

IEEESPFix

1.10 mathieeesingbas.library/IEEESPMul

NAME

IEEESPMul -- multiply one double precision IEEE number by another

SYNOPSIS

```
    x    = IEEESPMul(  y  ,  z  );
    d0           d0      d1
```

```
float    x,y,z;
```

FUNCTION

Compute $x = y * z$ in IEEE single precision.

INPUTS

y -- IEEE single precision floating point value
z -- IEEE single precision floating point value

RESULT

x -- IEEE single precision floating point value

BUGS

SEE ALSO

IEEESPDiv

1.11 mathieeesingbas.library/IEEESPNeg

NAME

IEEESPNeg -- compute negative value of IEEE single precision number

SYNOPSIS

```
x    = IEEESPNeg( y );
d0           d0
```

```
float    x,y;
```

FUNCTION

Invert the sign of argument y and return it to caller.

INPUTS

y - IEEE single precision floating point value

RESULT

x - IEEE single precision floating point value

BUGS

SEE ALSO

1.12 mathieeesingbas.library/IEEESPSub

NAME

IEEESPSub -- subtract one single precision IEEE number from another

SYNOPSIS

```
x    = IEEESPSub( y , z );
d0           d0    d1
```

```
float    x,y,z;
```

FUNCTION

Compute $x = y - z$ in IEEE single precision.

INPUTS

y -- IEEE single precision floating point value
z -- IEEE single precision floating point value

RESULT

x -- IEEE single precision floating point value

BUGS

SEE ALSO

IEEESPAdd

1.13 mathieeesingbas.library/IEEESTPt

NAME

IEEESTst -- compare IEEE single precision value to 0.0

SYNOPSIS

```
c    = IEEESTst( y );  
d0
```

```
float  y;  
long   c;
```

FUNCTION

Compare y to 0.0, set the condition codes for less than, greater than, or equal to 0.0. Set the return value c to -1 if less than, to +1 if greater than, or 0 if equal to 0.0.

INPUTS

y -- IEEE single precision floating point value

RESULT

c = 1	cc = gt	for (y > 0.0)
c = 0	cc = eq	for (y == 0.0)
c = -1	cc = lt	for (y < 0.0)

BUGS

SEE ALSO