

mathieeedoubbas

COLLABORATORS

	<i>TITLE :</i> mathieeedoubbas		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		March 28, 2025	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

1	mathieeedoubbas	1
1.1	mathieeedoubbas.doc	1
1.2	mathieeedoubbas.library/IEEEDPAbs	1
1.3	mathieeedoubbas.library/IEEEDPAdd	1
1.4	mathieeedoubbas.library/IEEEDPCeil	2
1.5	mathieeedoubbas.library/IEEEDPComp	2
1.6	mathieeedoubbas.library/IEEEDPDiv	3
1.7	mathieeedoubbas.library/IEEEDPFix	4
1.8	mathieeedoubbas.library/IEEEDPFloor	4
1.9	mathieeedoubbas.library/IEEEDPFIt	5
1.10	mathieeedoubbas.library/IEEEDPMul	5
1.11	mathieeedoubbas.library/IEEEDPNeg	6
1.12	mathieeedoubbas.library/IEEEDPSub	6
1.13	mathieeedoubbas.library/IEEEDPSt	7

Chapter 1

mathieeedoubbas

1.1 mathieeedoubbas.doc

IEEEDPAbs()	IEEEDPComp()	IEEEDPFloor()	IEEEDPNeg()
IEEEDPAdd()	IEEEDPDiv()	IEEEDPFlt()	IEEEDPSub()
IEEEDPCeil()	IEEEDPFix()	IEEEDPMul()	IEEEDPtst()

1.2 mathieeedoubbas.library/IEEEDPAbs

NAME

IEEEDPAbs -- compute absolute value of IEEE double precision argument

SYNOPSIS

```
    x    = IEEEDPAbs( y );  
    d0/d1      d0/d1
```

```
double  x,y;
```

FUNCTION

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

INPUTS

y -- IEEE double precision floating point value

RESULT

x -- IEEE double precision floating point value

BUGS

SEE ALSO

1.3 mathieeedoubbas.library/IEEEDPAdd

NAME

IEEEDPAdd -- add one double precision IEEE number to another

SYNOPSIS

```

    x    = IEEEEDPAdd( y , z );
    d0/d1      d0/d1 d2/d3

```

```

    double  x,y,z;

```

FUNCTION

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

INPUTS

```

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

```

RESULT

```

    x -- IEEE double precision floating point value

```

BUGS

SEE ALSO

IEEEEDPSub

1.4 mathieeedoubbas.library/IEEEDPCeil

NAME

IEEEDPCeil -- compute Ceil function of IEEE double precision number

SYNOPSIS

```

    x    = IEEEDPCeil( y );
    d0/d1      d0/d1

```

```

    double  x,y;

```

FUNCTION

Calculate the least integer greater than or equal to x and return it.
 This value may have more than 32 bits of significance.
 This identity is true. $\text{Ceil}(x) = -\text{Floor}(-x)$.

INPUTS

```

    y -- IEEE double precision floating point value

```

RESULT

```

    x -- IEEE double precision floating point value

```

BUGS

SEE ALSO

IEEEDPFloor

1.5 mathieeedoubbas.library/IEEEDPComp

NAME

IEEEDPComp -- compare two double precision floating point numbers

SYNOPSIS

```

    c    = IEEEEDPCmp(  y  ,  z  );
    d0    d0/d1 d2/d3

```

```

double  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 double precision floating point value
z -- IEEE double 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 mathieedoubbas.library/IEEEDPDiv

NAME

IEEEDPDiv -- divide one double precision IEEE by another

SYNOPSIS

```

    x    = IEEEDPDiv(  y  ,  z  );
    d0/d1    d0/d1 d2/d3

```

```

double  x,y,z;

```

FUNCTION

Compute x = y / z in IEEE double precision.

INPUTS

```

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

```

RESULT

```

x -- IEEE double precision floating point value

```

BUGS

SEE ALSO

IEEEDPMul

1.7 mathieedoubbas.library/IEEEDPFix

NAME

IEEEDPFix -- convert IEEE double float to integer

SYNOPSIS

```
x    = IEEEDPFix( y );
d0           d0/d1
```

```
long    x;
double  y;
```

FUNCTION

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

INPUTS

y -- IEEE double 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

IEEEDPFlt

1.8 mathieedoubbas.library/IEEEDPFloor

NAME

IEEEDPFloor -- compute Floor function of IEEE double precision number

SYNOPSIS

```
x    = IEEEDPFloor( y );
d0/d1           d0/d1
```

```
double  x,y;
```

FUNCTION

Calculate the largest integer less than or equal to x and return it. This value may have more than 32 bits of significance.

INPUTS

y -- IEEE double precision floating point value

RESULT

x -- IEEE double precision floating point value

BUGS

SEE ALSO

IEEEDPCeil

1.9 mathieedoubbas.library/IEEEDPFlt

NAME

IEEEDPFlt -- convert integer to IEEE double precision number

SYNOPSIS

```
x      = IEEEDPFlt( y );
d0/d1      d0
```

```
double x;
long y;
```

FUNCTION

Convert a signed 32 bit value to a double precision IEEE value and return it in d0/d1. No exceptions can occur with this function.

INPUTS

y -- 32 bit integer in d0

RESULT

x is a 64 bit double precision IEEE value

BUGS

SEE ALSO

IEEEDPFix

1.10 mathieedoubbas.library/IEEEDPMul

NAME

IEEEDPMul -- multiply one double precision IEEE number by another

SYNOPSIS

```
x      = IEEEDPMul( y , z );
d0/d1      d0/d1 d2/d3
```

```
double x,y,z;
```

FUNCTION

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

INPUTS

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

RESULT

x -- IEEE double precision floating point value

BUGS

SEE ALSO
IEEEEDPDiv

1.11 mathieedoubbas.library/IEEEDPNeg

NAME

IEEEDPNeg -- compute negative value of IEEE double precision number

SYNOPSIS

```
    x    = IEEEDPNeg( y );  
d0/d1      d0/d1  
  
double  x,y;
```

FUNCTION

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

INPUTS

y - IEEE double precision floating point value

RESULT

x - IEEE double precision floating point value

BUGS

SEE ALSO

1.12 mathieedoubbas.library/IEEEDPSub

NAME

IEEEDPSub -- subtract one double precision IEEE number from another

SYNOPSIS

```
    x    = IEEEDPSub( y , z );  
d0/d1      d0/d1 d2/d3  
  
double  x,y,z;
```

FUNCTION

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

INPUTS

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

RESULT

x -- IEEE double precision floating point value

BUGS

SEE ALSO

IEEEEDPAdd

1.13 mathieedoubbas.library/IEEEEDPTst

NAME

IEEEEDPTst -- compare IEEE double precision value to 0.0

SYNOPSIS

```
c    = IEEEEDPTst( y );  
d0           d0/d1
```

```
double 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 double 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