

mathieedoubbas

| |
|----------------------|
| COLLABORATORS |
|----------------------|

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

| |
|-------------------------|
| REVISION HISTORY |
|-------------------------|

| NUMBER | DATE | DESCRIPTION | NAME |
|--------|------|-------------|------|
| | | | |

Contents

| | | |
|----------|--|----------|
| 1 | mathieedoubbas | 1 |
| 1.1 | mathieedoubbas.doc | 1 |
| 1.2 | mathieedoubbas.library/IEEEDPAbs | 1 |
| 1.3 | mathieedoubbas.library/IEEEDPAdd | 1 |
| 1.4 | mathieedoubbas.library/IEEEDPCeil | 2 |
| 1.5 | mathieedoubbas.library/IEEEDPComp | 2 |
| 1.6 | mathieedoubbas.library/IEEEDPDiv | 3 |
| 1.7 | mathieedoubbas.library/IEEEDPFix | 4 |
| 1.8 | mathieedoubbas.library/IEEEDPFloor | 4 |
| 1.9 | mathieedoubbas.library/IEEEDPFit | 5 |
| 1.10 | mathieedoubbas.library/IEEEPMul | 5 |
| 1.11 | mathieedoubbas.library/IEEEPNeg | 6 |
| 1.12 | mathieedoubbas.library/IEEEPSub | 6 |
| 1.13 | mathieedoubbas.library/IEEEPTst | 7 |

Chapter 1

mathieeedoubbas

1.1 mathieeedoubbas.doc

| | | | |
|--------------|-------------|---------------|-------------|
| IEEEDPAbs() | IEEEDPCmp() | 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 mathieedoubbas.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 mathieedoubbas.library/IEEEDPcmp

NAME

IEEEDPcmp -- compare two double precision floating point numbers

SYNOPSIS

```
c = IEEEEDPCmp( y , z );
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 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

IEEEPMul

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

IEEEEDPCeil

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