

mathieeedoubbas

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Chapter 1

mathieedoubbas

1.1 mathieedoubbas.doc

```
IEEEEDPAbs ()  
IEEEEDPAdd ()  
IEEEEDPCeil ()  
IEEEEDPCmp ()  
IEEEEDPDiv ()  
IEEEEDPFix ()  
IEEEEDPFloor ()  
IEEEEDPFlt ()  
IEEEEDPMul ()  
IEEEEDPNeg ()  
IEEEEDPSub ()  
IEEEEDPTst ()
```

1.2 mathieedoubbas.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 = IEEEDPAdd( 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

IEEEDPSub

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
 IEEEEDPFloor

1.5 mathieedoubbas.library/IEEEEDPCmp

NAME
 IEEEEDPCmp -- 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/IEEEEDPDiv

NAME
 IEEEEDPDiv -- divide one double precision IEEE by another

SYNOPSIS

```
x = IEEEEDPDiv( 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

IEEEEDPMul

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
IEEEPDiv

```

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
