NAME

fpclassify, isfinite, isnormal, isnan, isinf - floating-point classification macros

SYNOPSIS

#include <math.h>

int fpclassify(x);

int isfinite(x);

int isnormal(x);

int isnan(x);

int isinf(x);

Link with *-lm*.

Feature Test Macro Requirements for glibc (see feature_test_macros(7)):

fpclassify(), **isfinite**(), **isnormal**():
        _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L;
        or *cc -std=c99*
isnan():
        _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE || _ISOC99_SOURCE ||
        _POSIX_C_SOURCE >= 200112L;
        or *cc -std=c99*
isinf():
        _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||
        _POSIX_C_SOURCE >= 200112L;
        or *cc -std=c99*

DESCRIPTION

Floating point numbers can have special values, such as infinite or NaN. With the macro **fpclassify**(x) you can find out what type x is. The macro takes any floating-point expression as argument. The result is one of the following values:

FP_NAN x is Not a Number.

FP_INFINITE
                x is either positive infinity or negative infinity.

FP_ZERO x is zero.

FP_SUBNORMAL
                x is too small to be represented in normalized format.

FP_NORMAL
                if nothing of the above is correct then it must be a normal floating-point number.

The other macros provide a short answer to some standard questions.

isfinite(x)   returns a nonzero value if
                (fpclassify(x) != FP_NAN && fpclassify(x) != FP_INFINITE)

isnormal(x)   returns a nonzero value if (fpclassify(x) == FP_NORMAL)

isnan(x)   returns a nonzero value if (fpclassify(x) == FP_NAN)

isinf(x)   returns 1 if x is positive infinity, and -1 if x is negative infinity.

ATTRIBUTES

Multithreading (see pthreads(7))

The **fpclassify**(), **isfinite**(), **isnormal**(), **isnan**(), and **isinf**() macros are thread-safe.

CONFORMING TO

C99, POSIX.1.

For **isinf**(), the standards merely say that the return value is nonzero if and only if the argument has an infinite value.

NOTES

In glibc 2.01 and earlier, **isinf**() returns a nonzero value (actually: 1) if x is positive infinity or negative infinity. (This is all that C99 requires.)

SEE ALSO

finite(3), INFINITY(3), isgreater(3), signbit(3)

COLOPHON

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