

NAME

`floor`, `floorf`, `floorl` – largest integral value not greater than argument

SYNOPSIS

```
#include <math.h>
```

```
double floor(double x);
```

```
float floorf(float x);
```

```
long double floorl(long double x);
```

Link with `-lm`.

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

floorf(), **floorl()**:

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
    /* Since glibc 2.19: */ _DEFAULT_SOURCE
    /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions return the largest integral value that is not greater than x .

For example, `floor(0.5)` is 0.0, and `floor(-0.5)` is -1.0.

RETURN VALUE

These functions return the floor of x .

If x is integral, +0, -0, NaN, or an infinity, x itself is returned.

ERRORS

No errors occur. POSIX.1-2001 documents a range error for overflows, but see NOTES.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes(7)**.

Interface	Attribute	Value
floor() , floorf() , floorl()	Thread safety	MT-Safe

CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008.

The variant returning *double* also conforms to SVr4, 4.3BSD, C89.

NOTES

SUSv2 and POSIX.1-2001 contain text about overflow (which might set *errno* to **ERANGE**, or raise an **FE_OVERFLOW** exception). In practice, the result cannot overflow on any current machine, so this error-handling stuff is just nonsense. (More precisely, overflow can happen only when the maximum value of the exponent is smaller than the number of mantissa bits. For the IEEE-754 standard 32-bit and 64-bit floating-point numbers the maximum value of the exponent is 128 (respectively, 1024), and the number of mantissa bits is 24 (respectively, 53).)

SEE ALSO

ceil(3), **lrint(3)**, **nearbyint(3)**, **rint(3)**, **round(3)**, **trunc(3)**

COLOPHON

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