

NAME

nearbyint, nearbyintf, nearbyintl, rint, rintf, rintl - round to nearest integer

SYNOPSIS

```
#include <math.h>

double nearbyint(double x);
float nearbyintf(float x);
long double nearbyintl(long double x);

double rint(double x);
float rintf(float x);
long double rintl(long double x);
```

Link with *-lm*.

Feature Test Macro Requirements for glibc (see [feature_test_macros\(7\)](#)):

```
nearbyint(), nearbyintf(), nearbyintl():
    _XOPEN_SOURCE >= 600 || _POSIX_C_SOURCE >= 200112L || _ISOC99_SOURCE;
    or cc -std=c99

rint():
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 500 ||
    _XOPEN_SOURCE && _XOPEN_SOURCE_EXTENDED || _ISOC99_SOURCE ||
    _POSIX_C_SOURCE >= 200112L;
    or cc -std=c99

rintf(), rintl():
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||
    _POSIX_C_SOURCE >= 200112L;
    or cc -std=c99
```

DESCRIPTION

The **nearbyint()**, **nearbyintf()**, and **nearbyintl()** functions round their argument to an integer value in floating-point format, using the current rounding direction (see [fesetround\(3\)](#)) and without raising the *inexact* exception.

The **rint()**, **rintf()**, and **rintl()** functions do the same, but will raise the *inexact* exception (**FE_INEXACT**, checkable via [fetestexcept\(3\)](#)) when the result differs in value from the argument.

RETURN VALUE

These functions return the rounded integer value.

If *x* is integral, +0, -0, NaN, or infinite, *x* itself is returned.

ERRORS

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

ATTRIBUTES

Multithreading (see [pthreads\(7\)](#))

The **nearbyint()**, **nearbyintf()**, **nearbyintl()**, **rint()**, **rintf()**, and **rintl()** functions are thread-safe.

CONFORMING TO

C99, POSIX.1-2001.

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).)

If you want to store the rounded value in an integer type, you probably want to use one of the functions described in [rint\(3\)](#) instead.

SEE ALSO

[ceil\(3\)](#), [floor\(3\)](#), [rint\(3\)](#), [round\(3\)](#), [trunc\(3\)](#)

COLOPHON

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