



Red Hat Enterprise Linux Release 9.2 Manual Pages on 'nexttoward.3' command

\$ man nexttoward.3

NEXTAFTER(3) Linux Programmer's Manual NEXTAFTER(3)

NAME

nextafter, nextafterf, nextafterl, nexttoward, nexttowardf, nexttowardl
- floating-point number manipulation

SYNOPSIS

```
#include <math.h>

double nextafter(double x, double y);

float nextafterf(float x, float y);

long double nextafterl(long double x, long double y);

double nexttoward(double x, long double y);

float nexttowardf(float x, long double y);

long double nexttowardl(long double x, long double y);

Link with -lm.
```

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

```
nextafter():

    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L

    || _XOPEN_SOURCE >= 500

    || /* Since glibc 2.19: */ _DEFAULT_SOURCE

    || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

nextafterf(), nextafterl():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L

    || /* Since glibc 2.19: */ _DEFAULT_SOURCE

    || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

nexttoward(), nexttowardf(), nexttowardl():

```
_XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||  
_POSIX_C_SOURCE >= 200112L
```

DESCRIPTION

The `nextafter()`, `nextafterf()`, and `nextafterl()` functions return the next representable floating-point value following `x` in the direction of `y`. If `y` is less than `x`, these functions will return the largest representable number less than `x`.

If `x` equals `y`, the functions return `y`.

The `nexttoward()`, `nexttowardf()`, and `nexttowardl()` functions do the same as the corresponding `nextafter()` functions, except that they have a long double second argument.

RETURN VALUE

On success, these functions return the next representable floating-point value after `x` in the direction of `y`.

If `x` equals `y`, then `y` (cast to the same type as `x`) is returned.

If `x` or `y` is a NaN, a NaN is returned.

If `x` is finite, and the result would overflow, a range error occurs, and the functions return `HUGE_VAL`, `HUGE_VALF`, or `HUGE_VALL`, respectively, with the correct mathematical sign.

If `x` is not equal to `y`, and the correct function result would be subnormal, zero, or underflow, a range error occurs, and either the correct value (if it can be represented), or 0.0, is returned.

ERRORS

See `math_error(7)` for information on how to determine whether an error has occurred when calling these functions.

The following errors can occur:

Range error: result overflow

`errno` is set to `ERANGE`. An overflow floating-point exception (`FE_OVERFLOW`) is raised.

Range error: result is subnormal or underflows

`errno` is set to `ERANGE`. An underflow floating-point exception (`FE_UNDERFLOW`) is raised.

ATTRIBUTES

For an explanation of the terms used in this section, see at?

tributes(7).

??

?Interface ? Attribute ? Value ?

??

?nextafter(), nextafterf(), ? Thread safety ? MT-Safe ?

?nextafterl(), nexttoward(), ? ? ?

?nexttowardf(), nexttowardl() ? ? ?

??

CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008. This function is defined in IEC 559

(and the appendix with recommended functions in IEEE 754/IEEE 854).

BUGS

In glibc version 2.5 and earlier, these functions do not raise an un?

derflow floating-point (FE_UNDERFLOW) exception when an underflow oc?

curs.

Before glibc version 2.23 these functions did not set errno.

SEE ALSO

nearbyint(3)

COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A

description of the project, information about reporting bugs, and the

latest version of this page, can be found at

<https://www.kernel.org/doc/man-pages/>.

GNU

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