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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'nexttowardl.3'***

**\$ man nexttowardl.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 attributes(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 underflow floating-point (FE\_UNDERFLOW) exception when an underflow occurs.

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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