

NAME

ldexp, ldexpf, ldexpl - multiply floating-point number by integral power of 2

SYNOPSIS

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

```
double ldexp(double x, int exp);
float ldexpf(float x, int exp);
long double ldexpl(long double x, int exp);
```

Link with *-lm*.

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

```
ldexpf(), ldexpl():
    _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 result of multiplying the floating-point number *x* by 2 raised to the power *exp*.

RETURN VALUE

On success, these functions return $x * (2^{exp})$.

If *exp* is zero, then *x* is returned.

If *x* is a NaN, a NaN is returned.

If *x* is positive infinity (negative infinity), positive infinity (negative infinity) is returned.

If the result underflows, a range error occurs, and zero is returned.

If the result overflows, a range error occurs, and the functions return **HUGE_VAL**, **HUGE_VALF**, or **HUGE_VALL**, respectively, with a sign the same as *x*.

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, overflow

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

Range error, underflow

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
ldexp(), ldexpf(), ldexpl()	Thread safety	MT-Safe

CONFORMING TO

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

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

SEE ALSO

[frexp\(3\)](#), [modf\(3\)](#), [scalbln\(3\)](#)

COLOPHON

This page is part of release 4.10 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/>.