NAME

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

LIBRARY

Math library (*libm*, *−lm*)

SYNOPSIS

#include <math.h>

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

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 <= 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

STANDARDS

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

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

SEE ALSO

frexp(3), **modf**(3), **scalbln**(3)