

**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
<b>ldexp()</b> , <b>ldexpf()</b> , <b>ldexpl()</b>	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**

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