

NAME

logb, logbf, logbl – get exponent of a floating-point value

LIBRARY

Math library (*libm*, *-lm*)

SYNOPSIS

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

```
double logb(double x);
```

```
float logbf(float x);
```

```
long double logbl(long double x);
```

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

logb():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
|| _XOPEN_SOURCE >= 500
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

logbf(), logbl():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions extract the exponent from the internal floating-point representation of x and return it as a floating-point value. The integer constant **FLT_RADIX**, defined in *<float.h>*, indicates the radix used for the system's floating-point representation. If **FLT_RADIX** is 2, **logb**(x) is equal to **floor(log2(x))**, except that it is probably faster.

If x is subnormal, **logb**() returns the exponent x would have if it were normalized.

RETURN VALUE

On success, these functions return the exponent of x .

If x is a NaN, a NaN is returned.

If x is zero, then a pole error occurs, and the functions return **-HUGE_VAL**, **-HUGE_VALF**, or **-HUGE_VALL**, respectively.

If x is negative infinity or positive infinity, then positive infinity 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:

Pole error: x is 0

A divide-by-zero floating-point exception (**FE_DIVBYZERO**) is raised.

These functions do not set *errno*.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes(7)**.

Interface	Attribute	Value
logb() , logbf() , logbl()	Thread safety	MT-Safe

STANDARDS

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

SEE ALSO**ilogb(3), log(3)**