NAME

scalb, scalbf, scalbl − multiply floating-point number by integral power of radix (OBSOLETE)

SYNOPSIS

#include <math.h>

double scalb(double *x*, **double** *exp*);
float scalbf(float *x*, **float** *exp*);
long double scalbl(long double *x*, **long double** *exp*);

Link with *−lm*.

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

scalb():
_XOPEN_SOURCE >= 500 || /* Since glibc 2.19: */ _DEFAULT_SOURCE || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

scalbf(), **scalbl**():
_XOPEN_SOURCE >= 600 || /* Since glibc 2.19: */ _DEFAULT_SOURCE || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

DESCRIPTION

These functions multiply their first argument *x* by **FLT_RADIX** (probably 2) to the power of *exp*, that is:

x * FLT_RADIX ** exp

The definition of **FLT_RADIX** can be obtained by including *<float.h>*.

RETURN VALUE

On success, these functions return *x* * **FLT_RADIX** ** *exp*.

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

If *x* is positive infinity (negative infinity), and *exp* is not negative infinity, positive infinity (negative infinity) is returned.

If *x* is +0 (−0), and *exp* is not positive infinity, +0 (−0) is returned.

If *x* is zero, and *exp* is positive infinity, a domain error occurs, and a NaN is returned.

If *x* is an infinity, and *exp* is negative infinity, a domain error occurs, and a NaN 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*.

If the result underflows, a range error occurs, and the functions return zero, 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:

Domain error: *x* is 0, and *exp* is positive infinity, or *x* is positive infinity and *exp* is negative infinity and the other argument is not a NaN
An invalid floating-point exception (**FE_INVALID**) is raised.

Range error, overflow
An overflow floating-point exception (**FE_OVERFLOW**) is raised.

Range error, underflow
An underflow floating-point exception (**FE_UNDERFLOW**) 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
scalb(), **scalbf**(), **scalbl**()	Thread safety	MT-Safe

CONFORMING TO

scalb() is specified in POSIX.1-2001, but marked obsolescent. POSIX.1-2008 removes the specification of **scalb**(), recommending the use of scalbln(3), scalblnf(3), or scalblnl(3) instead. The **scalb**() function is from 4.3BSD.

scalbf() and **scalbl**() are unstandardized; **scalbf**() is nevertheless present on several other systems

SEE ALSO

ldexp(3), scalbln(3)

COLOPHON

This page is part of release 4.16 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/.