

NAME

remainder, **remainderf**, **remainderl**, **remquo**, **remquof**, **remquol** - minimal residue functions

LIBRARY

Math Library (libm, -lm)

SYNOPSIS

#include <math.h>

double

remainder(*double x*, *double y*);

float

remainderf(*float x*, *float y*);

long double

remainderl(*long double x*, *long double y*);

double

remquo(*double x*, *double y*, *int *quo*);

float

remquof(*float x*, *float y*, *int *quo*);

long double

remquol(*long double x*, *long double y*, *int *quo*);

DESCRIPTION

remainder(), **remainderf()**, **remainderl()**, **remquo()**, **remquof()**, and **remquol()** return the remainder $r := x - n*y$ where n is the integer nearest the exact value of x/y ; moreover if $|n - x/y| = 1/2$ then n is even. Consequently the remainder is computed exactly and $|r| \leq |y|/2$. But attempting to take the remainder when y is 0 or x is +infinity is an invalid operation that produces a NaN.

The **remquo()**, **remquof()**, and **remquol()** functions also store the last k bits of n in the location pointed to by *quo*, provided that n exists. The number of bits k is platform-specific, but is guaranteed to be at least 3.

SEE ALSO

fmod(3), ieee(3), math(3)

STANDARDS

The **remainder()**, **remainderf()**, **remainderl()**, **remquo()**, **remquof()**, and **remquol()** routines conform to ISO/IEC 9899:1999 ("ISO C99"). The remainder is as defined in IEEE Std 754-1985.

HISTORY

The **remainder()** and **remainderf()** functions appeared in 4.3BSD and FreeBSD 2.0, respectively. The **remquo()** and **remquof()** functions were added in FreeBSD 6.0, and **remainderl()** and **remquol()** were added in FreeBSD 8.0.