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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'frexp.3'***

#### ***\$ man frexp.3***

FREXP(3)                      Linux Programmer's Manual                      FREXP(3)

#### NAME

frexp, frexpf, frexpl - convert floating-point number to fractional and integral components

#### SYNOPSIS

```
#include <math.h>

double frexp(double x, int *exp);

float frexpf(float x, int *exp);

long double frexpl(long double x, int *exp);

Link with -lm.
```

Feature Test Macro Requirements for glibc (see feature\_test\_macros(7)):

```
frexpf(), frexpl():

    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L

    /* Since glibc 2.19: */ _DEFAULT_SOURCE

    /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

#### DESCRIPTION

These functions are used to split the number x into a normalized fraction and an exponent which is stored in exp.

## RETURN VALUE

These functions return the normalized fraction. If the argument  $x$  is not zero, the normalized fraction is  $x$  times a power of two, and its absolute value is always in the range  $1/2$  (inclusive) to  $1$  (exclusive), that is,  $[0.5, 1)$ .

If  $x$  is zero, then the normalized fraction is zero and zero is stored in `exp`.

If  $x$  is a NaN, a NaN is returned, and the value of `*exp` is unspecified.

If  $x$  is positive infinity (negative infinity), positive infinity (negative infinity) is returned, and the value of `*exp` is unspecified.

## ERRORS

No errors occur.

## ATTRIBUTES

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

??

?Interface            ? Attribute   ? Value   ?

??

?frexpl(), frexpf(), frexpl() ? Thread safety ? MT-Safe ?

??

## CONFORMING TO

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

The variant returning double also conforms to SVr4, 4.3BSD, C89.

## EXAMPLES

The program below produces results such as the following:

```
$ ./a.out 2560
```

```
frexpl(2560, &e) = 0.625: 0.625 * 2^12 = 2560
```

```
$ ./a.out -4
```

```
frexpl(-4, &e) = -0.5: -0.5 * 2^3 = -4
```

Program source

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

```
#include <float.h>
```

```
#include <stdio.h>
```

```
#include <stdlib.h>

int
main(int argc, char *argv[])
{
    double x, r;
    int exp;
    x = strtod(argv[1], NULL);
    r = frexp(x, &exp);
    printf("frexp(%g, &e) = %g: %g * %d^%d = %g\n",
        x, r, r, FLT_RADIX, exp, x);
    exit(EXIT_SUCCESS);
}
```

#### SEE ALSO

ldexp(3), modf(3)

#### COLOPHON

This page is part of release 5.10 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/>.

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