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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'llround.3p' command

\$ man llround.3p

LLROUND(3P) POSIX Programmer's Manual LLROUND(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

llround, llroundf, llroundl ? round to nearest integer value

SYNOPSIS

```
#include <math.h>

long long llround(double x);

long long llroundf(float x);

long long llroundl(long double x);
```

DESCRIPTION

The functionality described on this reference page is aligned with the ISO C standard. Any conflict between the requirements described here and the ISO C standard is unintentional. This volume of POSIX.1?2017 defers to the ISO C standard.

These functions shall round their argument to the nearest integer value, rounding halfway cases away from zero, regardless of the current rounding direction.

An application wishing to check for error situations should set errno to zero and call feclearexcept(FE_ALL_EXCEPT) before calling these

functions. On return, if `errno` is non-zero or `fetestexcept(FE_INVALID | FE_DIVBYZERO | FE_OVERFLOW | FE_UNDERFLOW)` is non-zero, an error has occurred.

RETURN VALUE

Upon successful completion, these functions shall return the rounded integer value.

If `x` is NaN, a domain error shall occur, and an unspecified value is returned.

If `x` is +Inf, a domain error shall occur and an unspecified value is returned.

If `x` is -Inf, a domain error shall occur and an unspecified value is returned.

If the correct value is positive and too large to represent as a long long, an unspecified value shall be returned. On systems that support the IEC 60559 Floating-Point option, a domain error shall occur; otherwise, a domain error may occur.

If the correct value is negative and too large to represent as a long long, an unspecified value shall be returned. On systems that support the IEC 60559 Floating-Point option, a domain error shall occur; otherwise, a domain error may occur.

ERRORS

These functions shall fail if:

Domain Error

The `x` argument is NaN or ?Inf, or the correct value is not representable as an integer.

If the integer expression `(math_errhandling & MATH_ERRNO)` is non-zero, then `errno` shall be set to [EDOM]. If the integer expression `(math_errhandling & MATH_ERREXCEPT)` is non-zero, then the invalid floating-point exception shall be raised.

These functions may fail if:

Domain Error

The correct value is not representable as an integer.

If the integer expression (`math_errhandling & MATH_ERRNO`) is non-zero, then `errno` shall be set to `[EDOM]`. If the integer expression (`math_errhandling & MATH_ERREXCEPT`) is non-zero, then the invalid floating-point exception shall be raised.

The following sections are informative.

EXAMPLES

None.

APPLICATION USAGE

On error, the expressions (`math_errhandling & MATH_ERRNO`) and (`math_errhandling & MATH_ERREXCEPT`) are independent of each other, but at least one of them must be non-zero.

RATIONALE

These functions differ from the `llrint()` functions in that the default rounding direction for the `llround()` functions round halfway cases away from zero and need not raise the inexact floating-point exception for non-integer arguments that round to within the range of the return type.

FUTURE DIRECTIONS

None.

SEE ALSO

`feclearexcept()`, `fetestexcept()`, `lround()`

The Base Definitions volume of POSIX.1-2017, Section 4.20, Treatment of Error Conditions for Mathematical Functions, `<math.h>`

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