**Table 23.1**
Rounding Directions

| Value | Meaning |
|---|---|
| -1 | Indeterminable |
| 0 | Toward zero |
| 1 | To nearest |
| 2 | Toward positive infinity |
| 3 | Toward negative infinity |

fesetround function ➤27.6

Unlike the other macros in <float.h>, which represent constant expressions, the value of FLT_ROUNDS may change during execution. (The fesetround function allows a program to change the current rounding direction.) The other macro, FLT_RADIX, specifies the radix of exponent representation; it has a minimum value of 2 (indicating binary representation).

The remaining macros, which I'll present in a series of tables, describe the characteristics of specific types. Each macro begins with either FLT, DBL, or LDBL, depending on whether it refers to the float, double, or long double type. The C standard provides extremely detailed definitions of these macros; my descriptions will be less precise but easier to understand. The tables indicate maximum or minimum values for some macros, as specified in the standard.

Table 23.2 lists macros that define the number of significant digits guaranteed by each floating type.

**Table 23.2**
Significant-Digit Macros
in <float.h>

| Name | Value | Description |
|---|---|---|
| FLT_MANT_DIG<br>DBL_MANT_DIG<br>LDBL_MANT_DIG | | Number of significant digits (base FLT_RADIX) |
| FLT_DIG<br>DBL_DIG<br>LDBL_DIG | $\geq 6$<br>$\geq 10$<br>$\geq 10$ | Number of significant digits (base 10) |

Table 23.3 lists macros having to do with exponents.

**Table 23.3**
Exponent Macros
in <float.h>

| Name | Value | Description |
|---|---|---|
| FLT_MIN_EXP<br>DBL_MIN_EXP<br>LDBL_MIN_EXP | | Smallest (most negative) power to which FLT_RADIX can be raised |
| FLT_MIN_10_EXP<br>DBL_MIN_10_EXP<br>LDBL_MIN_10_EXP | $\leq -37$<br>$\leq -37$<br>$\leq -37$ | Smallest (most negative) power to which 10 can be raised |
| FLT_MAX_EXP<br>DBL_MAX_EXP<br>LDBL_MAX_EXP | | Largest power to which FLT_RADIX can be raised |
| FLT_MAX_10_EXP<br>DBL_MAX_10_EXP<br>LDBL_MAX_10_EXP | $\geq +37$<br>$\geq +37$<br>$\geq +37$ | Largest power to which 10 can be raised |

Table 23.4 lists macros that describe how large numbers can be, how close to zero they can get, and how close two consecutive numbers can be.