Table 23.4 Max, Min, and Epsilon Macros in <float.h>

Name	*Value*	*Description*
FLT_MAX	$\geq 10^{+37}$	Largest finite value
DBL_MAX	$\geq 10^{+37}$	
LDBL_MAX	$\geq 10^{+37}$	
FLT_MIN	$\leq 10^{-37}$	Smallest positive value
DBL_MIN	$\leq 10^{-37}$	
LDBL_MIN	$\leq 10^{-37}$	
FLT_EPSILON	$\leq 10^{-5}$	Smallest representable difference between two numbers
DBL_EPSILON	$\leq 10^{-9}$	
LDBL_EPSILON	$\leq 10^{-9}$	

C99

C99 provides two other macros, DECIMAL_DIG and FLT_EVAL_METHOD. DECIMAL_DIG represents the number of significant digits (base 10) in the widest supported floating type; it has a minimum value of 10. The value of FLT_EVAL_METHOD indicates whether an implementation will perform floating-point arithmetic using greater range and precision than is strictly necessary. If this macro has the value 0, for example, then adding two `float` values would be done in the normal way. If it has the value 1, however, then the `float` values would be converted to `double` before the addition is performed. Table 23.5 lists the possible values of FLT_EVAL_METHOD. (Negative values not shown in the table indicate implementation-defined behavior.)

Table 23.5 Evaluation Methods

Value	*Meaning*
-1	Indeterminable
0	Evaluate all operations and constants just to the range and precision of the type
1	Evaluate operations and constants of type `float` and `double` to the range and precision of the `double` type
2	Evaluate all operations and constants to the range and precision of the `long double` type

Most of the macros in <float.h> are of interest only to experts in numerical analysis, making it probably one of the least-used headers in the standard library.

23.2 The <limits.h> Header: Sizes of Integer Types

The <limits.h> header provides macros that define the range of each integer type (including the character types). <limits.h> declares no types or functions.

One set of macros in <limits.h> deals with the character types: `char`, `signed char`, and `unsigned char`. Table 23.6 lists these macros and shows the maximum or minimum value of each.

The other macros in <limits.h> deal with the remaining integer types: `short int`, `unsigned short int`, `int`, `unsigned int`, `long int`, and