25.1 The <locale.h> Header: Localization

The <locale.h> header provides functions to control portions of the C library whose behavior varies from one locale to another. (A *locale* is typically a country or a region in which a particular language is spoken.)

Locale-dependent aspects of the library include:

- *Formatting of numerical quantities.* In some locales, for example, the decimal point is a period (297.48), while in others it's a comma (297,48).
- *Formatting of monetary quantities.* For example, the currency symbol varies from country to country.
- *Character set.* The character set often depends on the language in a particular locale. Asian countries usually require a much larger character set than Western countries.
- *Appearance of date and time.* In some locales, it's customary to put the month first when writing a date (8/24/2012); in others, the day goes first (24/8/2012).

Categories

By changing locale, a program can adapt its behavior to a different area of the world. But a locale change can affect many parts of the library, some of which we might prefer not to alter. Fortunately, we're not required to change all aspects of a locale at the same time. Instead, we can use one of the following macros to specify a *category:*

<string.h> header ➤25.6

- LC_COLLATE. Affects the behavior of two string-comparison functions, strcoll and strxfrm. (Both functions are declared in <string.h>).

<ctype.h> header ➤23.5

- LC_CTYPE. Affects the behavior of the functions in <ctype.h> (except isdigit and isxdigit). Also affects the multibyte and wide-character functions discussed in this chapter.
- LC_MONETARY. Affects the monetary formatting information returned by the localeconv function.

numeric conversion functions ➤26.2

- LC_NUMERIC. Affects the decimal-point character used by formatted I/O functions (like printf and scanf) and the numeric conversion functions (such as strtod) in <stdlib.h>. Also affects the nonmonetary formatting information returned by localeconv.

strftime function ➤26.3

C99

wcsftime function ➤25.5

- LC_TIME. Affects the behavior of the strftime function (declared in <time.h>), which converts a time into a character string. In C99, also affects the behavior of the wcsftime function.

Implementations are free to provide additional categories and define LC_ macros not listed above. For example, most UNIX systems provide an LC_MESSAGES category, which affects the format of affirmative and negative system responses.