

# 25 International Features

*If your computer speaks English  
it was probably made in Japan.*

For many years, C wasn't especially suitable for use in non-English-speaking countries. C originally assumed that characters were always single bytes and that all computers recognized the characters `#`, `[`, `\`, `]`, `^`, `{`, `|`, `}`, and `~`, which are needed to write programs. Unfortunately, these assumptions aren't valid in all parts of the world. As a result, the experts who created C89 added language features and libraries in an effort to make C a more international language.

In 1994, Amendment 1 to the ISO C standard was approved, creating an enhanced version of C89 that's sometimes known as C94 or C95. This amendment provides additional library support for international programming via the digraph language feature and the `<iso646.h>`, `<wchar.h>`, and `<wctype.h>` headers. C99 adds even more support for internationalization in the form of universal character names. This chapter covers all of C's international features, whether they come from C89, Amendment 1, or C99. I'll flag the Amendment 1 changes as C99 changes, although they actually predate C99.

The `<locale.h>` header (Section 25.1) provides functions that allow a program to tailor its behavior to a particular “locale”—often a country or other geographical area in which a particular language is spoken. Multibyte characters and wide characters (Section 25.2) enable programs to work with large character sets such as those found in Asian countries. Digraphs, trigraphs, and the `<iso646.h>` header (Section 25.3) make it possible to write programs on computers that lack some of the characters normally used in C programming. Universal character names (Section 25.4) allow programmers to embed characters from the Universal Character Set into the source code of a program. The `<wchar.h>` header (Section 25.5) supplies functions for wide-character input/output and wide-string manipulation. Finally, the `<wctype.h>` header (Section 25.6) provides wide-character classification and case-mapping functions.