

`wcstombs`      The `wcstombs` function is the opposite of `mbstowcs`: it converts a sequence of wide characters into multibyte characters. The second argument points to the wide-character string. The first argument points to the array in which the multibyte characters are to be stored. The third argument limits the number of bytes that can be stored in the array. `wcstombs` stops when it reaches the limit or encounters a null character (which it stores). It returns the number of bytes stored, not including the terminating null character, if any. `wcstombs` returns `-1` (cast to type `size_t`) if it encounters a wide character that doesn't correspond to any multibyte character.

                The `mbstowcs` function assumes that the string to be converted begins in the initial shift state. The string created by `wcstombs` always begins in the initial shift state.

### 25.3 Digraphs and Trigraphs

Programmers in certain countries have traditionally had trouble entering C programs because their keyboards lacked some of the characters that are required by C. This has been especially true in Europe, where older keyboards provided the accented characters used in European languages in place of the characters that C needs, such as `#`, `[`, `\`, `]`, `^`, `{`, `|`, `}`, and `~`. C89 introduced trigraphs—three-character codes that represent problematic characters—as a solution to this problem. Trigraphs proved to be unpopular, however, so Amendment 1 to the standard added two improvements: digraphs, which are more readable than trigraphs, and the `<iso646.h>` header, which defines macros that represent certain C operators.

#### Trigraphs

A *trigraph sequence* (or simply, a *trigraph*) is a three-character code that can be used as an alternative to an ASCII character. Table 25.8 gives a complete list of trigraphs. All trigraphs begin with `??`, which makes them, if not exactly attractive, at least easy to spot.

Table 25.8  
Trigraph Sequences

Trigraph Sequence	ASCII Equivalent
??=	#
??(	[
??/	\
??)	]
??'	^
??<	{
??!	
??>	}
??-	~