declaration or definition required prior to function call

C99 requires that either a declaration or a definition of a function be present prior to any call of the function. C89 doesn't have this requirement; if a function is called without a prior declaration or definition, the compiler assumes that the function returns an int value.

variable-length array parameters

C99 allows variable-length array parameters. In a function declaration, the * symbol may appear inside brackets to indicate a variable-length array parameter.

static array parameters

C99 allows the use of the word static in the declaration of an array parameter, indicating a minimum length for the first dimension of the array.

compound literals

C99 supports the use of compound literals, which allow the creation of unnamed array and structure values.

declaration of main

C99 allows main to be declared in an implementation-defined manner, with a return type other than int and/or parameters other than those specified by the standard.

return statement without expression

In C89, executing a return statement without an expression in a non-void function causes undefined behavior (but only if the program attempts to use the value returned by the function). In C99, such a statement is illegal.

14 The Preprocessor

additional predefined macros

C99 provides several new predefined macros.

empty macro arguments

C99 allows any or all of the arguments in a macro call to be empty, provided that the call contains the correct number of commas.

macros with a variable number of arguments

In C89, a macro must have a fixed number of arguments, if it has any at all. C99 allows macros that take an unlimited number of arguments.

__func__ identifier

In C99, the __func__ identifier behaves like a string variable that stores the name of the currently executing function.

standard pragmas

In C89, there are no standard pragmas. C99 has three: CX_LIMITED_RANGE, FENV_ACCESS, and FP_CONTRACT.

Pragma operator

C99 provides the _Pragma operator, which is used in conjunction with the #pragma directive.

16 Structures, Unions, and Enumerations

structure type compatibility

In C89, structures defined in different files are compatible if their members have the same names and appear in the same order, with corresponding members having