Introducing the C language

C is a compact general-purpose computer programming language that was originally developed by Dennis MacAlistair Ritchie for the Unix operating system. It was first implemented on the Digital Equipment Corporation PDP-11 computer in 1972.

This new programming language was named "C" as it succeeded an earlier programming language named "B" that had been introduced around 1970.

The Unix operating system and virtually all Unix applications are written in the C language. However C is not limited to a particular platform and programs can be created on any machine that supports C, including those running the Windows platform.

The flexibility and portability of C made it very popular and the language was formalized in 1989 by the American National Standards Institute (ANSI). The ANSI standard unambiguously defined each aspect of C, thereby eliminating previous uncertainty about the precise syntax of the language.

ANSI C has become the recognized standard for the C language and is described, and demonstrated by examples, in this book.

Why learn C programming?

The C language has been around for quite some time and has seen the introduction of newer programming languages like Java, C++, and C#. Many of these new languages are derived, at least in part, from C – but are much larger in size. The more compact C is better to start out in programming because it's simpler to learn.

It is easier to move on to learn the newer languages once the principles of C programming have been grasped. For instance, C++ is an extension of C and can be difficult to learn unless you have mastered C programming first.

Despite the extra features available in newer languages C remains popular because it is versatile and efficient. It is used today on a large number of platforms for everything from micro-controllers to the most advanced scientific systems. Programmers around the world embrace C because it allows them maximum control and efficiency in their programs.

Dennis M Ritchie, creator of the C programming language.

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Don't forget

Programs written 20 years ago in C are still just as valid today as they were back then.

Standard C libraries

ANSI C defines a number of standard libraries that contain tried and tested functions, which can be used in your own C programs.

The libraries are contained in "header files" that each have a file extension of ".h". The names of the standard C library header files are listed in the table below with a description of their purpose:

Library:	Description:
stdio.h	Contains input and output functions, types, and macro definitions. This library is used by most C programs and represents almost one third of the entire C libraries
ctype.h	Contains functions for testing characters
string.h	Contains functions for manipulating strings
math.h	Contains mathematical functions
stdlib.h	Contains utility functions for number conversion, storage allocation, etc.
assert.h	Contains a function that can be used to add diagnostics to a program
stdarg.h	Contains a function that can be used to step through a list of function arguments
setjmp.h	Contains a function that can be used to avoid the normal call and return sequence
signal.h	Contains functions for handling exceptional conditions that may arise in a program
time.h	Contains functions for manipulating date and time components
limits.h	Contains constant definitions for the size of C data types
float.h	Contains constant definitions relating to floating-point arithmetic

Hot tip

A function is a piece of code that can be re-used repeatedly in a C program. A description of each function in the C library is given in the Reference section starting on page 161.