

About C Language

C programming is an ANSI/ISO standard and powerful programming language for developing real time applications. C programming language was invented by Dennis Ritchie at the Bell Laboratories in 1972. It was invented for implementing UNIX operating system. C programming is most widely used programming language even today. All other programming languages were derived directly or indirectly from C programming concepts. C programming is the basis for all programming languages. This C programming tutorial explains all basic concepts in C like history of C language, data types, keywords, constants, variables, operators, expressions, control statements, array, pointer, string, library functions, structures and unions etc.

- The C programming language is a structure oriented programming language, developed at Bell Laboratories in 1972 by Dennis Ritchie
- C programming language features were derived from an earlier language called “B” (Basic Combined Programming Language – BCPL)
- C language was invented for implementing UNIX operating system
- In 1978, Dennis Ritchie and Brian Kernighan published the first edition “The C Programming Language” and commonly known as K&R C
- In 1983, the American National Standards Institute (ANSI) established a committee to provide a modern, comprehensive definition of C. The resulting definition, the ANSI standard, or “ANSI C”, was completed late 1988.

C programming language standards:

- C89/C90 standard – First standardized specification for C language was developed by the American National Standards Institute in 1989. C89 and C90 standards refer to the same programming language.
- C99 standard – Next revision was published in 1999 that introduced new features like advanced data types and other changes.

C11 and Embedded C language:

- C11 standard adds new features to C programming language and library like type generic macros, anonymous structures, improved Unicode support, atomic operations, multi-threading and bounds-checked functions. It also makes some portions of the existing C99 library optional and improves compatibility with C++.

- Embedded C includes features not available in C like fixed-point arithmetic, named address spaces, and basic I/O hardware addressing.
- Operating systems, C compiler and all UNIX application programs are written in C language
- It is also called as procedure oriented programming language. The C language is reliable, simple and easy to use. C has been coded in assembly language.

Features of C programming language:

- Reliability
- Portability
- Flexibility
- Interactivity
- Modularity
- Efficiency and Effectiveness

Uses of C programming language:

The C programming language is used for developing system applications that forms a major portion of operating systems such as Windows, UNIX and Linux. Below are some examples of C being used.

- Database systems
- Graphics packages
- Word processors
- Spreadsheets
- Operating system development
- Compilers and Assemblers
- Network drivers
- Interpreters

Which level is C language belonging to?

S.no	High Level	Middle Level	Low Level
1	High level languages provide almost everything that the programmer might need to do as already built into the language	Middle level languages don't provide all the built-in functions found in high level languages, but provides all building blocks that we need to produce the result we want	Low level languages provides nothing other than access to the machines basic instruction set

2	Examples: Java, Python	C, C++	Assembler
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The C language is a structured language

S.no	Structure oriented	Object oriented	Non structure
1	In this type of language, large programs are divided into small programs called functions	In this type of language, programs are divided into objects	There is no specific structure for programming this language
2	Prime focus is on functions and procedures that operate on the data	Prime focus is in the data that is being operated and not on the functions or procedures	N/A
3	Data moves freely around the systems from one function to another	Data is hidden and cannot be accessed by external functions	N/A
4	Program structure follows “Top Down Approach”	Program structure follows “Bottom UP Approach”	N/A
5	Examples: C, Pascal, ALGOL and Modula-2	C++, JAVA and C# (C sharp)	BASIC, COBOL, FORTRAN

Key points to remember in C language:

1. The C language is structured, middle level programming language developed by Dennis Ritchie
2. Operating system programs such as Windows, Unix, Linux are written in C language
3. C89/C90 and C99 are two standardized editions of C language
4. C has been written in assembly language