The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (**F**ree/**L**ibre and **O**pen **S**ource **S**oftware)

Target Group

- Students- High School and College
- Working professional- Software users, developers and trainers
- Research scholars
- Community at large

Workshops

The Spoken Tutorial Project Team conducts workshops on C and C++ and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.
For more details, please visit
https://spoken-tutorial.org

Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.
For more details, please visit
https://forums.spoken-tutorial.org.

The Spoken Tutorial Project
is funded by the
National Mission on Education through
Information and Communication Technology,
Ministry of Human Resource Development,
Government of India.

Contact us

Email: contact@spoken-tutorial.org
Website: https://spoken-tutorial.org

Forum help available to all learners

Content available in 22 Indian languages

IIT Bombay

Spoken Tutorial
https://spoken-tutorial.org

Scan the QR code to
visit Spoken Tutorial website

THE
C
C++
PROGRAMMING LANGUAGE

About C

C is a general-purpose programming language, initially developed by Dennis Ritchie between 1969 and 1973 at Bell Labs. Its design provides constructs that map efficiently to typical machine instructions. C is one of the most widely used programming language and there are very few computer architectures for which a C compiler does not exist.

Features

- C has facilities for structured programming and allows lexical variable scope and recursion.

- All executable code is contained within subroutines, called "functions."

- C program source text is free-format, using the semicolon as a statement terminator and curly braces for grouping blocks of statements.

- Typing is static, but weakly enforced: all data has a type, but implicit conversions can be performed; for instance, characters can be used as integers.

- Complex functionality such as I/O, string manipulation, and mathematical functions are easy to implement with library routines.

About C++

- C++ is a statically typed, free-form, compiled, general-purpose programming language. It was developed by Bjarne Stroustrup starting in 1979, at Bell Labs.

- It adds object-oriented features such as classes, and other enhancements to the C programming language.

- The language began as enhancements to C, first adding classes, then virtual functions, operator overloading, multiple inheritances, templates, and exception handling among other features.

- C++ is also one of the most popular programming languages and can be implemented on most hardware and OS platforms.

- As an efficient compiler to native code, its application domains include:

- Systems software

- Application software

- Device drivers

- Embedded software

- High-performance server and client applications

- Entertainment software like video games

Features

- Classes: By using classes, we can create user-defined data types. A class is the collection of a set of data and code. An object is the instance of a class.

- Inheritance: Allows one data type to acquire properties of other data types. This provides the idea of reusability, that means we can add new features to an existing class without modifying it.

- Data Abstraction and Encapsulation: Encapsulation means hiding data from the data structures. Here, the data is accessible to only the functions that are allowed to access it. Abstraction means representing essential features without including background details.

- Polymorphism: means one interface can be used for multiple implementations, so that object can behave differently for each implementation.

- Dynamic Binding: At runtime, the code matching the object under the current reference will be called.

C and C++ Advantages

- Powerful and flexible: C/C++ are used for developing operating systems, compilers, parsers, interpreters, word processors, search engines and graphic programs.

- Support: C requires less runtime support

- Portable programming language: A variety of C/C++ programm written for one computer system can be compiled and run on another system, with little or no change.

- Modular: Written in routines called functions and classes (C++), programs can be used in other applications or programs.

- Preferred by professional programmers: A variety of C/C++ resources and helpful supports are widely available.

- Standardised: Many standards have been documented, maintained and updated for C and C++ as standard references.