INTERNATIONAL JOURNAL ONLINE OF SCIENCE

VOLUME I ISSUE II OCTOBER 2015 -- ISSN: 2455-0108

# Analysis in Brief of History and Difference between C and C++ Programming Languages

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## Abstract:

C is a powerful system, programming language, and C++ is an excellent general purpose programming language with modern bells and whistles. In this report I intend to first explain the history of C & C++. Secondly, I will discuss in brief the difference between C&C++ in many homes.

**Keywords: History, C, C++.**

## History of C Language

C programming language developed in ***At&T's Bell Laboratories of USA*** in ***1972***. It was planned and written by Dennis Ritchie. Initially, C language was evolved to be used in UNIX operating organization. It inherits many features of previous languages such as B and BCPL. In 1978, Dennis Ritchie and Brian Kernighan published the first edition "The C Programming Language" and commonly known as K&R C. Beginning in 1983, the ANSI X3J11 committee was asked to standardize the C language. The result was ANSI C, a measure which was adopted in 1988. It is not thrust upon any programmer, but since it is hence widely accepted, it would be economically unwise for any systems programmer or compiler writer not to adapt to the criterion.

C is an imperative (procedural) language. It was projected to be compiled using a relatively straightforward compiler, to provide low-level access to memory, to

provide language constructs that map efficiently to machine instructions, and to require minimal run-time livelihood. C was therefore useful for many applications that had formerly been coded in assembly language, such as in system programming.

Despite its low-level capabilities, the language was designed to promote cross-platform programming. A standards-compliant and portably written C program can be compiled for a very w"Porting" portably written C program can be collected for a very broad mixture of computer platforms and operating systems with few modifications to its source code.rms, from embedded microcontrollers to supercompute rs.

## History of C++ Language

C++ was devised by ***Bjarne Stroustrup*** in ***1983*** at ***Bell Laboratories***. It is an extension of C by adding some enhancements to C language. Bjarne combined the simula's (a language designed for making simulations, created by Ole-Johan Dahl and Kristen Nygaard) features of object oriented and the efficiency of C. The new features added to language are templates, namespaces, exception handling and use of standary library.

In 1983, it was renamed from C with Classes to C++ ("++" being the increment operator in C). New features were added including virtual functions, function name and operator overloading, references, constants, type-safe free-store memory allocation (new/delete), improved type checking, and BCPL style single-line comments with two forward slashes (//), as well as the development of a proper compiler for C++, Cfront.

In 1985, the first edition of The C++ Programming Language was released, which became the definitive reference for the language, as there was not yet an official standard.[9]The first commercial implementation of C++ was released in October of the same year.[6]

In 1989, C++ 2.0 was released, followed by the updated second edition of The C++ Programming Language in 1991.[10] New features in 2.0 included multiple inheritance, abstract classes, static member functions, const member functions, and protected members. In 1990, The Annotated C++ Reference Manual was published. This work became the basis for the future standard. Later feature additions included templates, exceptions, namespaces, new casts, and a boolean type.

After the 2.0 update, C++ evolved relatively slowly. In 2011, the C++11 standard was released, adding numerous new features, enlarging the standard library further, and providing more facilities to C++ programmers. After a minor C++14 update, released in December 2014, various new additions are planned for 2017.

## Difference between C and C++

| S.no | Basis of Difference | C | C++ |
|---|---|---|---|
| 1. | Language Type | C is a structural or procedural programming language. | C++ is an object oriented programming language. |
| 2 | Approach | C follows top down approach. | C++ follows bottom up approach |
| 3 | Level of Language | C is a middle level language. | C++ is a high level language. |
| 4 | Security | C not provides Security Feature for data. | C++ provide Security to data by Data hidden and can't be accessed by external function. |
| 5 | Backbone of Language | Pinter is a backbone of c Language | Reference variable is a backbone C++. |
| 6 | I/O function | Scanf() & Printf () use as I/O function in c. | Cin>> and cout<< basic I/O function in c++. |
| 7 | Variable defined | Variables must be defined at the beginning in the function. | Variables can be defined anywhere in the function. |
| 8 | Dividing of Programs | Programs are divided into modules and functions | Programs are divided into classes and functions. |
| 9 | Exception Handling | C doesn't support Exception Handling | C++ supports exception handling. Done by using try and catch |

| | | | |
|---|---|---|---|
| | | | block. |
| 10 | File Extension | C follw a **.C** extension for saving a c file | C++ follw a **.Cpp** extension for saving C++ file |
| 11 | Virtual and friend functions | C does not use virtual and friend functions. | C++ Using a virtual and friend functions. |
| 12 | Realation between Data and Fuction | In C (because it is a procedural programming language), data and functions are separate and free entities. | In C++ (when it is used as object oriented programming language), data and functions are encapsulated together in form of an object. For creating objects class provides a blueprint of structure of the object. |
| 13 | Memory allocation | C provides malloc() and calloc () functions for dynamic memory allocation, and free() for memory de-allocation. | C++ provides new operator for memory allocation and free operator for memory de-allocation. |

## Conclusion:

C & C++ both are user-friendly, advance programming language for user, So if you want to write a program so you can use both of them to create a program.

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