

C++ in depth

Introduction to C++



Saurabh Shukla (MySirG)

Agenda

- ① History of C++
- ② Version History of C++
- ③ Comparison with C
- ④ Installation

History of C++

- C++ is a general programming language
- Created by Danish Computer scientist Bjarne Stroustrup as an extension of the C programming language.
- Developed at AT&T's Bell Labs, USA
- C++ ranked 3rd on TIOBE index



Bjarne Stroustrup

python
C
C++
Java

During Stroustrup's PHD thesis work, he found Simula had features that were very helpful for large software development but the language was too slow for practical use, while BCPL was fast but too low level to be suitable for large software development.

When Stroustrup started working in AT & T's bell labs, he had the problem of analyzing the UNIX Kernel with respect to distributed computing.

Stroustrup decided to enhance the C language with simula like features.

C was chosen because it was

- general purpose
- fast
- portable
- widely used

initially it was called C with classes

C++ name was given by Rick Mascitti

and was first used in December 1983.

Before this name, it was known as C with classes or new C

Version History of C++

- C with classes (1979) - First implementation.
classes, member functions, derived classes,
public and private access control, friend,
type checking of function arguments,
inline functions, overloaded assignment
operator, constructor, destructors,
 $f()$ is same as $f(void)$
- First C with classes reference manual
published (1982)
- CFront was a compiler written by Stroustrup
which converts C++ program to C program (1985)

C++ Language (1985)

virtual function, function overloading,
operator overloading, references,
new and delete operators, const
keyword, scope resolution operator,
I/O stream

- First book "The C++ programming Language" was published, written by Bjarne Stroustrup (1985)
- C++ support in GCC (1987)

- CFront 2.0 (1989)

multiple inheritance, pointers to members,
protected access control, type-safe linkage,
abstract class, static, const qualified
member functions, endl.

- 1990

namespaces, exception handling.
nested class, templates

- ANSI C++ Committee founded (1990)

- ISO C++ Committee founded (1991)

- CFront 3.0 (1991)

- STL implemented in C++ (1992)

- C++ 98 (1998)
bool, algorithms in STL, iterators,
function objects
- C++ 03 (2003)
major bug fixes
- C++ 11 (2011)
- C++ 14 (2014)
- C++ 17 (2017)
- C++ 20 (2020)
- C++ 23 (2023)

Comparison with C

C++ is a superset of C language

C is procedure oriented programming language

C++ is Object Oriented as well as procedure oriented.

(Supports polymorphism, inheritance, encapsulation)

No concept of exception handling

C++ supports exception handling

no type safe linking

type safe linking

Top down approach

Bottom up approach

Installation

① VS code

② MinGW

gcc -std=c11 -o A A.c

g++ -std=c++17 -o A A.cpp