



OOP Concepts & Introduction to C++

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Introduction to OOP



OOP means Object Oriented Programming Language. Oriented means Center. In OOP's all the data revolves around object. The main features of OOP's are:

1. Object
2. Class
3. Encapsulation
4. Abstraction
5. Polymorphism
6. Inheritance
7. Data Handling

Explanation of OOP's Concepts:



Object

This is the basic unit of object oriented programming. That is both data and function that operate on data are bundled as a unit called as object.

Class

To define a blueprint for an object we define class. A class is the collection of similar type of objects.

Abstraction

Data abstraction refers to, providing only essential information to the outside world and hiding their background details, i.e., to represent the needed information in program without presenting the details.

For example, a database system hides certain details of how data is stored and created and maintained. Similar way, C++ classes provides different methods to the outside world without giving internal detail about those methods and data.

Explanation of OOP's Concepts:



Encapsulation

To bind the data & function together in a single unit is called Encapsulation. Here Single unit is Class, which contains data & functions.

Inheritance

One of the most useful aspects of object-oriented programming is code reusability. The process of forming a new class from an existing class that is from the existing class called as base class, new class is formed called as derived class.

This is a very important concept of object-oriented programming since this feature helps to reduce the code size.

Polymorphism

The ability to use an operator or function in different ways in other words giving different meaning or functions to the operators or functions is called polymorphism. Polymorphism has 2 types : function Overloading & Operator Overloading.

Explanation of OOP's Concepts:



Data Handling :

To handle the data when certain errors occurs in program is called Data handling.

Introduction to C++



1. C++ programming is one of the most popular and widely used object-oriented programming language which was developed by Bjarne Stroustrup in 1979 at Bell labs.
2. It is derived from C programming. So, almost all code that run on C runs correctly on C++. If you have good understanding of basic features of C programming, you will have a head start learning C++.
3. Every C Program can be consider s C++ Program, but the reverse is not true.
4. C++ supports for the Structured programming & also it fully support OOP.
5. 1. Encapsulation 2. Data Hiding 3. Inheritance 4. Polymorphism
6. C++ is also called as “C with classes”.
7. It is first popular Object Oriented Programming Language.
8. C++ is an Object Oriented Programming language but is not purely Object Oriented.

Versions of C++



- 1. Visual C++
- 2. Borland C++
- 3. Turbo C++
- 4. Standardize C++ {ANSI C++}

Benefits of C++ over C Language



The major difference being OOPS concept, C++ is an object oriented language whereas C language is a procedural language.

Other features that makes C++ stronger language than C.

1. There is Stronger Type Checking in C++.
2. All the OOPS features in C++ like Abstraction, Encapsulation, Inheritance etc makes it more worthy and useful for programmers.
3. C++ supports and allows user defined operators (i.e Operator Overloading) and function overloading is also supported in it.
4. Exception Handling is there in C++.
5. The Concept of Virtual functions and also Constructors and Destructors for Objects.
6. Inline Functions in C++ instead of Macros in C language. Inline functions make complete function body act like Macro, safely.
7. Variables can be declared anywhere in the program in C++, but must be declared before they are used.

5 most popular C++ IDE / Compiler used to Run C++ Program



- C++ compiler are OS dependent, So writing a C++ Program is not an easy task, we have to put lot of efforts to write C++ Program if we don' have IDE. IDE makes our task so easy.
- Here are the list of different compilers used to compile & execute C++ Programs on th different Operating Systems(OS).
- 1. Borland C++/turbo C++ [Old & most popular IDE]
- 2. Visual C++ [Microsoft Platform]
- 3. DEV C++
- 4. GCC
- 5. Eclipse



C++ Characteristics

C++ Provides huge Function Library that's why its popularity is increasing day by day and more programmers are inclining towards C++ due to its multiple features.

The characteristics of C++ Language are:

- 1) C++ is an Object Oriented Programming Language (OOPL).
- 2) C++ have huge Function Library.
- 3) C++ is highly Flexible language with Versatility.
- 4) C++ can be used for developing System Software, operating systems, compilers, editors and data bases.
- 5) C++ is suitable for Development of Reusable Software , thus reduces cost of software development.
- 6) C++ is a Machine Independent Language.