C++ Tutorials for Beginners

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09.05.2021

Contents

List of Figures

List of codes

1 Getting Started

This section introduces the basics of C++ programming language and the tools needed to follow this tutorial. The goal of this tutorial is to help beginners getting started with C++ programming language. It does not require you to you to have a prior programming background kownledge. All you have to do is to follow along with me and and try to ***WRITE*** the code on your own machine not just read. Believe me it is easier to read and assume that you have mastered it until you are required to write the code by yourself, that is where it realize you have not properly understood it.

1.1 Understand the Computer Language

Your computer is an incredible and complicated device. Basically, the computer understands one simple language composed of 0 and 1. Thus a message like this ”*01001100101001010*” could mean ”open a window” for instance. Fortunately, we do not have to learn this language (Binary language). Programmers created languages which are much simpler than binary language. Here you could check *the number of programming languages.*
All programming languages have the same goal, that is being able to easily and efficently communicate with the computer compare to binary language. Here, is how it works :

1. You write the instructions to be executed by the computer in a programming language (e.g C++)
2. The instructions are translated in binary, the language understood by the computer.
3. The computer can now decode the message and executes your request.

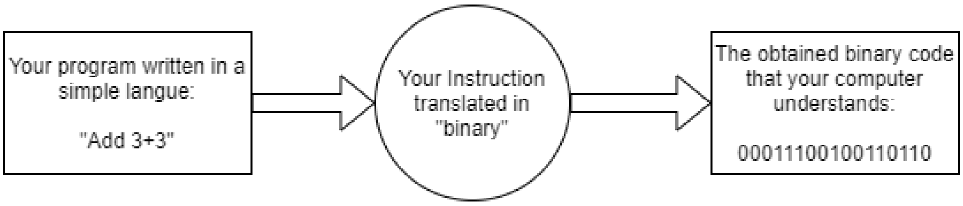
Your program written in a simple langue:
"Add 3+3"
Your Instruction translated in "binary"
The obtained binary code that your computer understands:
00011100100110110

Figure 1: Compliling Process.

1.2 C++ against other programming languages

Before we start talking about why C++ reprsents a powerful language despite its age. let’s discuss the the key points to analyze before diving into a language.

There exists numerous programming languages as mentioned in above section, although some languages are interesting, they are seldom used. The main challenge that comes with these languges, is that they do not have a very big community so imagine you working on a project and you are facing a problem, it is difficult to find help since not so many people are using the the language.This explains why C++ represents a good choice for debutant programmers. You are not alone, a lot ressources are availble to guide through your learning process, also C++ is still being widely used.

Another interesting aspect to look at as well is the programming language level. There are of two (02) types: ***high level*** and ***low level***.
high level: is a language that is that is far from binary language and really to humans languge,it allows to easily understand and translate instructions contrary to ***low level*** which a language closed to machine language and generally requires much more effort but gives you more control over what you can do, it is a trade-off.

C++ is a low level language. Do not panic, although coding in C++ might be a little complex, you will have in your possession a very ***powerful*** and particulary ***fast*** language. Infact, if most games are developed in C++, it is because it is the language capable of coupling speed and power, that makes it an essential language.

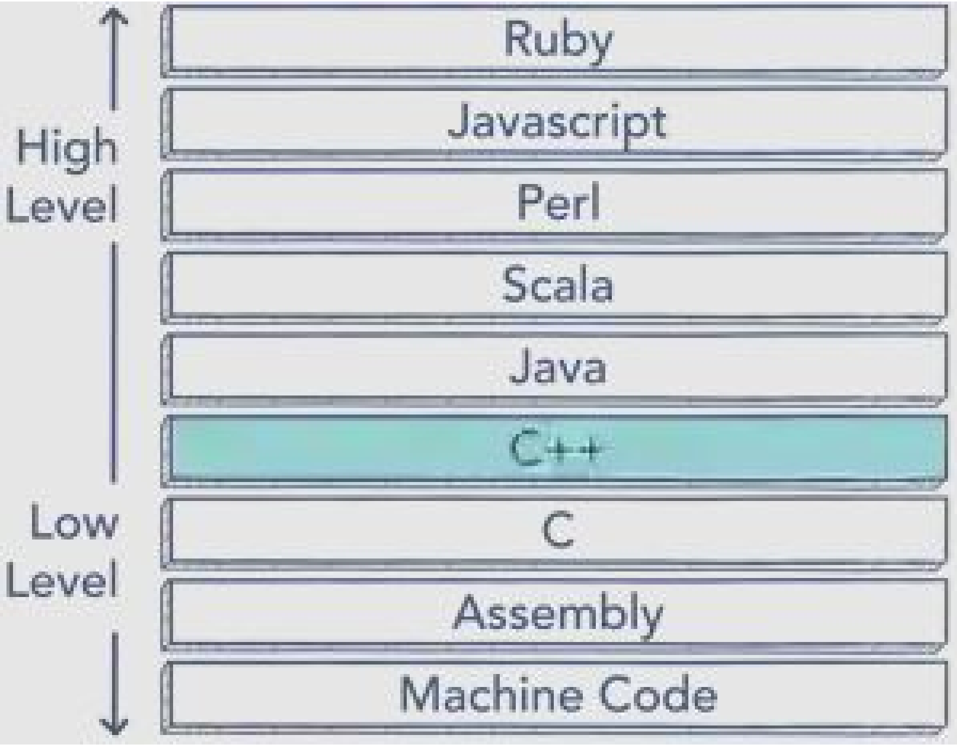

Figure 2: Programming Language by level.

1.3 Summary of C++

- **Popularity** : C++ is one of the most popular languages in the world. It is used by some 4.4 million developers worldwide
- **Large Community** : There is a large online community of C++ users and experts that is particularly helpful in case any support is required. There is a lot of resources available on the internet regarding C++.
- **Portable** : Programs developed in C++ can be moved from one platform to another. This is one of the main reasons that applications requiring multi-platform or multi-device development often use C++.
- **Speed** : Programs written in C++ language execute more faster compare to most programming languages

Snippet of C++ To give you an idea of how the code looks, let's look at a simple C++ program displaying "Hello world!" on the screen. Do not try to understand the code just appreciate the beauty and structure. We will go into details in the following sections

```cpp
//=================================================
// Sample example of C++ programming language
//=================================================

#include <iostream>

using namespace std;

int main()
{
    cout << "Hello world!" << endl;
    return 0;
}
//=================================================
```

Listing 1: Sample example of C++ programming language

If you are interested in knowing the story of C++ starting from its creation, you can learn all about C++ from wikipedia

1.4 Summary

- Programs allow us to efficently control actions on the computer: web browsing, text editing etc
- In order to create a program, we write instructions for the computer using a programming; source code

- The source code must be converted in binary by what we could a compiler, it allows the executation of the code.

- C++ is a widely used programming language, it is an evolution of C programming due to the fact that it allows Object Oriented Programming (OOP), a very powerful programming feature.