



# C++ Basics

A Language with Some Class

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# Contents

<b>1</b>	<b>Getting Started</b> .....	<b>5</b>
1.1	Installing G++	5
<b>2</b>	<b>Introduction</b> .....	<b>7</b>
2.1	Program Structure	7
2.2	Basic Output	7
2.3	Comments	8



# 1. Getting Started

C++ is a general purpose programming language, created at 1985 by Bjarne Stroustrup as at first an extension of the Grandpa language, C. C++ or also called "C with Classes", was first developed for system and embedded programming, however over the years it has made itself seen in game development, desktop application development, and has overall been a very good language to have in your portfolio.

Little known fact, the first Command Line program written in MKProjects were first written in C++ before being written in Rust. For C++ there is a well known compilers you can use g++.

## 1.1 Installing G++

```
# Mac OS
```

```
$ g++
```

```
# Debain Linux
```

```
$ sudo apt-get install g++
```

Usage:

```
$ g++ file.cpp # to compile C++ program
```

```
$ ./a.out # to execute program binary
```





## 2. Introduction

### 2.1 Program Structure

Consider the following hello world program, `hello.cpp`:

```
#include<iostream>

int main(){
    std::cout << "Hello World" << std::endl;
    return 0;
}
```

The program runs from top to bottom, line by line:

- The first line instructs the compiler to locate the file that contains a library called `iostream`.
- This library contains code that allows for I/O (input & output).
- The `main()` function houses all the instructions for the program.

### 2.2 Basic Output

Now let's talk more about the `std::cout` in our program above. This is used to display output to the user's command line or terminal. To use `std::cout`, you must use it following `<<` and a string or variable you wish to output.

```
std::cout << "The answer of the test is: " << answer << std::endl;
```

**Note:** `std::endl` is used to end the line of the output.

## 2.3 Comments

Comments are useful to document code, temporary debugging and in C++, it supports two different type of comments, single line `//` and multi-line `/* */`. Comments are ignored by the compiler at compiler time, making them a very good way to organize your code.

```
// This single line will be ignored

/*
The first C++ program written by MKProjects
was only available for Linux on Sanp!
All of this will be ignored !!!
*/
```

### Compile & Run

Since we have our program, `hello.cpp`, we may as well compile and run it.

```
# First compile the program with g++
$ g++ hello.cpp

# Now run the binary to execute the program
$ ls
a.out hello.cpp

$ ./a.out
Hello World
```