

First Program in C++

In this section, we'll discuss the basic structure of a C++ program, walk you through your first program (the "Hello, World!" example), and provide additional explanations of its syntax.

Hello, World!

The first program that most people learn to write in any programming language is often a simple one that displays the message "Hello, World!" on the screen. Here's the classic "Hello, World!" program in C++:

```
#include <iostream>

int main() {
    std::cout << "Hello, World!\n";
    return 0;
}
```

Let's break down the different components of this program:

Header Files & Preprocessor Directives

The first line of the program `#include <iostream>` is a [preprocessor directive](#) that tells the compiler to include the header file `iostream`. Header files provide function and class declarations that we can use in our C++ programs.

```
#include <iostream>
```

`main()` Function

In C++, the `main()` function serves as the entry point of your program. The operating system runs your program by calling this `main()` function. It should be defined only once in your program and must return an integer. The keyword `int` is the return type of this function which is an integer. Unlike C in C++ it is mandatory to have `int` as the return type for the `main` function.

```
int main() {  
    // Your code goes here.  
}
```

Output to the Console

To output text to the console, we use the `std::cout` object and the insertion operator `<<`. In the "Hello, World!" example, we used the following line to print "Hello, World!" to the console:

```
std::cout << "Hello, World!\n";
```

- `std`: This is the namespace where C++ standard library entities (classes and functions) reside. It stands for "standard"
- `std::cout`: The standard "character output" stream that writes to the console
- `"Hello, World!"`: The string literal to print
- `'\n'`: The "end line" manipulator that inserts a newline character and flushes the output buffer

Return Statement

Lastly, the `return 0;` statement informs the operating system that the program executed successfully. Returning any other integer value indicates that an error occurred:

```
return 0;
```

Now that you understand the basic components of a C++ program, you can write your first program, compile it, and run it to see the "Hello, World!" message displayed on the screen.

