

# Hello World

A C++ program has a very specific structure in terms of how the code is written. Let's take a closer look at the Hello World program — line by line!

C++ programs have a very specific structure in terms of how the code is written. There are some key elements that you use in all your C++ programs.

Here, we have a program called **hello.cpp**. It is a classic first program!

```
// This program outputs the message "Hello World!" to the monitor

#include <iostream>

int main() {

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

    return 0;

}
```

This program writes the phrase “Hello, World!” to your terminal.

C++ is a case sensitive language. Case sensitivity means that your keywords and variable declarations must match the case. For example, the C++ keyword for outputting is `cout`. If you were to type `cout` or `COU`, the compiler would not know that your intention was to use the keyword `cout`.

**Note:** Don't be intimidated by all the new information. You'll learn about all of these things (and a whole lot more)!

Let's go over this **hello.cpp** program line by line:

- ```
// This program outputs the message "Hello World!" to the monitor
```

This is a single-line comment that documents this code. The compiler will ignore everything after `//` to the end of the line. Sometimes, you will find this comment to include the author's name or document what the code does.

- ```
#include <iostream>
```

This is known as a pre-processor directive. It instructs the compiler to locate the file that contains code for a library known as `iostream`. This library contains code that allows for input and output, such as displaying data in the terminal window, or reading input from your keyboard.

- ```
int main() {  
    // Statements  
}
```

Every C++ program must have a *function* called `main()`. A function is basically a sequence of instructions for the computer to execute. This `main()` function houses all of our instructions for our program. This is where we will be writing our code.

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

This code uses a method known as `cout` (pronounced “see out”) to send the text “Hello World!” to the terminal for output.

- ```
return 0;
```

The `return` statement is used to end a function. If the program reaches this statement, returning a value of `0` is an indication to the operating system that the code executed successfully. This line of code is optional.

C++ programs permits judicious use of *white space* (tabs, spaces, new lines) to create code that is easier to read. The compiler completely ignores the white space, with a small exception concerning if statements that will be covered later. It is highly recommended that you make use of white space to indent and separate lines of code to aid in readability of your source code files.

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