

C++ Program Structure

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A C++ program has a very specific structure in terms of how the code is written and some key elements that you use in your C++ programs. The simplest of C++ programs is shown here.

```
1. #include <iostream>
2.
3. int main()
4. {
5.     std::cout << "Hello World!";
6.     return 0;
7. }
```

In this simple program we notice some elements listed. The line numbers are used for reference only and are not part of the program code.

Line 1: 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 to streams, such as the console window.

Line 3: Every C++ program must have a method known as `main()`. It is referred to as the entry point for the application when you start execution of the program on your computer. The `int` portion is the return type of the method. The empty parentheses `()` after the method name indicate that this a method and that it takes no arguments, in other words, there are no parameters for passing in values.

Line 4: Method bodies in C++ start with an open curly brace. **Line 5:** This code uses a method known as `cout` (pronounced "see out") to send the text `Hello World!` to the console for output and display. The `std::` prefix to this command is a way of indicating that `cout` is part of a namespace known as `std`. The `::` is used to indicate that `cout` is part of the `std` namespace.

Also notice that the line ends with a semi-colon. C++ statements are terminated with semi-colons.

Line 6: The `return` statement is used to end a function or method when a value is expected to be sent back to a caller. In this case, the caller is the operating system and the value returned is an integer value of 0. If the program reaches this statement,

returning a value of 0 is an indication to the operating system that the code executed successfully. In the past, programmers would return 0 to indicate successful execution and non-zero values to indicate that an error had occurred in the program somewhere.

Line 7: This line closes out the body of the function `main()` and is necessary so the compiler knows where the function or method ends, but is also used for other purposes that will be covered later in the course on variable scope and visibility.
