

Writing your first program

Follow these steps, copying the code exactly as it is listed, to create a simple C++ program that will output the traditional first program greeting:



hello.cpp

Don't forget



Comments throughout this book are shown in green – to differentiate them from other code.

Beware



After typing the final closing `}` brace of the main method always hit Return to add a newline character – your compiler may insist that a source file should end with a newline character.

- 1 Open a plain text editor, such as Windows' Notepad, then type these “preprocessor directives”
`#include <iostream>`
`using namespace std ;`
- 2 A few lines below the preprocessor directives, add a “comment” describing the program
`// A C++ Program to output a greeting.`
- 3 Below the comment, add a “main function” declaration to contain the program statements
`int main()`
`{`
`}`
- 4 Between the curly brackets (braces) of the main function, insert this output “statement”
`cout << "Hello World!" << endl ;`
- 5 Next insert a final “return” statement in the main function
`return 0 ;`
- 6 Save the program to any convenient location as “hello.cpp”- the complete program should look like this:

```
hello.cpp - Notepad
File Edit Format View Help

#include <iostream>
using namespace std ;

// A C++ Program to output a greeting.

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

...cont'd

The separate parts of the program code on the opposite page can be examined individually to understand each part more clearly:

- **Preprocessor Directives** – these are processed by the compiler before the program code so must always appear at the start of the page. Here the **#include** instructs the compiler to use the standard C++ input/output library named **iostream**, specifying the library name between `< >` angled brackets. The next line is the “using directive” that allows functions in the specified namespace to be used without their namespace prefix. Functions of the **iostream** library are within the **std** namespace – so this **using** directive allows functions such as **std::cout** and **std::endl** to be simply written as **cout** and **endl**.
- **Comments** – these should be used to make the code more easily understood by others, and by yourself when revisiting the code later. In C++ programming everything on a single line after a `//` double-slash is ignored by the compiler.
- **Main function** – this is the mandatory entry point of every C++ program. Programs may contain many functions but they must always contain one named **main**, otherwise the compiler will not compile the program. Optionally the parentheses after the function name may specify a comma-separated list of “argument” values to be used by that function. Following execution the function must return a value to the operating system of the data type specified in its declaration – in this case an **int** (integer) value.
- **Statements** – these are the actions that the program will execute when it runs. Each statement must be terminated by a semi-colon, in the same way that English language sentences must be terminated by a full stop period. Here the first statement calls upon the **cout** library function to output text and an **endl** carriage return. These are directed to standard output by the `<<` output stream operator. Notice that text strings in C++ must always be enclosed within double quotes. The final statement employs the C++ **return** keyword to return a zero integer value to the operating system – as required by the main function declaration. Traditionally returning a zero value indicates that the program executed successfully.

Hot tip



The C++ compiler also supports multiple-line C-style comments between `/*` and `*/` – but these should only ever be used in C++ programming to “comment-out” sections of code when debugging.

Hot tip



Notice how the program code is formatted using spacing and indentation (collectively known as whitespace) to improve readability. All whitespace is ignored by the C++ compiler.