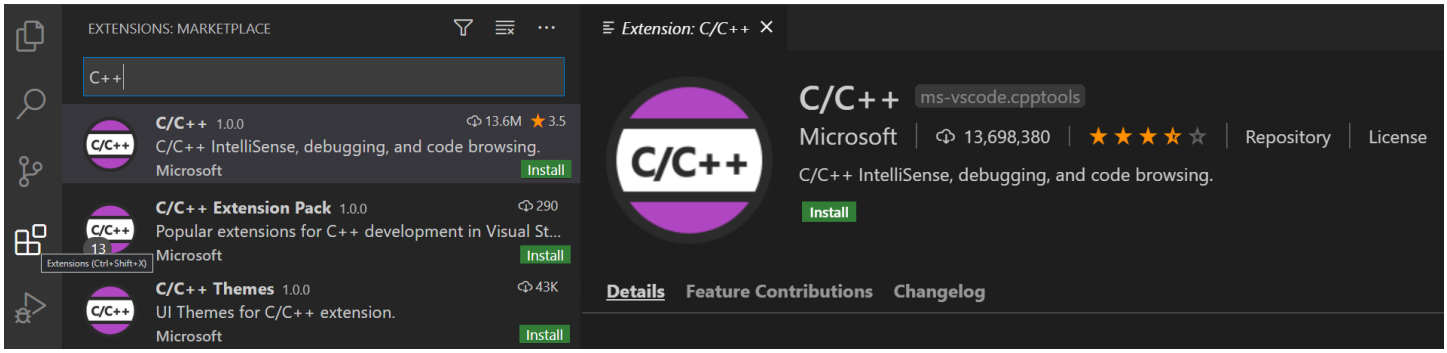
# Prerequisites

### Download Visual Studio Code

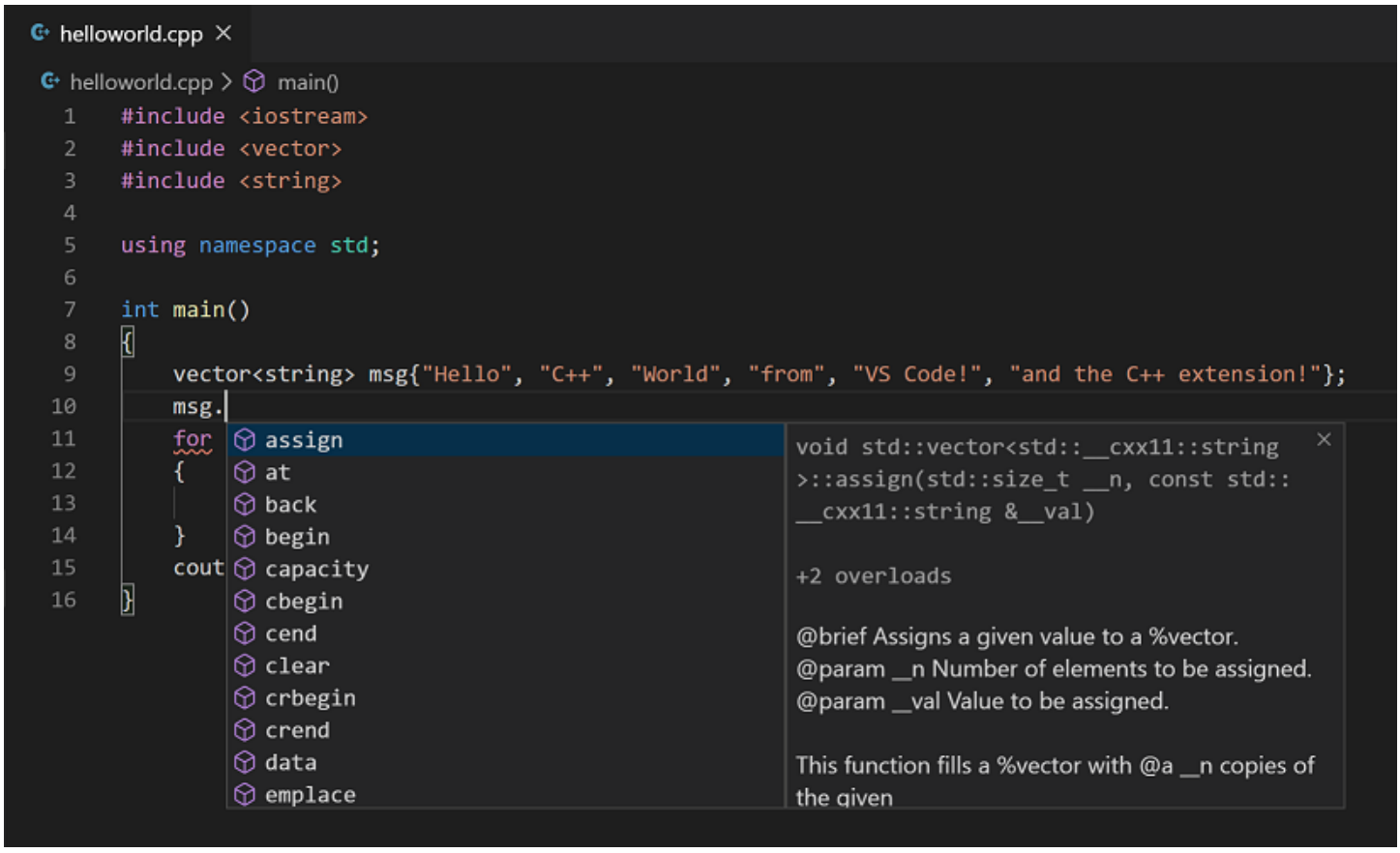
Click here to download Visual Studio Code. Install with all default settings.

### Install the C++ Extension

1. Open VS Code.
2. Select the Extensions view icon on the Activity bar or use the keyboard shortcut (Command+Shift+X for mac and Ctrl+Shift+X for pc).
3. Search for 'C++'.
4. Select Install.



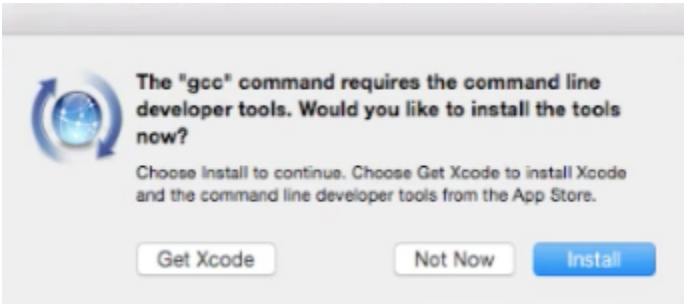

After you install the extension, when you open or create a *.cpp file, you will have syntax highlighting (colorization), smart completions and hovers (IntelliSense), and error checking.



# Install Compiler (Mac)

### Install Xcode Command Line Tools

1. Open a new terminal window.
2. Type: `gcc`
3. You will be prompted:
   The “gcc” command requires the command line developer tools. Would you like to install the tools now?
4. Select Install to start the installation.
5. Select Agree to agree to the terms.
6. GCC will install to your Mac.




### Check your Xcode Command Line Tools installation

To check that your Xcode command line tools are correctly installed and available, open a new Terminal and type:
`g++ --version`

You will get the following message (or something similar) if Xcode was installed correctly:

```
Configured with: --prefix=/Library/Developer/CommandLineTools/usr
--with-gxx-include-dir=/usr/include/c++/4.2.1
Apple LLVM version 10.0.0 (clang-1000.10.44.4)
Target: x86_64-apple-darwin17.7.0
Thread model: posix
InstalledDir: /Library/Developer/CommandLineTools/usr/bin
```

# Install Compiler (PC)

### Install the Windows Subsystem for Linux (WSL)

**Note:** You must have Windows 10 or Windows 11 to use the Windows Subsystem for Linux.

First you will need to download and install the Windows subsystem for Linux following this guide from Microsoft:
https://docs.microsoft.com/en-us/windows/wsl/install

Next, you will need to configure Visual Studio Code to use the GCC compiler on the WSL following this guide from Microsoft:
https://code.visualstudio.com/docs/cpp/config-wsl

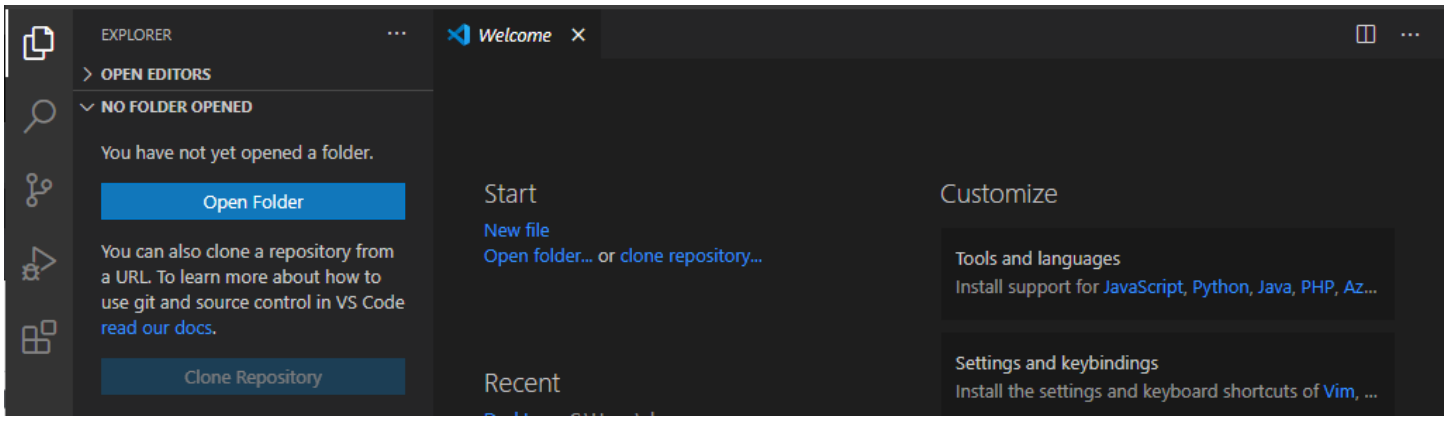
This will download and install the WSL and GCC compiler to your Windows machine so you can use Linux commands and compile/run C++ programs. You can open your newly installed subsystem by searching for 'Ubuntu' (without the quotes) and running the program that is found from the search.

# Hello World

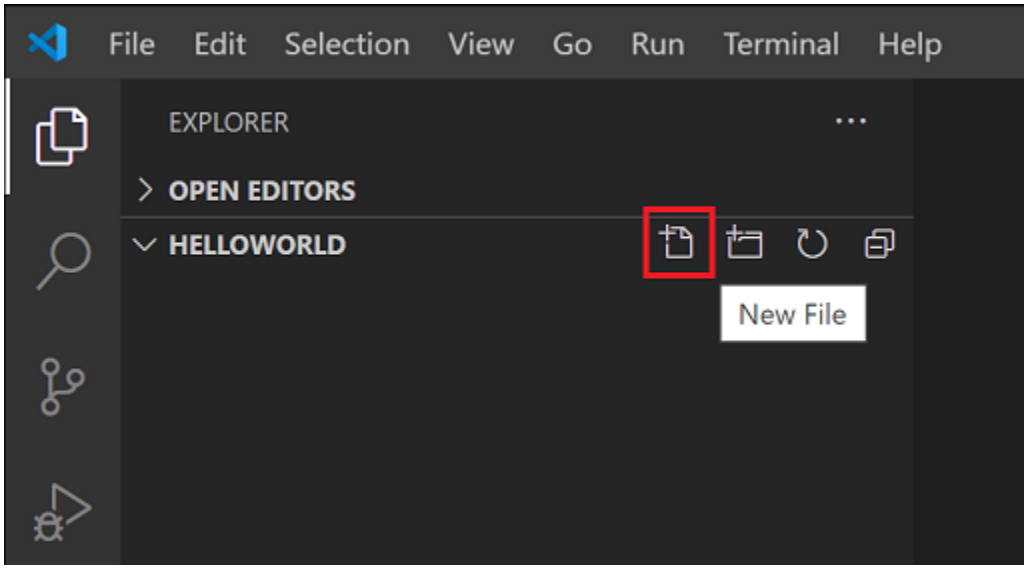
To make sure the compiler is installed and configured correctly, we'll create the simplest Hello World C++ program.

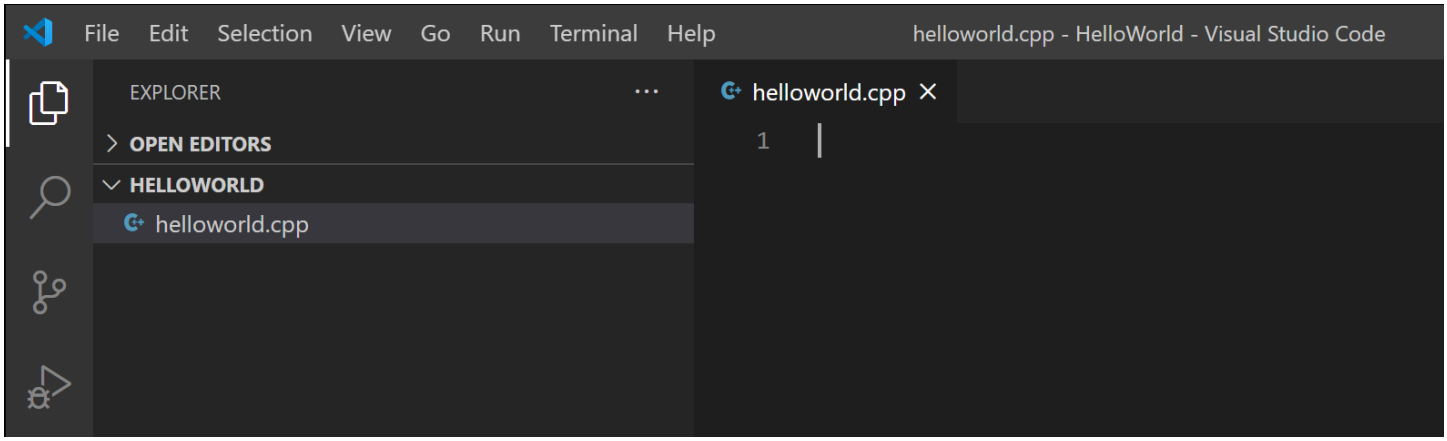
Create a directory called "HelloWorld" on your desktop and open VS Code in that folder.

1. Select the Explorer view icon on the Activity bar or use the keyboard shortcut (Command+Shift+X).
2. Select ‘Open Folder’.
3. Navigate to the "HelloWorld" directory you created.
4. Press ‘Select Folder’.




Now create a new file called helloworld.cpp with the New File button in the File Explorer or **File > New File** command.



**Add Hello World source code**

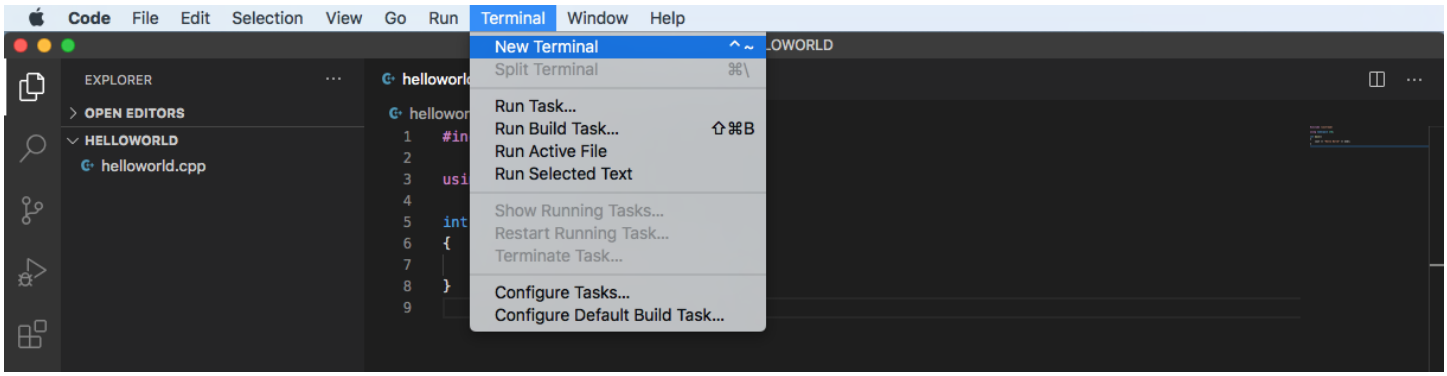
Now paste in this source code:

```
#include <iostream>

using namespace std;

int main()
{
    cout << "Hello World" << endl;

}
```

Now press `Ctrl+S` to save the file. You can also enable Auto Save to automatically save your file changes, by checking Auto Save in the main File menu.

## Build Hello World

Now that we have a simple C++ program, let's build it. Select the **Terminal > New Terminal** command (`^+~`) from the main menu.




This will open a new terminal at the folder you have open in the Explorer.


Type: **`g++ helloworld.cpp`**

This will compile `helloworld.cpp` and create an executable file called `a.out`, which will appear in the File Explorer.

## Run Hello World

From a VS Code Integrated Terminal (Terminal>New Terminal or ^+~), you can now run your program by typing "./a.out".


If everything is set up correctly, you should see the output "Hello World".