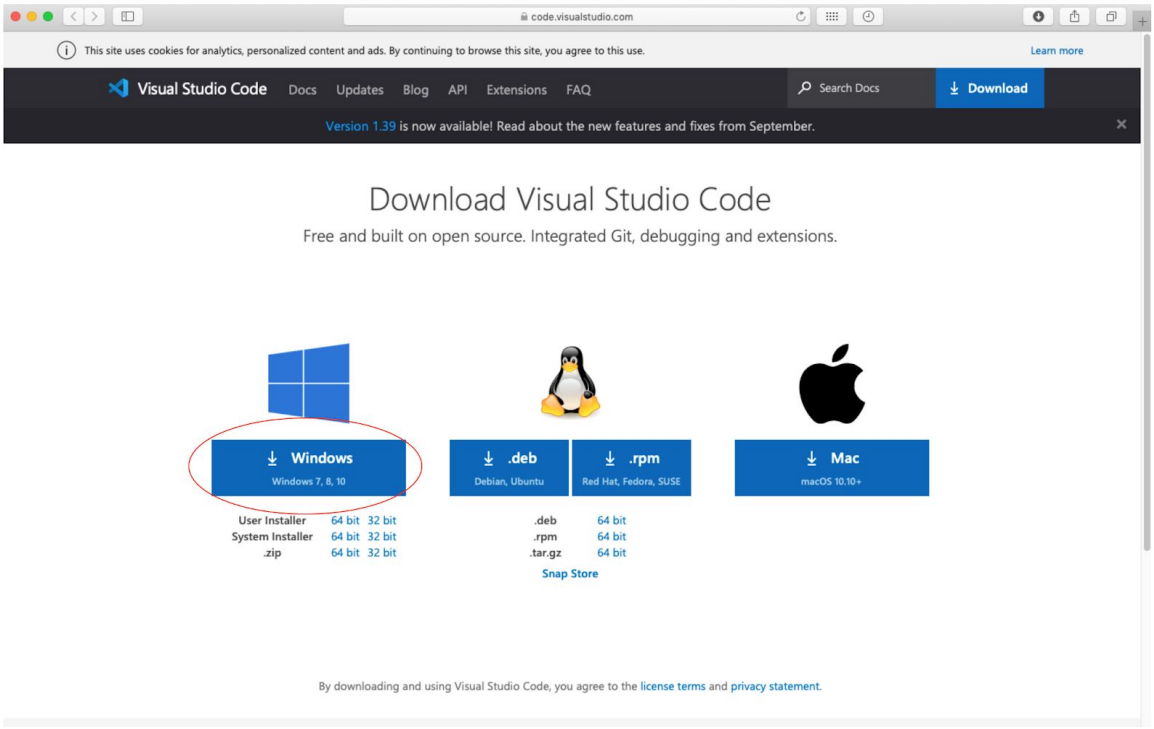
CSCI 1300 CS1: Starting Computing
Fleming, Naidu, Quigley - Fall 2020
Visual Studio Code

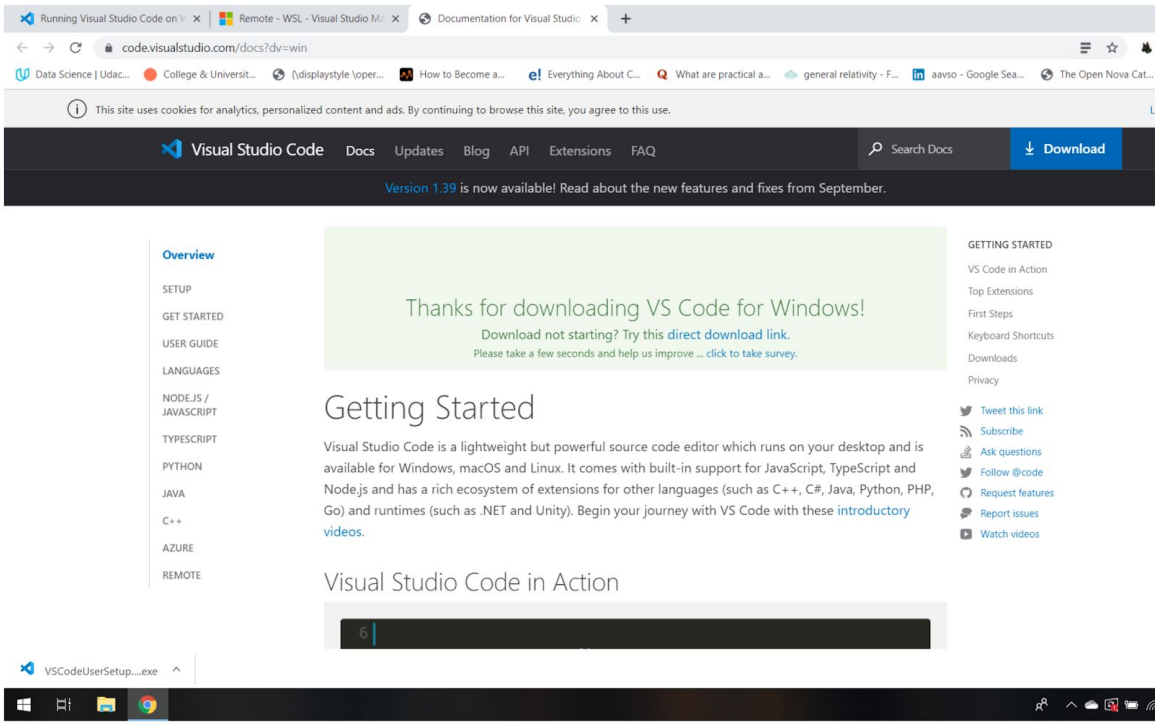
You will use Visual Studio Code (VS Code) to write and execute your programs locally.

Important: Before proceeding with this document, make sure that you have run Windows Update within your Windows 10 environment. You must have the latest updates installed.

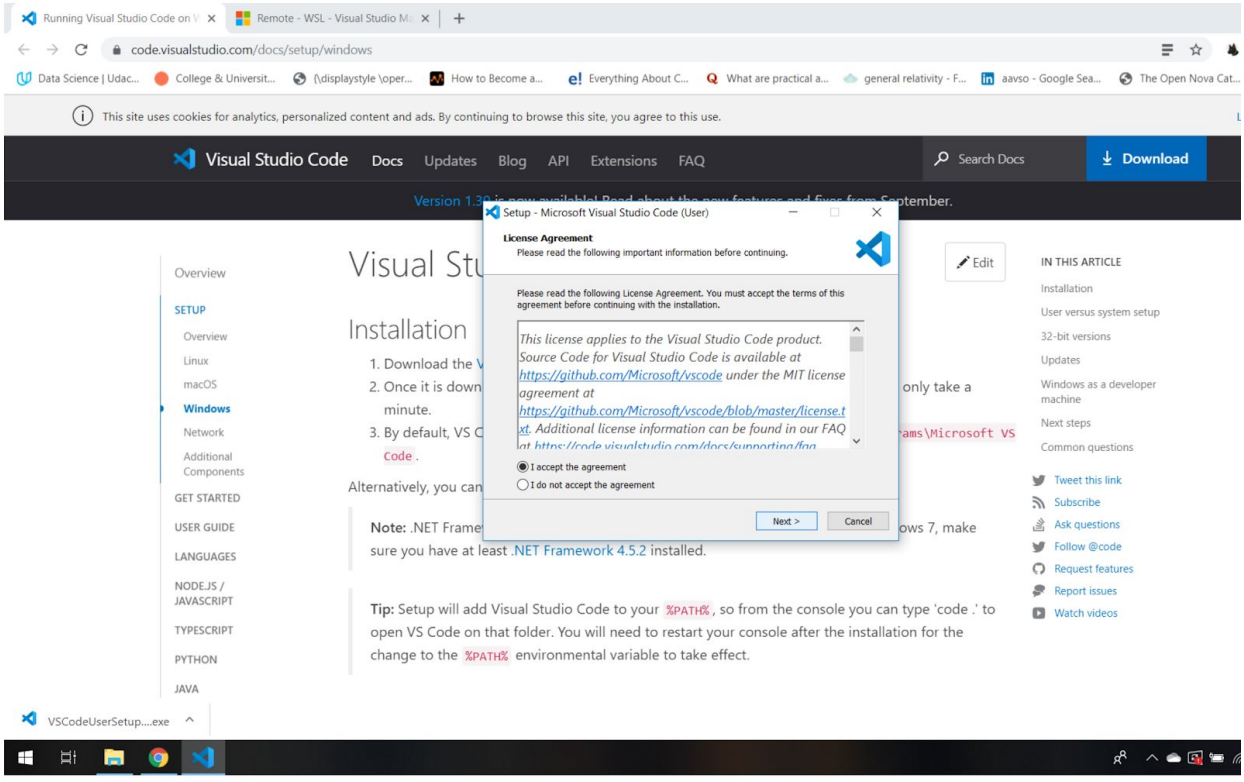
Windows Installation Guide (part 1)

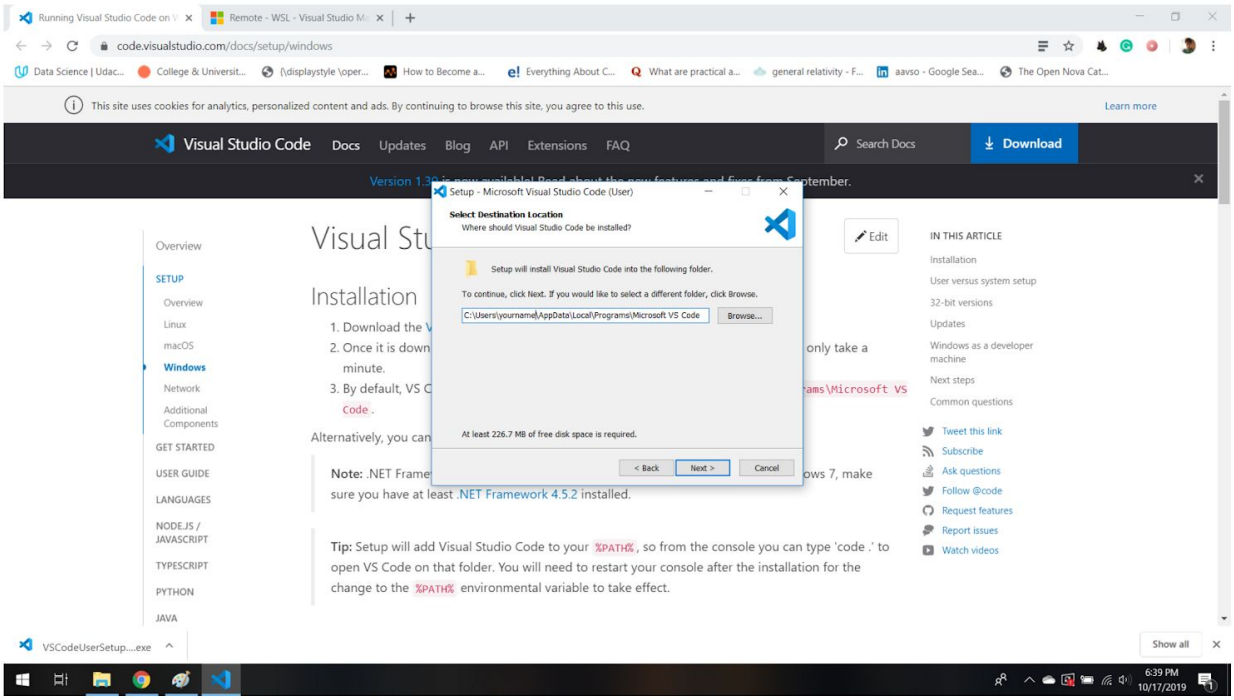
Step 1: Go to VS code download page, and download for Windows.

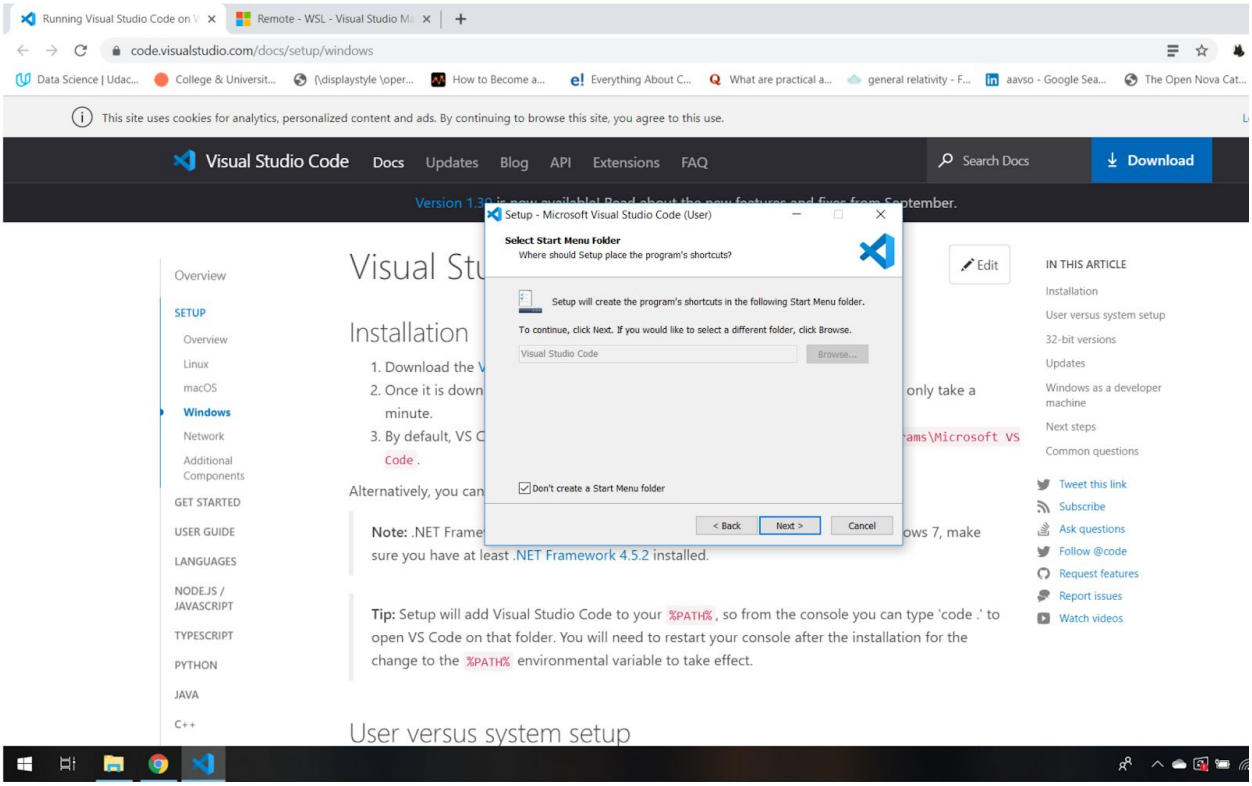




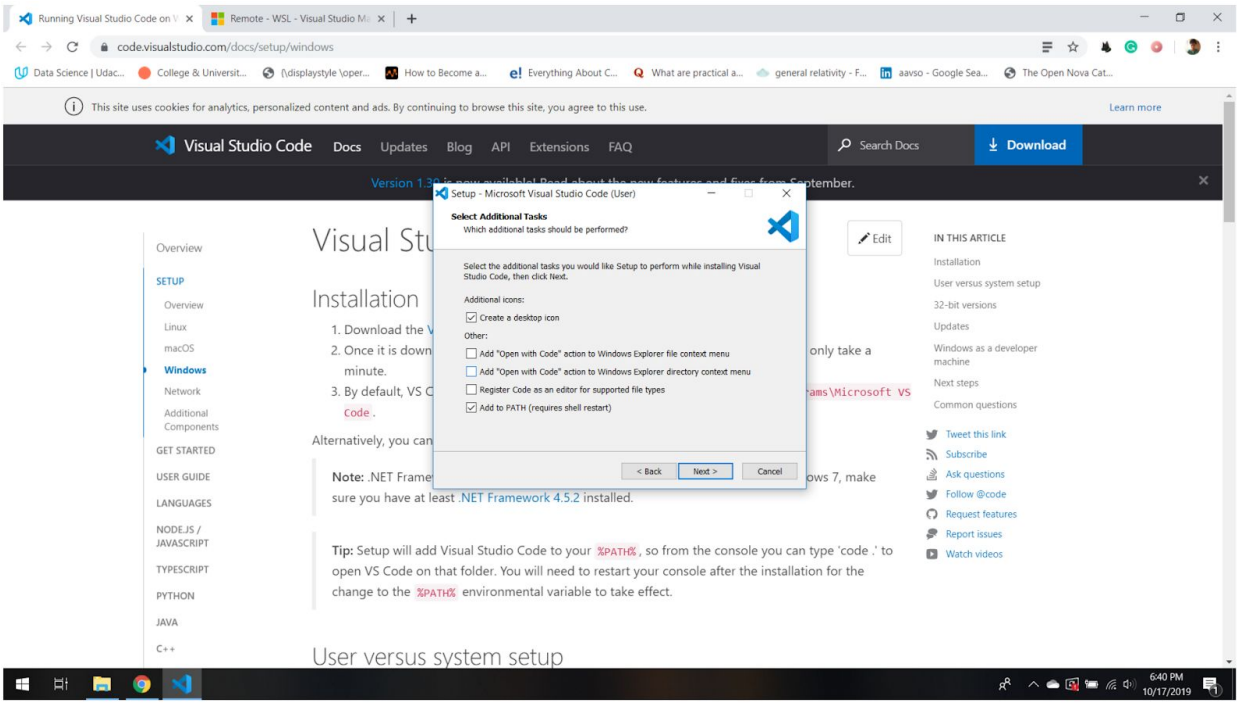
Step 2: Accept the user agreement and proceed to follow the steps for installation



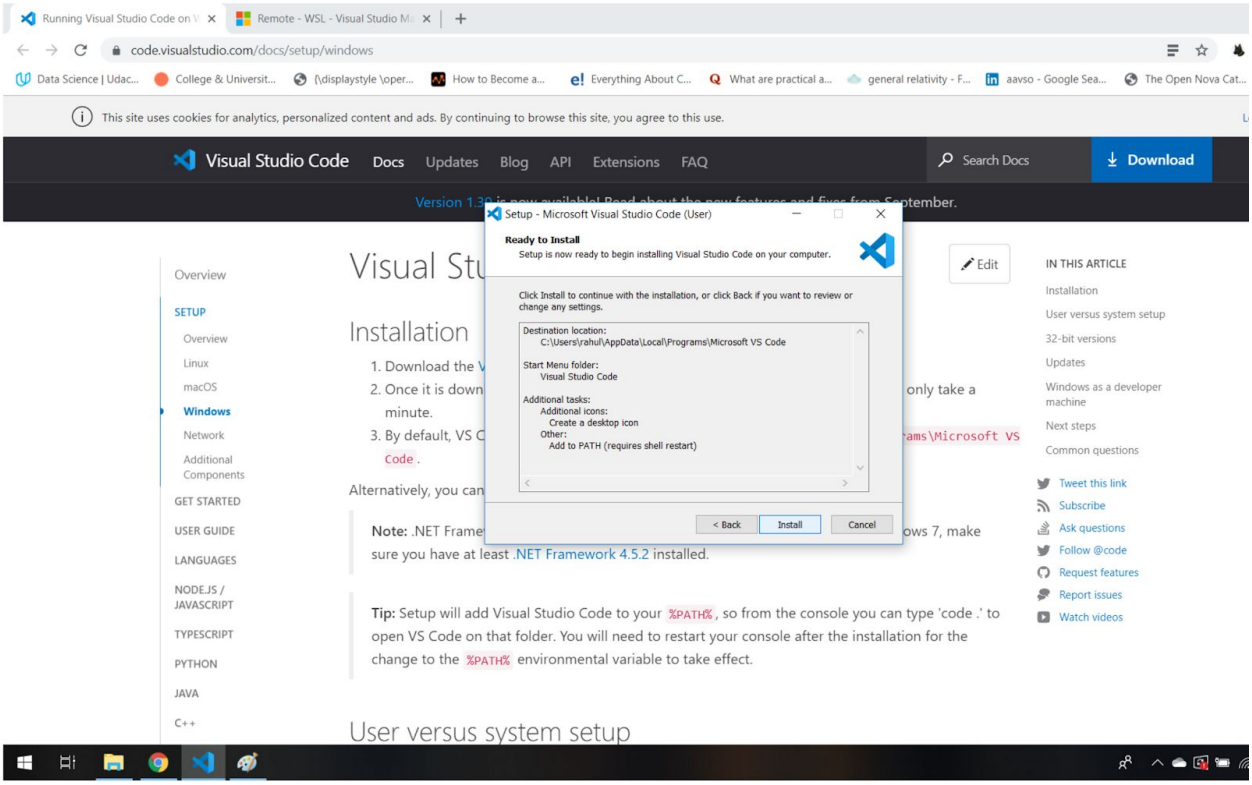




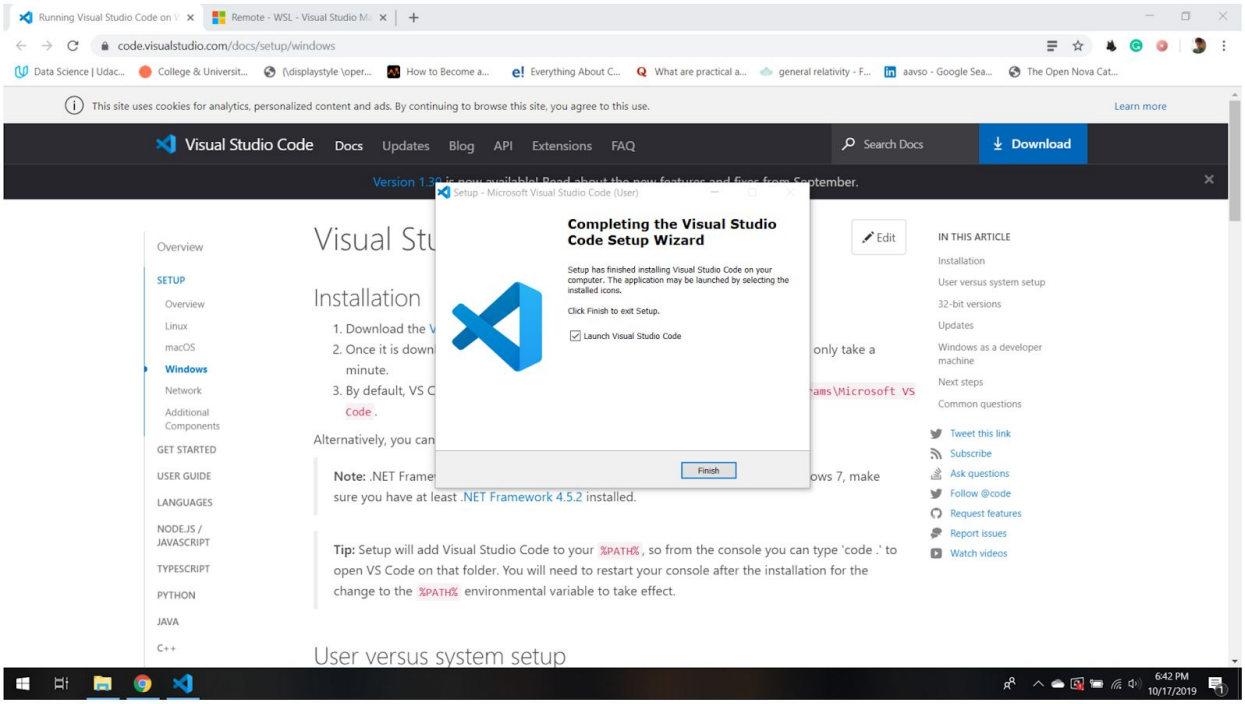
Step 3: Choose Options based on your preferred settings. If you're not sure, you can stick with the ones used in this tutorial.



Step 4: Click on Install and wait for Visual Studio Code to finish installing.



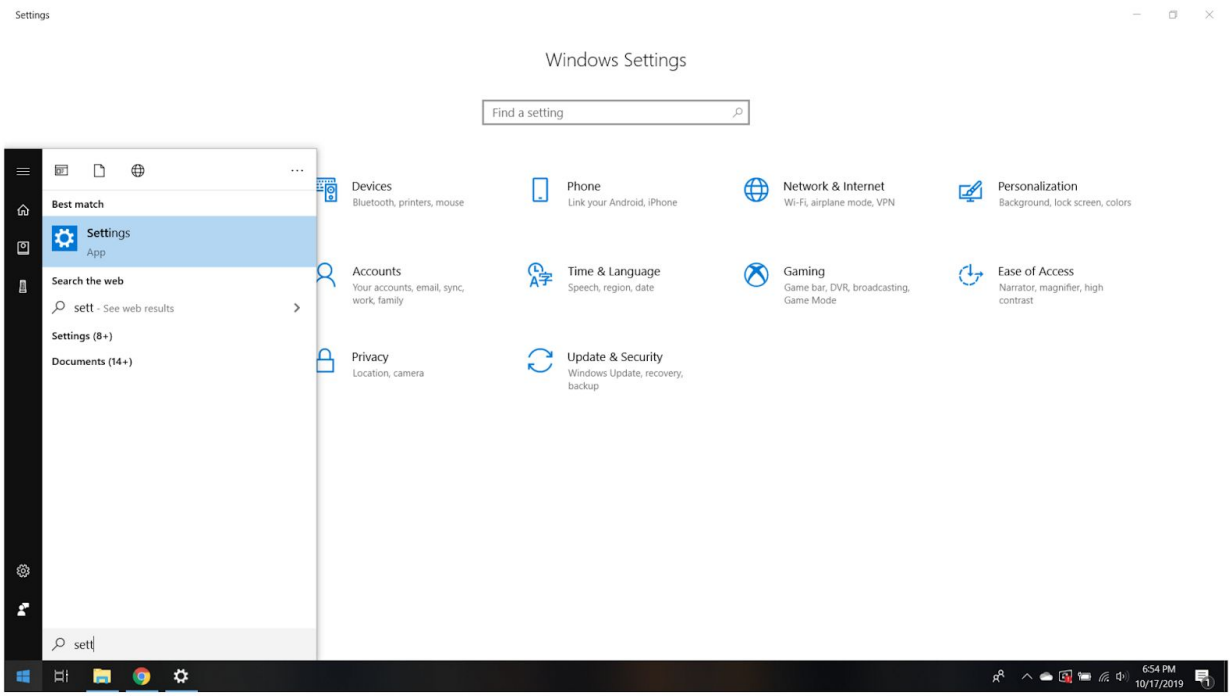
Step 5: You may check out Visual Studio Code by launching it.

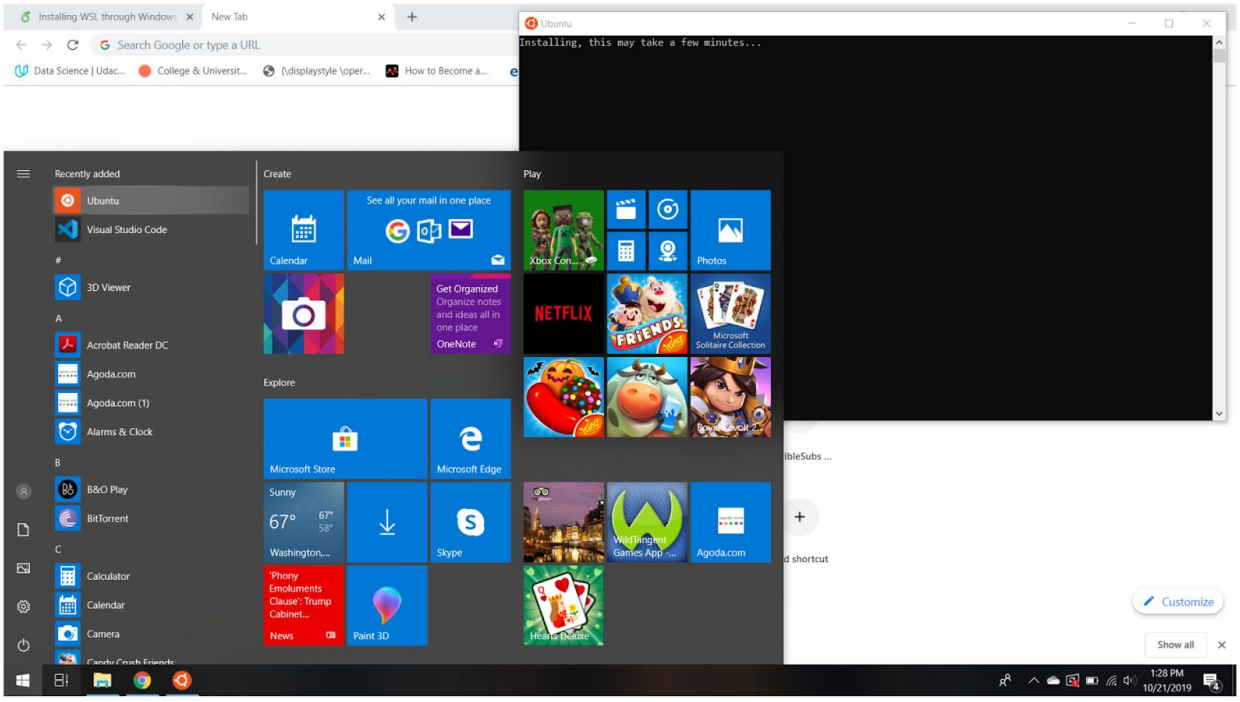


Installing Windows Subsystem for Linux (WSL) (part 2)

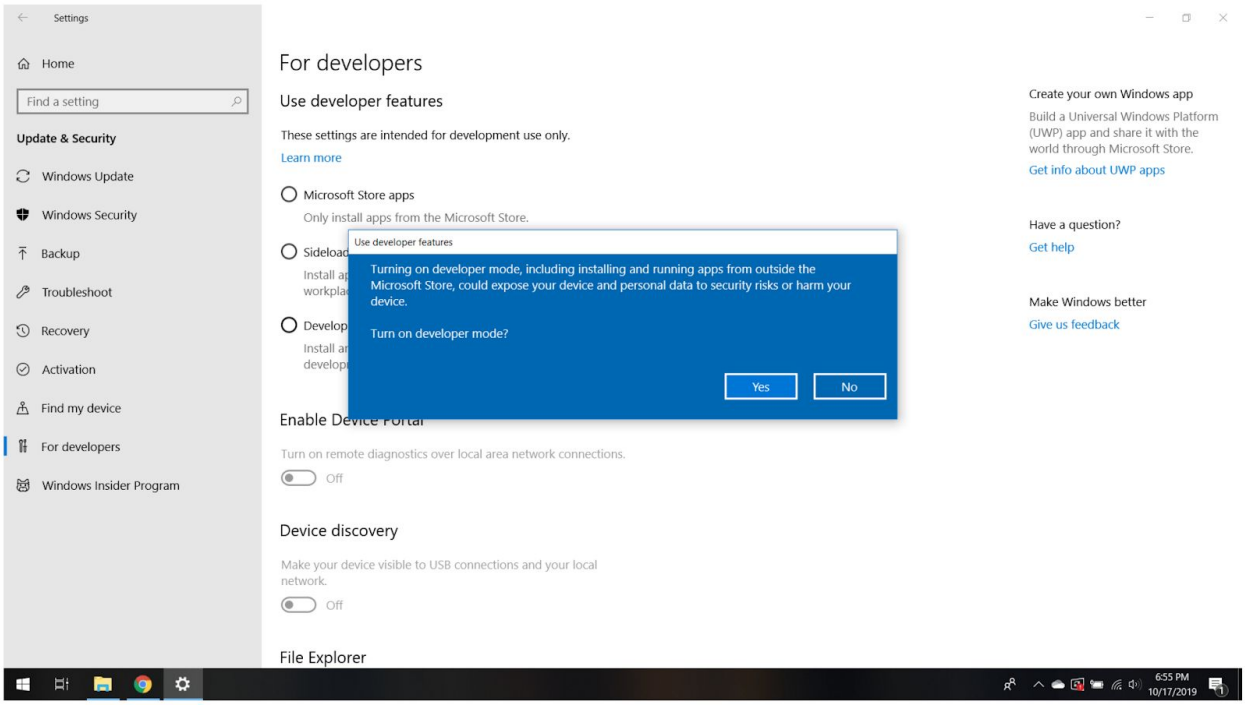
Let us now install WSL so that we can emulate linux commands and functionality on our Windows Machine

Step 1: Open Settings from your Start menu and click on Update and Security.

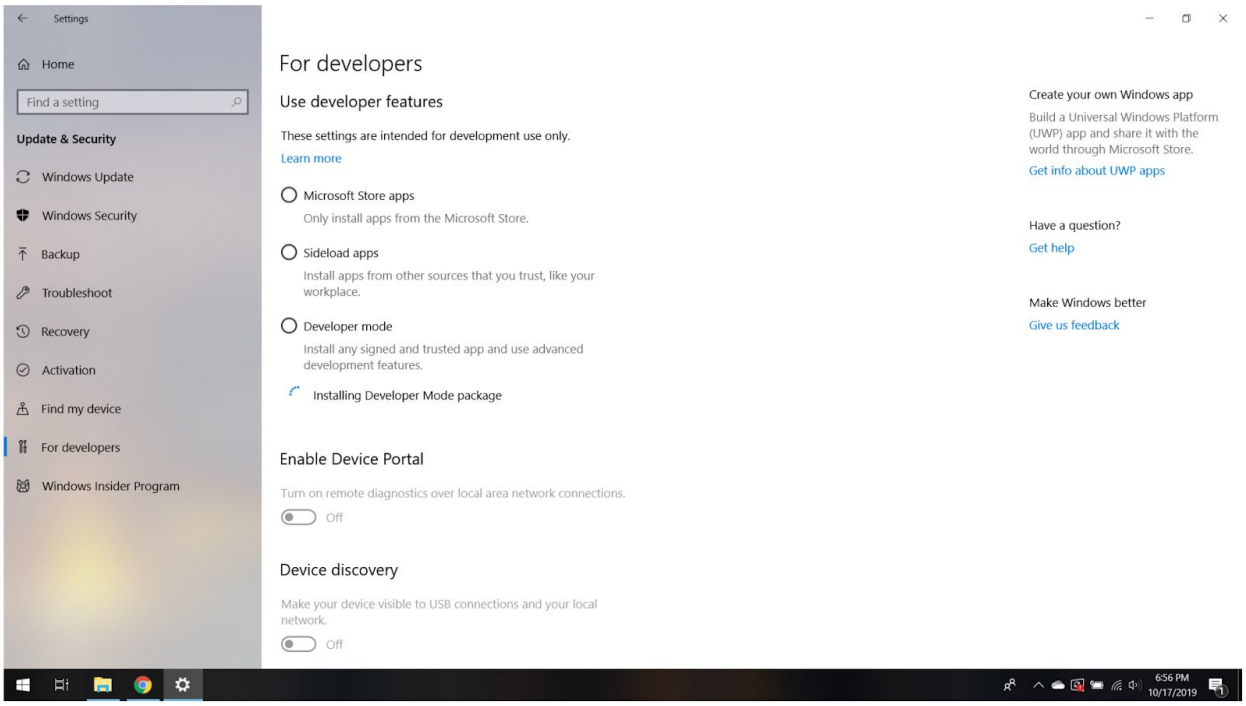




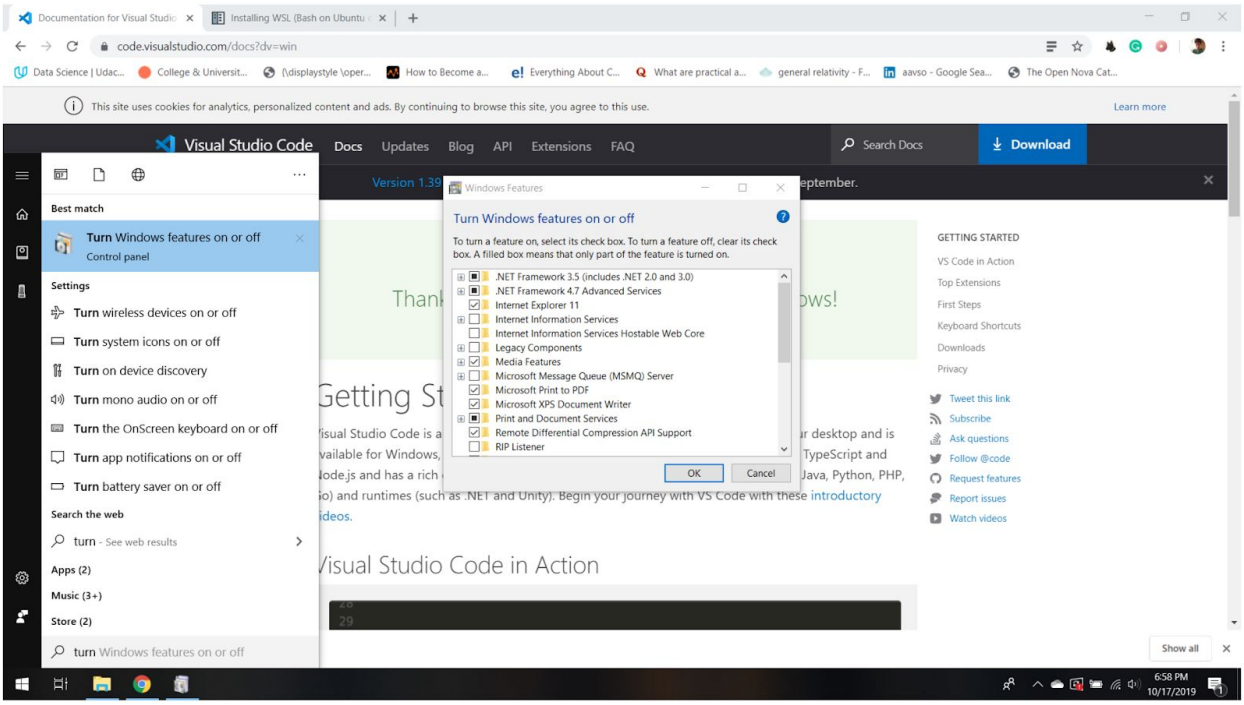
Step 2: Click on the For Developers Tab on the left side and toggle the Developer Mode option. Click “Yes” to turn on developer mode.



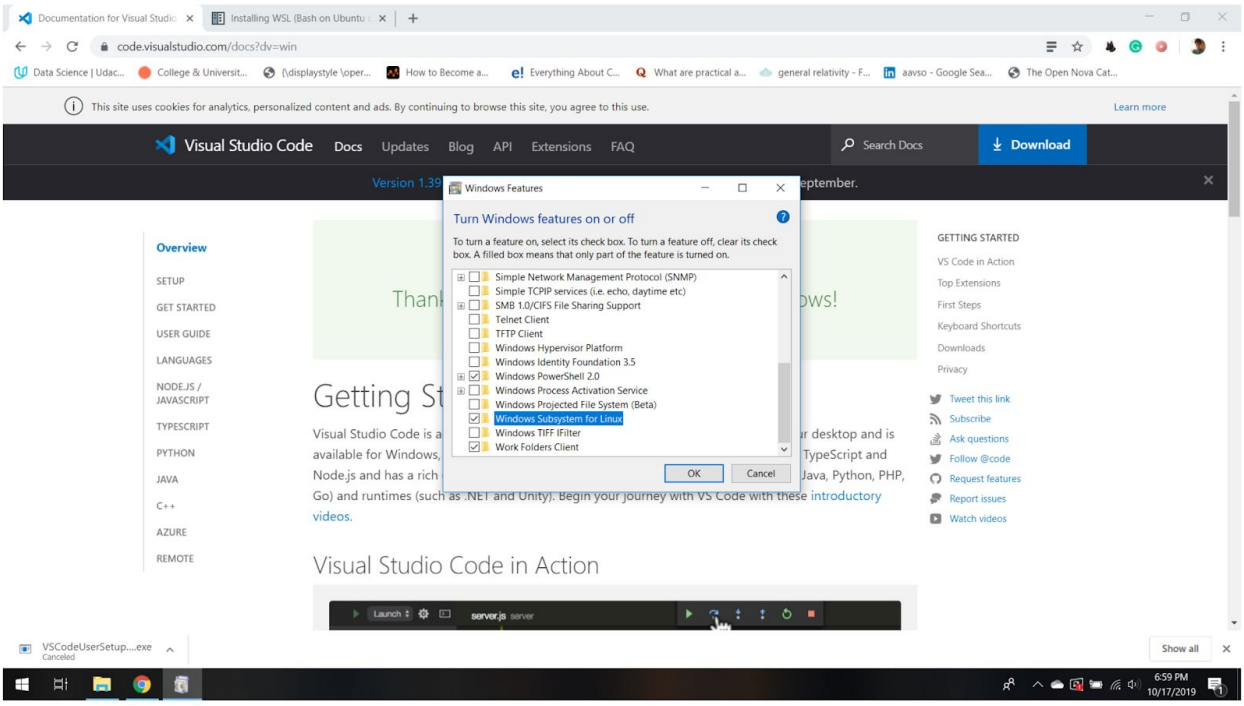
Step 3: This will start a brief installation of developer packages.



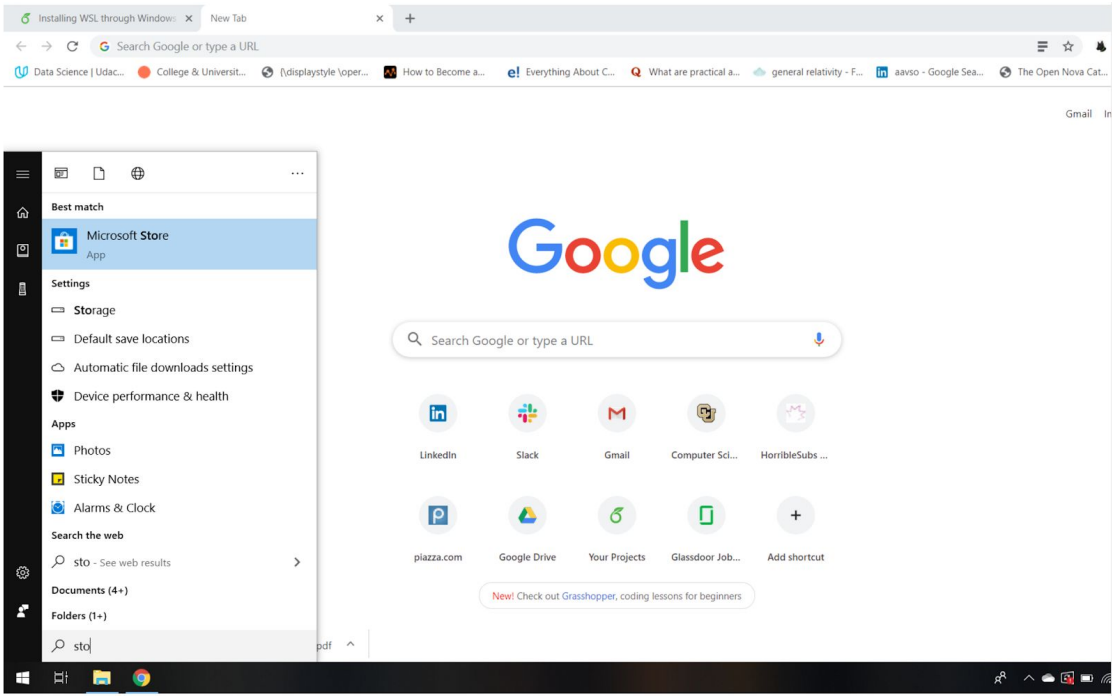
Step 4: Click on the Start menu again and search for “Turn Windows features on or off”



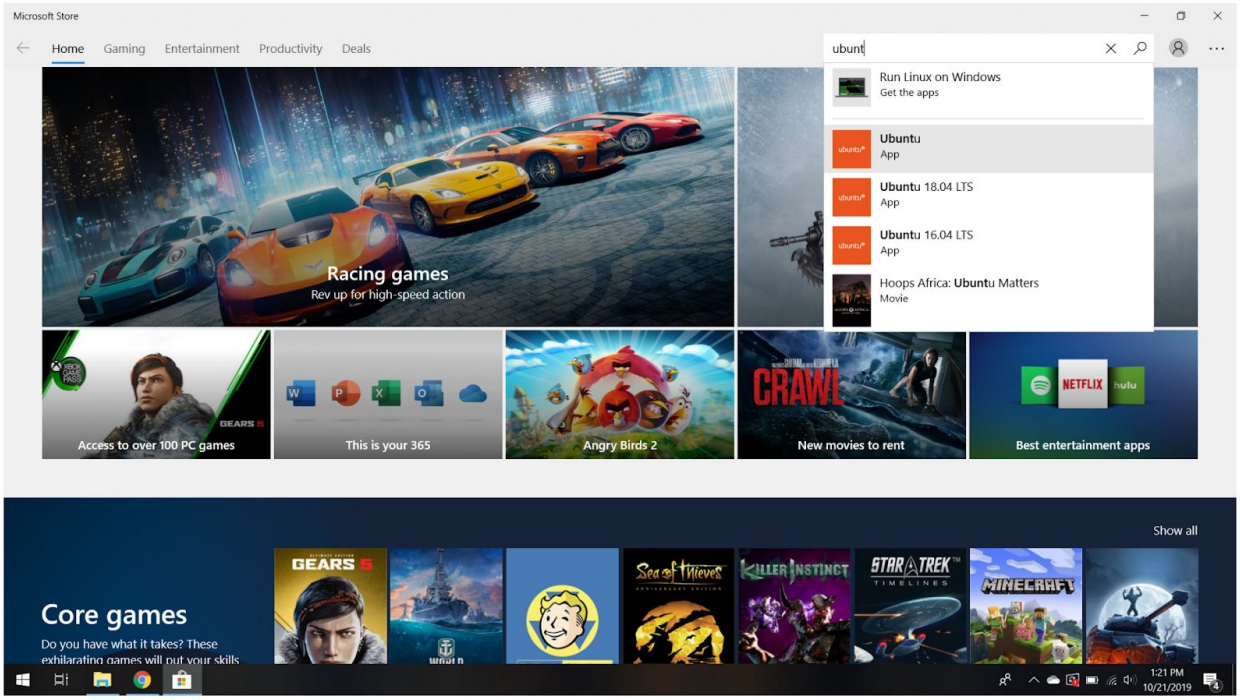
Step 5: Scroll down the list in that window and enable Windows Subsystems for Linux. This will trigger a brief loading screen and asks you to restart your computer. Click on “restart now”.

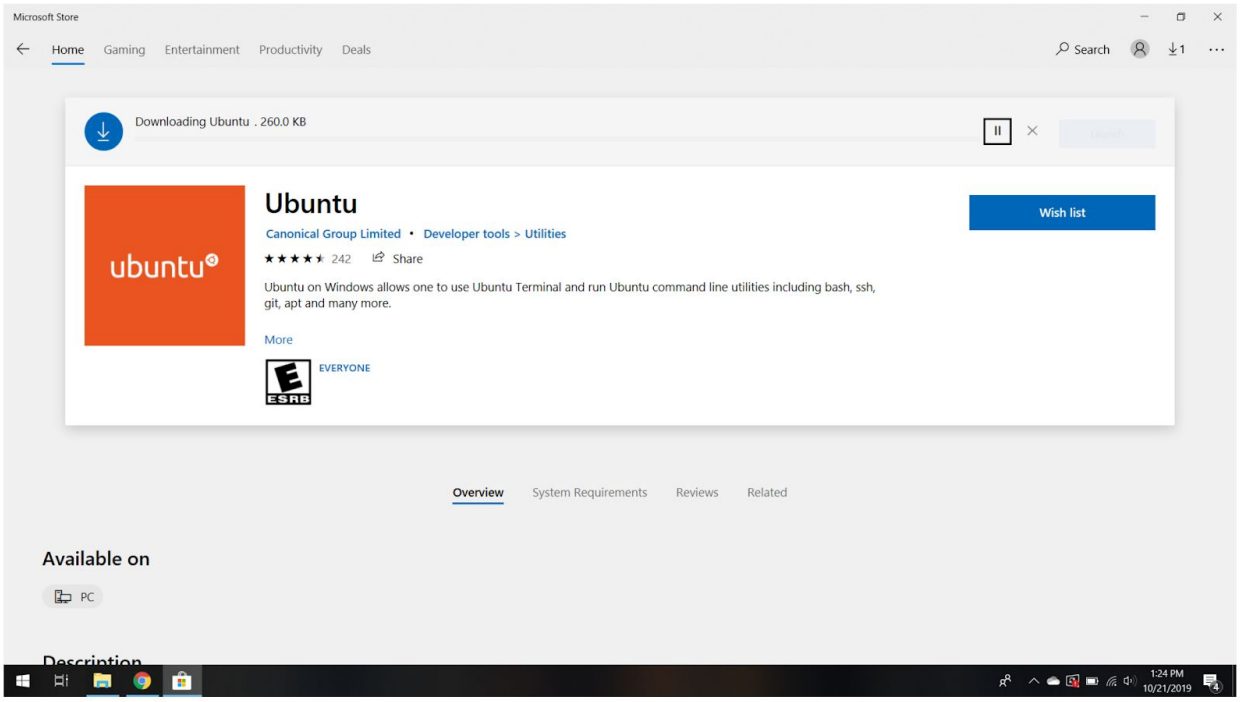


Step 6: Search for the Microsoft store and click on it.



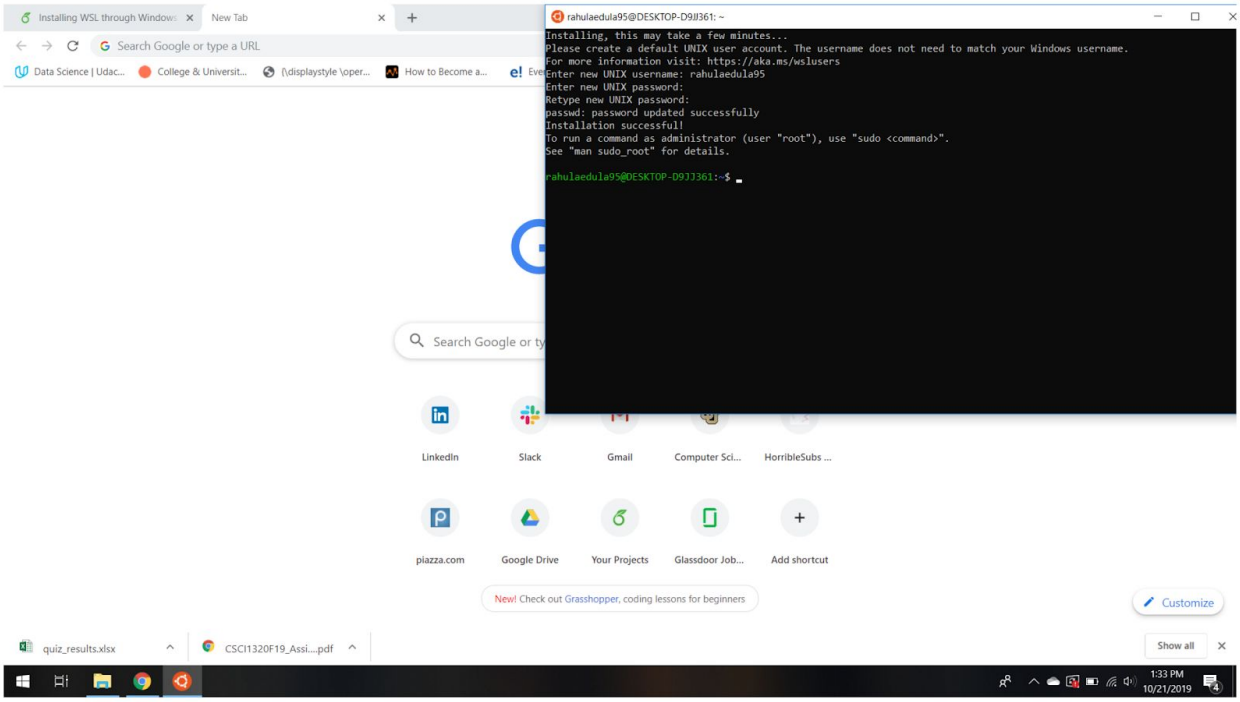
Step 7: Search for Ubuntu inside Microsoft Store and Click on Install



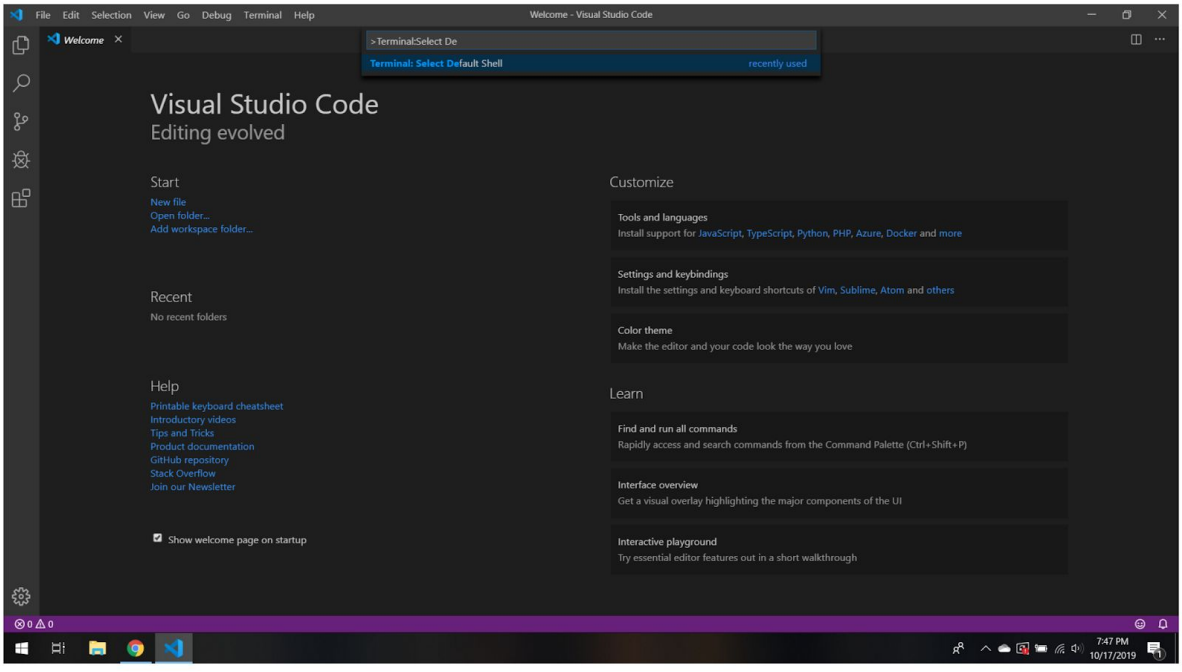


Step 8: Open Ubuntu in the start menu and let it finish installing.

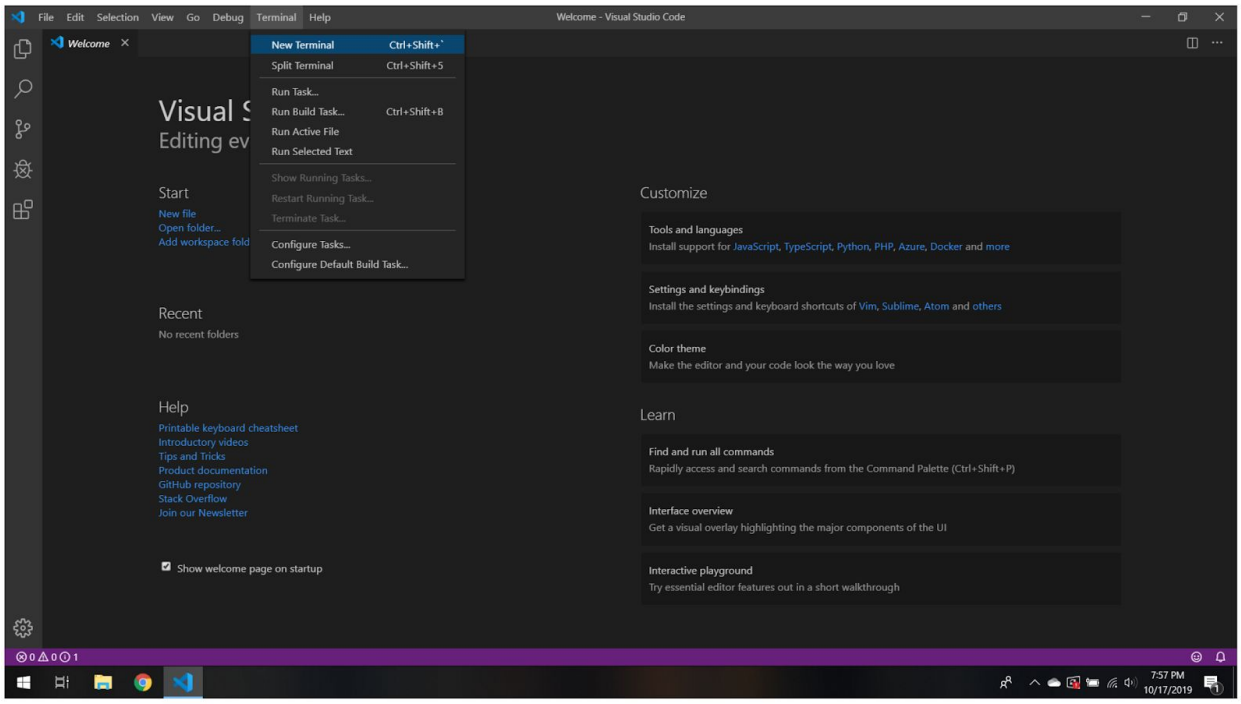
Step 9: Make sure you give it an appropriate username and password of your choice.

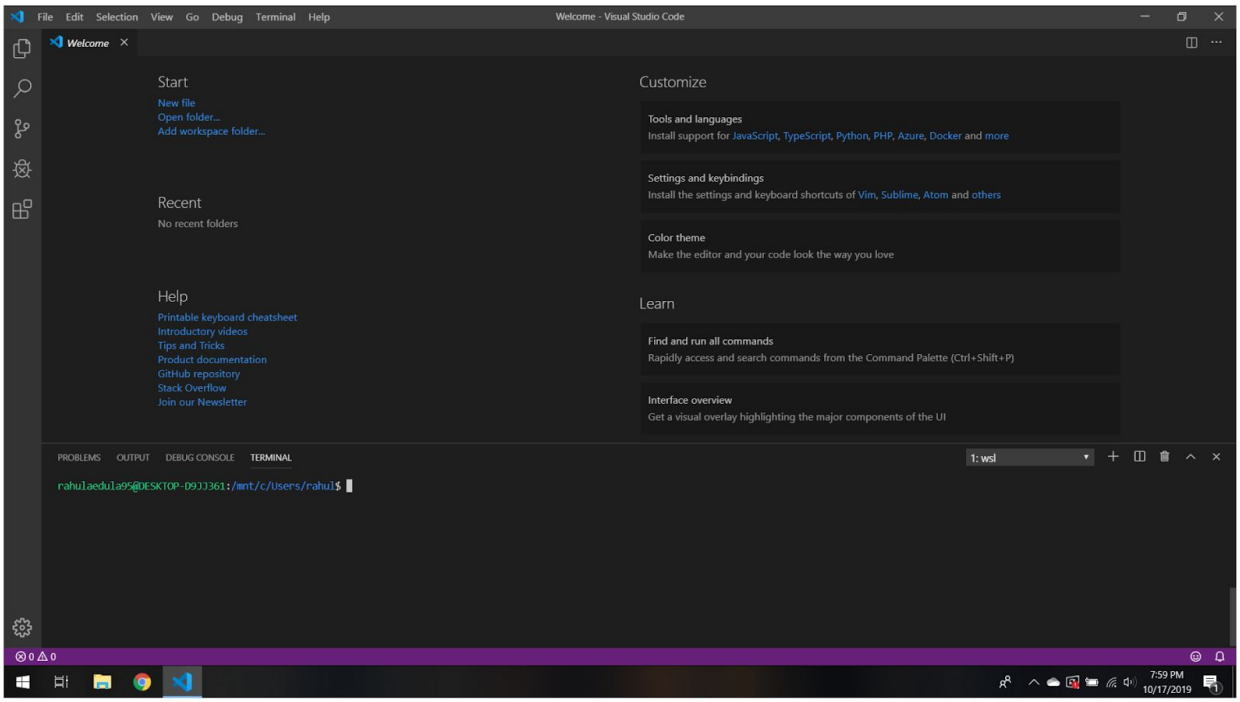


Step 10: Now start Visual Studio Code again to add the final touches. Press on ctrl+shift+p to get a drop down and search for Terminal: Select Default Shell. Choose the WSL Shell as your default shell.

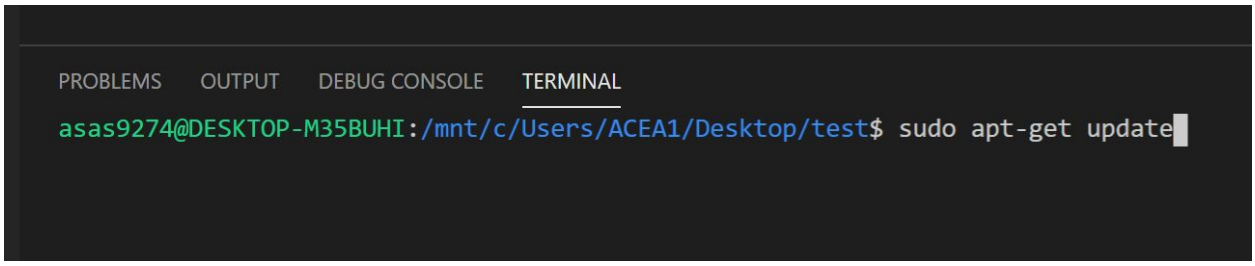


Step 11: We can now click on New Terminal from the drop down menu on the top of Visual Studio Code. This will open a new terminal on the bottom of your screen.





Step 12: We need to run an update so that we can use the C++ compiler. In the terminal window, run the command sudo apt-get update and hit Enter. It may take several minutes to complete.



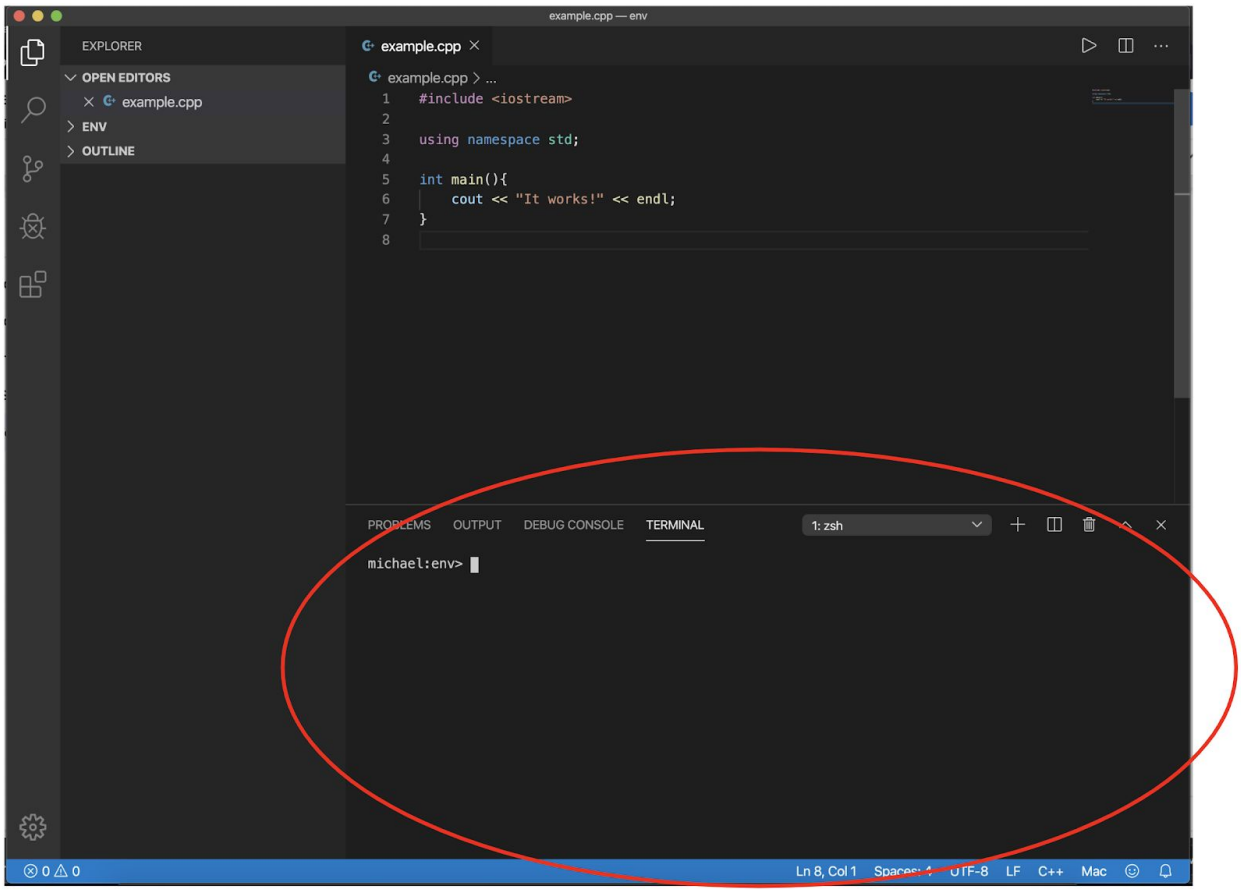
Step 13: Install updates to Ubuntu with
"**`sudo apt update && sudo apt upgrade`**"
Type "y" and hit enter to accept changes.

Step 14: We need to install g++. In the terminal window, run the command
"**`sudo apt install gcc && sudo apt install g++`**"
and hit Enter. It may take several minutes to complete. Once it finishes, restart VS Code.
Type "y" and hit enter when prompted.

Well done! Go to the section Compiling Code In Terminal (next page) to compile code on your computer.

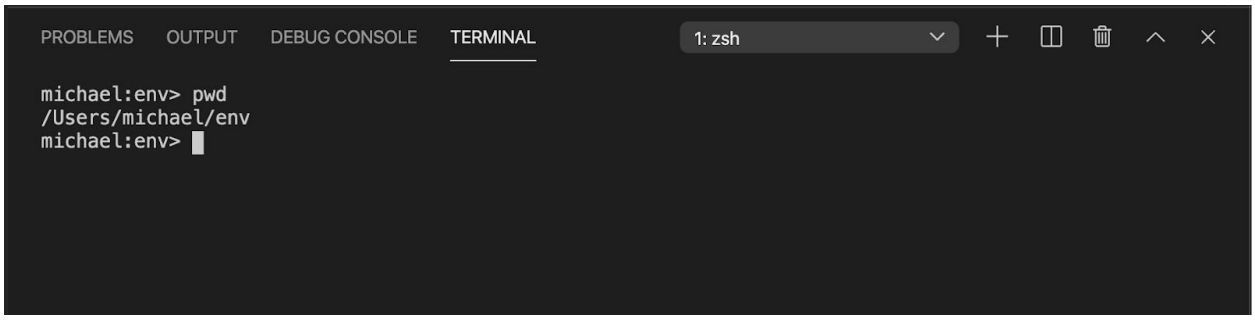
Compiling Code In Terminal

When you open VSCode at the bottom of the screen you should see a terminal.

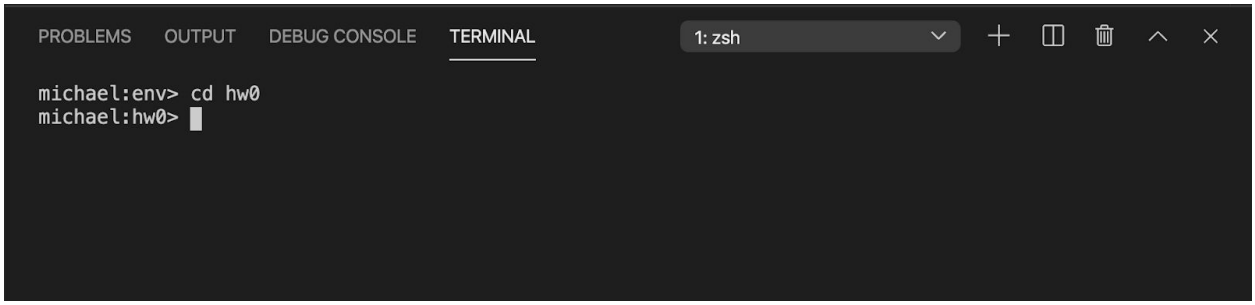


In order to compile and run your code you first need to navigate to where your code is saved through terminal. You do this using the **cd** (change directory) command (see the hmwk0 pdf on Canvas if you need an explanation on how to do this). If you have a folder open in VSCode by default the terminal will open to the location of that folder.

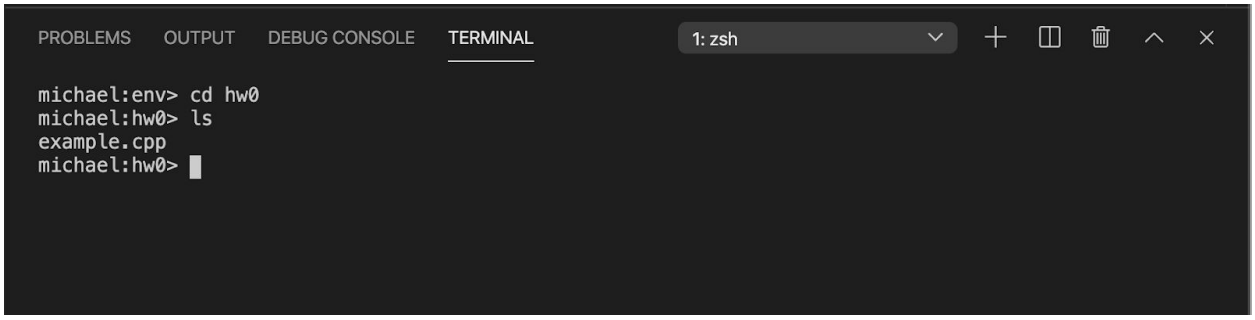
For instance on my computer I have a folder I made called **env** open in VSCode which the terminal automatically opens to. You can visualize your location using **pwd** (print working directory).



But let's say the code I want to run is located in a subdirectory called **hw0**, I can navigate to hw0 using **cd.**



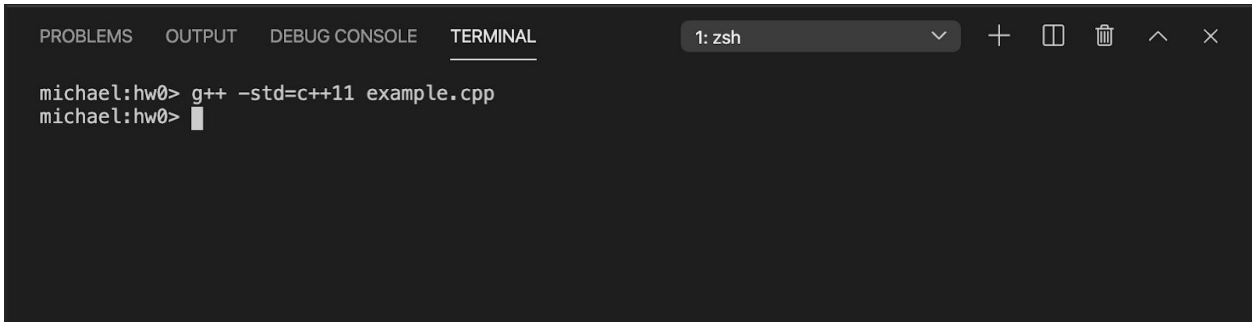
Now let's double check the files we are looking for are actual there by using the **ls** (list) command.



Now to compile our code we use the program g++ in the following command.

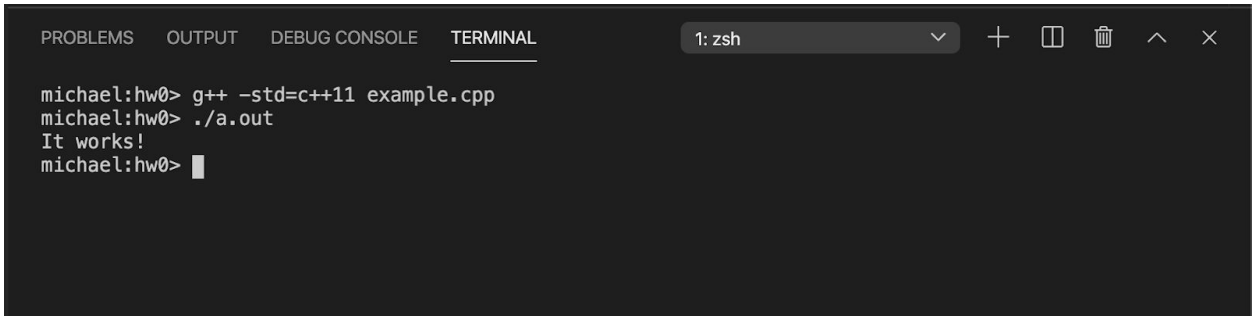
g++ -std=c++11 example.cpp

g**++** is the compiler program
-std=c++11 specifies the version of C++ we want to use
example.cpp is the file we want to compile



This command creates a file named **a.out** which is the compiled version of the code in example.cpp. Now to exceture our code we run a.out by typing the following and hitting enter.

./a.out



And that is how you compile and run a C++ program from terminal.

Compiling Code in the UI

You do not have to manually compile using the terminal. Instead you can install the Code Runner extension. In the extensions tab search for Code Runner and click install. Code runner allows you to compile and run code by the click of a single button.

Step 1: Search for and install the “Code Runner” Plugin

Step 2: Select the editor tab of the source file you wish to compile.

Step 3: Compile with the “Play” button and observe output in the terminal.

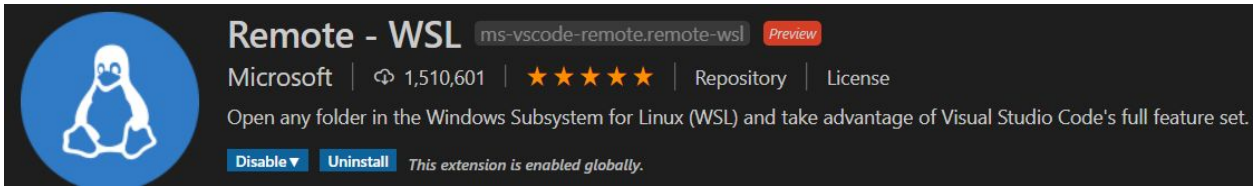
Note: Some students have reported that Code Runner does not work on their systems, or works inconsistently. Try this: Follow steps 1-8 below, in the **Set up** section of **Compiling Code with a Build File**. This will put you in a remote WSL environment, which could fix any errors you were running into previously. Try using the play button when you’re in this environment and see if it works. If you are still having trouble, then you can use the full method below to compile using a build file, or you can compile using the terminal.

Compiling Code with a Build Script

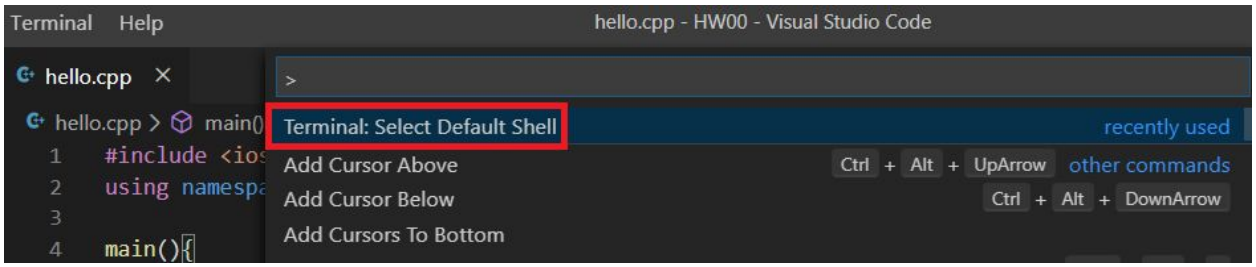
These steps assume that you have completed the VS Code installation steps on Canvas.

Set up:

1. In VS Code: Make sure the “Remote - WSL” plugin is installed.



2. [Ctrl] + [Shift] + [P]: To open the settings chooser. Search for “Terminal” if “Terminal: Select Default Shell” is not already at the top. And select this option

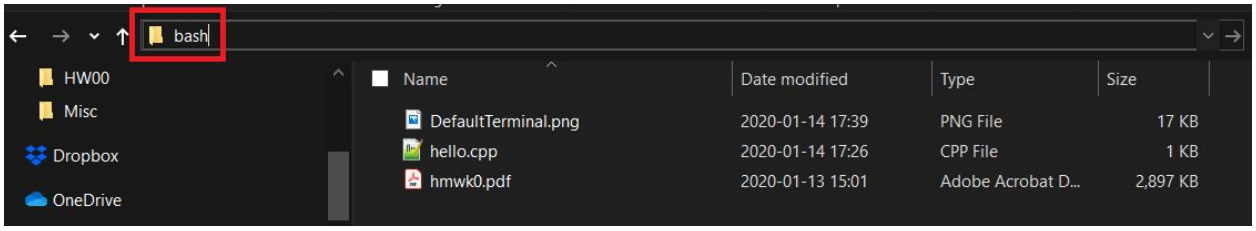


3. Choose “WSL Bash” as the default terminal.

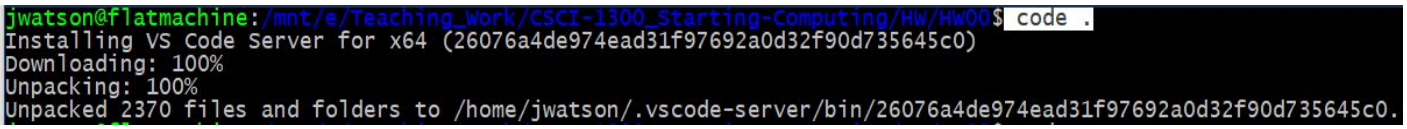
4. Close any open VS Code Windows.

5. In File Explorer, navigate to the directory where your code is.

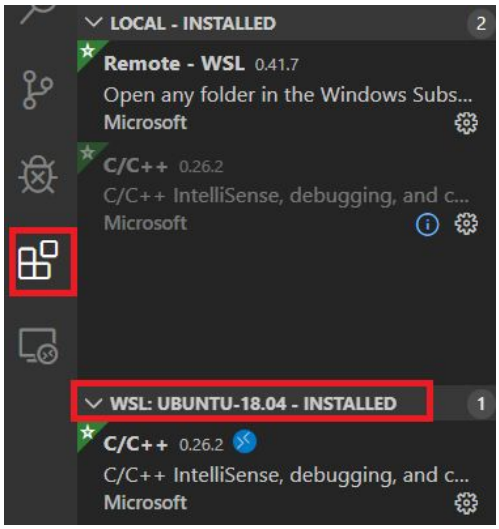
6. Open a WSL terminal by typing “bash” in the address bar and pressing [Enter].



7. Type “`code .`” in the new terminal and press [Enter]. VS Code will initiate a one-time download of packages for interfacing with WSL before starting VS Code.

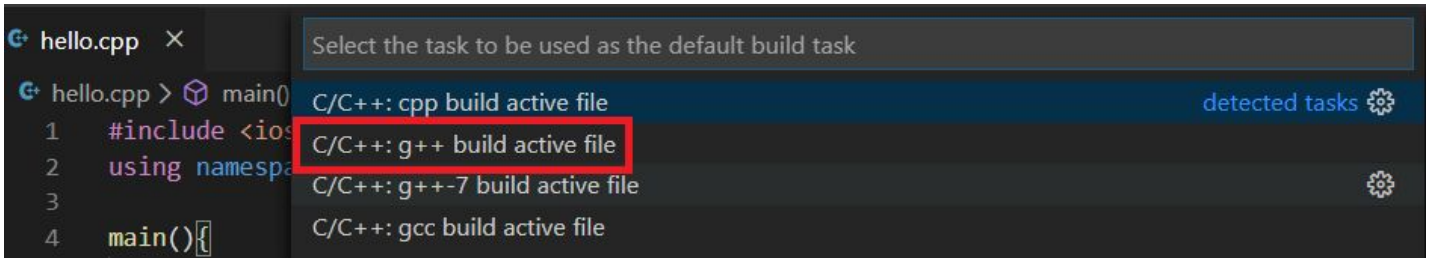


8. Make sure that the “C/C++” plugin has been installed in the local WSL instance of VS Code.



Per project:

9. Select “Terminal” → “Configure Default Build Task”. Select the “g++ build active” option. A JSON file will be created. There is no need to modify the JSON file now.



Compilation:

10. Select the editor tab for your source file.

11. Select “Terminal” → “Run Build Task” -or- press [Ctrl] + [Shift] + [B]. If there are no errors, you can press any key to close the terminal. The default build task creates an executable program with the same name as your source file, but without a file extension.

12. Select “Terminal” → “New Terminal”, then type “`./<programName>`” and press ; you should see the program output in the terminal.