VS Code Setup Instructions

ENGR 1050, University of Pennsylvania

Set Up Your System

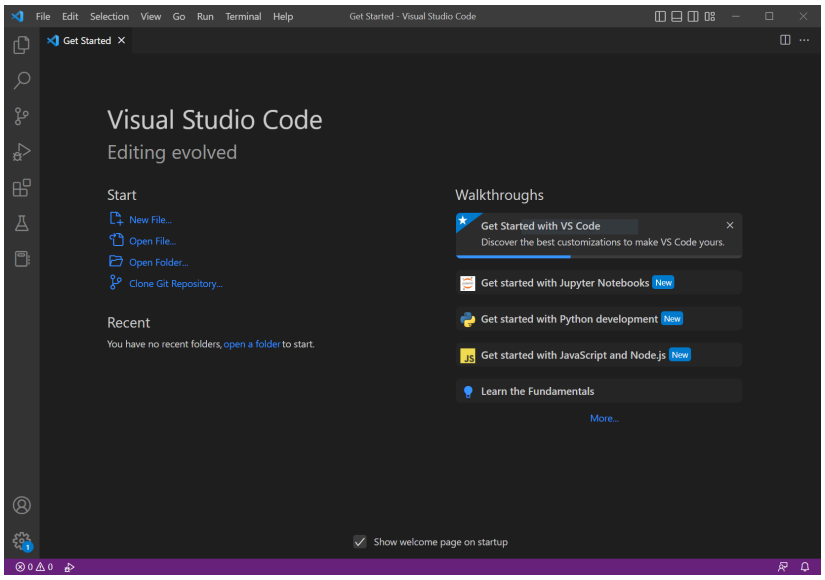
These instructions will get you set up with Python and VS Code. If you are already familiar with Python and prefer a different editor, that is fine. Just be aware that the TAs may not be as familiar with your tool of choice, so you will need to work to understand its features yourself.

Using campus labs. These tools are also available in all SEAS computer labs, including Moore 100, Towne M66, and Towne M70. They are also available via Virtual PC Lab (see `https://cets.seas.upenn.edu/answers/virtuallab.html`).

1. **The language: Python.** Install Python from `https://www.python.org/downloads/`. I recommend you install the latest version (3.11), but any version later than 3.7 should work.

2. **Our IDE: VS Code.** It is possible to write programs in Python using many tools. Our tool of choice will be VS Code. VS Code is an IDE, or an integrated development environment, meaning that it is a code editor with built-in features to assist you with formatting, debugging, and compiling your code. Install VS Code from `https://code.visualstudio.com/`. VS Code has support for Windows, Mac, and Linux operating sytsems.

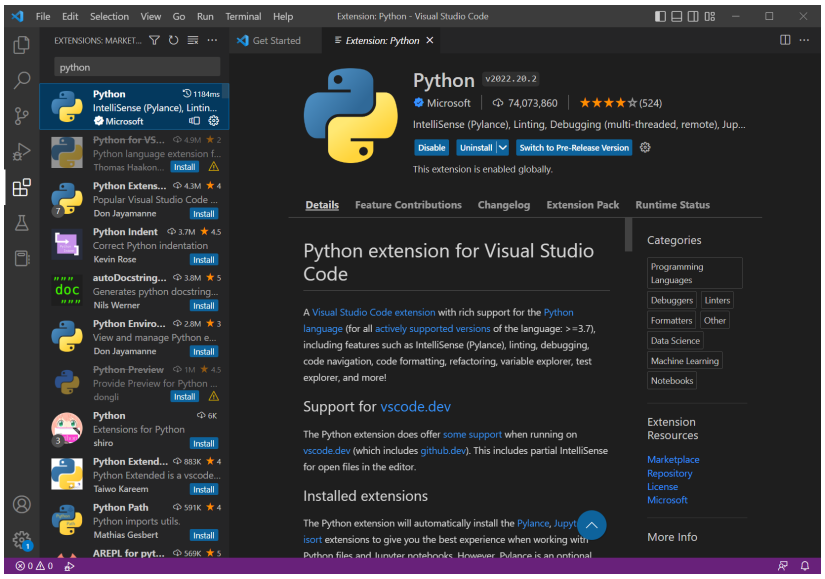
3. **Open VS Code:** VS Code can actually support many different languages, so we'll need to set ours up for Python. Open VS Code. You should see a window that looks like



   VS Code will try to walk you through some customization steps so that you can make it look and feel comfortable for you. These are all options you can change later, and they don't affect the core functionality, so choose whatever makes you happy.

4. **Install the Python Extension:** On the left panel, click on the button for "Extensions." In the screenshot above, this is the fifth icon from the top, the one with 4 squares. In the new panel that

opens up, type "Python" into the search bar. Click on the "Python" extension and install it. The description should look like this



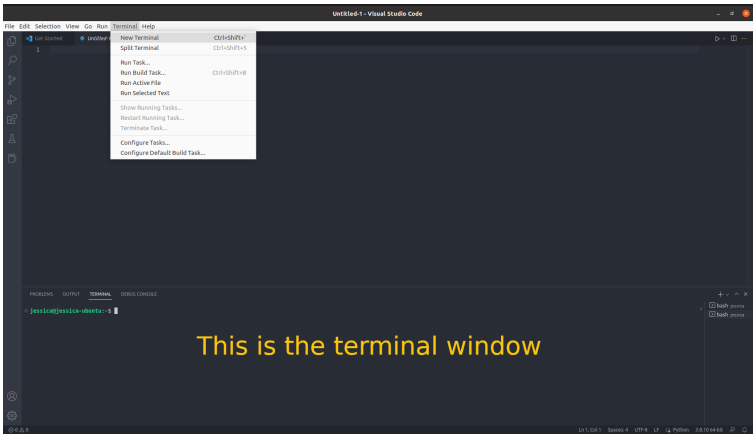
5. **Select Interpreter:** Finally, tell VS Code where to find your installation of Python. Click on the gear icon on the bottom left corner, then on "Command Palette." This will make a textbox show up at the top of your window. Type in "Python: Select Interpreter," then press enter. A drop-down menu should appear that shows the existing Python installations on your computer. Click on the your installation.

6. You should be all set up now to write new programs.

Install Packages

One of the great things about Python is that you can extend its functionality through (almost always free and open-source) specialized packages developed by other programmers, companies, or research labs. In this class, we have used Numpy, Matplotlib, and SciPy which provide scientific computing and data visualization tools. To get access to these packages, follow these steps:

1. **Open New Terminal Window:** In VS Code, at the top navigation bar, click **Terminal** > **New Terminal (MacOS)** or **View** > **Terminal (Windows)**. A new window should pop up somewhere on your screen (e.g., the bottom half) labeled Terminal. To type a command in Terminal, click in the terminal window and begin typing. The white rectangle is the cursor.



2. **Install NumPy:** Pip is a package manager for Python and can be used to install, update, and uninstall Python packages. For NumPy, simply type the following command in Terminal and then hit the Enter key on your keyboard:

```
pip install numpy
```

Troubleshooting: If you used the default installers on the Python website to install Python in HW 0, you should already have pip. If you get an error on this step, then you will need to install it independently.

   (a) Open a new Python file in VS Code.
   (b) Copy and paste ALL of the text on this page (https://bootstrap.pypa.io/get-pip.py) into the file. We recommend using keyboard shortcuts (`CTRL-a` to select all, `CTRL-c` to copy, and `CTRL-v` to paste) for this.
   (c) Save the Python file as `get-pip.py`.
   (d) Run the code to install Pip.

3. **Install Matplotlib:** Similar to Numpy, you can install Matplotlib with the following command in Terminal and then hit the Enter key on your keyboard:

```
pip install matplotlib
```

4. **Install SciPy:** For SciPy, enter the following command in Terminal and then hit the Enter key on your keyboard:

```
pip install scipy
```

5. **Check Installation by Importing:** To make sure that you have correctly installed these modules, you can check that there are no errors when you import the packages in a Python script. Importing a package allows you to use all of the tools that the package provides in your code.

   (a) Open a new Python file in VS Code. Save it as `test-packages.py`.
   (b) Write the following two lines in the file:

```
import numpy
import matplotlib
import scipy
```

   (c) Save the file and then run it.
   (d) If there are no error messages in the Terminal window, then you have successfully installed and imported both packages!