CSC-121

Introduction to Computer Programming

Lab 0

Agenda

1. Install Anaconda

1. Install Sublime

1. Run Jupyter Notebook
    - Create and run code blocks
    - Get comfortable with Python notebooks

1. Run python code (.py files), from the terminal

1. Submit jupyter notebook + helloworld.py on Moodle

Lab Assistants:

- Marissa Patel (121-01)
- Abby Grant (121-02)

1. Installing Anaconda

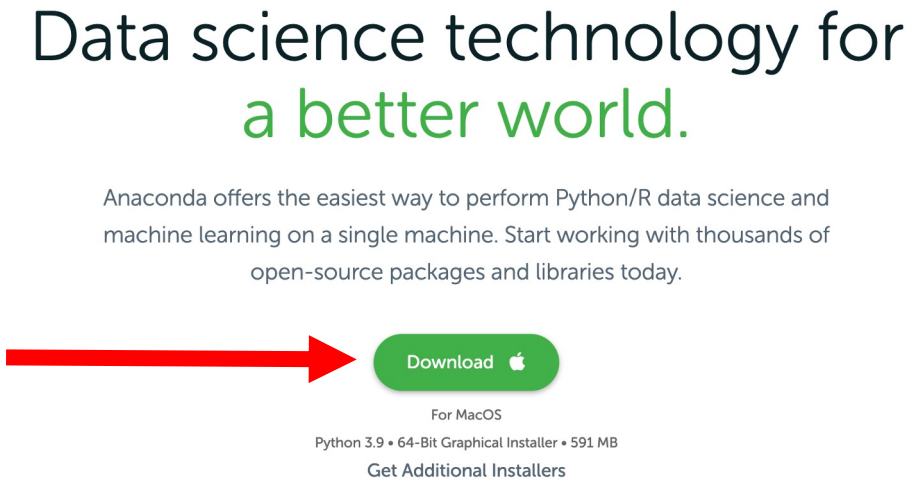
1.1. Install Anaconda

1. Go to https://www.anaconda.com/

OR
https://www.anaconda.com/products/distribution

1. The *Download* button *should* match your Operating System
   (and your machine specs)

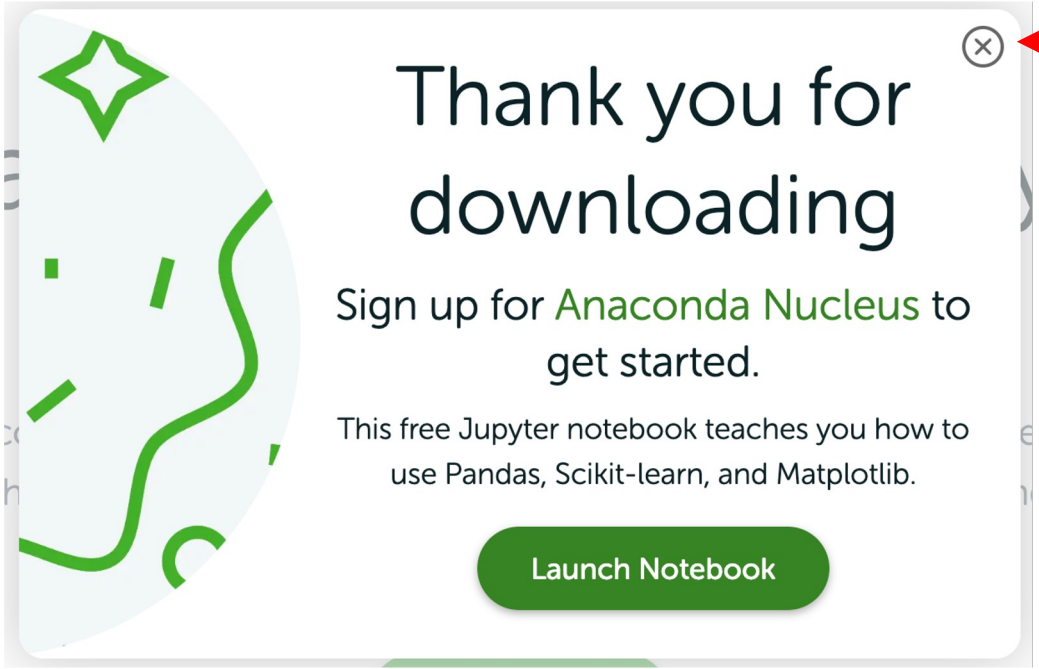
1. Download, run and follow instructions on the installer



Installing on Windows
https://docs.anaconda.com/anaconda/install/windows/

Installing on Mac
https://docs.anaconda.com/anaconda/install/mac-os/

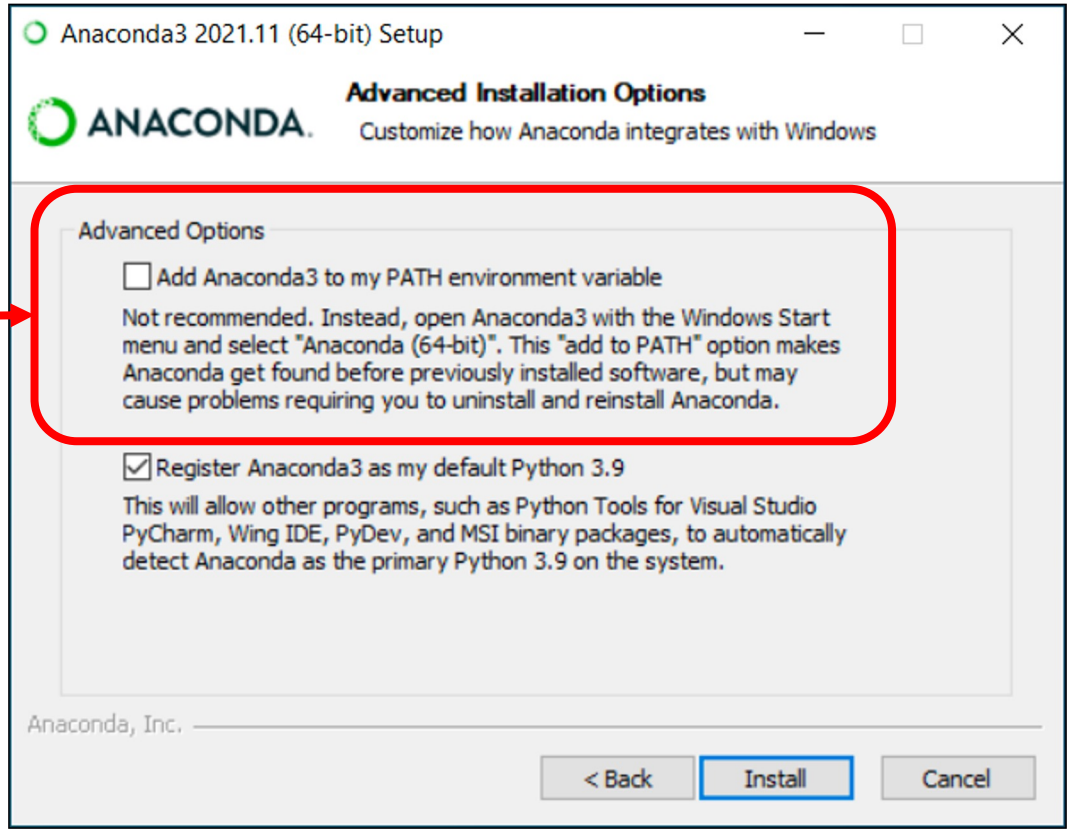
1.2. Ignore Promotional Popups



1.3. Please Add to PATH environment variable

- Please **check this box**
    - If you see anything about **adding to PATH environment variable,** choose YES
- Please pay attention to the folder path at which the installer is going to install Anaconda
    - On macs, this should be your home directory:

`/Users/<your_name>` or `/Users/<your_name>/opt/anaconda3`

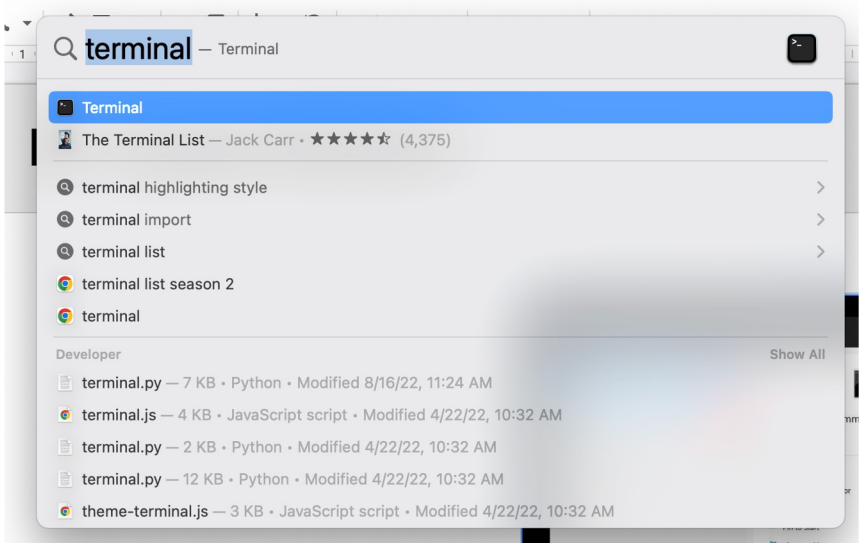


2. Running Jupyter Notebooks

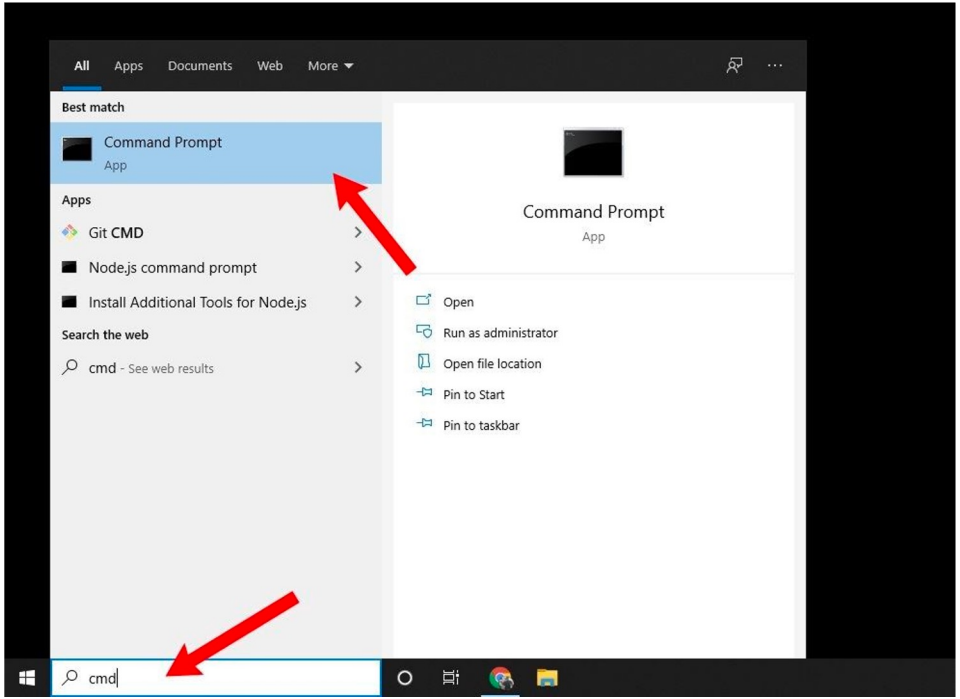
2.1. Launch Terminal/Command Prompt

Launch Terminal (Mac) / Command Prompt (Windows)

On Mac,
1. Command+Space (spotlight)
2. Type terminal and press return



MacOS



Windows

2.2. Creating a new folder, using the terminal/cmd. line

1. Enter the command: `pwd` (mac) `cd` (windows)
   - *This would print the path of the current directory you are in.*

1. Enter the command: `ls -lt` (mac) `dir` (windows)
   - *This would print the contents of the current directory*

1. Enter the command: `mkdir csc121`
   - *This would create a new folder by the name of csc121 at your current path*

1. Enter the command: `ls -lt` (mac) `dir` (windows)
   - *Check if the new folder is added to the list*

1. Enter the command: `cd csc121`
2. Enter the command: `pwd` (mac) `cd` (windows)

```
(base) fsultan@fu220255 ~ % pwd
/Users/fsultan
```

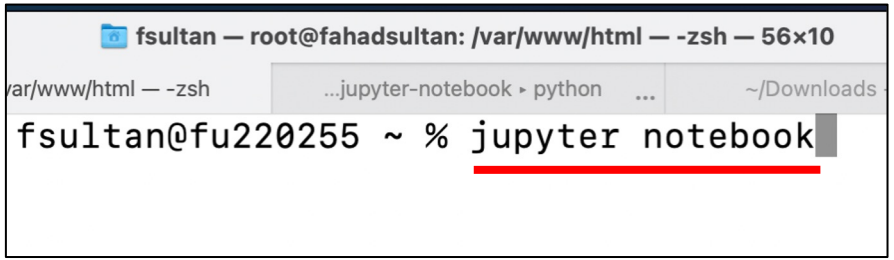
```
% ls -lt

staff    608 Aug 23 16:26 Desktop
staff   3392 Aug 23 12:50 Downloads
staff   2688 Aug 15 19:57 Library
staff    160 Aug 15 16:19 Documents
staff     96 Aug  2 11:42 opt
staff    128 Jul 28 14:53 Music
```

```
% mkdir csc121
% ls -lt

staff     64 Aug 23 18:29 csc121
staff    608 Aug 23 16:26 Desktop
staff   3392 Aug 23 12:50 Downloads
```

```
(base) fsultan@fu220255 ~ % cd csc121
(base) fsultan@fu220255 csc121 % pwd
/Users/fsultan/csc121
```

2.2. Launch Jupyter Notebook

1. Enter the command:
   `jupyter notebook`

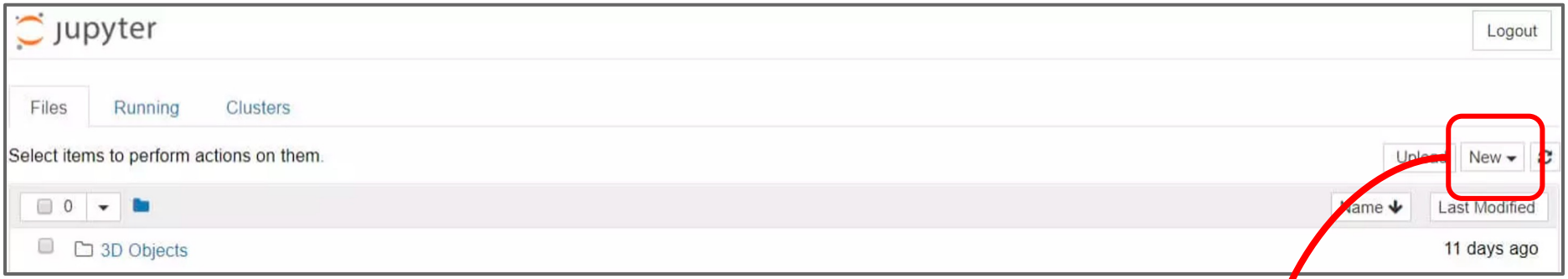


1. If a new tab is opened in your browser and you get something that looks like below in the terminal/command line, you are good!

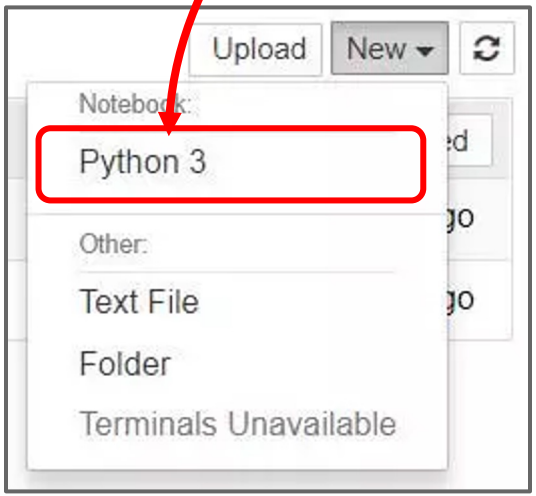
```
(base) fsultan@fu220255 ~ % jupyter notebook
[I 2022-08-23 13:41:03.704 LabApp] JupyterLab extension loaded from /Users/fsultan/opt/anaconda3/lib/python3.9/site-packages/
jupyterlab
[I 2022-08-23 13:41:03.704 LabApp] JupyterLab application directory is /Users/fsultan/opt/anaconda3/share/jupyter/lab
[I 13:41:03.707 NotebookApp] The port 8888 is already in use, trying another port.
[I 13:41:03.708 NotebookApp] Serving notebooks from local directory: /Users/fsultan
[I 13:41:03.708 NotebookApp] Jupyter Notebook 6.4.8 is running at:
[I 13:41:03.708 NotebookApp] http://localhost:8889/?token=9d53f47af7c1372000b22d30e387bb4a5d22efc625adb36b
[I 13:41:03.708 NotebookApp]  or http://127.0.0.1:8889/?token=9d53f47af7c1372000b22d30e387bb4a5d22efc625adb36b
[I 13:41:03.708 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 13:41:03.712 NotebookApp]

    To access the notebook, open this file in a browser:
        file:///Users/fsultan/Library/Jupyter/runtime/nbserver-33354-open.html
    Or copy and paste one of these URLs:
        http://localhost:8889/?token=9d53f47af7c1372000b22d30e387bb4a5d22efc625adb36b
     or http://127.0.0.1:8889/?token=9d53f47af7c1372000b22d30e387bb4a5d22efc625adb36b
```

If you see any errors, please see me or the lab assistant

2.3. Creating a new Python Notebook



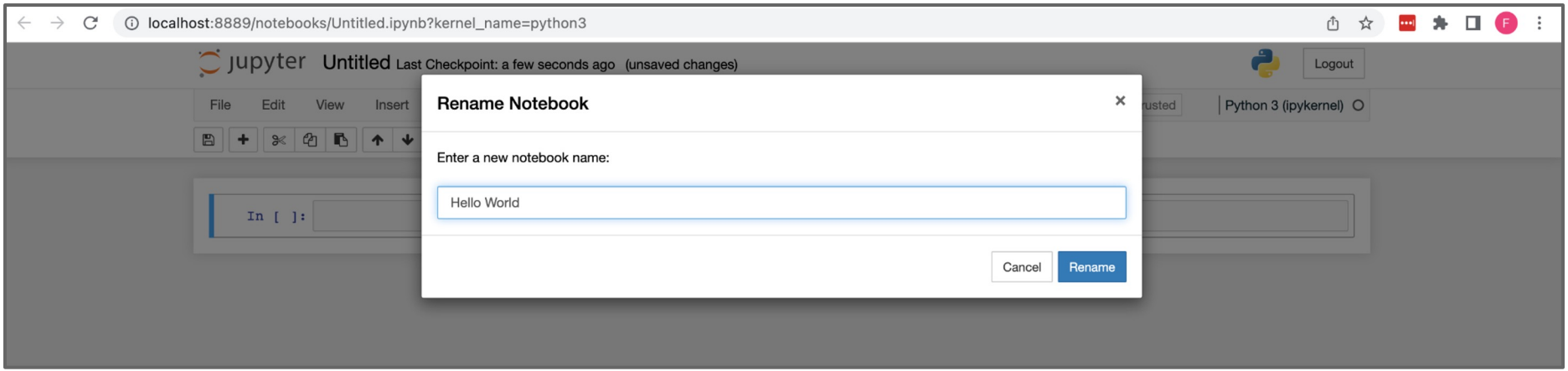
- Click on "*New*"
- Select "*Python 3*" from the dropdown



2.4. Rename Notebook

1. Click on **Untitled** on the top left, next to the Jupyter logo

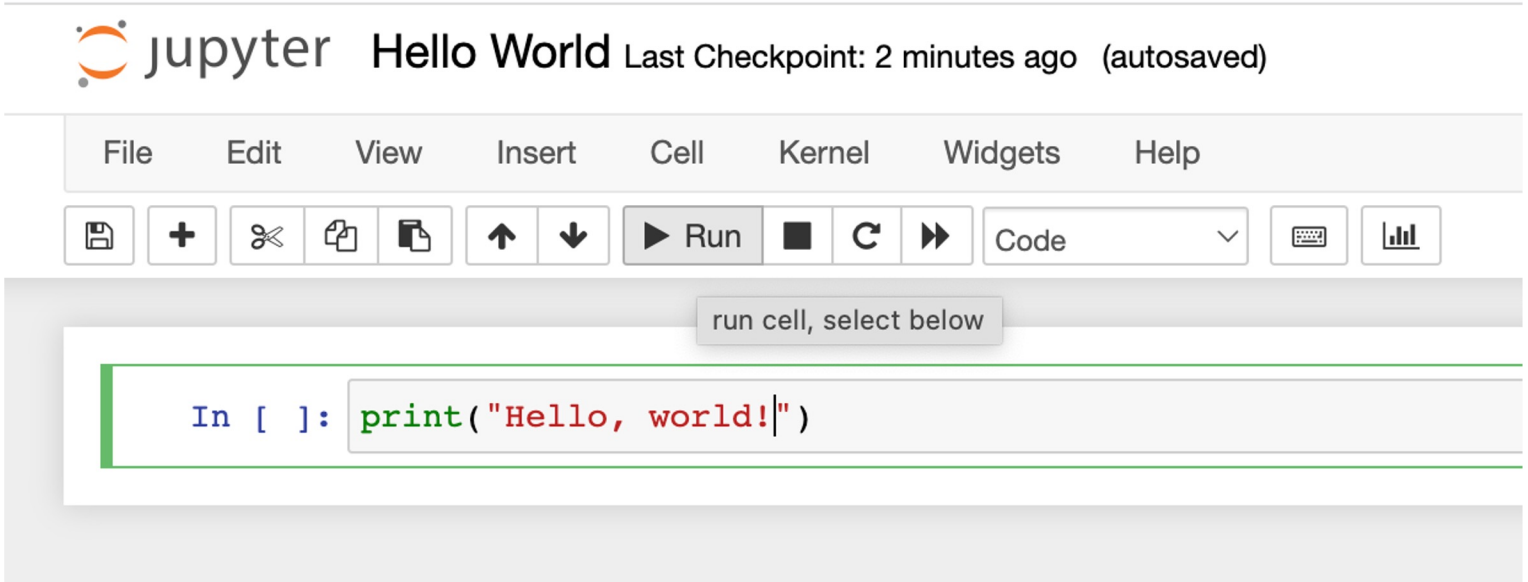
1. Rename the file to *Hello World*



2.5. Run a code cell

1. In the top code cell, type `print("Hello, world!")`

1. Click on the “Run” button above in the toolbar

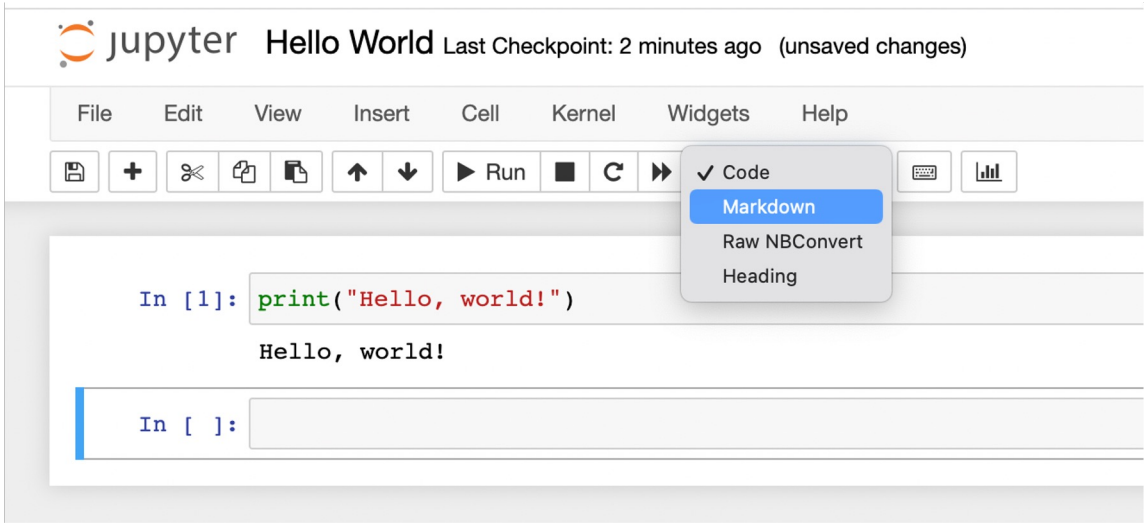


2.6. Markdown Cell

1. A new cell would have been created below

1. Click on the dropdown menu with Code preselected from the toolbar

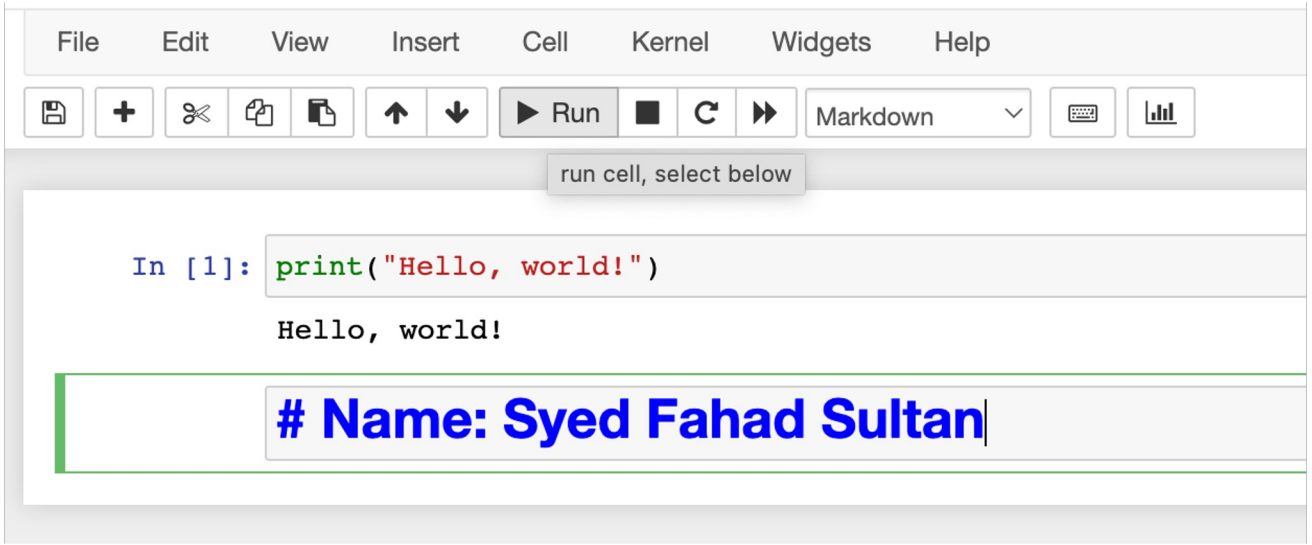
1. Select Markdown from the dropdown



2.7. Run Markdown Cell

1. In the new cell, type `# Name:` followed by your name

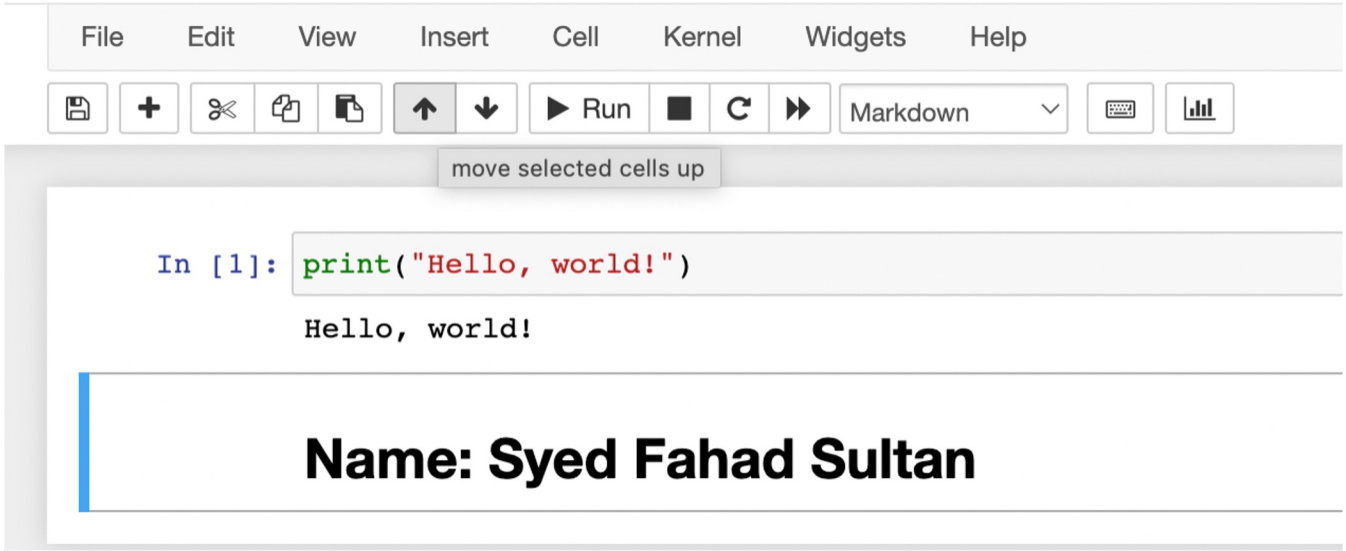
1. Click on the Run button from the toolbar



2.8. Moving cells

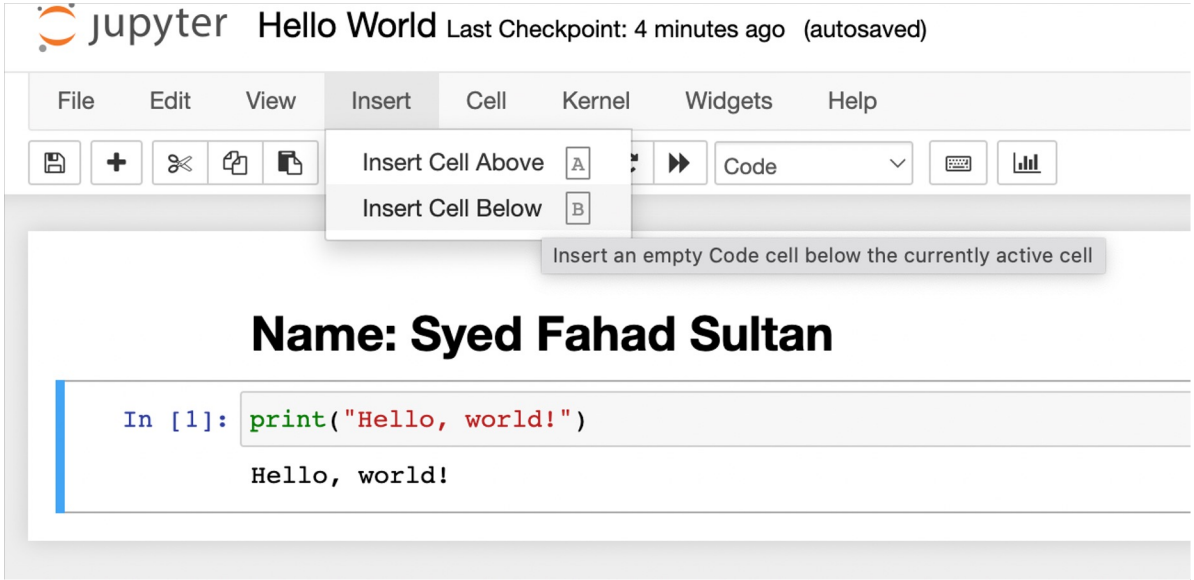
1. Click on the markdown cell

1. Click on the Upward Arrow in the toolbar



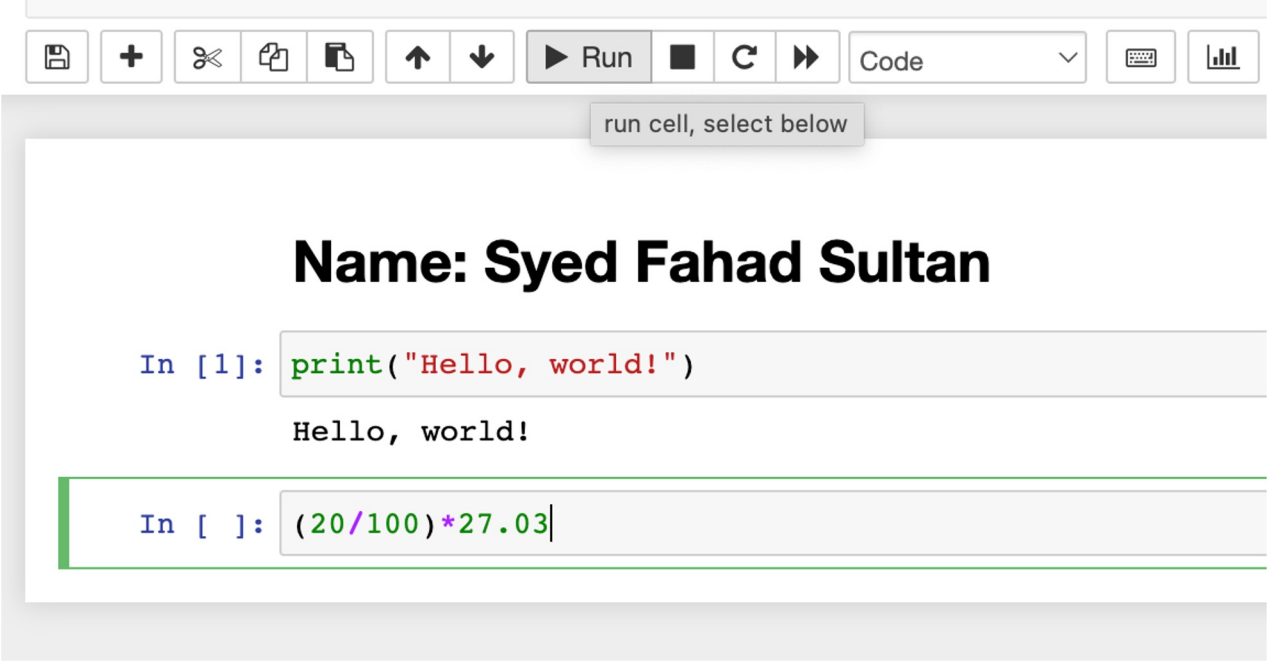
2.9. Second code cell

1. Click on **Insert** from toolbar and select Insert Cell Below from the dropdown



2.10. Gratuity for Check Amount: $27.03

1. In the newly created cell, type `(20/100)*27.03`
2. Run cell



2.11. Documentation string for help

1. Create yet another new cell
2. Type `print?` and Run

Name: Syed Fahad Sultan

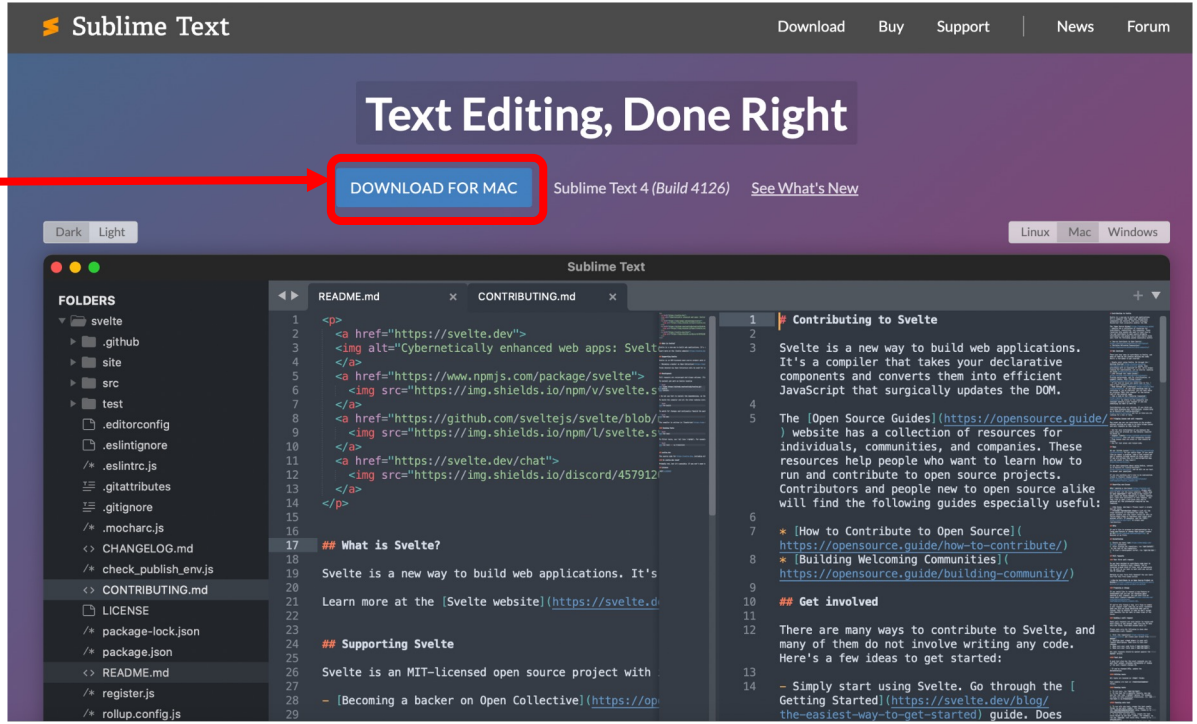
```
In [1]: print("Hello, world!")
        Hello, world!

In [5]: (20/100)*27.03
Out[5]: 5.406000000000001

In [6]: print?
```

```
Docstring:
print(value, ..., sep=' ', end='\n', file=sys.stdout, flush=False)

Prints the values to a stream, or to sys.stdout by default.
Optional keyword arguments:
file:  a file-like object (stream); defaults to the current sys.stdout.
sep:   string inserted between values, default a space.
end:   string appended after the last value, default a newline.
flush: whether to forcibly flush the stream.
Type:      builtin_function_or_method
```

3. Installing Sublime Text

3.1. Install Sublime Text

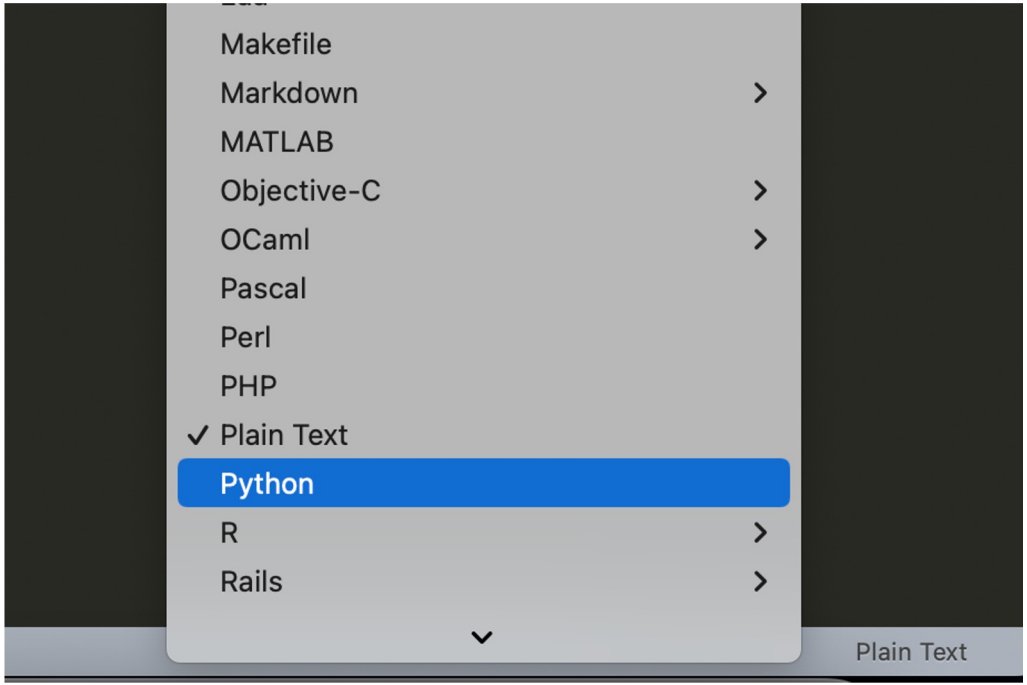
1. Go to https://www.sublimetext.com/
1. Click on the download button
1. Run the downloaded file
1. Follow instructions to install
1. Run SublimeText



3.2. Turn on syntax highlighting

1. Click on Plain Text in the bottom right corner

1. Select Python

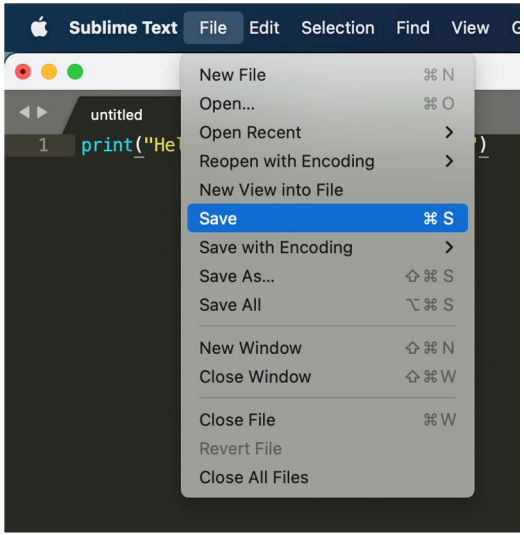


3.3. Hello World

1. Type in the code line shown in the screenshot

1. **Replace *Fahad* with your own preferred name**

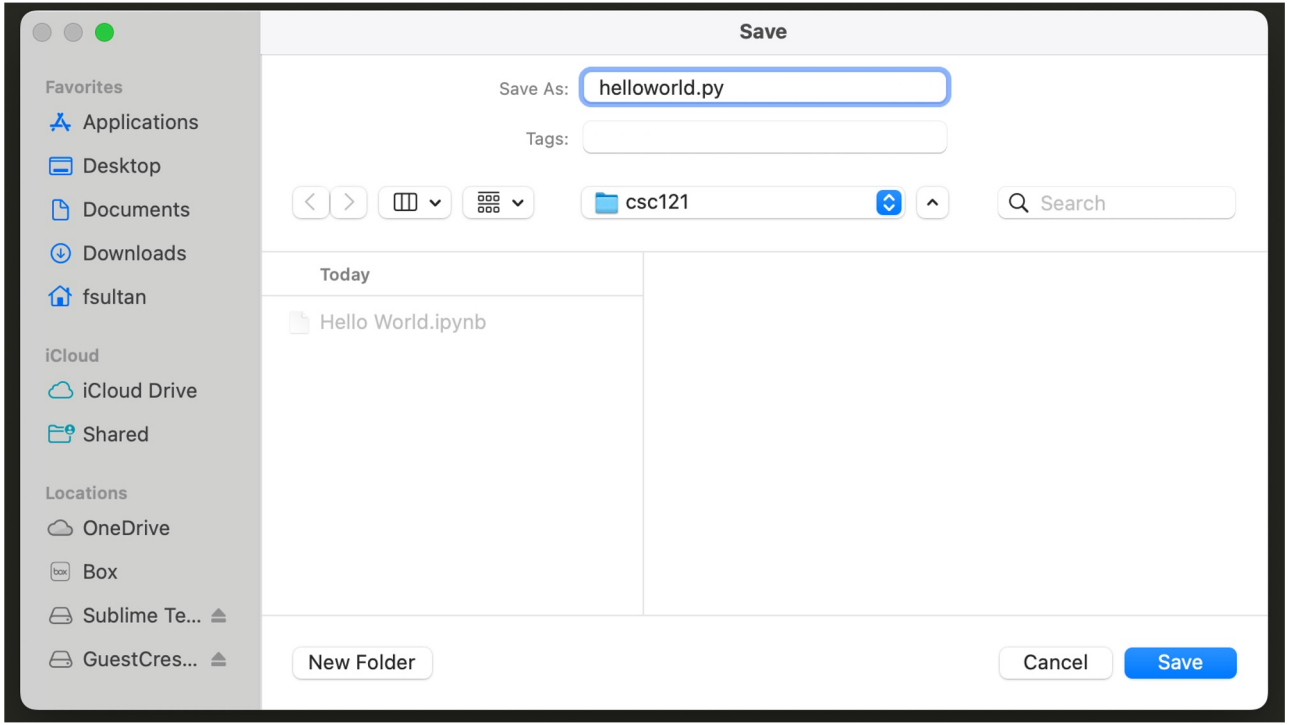
1. Click on File, top left corner, next to Sublime Text and select Save



3.4. Save file

1. Name the file `helloworld.py`

1. **Save it in the same directory as** `Hello World.ipynb`

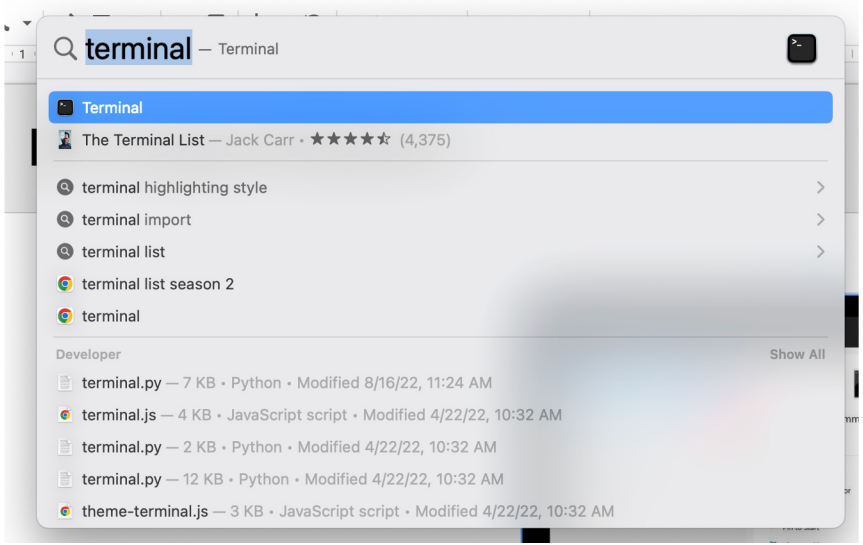


4. Running Python code

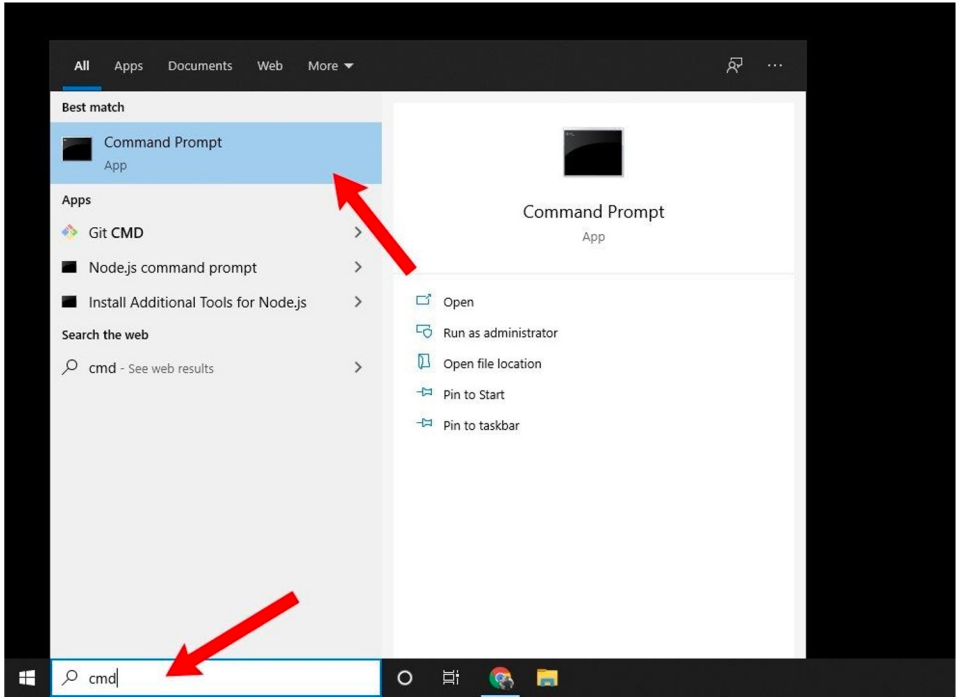
4.1. Launch Terminal/Command Prompt

Launch Terminal (Mac) / Command Prompt (Windows)

On Mac,
1. Command+Space (spotlight)
2. Type terminal and press return



MacOS



Windows

4.2. Testing Python

1. Enter the command:

`python`

```
(base) fsultan@fu220255 ~ % python
Python 3.9.12 (main, Apr  5 2022, 01:53:17)
[Clang 12.0.0 ] :: Anaconda, Inc. on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

If you see the three greater than signs `>>>` you are good

1. Enter the python code: `print("Hello, world!")`

1. Enter `exit()`

4.3. Run helloworld.py

1. Use `cd` (perhaps multiple times) to go to the directory where you saved `helloworld.py`
    - Use `ls -lt` (mac) or `dir` (windows) to confirm

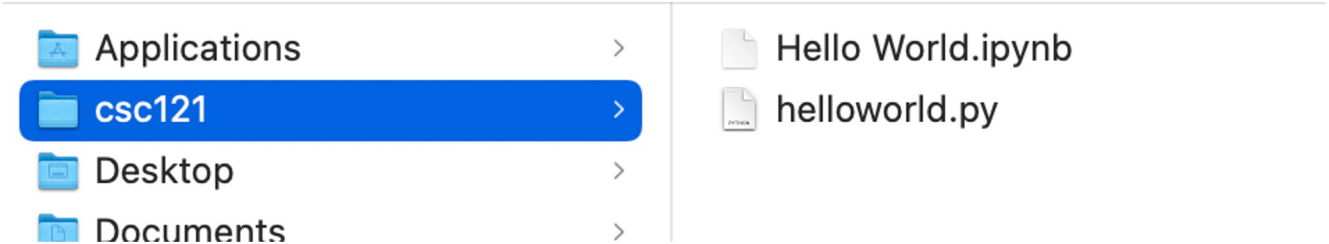
1. Run the command:
   `python helloworld.py`

```
(base) fsultan@fu220255 csc121 % python helloworld.py
Hello, World! My name is Fahad
(base) fsultan@fu220255 csc121 %
```

5. Submission to Moodle

5.1. Confirm folder content

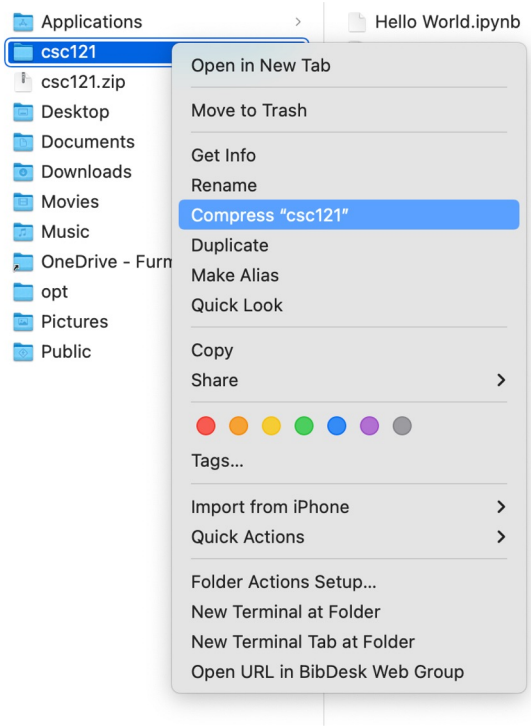
1. Make sure your `Hello World.ipynb` and `helloworld.py` files are both in the same folder



5.2. Compress folder

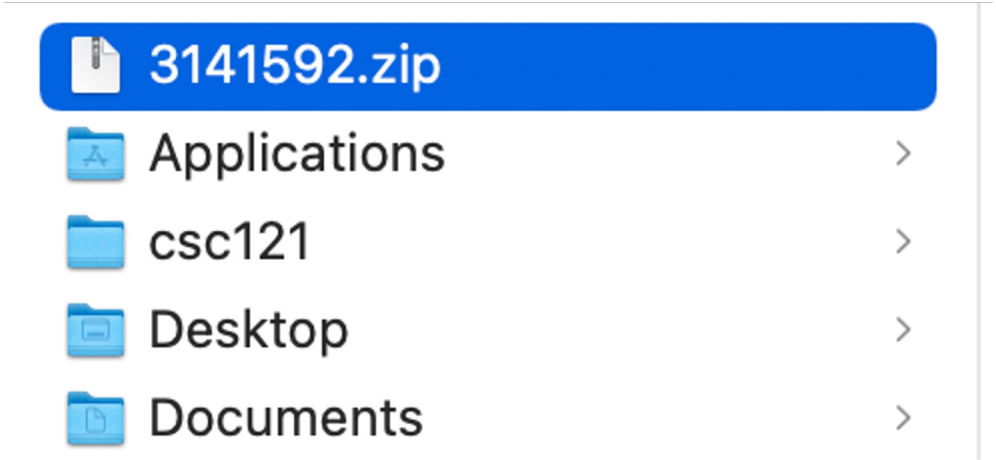
1. Right Click on folder

1. Select Compress



5.3. Rename compressed folder to Student ID & Submit

1. Rename compressed folder to your Student ID



1. **Submit on Moodle, under *"Lab 0"***