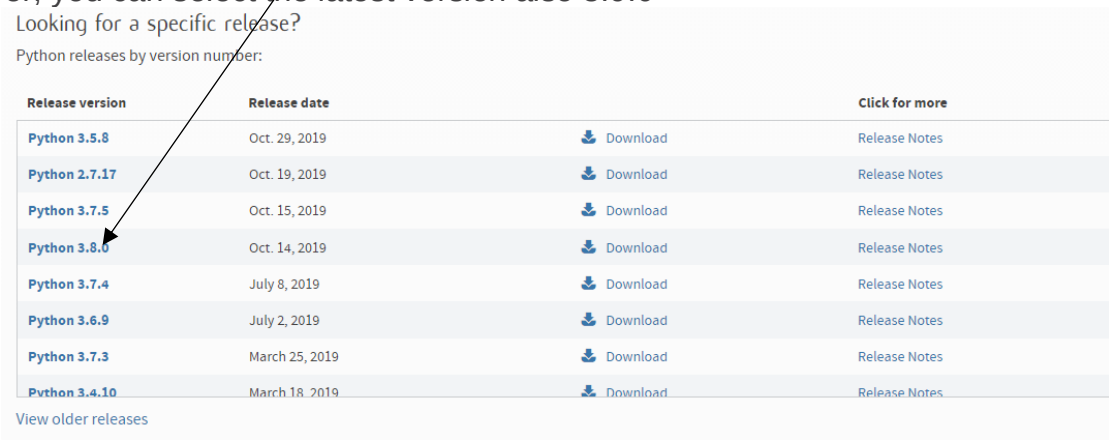
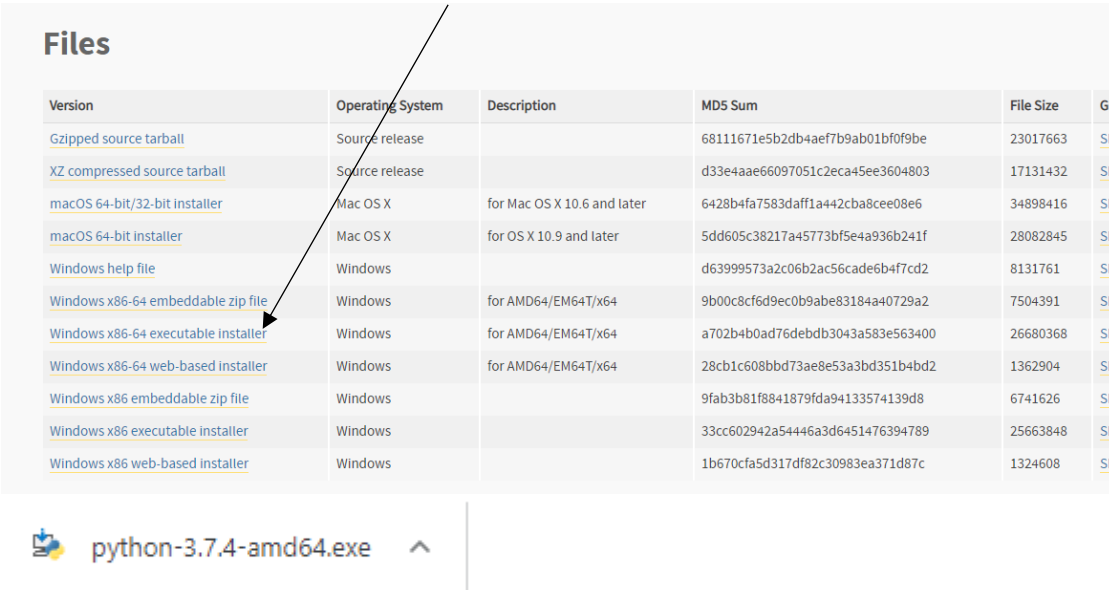
Installation Guide

1) We recommend Python 3. Install Python 3 latest version
    a. Python 3 Installation on Windows
    i. Open your web browser and navigate to the Downloads for Windows section of the official Python website (https://www.python.org/)
    ii. Go to download section(https://www.python.org/downloads/), scroll your mouse to down and Select the python version: 3.7.4 (I use this). However, you can select the latest version also 3.9.0

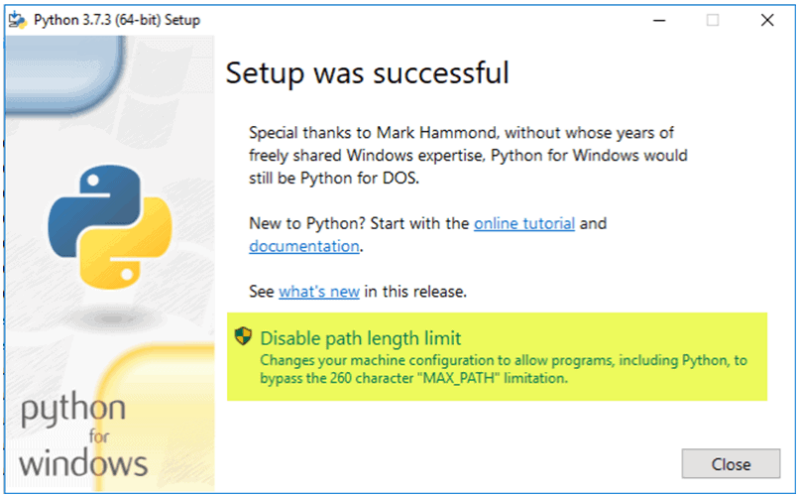


    iii. Select a link to download the **Windows x86-64 executable installer**



    iv. Run the Python Installer once downloaded. (In this example, we have downloaded Python 3.7.4.)
    v. Make sure you select the Install launcher for all users and Add Python 3.7 to PATH checkboxes. The latter places the interpreter in the execution path
    vi. Select Install Now – the recommended installation options.

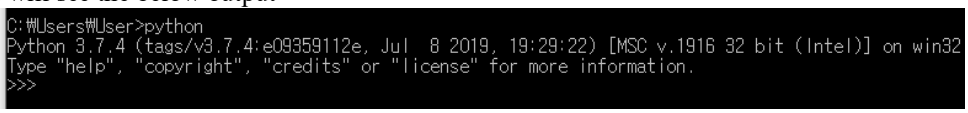
vii. The next dialog will prompt you to select whether to Disable path length limit. Choosing this option will allow Python to bypass the 260-character MAX_PATH limit. Effectively, it will enable Python to use long path names. The Disable path length limit option will not affect any other system settings



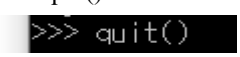
viii. Verify Python Was Installed On Windows. Open cmd prompt

ix. Type python in cmd

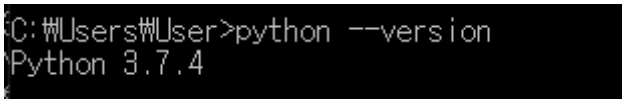
x. You will see the below output



xi. Terminate the python. TO terminate write quit() in cmd



xii. Check python version by write in cmd **python –version**



xiii. Now you have to install Pip. PIP is a package management system used to install and manage software packages written in Python. It stands for “preferred installer program” or “Pip Installs Packages.”

xiv. PIP for Python is a utility to manage PyPI package installations from the command line.

xv. Before you install PIP on Windows, check if PIP is already installed.

Type in the following command at the command prompt:

```
pip help
```

xvi. If PIP responds, then PIP is installed. Otherwise, there will be an error saying the program could not be found.

xvii. installing PIP, write the below command.

```
curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
```

xviii. Then run the following command in the folder where you have downloaded `get-pip.py`:

```
python get-pip.py
```

xix. Verify pip installation by writing pip -V

```
C:₩Users₩User>pip -V
pip 20.2.4 from e:₩software₩python₩lib₩site-packages₩pip (python 3.7)
```

xx. Install virtualnv (Optional)

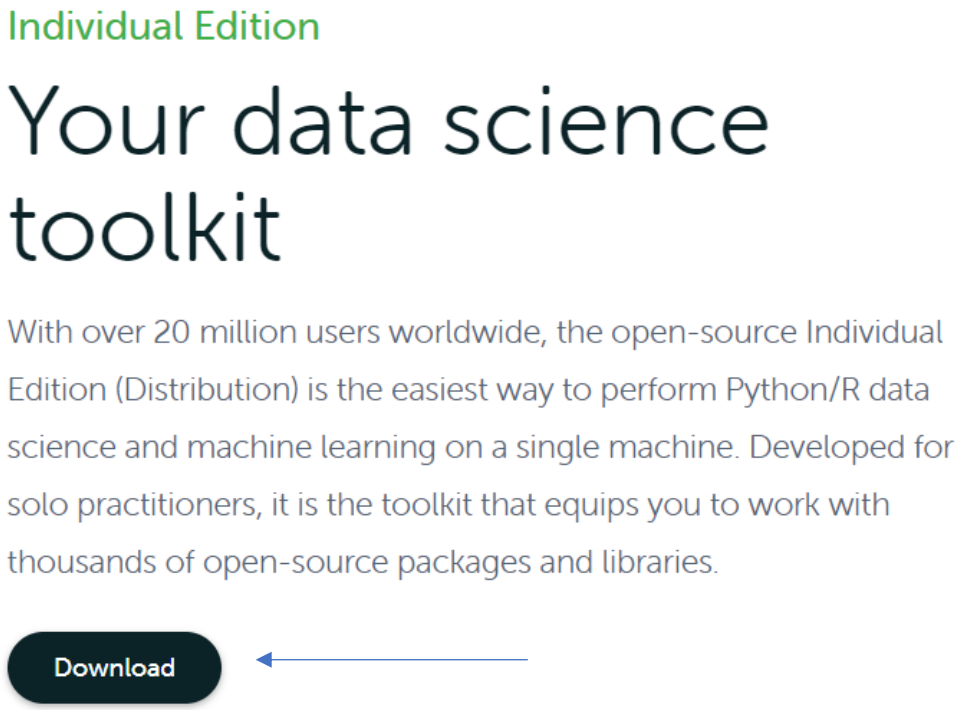
Type `pip install virtualenv in cmd`

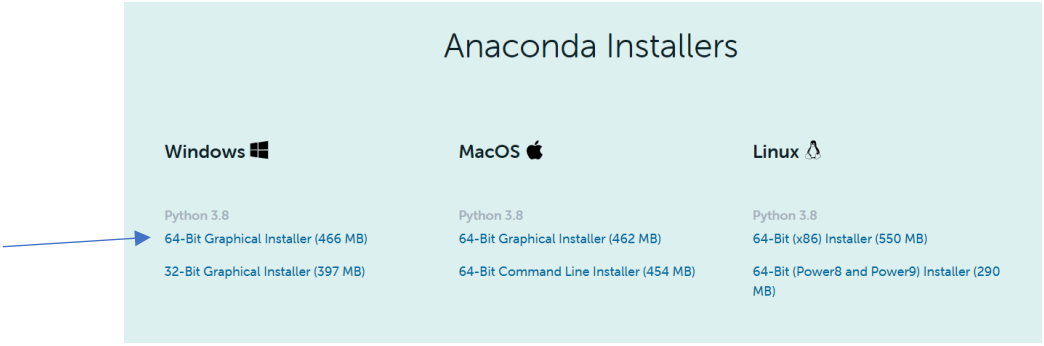
xxi. FINISH

2) Download and install Anaconda

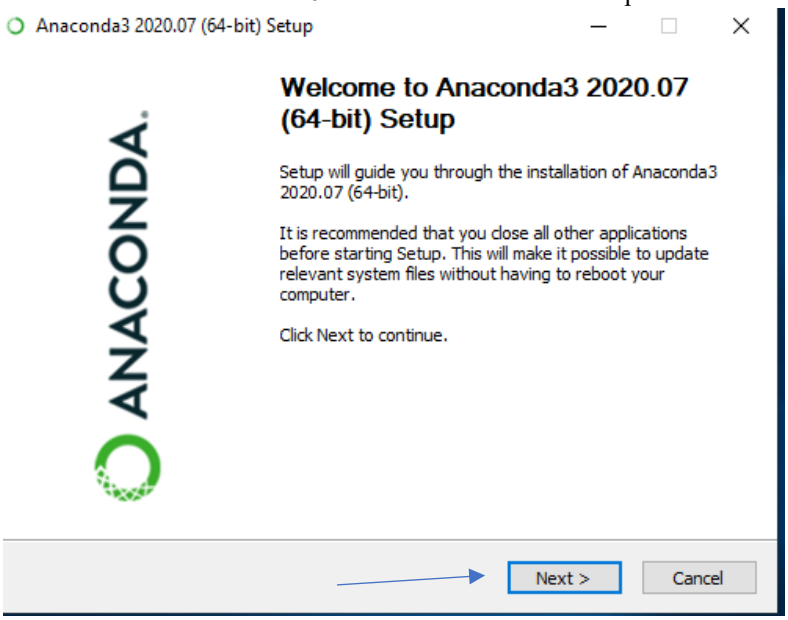
a. Go to https://www.anaconda.com/products/individual

b. Click Download button in https://www.anaconda.com/products/individual

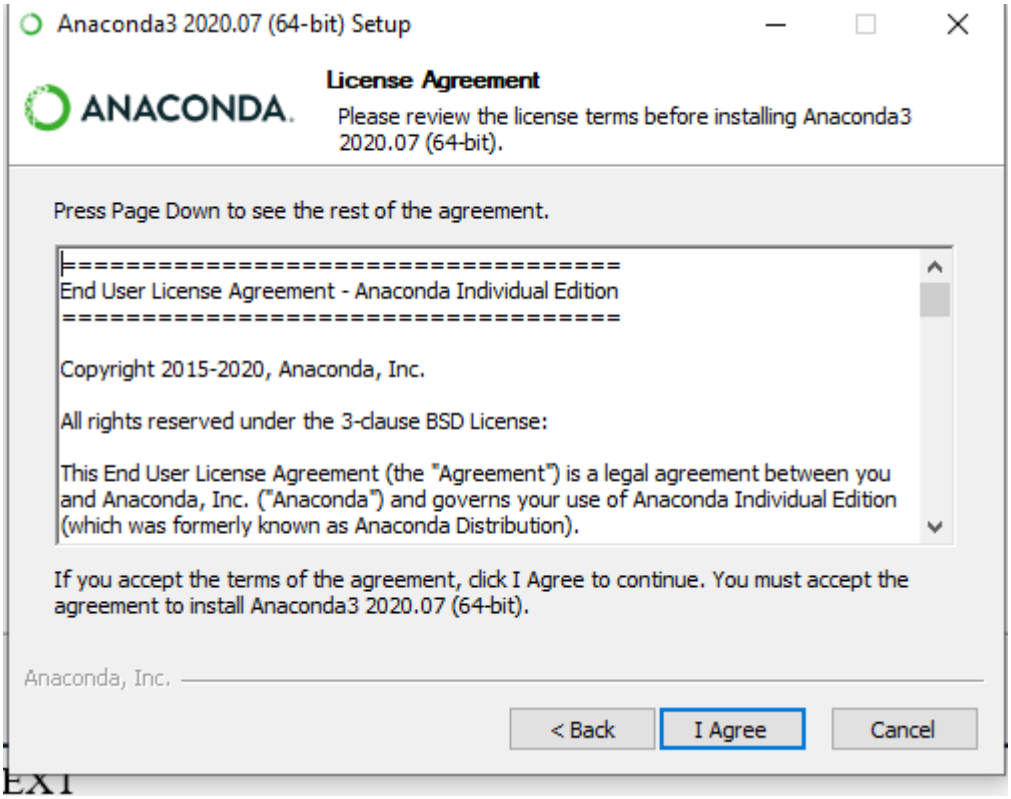




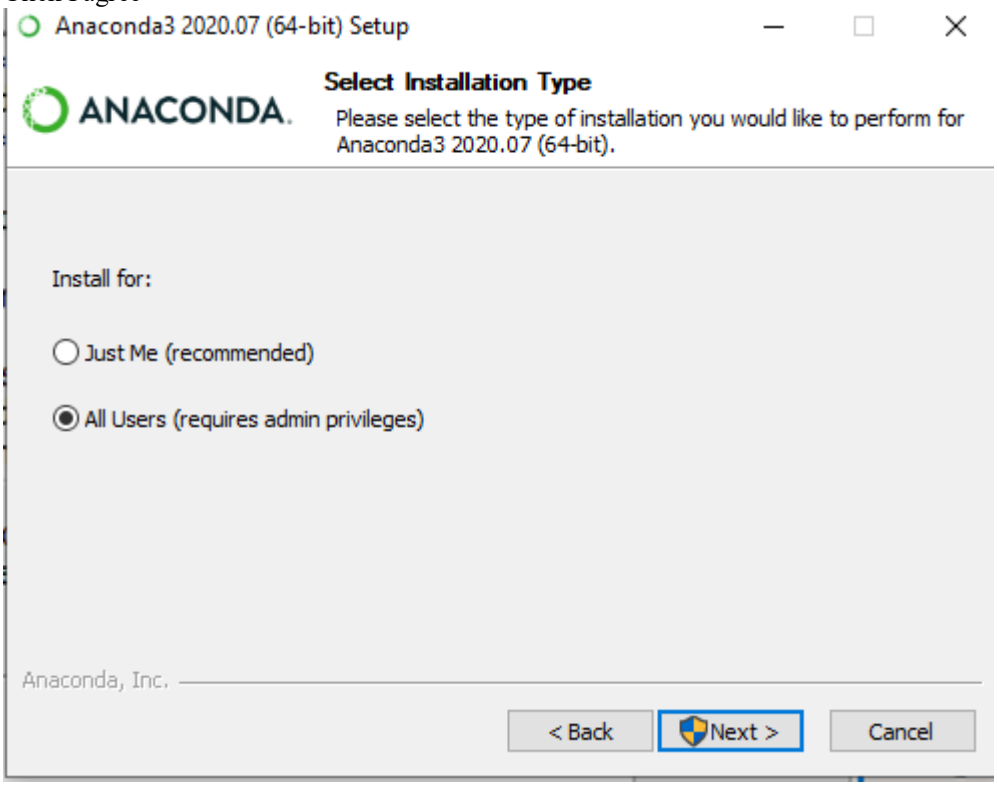
c. Select installer for windows 64-bit and download this setup file. Click in the setup file



d. Click NEXT

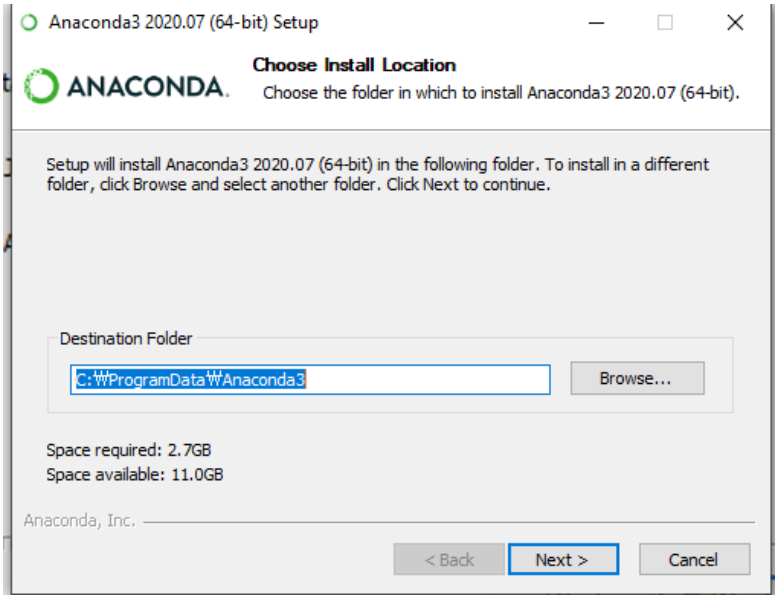


e. Click I agree



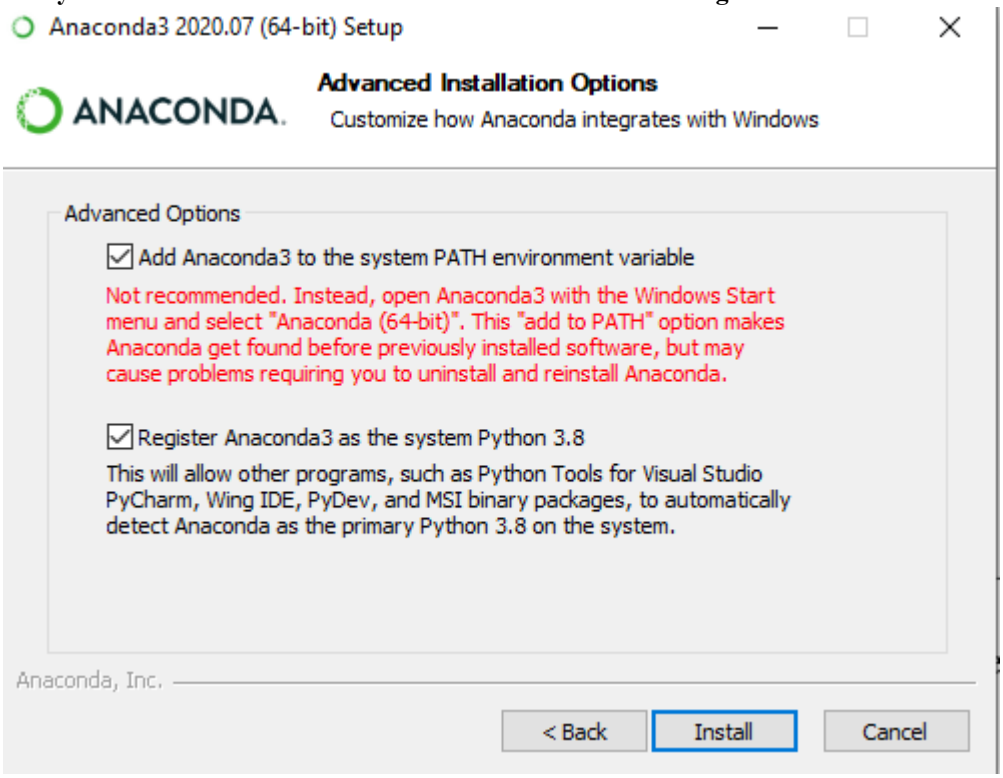
f. Select All Users

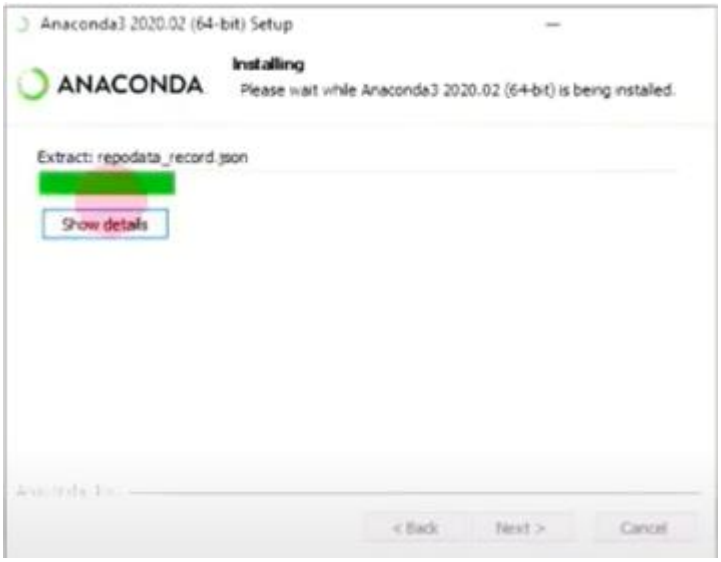
g.



h. Select your browser. It will take 2.7 GB

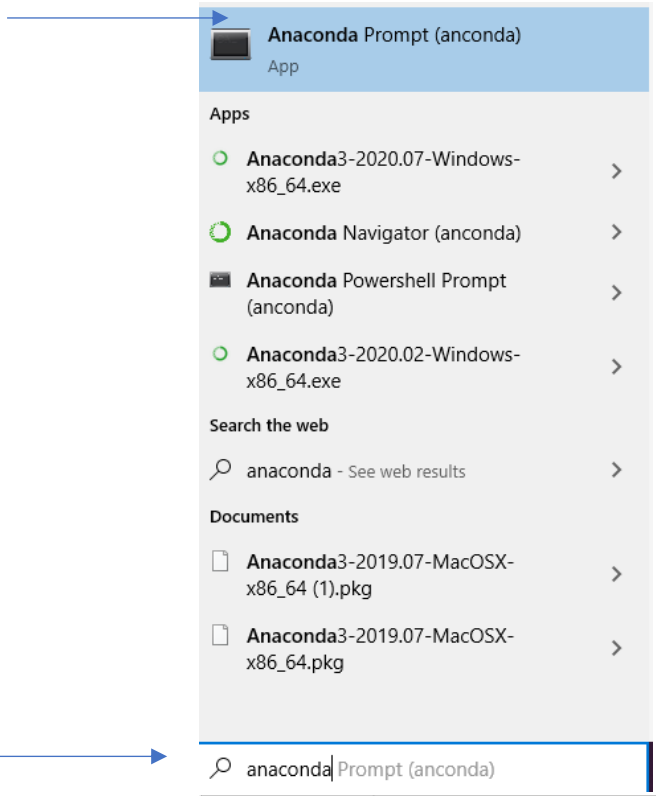
i. If you never install anaconda previously then do not select the first checkbox. If you are newly install anaconda for first time check both like below image

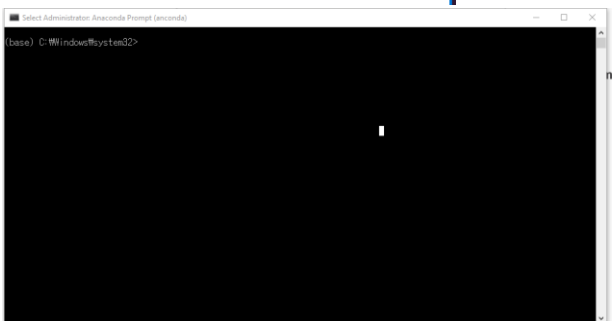




j. Start installation and wait until FINISH

k. On Windows open the Start menu and open an **Anaconda Command Prompt as administrator**.





l. Now install tensorflow in a new conda environment

m. Type conda create -n env_name tensorflow. You can give any name instead of env_name. it takes some time to install tensorflow

```
(base) C:₩Windows₩system32>conda create -n env_name tensorflow
Collecting package metadata: |
```

```
  tensorflow          pkgs/main/win-64::tensorflow-2.1.0-eigen_py37hd727fc0_0
  tensorflow-base     pkgs/main/win-64::tensorflow-base-2.1.0-eigen_py37h49b2757_0
  tensorflow-estima~ pkgs/main/noarch::tensorflow-estimator-2.1.0-pyhd54b08b_0
  termcolor           pkgs/main/win-64::termcolor-1.1.0-py37_1
  urllib3             pkgs/main/noarch::urllib3-1.25.11-py_0
  vc                  pkgs/main/win-64::vc-14.1-h0510ff6_4
  vs2015_runtime      pkgs/main/win-64::vs2015_runtime-14.16.27012-hf0eaf9b_3
  werkzeug            pkgs/main/noarch::werkzeug-0.16.1-py_0
  wheel               pkgs/main/noarch::wheel-0.35.1-pyhd3eb1b0_0
  win_inet_pton       pkgs/main/win-64::win_inet_pton-1.1.0-py37haa95532_0
  wincertstore        pkgs/main/win-64::wincertstore-0.2-py37_0
  wrapt               pkgs/main/win-64::wrapt-1.12.1-py37he774522_1
  yarl                pkgs/main/win-64::yarl-1.6.2-py37he774522_0
  zipp                pkgs/main/noarch::zipp-3.4.0-pyhd3eb1b0_0
  zlib                pkgs/main/win-64::zlib-1.2.11-h62dcd97_4


Proceed ([y]/n)? y


Downloading and Extracting Packages
numpy-base-1.19.2    | 4.8 MB    | ##################################################################################
pysocks-1.7.1        | 27 KB     | ##################################################################################
tensorflow-estimator | 273 KB    | ##################################################################################
absl-py-0.11.0       | 170 KB    | ##################################################################################
cachetools-3.1.0     | 88 KB     | ##################################################################################
requests-2.24.0      | 54 KB     | ##################################################################################
ca-certificates-2020 | 159 KB    | ##################################################################################
vs2015_runtime-14.16 | 2.4 MB    | ##################################################################################
protobuf-3.13.0.1    | 591 KB    | ##################################################################################
```

n.

o. Type y. It start install all packages automatically.

p. After Finish you will see the below output

```
# To activate this environment, use
#
#     $ conda activate env_name
#
# To deactivate an active environment, use
#
#     $ conda deactivate


(base) C:₩Windows₩system32>
```

q. Activate your environment type: conda activate env_name.

r. To deactivate use: conda deactivate (when you finish work)

s. Install some nececessary library

t. `conda install keras (install keras)`

u. `conda install gym (install Gym)`

v. conda install -c conda-forge notebook

w. python -m pip install -U matplotlib
x. python -m pip install --user numpy scipy matplotlib ipython jupyter pandas sympy nose
y. Now deactivate you environment
conda deactivate
z. Then close anaconda prompt
aa. Open again the anaconda prompt as administrator from start menu
bb. Activate your environment: conda activate my_env
cc. Choose any directory your want to run code
dd. To go another directory type your drive name like below

ee.

```
(base) C:₩Windows₩system32>conda activate env_name

(env_name) C:₩Windows₩system32>E:

(env_name) E:₩>
```

ff. Create a new folder here: mkdir folder_name

gg.

```
(env_name) E:₩>mkdir beam_forming
```

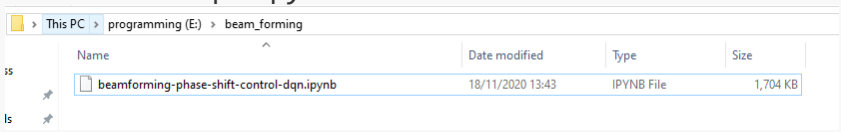
(beam-forming is my folder name)

hh. Go to the created folder
cd beam_forming

ii.

```
(env_name) E:₩>cd beam_forming

(env_name) E:₩beam_forming>
```

jj. Now copy paste the new code file here (beamforming-phase-shift-control-dqn.ipynb

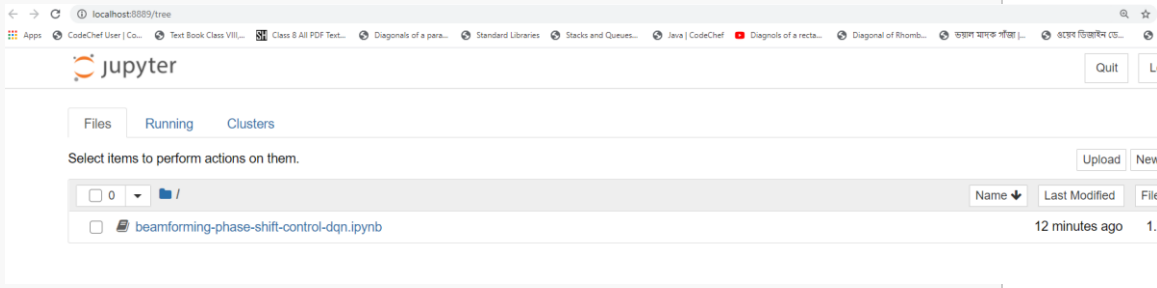


kk.

ll. Open jupyter notebook
type : jupyter notebook

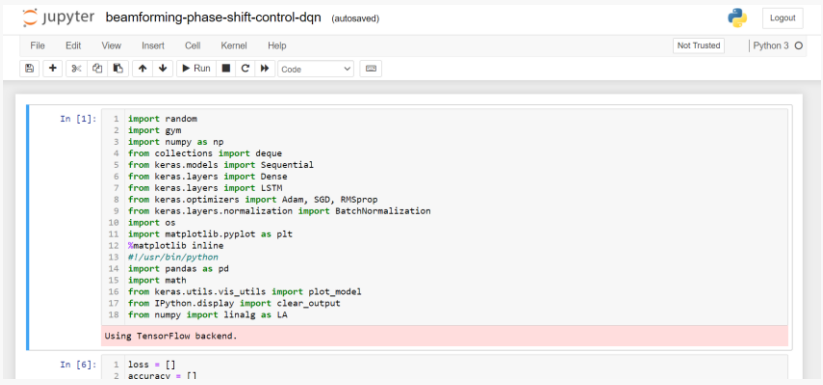
```
(env_name) E:₩beam_forming>jupyter notebook
[I 13:53:40.663 NotebookApp] The port 8888 is already in use, trying another port.
[I 13:53:40.665 NotebookApp] Serving notebooks from local directory: E:₩beam_forming
[I 13:53:40.665 NotebookApp] Jupyter Notebook 6.1.5 is running at:
[I 13:53:40.665 NotebookApp] http://localhost:8889/?token=d305724e780ea40d2b2454a82ef6f01bd3d7a597ab0ccb6d
[I 13:53:40.665 NotebookApp]  or http://127.0.0.1:8889/?token=d305724e780ea40d2b2454a82ef6f01bd3d7a597ab0ccb6d
[I 13:53:40.666 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 13:53:40.731 NotebookApp]

    To access the notebook, open this file in a browser:
        file:///C:/Users/User/AppData/Roaming/jupyter/runtime/nbserver-4060-open.html
    Or copy and paste one of these URLs:
        http://localhost:8889/?token=d305724e780ea40d2b2454a82ef6f01bd3d7a597ab0ccb6d
     or http://127.0.0.1:8889/?token=d305724e780ea40d2b2454a82ef6f01bd3d7a597ab0ccb6d
```

mm. A local server will open in your browser. You will see the server like below



nn.

oo. Open the file beamforming-phase-shift-control-dqn.ipynb. You will see the code like below



Now Run the code.
FINISH..

Reference:

1) https://www.tensorflow.org/
2) https://www.anaconda.com/
3) https://www.python.org/
4) https://keras.io/