

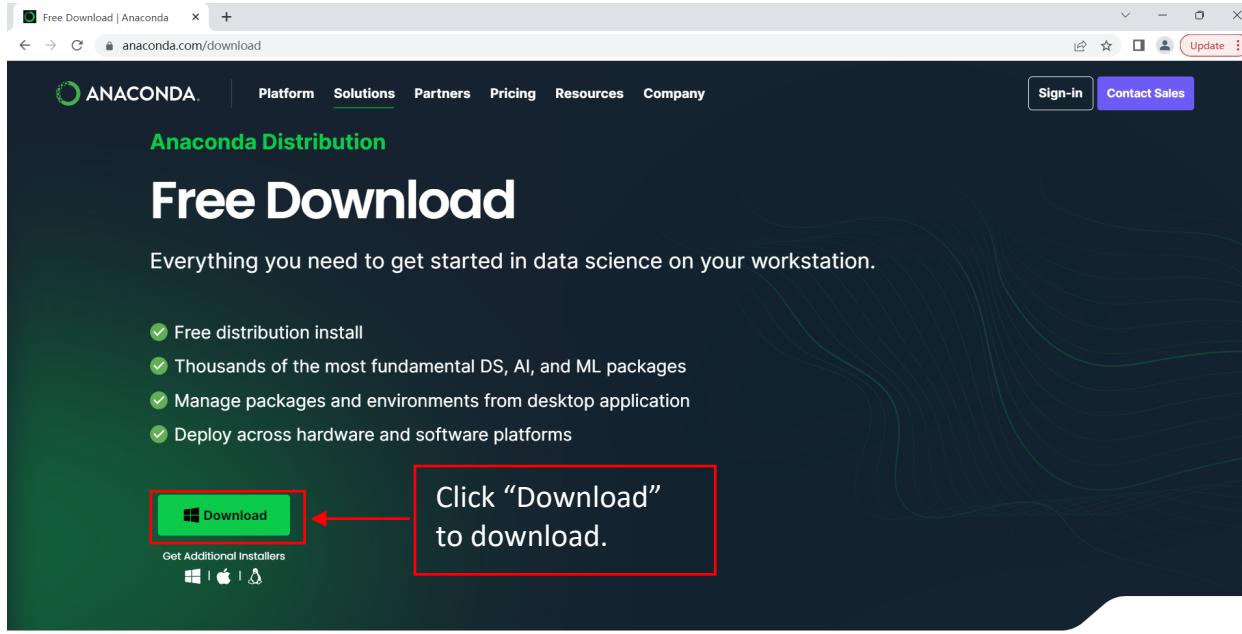
Python Installation and Use of Jupyter Notebook

Instructor: Dr. Jintao Ke, Spring 2024

1. Download Anaconda from the following link:

<https://www.anaconda.com/download>

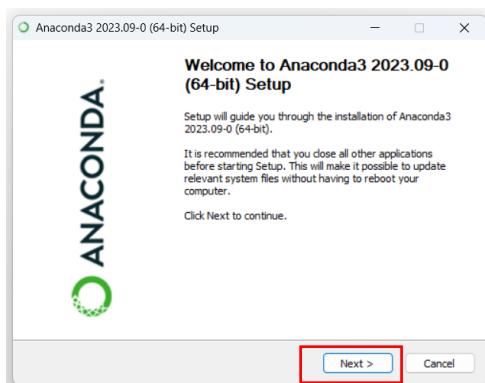
As shown in the figure below.



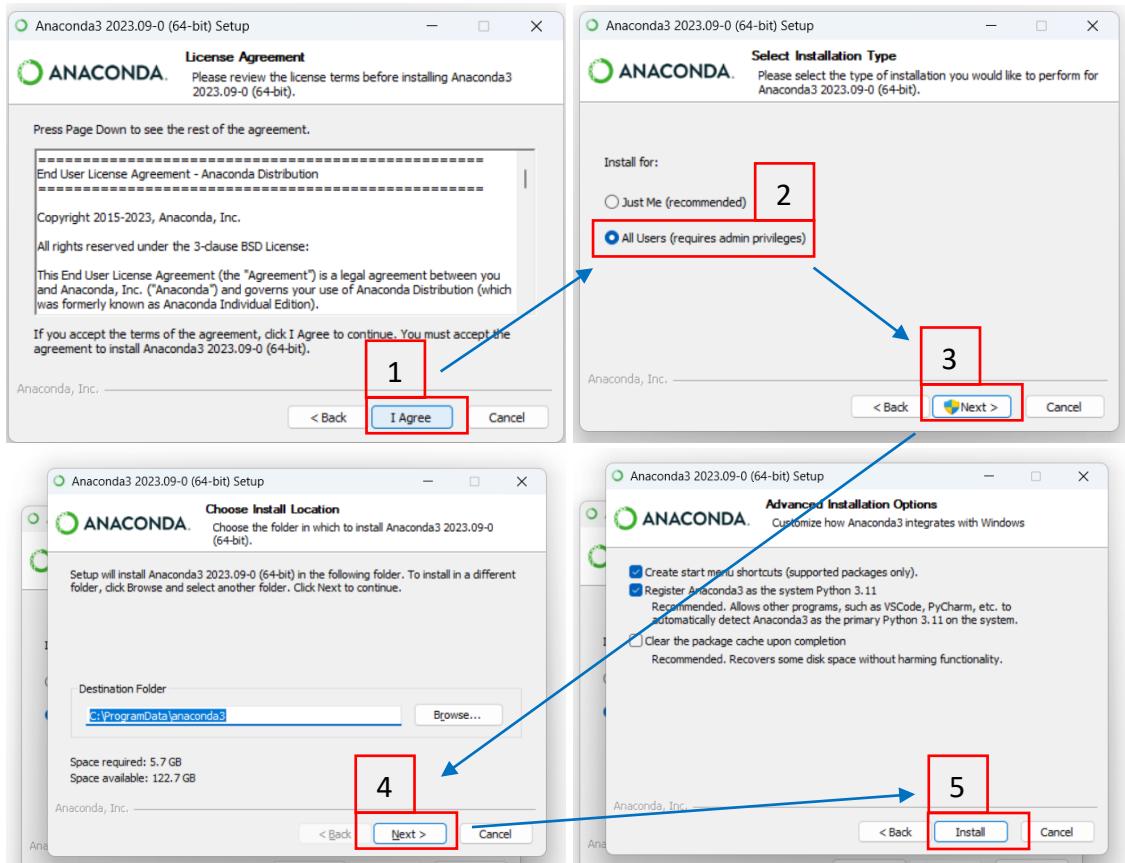
2. Double click the downloaded file in the folder, as shown in the figure below.



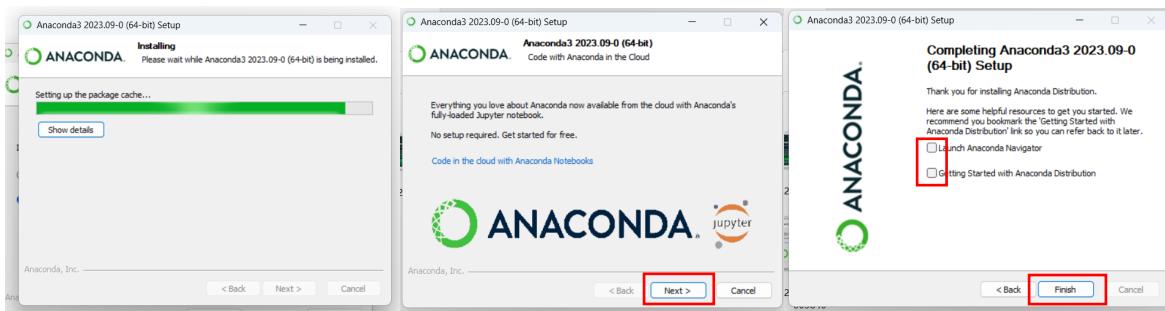
3. Click "Next", as shown in the figure below.



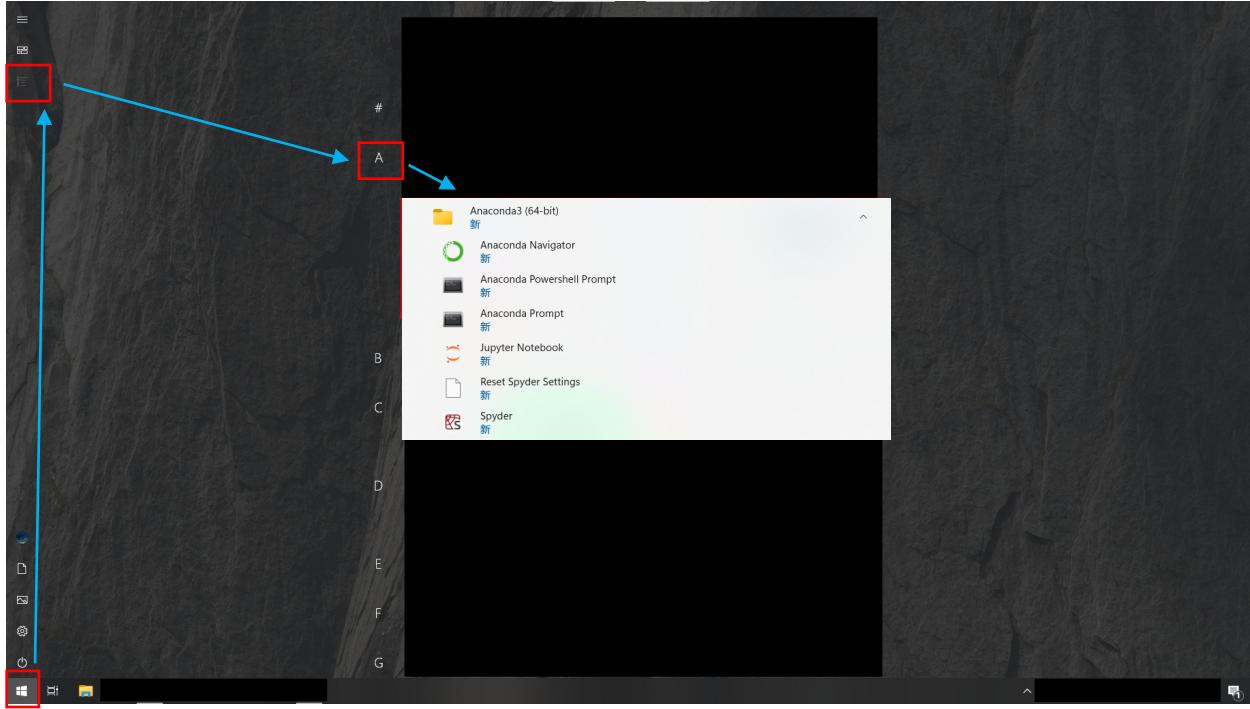
4. Complete the 5 steps as shown in the figures below.



5. Wait until installation completes (~ several minutes), then click “Next” and “Finish”, as shown in the figures below.



6. Anaconda will appear in the start page, as shown in the figure below. (*Windows 10 and 11*)

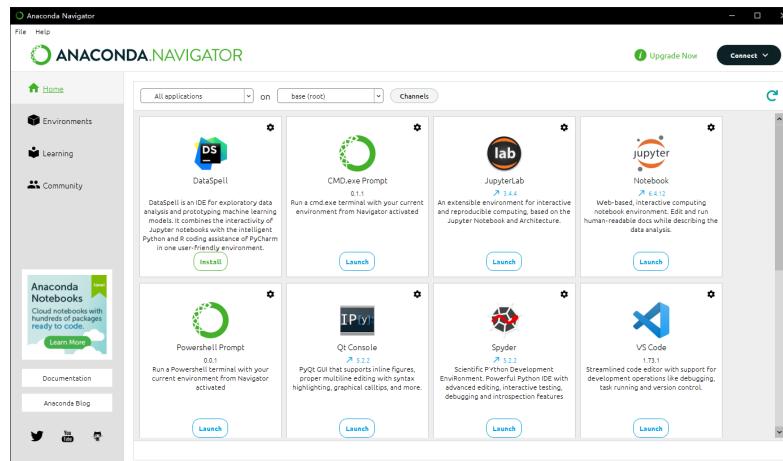


7. **Anaconda Navigator** (by clicking the green icon in the figure above, the layout is shown below) is an integrated platform for you to easily start **Jupyter Notebook**, **Jupyter Lab**, **Spyder**, or even **VS Code**. In this course, we recommend you use **Jupyter Notebook**.

You can either click the “Launch” bottom in *Anaconda Navigator* as shown in the figure below, or directly start *Jupyter Notebook* from its shortcut as shown as the orange icon in the figure in step 6.

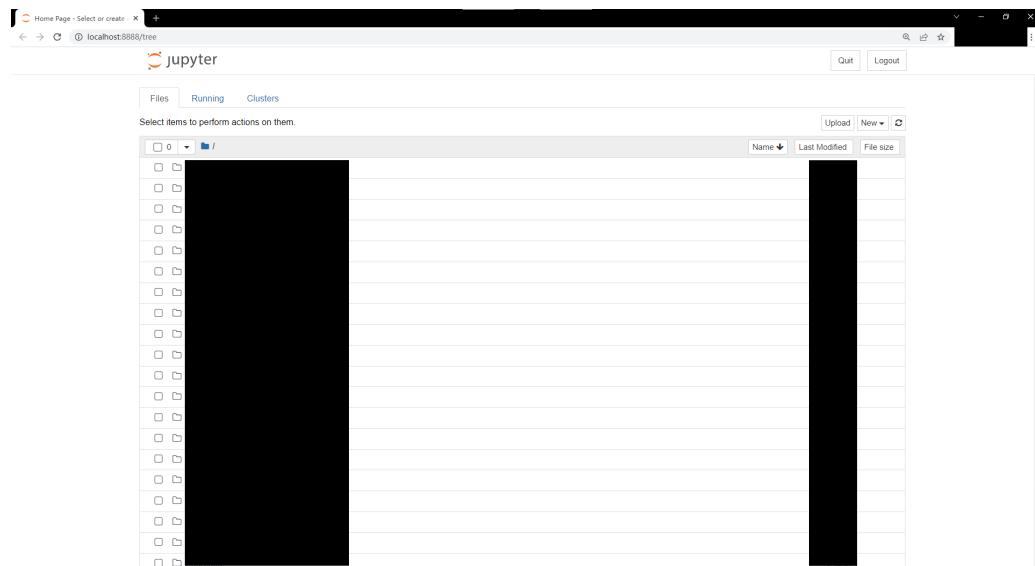
Alternatively, you can open the command line tool as instructed in step 15 later, and type `jupyter notebook`. You can use command `cd xxxx` to enter a folder called `xxxx`, and use `cd ..` to go back.

For macOS users, search for terminal and do the same as last paragraph, but `cd ..` for going back to the previous folder.

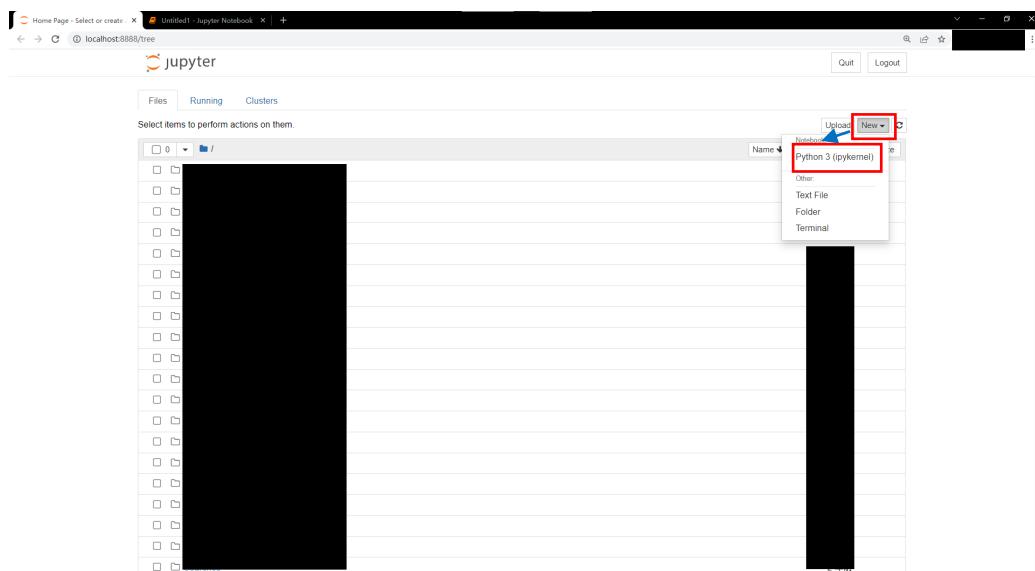


8. *Jupyter Notebook* is a lightweight script editor. You can easily write your code and execute your code here. After launching it, a pop-up window will appear in your default browser. Refer to the figure below.

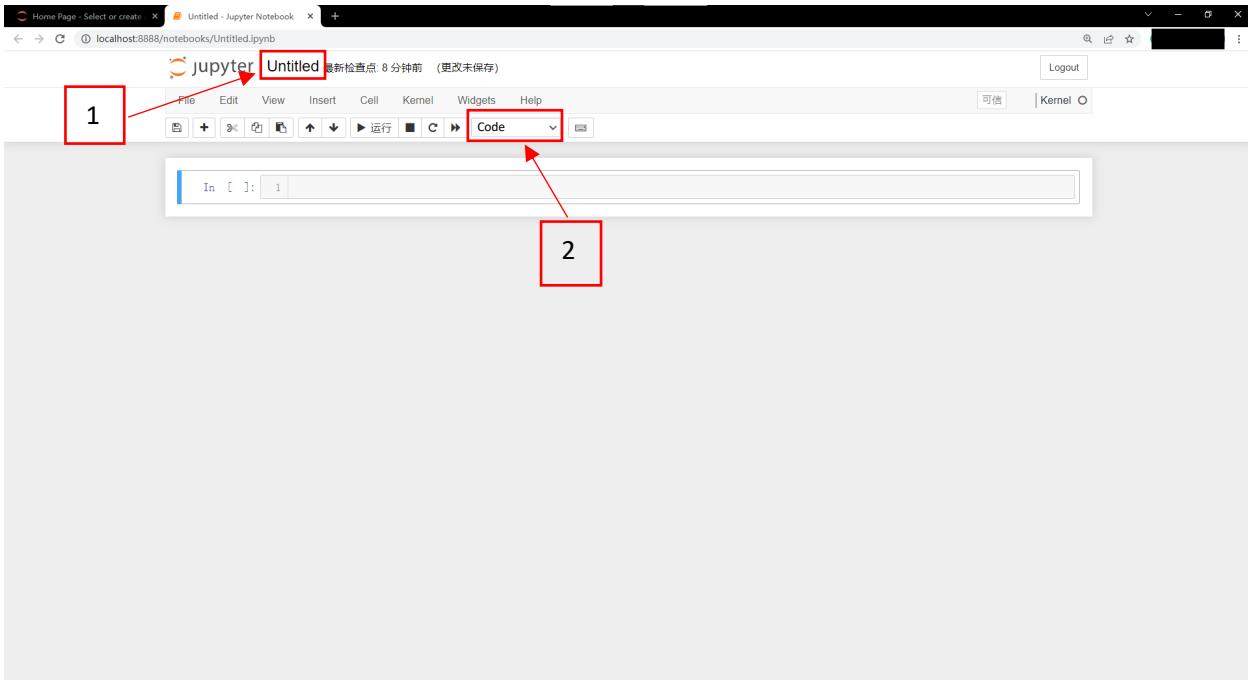
Note: I'm hiding my folder layout here, the black boxes are not parts of the Jupyter Notebook.



9. Create a *Jupyter Notebook* file by clicking “New” → “Python 3 (ipykernel)”, as shown in figure below.



10. A pop-up window may occur and this is the new *Jupyter Notebook* file you just created, as shown in figure below. You can change the file name in position 1.



11. To write Python codes, make sure the section box is a code box, by checking the position 2. You can change the setting to “Markdown” if you would like to write some notes.

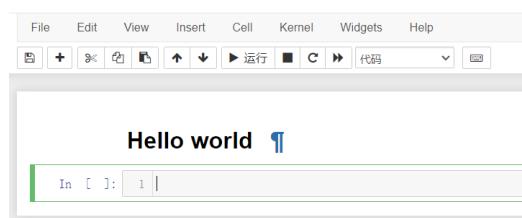
12. Change position 2 shown in the figure at step 10, from “Code” to “Markdown”. Then type the following, as shown in the figure below. Then press “Shift” AND “Enter” on your keyboard to run the code. You can also click “运行” or “Run” in toolbar at the top.

Note: Markdown is a popular lightweight language for taking notes. Readers can refer to this link: <https://www.markdowntutorial.com/> for a quick tutorial of its grammar.

Note2: To enable the line number, click “View” → “Toggle Line Numbers” respectively.



13. The execution should show this.

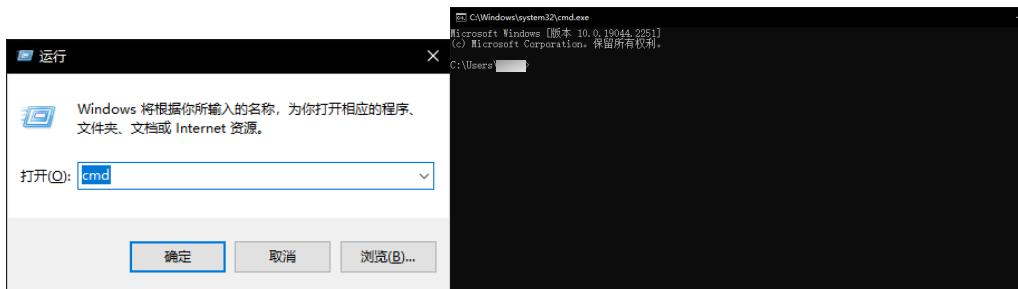


14. Write some code, then press “Shift” AND “Enter” to execute.

```
File Edit View Insert Cell Kernel Widgets Help
In [1]: 1 print('hello world')
hello world
```

OPTIONAL Section - Create a Designated Virtual Environment

15. Press “Windows” and “R” on your keyboard, type “cmd” and press “Enter” on your keyboard to call the command line window, as shown in the figures below.



16. Assume that your new virtual environment will be based on Python 3.8.11. Also assume the new environment is called “modeling”. Type the following as shown below. Then press “Enter”.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [版本 10.0.19044.2251]
(c) Microsoft Corporation。保留所有权利。
C:\Users\[REDACTED]>conda create -n modeling python=3.8.11
```

17. Type “y” and press “Enter”.

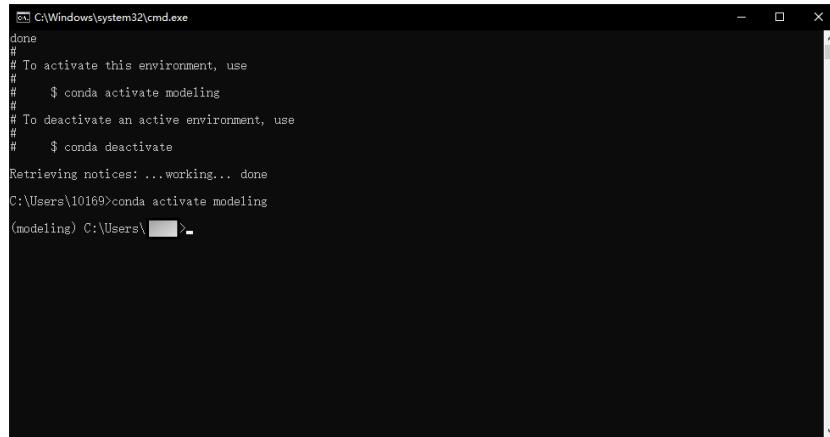
```
C:\Windows\system32\cmd.exe - conda create -n modeling python=3.8.11
package          build
ca-certificates-2022.10.11      haa95532_0    125 KB
certifi          pkgs/main/win-64::certifi-2022.9.24-py38haa95532_0 None
openssl          pkgs/main/win-64::openssl-1.1.ls-h2bfff1b_0 None
pip              pkgs/main/win-64::pip-22.2.2-py38haa95532_0 None
python            pkgs/main/win-64::python-3.8.11-h244533_1 None
setuptools       pkgs/main/win-64::setuptools-65.5.0-py38haa95532_0 None
sqlite            pkgs/main/win-64::sqlite-3.40.0-h2bfff1b_0 None
vc                pkgs/main/win-64::vc-14.2-h2ff451_1 None
vs2015_runtime   pkgs/main/win-64::vs2015_runtime-14.27.29016-h5e58377_2 None
wheel             pkgs/main/noarch::wheel-0.37.1-pynd3eb1b_0 None
wincertstore    pkgs/main/win-64::wincertstore-0.2-py38haa95532_2 None

Total:          26.1 MB

The following NEW packages will be INSTALLED:
ca-certificates      pkgs/main/win-64::ca-certificates-2022.10.11-haa95532_0 None
certifi               pkgs/main/win-64::certifi-2022.9.24-py38haa95532_0 None
openssl              pkgs/main/win-64::openssl-1.1.ls-h2bfff1b_0 None
pip                  pkgs/main/win-64::pip-22.2.2-py38haa95532_0 None
python                pkgs/main/win-64::python-3.8.11-h244533_1 None
setuptools            pkgs/main/win-64::setuptools-65.5.0-py38haa95532_0 None
sqlite                pkgs/main/win-64::sqlite-3.40.0-h2bfff1b_0 None
vc                    pkgs/main/win-64::vc-14.2-h2ff451_1 None
vs2015_runtime        pkgs/main/win-64::vs2015_runtime-14.27.29016-h5e58377_2 None
wheel                 pkgs/main/noarch::wheel-0.37.1-pynd3eb1b_0 None
wincertstore          pkgs/main/win-64::wincertstore-0.2-py38haa95532_2 None

Proceed ([y]/n)? y
```

18. To use the new virtual environment, write “`conda activate modeling`” then press “Enter”. You can see that there’s a “modeling” before each line.



```
C:\Windows\system32\cmd.exe
done
# To activate this environment, use
#     $ conda activate modeling
# To deactivate an active environment, use
#     $ conda deactivate
Retrieving notices: ...working... done
C:\Users\10169>conda activate modeling
(modeling) C:\Users\10169>
```

19. Install package “jupyter” by typing “`pip install jupyter`”, as shown below. Then press “Enter”.

Note: make sure that you are under the “modeling” environment.



```
C:\Windows\system32\cmd.exe
(modeling) C:\Users\10169>pip install jupyter
```

20. Install a new Jupyter Notebook kernel by typing

`python -m ipykernel install --name=modeling --user`
then press “Enter”.

```
(modeling) C:\Users\10169>python -m ipykernel install --name=modeling --user
Installed kernelspec modeling in C:\Users\10169\AppData\Roaming\jupyter\kernels\modeling
```

21. Check the new environment and new kernel, by the following two commands

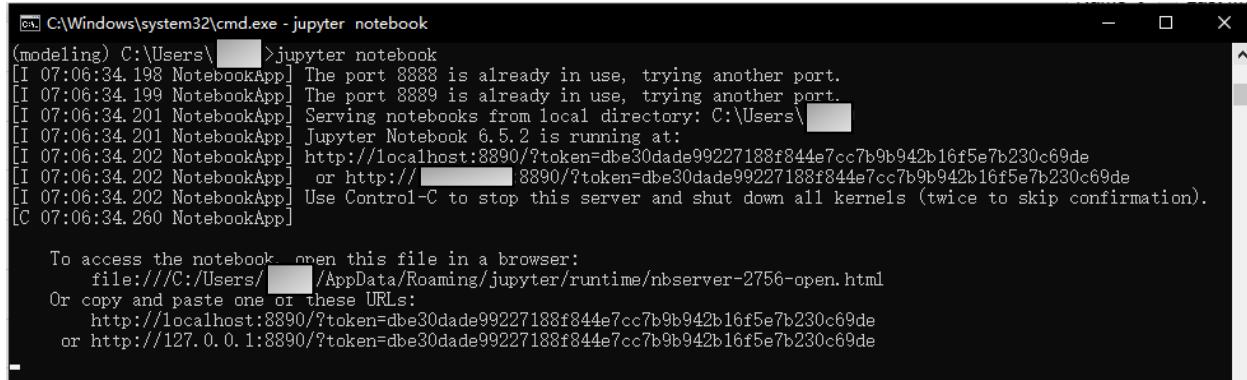
`conda env list`
`jupyter kernelspec list`

It should give,

```
(modeling) C:\Users\10169>conda env list
# conda environments:
#
base                  C:\Users\10169\anaconda3
modeling              * C:\Users\10169\anaconda3\envs\modeling

(modeling) C:\Users\10169>jupyter kernelspec list
Available kernels:
  python3      C:\Users\10169\anaconda3\envs\modeling\share\jupyter\kernels\python3
  modeling      C:\Users\10169\AppData\Roaming\jupyter\kernels\modeling
```

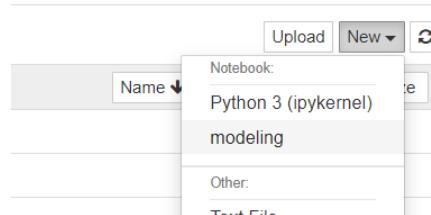
22. To start *Jupyter Notebook* in the new virtual environment, type “`jupyter notebook`” then press “Enter”.



```
C:\Windows\system32\cmd.exe - jupyter notebook
(modeling) C:\Users\[REDACTED] >jupyter notebook
[I 07:06:34.198 NotebookApp] The port 8888 is already in use, trying another port.
[I 07:06:34.199 NotebookApp] The port 8890 is already in use, trying another port.
[I 07:06:34.201 NotebookApp] Serving notebooks from local directory: C:\Users\[REDACTED]
[I 07:06:34.201 NotebookApp] Jupyter Notebook 6.5.2 is running at:
[I 07:06:34.202 NotebookApp] http://localhost:8890/?token=dbe30dade99227188f844e7cc7b9b942b16f5e7b230c69de
[I 07:06:34.202 NotebookApp] or http://[REDACTED]:8890/?token=dbe30dade99227188f844e7cc7b9b942b16f5e7b230c69de
[I 07:06:34.202 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 07:06:34.260 NotebookApp]

To access the notebook, open this file in a browser:
  file:///C:/Users/[REDACTED]/AppData/Roaming/jupyter/runtime/nbserver-2756-open.html
Or copy and paste one of these URLs:
  http://localhost:8890/?token=dbe30dade99227188f844e7cc7b9b942b16f5e7b230c69de
or http://127.0.0.1:8890/?token=dbe30dade99227188f844e7cc7b9b942b16f5e7b230c69de
```

23. Similar with step 9, but select “modeling” kernel as shown below.



24. You can try your new environment now.

25. To install packages for a specific environment, one should first activate it. Then, type “`pip install XXXX`” to install packages.

26. To remove an environment and all of its installed package, take the environment “modeling” as an example, type “`conda remove -n modeling --all`”, then type “`jupyter kernelspec remove modeling`”.