

Python and Jupyter Notebook tutorial

Instructor: Prof. Jiaji Wang & Prof. Xuguang Wang

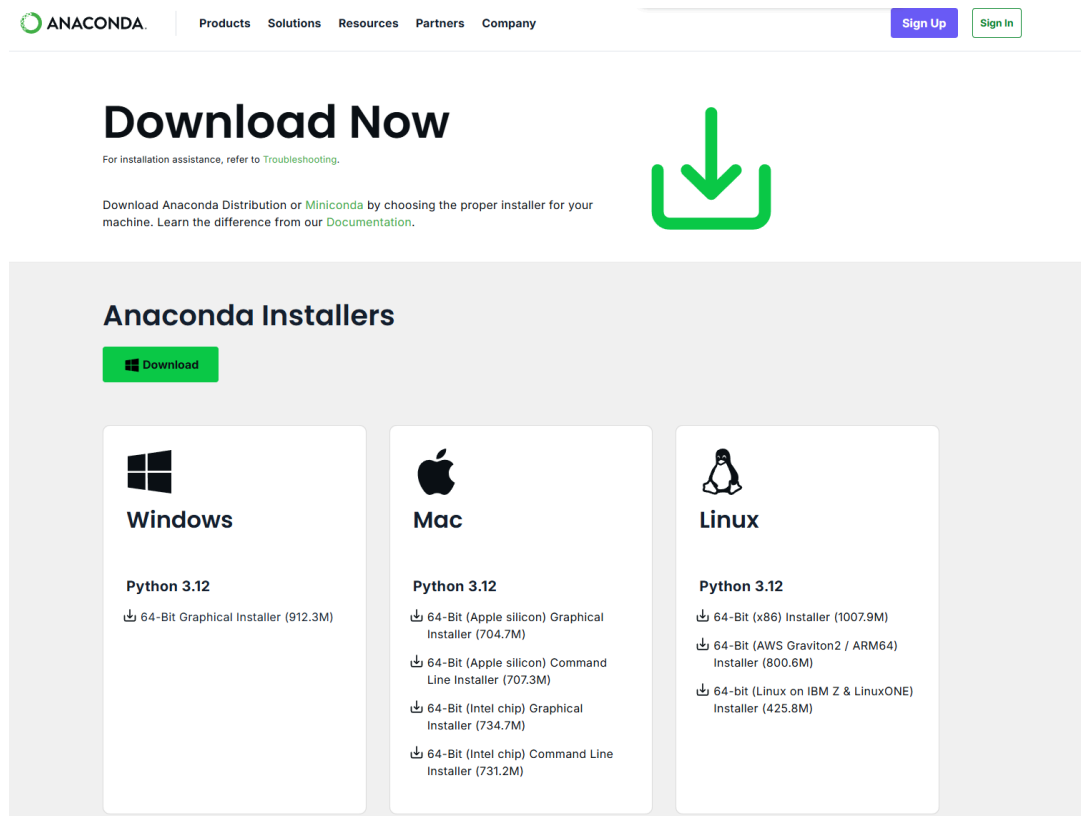
Brief introduction:

In this course, we will mainly utilize the **Anaconda** platform, which is an integrated platform with multiple function tools available.

- Downloading the software **Anaconda** from the official website:

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

Pick the version that is fitted with your personal computer operating system such as Windows/Mac/Linux



Download Now

For installation assistance, refer to [Troubleshooting](#).

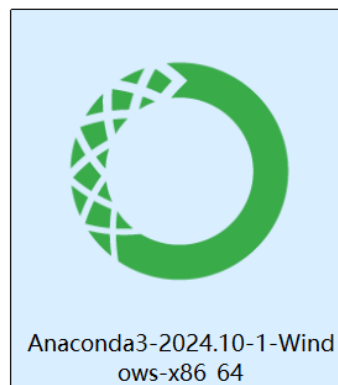
Download Anaconda Distribution or [Miniconda](#) by choosing the proper installer for your machine. Learn the difference from our [Documentation](#).

Anaconda Installers

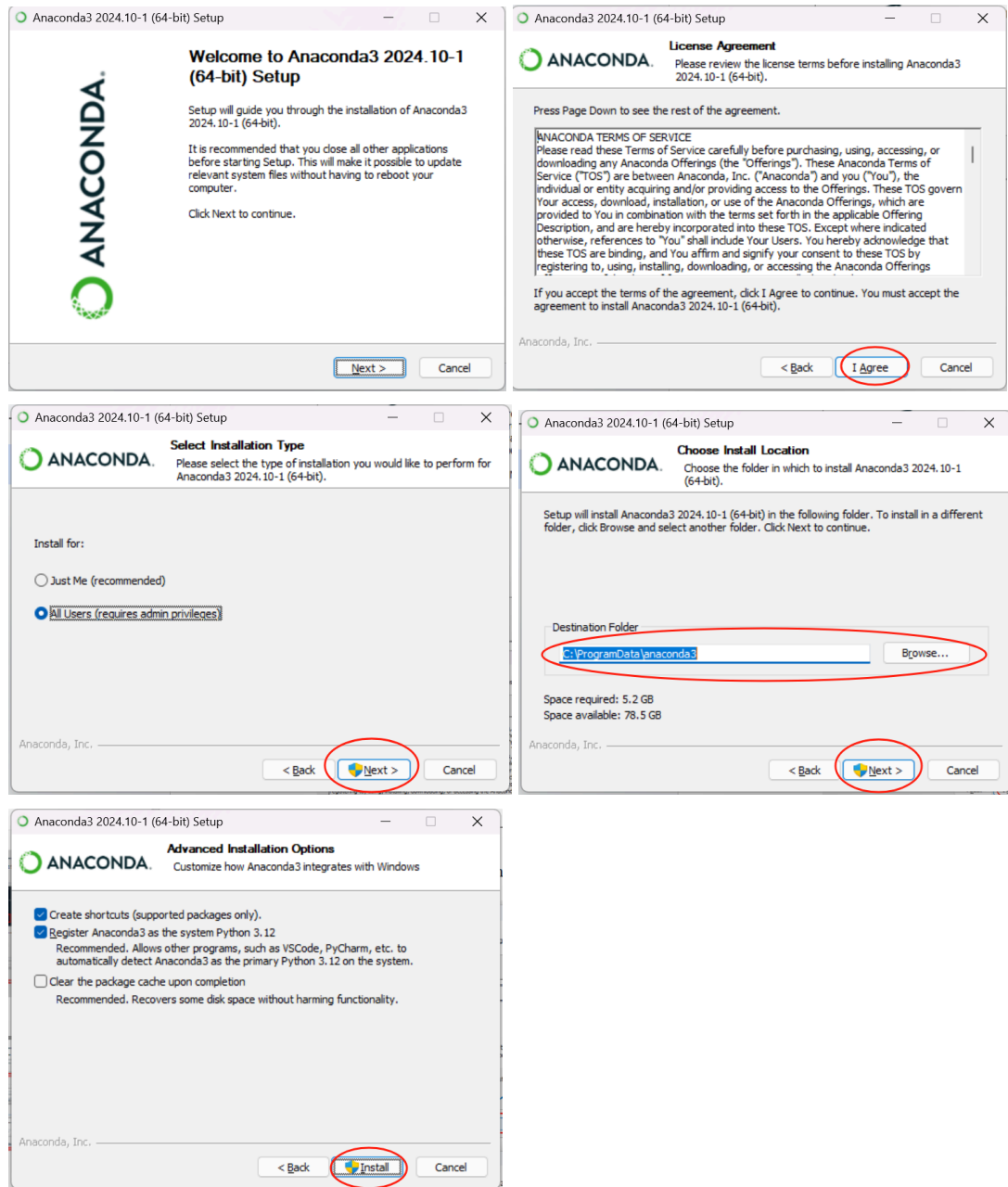
[Download](#)

Operating System	Python Version	Installer Type	Size
Windows	Python 3.12	64-Bit Graphical Installer	912.3M
		64-Bit (Intel chip) Command Line Installer	731.2M
Mac	Python 3.12	64-Bit (Apple silicon) Graphical Installer	704.7M
		64-Bit (Intel chip) Command Line Installer	731.2M
Linux	Python 3.12	64-Bit (x86) Installer	1007.9M
		64-Bit (AWS Graviton2 / ARM64) Installer	800.6M
		64-bit (Linux on IBM Z & LinuxONE) Installer	425.8M

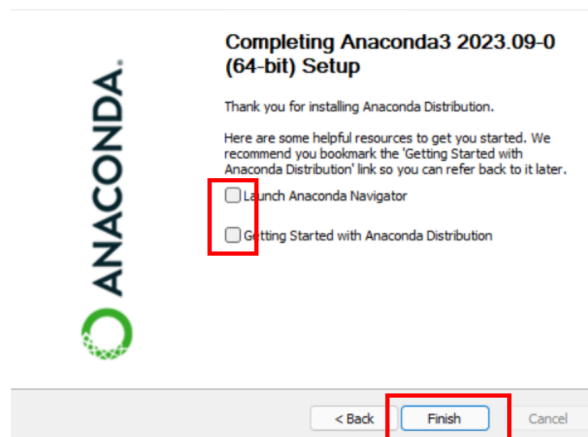
- Install the software **Anaconda** using the downloaded package.



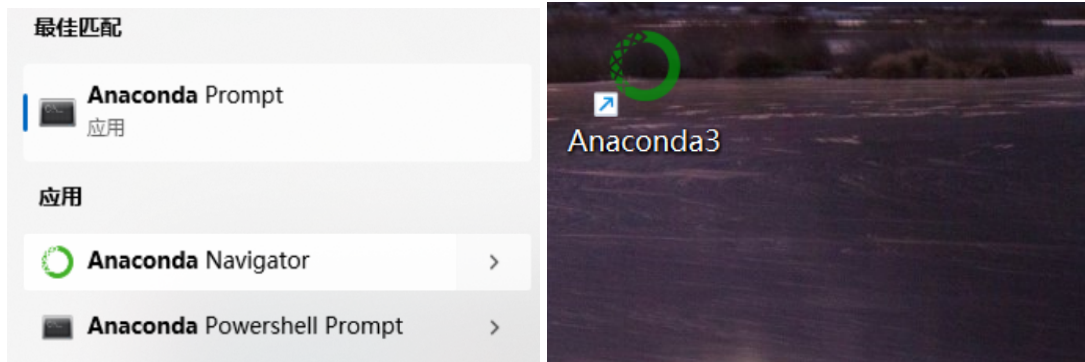
- Then, begin to install the Anaconda3 setup software.



Then, after installing Anaconda3, make sure you tick the two options shown below:

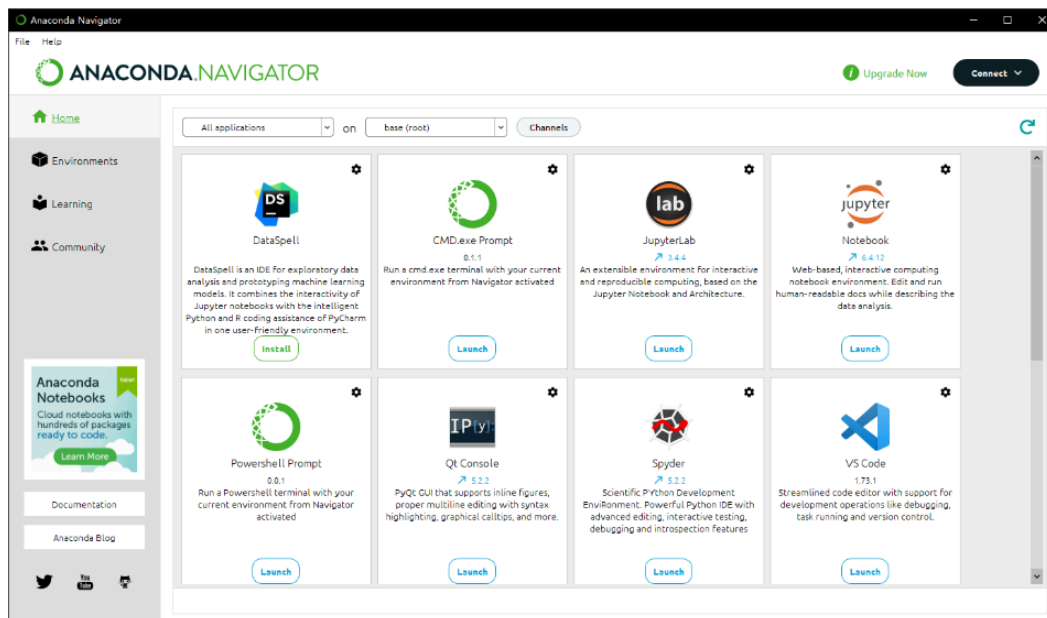


- You will be able to see the Anaconda Navigator, Anaconda Prompt on your system start page or desktop

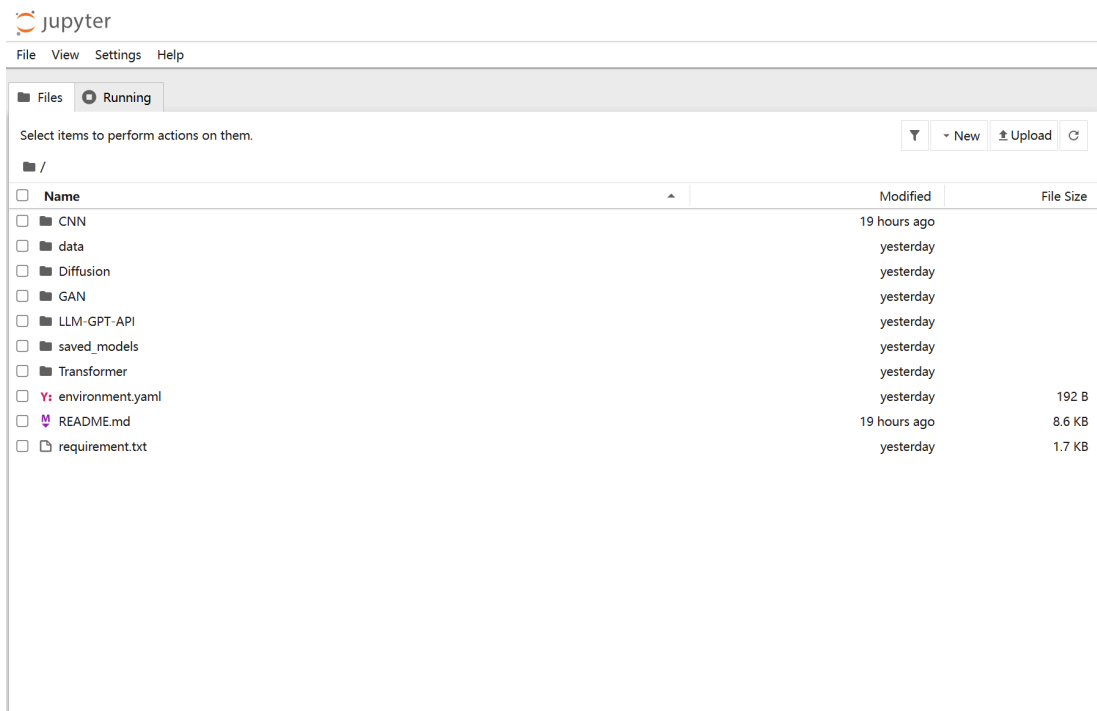


Then, open up the Anaconda Navigator or double click the green icon Anaconda3. We can enter the Navigator software and install Jupyter Notebook, which is similar to a word document app but in code content.

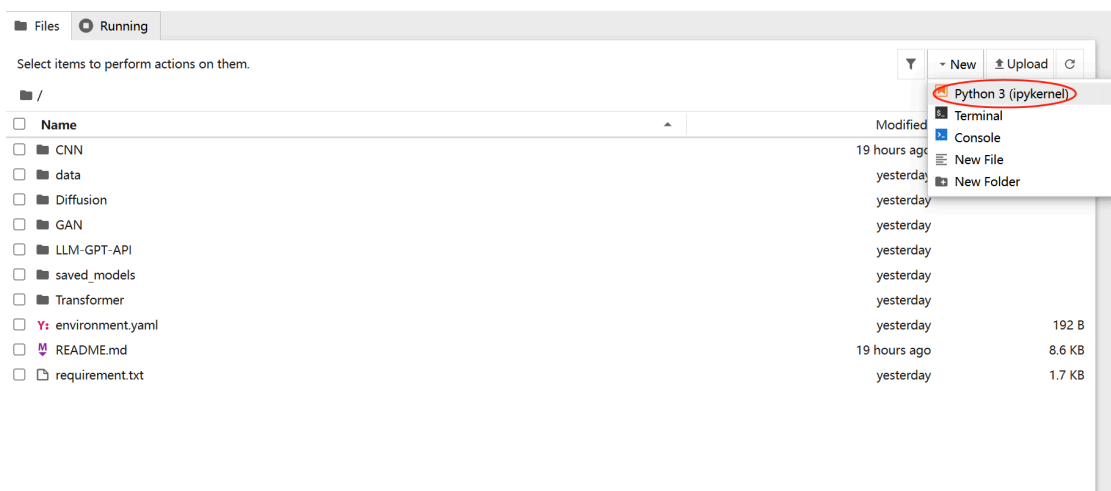
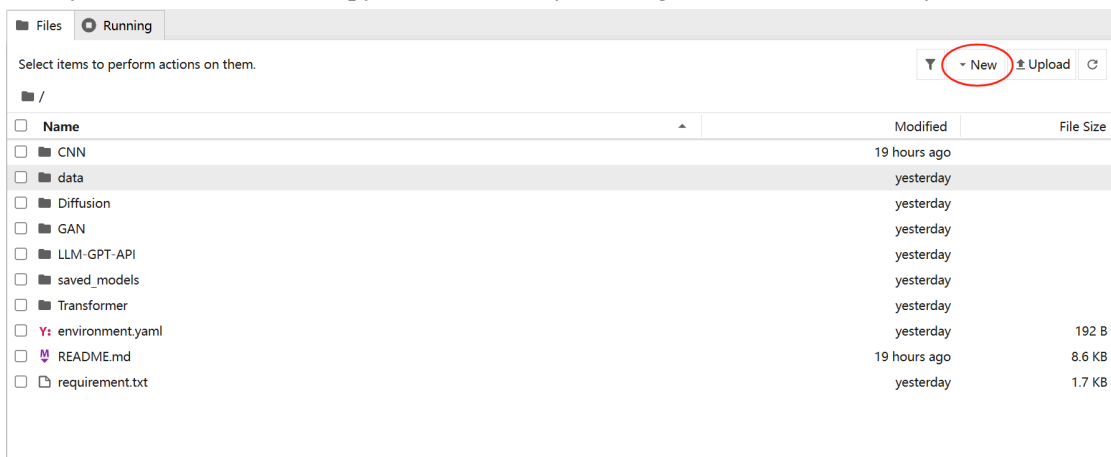
Once Jupyter Notebook is installed, you can launch it right within the Anaconda Navigator by clicking the button launch.



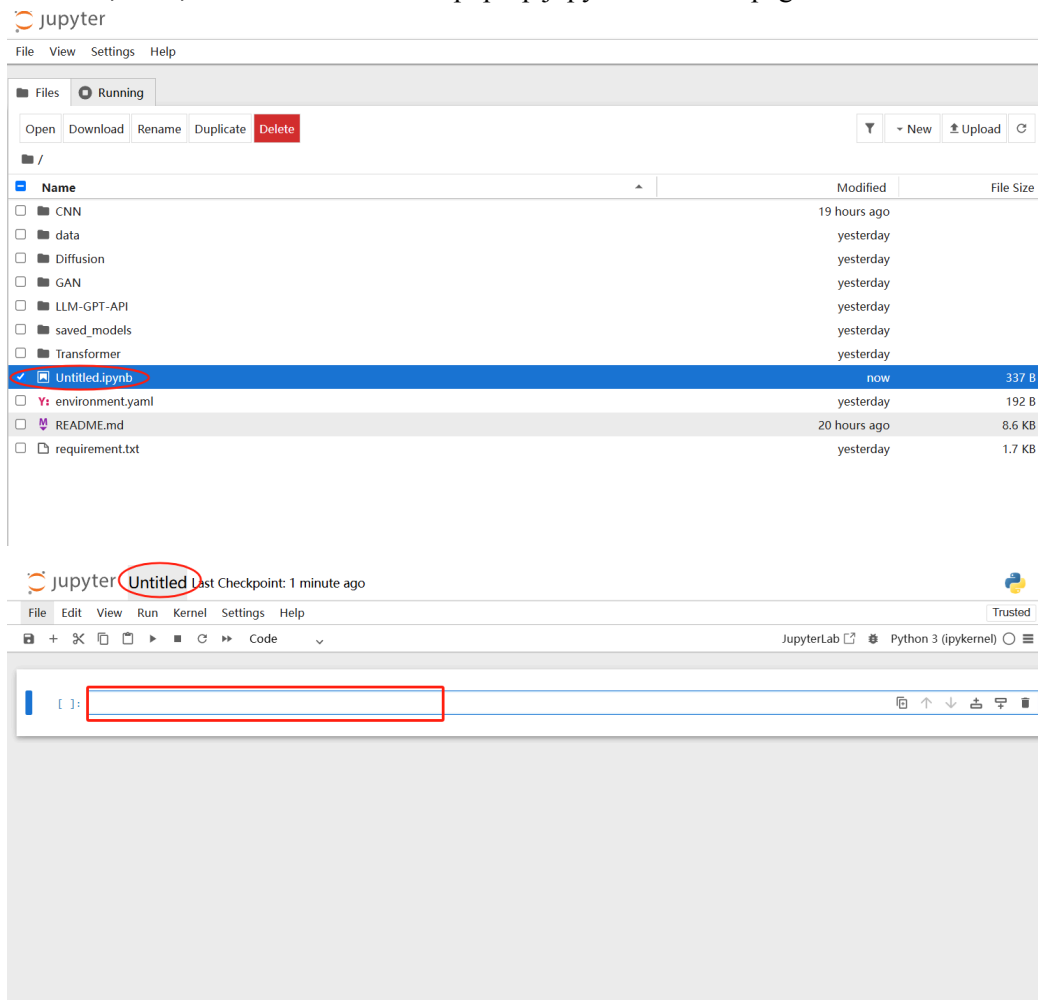
- Jupyter Notebook is a lightweight script editor, where you can easily edit, modify, and execute your code within the notebook. After launching the notebook, you shall be able to see the layout of the Notebook editor. (Take our course code as example)



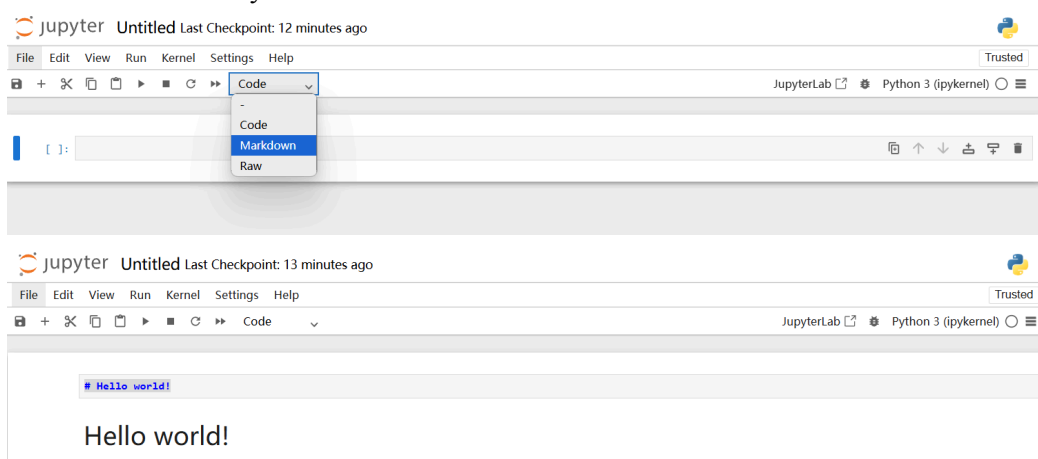
Then you can create a new Jupyter Notebook by clicking New and select the Python 3



A new notebook file normally named untitled will be created for you to use. You can revise the name, code, and others of the new pop-up jupyter notebook page.



- There is code and markdown selection for each cell. If you want to take some notes and briefly introduce some background about the code, you can switch the code mode to markdown mode for you to use.



Once you finish the code or markdown notes, you can use the shortcut “**shift**” & “**enter**” to execute the cell.

- **Creating your own virtual environment.**

The above Jupyter Notebook together with all other packages you installed will be automatically installed on the default local environment named **base**.

You can even create your own virtual coding environment such as CIVL3141. How to do this? Firstly, you can recall the **Anaconda Prompt** in the start page of Windows. Click Anaconda Prompt and you can enter the base environment right now.

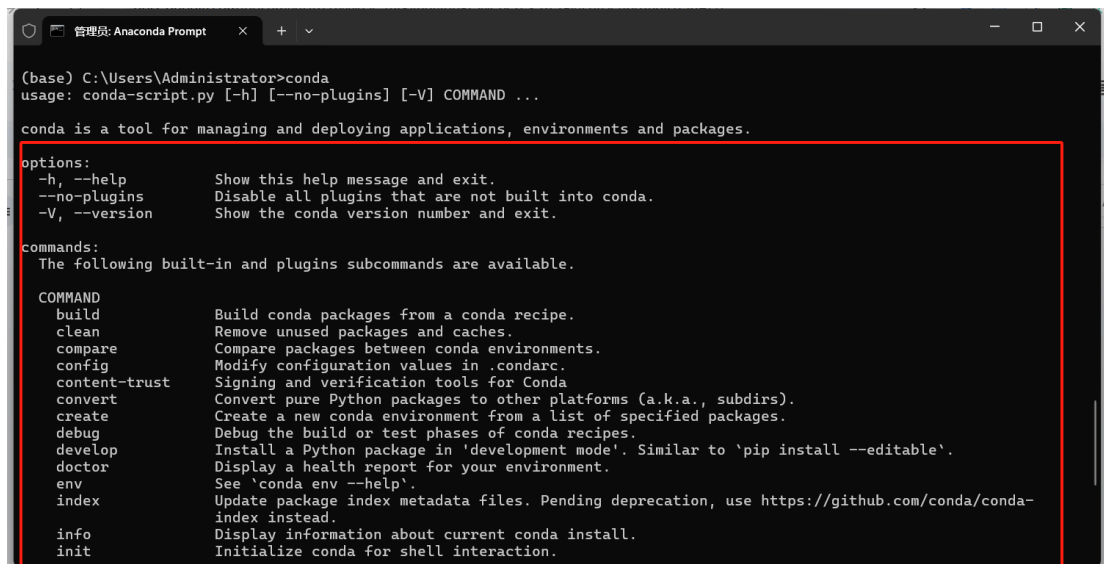


Once entering the virtual environment, you can create your own environment by using the command below:

conda create -n CIVL3141 python=3.8

The above command can be illustrated as using conda to create an environment named CIVL3141 with the specific Python version equal to 3.8. For more details, please check by typing the command:

conda or conda -h



Then after enter the command **conda create -n CIVL3141 python=3.8**, you can type **Y** to agree the installation of default packages together with the specific python version.

```
added / updated specs:
- python=3.8

The following packages will be downloaded:

package | build | size
-----|-----|-----
ca-certificates-2025.2.25 | haa95532_0 | 130 KB
openssl-3.0.16 | h3f729d1_0 | 7.8 MB
vc-14.42 | haa95532_4 | 11 KB
vs2015_runtime-14.42.34433 | he0abc0d_4 | 1.2 MB
-----|-----|-----
Total: | 9.1 MB

The following NEW packages will be INSTALLED:

ca-certificates | pkgs/main/win-64::ca-certificates-2025.2.25-haa95532_0
libffi | pkgs/main/win-64::libffi-3.4.4-hd77b12b_1
openssl | pkgs/main/win-64::openssl-3.0.16-h3f729d1_0
pip | pkgs/main/win-64::pip-24.2-py38haa95532_0
python | pkgs/main/win-64::python-3.8.20-h8205438_0
setuptools | pkgs/main/win-64::setuptools-75.1.0-py38haa95532_0
sqlite | pkgs/main/win-64::sqlite-3.45.3-h2bbff1b_0
vc | pkgs/main/win-64::vc-14.42-haa95532_4
vs2015_runtime | pkgs/main/win-64::vs2015_runtime-14.42.34433-he0abc0d_4
wheel | pkgs/main/win-64::wheel-0.44.0-py38haa95532_0

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

- To use the new virtual environment, you need to use the command below to enter your environment:

conda activate CIVL3141

```
(base) C:\Users\Administrator>conda activate CIVL3141
(CIVL3141) C:\Users\Administrator>
```

After entering the environment, you can install packages such as Jupyter Notebook by typing the command below:

pip install jupyter

python -m ipykernel install --name=CIVL3141 --user

then, press enter to finish the installation.

Now you can use **conda env list** to check the envs that you have already installed.

```
(CIVL3141) C:\Users\Administrator>conda env list
# conda environments:
#
base                  D:\anaconda
CIVL3141              * D:\anaconda\envs\CIVL3141
```

Then you can start the Jupyter Notebook under this environment by using command

jupyter notebook

You should be able to obtain the commands below:

```
C:\Windows\system32\cmd.exe - jupyter notebook
(modeling) C:\Users\>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 8889 is already in use, trying another port.
[I 07:06:34.201 NotebookApp] Serving notebooks from local directory: C:\Users\
[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://: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/ /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
```

You can access the notebook by opening the file in a browser or copy and paste the URLs that were provided.

Now you can obtain the Jupyter Notebook layout page similar to your previous one.

