Python Installation and Use of *Jupyter Notebook*

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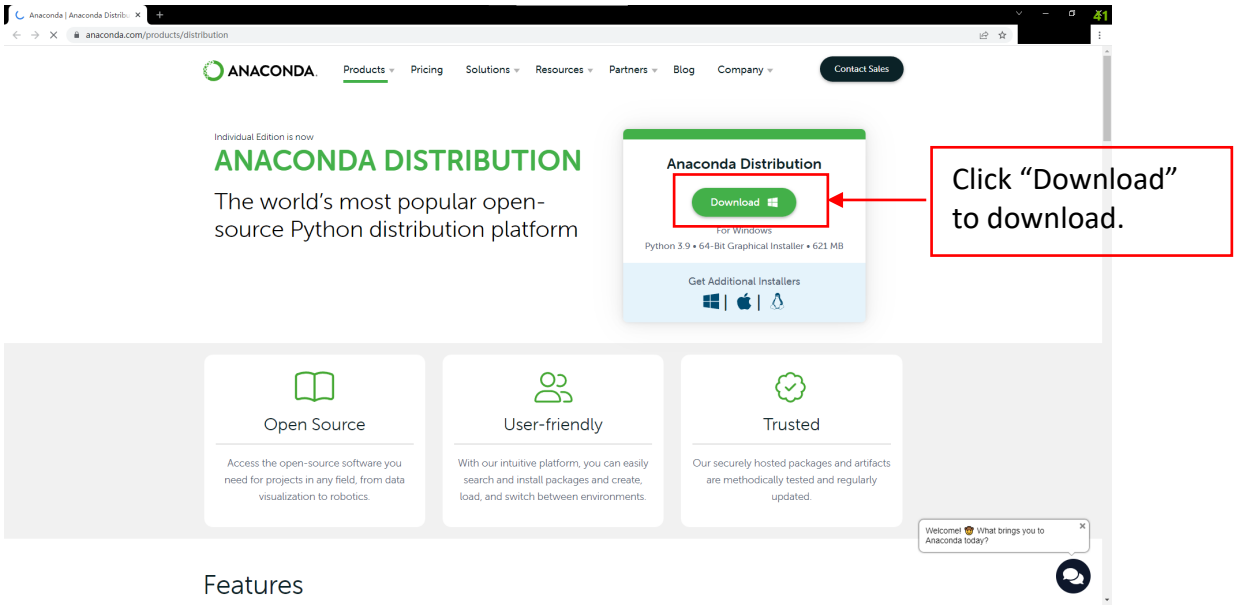
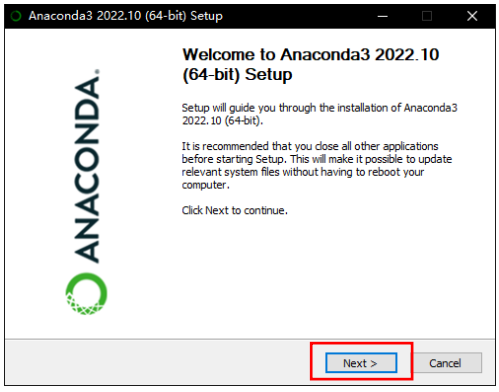
1. Download Anaconda from the following link:
   https://www.anaconda.com/products/distribution
   As shown in the figure below.

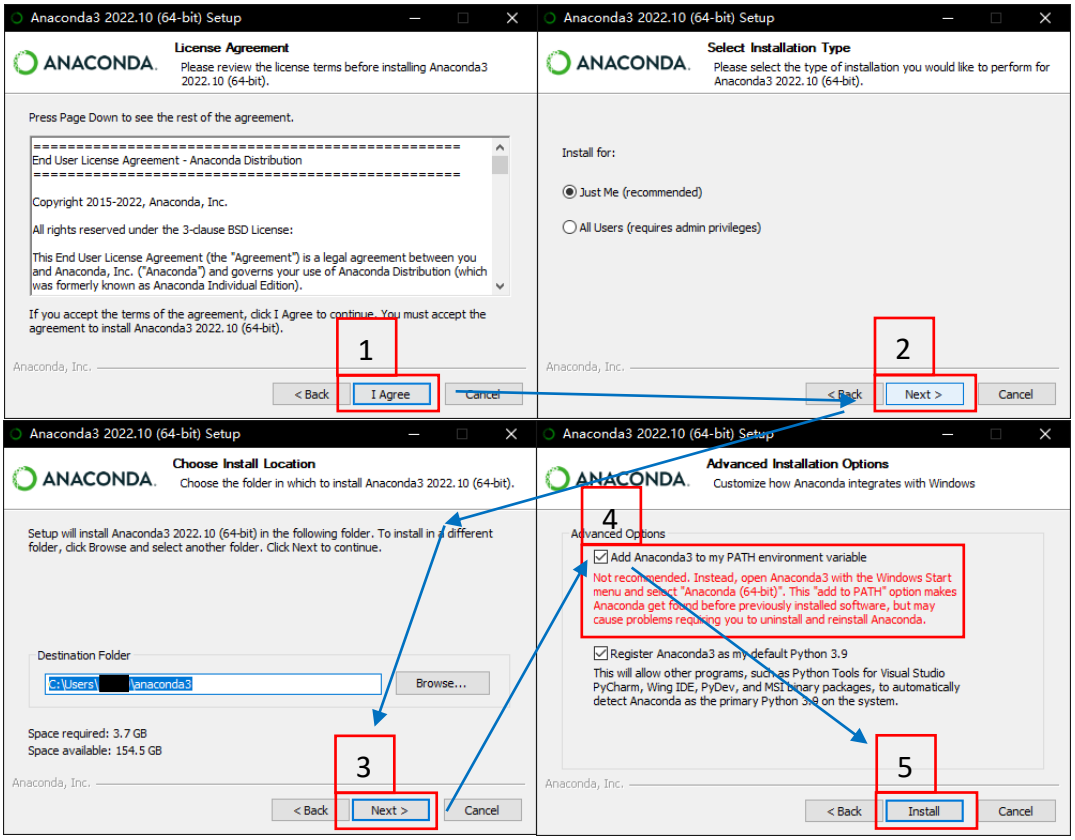


2. Double click the downloaded file, shown in the figure below.

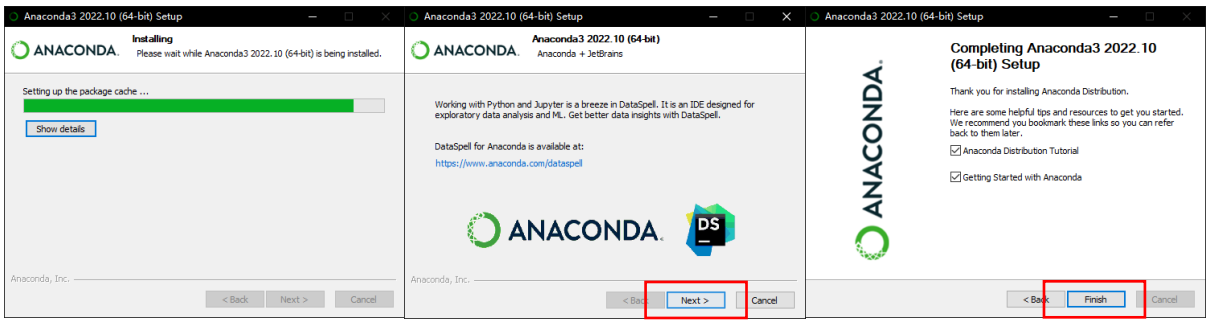
3. Click "Next", as shown in the figure below.



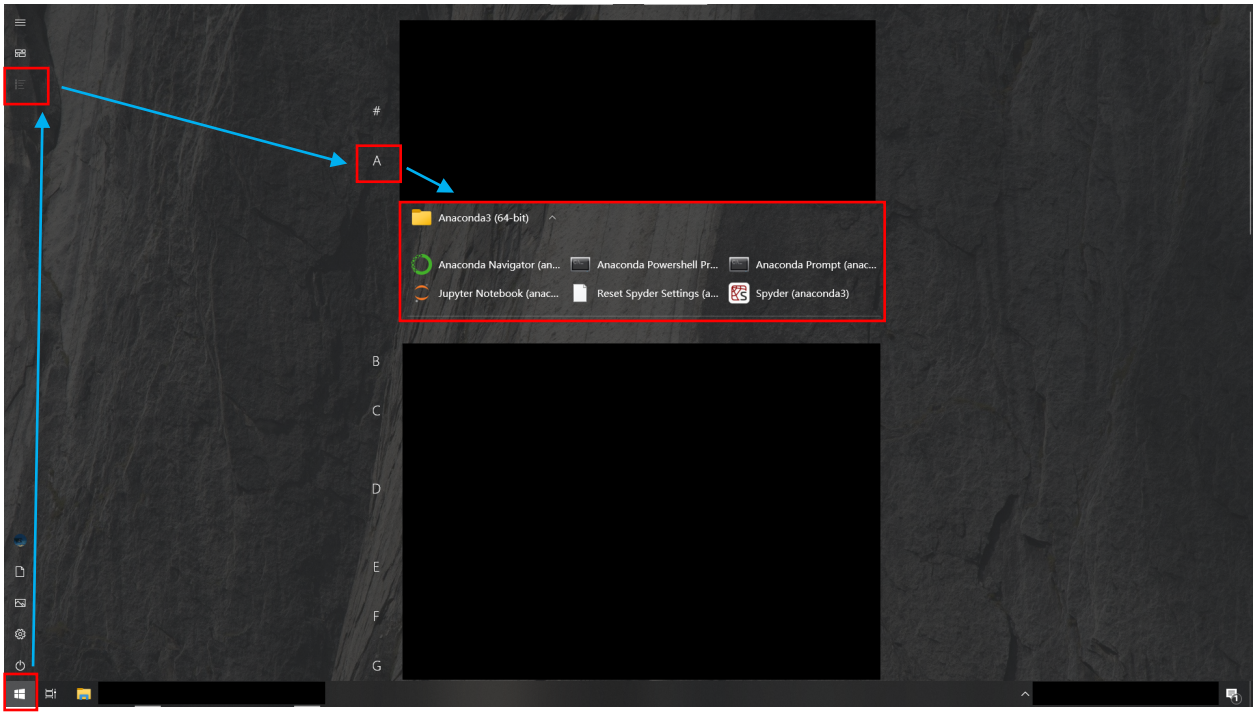
4. Complete the 5 steps as shown in the figures below.



5. Wait until installation complete, then click “Next” 2 times, as shown in the figures below.

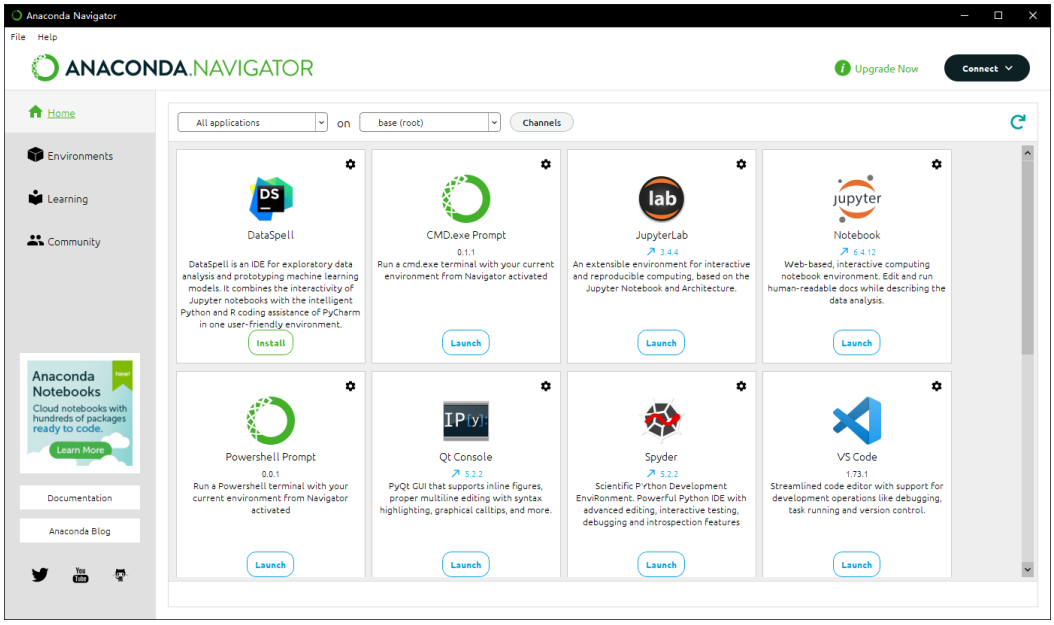


6. Anaconda will appear in the start page, as shown in the figure below.

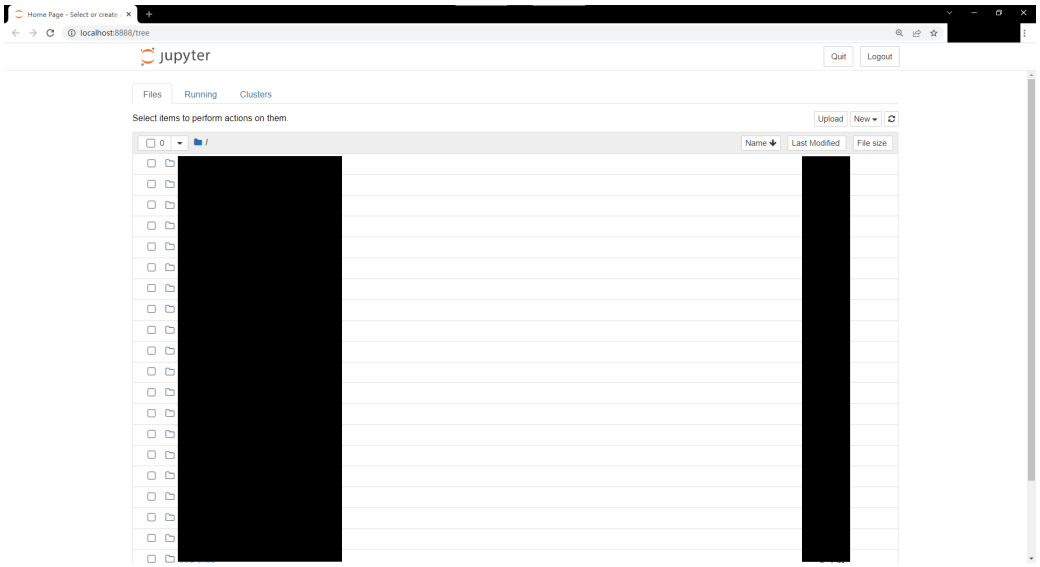


7. *Anaconda Navigator* (by clicking the green icon in the figure above, the layout is shown below) is an integrated platform for you to easily start *Jupyter Notebook, Jupyter Lab, Spyder,* or even *VS Code*. In this course, we recommend you use *Jupyter Notebook.*

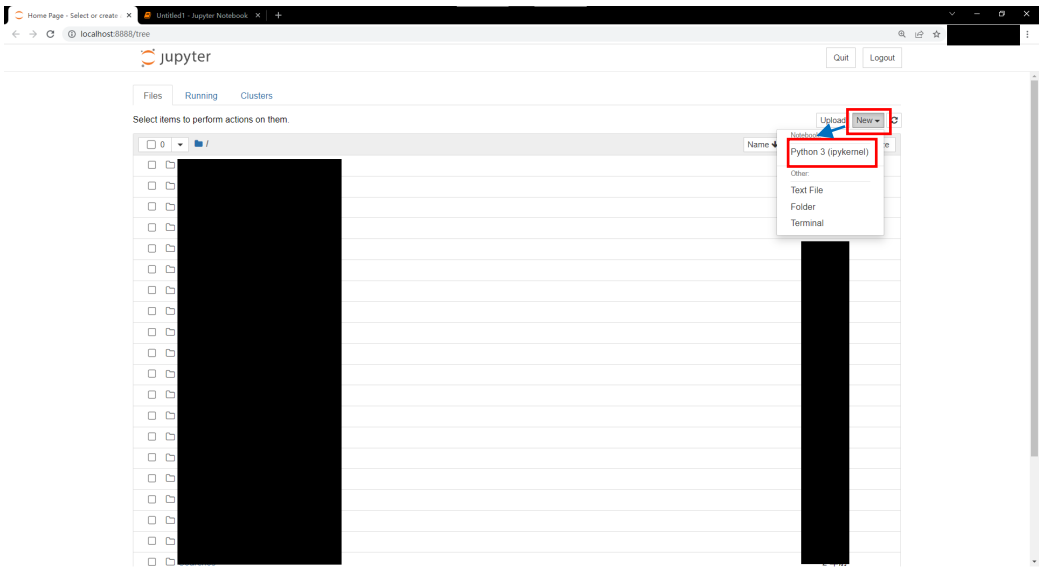
   You can either click the "Lauch" bottom in *Anaconda Navigator* as shown in the figure below, or directly start *Jupyter Notebook* from its shortcut as shown as the orange icon in the figure in step 6.



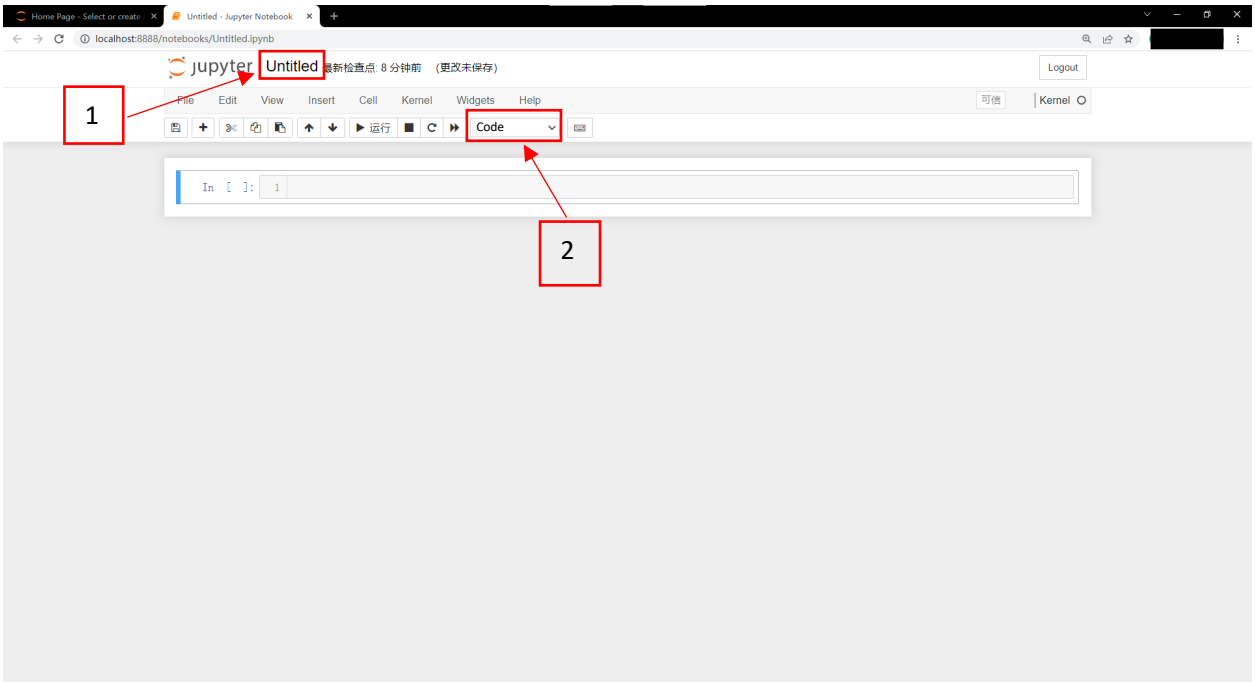
8. *Jupyter Notebook* is a lightweight script editor. You can easily write your code and execute your code here. After launching it, a pop-up window will appear in your default browser. Refer to the figure below.
   Note: I'm hiding my folder layout here, the black boxes are not parts of the Jupyter Notebook.



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

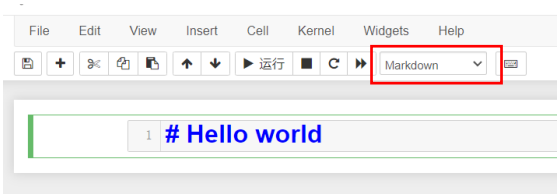


10. A pop-up window may occur and this is the new *Jupyter Notebook* file you just created, as shown in figure below. You can change the file name in position 1.

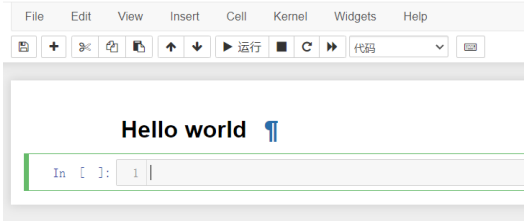


11. To write Python codes, make sure the section box is a code box, by checking the position 2. You can change the setting to "Markdown" if you would like to write some notes.

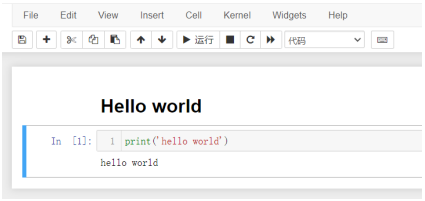
12. Change position 2 shown in the figure at step 10, from "Code" to "Markdown". Then type the following, as shown in the figure below. Then press "**Shift**" AND "**Enter**" on your keyboard to run the code. You can also click "**运行**" or "**Run**" in toolbar at the top.
Note: Markdown is a popular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

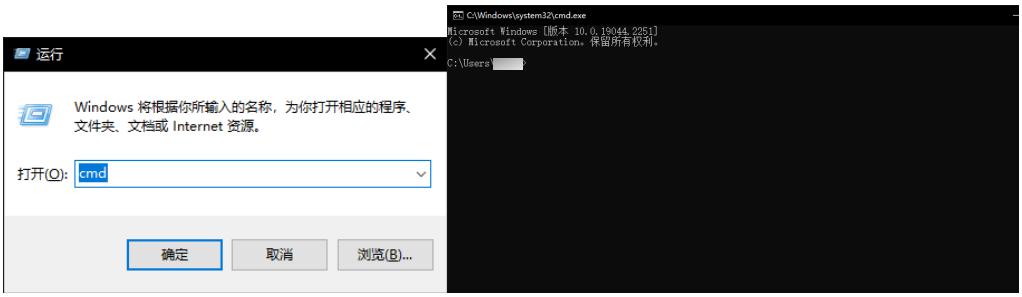


14. Write some code, then press "**Shift**" AND "**Enter**" to execute.

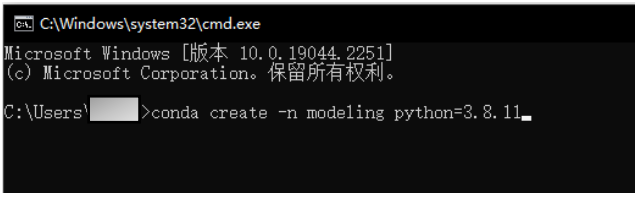


OPTIONAL Section - Create a Designated Virtual Environment

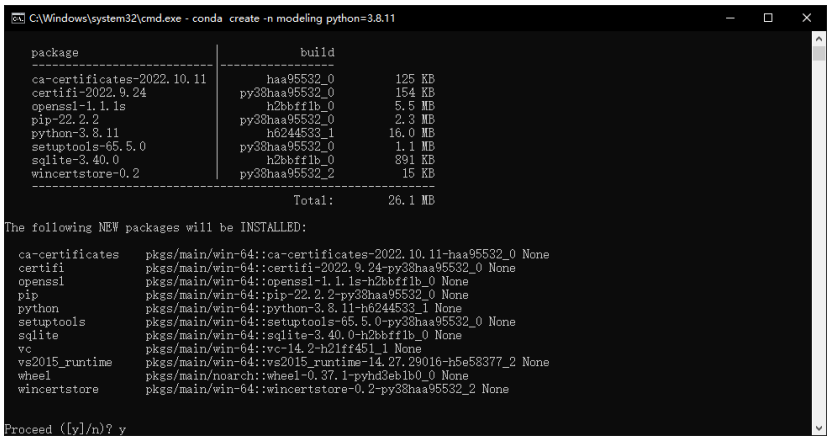
15. Press "**Windows**" and "**R**" on your keyboard, type "cmd" and press "**Enter**" on your keyboard to call the command line window, as shown in the figures below.



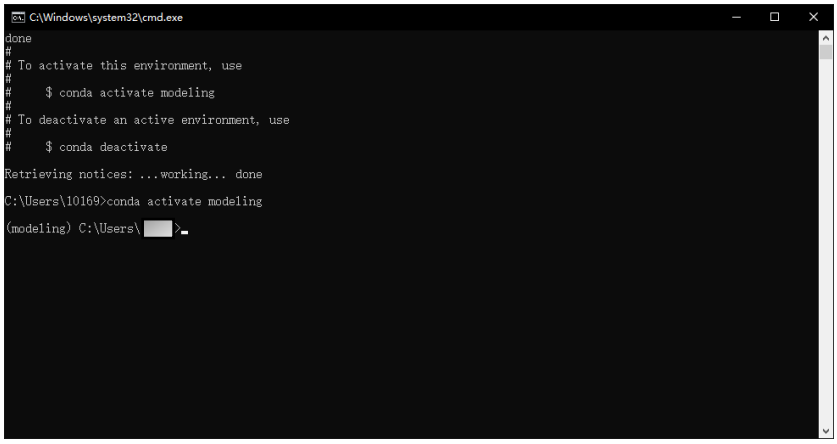
16. Assume that your new virtual environment will be based on Python 3.8.11. Also assume the new environment is called "modeling". Type the following as shown below. Then press "**Enter**".



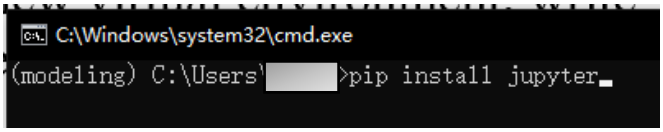
17. Type "y" and press "**Enter**".



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.



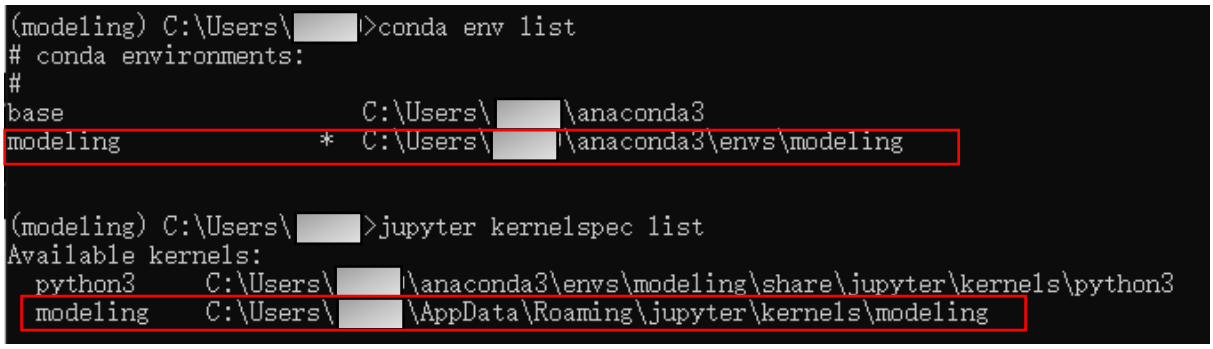
19. Install package "jupyter" by typing "`pip install jupyter`", as shown below. Then press "**Enter**".
Note: make sure that you are under the "modeling" environment.



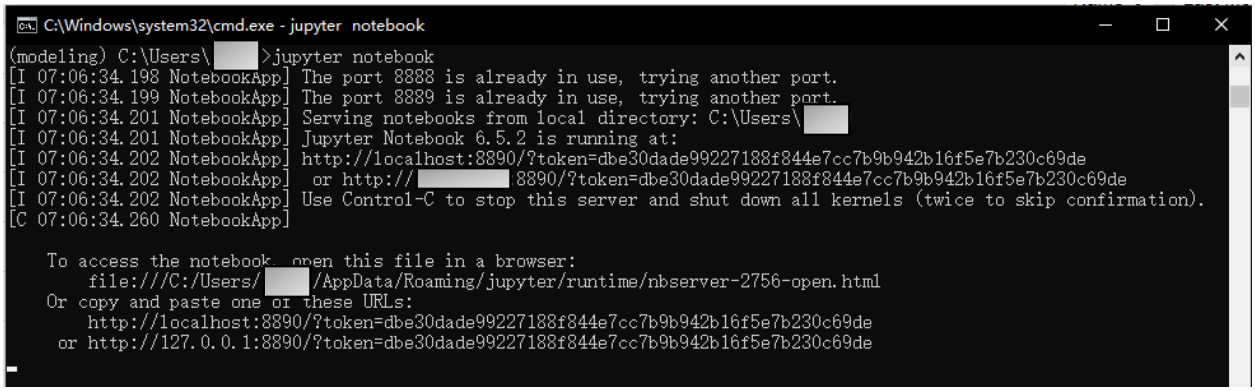
20. Install a new Jupyter Notebook kernel by typing
`python -m ipykernel install --name=modeling --user`
then press "**Enter**".

21. Check the new environment and new kernel, by the following two commands
`conda env list`
`jupyter kernelspec list`

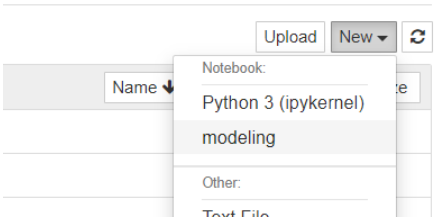
It should give,



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



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`**".