

# Tutorial of Anaconda (Python, Jupyter Notebook) installation

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# 1 Introduction

This is a tutorial on how to properly install Anaconda, Python and Jupyter Notebook, preparing for the Data Science and Machine learning course provided by EOM, SDU.

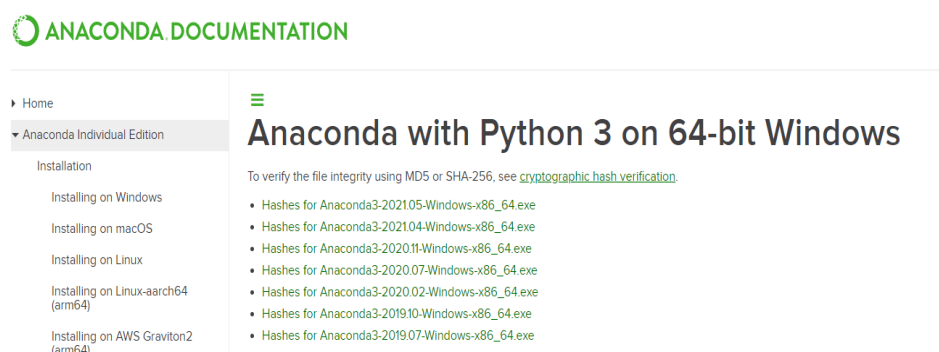
## 2 Install Anaconda

### 2.1 Download Anaconda

Download Anaconda from the following link (This file consists of different installation versions of Anaconda for any OS. **Python and Jupyter Notebook are built-in with this installation file, which means you do not need to download and install them separately**): <https://docs.anaconda.com/anaconda/install/hashe/wins-3-64/>

The following steps show how you can properly download the desired file:

- a) Click on the provided link, select one of the executive files based on your own OS system. Here I use the 64-bit window OS as an example. You will see the same webpage, as shown in the following image.



- b) Select the latest version and go to the specific web page, copying the md5 string and then clicking on the installer files link, as shown below.

## Hashes for Anaconda3-2021.05-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>

2<sup>nd</sup> : click on this link

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or "checksums") below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961728.5321963
time file was last modified, in human readable format	2021-05-13 22:08:48
exact file size, in bytes	500375944
file size, in human friendly format	477.2 MiB
md5	d62d396a00c6dd51ebf70cde1b5f4c51
sha256	93db42390444019e98b442ab281e1091671b6dce64daf08928d337ffc83cf3d2

1<sup>st</sup>: copy the md5 string

c) Look up the specific executive file by the copied md5, and download the file, as show below.

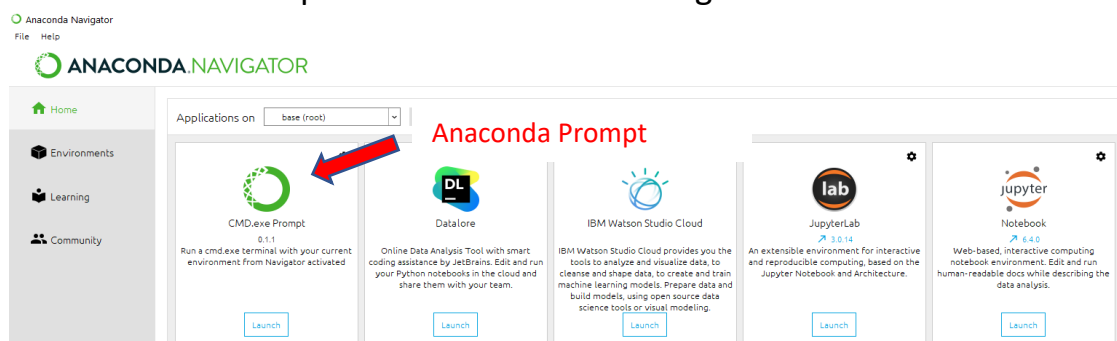
← → ↻	repo.anaconda.com/archive/		
Anaconda3-2021.05-Linux-x86_64.sh	544.4M	2021-05-13 22:08:47	25e3e0ae890545000ac0f5c93f89c4b7
Anaconda3-2021.05-MacOSX-x86_64.pkg	440.3M	2021-05-13 22:08:47	0198acd5268012b81c66d11b9ddeb2c8
Anaconda3-2021.05-MacOSX-x86_64.sh	432.7M	2021-05-13 22:08:47	5e0e2b3a39f58d9b2458670a95f7625b
Anaconda3-2021.05-Windows-x86.exe	408.5M	2021-05-13 22:08:48	538586430492ddd24b5cb815034715ab
Anaconda3-2021.05-Windows-x86_64.exe	477.2M	2021-05-13 22:08:48	d62d396a00c6dd51ebf70cde1b5f4c51
Anaconda3-4.0.0-Linux-x86.sh	336.9M	2016-03-29 11:15:03	c88cbe27cc8fb4976e6bd38068cc57d6
Anaconda3-4.0.0-Linux-x86_64.sh	398.4M	2016-03-29 11:15:02	546d1f02597587c685fa890c1d713b51
Anaconda3-4.0.0-MacOSX-x86_64.pkg	341.5M	2016-03-29 11:16:08	b25796c49f9d3b47561c6eac9bbc77f0

## 2.2 Install Anaconda

Install the version of Anaconda which you have downloaded, following the instructions on the download page. **Note that** the latest version of Python will be installed automatically together with Anaconda.

## 2.3 Anaconda Prompt

Open "Anaconda Prompt" in the "Anaconda Navigator".



## 2.4 Verify Anaconda

Type the command to verify if Anaconda and Python are installed.

```
(base) C:\Users\jiec>python --version
Python 3.8.10
```

```
(base) C:\Users\jiec>conda --version
conda 4.10.3
```

## 2.5 Install completed

Congratulations, you have installed Anaconda, Python and Jupyter Notebook successfully.

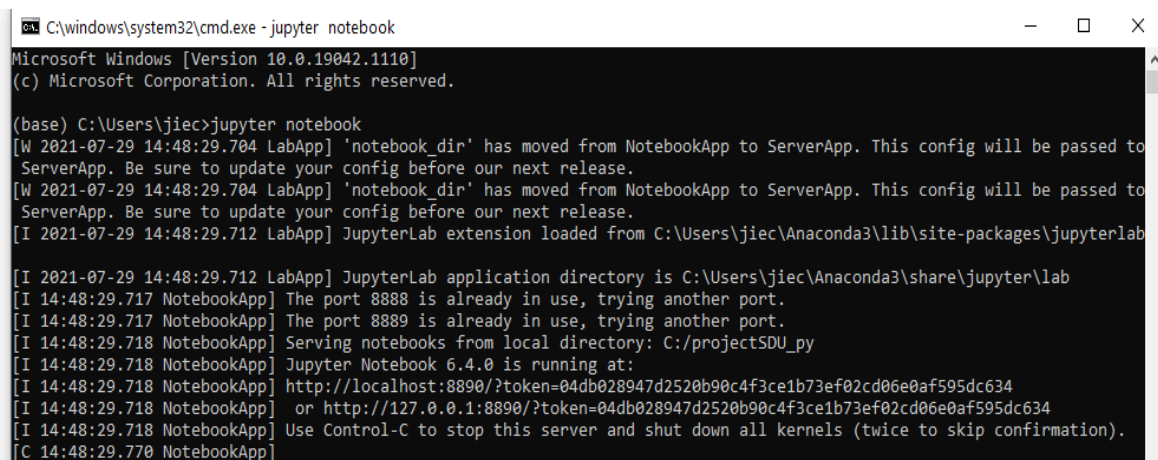
## 3 Run the Notebook

In this section, I will show you how to run the Notebook properly after installation. Basically, there are two options you can use to open the Notebook for using. You may choose either of them.

**Option 1:** Type the command to start the Jupyter Notebook (Open the “Anaconda Prompt” in the “Anaconda Navigator”).)

```
(base) C:\Users\jiec>jupyter notebook
```

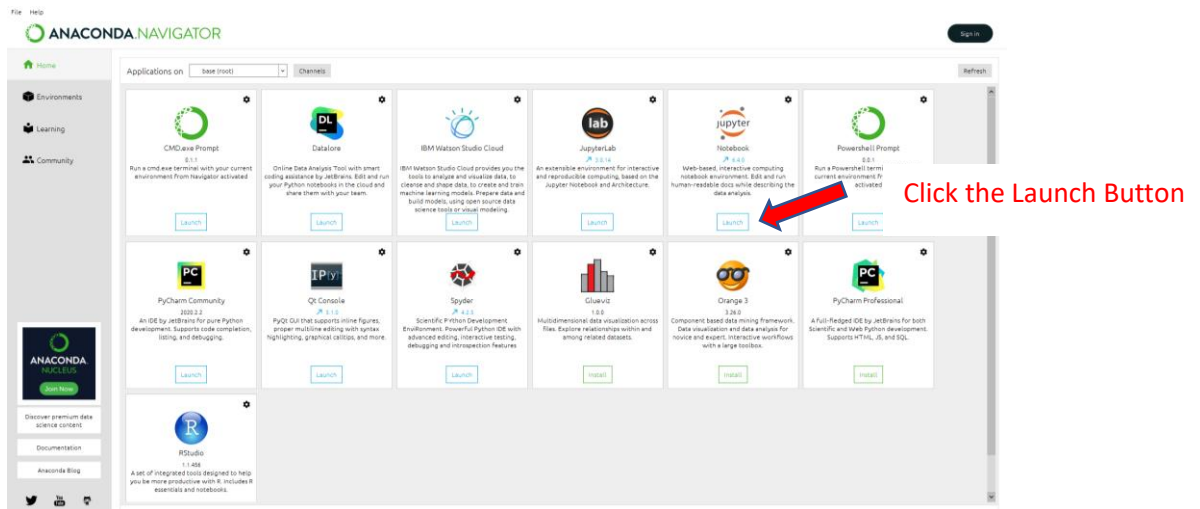
This will print some information about the Notebook server in your terminal, including the URL of the web application (by default, <http://localhost:8888>):



```
C:\windows\system32\cmd.exe - jupyter notebook
Microsoft Windows [Version 10.0.19042.1110]
(c) Microsoft Corporation. All rights reserved.

(base) C:\Users\jiec>jupyter notebook
[W 2021-07-29 14:48:29.704 LabApp] 'notebook_dir' has moved from NotebookApp to ServerApp. This config will be passed to
ServerApp. Be sure to update your config before our next release.
[W 2021-07-29 14:48:29.704 LabApp] 'notebook_dir' has moved from NotebookApp to ServerApp. This config will be passed to
ServerApp. Be sure to update your config before our next release.
[I 2021-07-29 14:48:29.712 LabApp] JupyterLab extension loaded from C:\Users\jiec\Anaconda3\lib\site-packages\jupyterlab
[I 2021-07-29 14:48:29.712 LabApp] JupyterLab application directory is C:\Users\jiec\Anaconda3\share\jupyter\lab
[I 14:48:29.717 NotebookApp] The port 8888 is already in use, trying another port.
[I 14:48:29.717 NotebookApp] The port 8889 is already in use, trying another port.
[I 14:48:29.718 NotebookApp] Serving notebooks from local directory: C:/projectSDU_py
[I 14:48:29.718 NotebookApp] Jupyter Notebook 6.4.0 is running at:
[I 14:48:29.718 NotebookApp] http://localhost:8890/?token=04db028947d2520b90c4f3ce1b73ef02cd06e0af595dc634
[I 14:48:29.718 NotebookApp] or http://127.0.0.1:8890/?token=04db028947d2520b90c4f3ce1b73ef02cd06e0af595dc634
[I 14:48:29.718 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 14:48:29.770 NotebookApp]
```

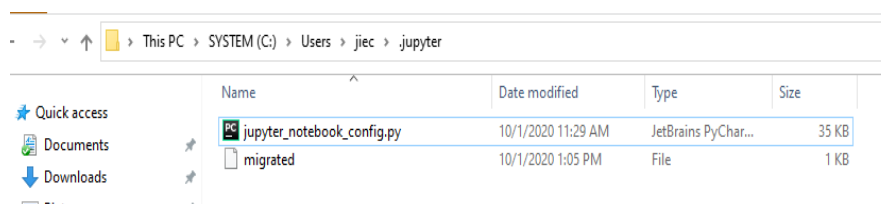
**Option 2:** Use the Anaconda navigator to start the Jupyter Notebook. The navigator is illustrated below.



### 3.1 Change the default work directory

Obviously, the default local directory when we start the Notebook is not what we want for our own project. Therefore, we need to change the default work directory. The procedure is shown in the following steps.

- Open Anaconda Prompt and run: `jupyter notebook --generate-config`.
- This writes a file to `C:\Users\username\.jupyter\jupyter_notebook_config.py`. An example is presented below:



- Browse to the file location and open it in an Editor
- Search for the following line in the file: `#c.NotebookApp.notebook_dir = "`
- Replace the line by the new work directory you want to have, as shown below

```

The extensions
# will be loaded in alphabetical order.
#c.NotebookApp.nbserver_extensions = {}

## The directory to use for notebooks and kernels.
c.NotebookApp.notebook_dir = 'C:/projectSDU_py'

## Whether to open in a browser after starting. The specific
browser used is
# platform dependent and determined by the python standard

```

The following links provide details so that you can go through them if you are interested in:

Install Jupyter Notebook

<https://test-jupyter.readthedocs.io/en/latest/install.html>

Run Jupyter Notebook

<https://test-jupyter.readthedocs.io/en/latest/running.html#running>

How to change the Jupyter start-up folder (Stack Overflow)

<https://stackoverflow.com/questions/35254852/how-to-change-the-jupyter-start-up-folder#:~:text=In%20the%20start%20menu%2C%20right,new%20%22D%3A%5Cpath%22%20.>

## 4 Install the required Python packages

As a data scientist, the popular Python packages you need to install include, but not limited to, **Pandas, Numpy, Matplotlib, Scikit-learn and Keras**, etc. When we adopt the method in Section 1 to install Anaconda, some default packages such as Numpy and Pandas are automatically installed. Thus, you can first check if these packages are available. By using this command: `Conda list`, you will display all the installed Python packages, as shown below.

```

(base) C:\Users\jiec>conda list
# packages in environment at C:\Users\jiec\Anaconda3:
#
# Name                   Version             Build           Channel
_anaconda_depends        2020.07             py38_0
_ipyw_jlab_nb_ext_conf   0.1.0               py38_0
alabaster                0.7.12             pyhd3eb1b0_0
altgraph                 0.17               pypi_0         pypi
anaconda                 custom             py38_1
anaconda-client          1.8.0              py38haa95532_0
anaconda-navigator       2.0.4              py38_0
anaconda-project         0.10.1             pyhd3eb1b0_0
anyio                    2.2.0              py38haa95532_2
appdirs                  1.4.4              pypi_0         pypi
argh                     0.26.2             py38_0
argon2-cffi              20.1.0             py38h2bbff1b_1
asn1crypto               1.4.0              py_0

```

Other useful Conda commands are listed here:

`conda install pandas` — Download and install the pandas package from the main conda channel.

`conda install -c conda-forge pandas` — Download and install the pandas package from the main conda-forge channel.

`conda update pandas` — Download and install the latest pandas package from the main conda channel.

`conda update all` — Download and install the the latest versions of all installed packages. Can be very slow if you have a lot of outdated packages.

`conda uninstall pandas` — Uninstall the pandas package in your conda environment.