동국대학교
dongguk university

Introduction to Programming Environment

Machine Learning

Notice

- Code Practice
  - It is Python programming practice of what you have learned in the lecture
  - Code practice file (Week**_given_code.ipynb) will be provided. It consists of practice code template & Quiz with desired results of each cell
    1. Follow TA's explanation and fill the '**None**' parts (~ 1 hour)
    2. Write the codes for Quiz yourself (~ 1 hour)
    3. TA and assistants will help programming if you need
  - After you completed each practice, summit your practice code file(Week**_studentID_name.ipynb) to e-class by Saturday night
  - Some part of the Quiz may be include in homework or exam later
- Homework
  - Every 3 weeks, homework will be given
  - It covers contents of last 3 weeks lecture and code practice

What is Python?

- Python
  - High-level programming language released in 1991, which was created by Guido van Rossum
  - Python is interpretive, object-oriented, dynamic typed(check the data type in run time) and interactive programming language
  - Python supports multiple programming paradigms, including procedural, object-oriented, and functional programming
  - The Zen of Python
    - Beautiful is better than ugly
    - Explicit is better than implicit
    - Simple is better than complex
    - Flat is better than nested
    - Sparse is better than dense
    - Readability counts
    - …

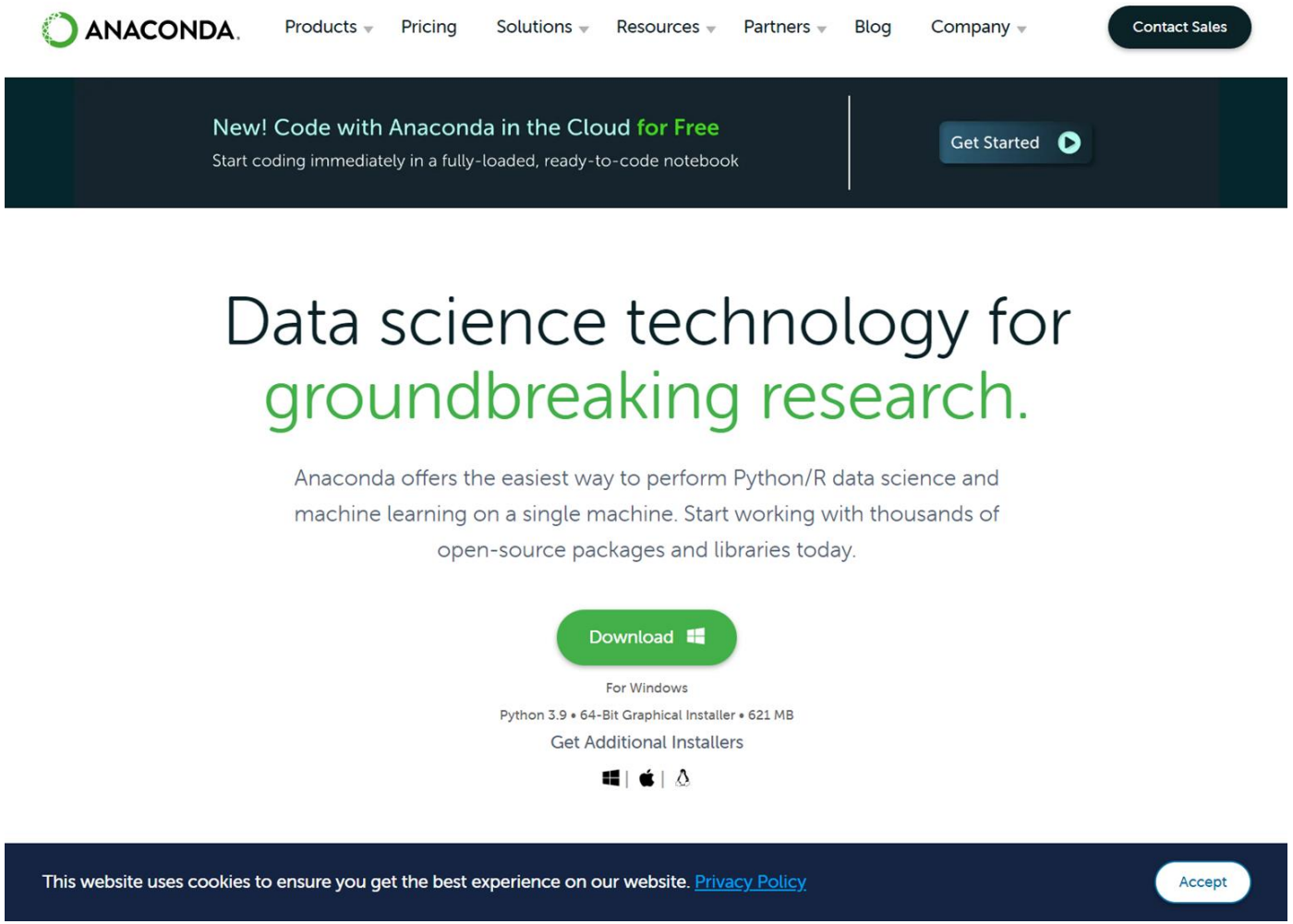
https://www.python.org/dev/peps/pep-0020

Anaconda

- Anaconda
  - A free and open-source distribution of the Python programming languages for scientific computing
  - Python + Libraries + Tools
- Typical AI/ML-related libraries supported by Anaconda
  - Numpy
    - It provides multidimensional array object, vector operation and linear algebra
  - Pandas
    - It provides 'Dataframe' to address the type of table data
  - Matplotlib
    - It provides several tools of drawing graph, chart and visualization
  - Scikit-Learn
    - It provides packages of some machine Learning algorithms and various models of machine learning functions

https://www.anaconda.com/

www.anaconda.com



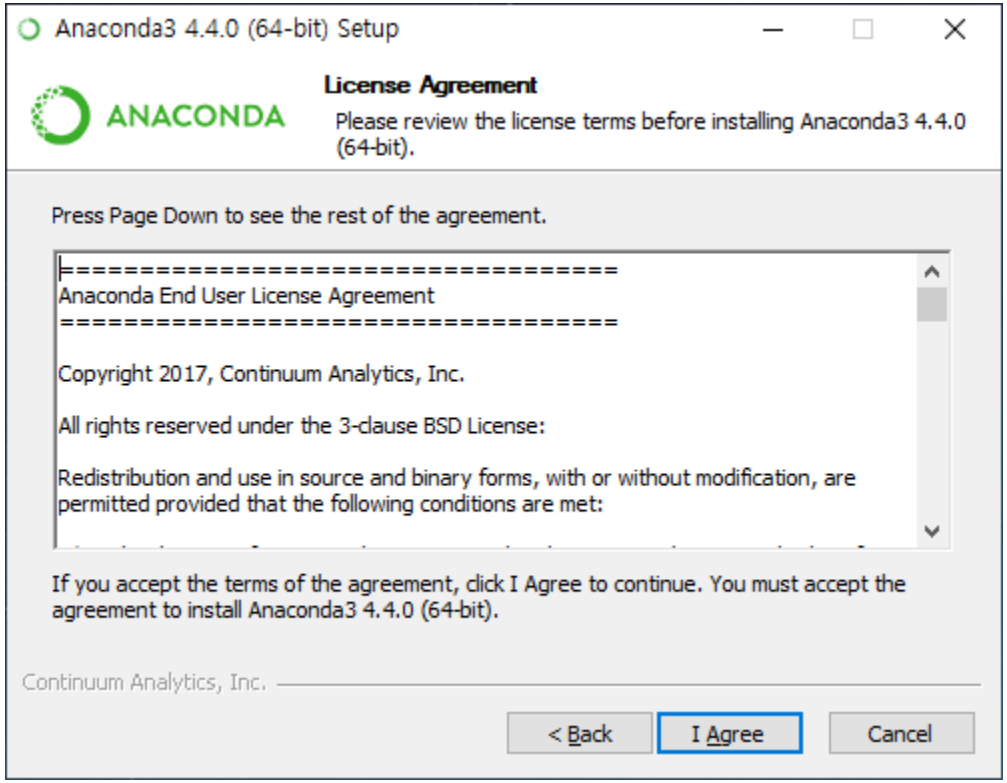
https://www.anaconda.com/

How to Install Anaconda

3. Run the install programs, click the “next” button.

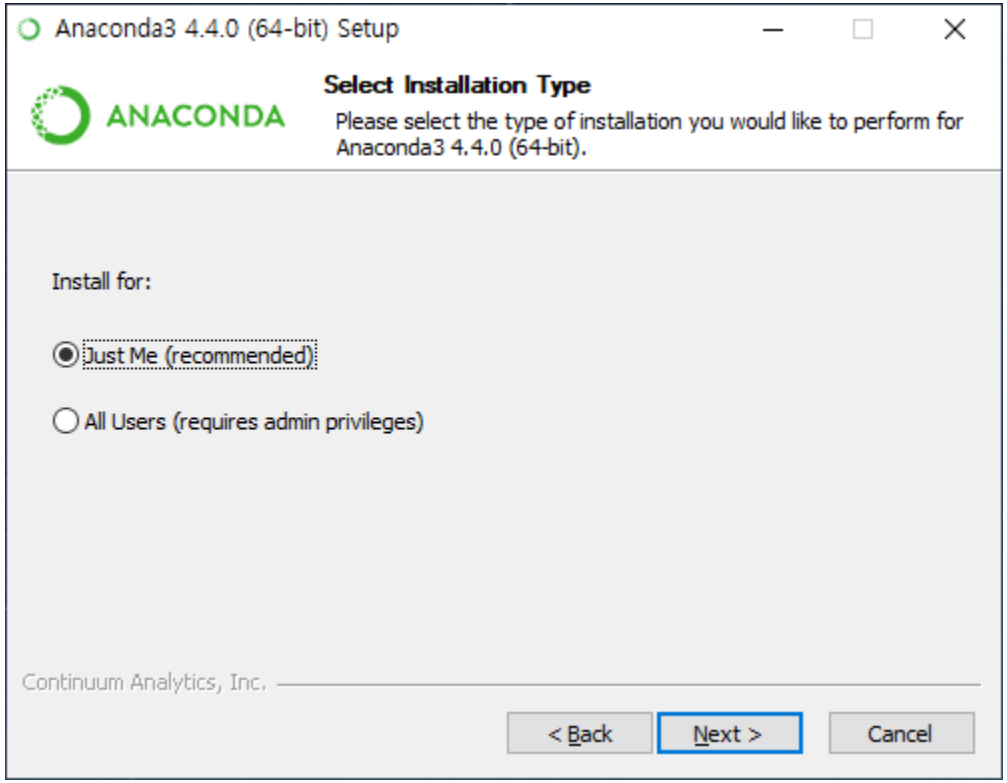
How to Install Anaconda

4. Click “I Agree” button



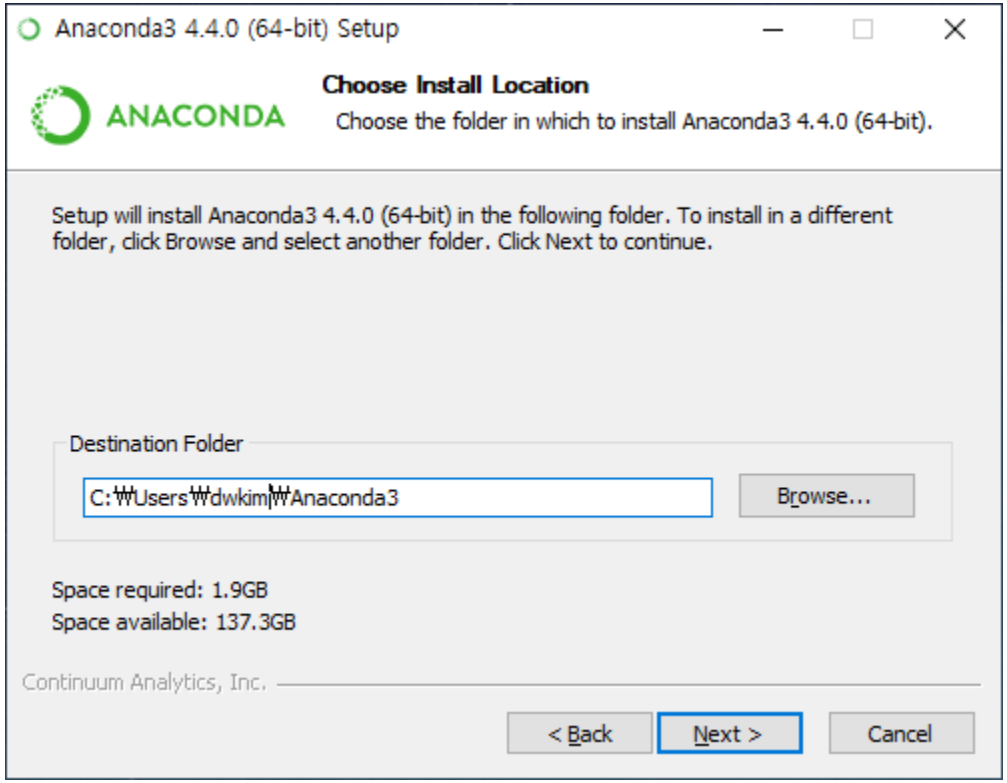
How to Install Anaconda

5. Go on with default value(“Just Me”), and Click the “next” button



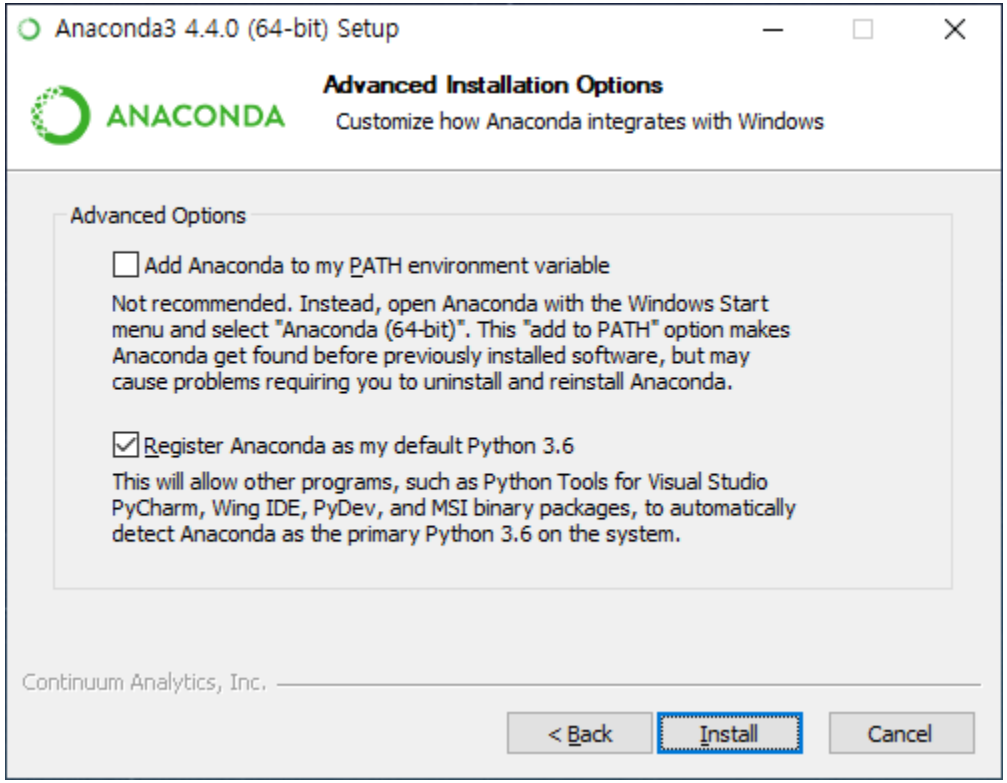
How to Install Anaconda

6. Click the “next” button



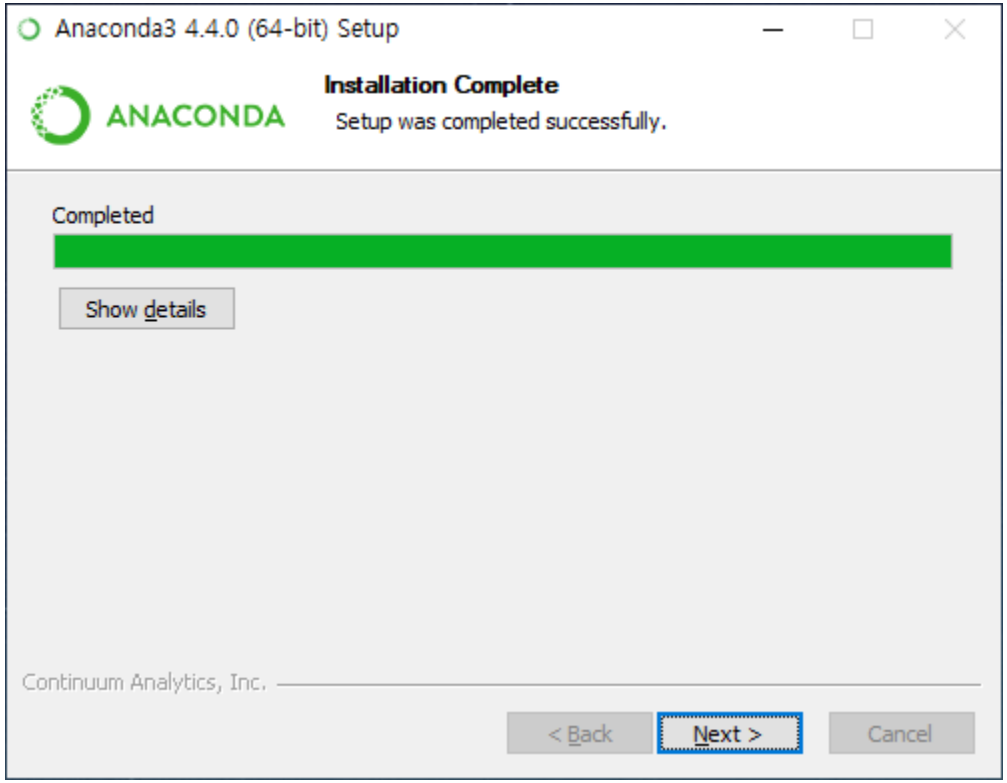
How to Install Anaconda

7. Go on with default value, Click the “Install” button



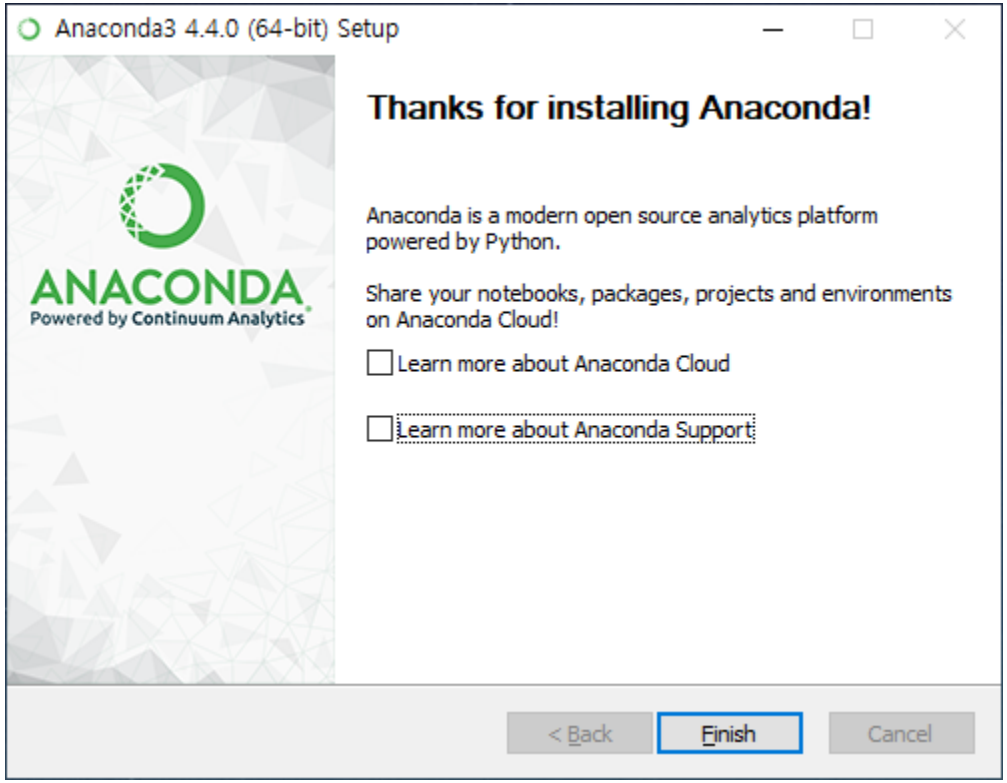
How to Install Anaconda

8. Install Complete, Click the “Next”.



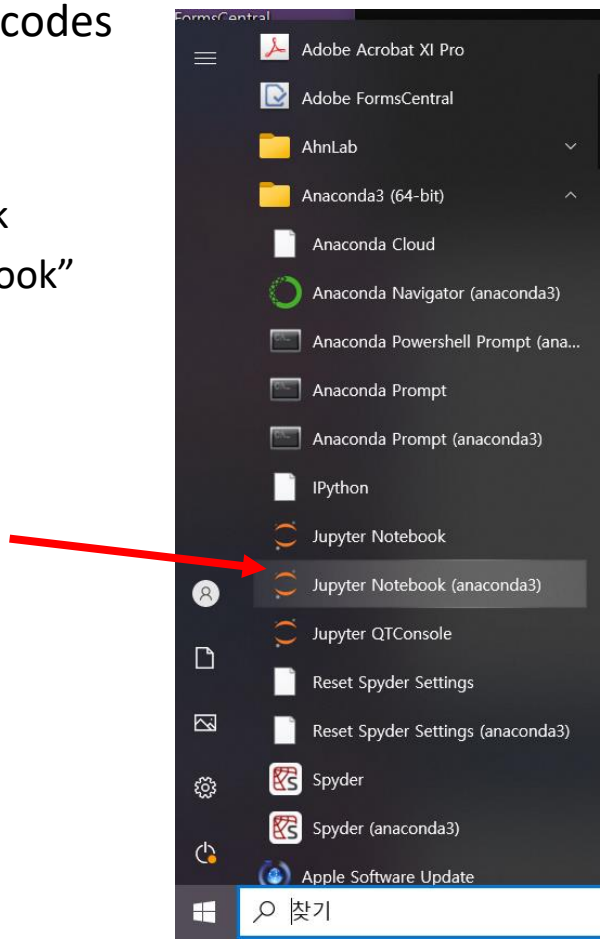
How to Install Anaconda

9. Uncheck all boxes, And Click the “Finish”.



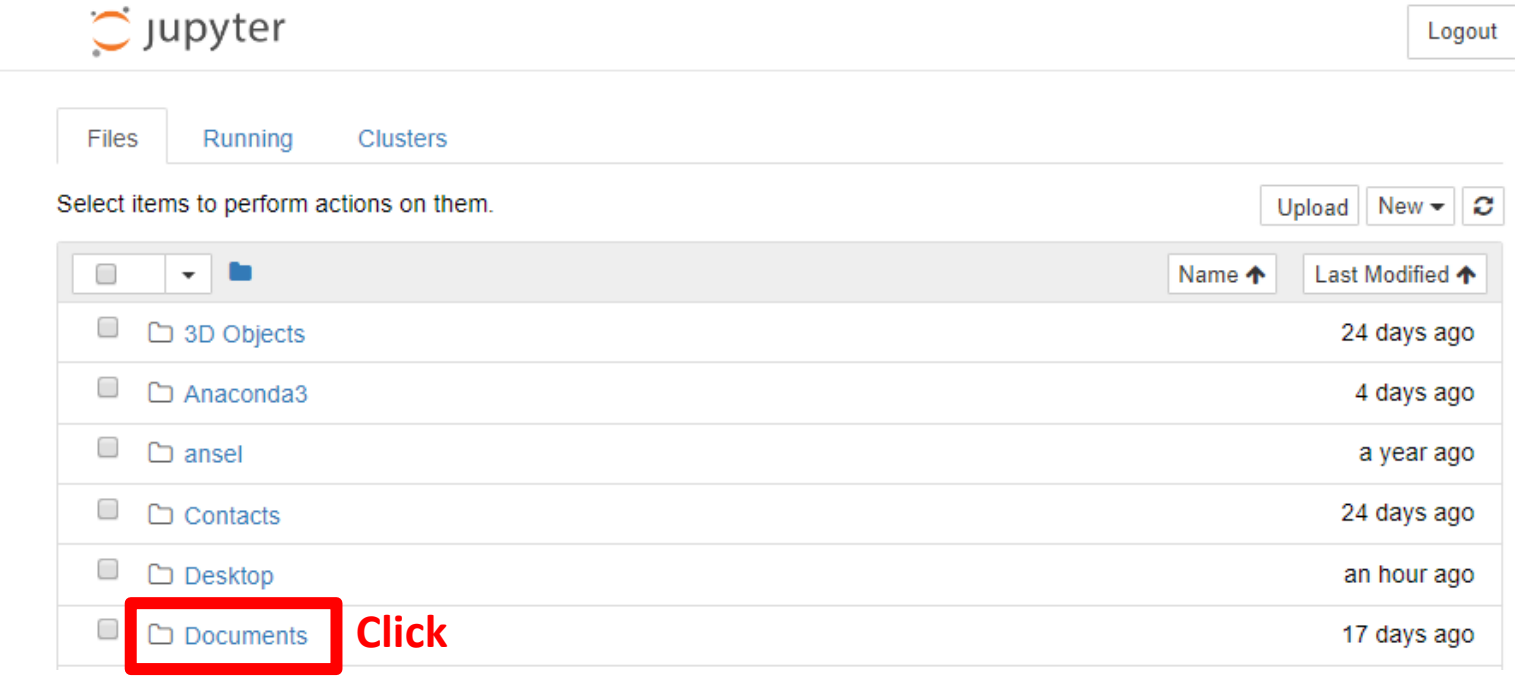
What is Jupyter Notebook?

- Jupyter Notebook
  - It is a tool for writing codes and executing the codes in the web browser such as Chrome, Edge etc.
  - Starting Jupyter Notebook
    - Start– Anaconda3 – Click the Jupyter Notebook
    - Run – Anaconda Prompt –Type “jupyter notebook” and enter



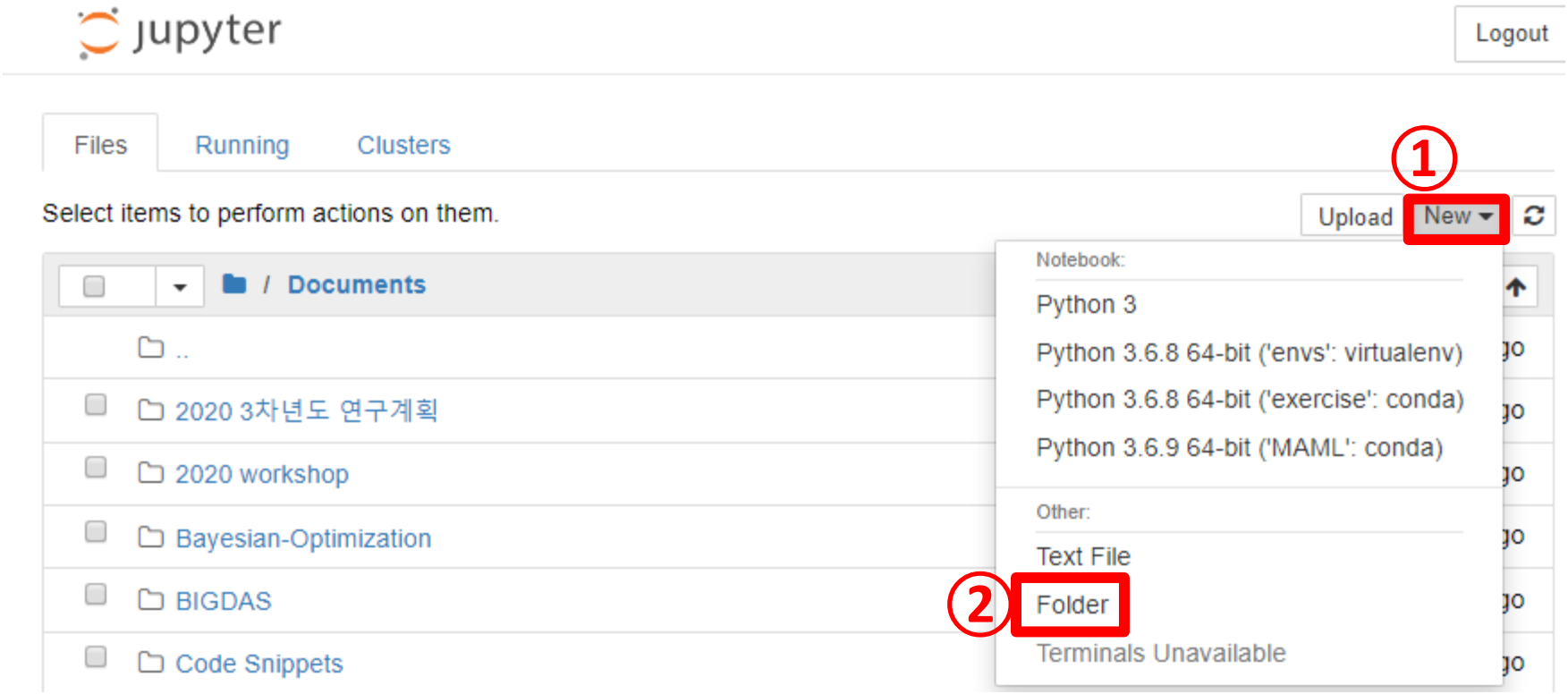
How to create folder and file

1. We will make a workspace folder for this lecture named “2023ML”, on this path.
   “C:\Users\{UserName}\Documents\2023ML”
   you can follow this step or use other file explorer(It will be much easier than this).



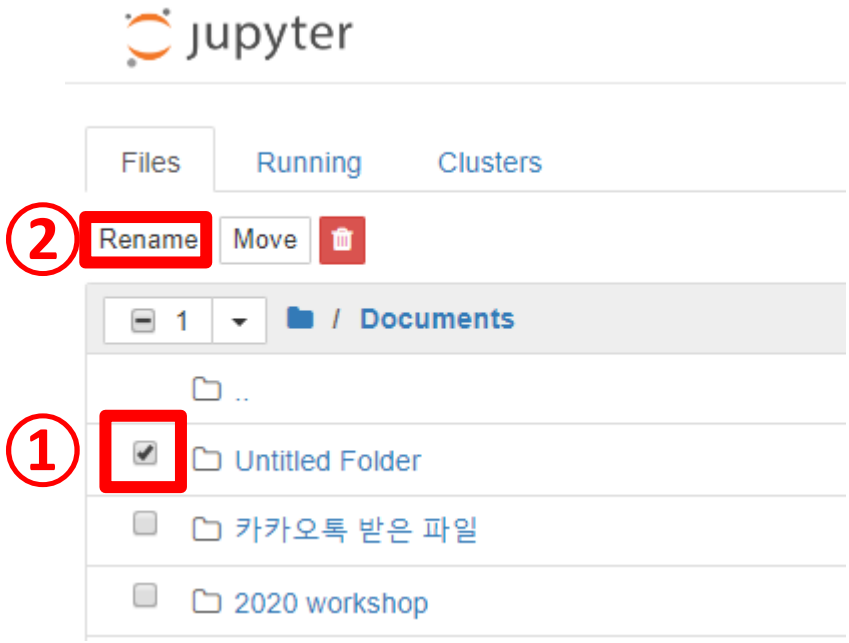
How to create folder and file

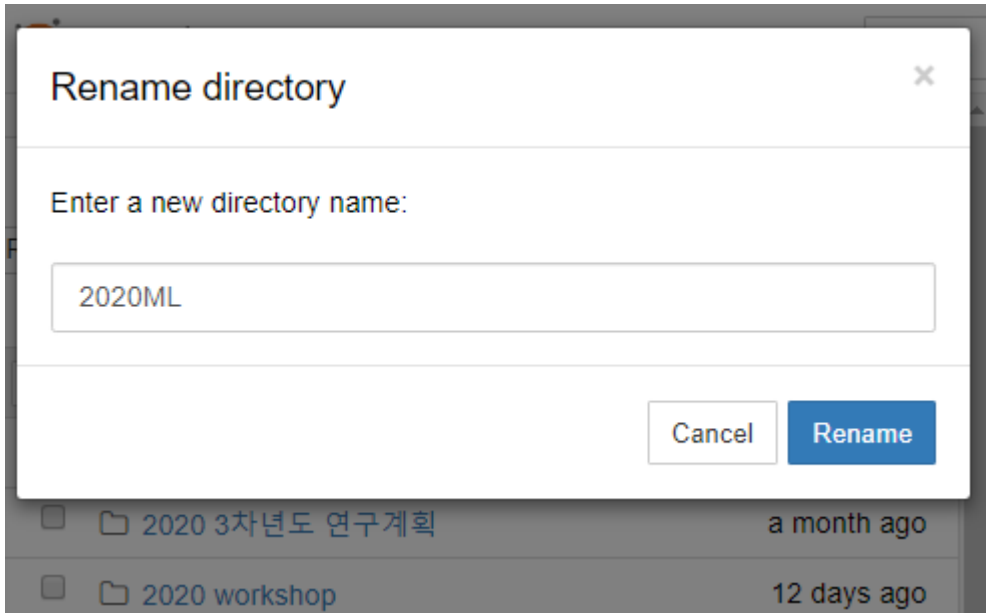
2. Click “New” and “Folder” to make the “Untitled Folder”



How to create folder and file

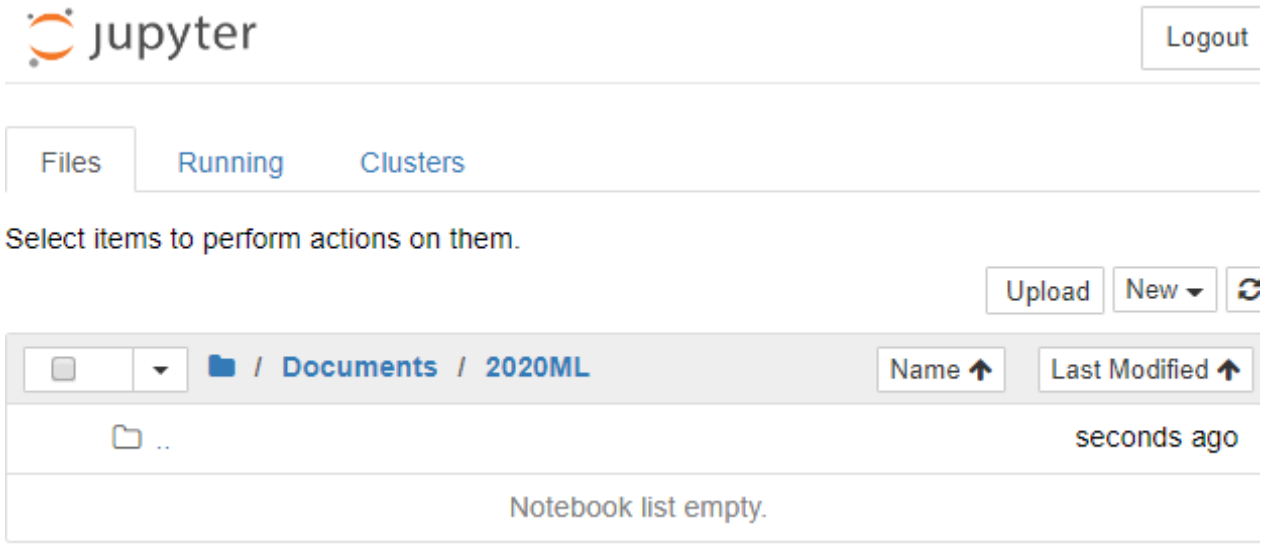
3. Check the box of “Untitled Folder” and Click the “Rename” and type “2023ML”.





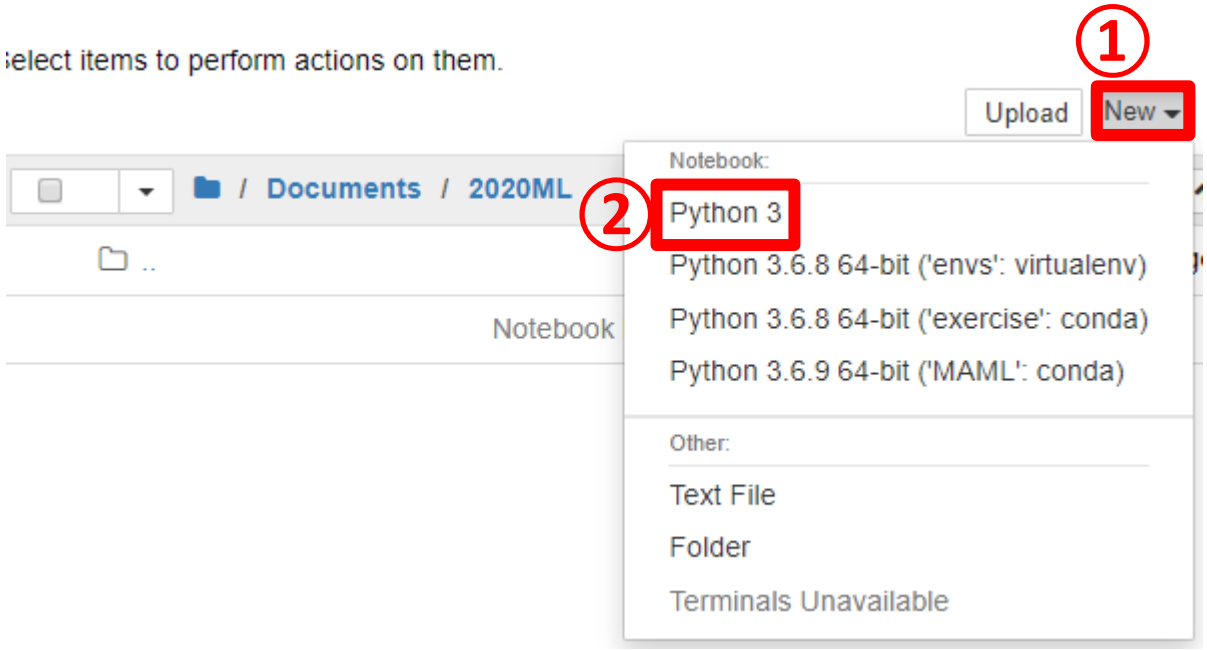
How to create folder and file

4. “2023ML” folder has been created.



How to create folder and file

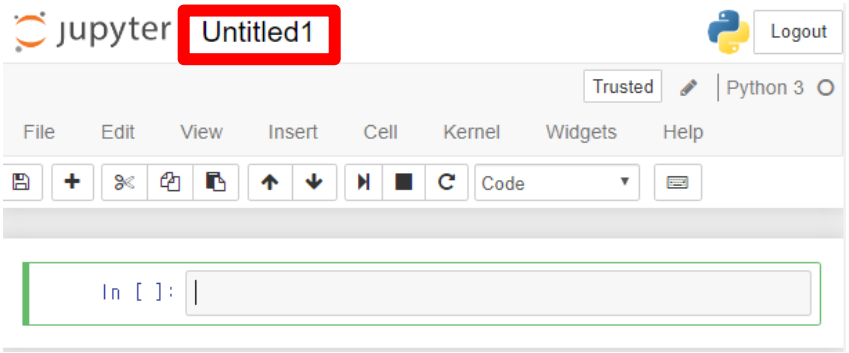
5. Let's create test file(*.ipynb(ipython notebook file)).
   Click "New" and "Python3"

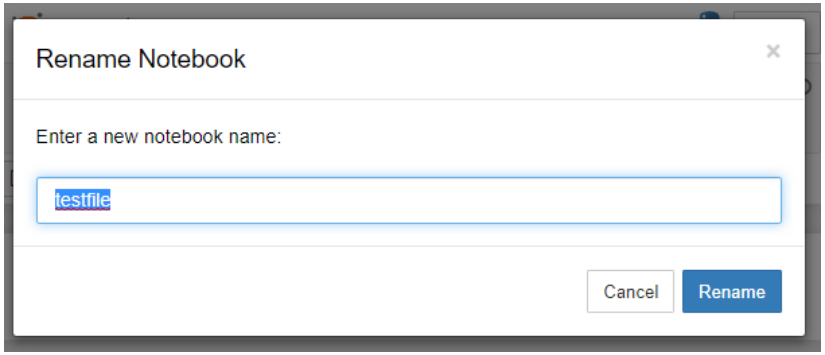


How to create folder and file

6. “Untitled1.ipynb” file has been created.

   You can modify the file name by just click the title(Untitled1).

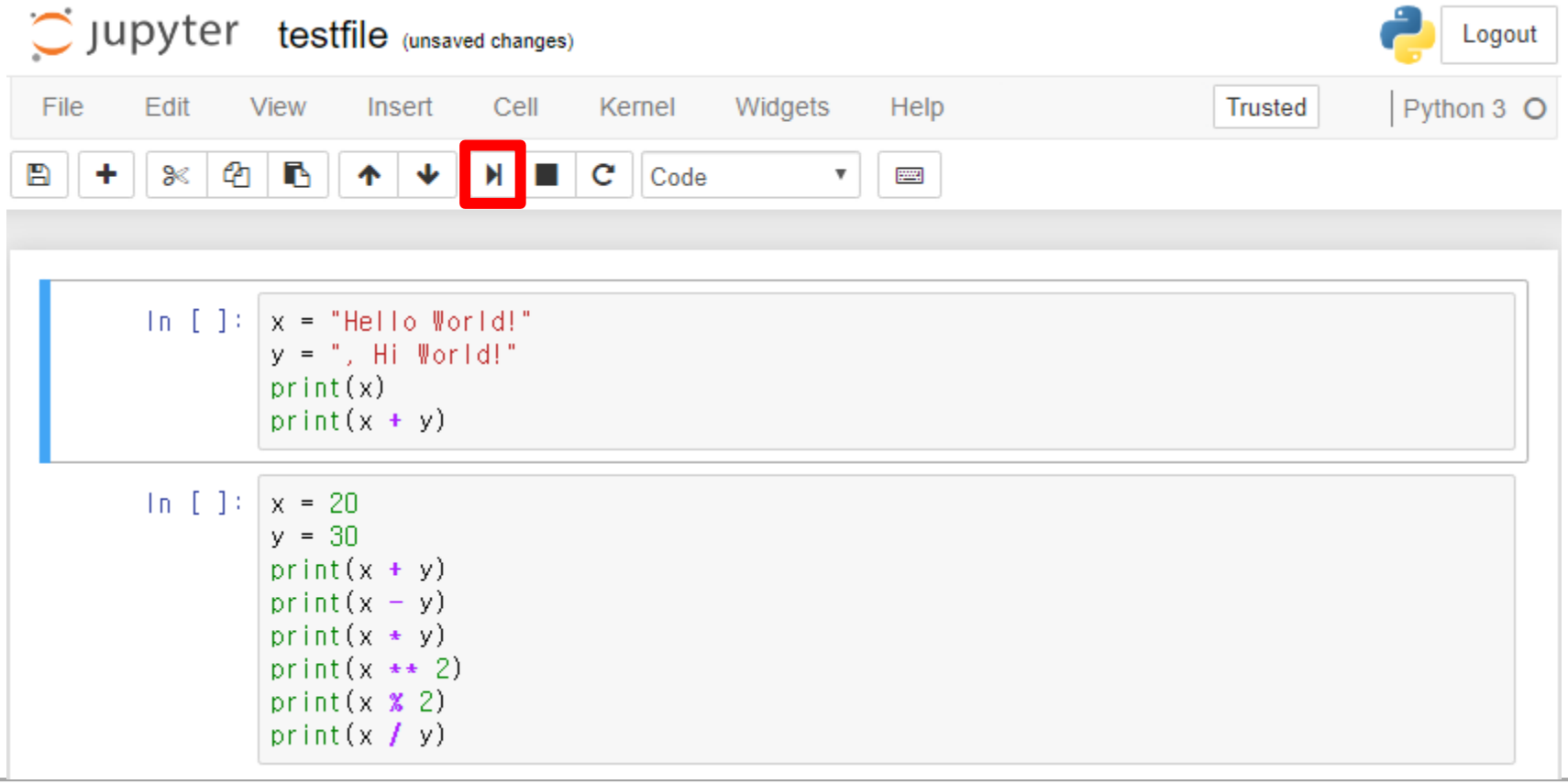




How to create folder and file

7. Let's run some sample code.

   Type this code, and run the code by click ⏭ button.



How to create folder and file

8. Because python is interpreter language, We can run these codes cell by cell.

In [1]:
```
x = "Hello World!"
y = ", Hi World!"
print(x)
print(x + y)
```

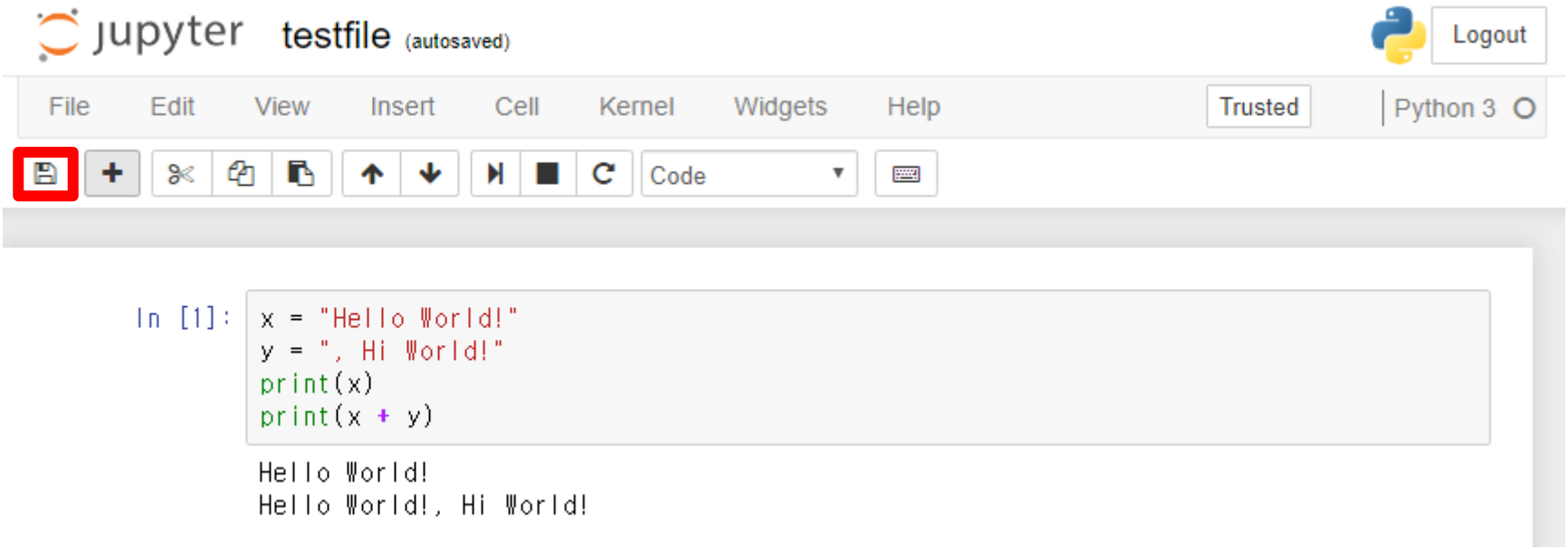
```
Hello World!
Hello World!, Hi World!
```

In [2]:
```
x = 20
y = 30
print(x + y)
print(x - y)
print(x * y)
print(x ** 2)
print(x % 2)
print(x / y)
```

```
50
-10
600
400
0
0.6666666666666666
```

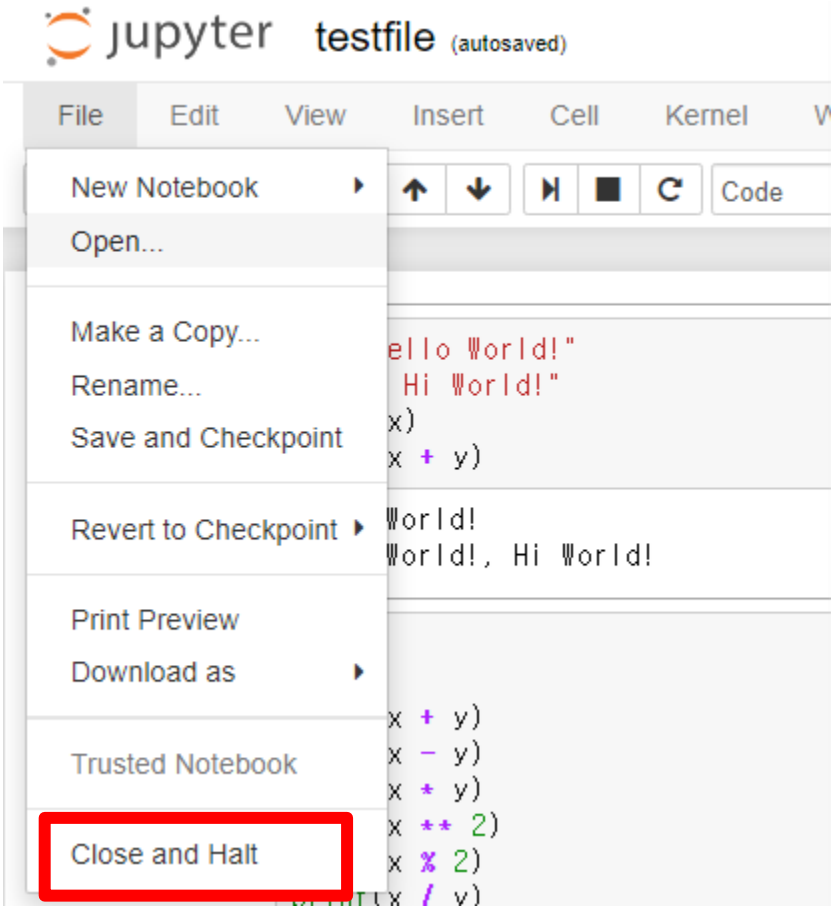
How to save and delete file

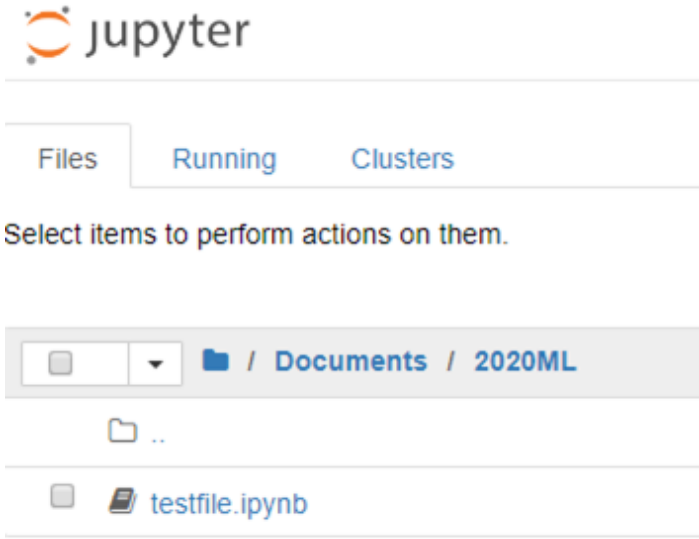
1. To save this file, just click 



How to save and delete file

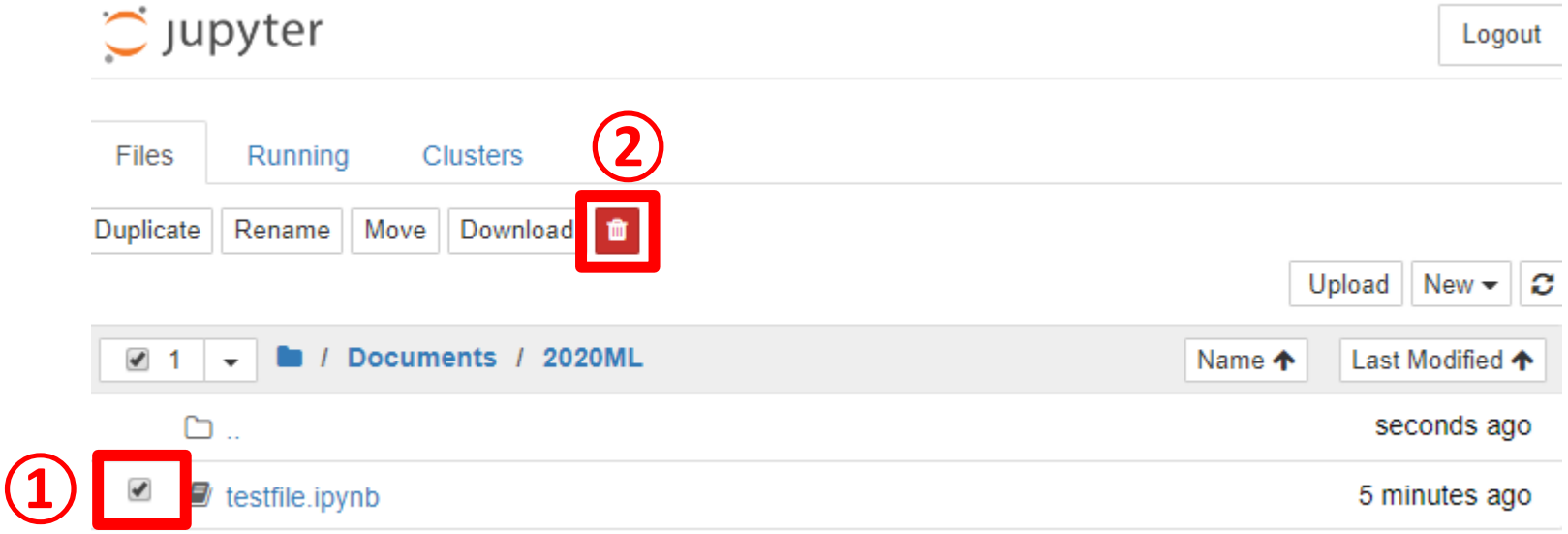
2. To close this file, click “File” button, and “Close and Halt” button.





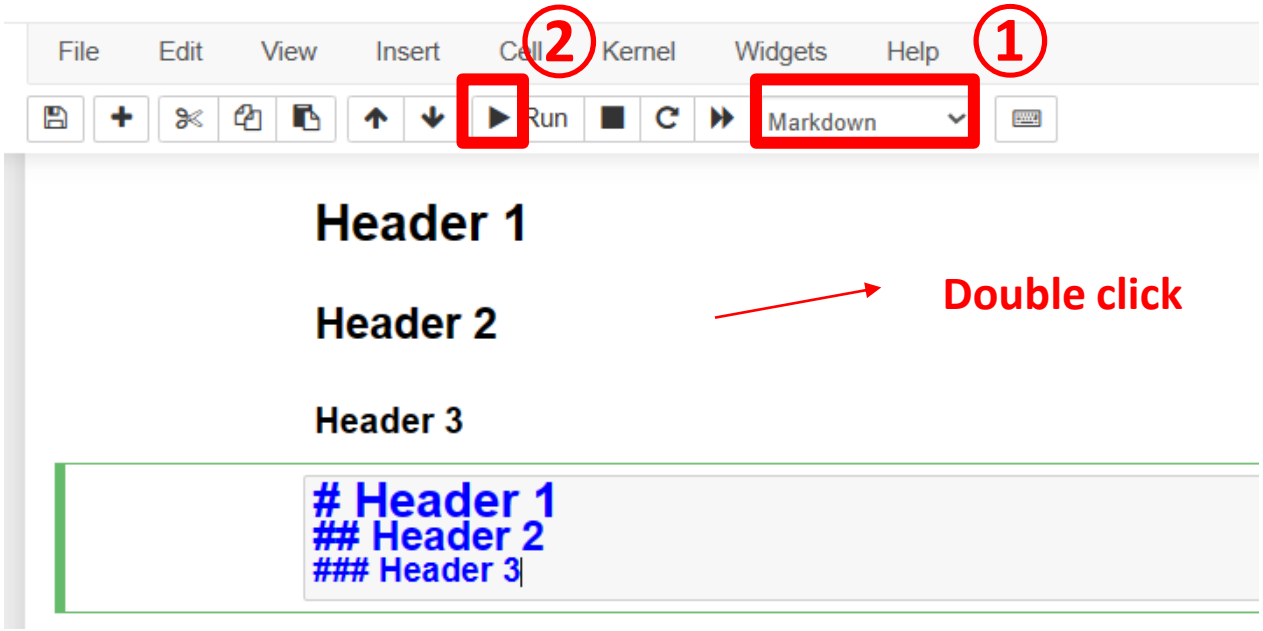
How to save and delete file

3. To delete this file, check this file, and click  button.



Markdown

- Markdown
  - **Markdown** is a lightweight markup language with plain-text-formatting syntax
  - Select 'Markdown‘ → edit using markdown language → run the cell
  - Double click the markdown cell to edit the contents



https://en.wikipedia.org/wiki/Markdown

Markdown

- Lists