SE274 DATA STRUCTURE

Lecture 0: Environment Setting

2020-02-17 | Lecturer: Sunjun Kim

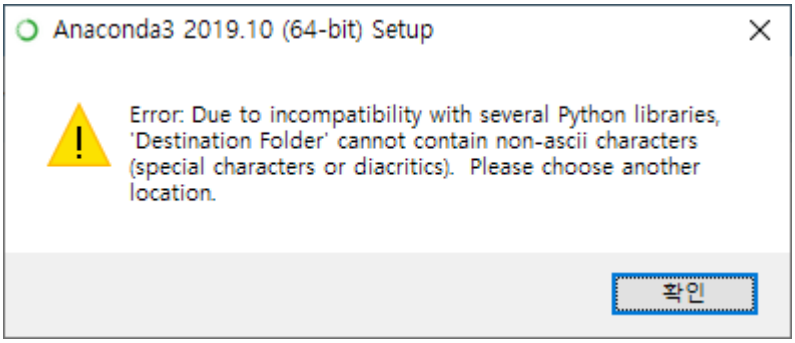
Introduction

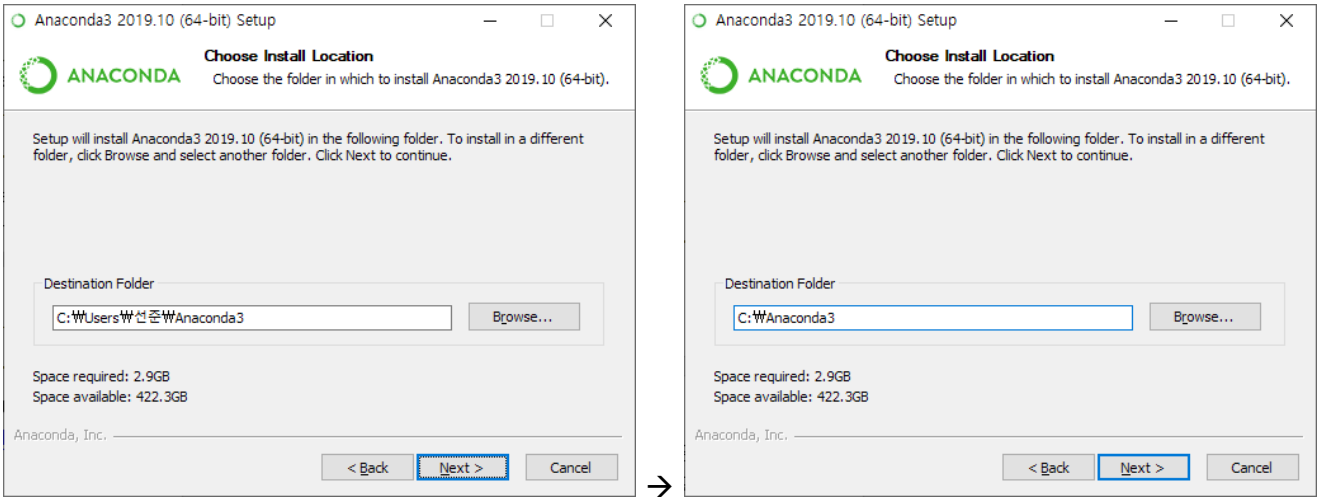
Welcome to the Data Structure course! In this course, you will learn about how to arrange and represent data in a computing system. Before we start, you need to set up the working environment. Python is the language we are going to use, and Jupyter notebook is the primary material for the in-class examples and assignments. Please follow the instructions below.

Python installation (Anaconda installation is recommended)

Download Anaconda distribution from https://www.anaconda.com/distribution/. **Select Python 3.7** version. Follow the instruction documented in https://docs.anaconda.com/anaconda/install/.

Warning: if you encounter this error, please change the installation location to be English only. You may need to relaunch the installer with an Administration privilege.

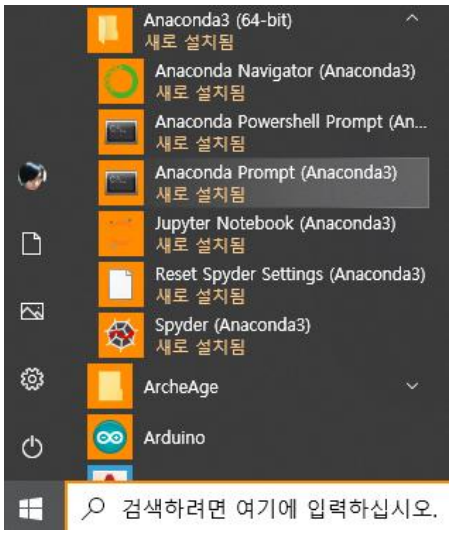




Alternatively, if you want to use your exisitng python enviromnent, you can install jupyter notebook by typing "**pip install jupyter**" in a console. Check https://jupyter.readthedocs.io/en/latest/install.html for the detailed description.

Jupyter Notebook

To begin, click **Jupyter Notebook** in the installed Anaconda menu.



Alternatively, you may open **Anaconda Prompt** and type **jupyter notebook** in the console. The generated notebooks will be stored in the user folder by default. Before running the **jupyter notebook** command, you may navigate to your favored location, then the files will be stored there.

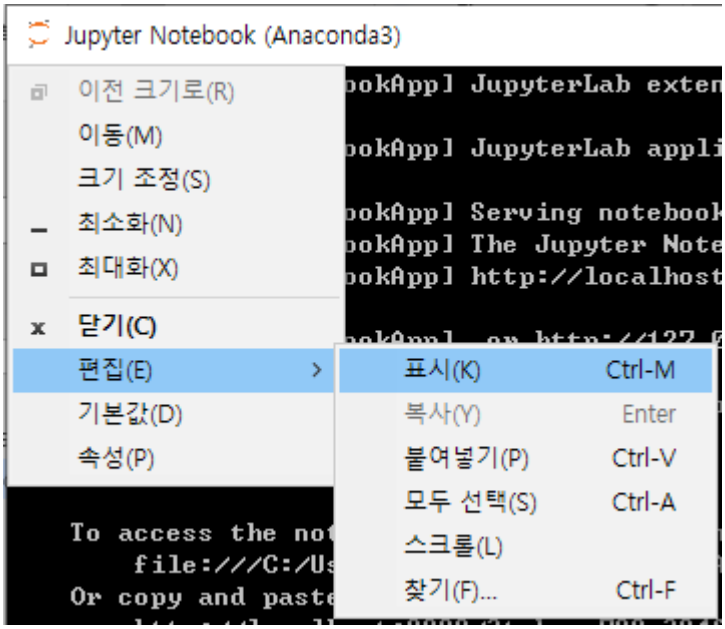
If you're using a MacOS device, open **Terminal** and type "jupyter notebook" in the shell prompt.

After some initialization messages, you'll be able to see an URL looks like this:

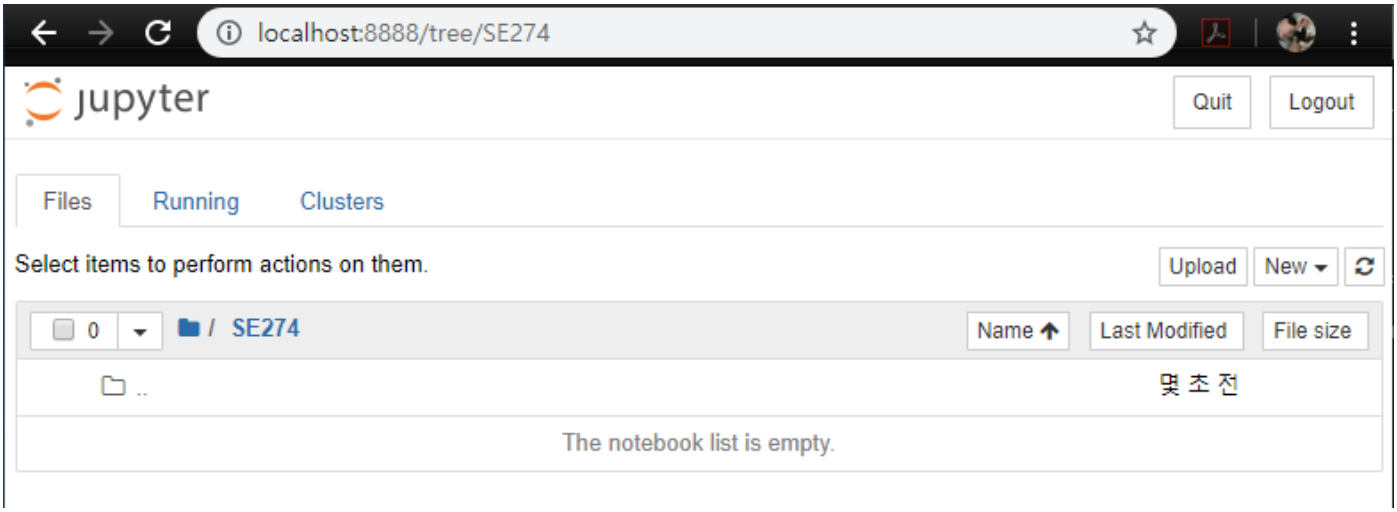
```
    To access the notebook, open this file in a browser:
        file:///C:/Users/%EC%84%A0%EC%A4%80/AppData/Roaming/jupyter/runtime/nbserver-18640-open.
html
    Or copy and paste one of these URLs:
        http://localhost:8888/?token=5424b49c6232ee95dcf679458709724393e505d6f8518ebc
     or http://127.0.0.1:8888/?token=5424b49c6232ee95dcf679458709724393e505d6f8518ebc
```

Copy the URL and paste it into a web browser.

Tip: to copy the URL in the console window, press Ctrl+M, drag on the URL, then press Ctrl+C.

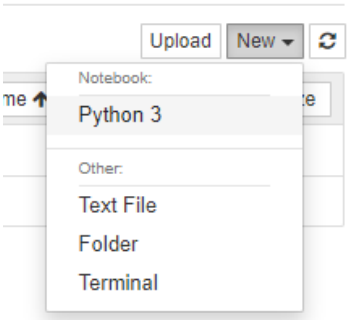


After the interface is loaded on the browser, generate a folder (New → Folder), and rename it to **SE274**. Get into it.

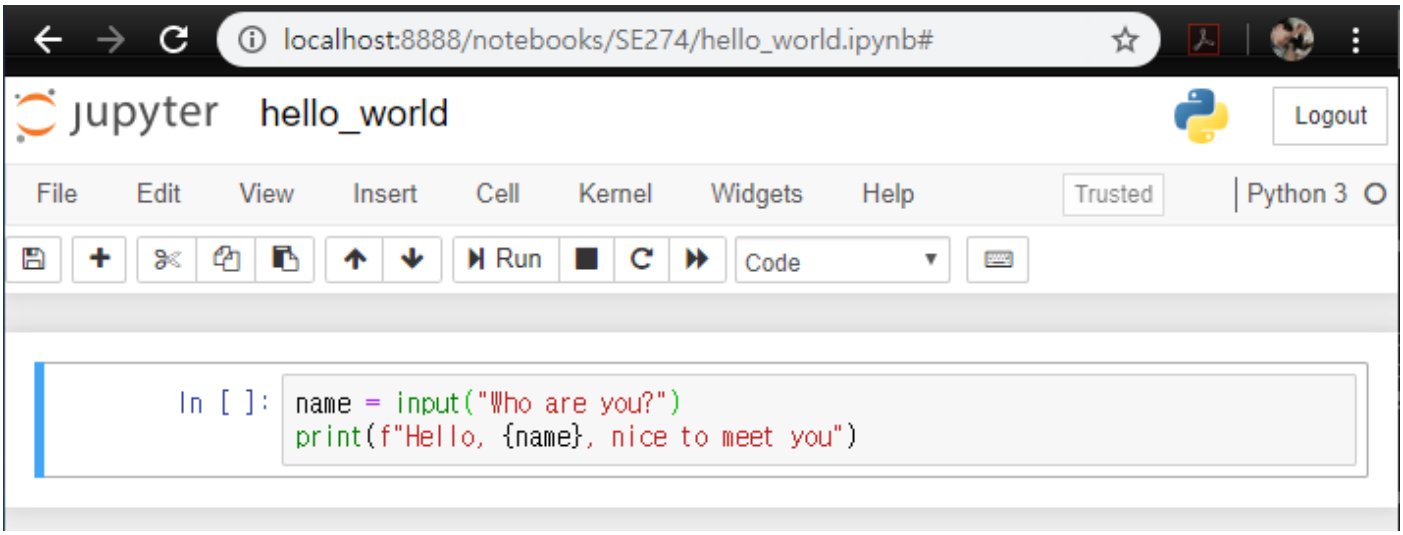


Make a new notebook (New → Python3).

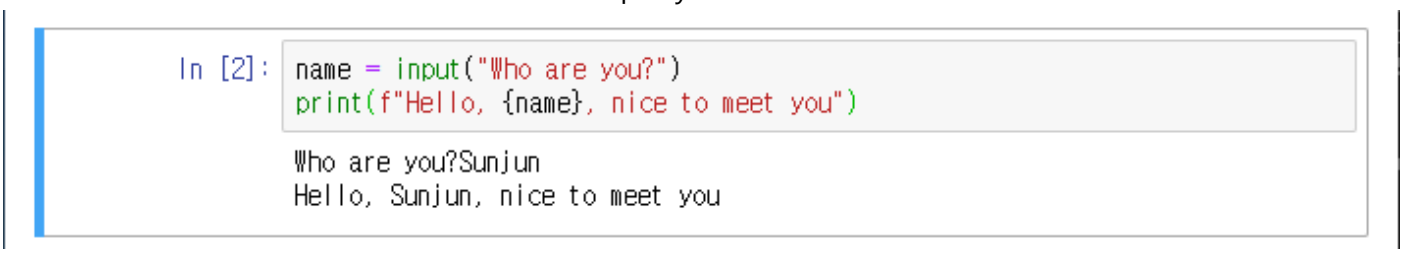
New browser tab will be created.



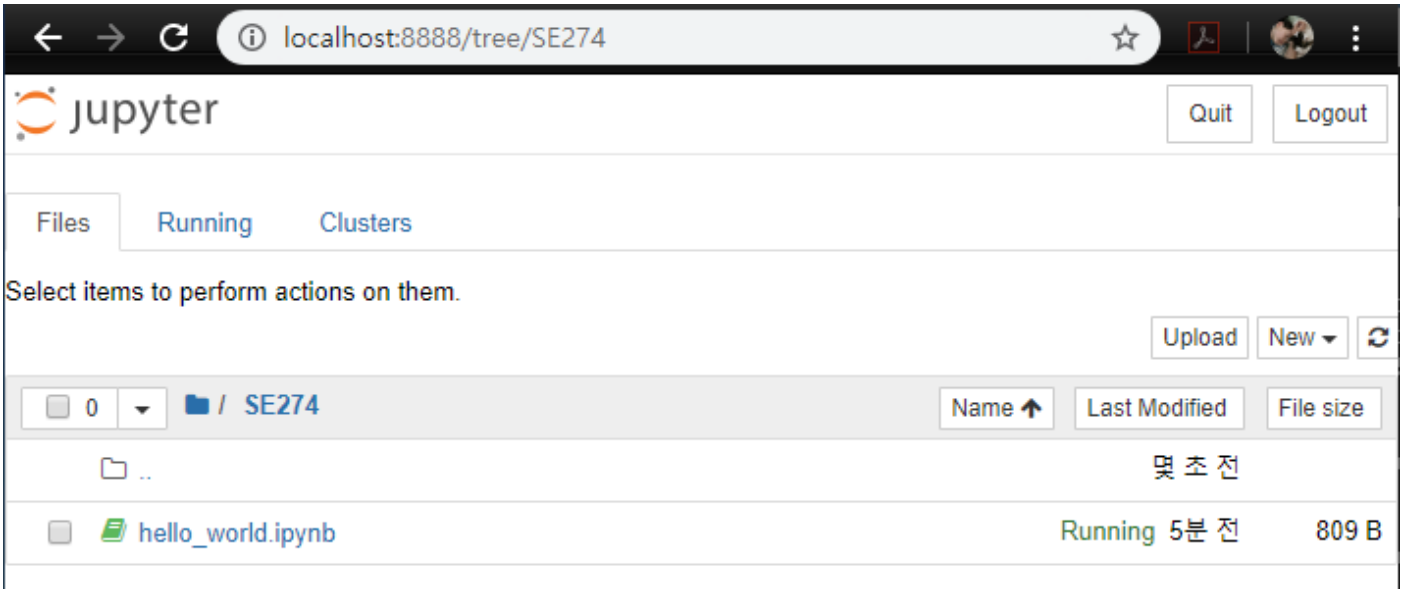
Set the title to **hello_world** (click the title to change it). Type the first code as below:



Press Ctrl+Enter to execute the current cell. Input your name and see the result.

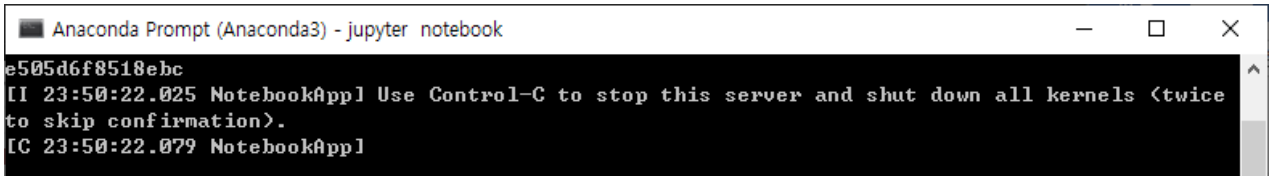


Well done! You've just created your first Jupyter notebook. Your notebook is stored as a file named **hello_world.ipynb** in the working folder, in this case, **SE274**.



Tips for using Jupyter notebooks

- Please try **Help→User Interface Tour** to get used to the interface.
- Remember to press **Quit** button (in the folder navigation tab) to terminate the kernel. Just closing the browser does not shut down all the processes. Alternatively, you can press Ctrl+C in the prompt console window.



- The notebook interface is working similar to a python interpreter. The codes are evaluated in the order of the execution, not in the order of the cells in the notebook. For example:
  - When you execute the cell in the order of the document, the last `print()` will output 5.

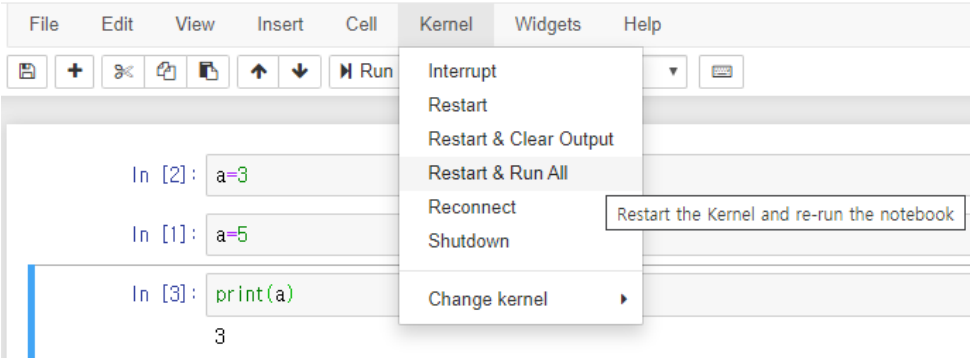
```
In [1]: a=3

In [2]: a=5

In [3]: print(a)
5
```

  * Note that the order of the execution is labeled in the bracket at the left side of the cells.

- When you execute in the order of the second cell, the first, and the last, it will print out 3 instead of 5, because a was assigned to 3 lastly. Check the labeled execution order.

```
In [2]: a=3
In [1]: a=5
In [3]: print(a)
3
```

- This may mess up your notebook completely. When you make a code, you'll probably execute the cells back and forth frequently. Even though the code ran in the execution time, it may not be executed properly in the next time.
- If you're unsure, **ALWAYS TRY** restart the kernel before you finalize the notebook.



- When you complete your project and saved all, always shut down the environment by pressing the "Quit" button on the interface.

Reading Assignment

- Read and try through this tutorial: https://www.dataquest.io/blog/jupyter-notebook-tutorial/
- Optional: If you're not familiar with Python, go to https://www.dataquest.io/m/349-project-learn-and-install-jupyter-notebook/ (which will require a registration, but it's free) and follow the tutorials until **[Project: Learn and Install Jupyter Notebook]**.