LGT3109 Instructions for Tutorial 1

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1. Remote Access of Coding Environment

Objective:

- Be able to access the remote coding environment for Python through https://puuds.polyu.edu.hk/uds/page/login

Note: Section 1 provides instructions on how to access Anaconda Navigator through remote desktop. However, I highly recommend that you download and install Anaconda Navigator on your personal laptop. In class, all teaching and coding will be based on PC-end Python, and remote desktop only serves as a backup solution. If you would like to install the Python coding environment in your own computer, please refer to the step-by-step document below:

For Windows: https://docs.anaconda.com/free/anaconda/install/windows/

For MacOS: https://docs.anaconda.com/free/anaconda/install/mac-os/

If you prefer Python installation on your own computer, after the installation, you can skip Section 1 and directly jump to Section 2.

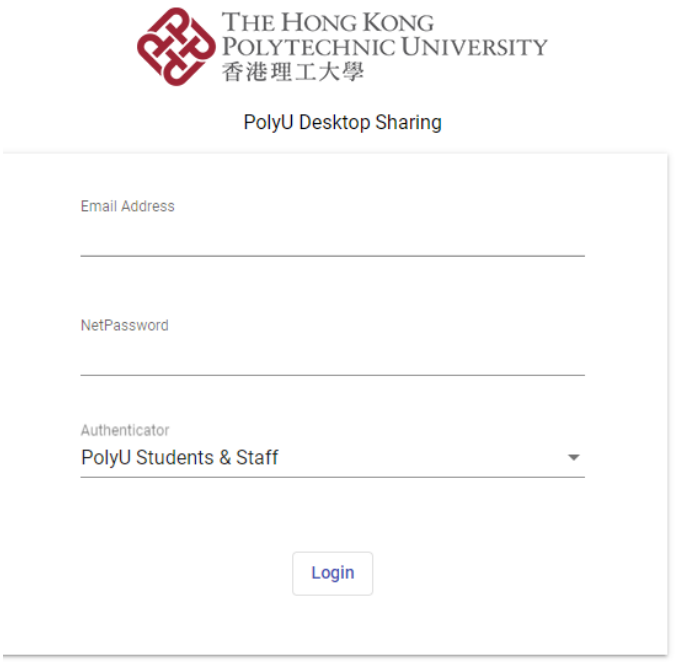
1.1. Remote Access

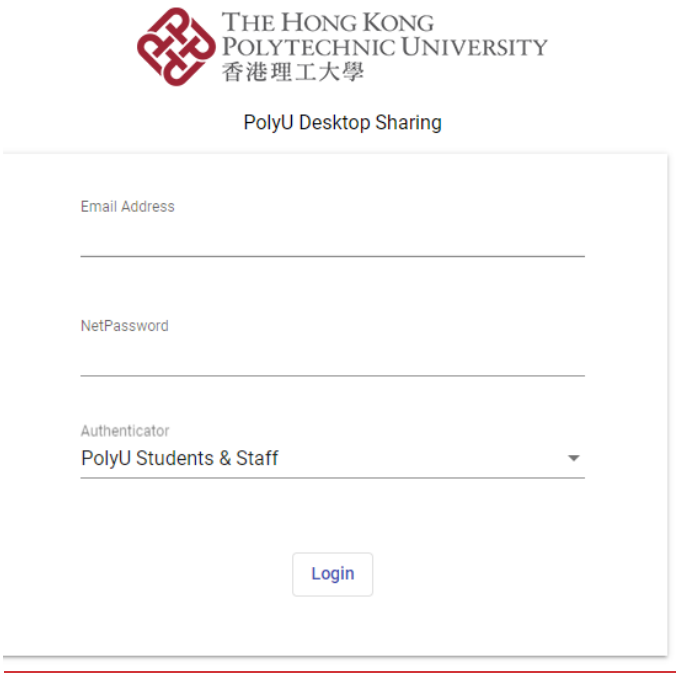
Instructions for Windows system:

You can remotely access the coding environment for Python, which is installed in PolyU Desktop Sharing (UDS), by following the instructions below:

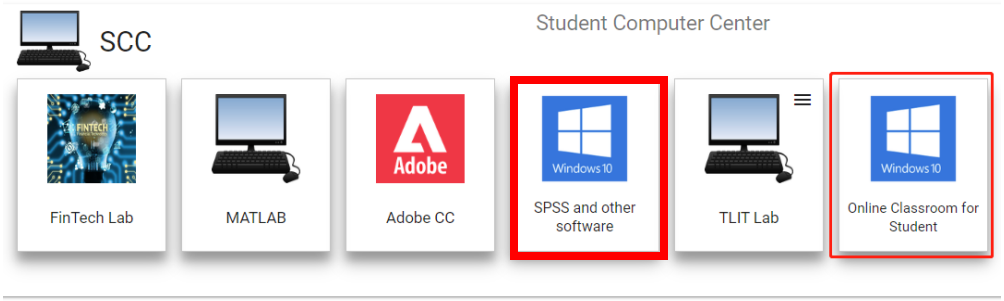
Step 1. Use an internet browser (such as Internet Explorer, Chrome, MS Edge, Safari, etc) to open the web page at https://puuds.polyu.edu.hk/uds/page/login

Step 2. Enter your "Email Address" and "NetPassword", then click "Login", to login the UDS.

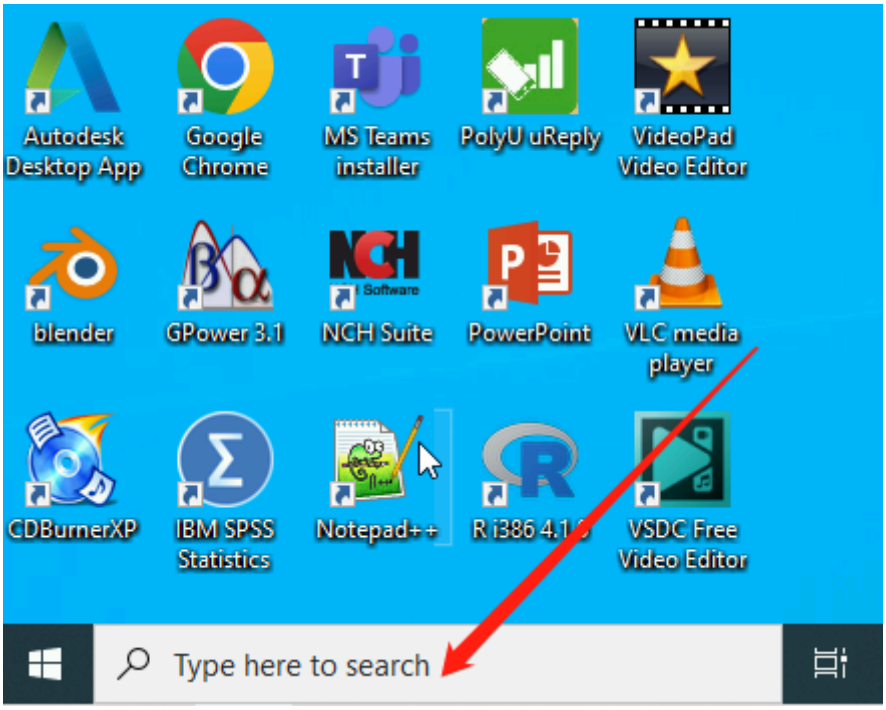


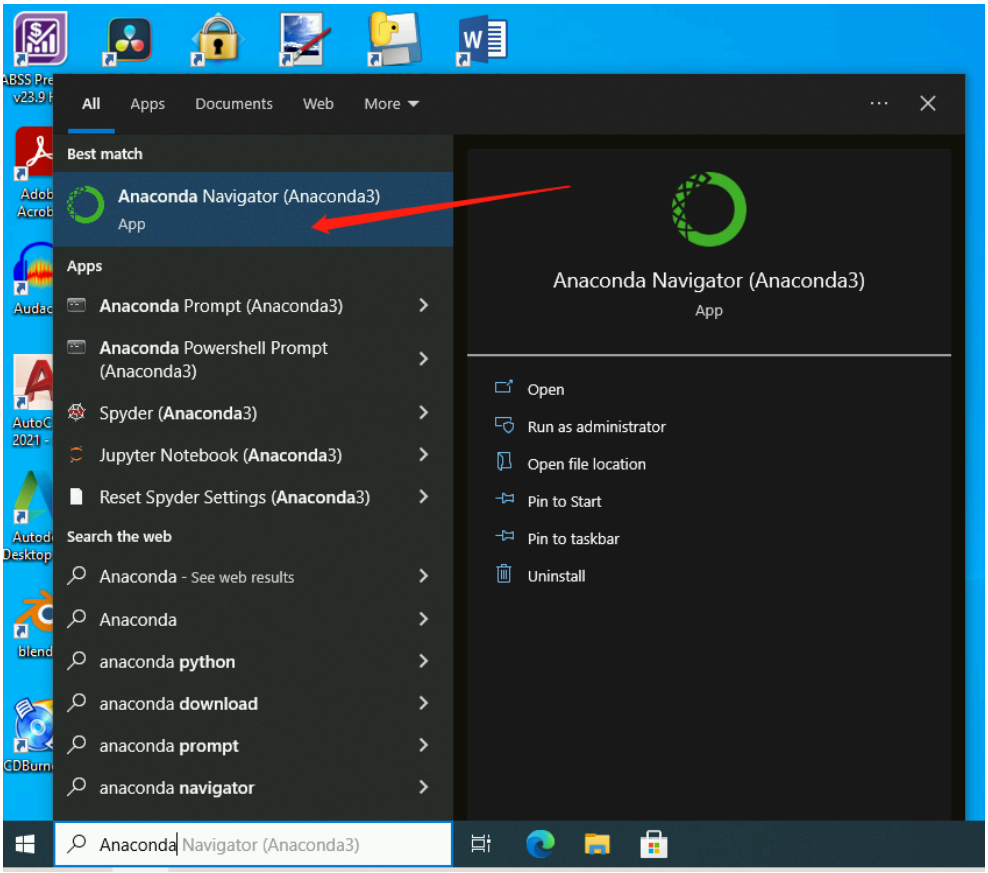


Step 3. Click “Online Classroom for Student” or “Windows 10 (SPSS and other software)”, or any link with an icon of “Windows 10”.

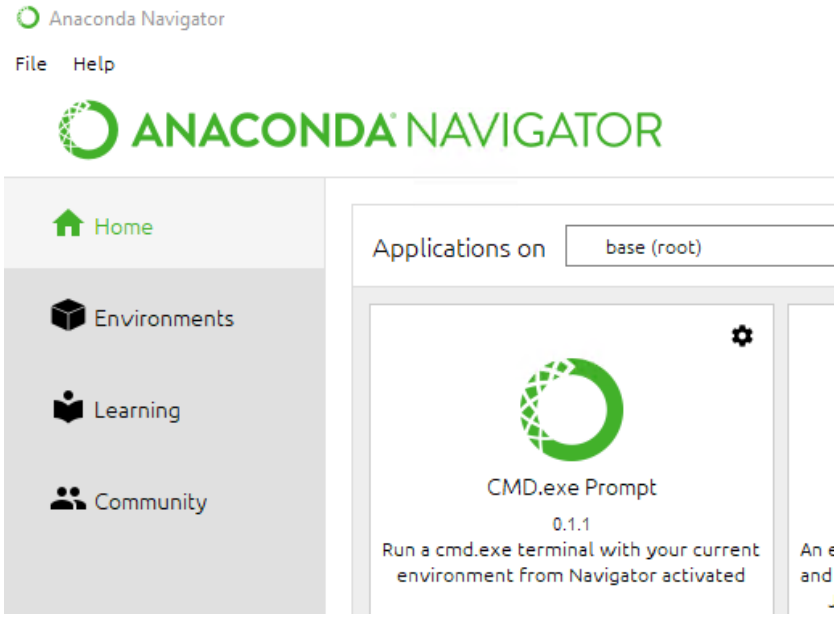


Step 4. After Step 3, your computer will connect to a remote Windows 10 system. In the system, click the search box titled “Type here to search” and located in the windows tool bar, and then type “Anaconda” in the search box to locate “Anaconda Navigator (Anconda3)” app, Click “Anaconda Navigator (Anaconda3)”.

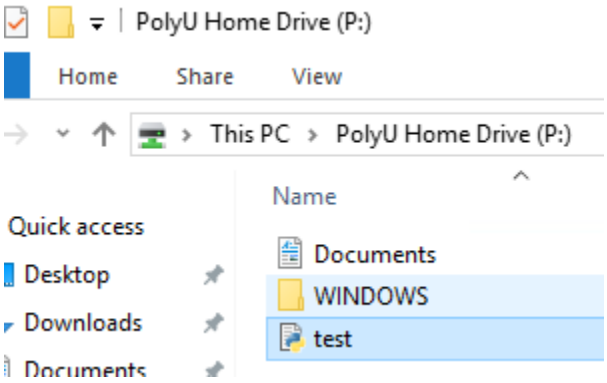




Step 5. After Step 4, the following interface of “Anaconda Navigator” will be launched, indicating that you are successful in accessing the coding environment for python installed remotely in UDS.



Step 6. Click the file browser, and you will see the P drive, in which you can store all your files. You can also use Copy (Control-C) /Paste (Control-V) to copy your file in the P drive of the remote desktop from/to your local computer.

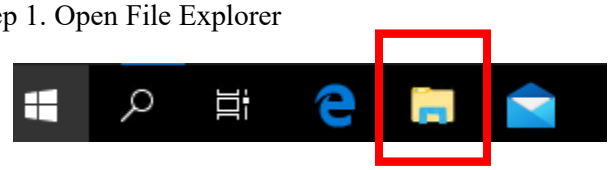


1.2. Managing folders and files for tutorials in the working drive

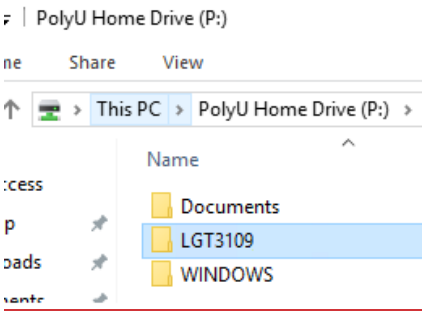
The working drive is P in remote PC and E in MN102c, where you can store your folders and files for lectures and tutorials, which will be kept even after you logout the remote access or reboot the PC in MN10c.

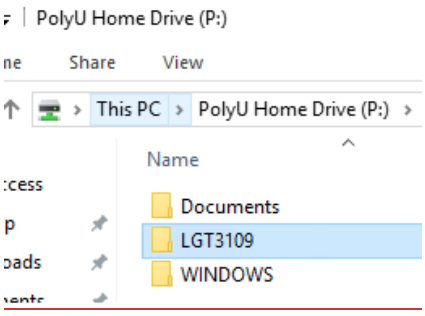
Instructions to download and save files for LGT3109 tutorials to your working drive.

Step 1. Open File Explorer

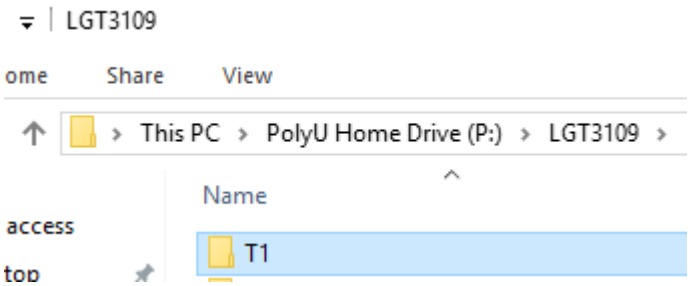


Step 2. Go to working drive and create a folder named as LGT3109 as your course folder.





Step 3. In LGT3109, create a folder named T{tutorial id} as a tutorial folder for each tutorial. For example, the tutorial folder for tutorial 1 is T1:



Step 4. Download the zip file of the tutorial from LEARN@PolyU, save it in the tutorial folder, and extract it here. In the newly created “report” folder, you will find some files for your preparation of the tutorial report.

2. Access of Shell and Editor of Python IDLE through Anaconda Navigation

Objective:

- Be able to open Anaconda Navigation
- Be able to open Python IDLE
- Be able to use Shell of Python IDLE to execute python code
- Be able to use Editor of Python IDLE to open/create/edit/execute python code

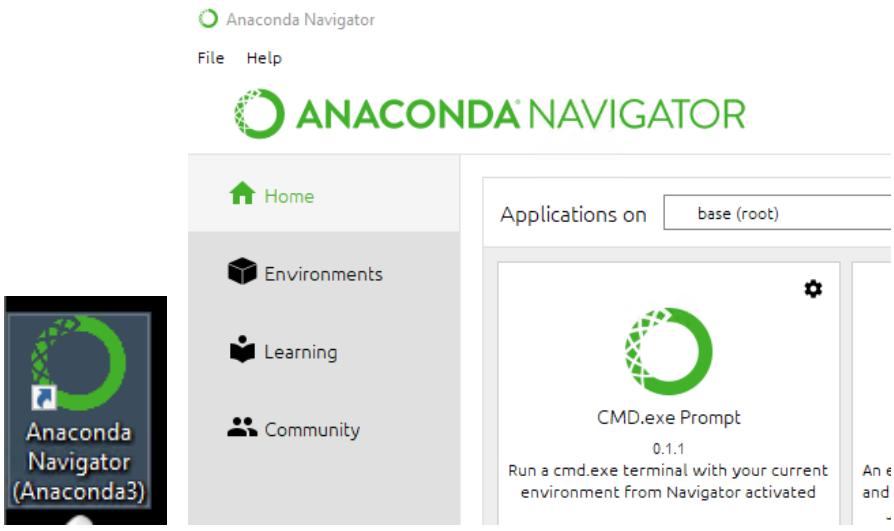
2.1. Open Anaconda Navigator

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda distribution that allows users to launch applications and manage various conda packages, environments and channels (including those for Python) without using command-line commands.

Read https://docs.anaconda.com/anaconda/navigator/overview/ for more information about Anaconda Navigator.

Instructions:

Step 1. Launch "Anaconda Navigator". If you are asked about update, select NO. If you are asked about help to improve anaconda, select OK.



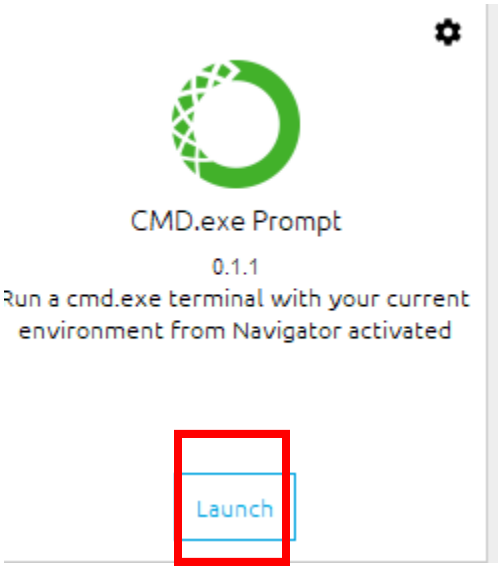
2.2. Start Python IDLE in Anaconda Navigator, Open Shell, and Execute Python code in Shell

IDLE is an integrated development environment for Python, including a python shell and a python editor.

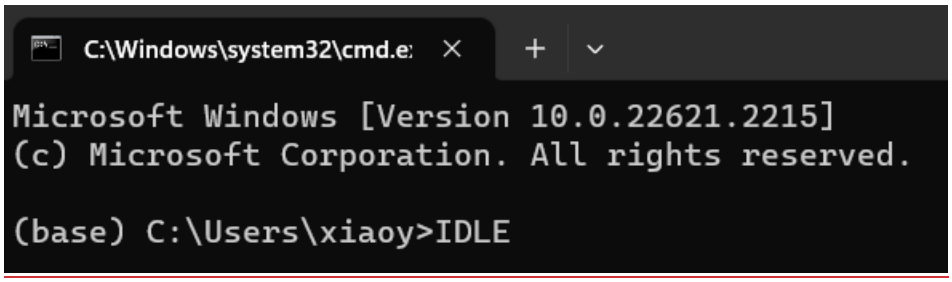
For more details, read https://docs.python.org/3/library/idle.html and https://geek-university.com/python/idle-editor/

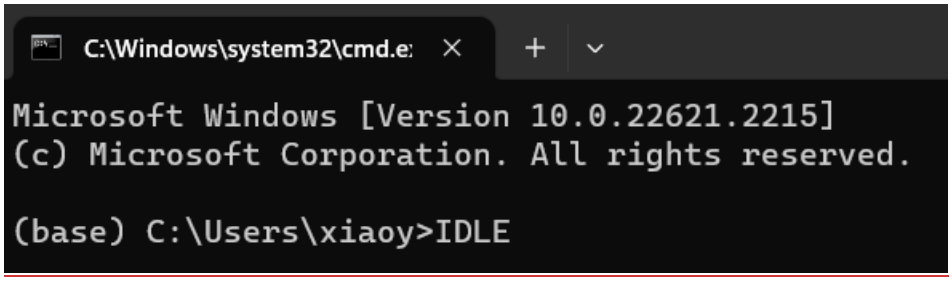
Instructions:

Step 1. In "Anaconda Navigator", click "Launch" button of "CMD.exe Prompt" to open a windows command prompt

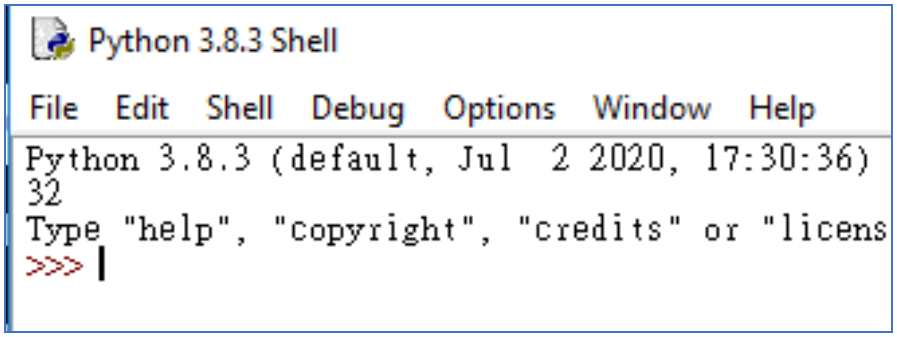


Step 2. In the windows command Prompt, type IDLE to start Python IDLE ("IDLE") as below:





Step 3. You will see the shell of Python as shown below:

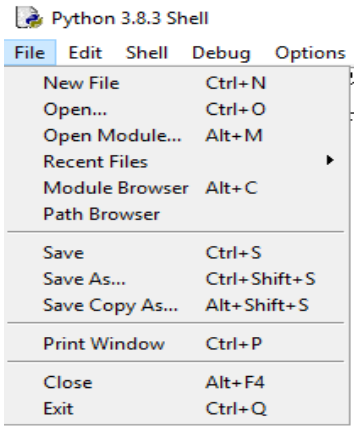


Step 4. In the shell, you can type and execute any Python code

2.2. Create/Edit/Save/Open/Execute Python Code in the Editor of Python IDLE

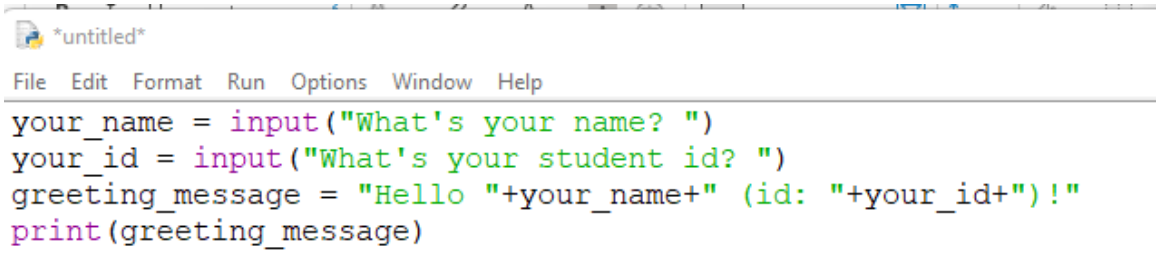
Instructions:

Step 1. In the Shell of Python IDLE, Click “New File” in File Menu

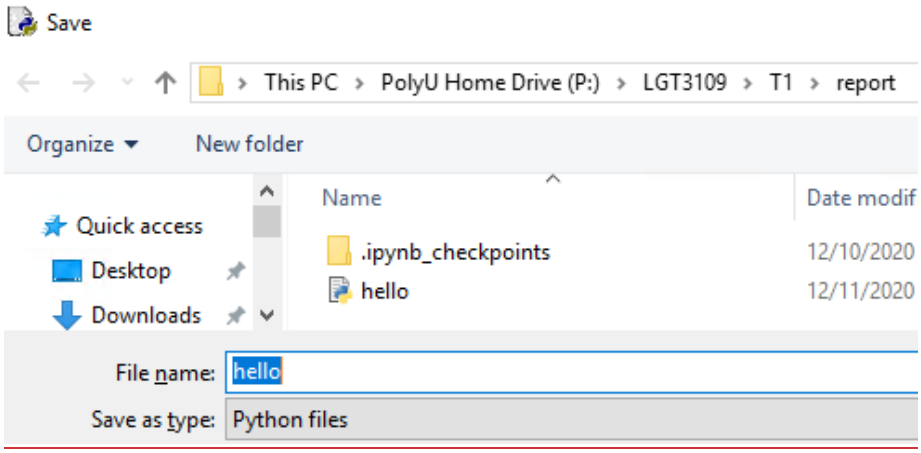


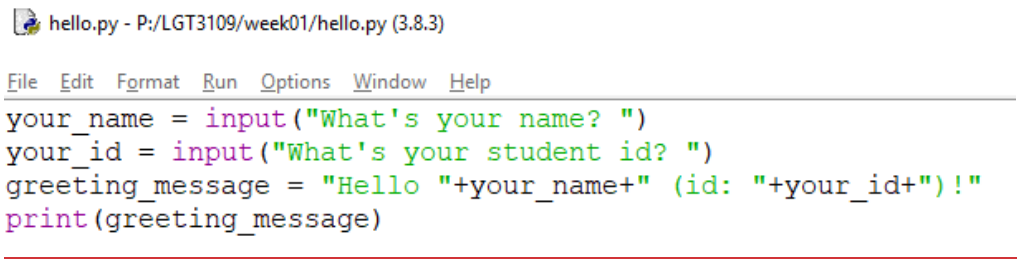
Step 2. The editor is opened with an empty python code

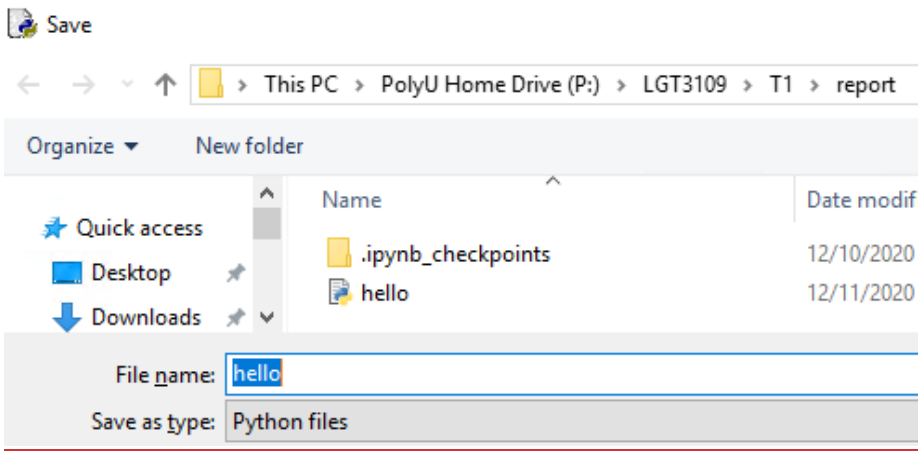
Step 3. You can edit code in the editor, e.g.:

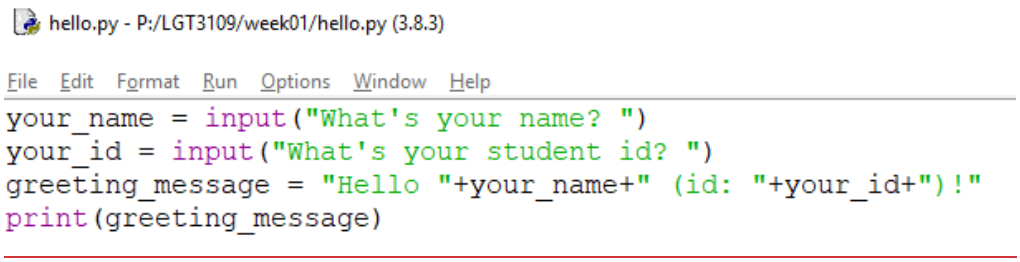


Step 4. To save the code, click “Save” in File Menu (or press Ctrl+S) of the editor. You may be asked to select a directory and input a file name. For example, go to \LGT3109\T1\report of the working drive in remote PC, and save the file as hello.py:

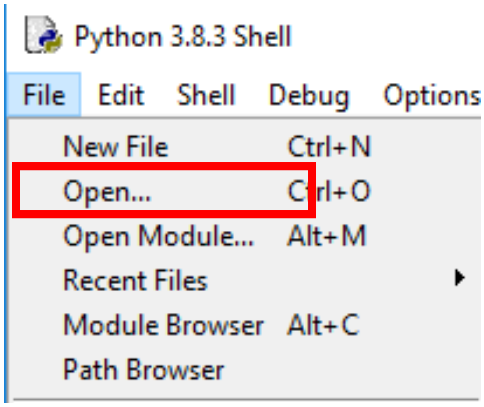




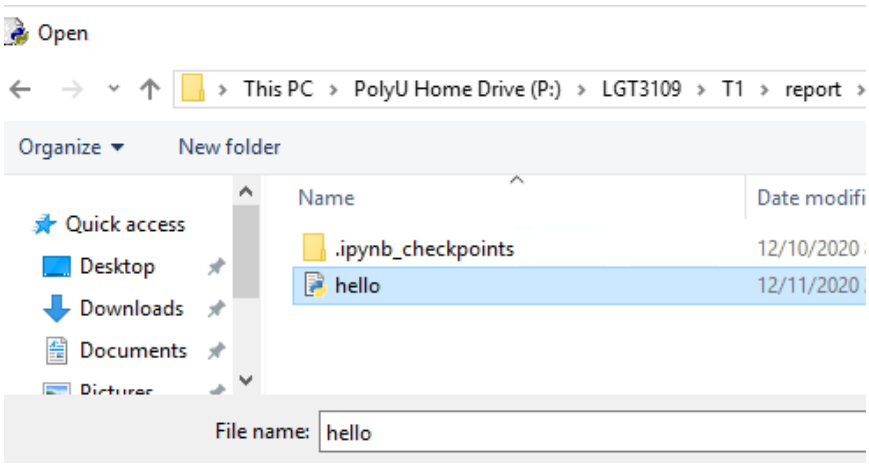


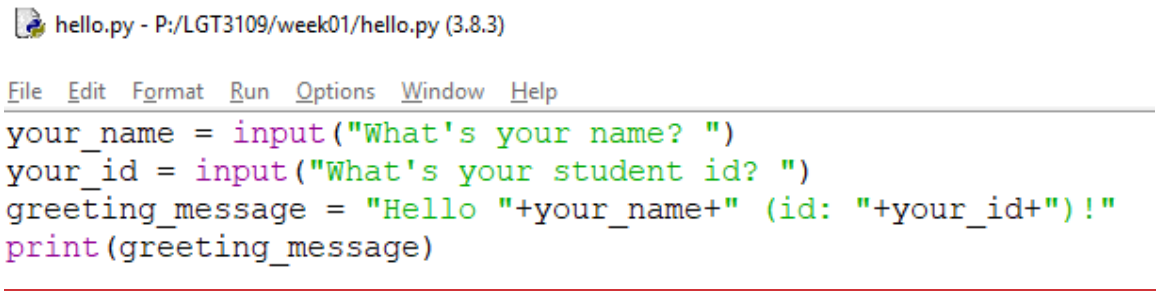


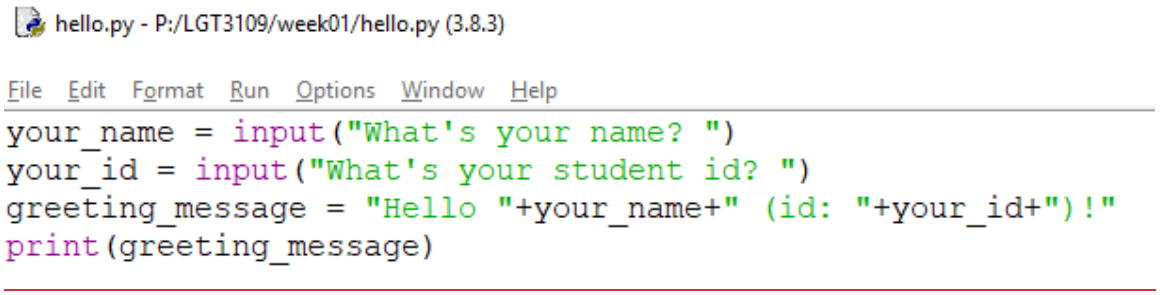
Step 5. To open a code, in either Shell or Editor, click “Open…” in File Menu (or press Ctrl+O).



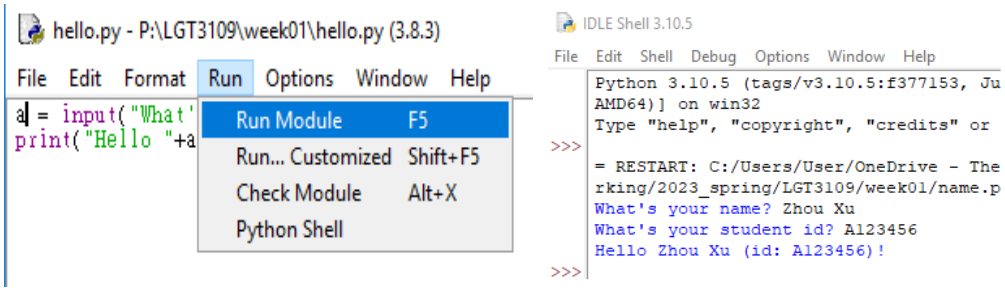
Step 6. You will be asked to select the code to open. Select the hello.py that you have just saved. After that click “Open”:







Step 7. To execute a code opened in the editor, click “Run Module” of Menu Run (or press “F5”) in the Editor:



3. Use of Jupyter Notebook through Anaconda Navigation

Jupyer Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. It is widely used for data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and much more. In LGT3109, we will use Jupyter Notebook to work on our tutorial reports.

See https://mybinder.org/v2/gh/ipython/ipython-in-depth/master?filepath=binder/Index.ipynb for more details

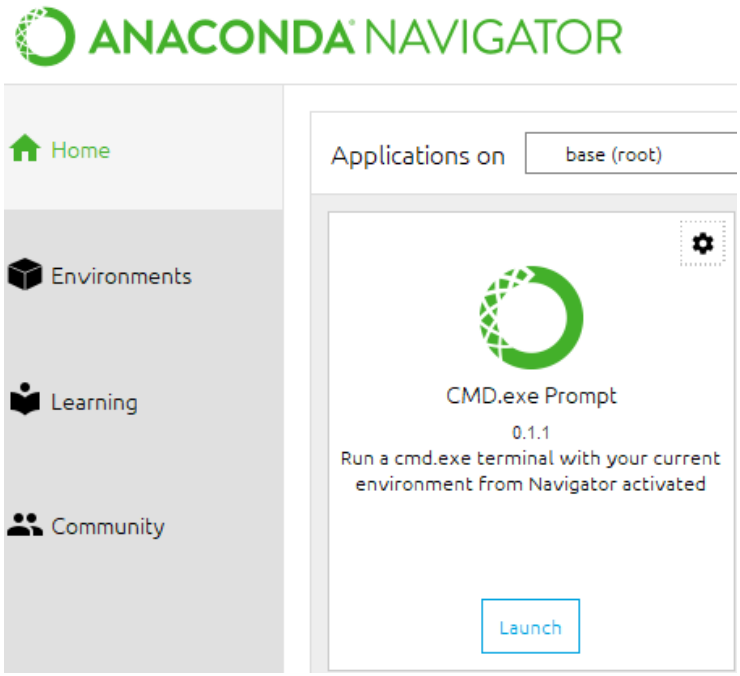
Objective:

- Be able to open Jupyter Notebook from your working drive/directory
- Be able to use Jupyter Notebook to create/edit notebook
- Be able to use Jupyter Notebook to work on your tutorial report

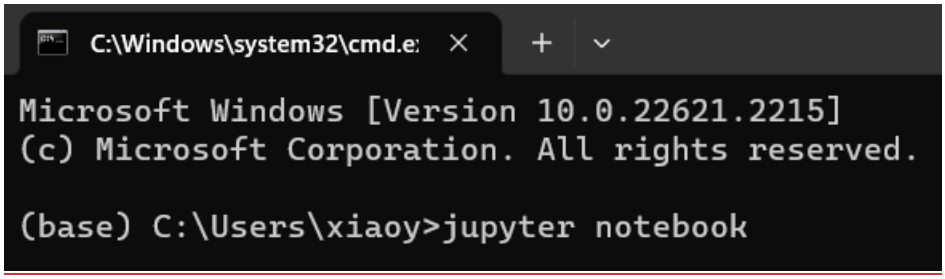
3.1. Open Jupyter Notebook from Your Working Drive/Directory

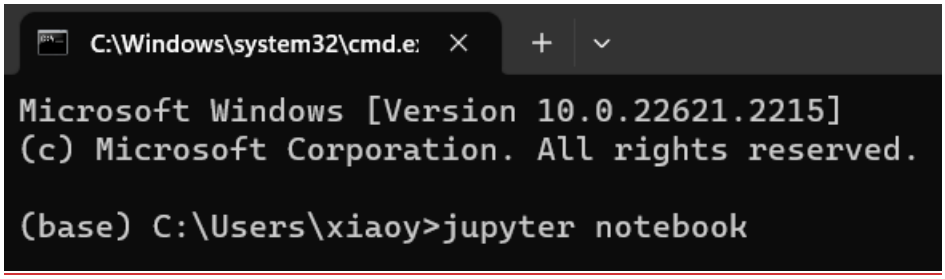
Instructions:

Step 1. In "Anaconda Navigator", click "Launch" button of "CMD.exe Prompt" to open a windows command prompt. If you are asked about update, select NO. If you are asked about help to improve anaconda, select OK.

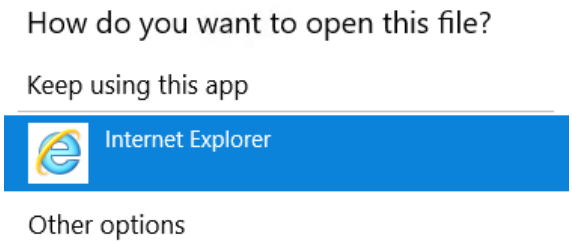


Step 2. In the prompt, type “jupyter notebook”.

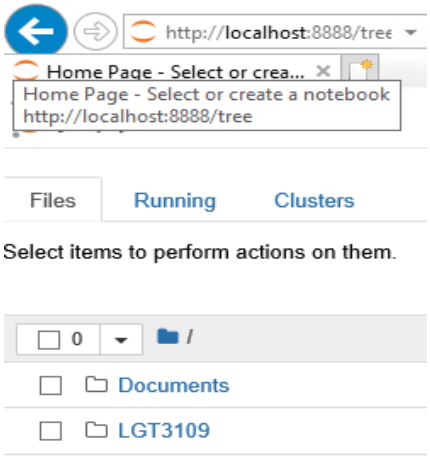




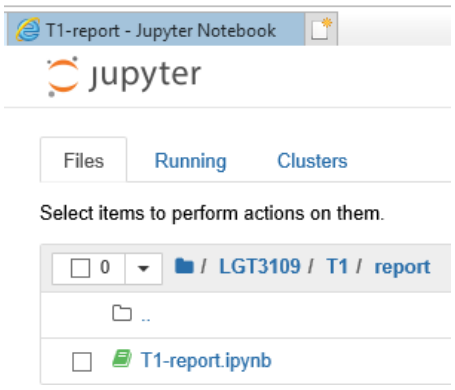
If you are asked to select an internet browser, select IE



Step 3. Your Jupyter Notebook will be launched from your working directory



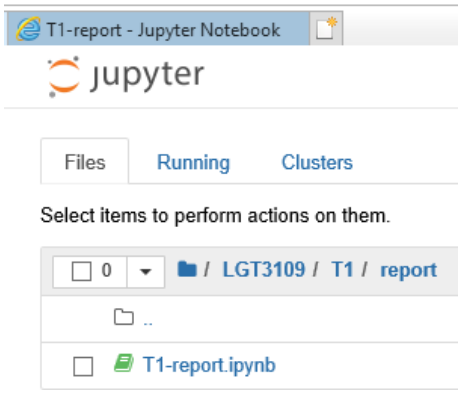
Step 4. By clicking folders in the file navigator of the jupyter notebook, you can locate the items to perform actions. For example, you can locate the folder for tutorial 1 report in /LGT3109/T1/report



3.2 Open/Rename/Edit/Save/Create Jupyter Notebook

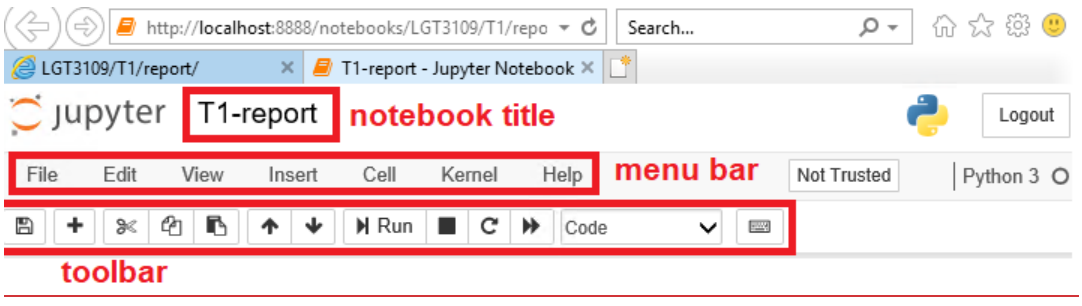
Instructions:

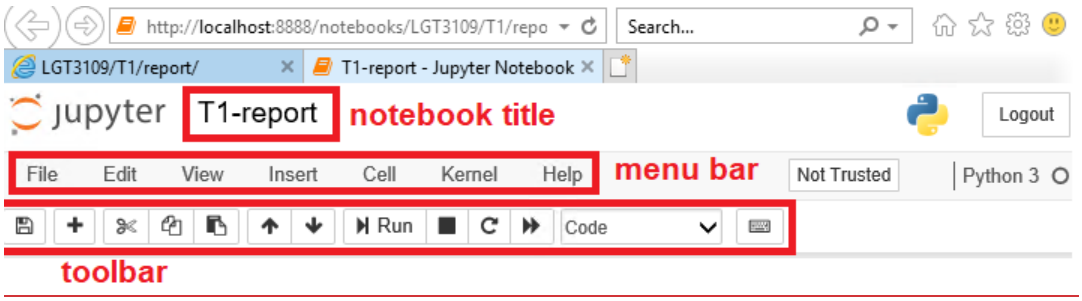
Step 1. **(Open)** Go to the working folder, e.g., LGT3109/T1/report, in Jupyter Notebook in the browser and click the notebook file (with .ipynb extension) to open the jupyter notebook:



a. Check the **header** of the jupyter notebook: At the top of the notebook document is a header which remains fixed at the top of the screen, even as the body of the notebook is scrolled.

b. The header contains the notebook title, a menubar, and toolbar. The title can be edited in-place (which renames the notebook file). The menubar and toolbar contain a variety of actions which control notebook navigation and document structure.



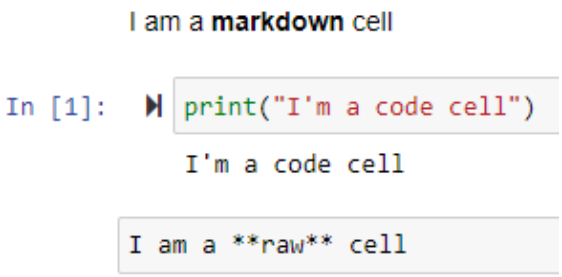


c. Check the **body** of the jupyter notebook has three types of cells:

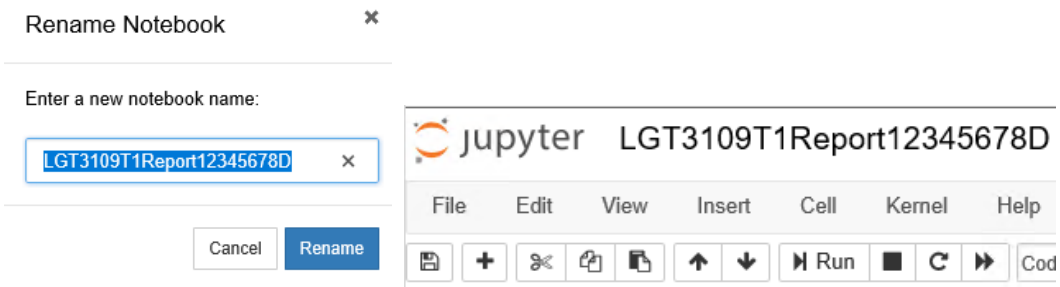
   i. Markdown Cells: Used to build a nicely formatted text

   ii. Code cells: Used to define the computational code, which can be in two forms, including **input cell** where the user types the code to be executed, and **output cell** where the result of the executed code is shown

   iii. Raw cells: text needs to be included in raw form, without execution or transformation



Step 2. **(Rename)** Click the notebook title (see above), rename the notebook to LGT3109T1Report{your student id}, and click "Rename". For example, if your student ID is 12345678D, then rename the notebook to LGT3109T1Report12345678D



Step 3. (**Edit Text**)

a. Click "+" in the toolbar to create a new cell. The new cell created is in **Command Mode**, which is indicated by a grey cell border. In command mode: the structure of the notebook can be modified as a whole (such as by adding new

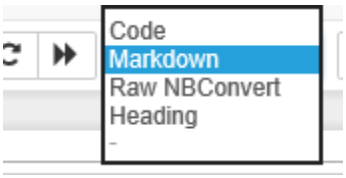
cells, deleting existing cells, and changing the order of the cells), but the text in individual cells cannot be changed.

b. Click the newly created cell and press Enter (or double click the newly created cell) so that the cell is in **Edit Mode**, which is indicated by a green cell boarder and a prompt showing in the editor area. When a cell is in edit mode, you can type into the cell, like a normal text editor.

c. When a cell is in **Edit Mode**, you can press ESC or click the white area before the cell to change it to **Command Mode.**

d. When a cell is in **Command Mode**, you can click the gray area of the cell or press Enter to change it to **Edit Mode**.

e. (**Mark Cell**): To input a formatted text in a cell, we need to change the cell's type to Mark Cell. To do this, select the cell and change its mode to Command Mode (by clicking the white area before the cell), and then press M or select "Markdown" in the cell type box in the toolbar.



Now, you can double click the cell, so as to edit it by typing any text. After editing the text, you can press Shift+Enter to run and refresh the cell.

Step 3.e. Type your name to replace "Xiaoyu Wang" in the following Mark Cell (10 points):

In this cell, replace "Xiaoyu Wang" below with your name:

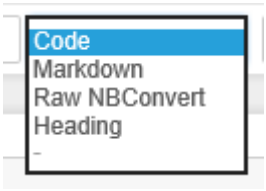
Xiaoyu Wang

Step 3.e. Type your name to replace "Xiaoyu Wang" in the following Mark Cell (10 points):

In this cell, replace "Xiaoyu Wang" below with your name:

Xiaoyu Wang

f. (**Code Cell**) : To input a code in a cell, we need to change the cell's type to Code Cell. To do this, select the cell and change its mode to Command Mode (by clicking the white area before the cell), and then press Y or select "Code" in the cell type box in the toolbar.



Now, you can edit the cell by typing any python code:

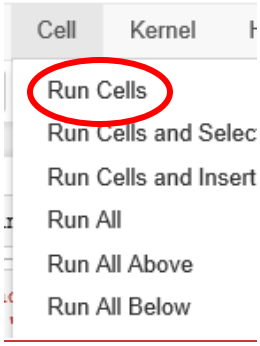
Step 3.f. Change the code in the following Code Cell by replacing "Xiaoyu Wang" with your name (10 points):

```
In [1]: my_name = "Xiaoyu Wang"
        print("Hello "+my_name+"!")

        Hello Xiaoyu Wang!
```

Step 3.f. Change the code in the following Code Cell by replacing "Xiaoyu Wang" with your name (10 points):

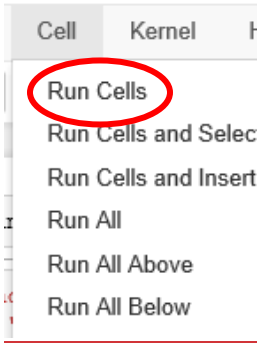
```
In [1]: my_name = "Xiaoyu Wang"
        print("Hello "+my_name+"!")

        Hello Xiaoyu Wang!
```

Step 4. (**Execute Code**): To execute a code in a cell, select the cell and press Shift+Enter, or click "Run Cell" in "Cell" menu of the menu bar



Step 3.f. Change the code in the following Code Cell by replacing "Xiaoyu Wang" with your name (10 points):

```
In [1]: my_name = "Xiaoyu Wang"
        print("Hello "+my_name+"!")

        Hello Xiaoyu Wang!
```



Step 3.f. Change the code in the following Code Cell by replacing "Xiaoyu Wang" with your name (10 points):

```
In [1]: my_name = "Xiaoyu Wang"
        print("Hello "+my_name+"!")

        Hello Xiaoyu Wang!
```

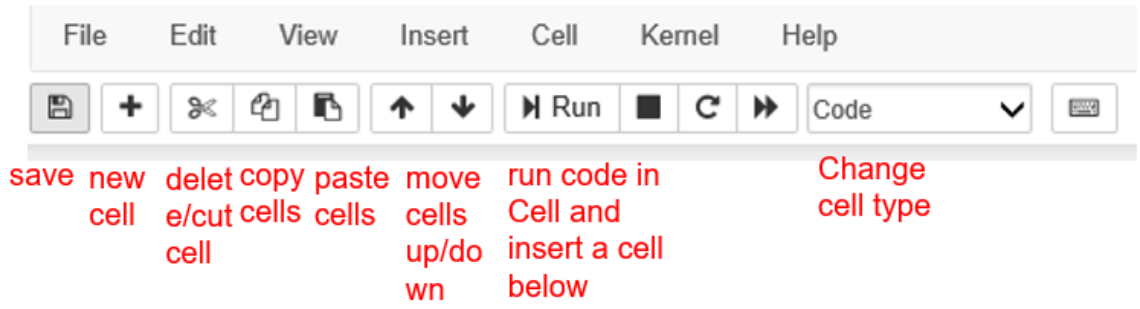
Step 5. Other useful short keys:

a. To insert a cell below the current selected cell, press B in the command mode

b. To delete the selected a cell, press DD (i.e., press D twice)

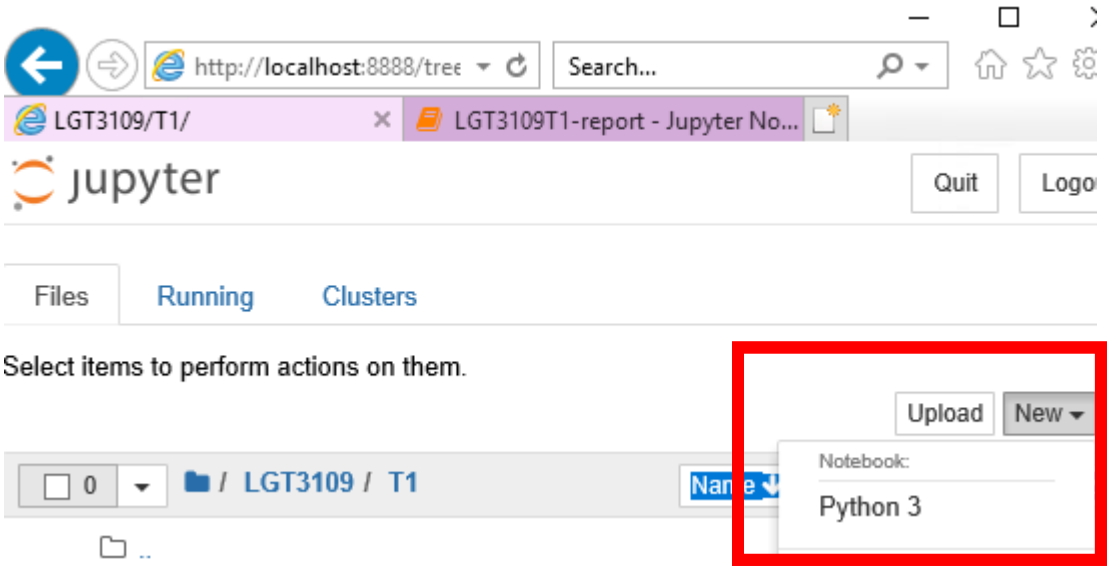
c. You can use arrow keys (upper and down) to change the selected cells

Step 6. Try tools in Toolbar

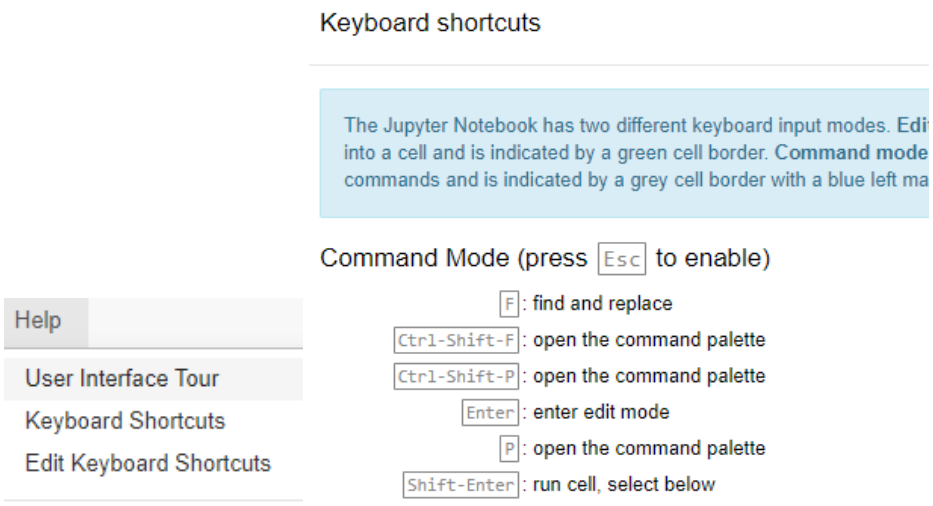


Step 7. (**Save Notebook**): Press Ctrl+S or click the save button in the toolbar to save the notebook.

Step 8. (**Create Notebook**): Go to the working folder, e.g., LGT3109/T1/report, in Jupyter Notebook in the browser, and click "New" in the tool bar and choose "Python 3". Now you can edit the new notebook.



Step 9. (**Try Help Menu**): In the newly created notebook, click Help in the menu bar, and select Keyboard Shortcuts, which include all the shortcuts that you can use:



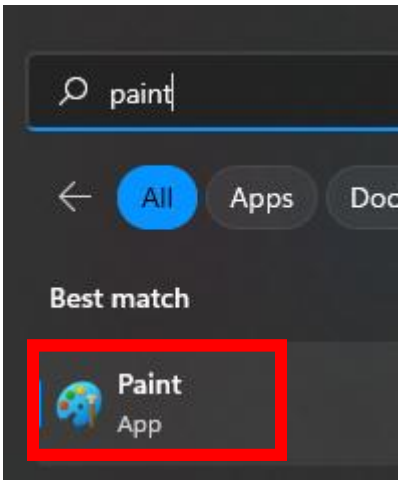
The most important keyboard shortcuts are

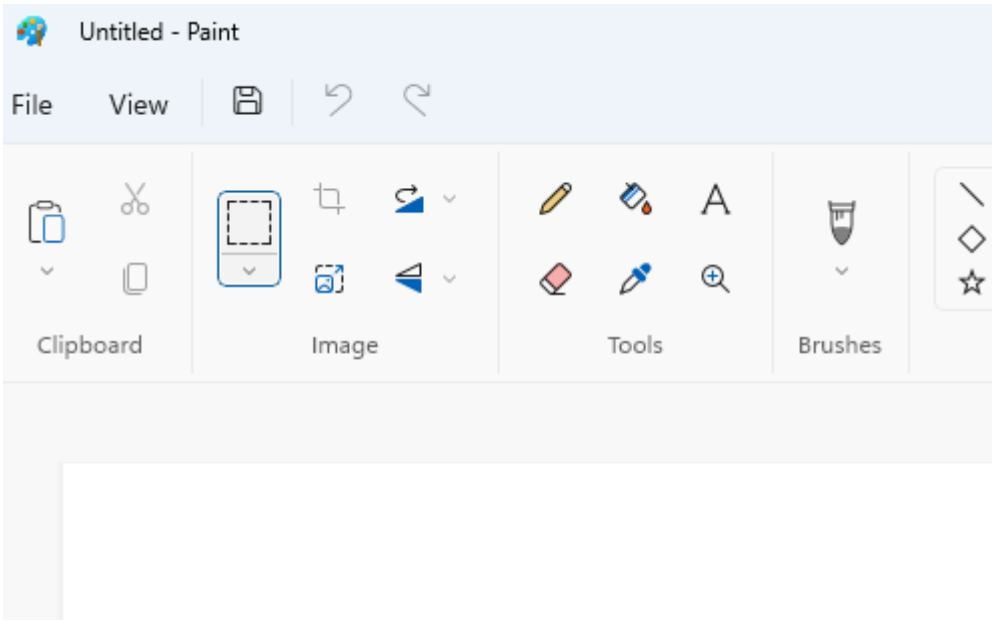
- Enter - enters edit mode
- Esc - enters command mode
- Shift+Enter – execute the cell

3.3 Edit Screenshot and Insert Pictures in Jupyter Notebook

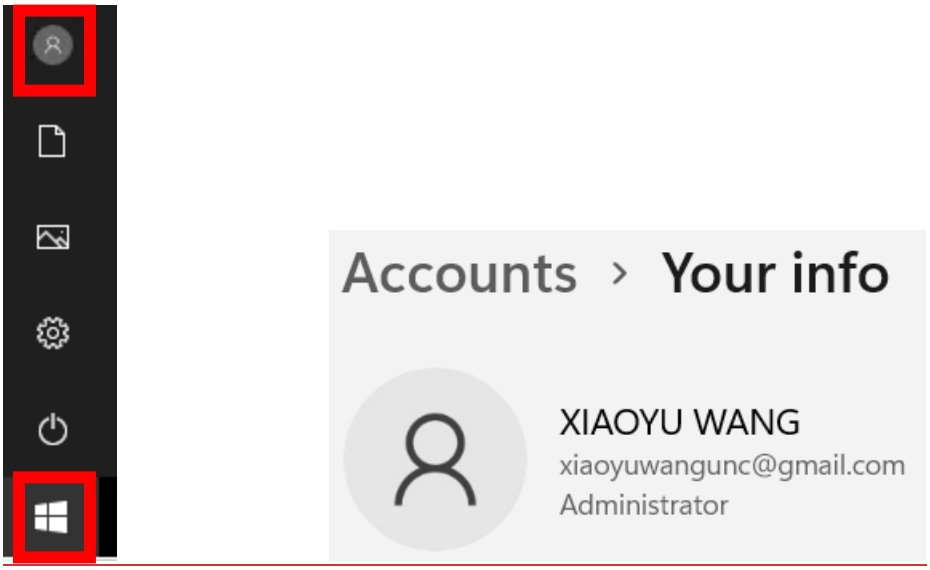
Instructions:

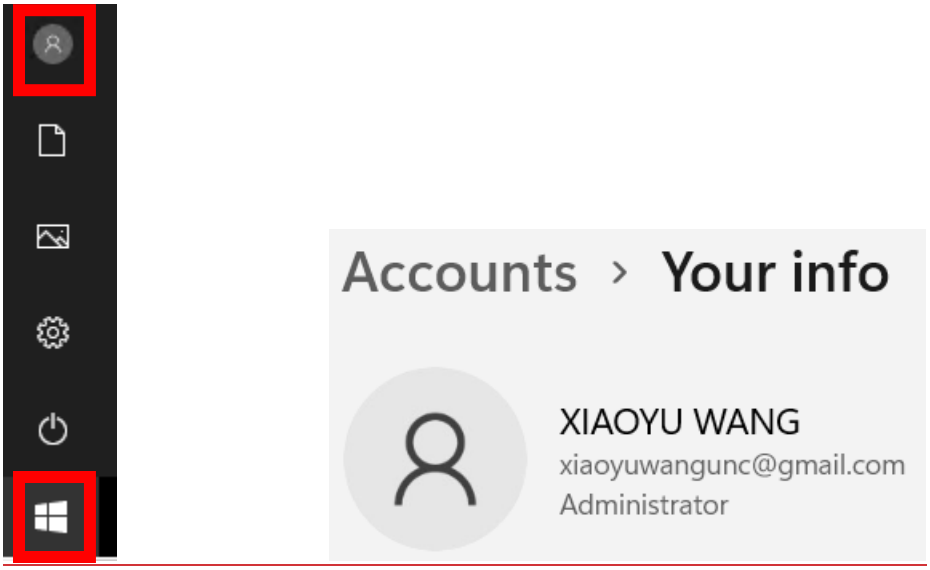
Step 1. (**Open "Paint"**): Click search icon in the window's toolbar, typing "paint", and click "Paint" in "Best Match" to open the snipping tool.





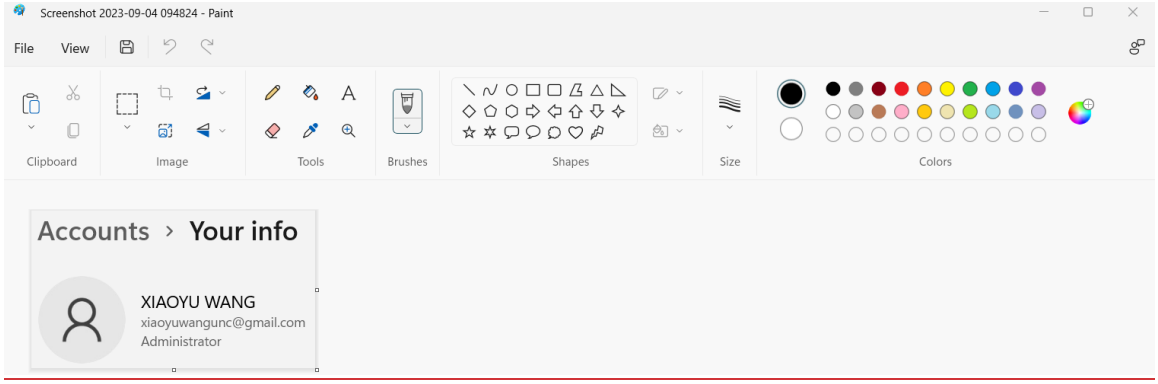
Step 2. (**Show your windows account name**): Click the start button in the toolbar, click the user icon, click “change icon setting”, and show your account information (including your account name)

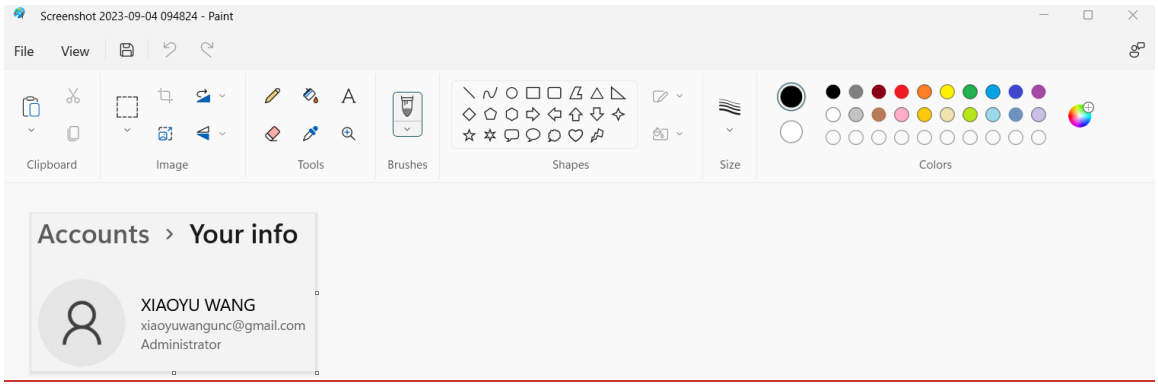




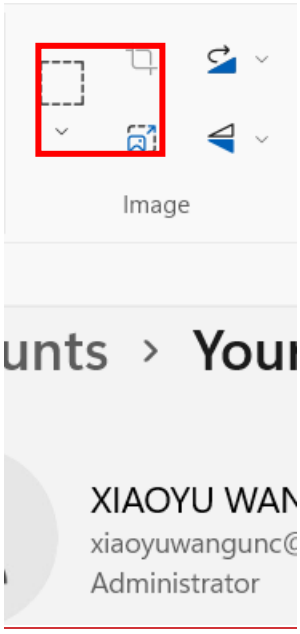
Step 3. (**Make a screenshot**): Press “PtrScn” key on the keyboard to capture a screenshot of your desktop stored in clipboard.

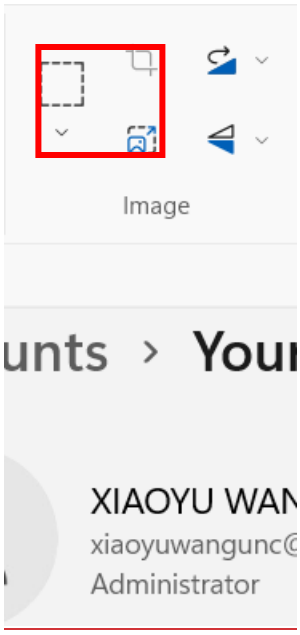
Step 4. (**Paste the screenshot to Paint):** In Paint, press ctrl + P to paste the screen shot



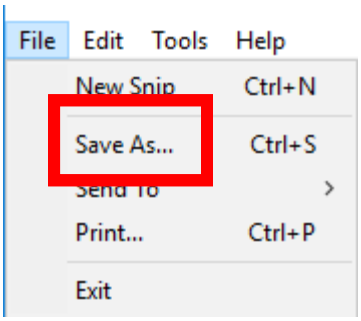


Step 5. (**Crop the picture of your account information):** In Paint, use buttons in the toolbar (shown in the red rectangle below) to select and crop your account information





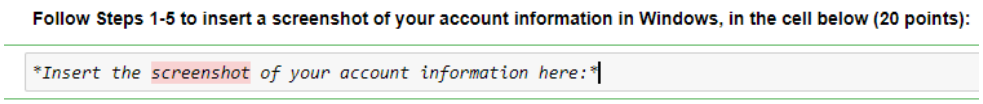
Step 6. (**Save the screenshot to the working directory**): Click "Save as" in File Menu of the Paint, so as to save the screenshot to the directory of the tutorial report, i.e., \LGT3109\T1\report of the working drive in remote, with a file name "account_info.png".



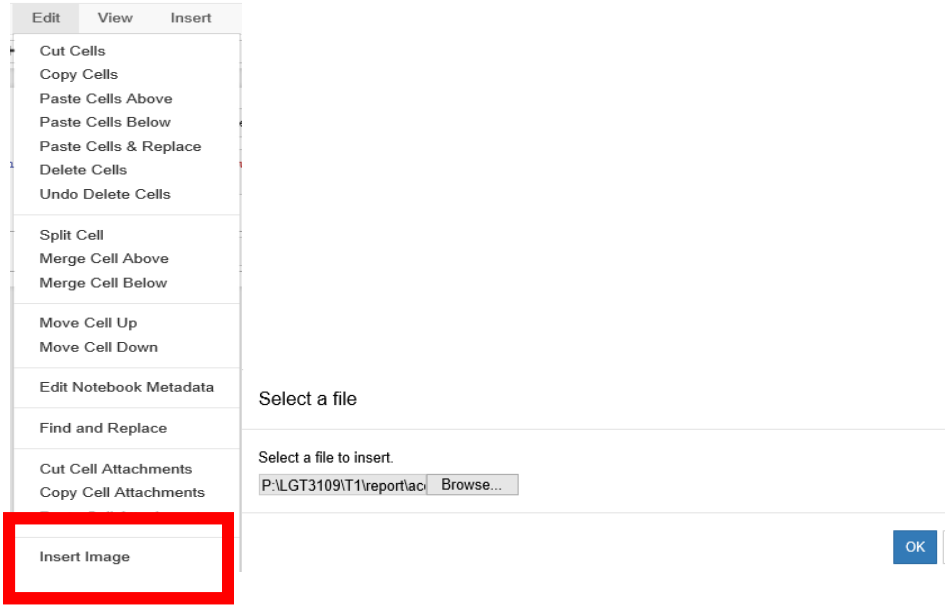
Step 7. (**Insert the saved picture in Jupyter Notebook**):

a. Go to Jupyter notebook of the tutorial report (i.e., LGT3109T1Report{your student id.ipynb}.

b. Select the cell below in the jupyter notebook of the tutorial report:



c. Click the selected cell, click "Insert Image" in Edit Menu of the menu bar, click "Browser" to locate the picture to be inserted, click OK:



You will find the following information in the cell

```
![account_info.PNG](attachment:account_info.PNG)
```

d. Press Ctrl+Enter or “Run Cell” in Cell Menu of the menu bar. The picture is inserted.

e. If you want to change the size of the image, select the cell, and edit the cell by changing the content to the following html text, where the image file name is input to the right of “src=”:

```
<img src="account_info.png" width="100">
```

Press Ctrl+Enter to view the shrinked image.

4. *Zip the folder of your tutorial report*

When submitting your tutorial report, you need to first zip the folder of the report and submit the zip file in LEARN@PolyU.

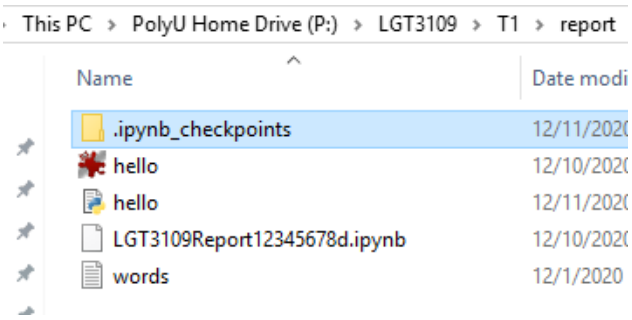
Objective:

1. Be able to zip the folder of the tutorial report for submission in LEARN@PolyU

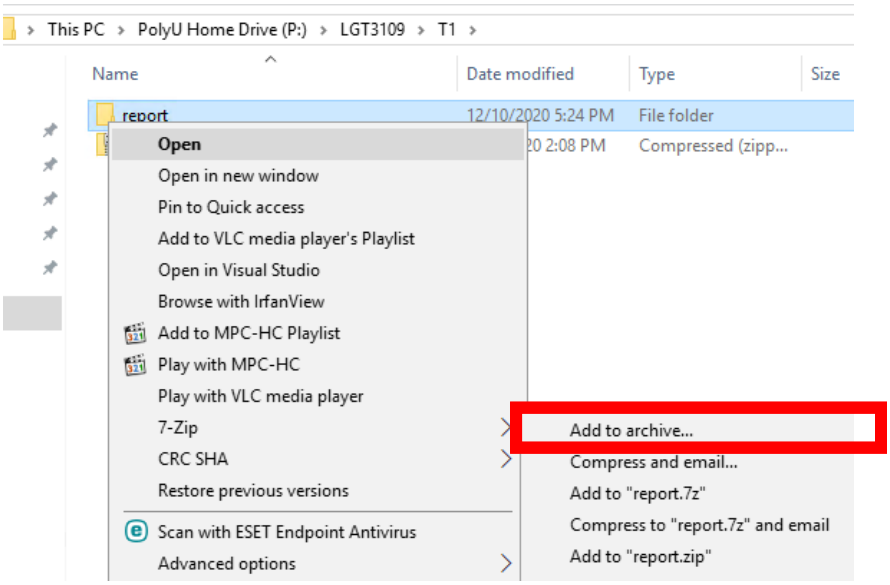
Instructions:

Step 1. Save the Jupyter notebook of your report, and close the IE browser

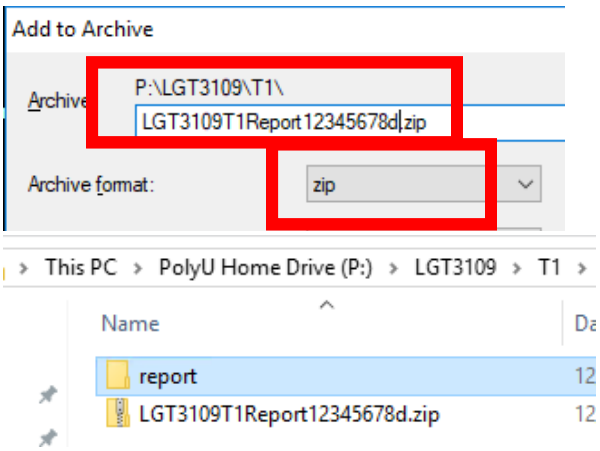
Step 2. Use File Explorer to the working directory of your working drive. Check the files under the "report" folder. Your directory shall contain all these files, except the file name of the notebook shall be different and shall include your student id.



Step 3. In the working directory, right click the "report? folder, select 7-Zip, and select Add to archive

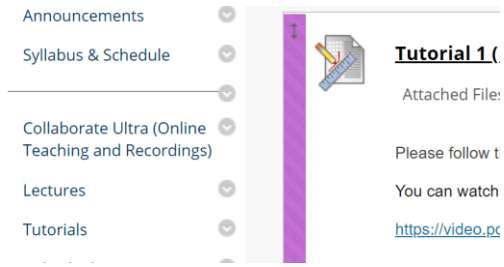


Step 4. Change the Archive format to “zip”, and input the archive name to LGT3109T1Report{ student_id}.zip (e.g., if student_id is 12345678d, then the archive name is LGT3109T1Report12345678d.zip), and click OK:

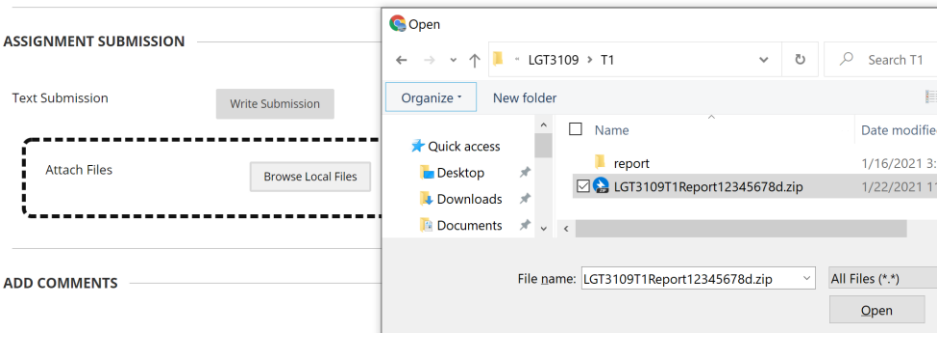


Step 5. Submit the zip file in the Blackboard (see an example below)

Go to Blackboard -> LGT3109 -> “Tutorials -> Click Tutorial 1



Click “Browse Local Files” to select the zip file to be submitted



Click Submit