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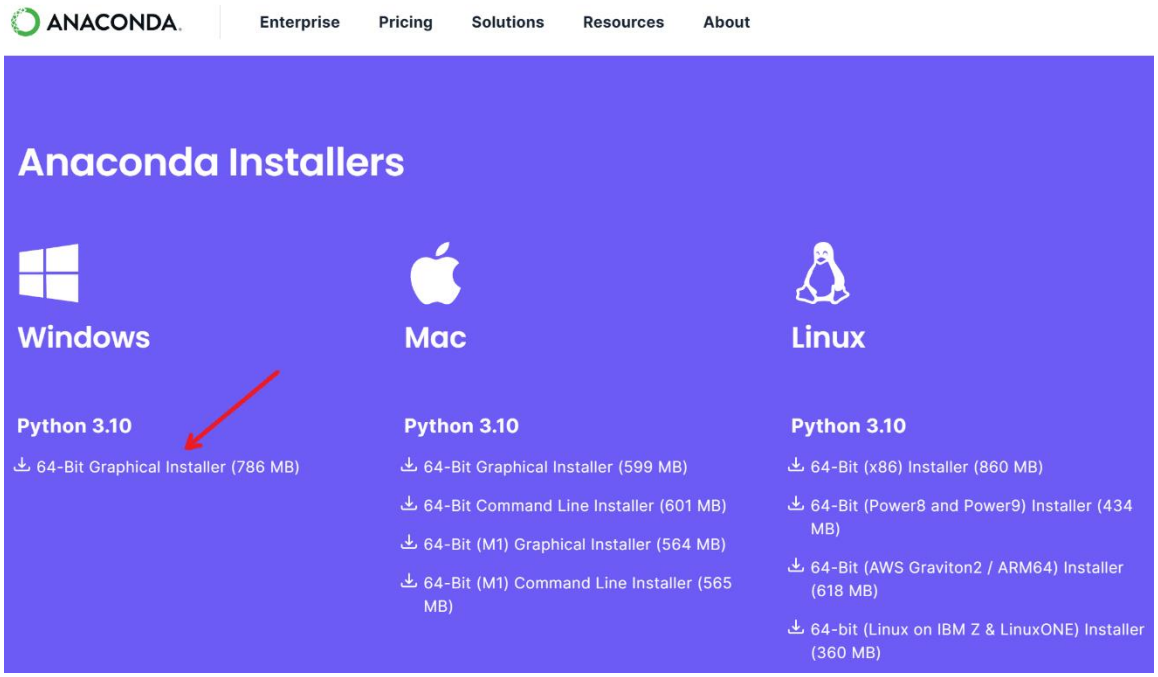
HOW TO INSTALL AND USE JUPYTER NOTEBOOK

Jupyter is an IDE that is popular among Python developers and Data Scientists. It is a part of Anaconda platform which is a collection of tools and IDEs. By installing Anaconda, we can have Jupyter IDE available to us. When we install Anaconda, it comes with a copy of Python software along with important packages like numpy, scikit-learn, scipy, pandas, matplotlib, etc. Also, it has 2 popular IDEs: Spider and Jupyter. Anaconda is liked by Data Scientists because of its capabilities of handing huge volumes of data very quickly and efficiently. In this section, first we will install Anaconda platform and then see how to work with Jupyter Notebook.

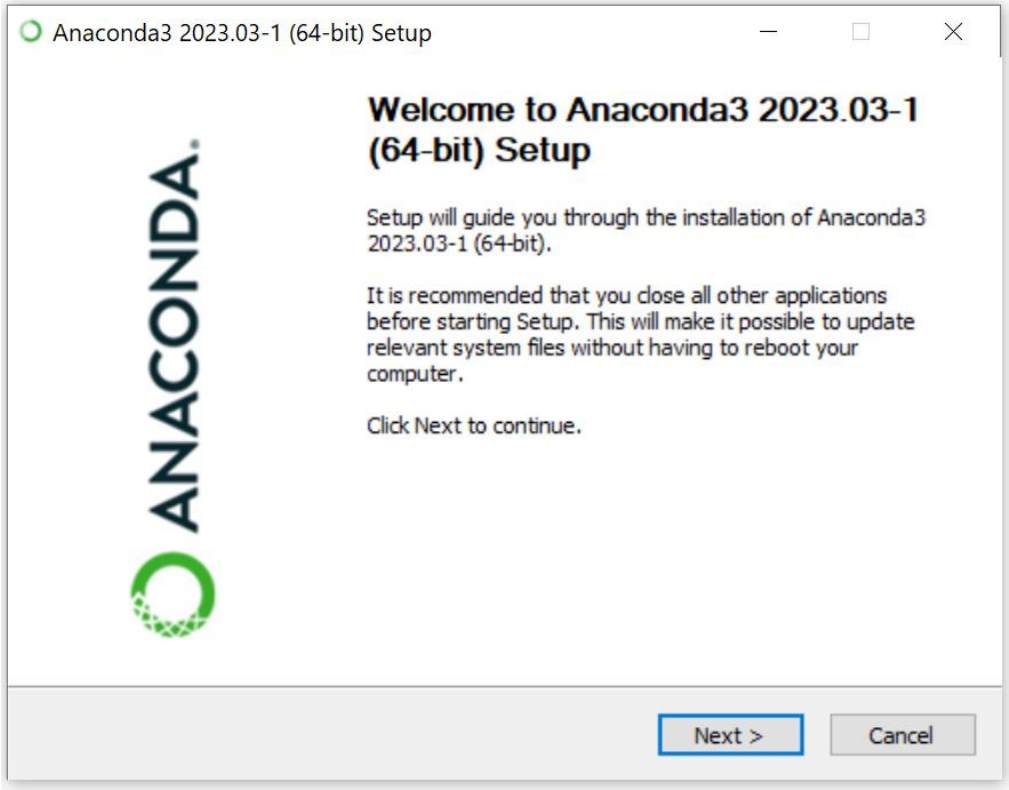
Step 1) To install Anaconda individual edition, we should visit the following url:

https://www.anaconda.com/products/individual

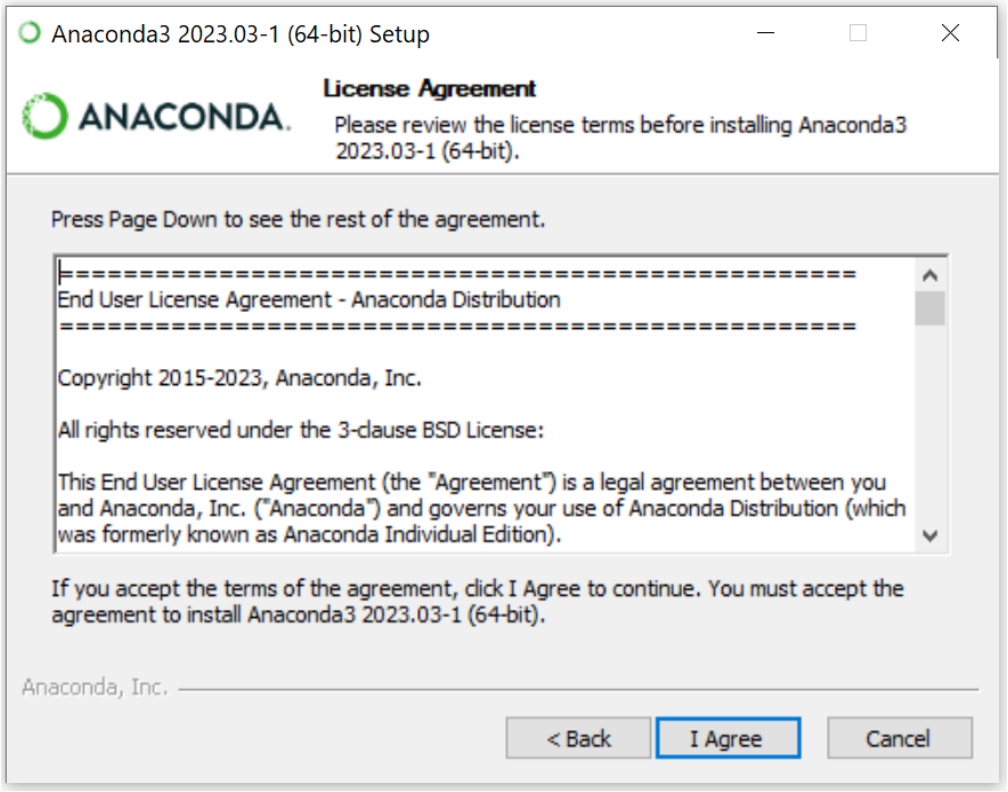
Then go to the bottom of the page. Select the 64-Bit Graphical Installer under Windows.



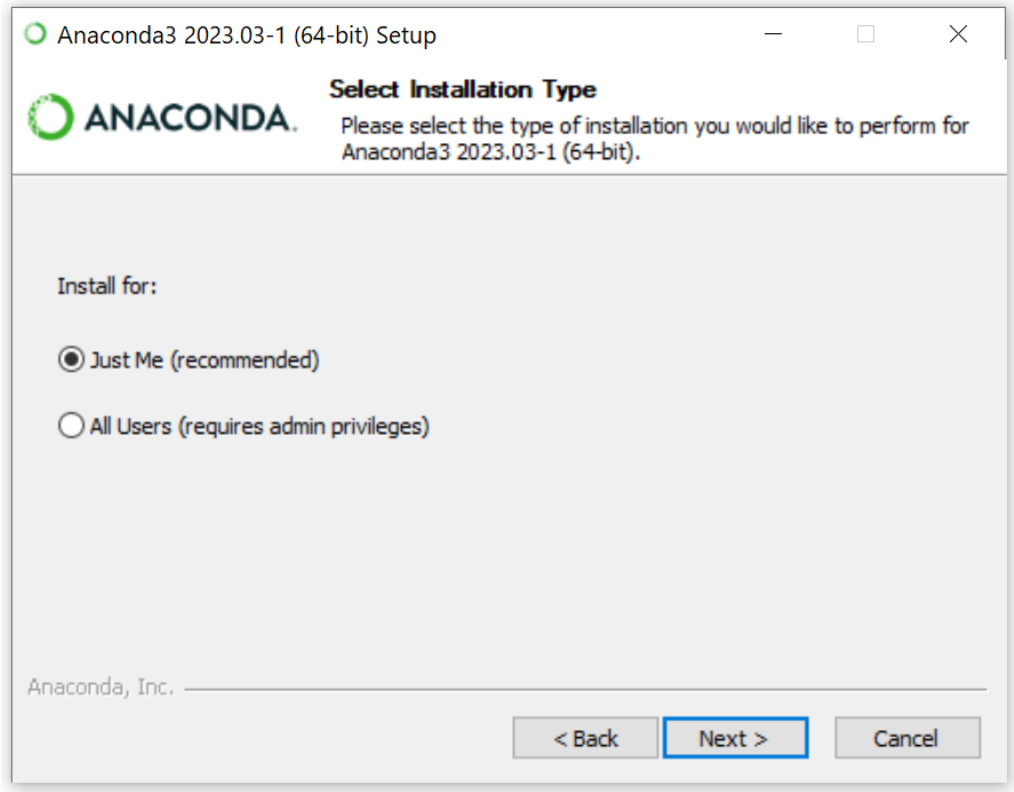
Step 2) It downloads a file like "Anaconda3-2023.03-1-Windows-x86_64.exe". Double click on it. Then Anaconda Setup will start execution. Click on "Next" button.



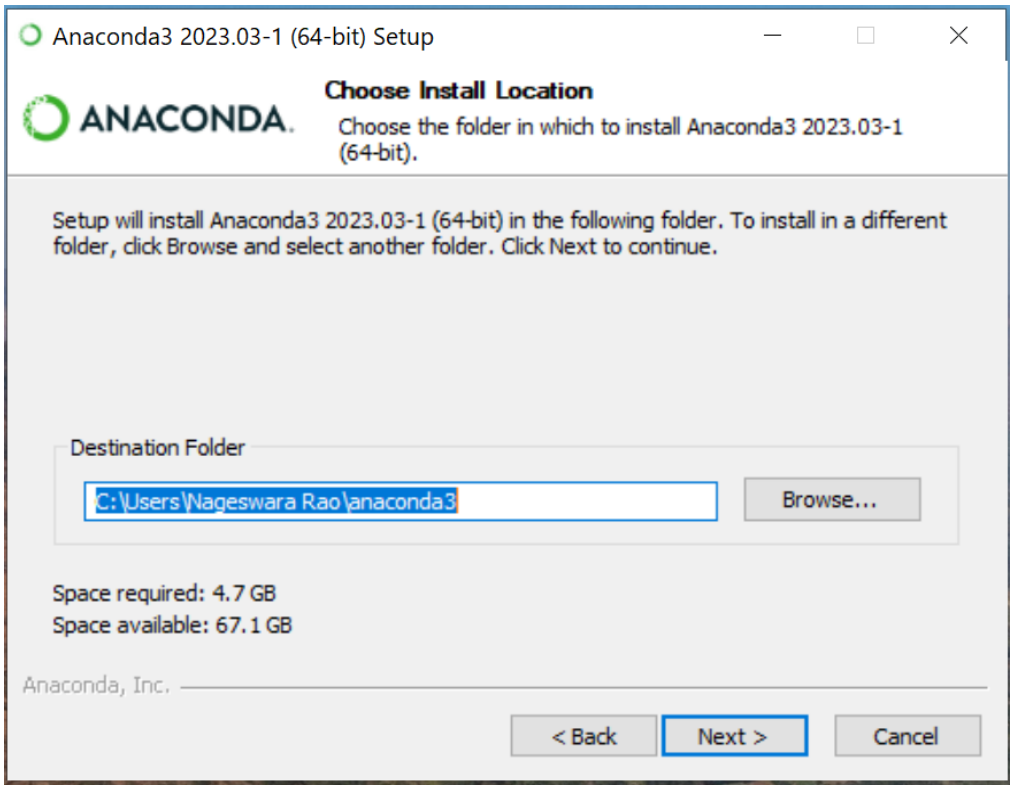
Step 3) Then click on “Next” button to continue. When it displays “License Agreement”, click on “I Agree” button.



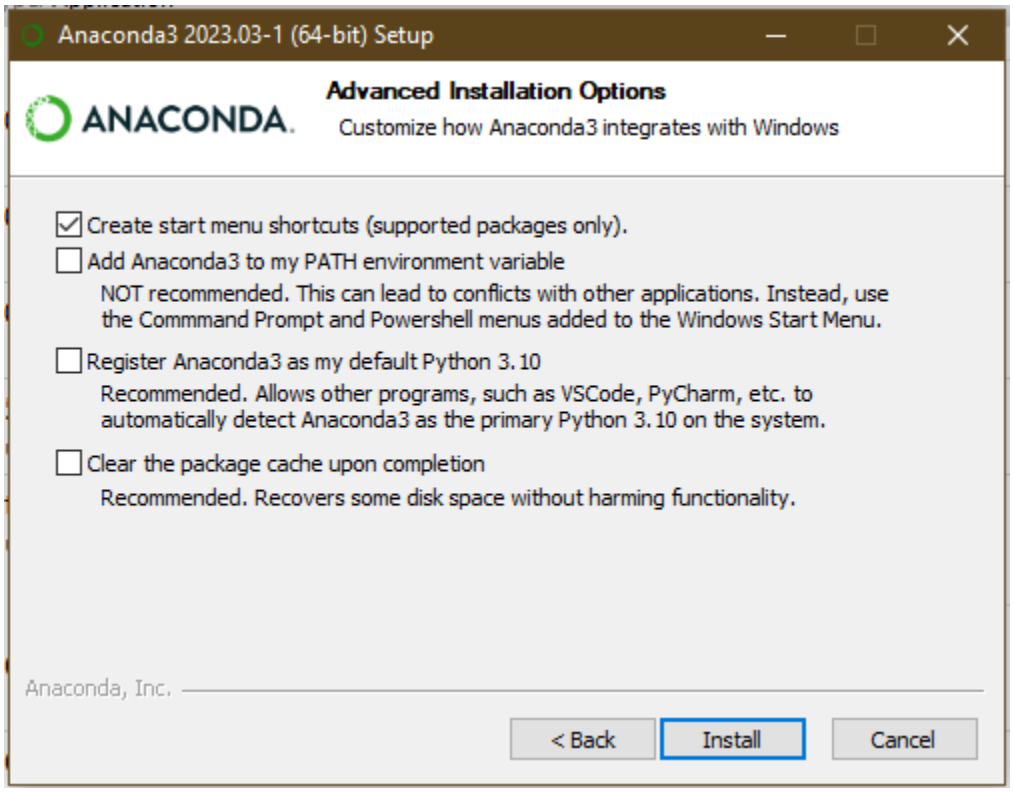
Step 4) Then click on 'Just Me' radio button for installing your individual copy.



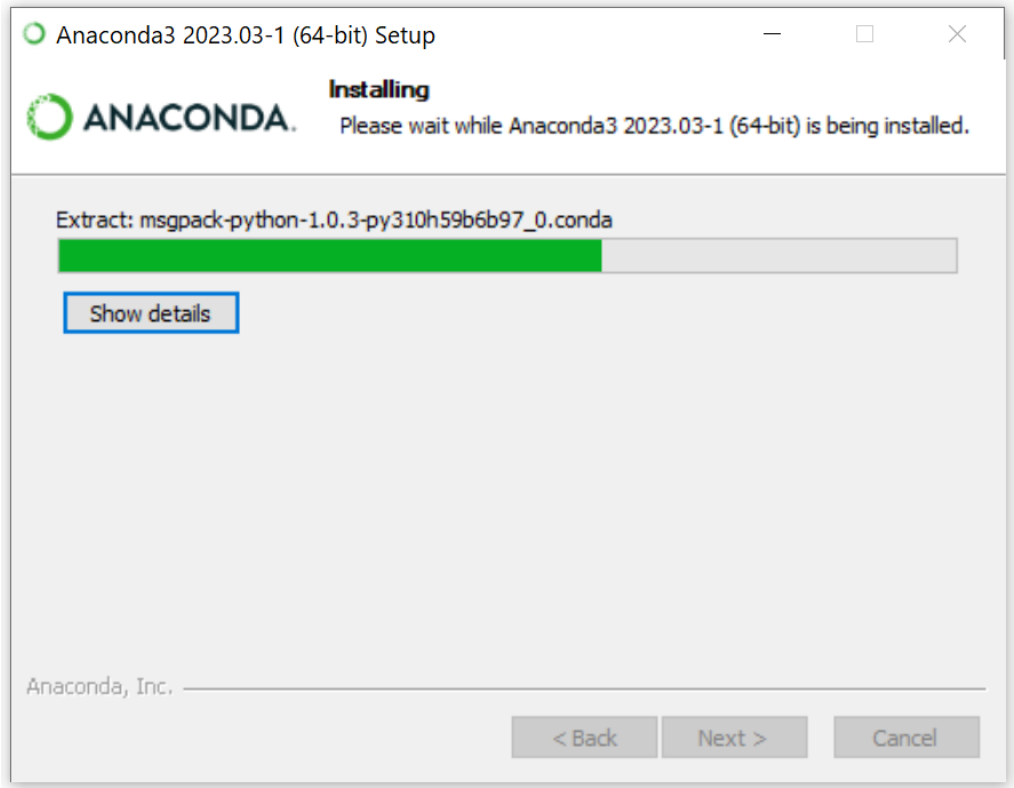
Step 5) It will show a default directory to install. Click on 'Next'.



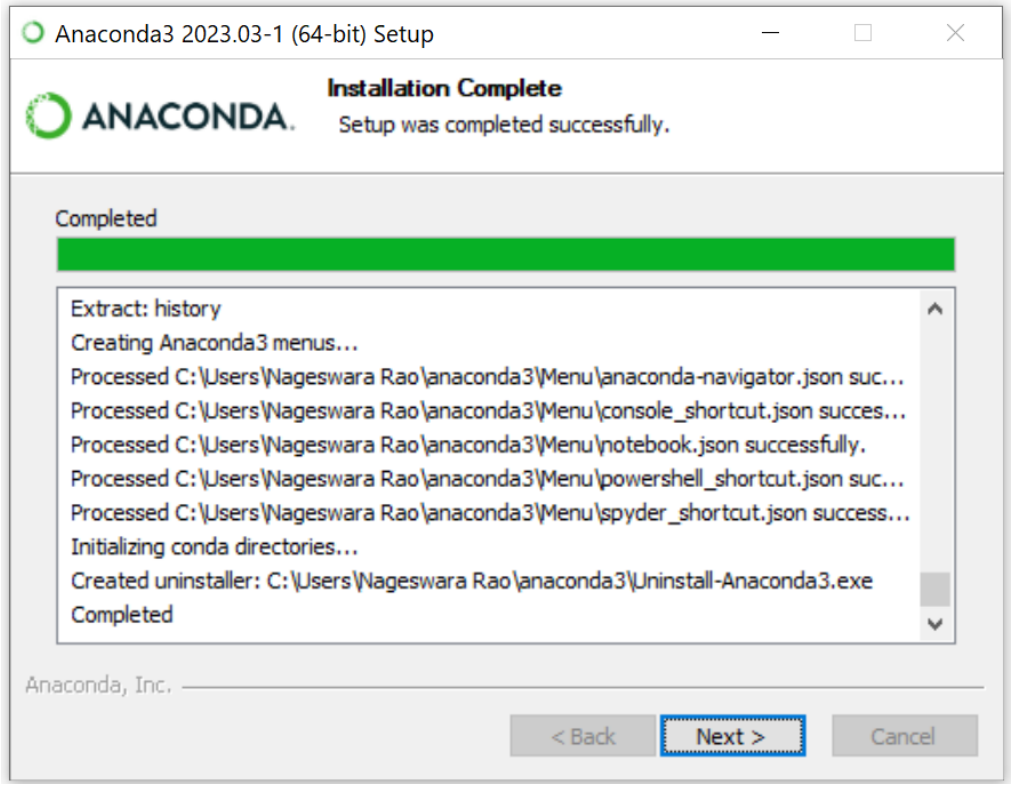
Step 6) In the next screen, select the checkbox ‘Create start menu shortcuts’. Also, unselect other checkboxes.



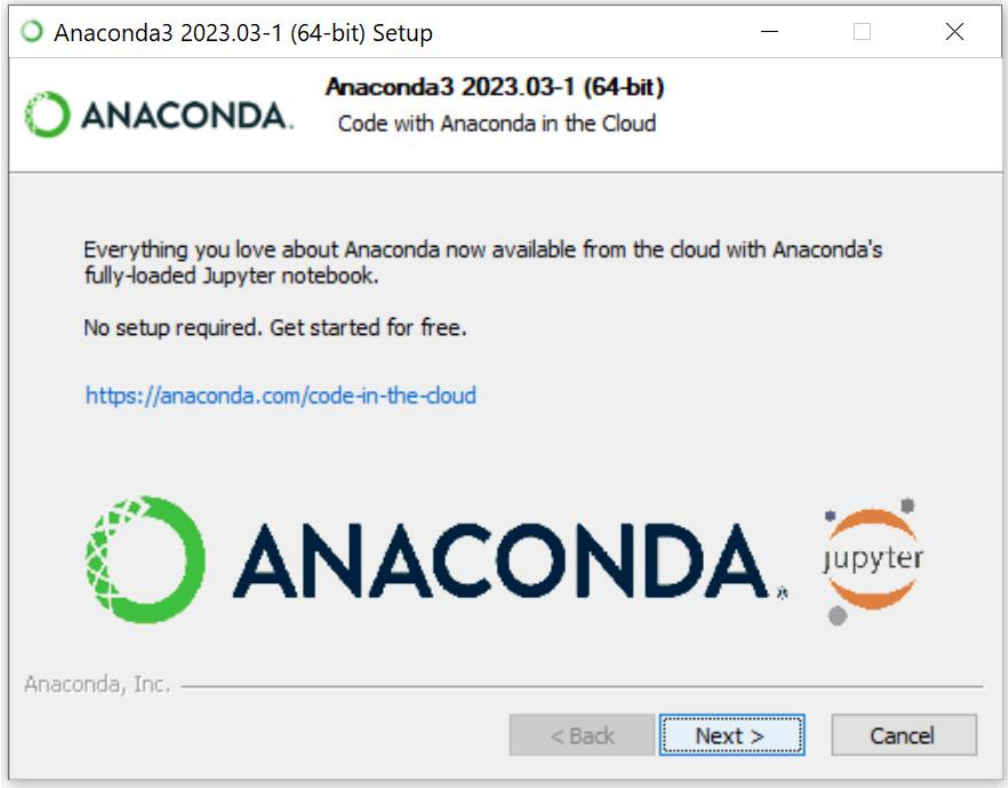
Step 7) The installation starts in the next screen**.** We should wait for the installation to complete.



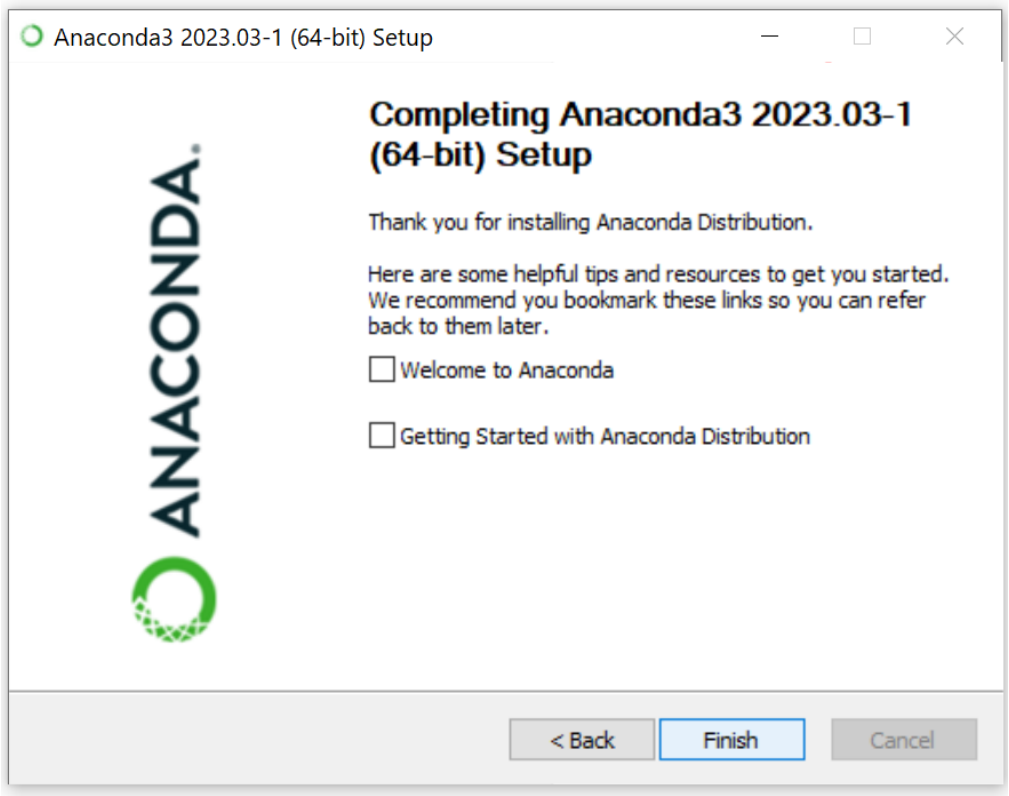
Step 8) When the installation completes, click on “Next” .



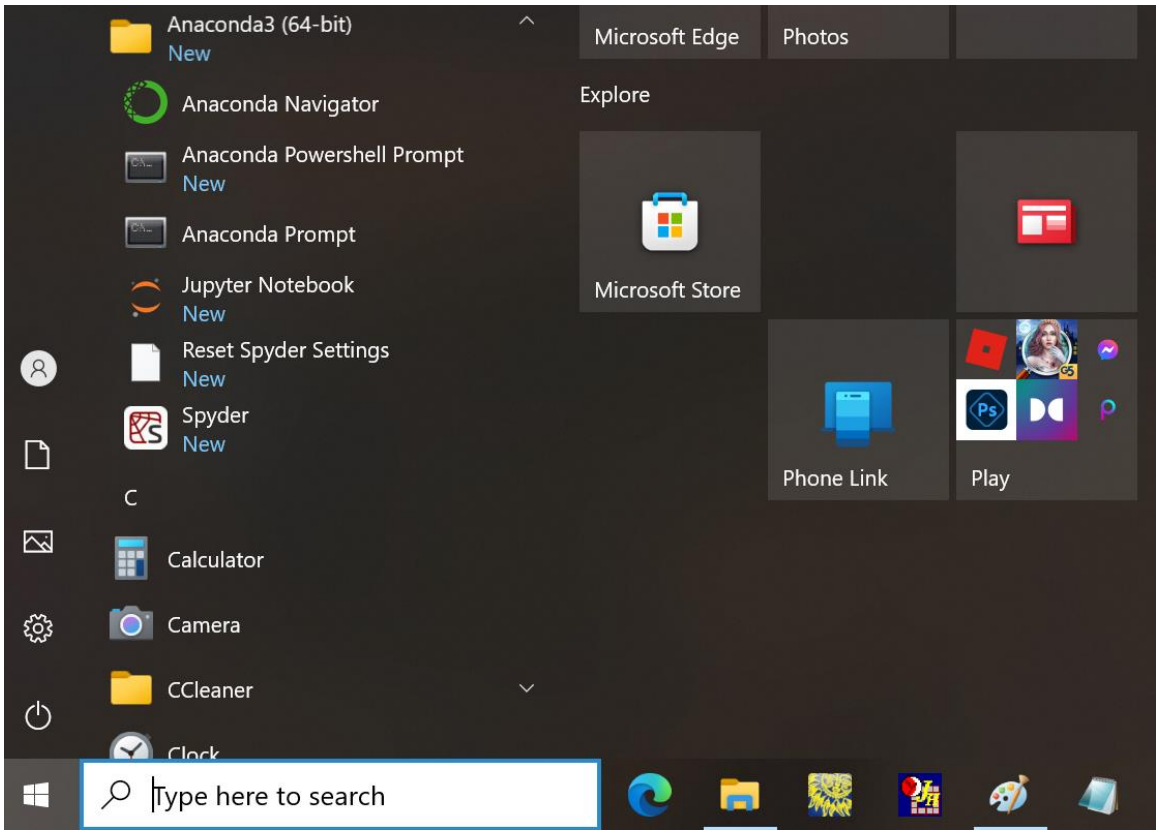
Step 9) In the next screen, click on “Next”.



Step 10) In the final screen, do not check the checkboxes and then click on “Finish”.

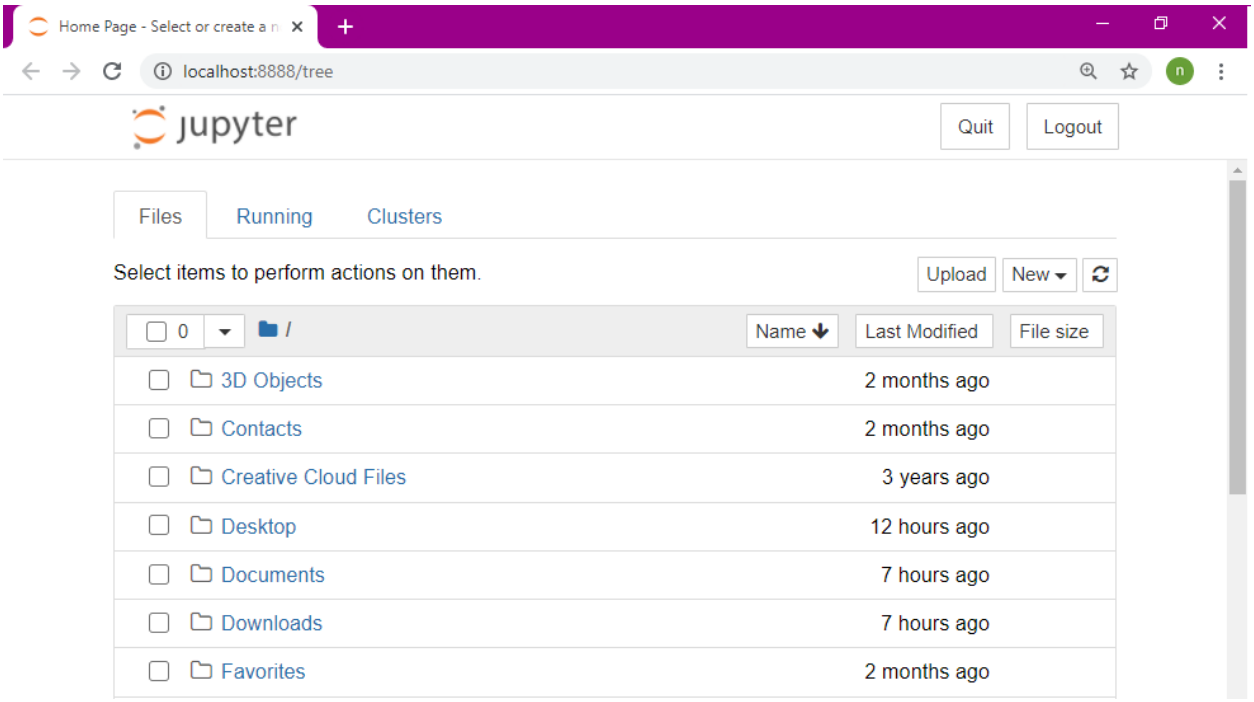


Note: Once the installation is completed, we can find a new folder by the name “Anaconda3(64-bit)” created in Window 10 applications which can be seen by pressing Windows “Start” button. When we click on this folder, we can find several icons including “Jupyter Notebook” and “Spyder”.

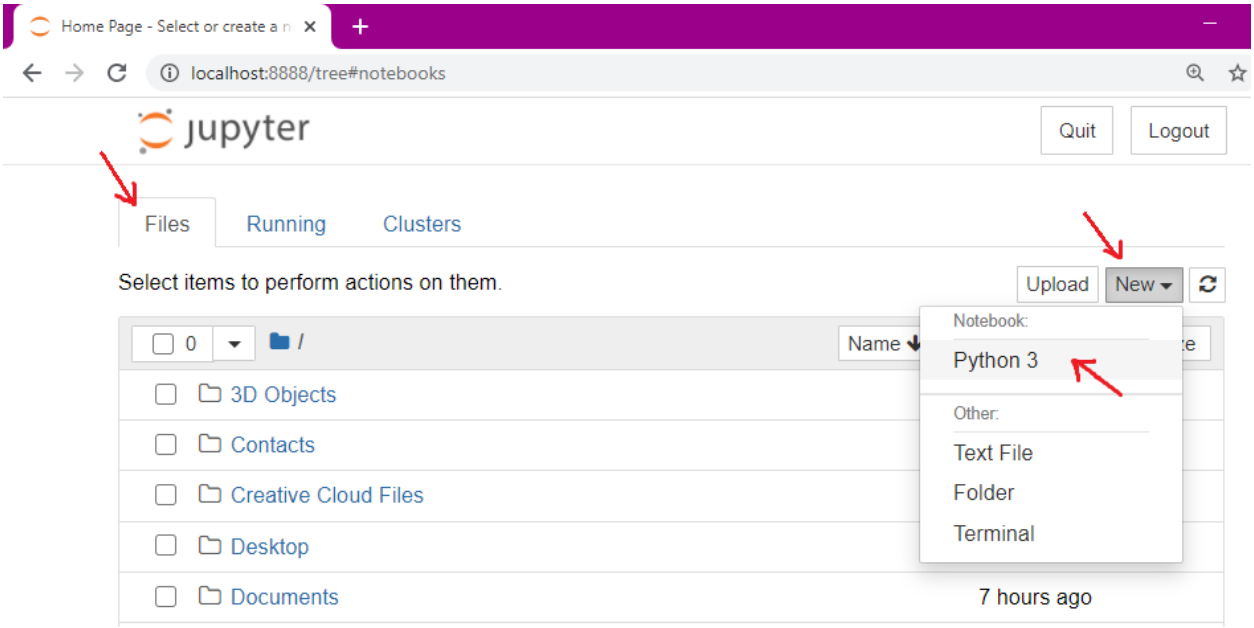


USING JUPYTER NOTEBOOK

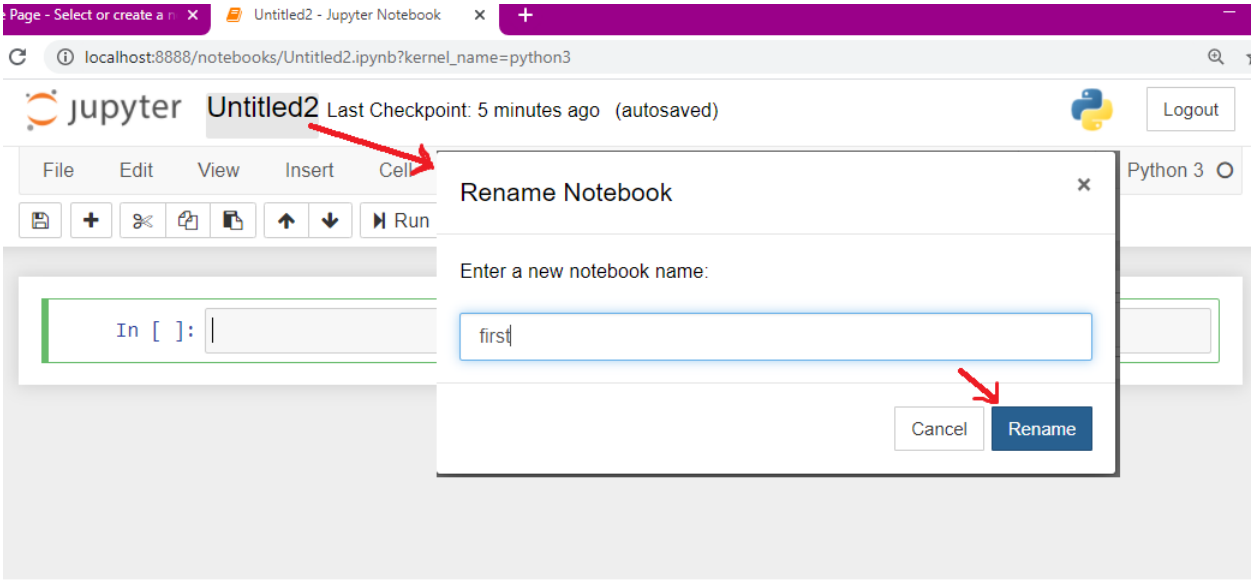
Step 1) click on the “Start” button on the Windows task bar and select the “Anaconda3” folder. In that, click on “Jupyter Notebook” link. First of a black window opens where the Jupyter server runs. Minimize this window but do not close it. After that, Jupyter opens in the browser and displays the following initial screen (Home Page).



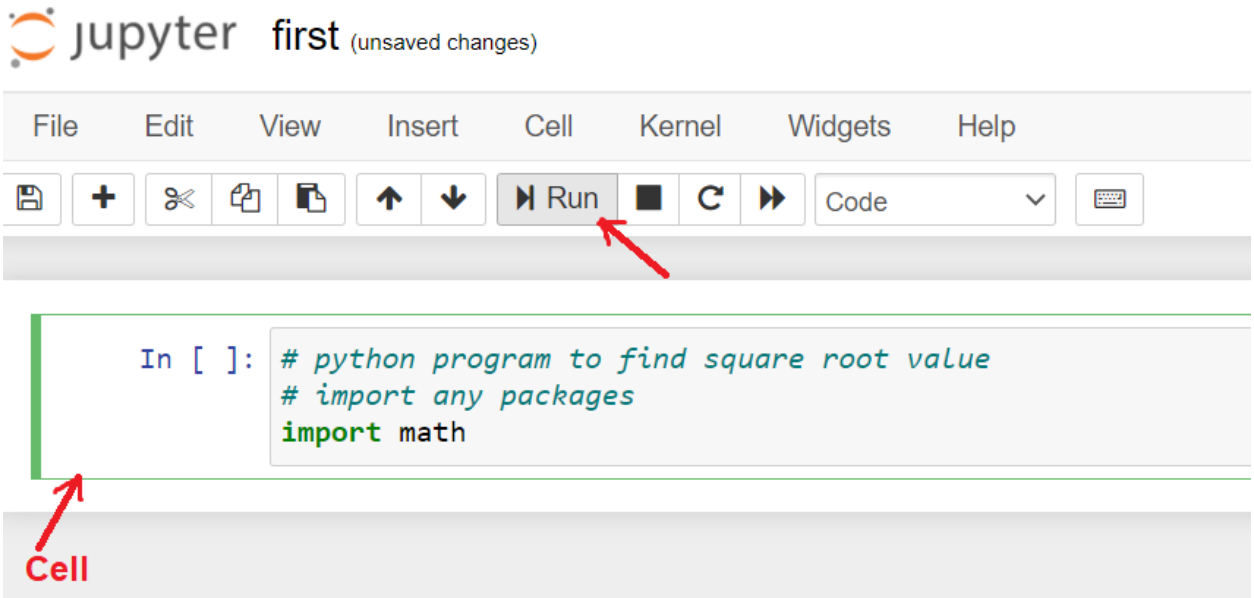
Step 2) To enter a new program, click on “Files” tab, then click on “New” and then “Python 3”.



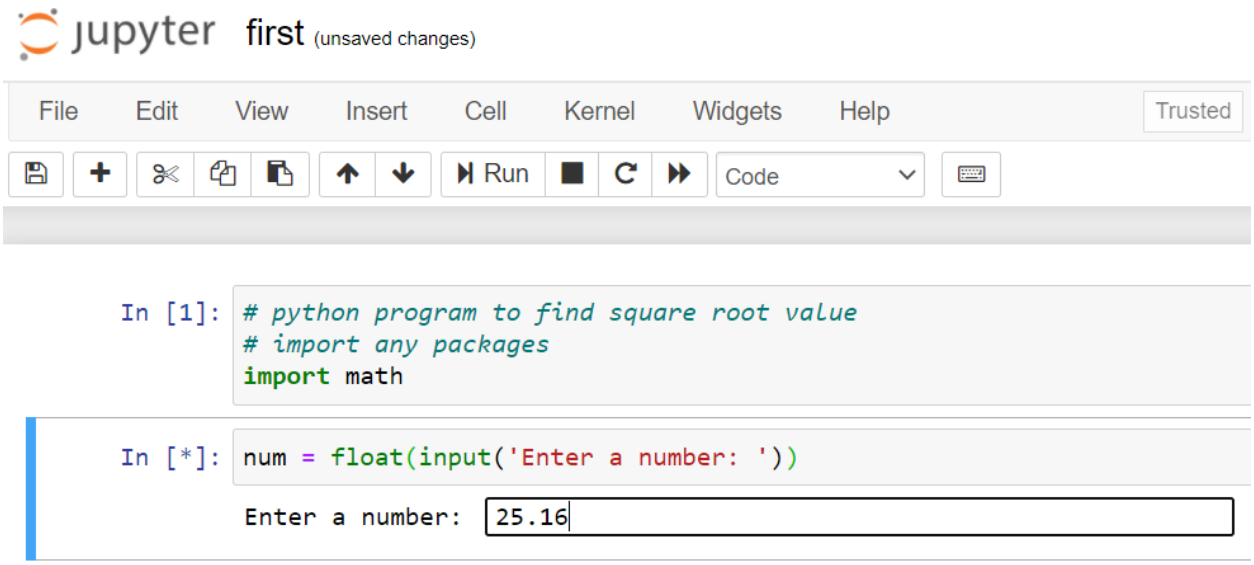
Step 3) It opens a new page. Click on “Untitled” at the top of the page and enter a new name for your program. Then click on “Rename” button.



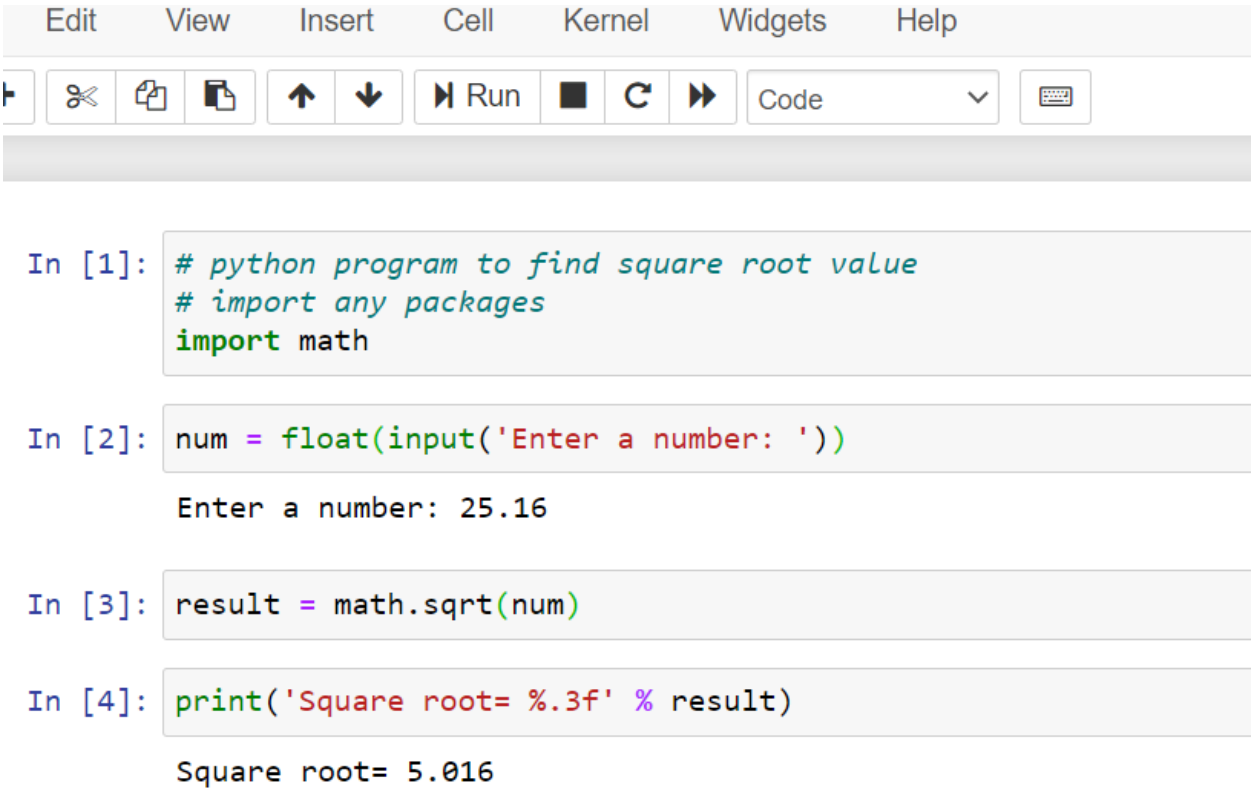
Step 4) Type the program code in cell and click on “Run” to run the code of the current cell. The current cell being edited is shown in green box.



Step 5) We can enter code in the next cell and so on. In this manner, we can run the program as blocks of code, one block at a time. When input is required, it will wait for your input to enter, as shown in the following screen. The blue box around the cell indicates command mode.

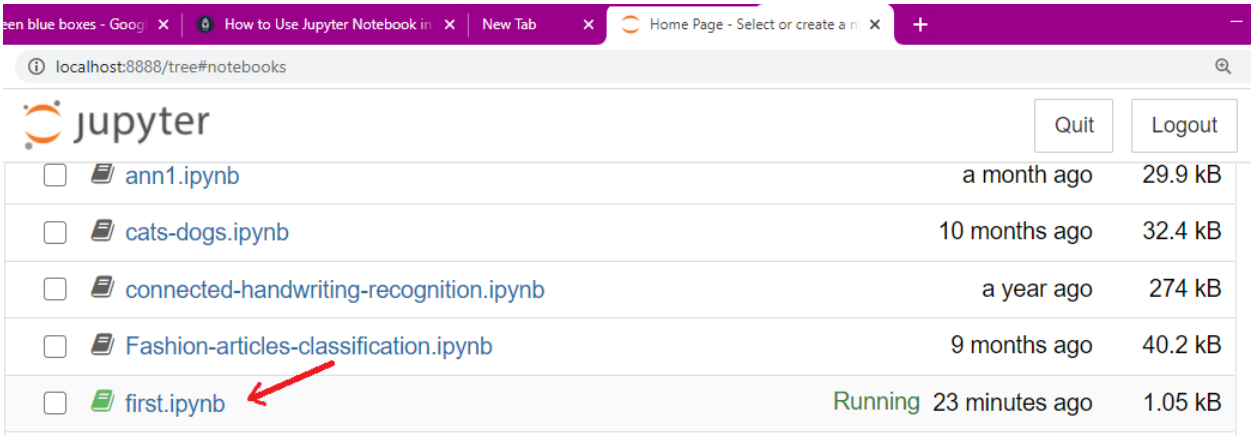


Step 6) Type the program in the cells and run each cell to see the results produced by each cell.

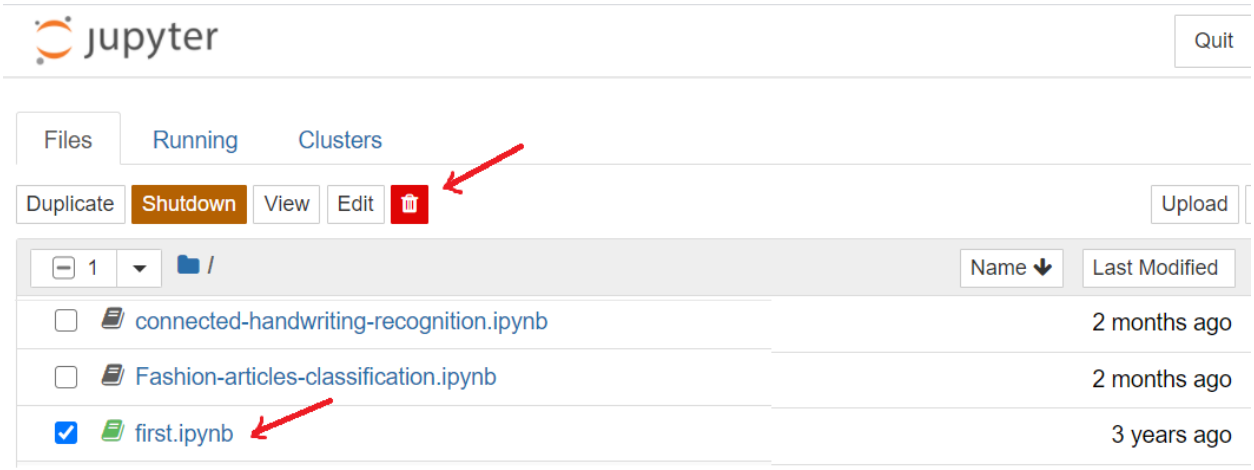


Note: To save the program, click on Floppy symbol below the "File" menu. Click on "Insert" to insert a new cell either above or below the current cell. The programs in Jupyter are saved with the extension ".ipynb" which indicates Interactive Python Notebook file. This file stores the program and other contents in the form of JSON (JavaScript Object Notation). Click on 'Logout' to terminate Jupyter. Then close the server window also.

Step 7) To reopen the program, first enter into Jupyter Notebook Home Page. In the “Files” tab, find out the program named “first.ipynb” and click on it to open it in another page.



Step 8) Similarly, to delete the file, first select it and then click on the Delete Bin symbol.



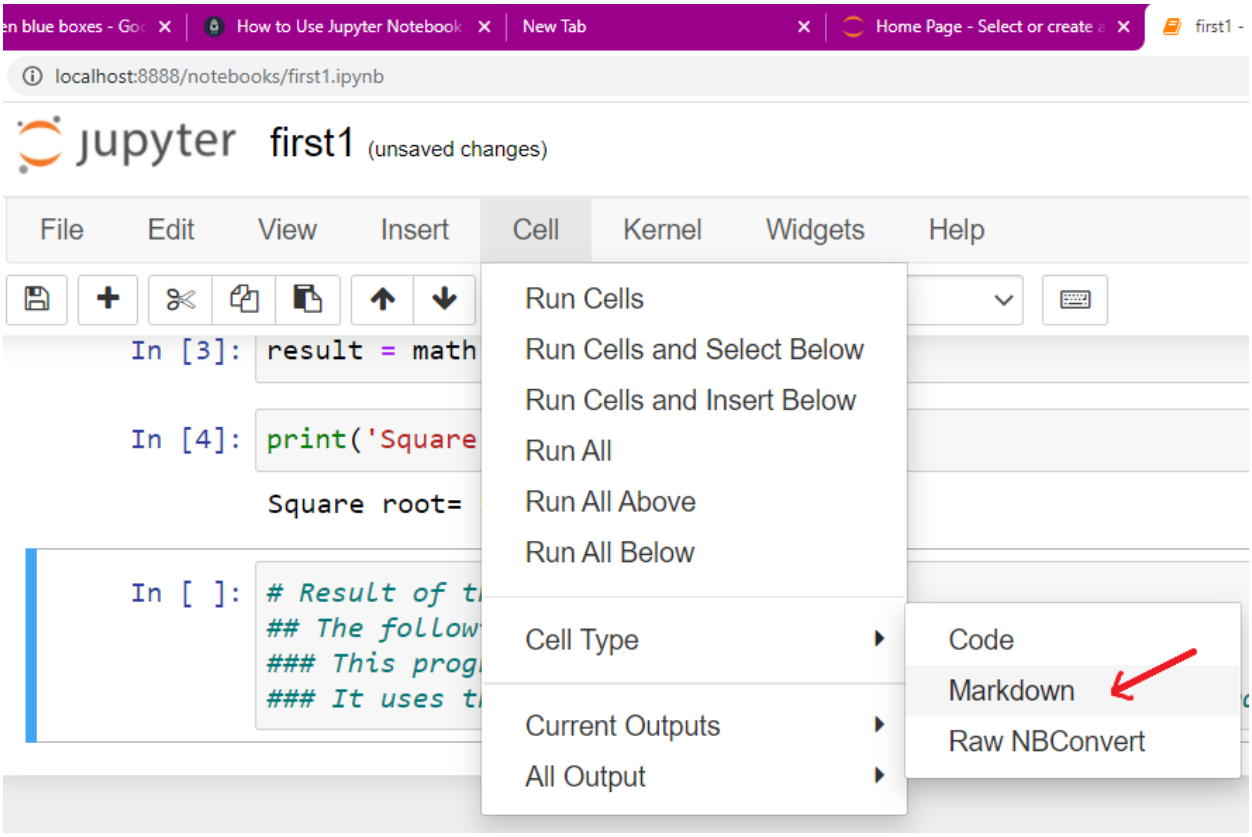
ADDING NOTES IN THE PROGRAM

A Notebook indicates a program along with any notes and images associated with it. Hence it is possible to add any notes and images to our program. This is done using “Mark Down” type of cells. Actually, our program is typed in a cell that is by default known as “Coding” cell, but when we do not want enter program statements in the cell, then it comes under “Mark Down” cell.

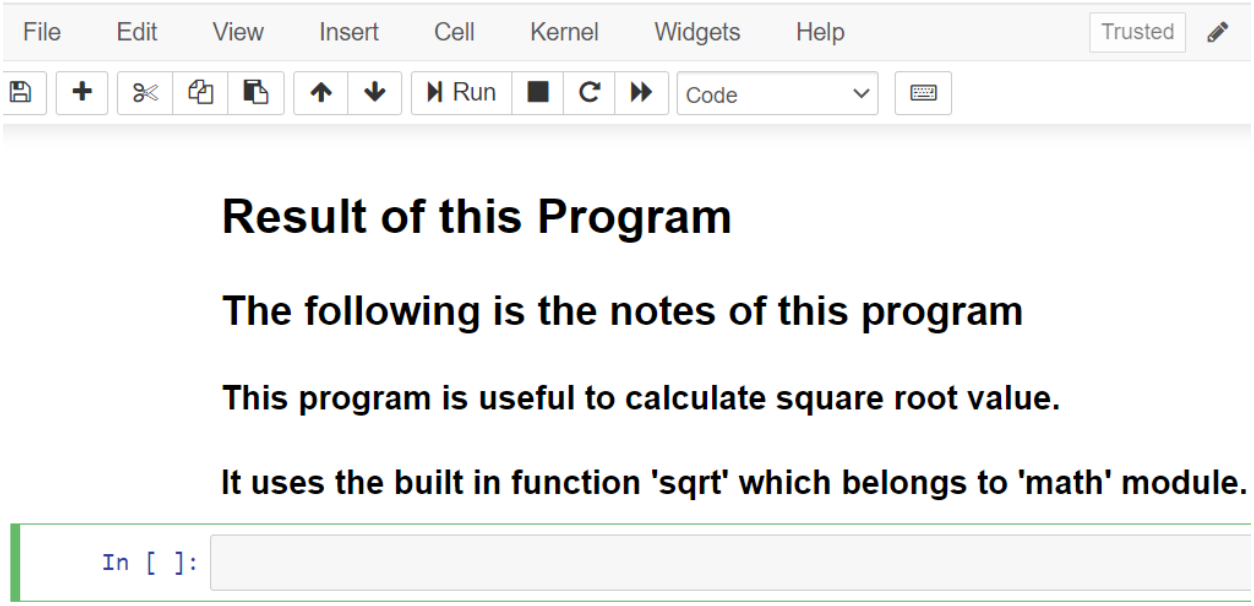
Step 1) Open the program and at its bottom, in a fresh cell, type some text starting with a # or ## or ### as shown below.

```
In [3]: result = math.sqrt(num)

In [4]: print('Square root= %.3f' % result)

        Square root= 5.016

In [ ]: # Result of this Program
        ## The following is the notes of this program
        ### This program is useful to calculate square root value.
        ### It uses the built in function 'sqrt' which belongs to 'math' module.
```

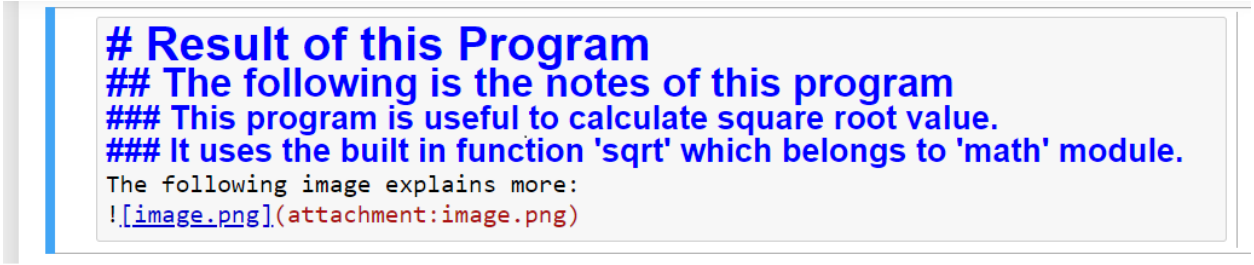
Step 2) Click on “Cell” in the menu and then “Cell Type” and click on “Markdown”. This will convert our current cell as “Markdown” type of cell.



Step 3) Then click on “Run” to see that our text is displayed as various levels of headings. # is converted into big heading and ## into a bit small heading.



Step 4) When we double click on the previous cell, we can get the original text. To add any images or photos in our notes, first open the image in an image editing software like Paint or Photoshop. Then copy and paste it into our cell. Then a new statement like: ![image.png](attachment:image.png) is added.The cell contents look like the below one:



Step 5) Click on “Run” in the menu to find the image added to the notes.

Result of this Program

The following is the notes of this program

This program is useful to calculate square root value.

It uses the built in function 'sqrt' which belongs to 'math' module.

The following image explains more:

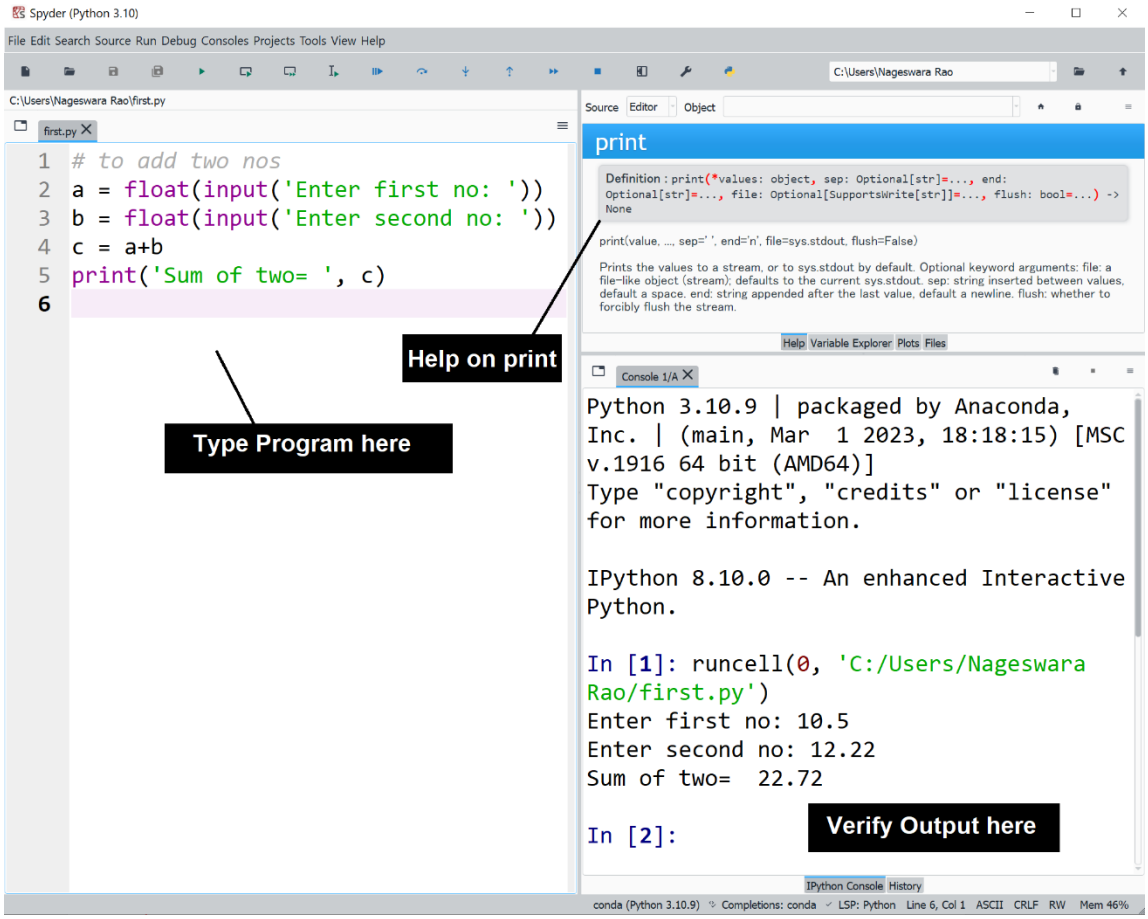
Note: In this manner, we can add notes or images in any cell and convert it into “Markdown” cell. Of course, we need to save the program again. When the program is reopened, Jupyter displays the program source code in the cells along with the notes and images wherever inserted.

To get help in Jupyter, Place the cursor inside the parenthesis of the function, hold down shift , and press tab .

WORKING WITH SPYDER IDE

Another important IDE that is available with Anaconda platform is Spyder IDE. We can run our Python programs in this IDE also.

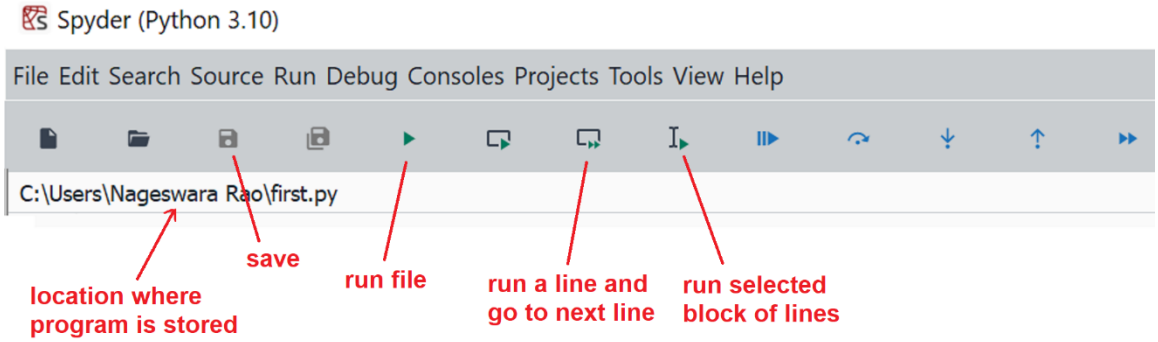
Step 1) click on the “Start” button on the Windows task bar and select the “Anaconda3” folder. In that, click on “Spyder” link. It opens Spyder. Type the program at the left side window. The program is run at the right bottom window.



To get help in Spyder, place mouse on any function name or class name etc. and press Control + I. The help will be displayed in the right top window in 'Help' tab.

Similarly, 'Variable Explorer' tab shows the variables or objects and the data stored in them. 'Plots' tab displays the graphs or plots separately so that they can be copied.

Please observe the following to run the program:



Note: To make settings like Fonts and sizes

Tools -> Preferences -> Appearance.