# Hands-on Lab : Download & install Anaconda

Time efforts: **15** minutes

## Objectives of exercise

- Download & install Anaconda
- Create Anaconda Environment for R and Python
- Install and run Jupyter Notebook

## Overview of Anaconda

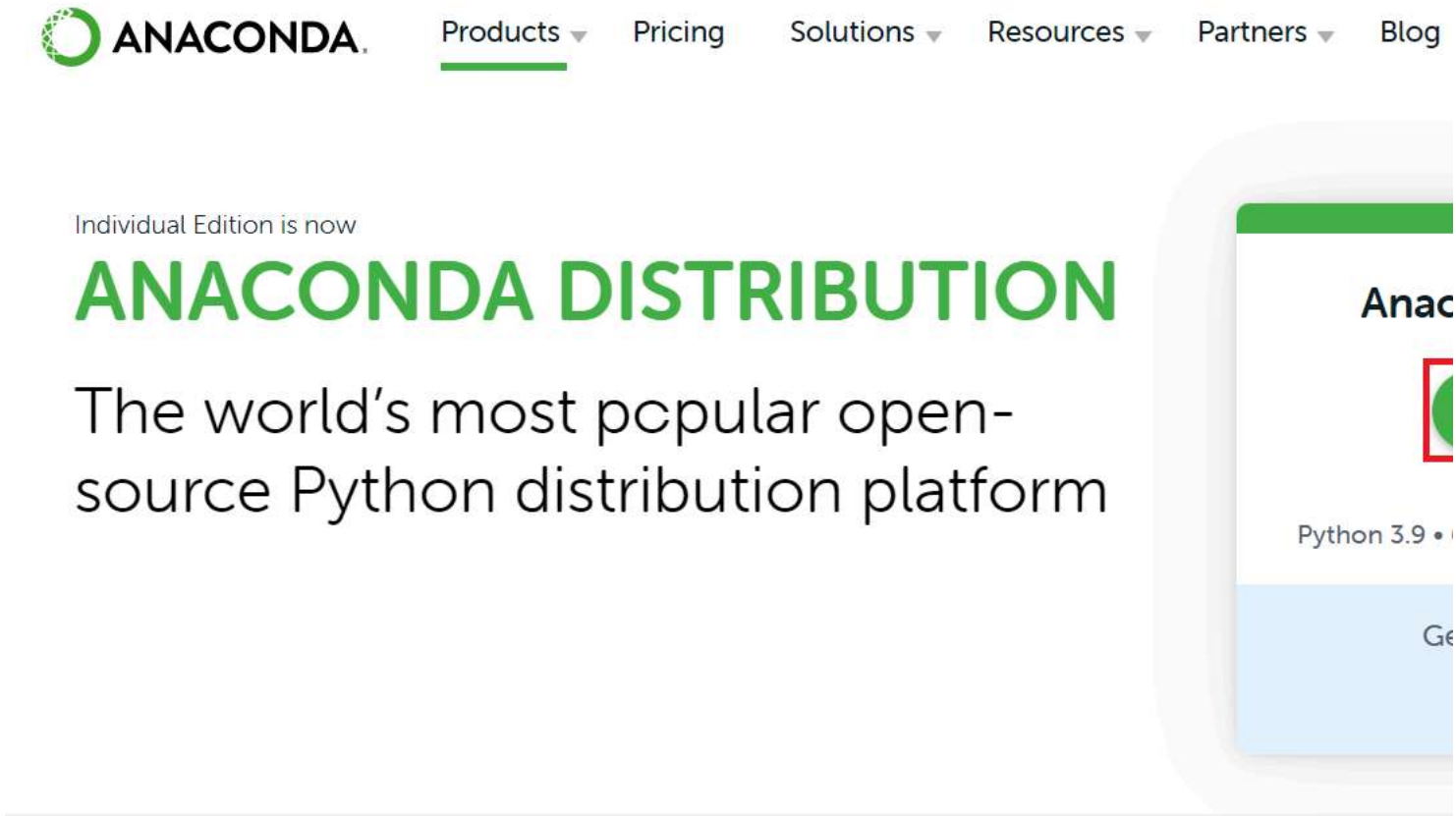
There are several cloud-based data science tools that can make team collaboration more accessible. At times it's useful to work directly on your desktop.

Anaconda Distribution is an Open Source distribution of Python and R languages. It comes with a repository of a large number of packages for data science and machine learning, with the most popular and commonly used ones pre-installed. It includes Anaconda Navigator, a graphical interface (GUI) that contains several tools, and IDEs such as Jupyter Notebooks and R Studio. It has binaries for major platforms, including Windows, Linux, and macOS. This lab includes instructions for downloading and installing Anaconda on Windows.

## Exercise 1: Download & Install Anaconda Distribution

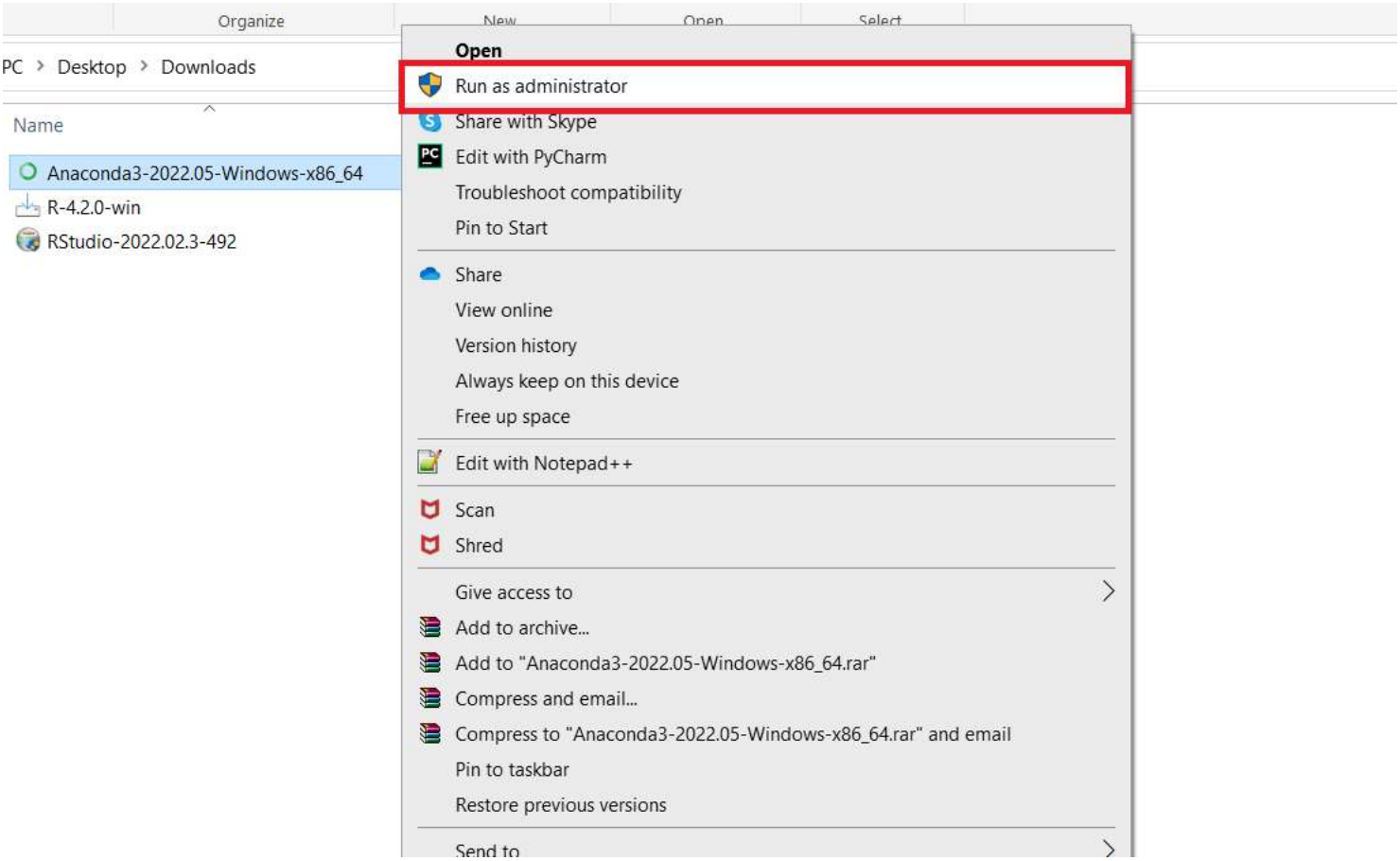
**Step 1**: Use the below link to download the Anaconda distribution:

**Link for Download Anaconda Distribution:** https://www.anaconda.com/products/distribution

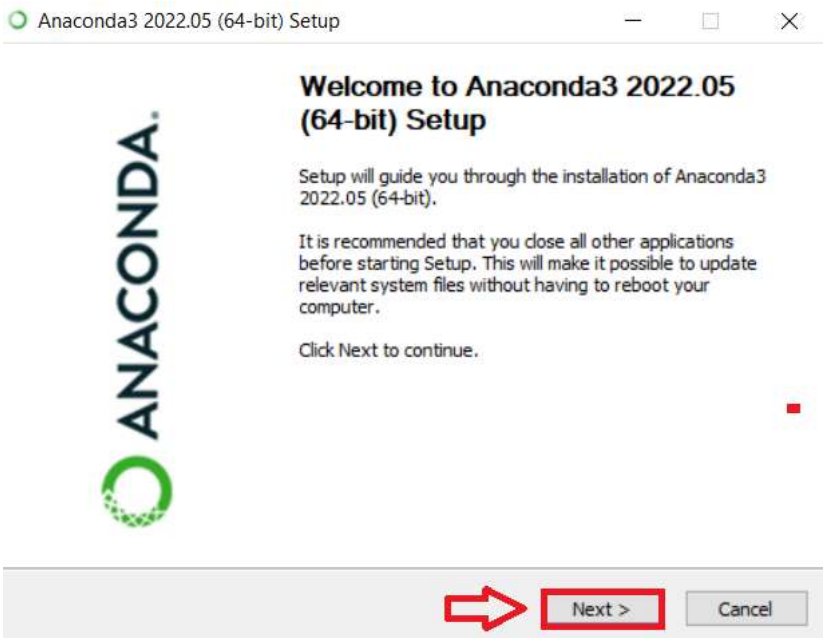


***Note**: Depending on your **Operating system**, it would show the download link specific to your OS. Click the **Download** button to download it to your local machine.*

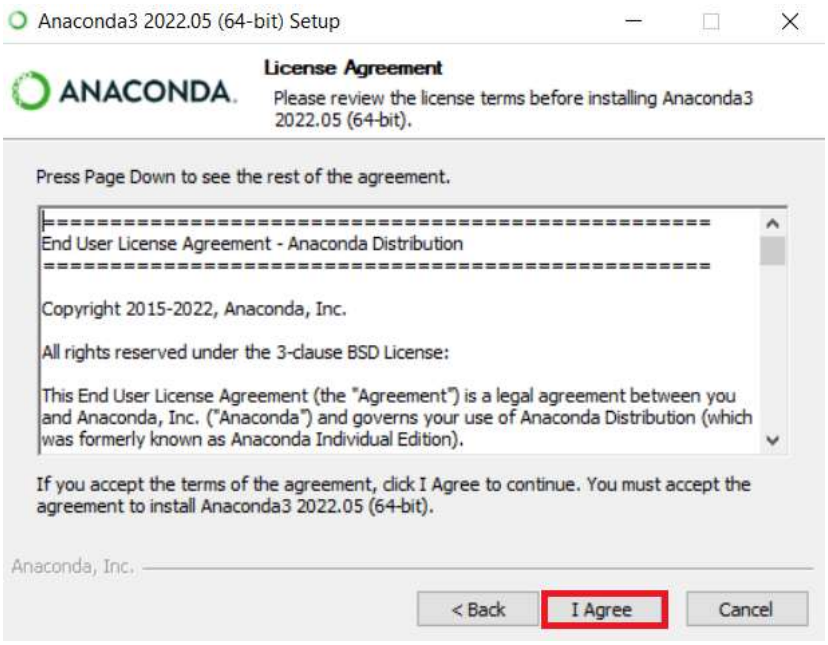
**Step 2**: Once the download completes, right-click the downloaded file and run it as **Administrator**.



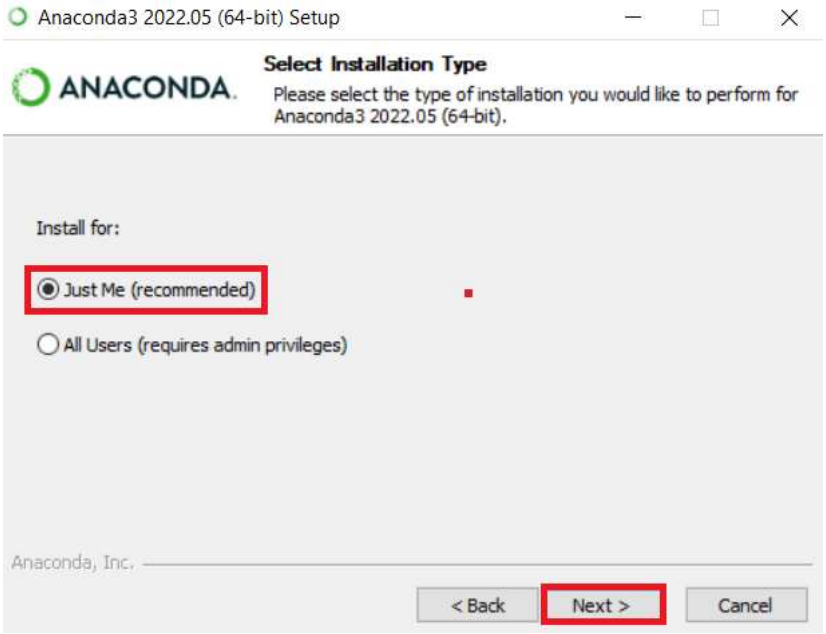

**Step 3**: At the beginning of the welcome window, you need to click **Next** to confirm the installation.



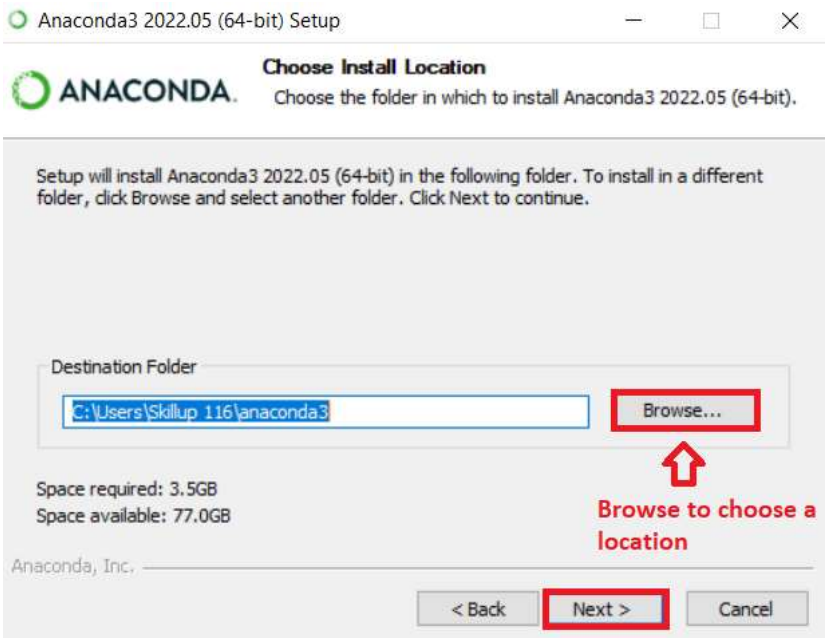

**Step 4**: Agree to the license.



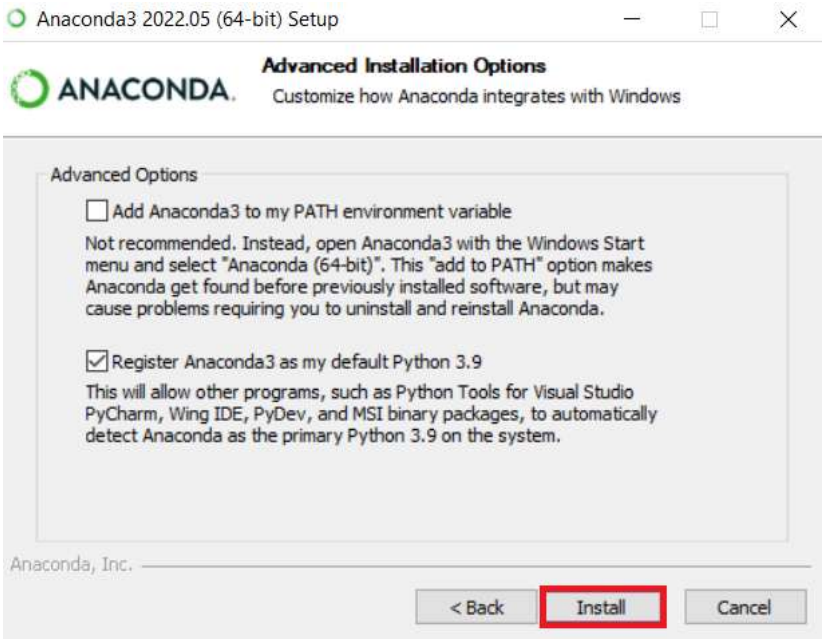

**Step 5**: In the installation window, select **Just me**, and click **Next**.



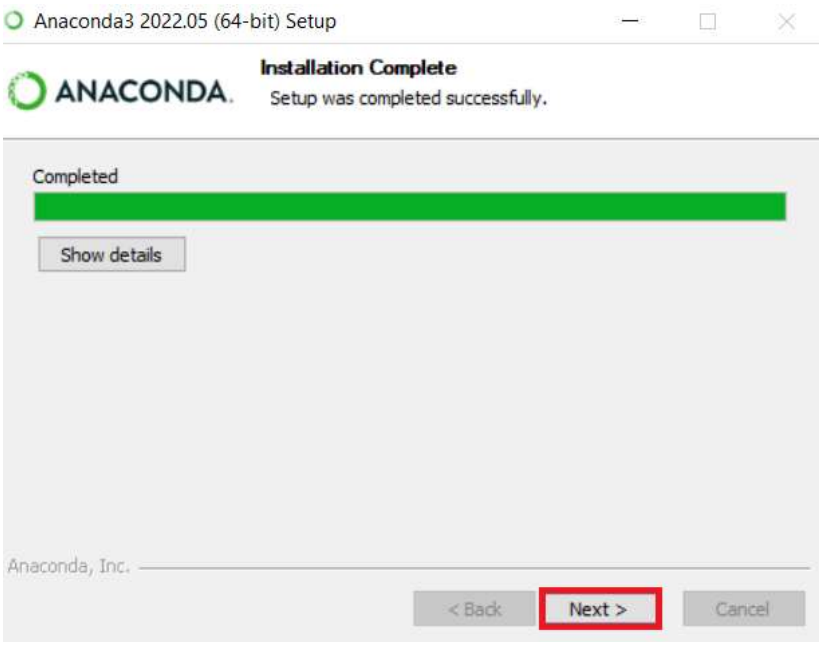

**Step 6**: Select the folder where you would like to **Install Anaconda**, or retain the **Default** installation location and click **Next**.



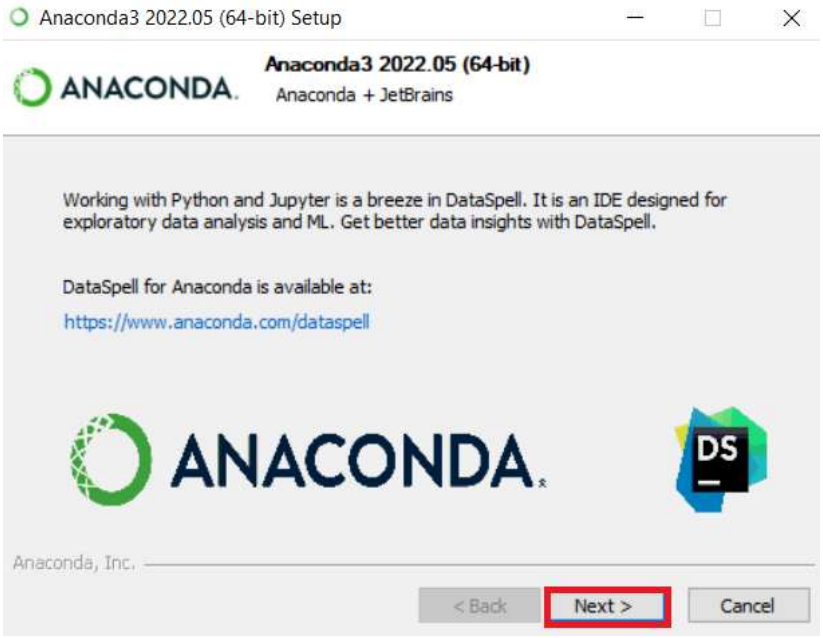

**Step 7**: In the **Advanced Installation Options** window, select **Register Anaconda3 as the default Python 3.9** option, and click **Install**.



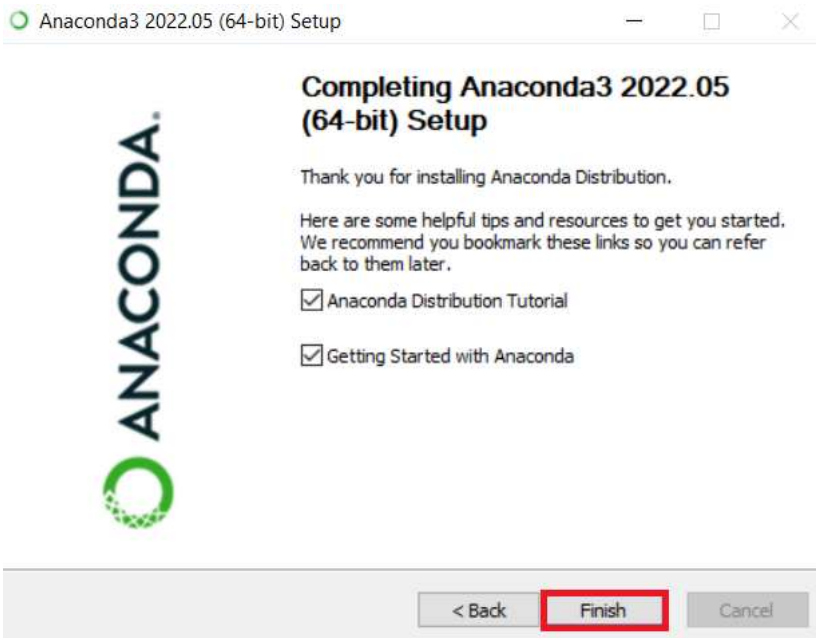

**Step 8**: You need to wait for the installation to complete. Once installation completes, click **Next**.




**Step 9**: Click **Next**.




**Step 10**: Click **Finish** to complete the installation of the Anaconda distribution.

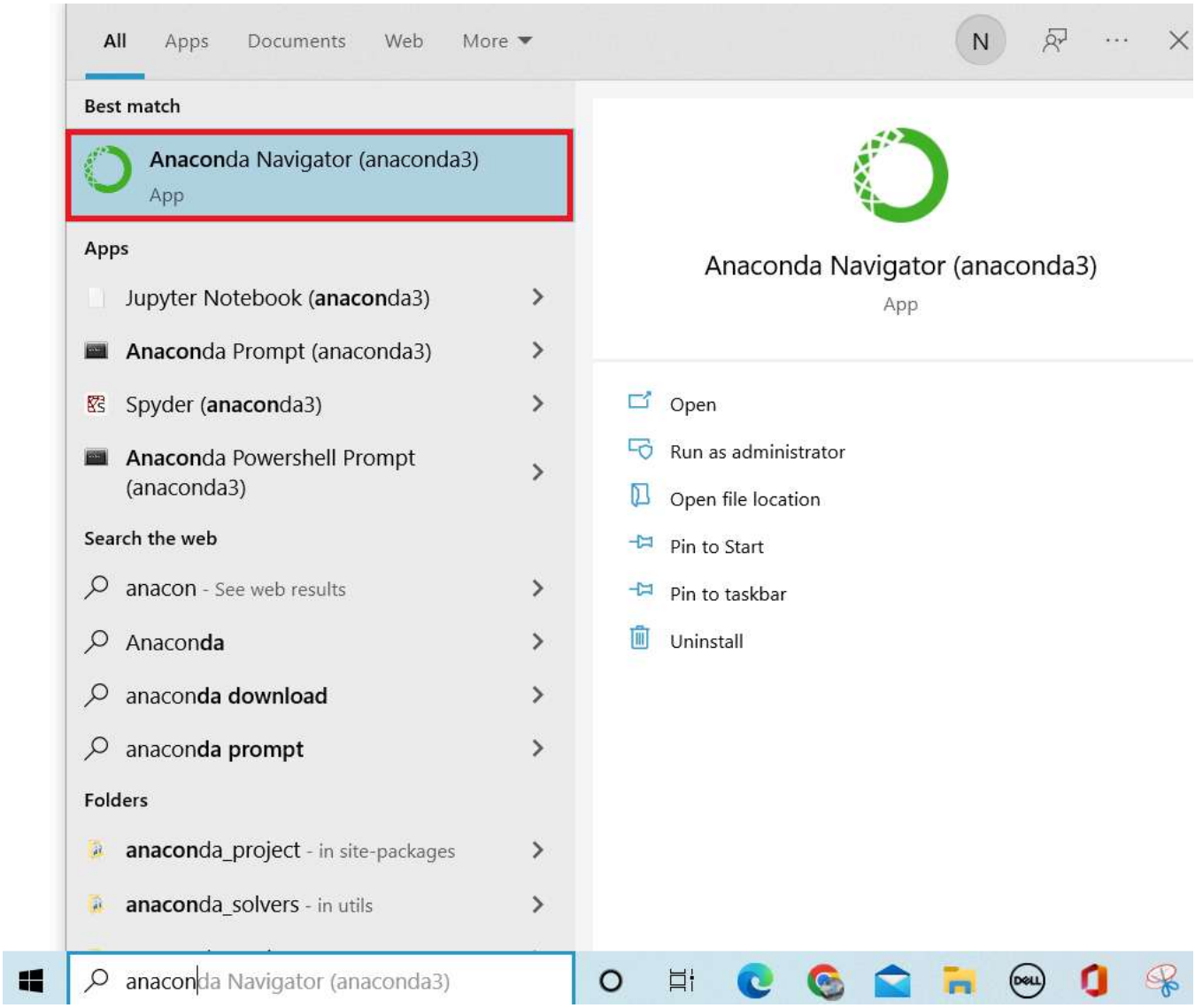


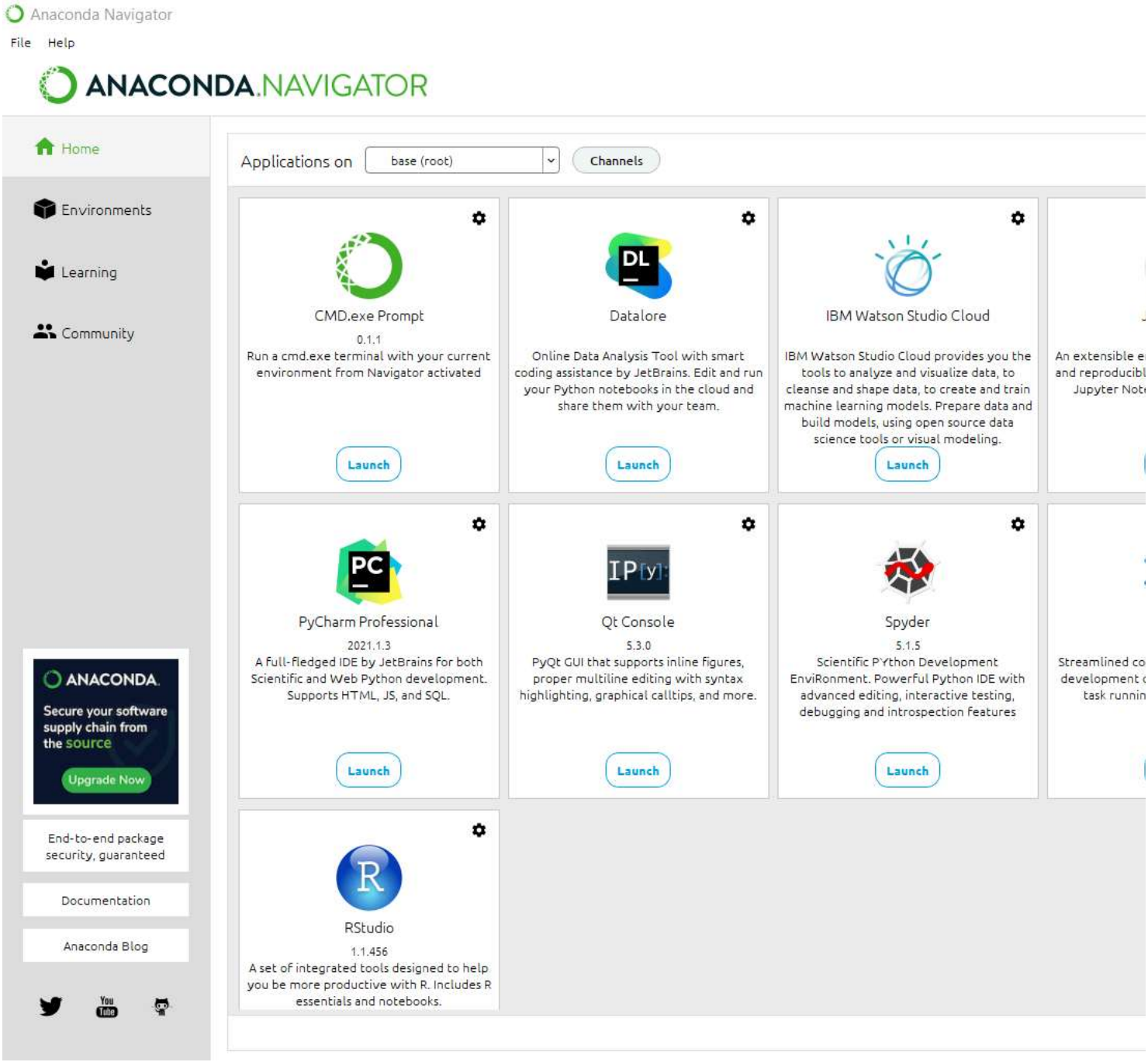

## Exercise 2: Create Anaconda Environment

Anaconda environment is a directory containing a specific collection of conda packages you have installed. For example, you may have one environment with NumPy 1.7 and its dependencies and another environment with NumPy 1.6 for legacy testing.

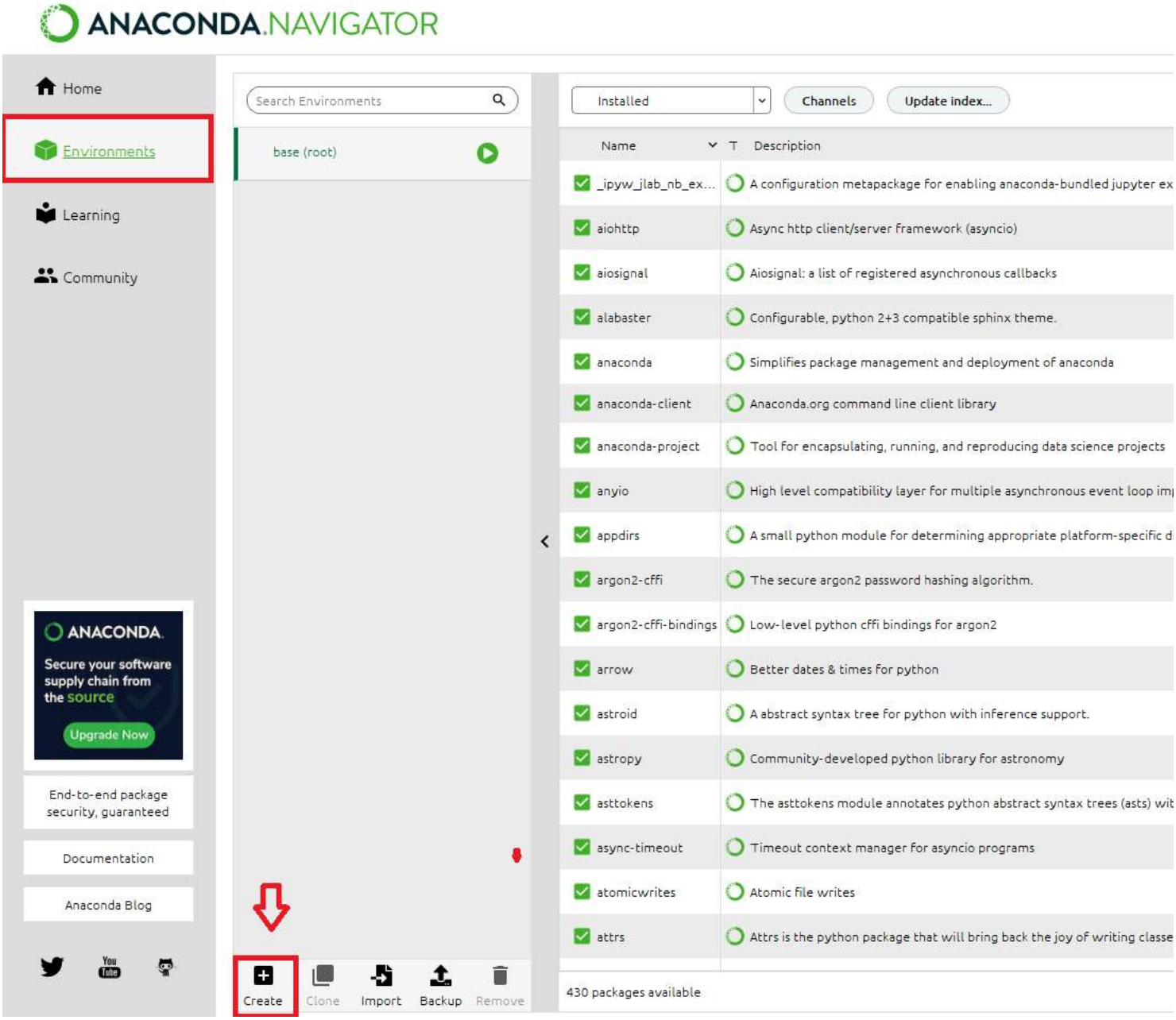
**Ref**: https://conda.io/projects/conda/en/latest/user-guide/concepts/environments.html

**Step 1**: Open the **Anaconda Navigator** from the Windows Start menu.


All
Apps
Documents
Web
More
N
Best match
Anaconda Navigator (anaconda3)
App
Apps
Jupyter Notebook (anaconda3)
Anaconda Prompt (anaconda3)
Spyder (anaconda3)
Anaconda Powershell Prompt (anaconda3)
Search the web
anacon - See web results
Anaconda
anaconda download
anaconda prompt
Folders
anaconda_project - in site-packages
anaconda_solvers - in utils
Anaconda Navigator (anaconda3)
App
Open
Run as administrator
Open file location
Pin to Start
Pin to taskbar
Uninstall
anaconda Navigator (anaconda3)



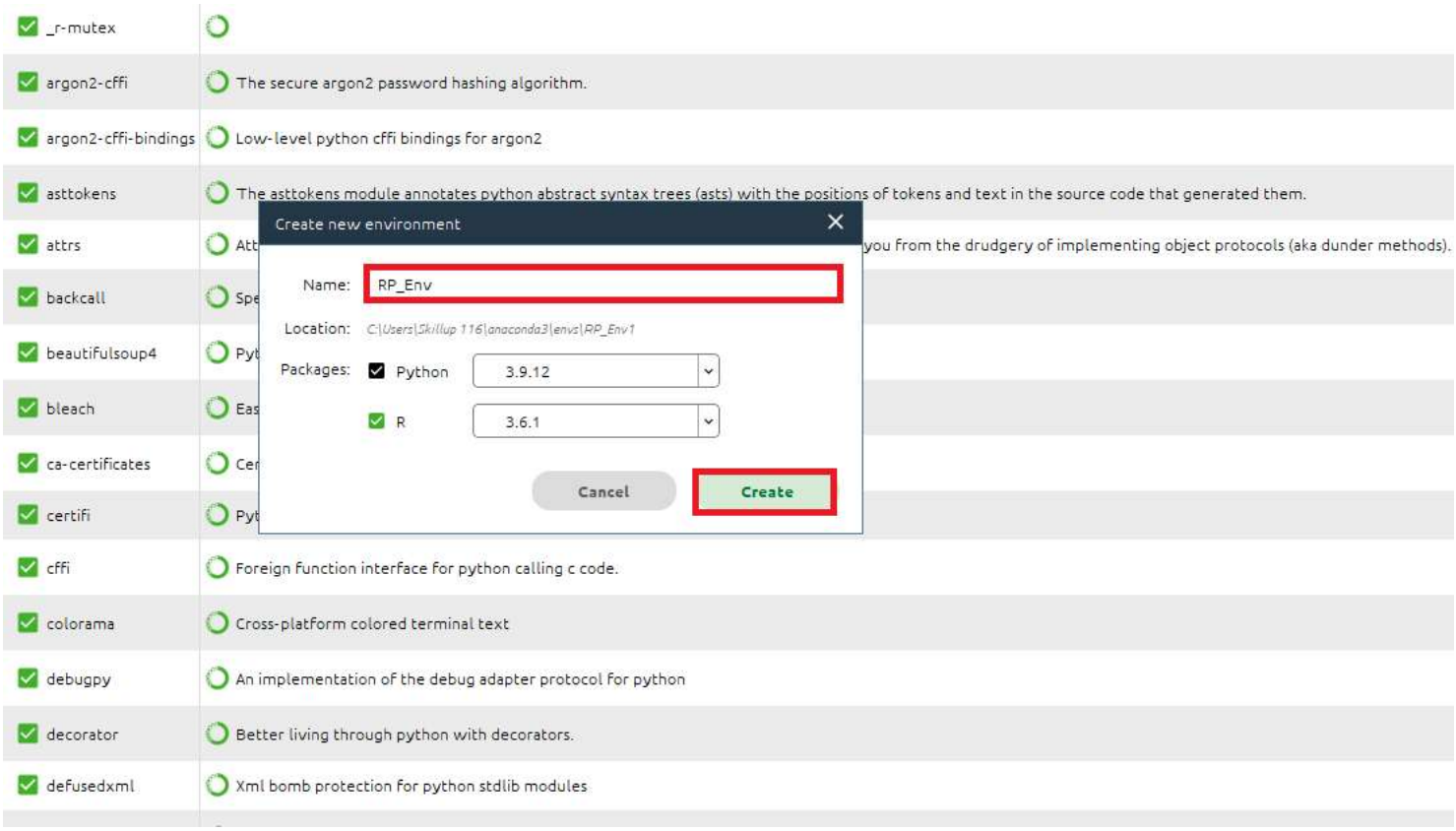

**Step 2**: Create an environment using Anaconda Navigator. Go to the **Environments** tab and click **Create** (at the bottom menu as highlighted below) to create an icon on the Anaconda environment.




**Note**: All the macOS users, select Update index and all your packages will be updated.

***Note**: It is always helpful to create a separate environment because different projects require different packages.*

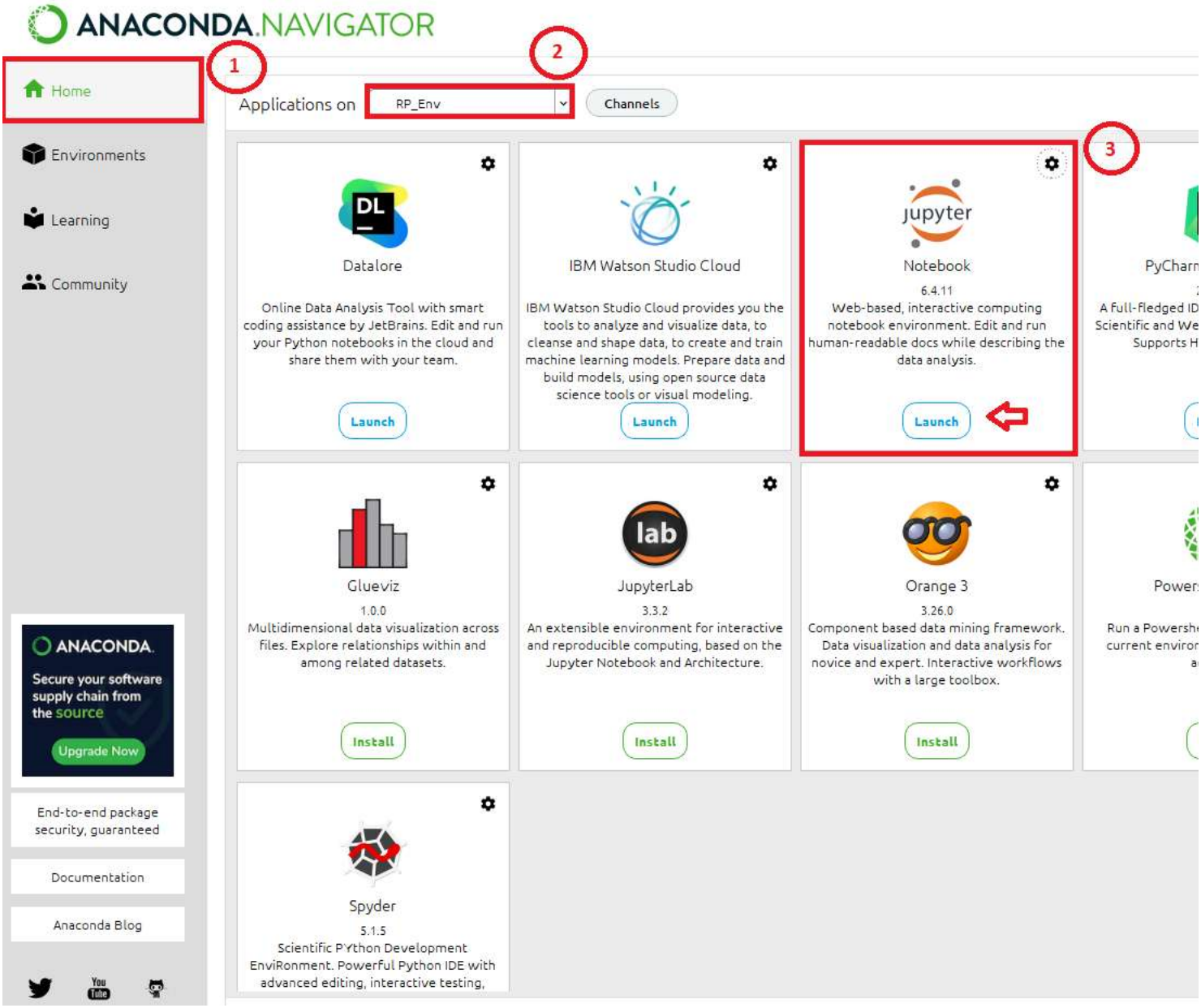
**Step 3**: **Give a name** for your environment, select the suitable version and language and click **Create**.




**Note**: The macOS users must uncheck Python and then create the environment.

**Step 4**: Once you create an Anaconda environment, go back to the **Home Page** and **Launch Jupyter** and create a **Python Notebook** (make sure to select the right environment).

**Note**: The macOS users need to restart their Anaconda prompt first and then launch their Jupyter Notebook.

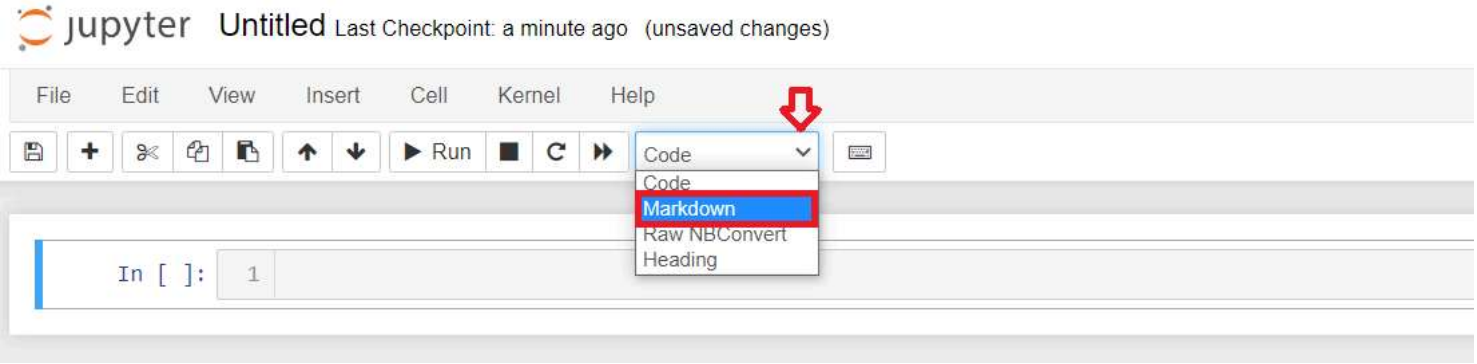



**Step 5**: This opens **Jupyter Notebook** in the default browser, and now you can select the **kernel** and create a **Notebook**.

## Exercise 3: Create and execute Python Jupyter Notebook

### Step 1: Create markdown cells and add text

In your notebook, **click any code cell**, and in the drop-down menu, change the cell type from Code to Markdown. You will notice that you cannot create Markdown cells without first creating and converting them from Code to Markdown.




In the Markdown cell, write some text like **My First Program**.

To render the Markdown text, make sure the cell is selected (by clicking within it), and press **Play** in the menu or **Shift+Enter**.

```
# My First Program
```

Your Markdown cell should now be rendered!

▶ Output

***Note:*** *To edit your Markdown cell, double-click anywhere within the cell. Note you can use the keyboard shortcut: [m] - Convert Cell to Markdown.*

### Step 2: Create new cells.

- In your Jupyter Notebook, click any of the existing cells to select the cell.
- Click **Insert Cell Above** or **Insert Cell Below** to insert the cell from the Insert menu.

▶ Output

***Note:*** *You can use the keyboard shortcuts: [a] - Insert a Cell Above; [b] - Insert a Cell Below.*

### Step 3: Write and execute code.

- In your new empty notebook, click within the gray code cell and write some code, like.

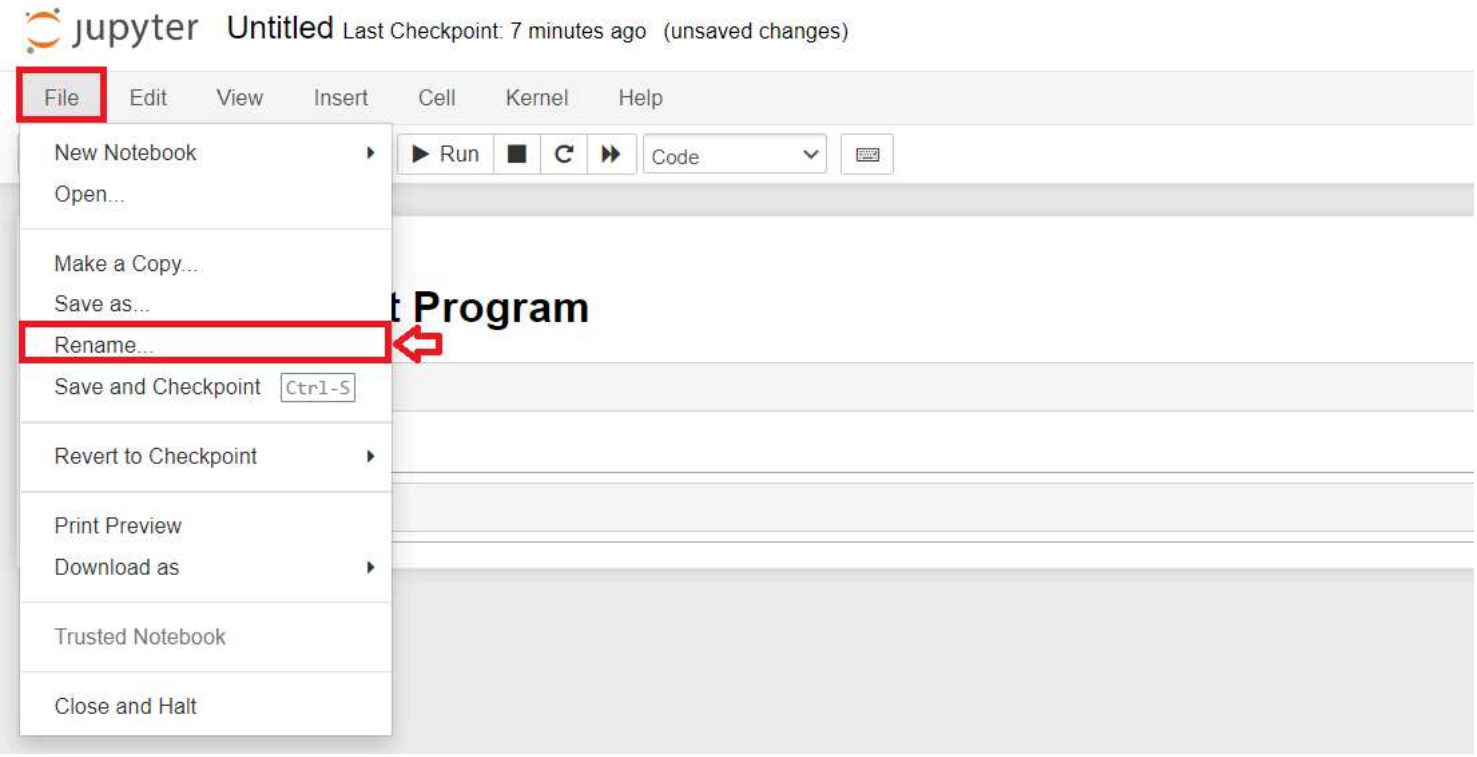
```
1+1
```

- Execute the code by clicking the **Play** button in the menu above the notebook or pressing **Shift+Enter** on your notebook.
- You should see the output 2.

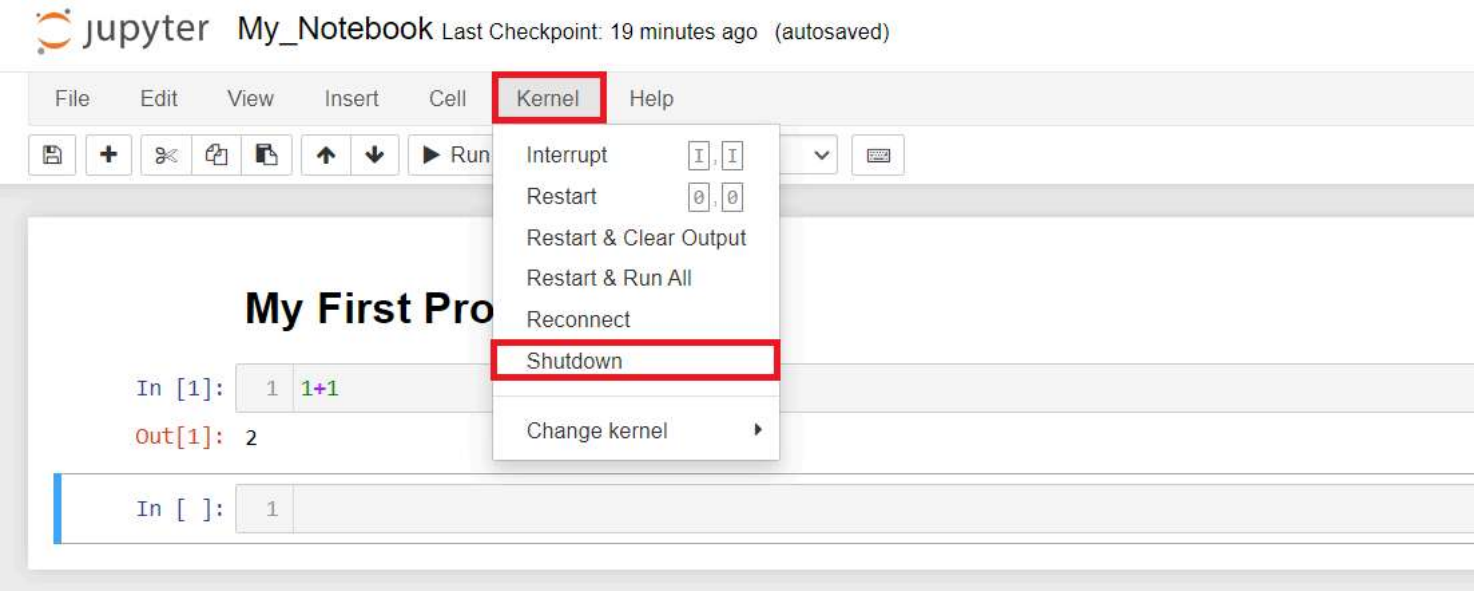
▶ Output

### 4. Rename, Shutdown kernel, and Save your Notebook

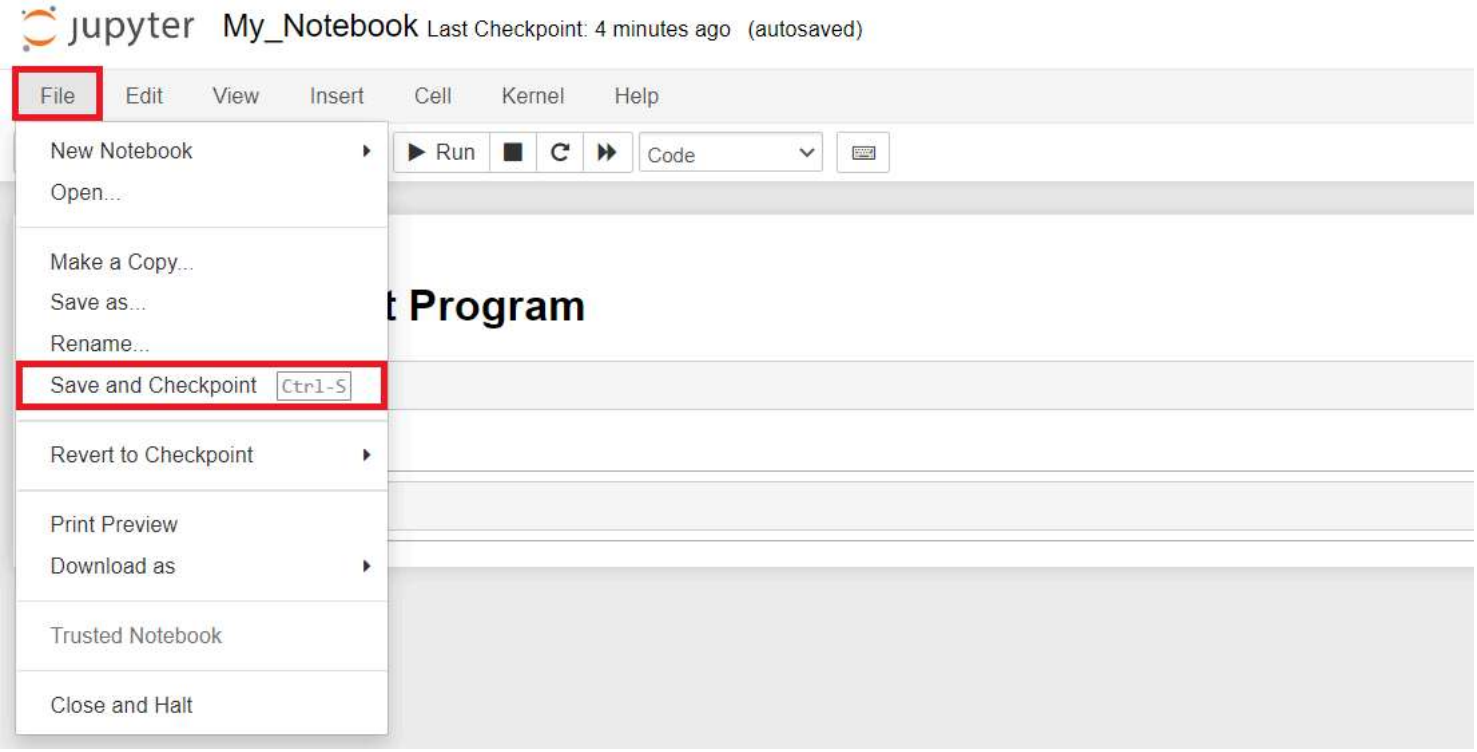
**Step 1**: Click **Rename** from the **File** menu to rename your notebook like ***My_Notebook.ipynb***.




**Step 2:** To shut down the kernel, click **Shutdown** from the **Kernel** menu.

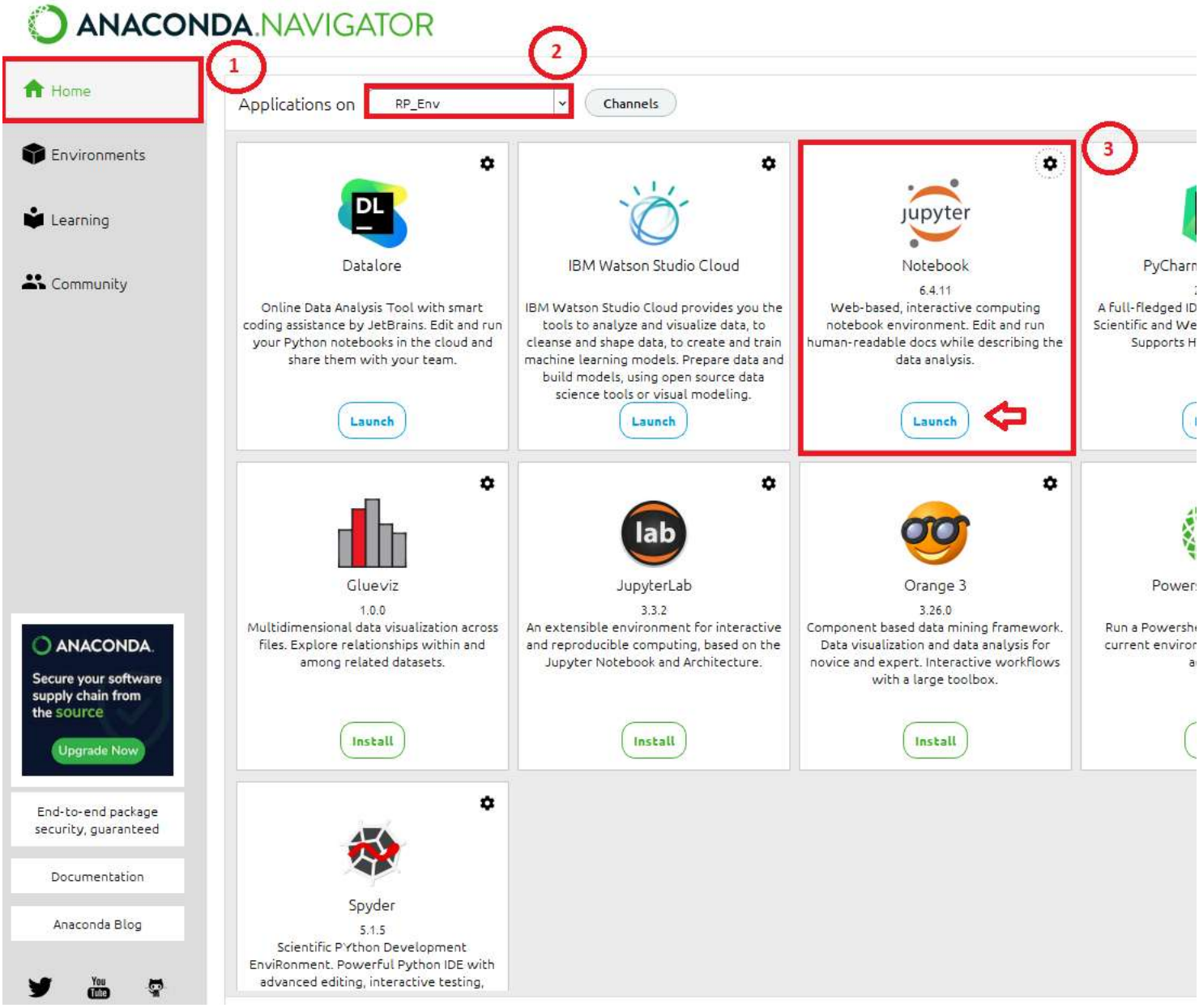



**Step 3:** Click **Save Notebook** or **Save Notebook as** to save the notebook from the **File** menu.

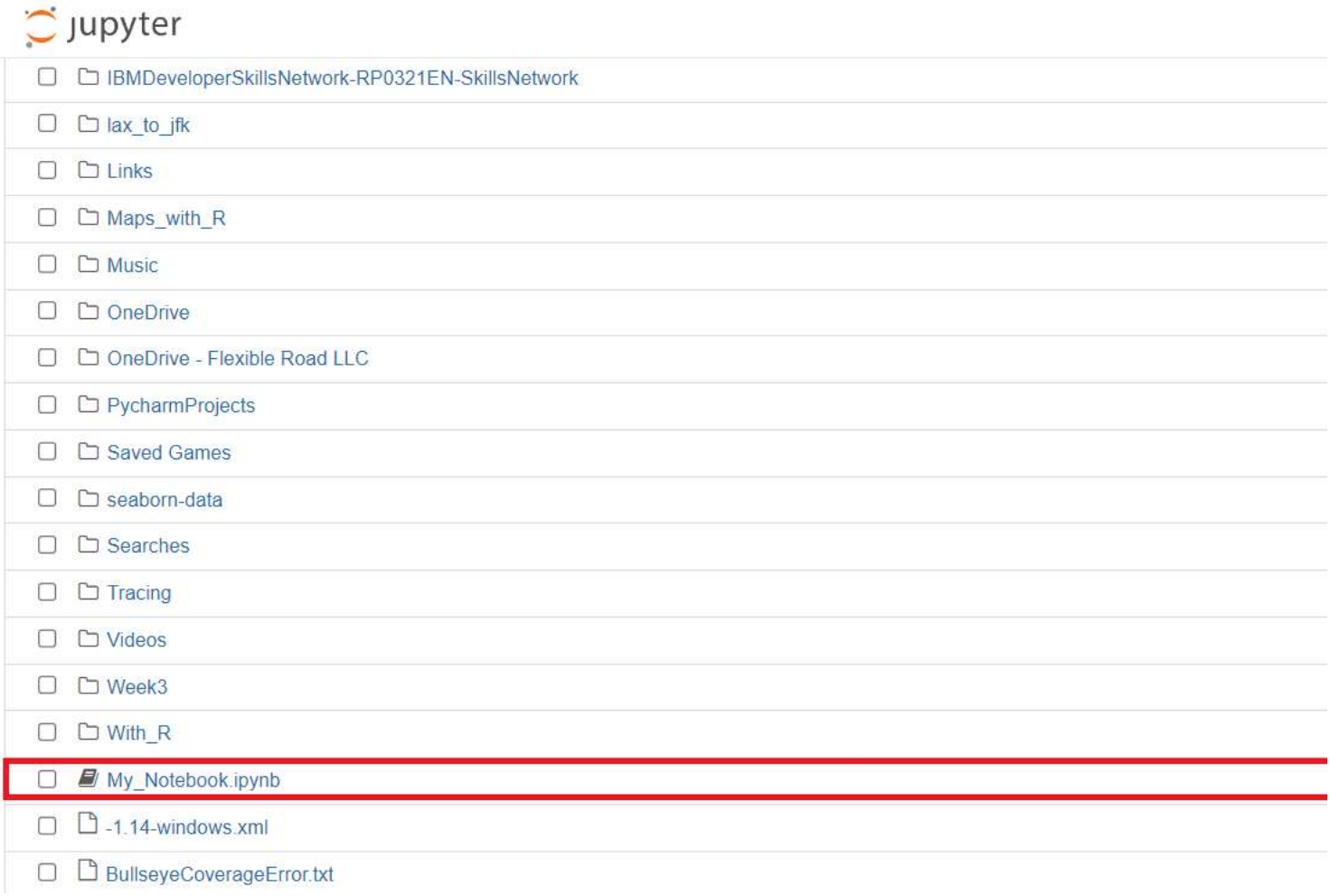



**5. Open the recently created notebook.**

**Step 1**: Open **Anaconda Navigator** from the Windows **Start** menu and **launch Jupyter**.




**Step 2**: Go to the **directory** where you **saved** your file and **click** to open it.




### Practice Exercise

**Let us try executing simple math operations**

### Problem 1: Find the minimum and maximum values.

```
x = min(5, 10, 25)
y = max(5, 10, 25)
print(x)
print(y)
```

▶ Output

### Problem 2: Find the value of 4 to the power 3.

```
x = pow(4, 3)
print(x)
```

▶ Output

## Exercise 4: Create and execute R Jupyter Notebook

**Select the kernel and create a Notebook.**


**Problem 1: Find the Multiplication of 2 numbers.**

```
2 * 3 # Multiplication
```

▶ Output

**Problem 2: Find the Subtraction of 2 numbers.**

```
4 - 1 # Subtraction
```

▶ Output

**Problem 3: Add 2 to the given number.**

```
a <- 1 # Assigning 1 to the variable called "a"
a + 2 # Adding 2
```

▶ Output

**Problem 4: Create a data frame**

```
df = data.frame(Emp_Name = c("Jai", "David", "Michael"),
                Job_role = c("Manager", "Team Lead", "Developer" )
               )
print(df)
```

▶ Output

**Congratulations! You have learned how to download and install Anaconda on your local machine and create a new environment. You have also created a Jupyter Notebook and saved it.**

## Author(s)

[D.M.Naidu]