

Introduction to Python, Anaconda, Jupyter Notebook, and Google Colab

Outline

- Python
- Anaconda
- Jupyter Notebook
- Google Colab

Outline

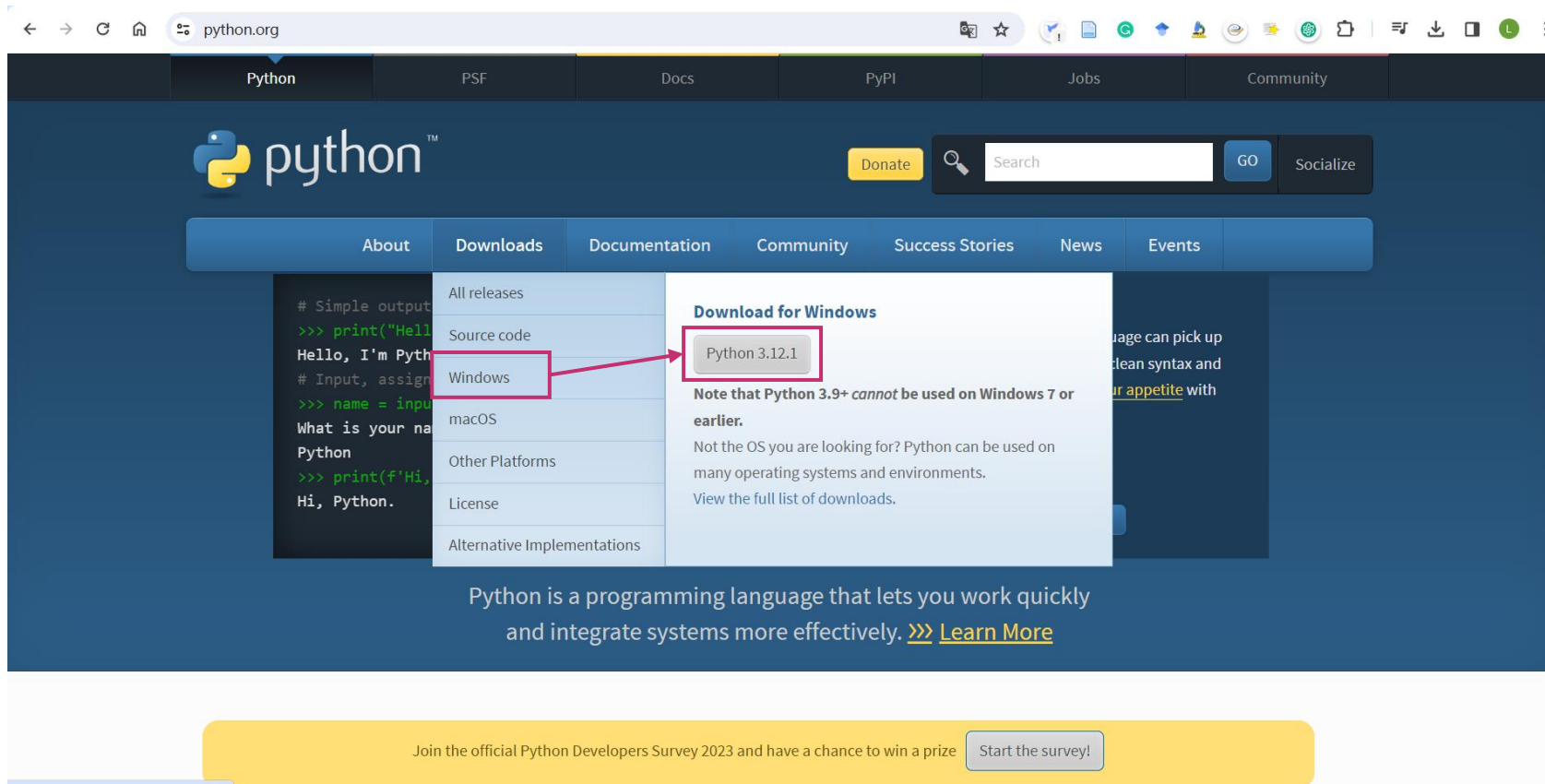
- Python
- Anaconda
- Jupyter Notebook
- Google Colab

What is Python?

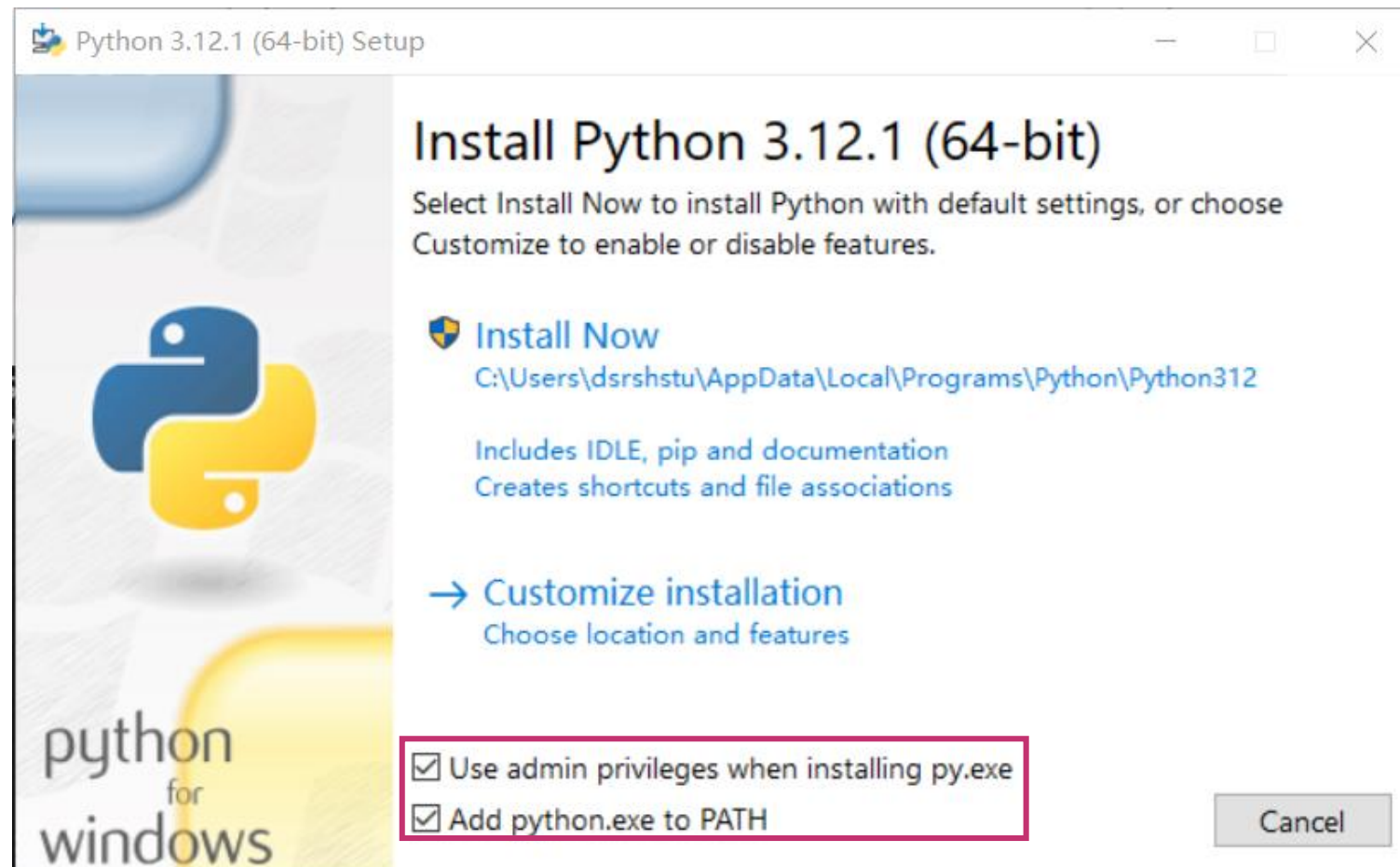
- **Python** is a high-level, interpreted programming language known for its simplicity and readability.
- Created by **Guido van Rossum** and first released in 1991, Python has since become one of the most popular programming languages globally.
- It is designed to be easy to learn and emphasize code readability, making it an excellent choice for beginners and experienced developers alike.

Download and install

- Download and install Python from the official website: <https://www.python.org/>.

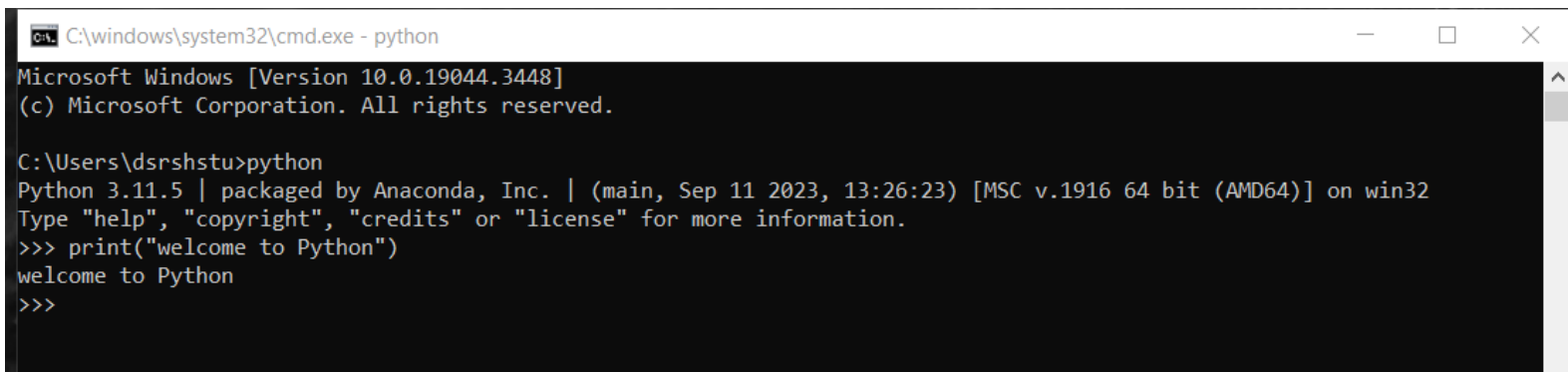
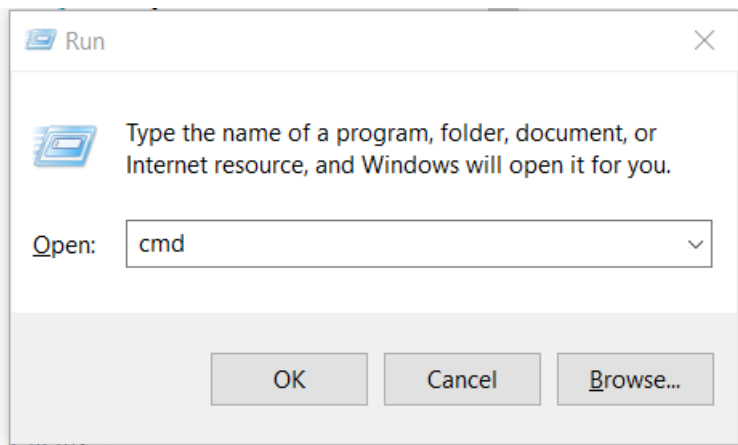


Download and install



Windows Python test

- Open the Command Prompt in Windows
 - Windows + R to open “Run” box
 - Type “cmd” and click “OK”
- Check version and print welcome message
 - Type “python”
 - Type “print(“welcome to Python”)”



You can learn more...

- <https://docs.python.org/3/tutorial/>
- <https://wiki.python.org/moin/BeginnersGuide/Programmers>
- <https://www.w3schools.com/python/>
- <https://chat.openai.com/>

Outline

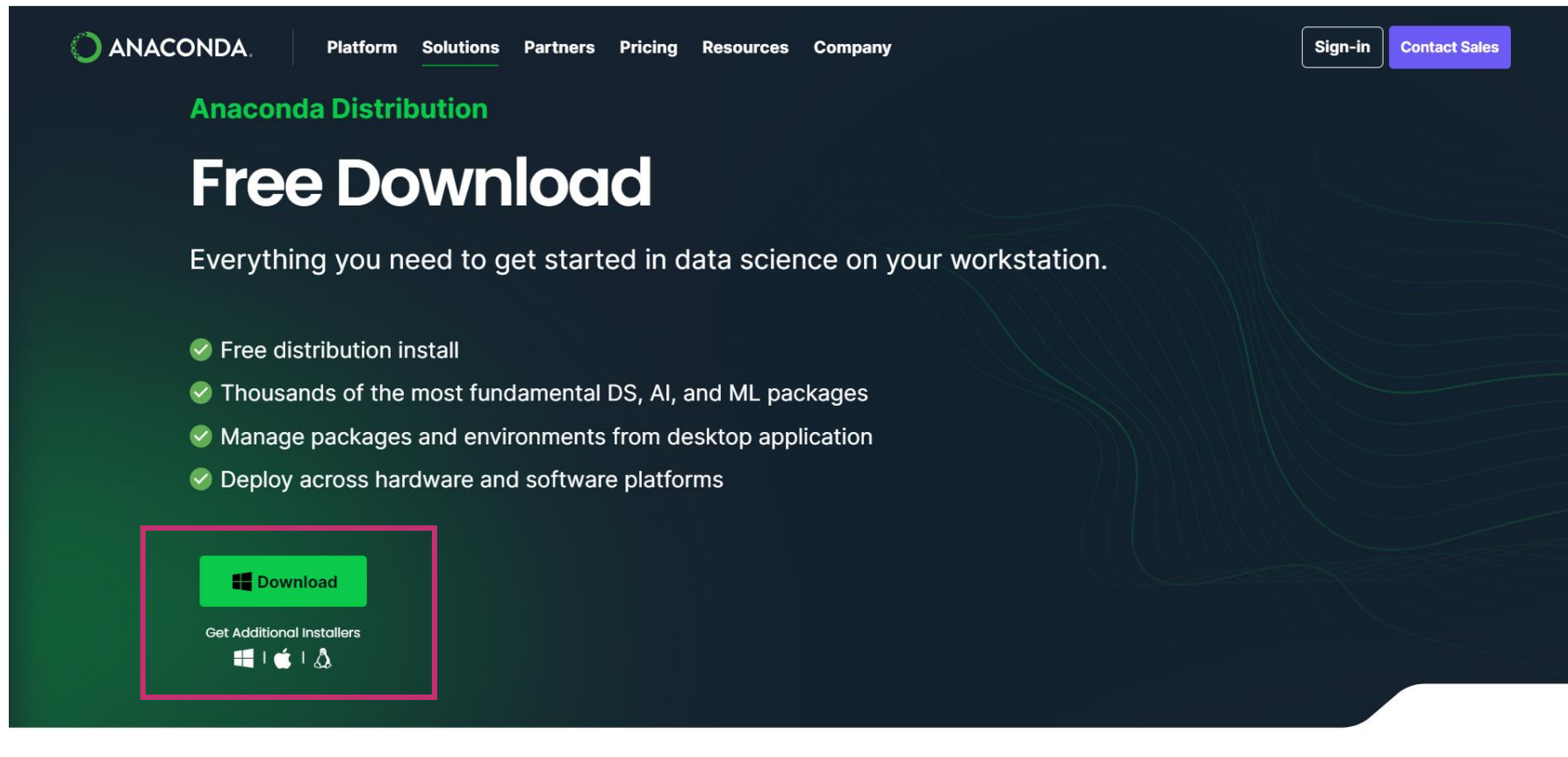
- Python
- **Anaconda**
- Jupyter Notebook
- Google Colab

What is Anaconda?

- **Anaconda** is a package manager, an environment manager, and Python distribution that contains a collection of many open source packages.
- An installation of Anaconda comes with many packages such as numpy, scikitlearn, scipy, and pandas preinstalled and it is also the recommended way to install Jupyter Notebooks.

Download and install

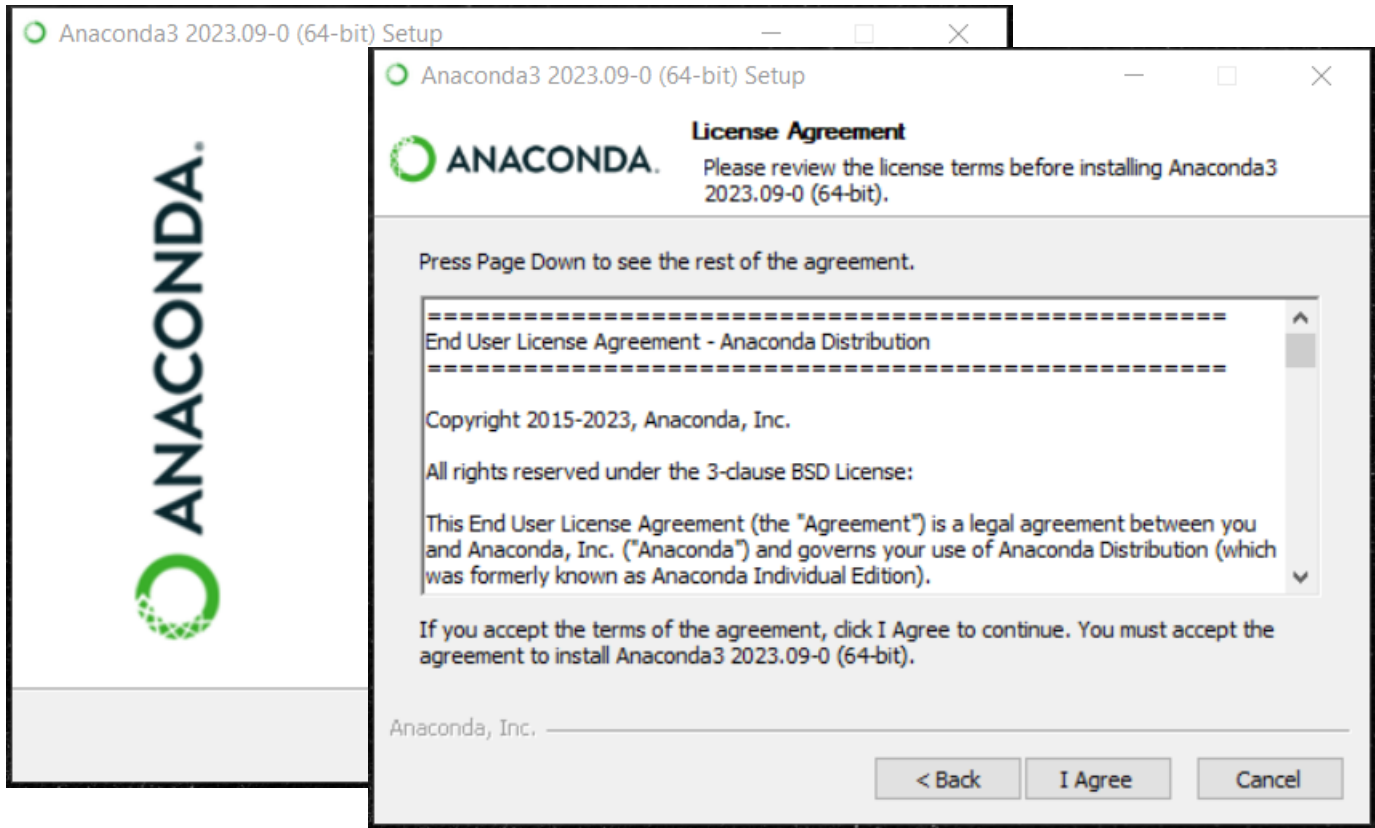
- Download and install Anaconda from the official website:
<https://www.anaconda.com/download>.



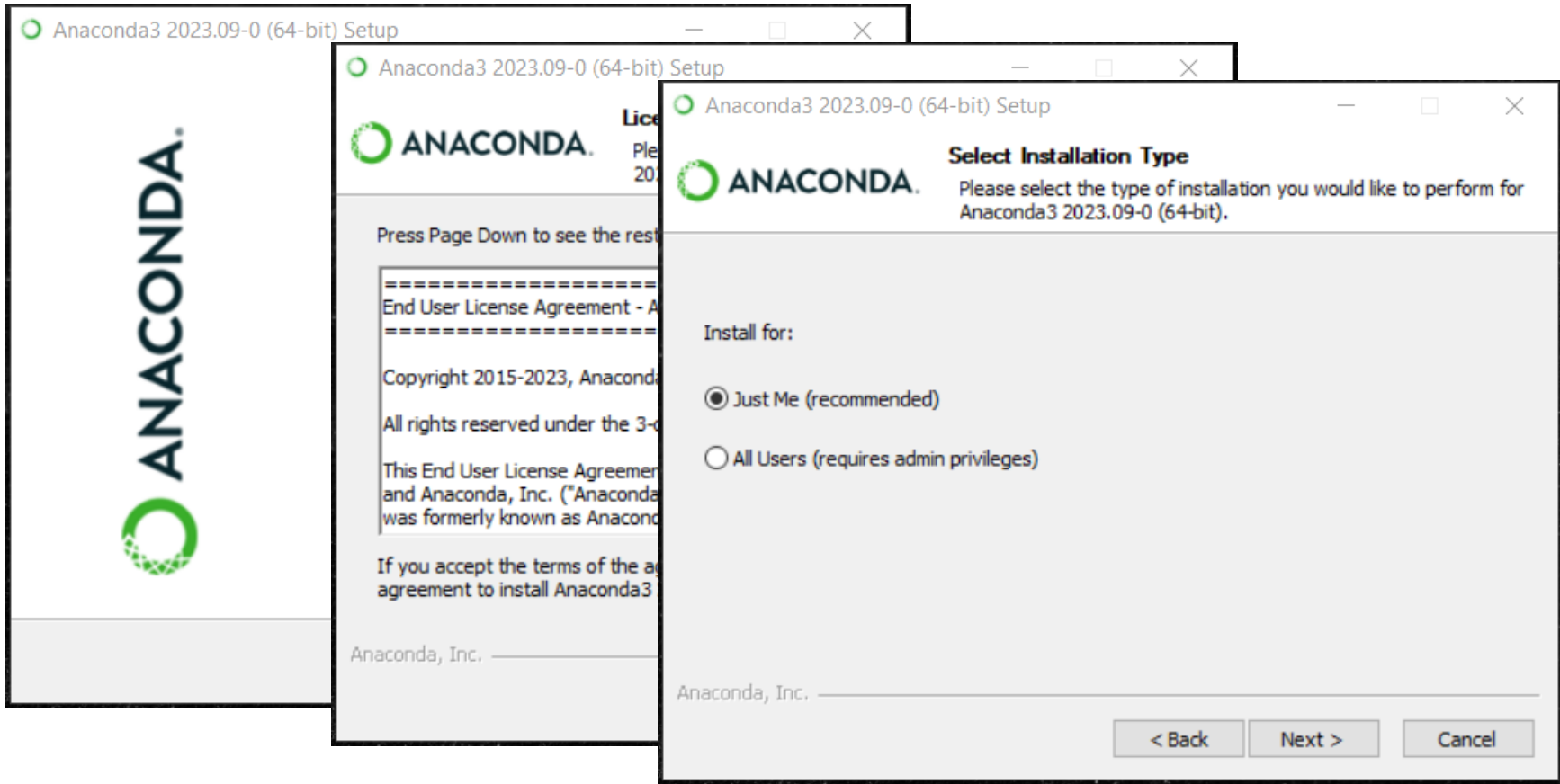
Download and install



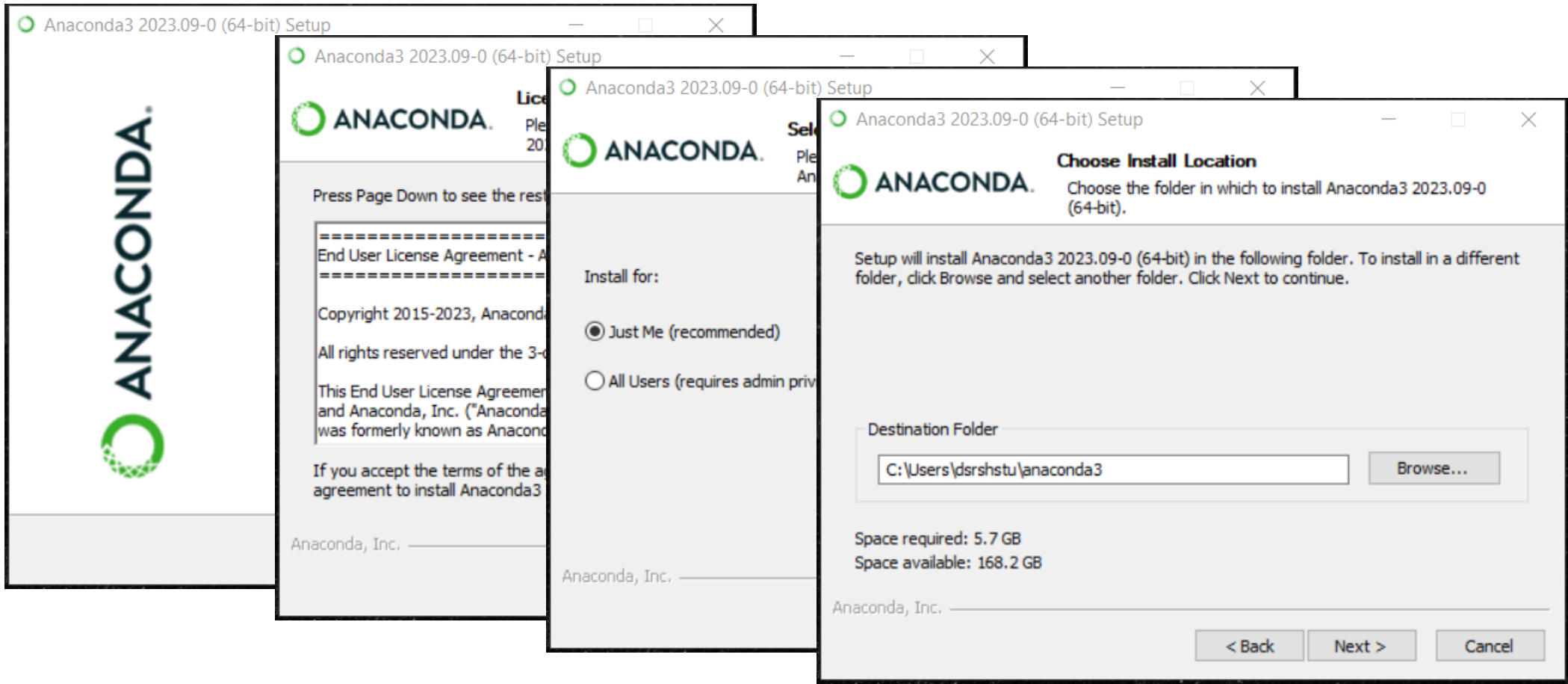
Download and install



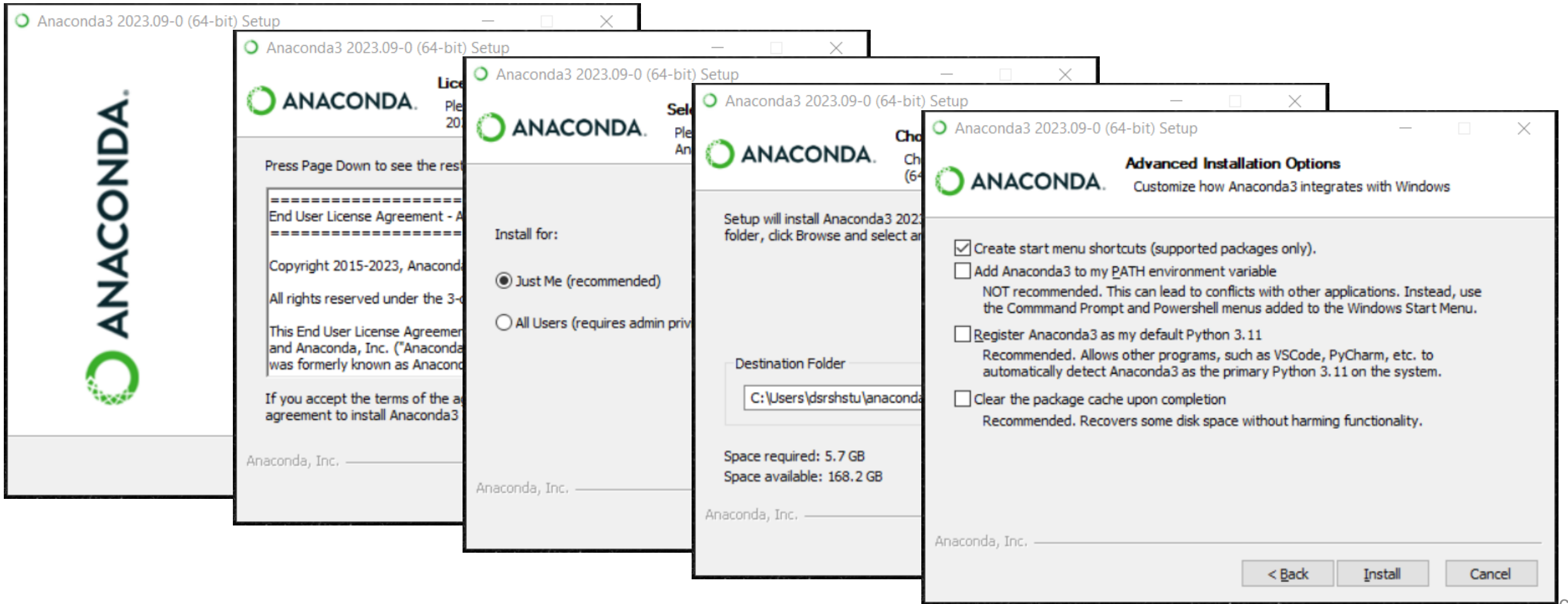
Download and install



Download and install

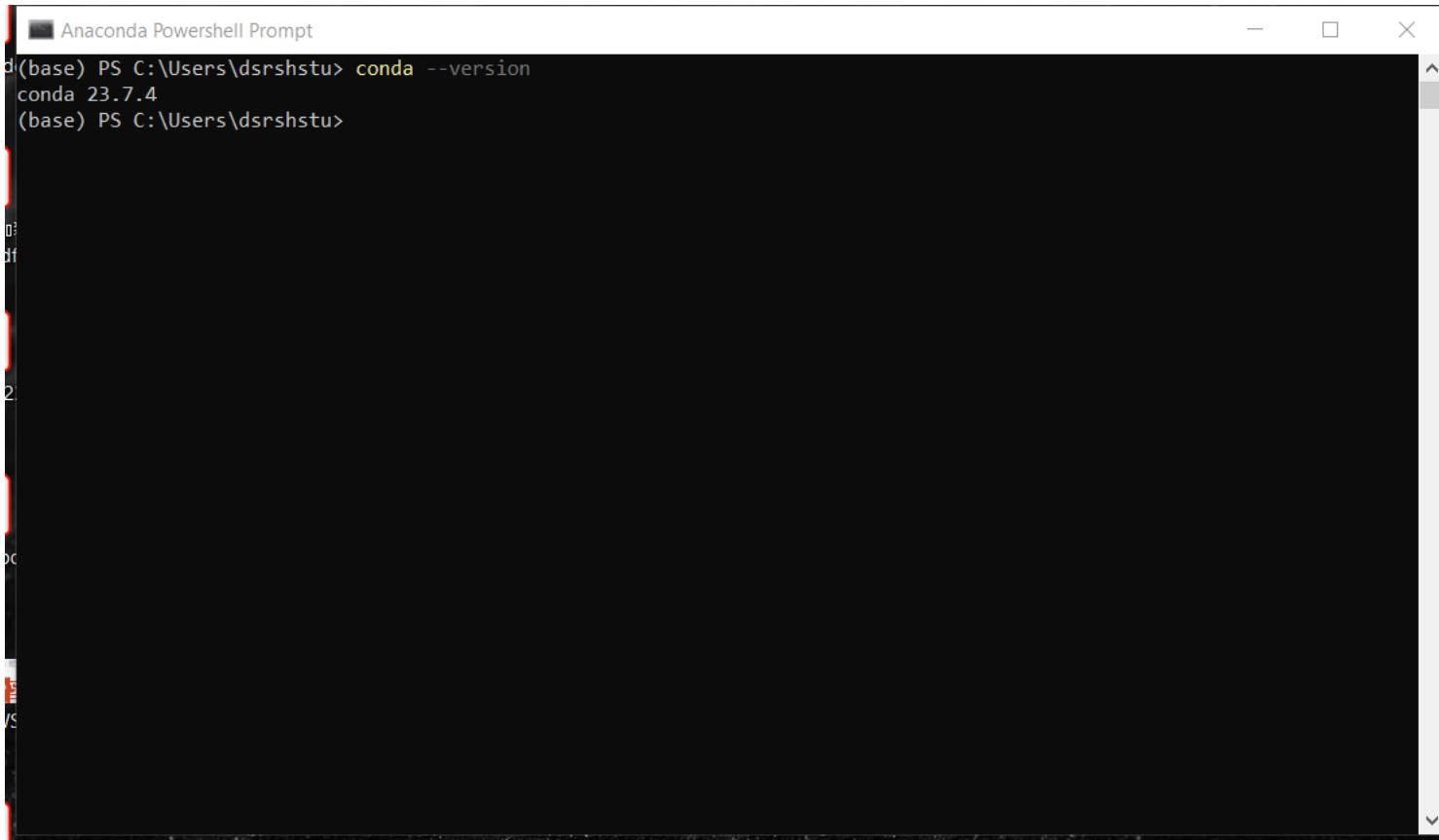


Download and install



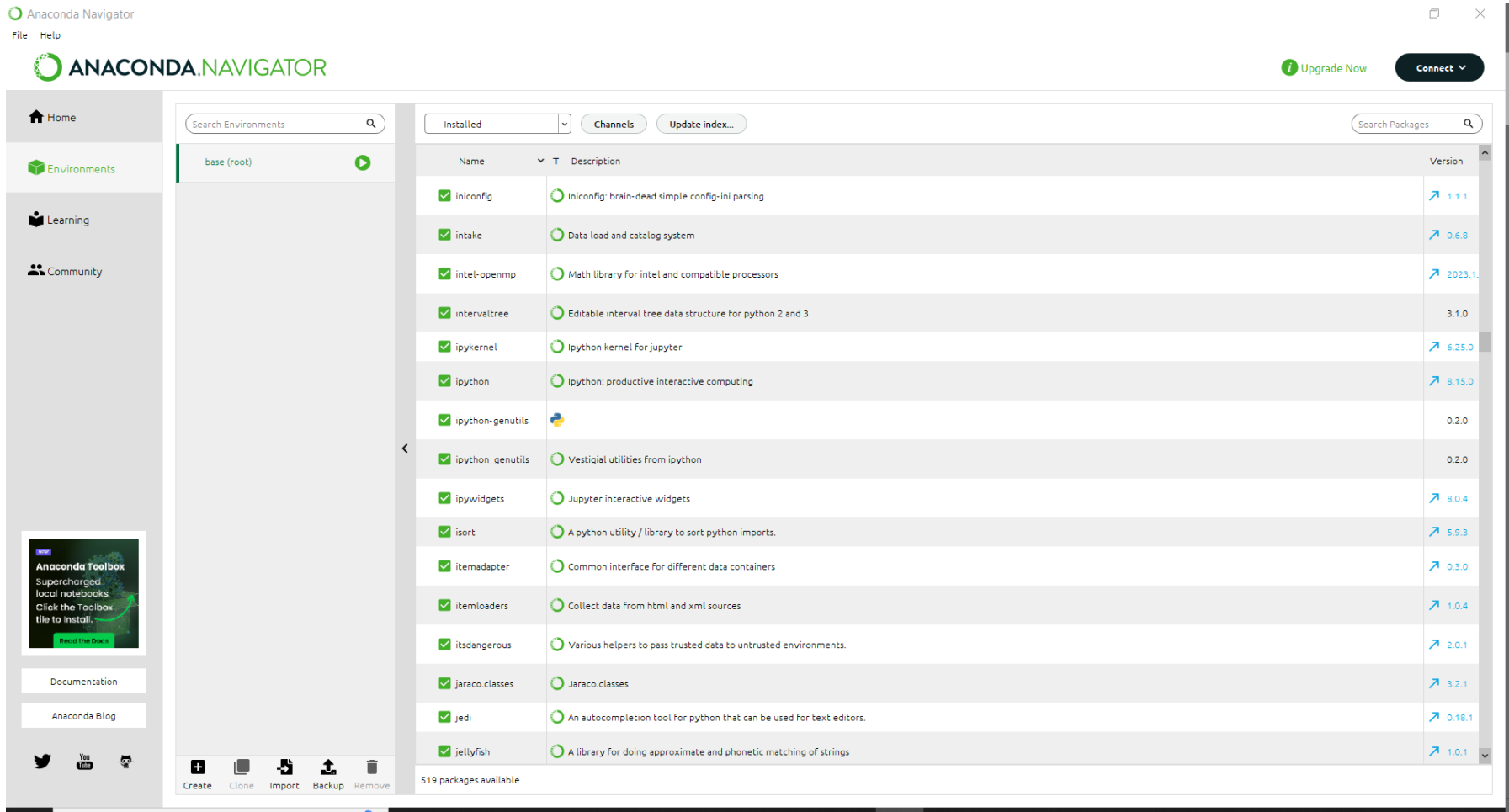
Anaconda test – Anaconda Powershell Prompt (CLI)

- Type “conda --version”

A screenshot of the Anaconda Powershell Prompt window. The window title is 'Anaconda Powershell Prompt'. The command prompt shows the user at the C:\Users\dsrshstu directory. The command 'conda --version' has been entered and executed, resulting in the output 'conda 23.7.4'. The prompt then returns to the default state, showing '(base) PS C:\Users\dsrshstu>'.

```
(base) PS C:\Users\dsrshstu> conda --version
conda 23.7.4
(base) PS C:\Users\dsrshstu>
```

Anaconda test – Anaconda Navigator (UI)



Outline

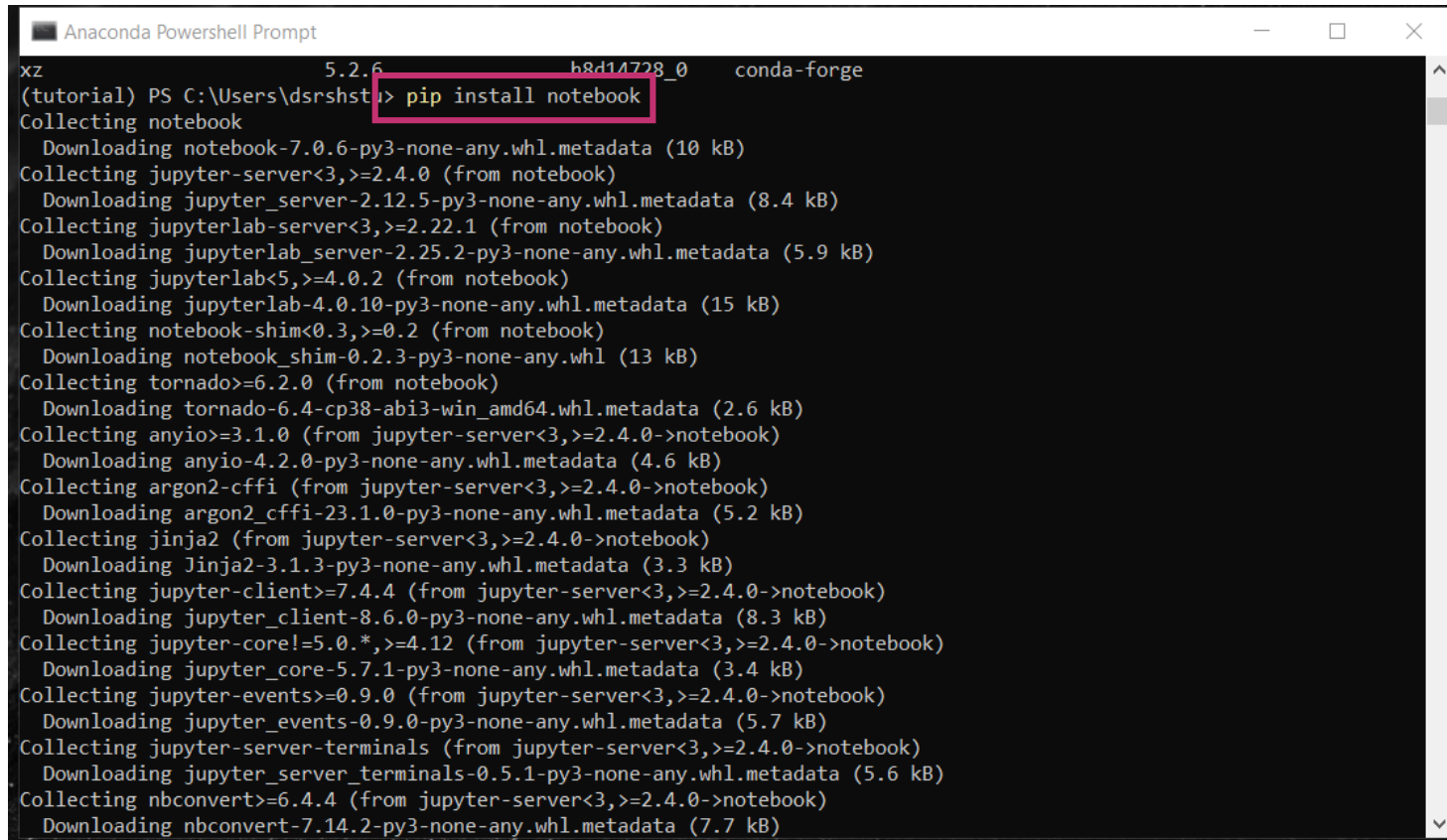
- Python
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- Google Colab

What is Jupyter Notebook?

- **Jupyter Notebook** is an open-source web application that allows you to create and share documents containing live code, equations, visualizations, and narrative text.

Download and install

- Type “pip install notebook” in Anaconda Powershell Prompt

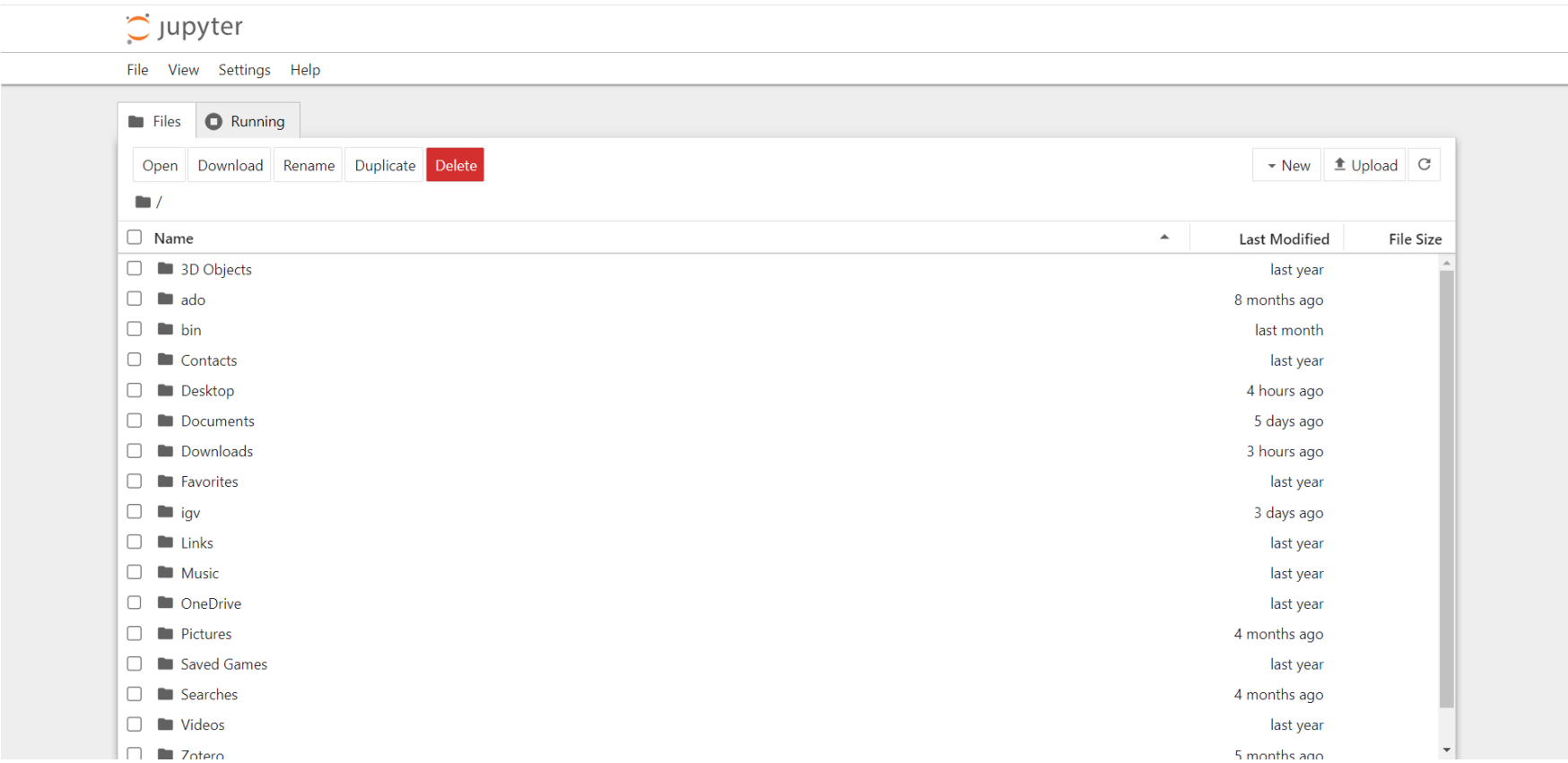


```
Anaconda Powershell Prompt
xz 5.2.6 h8d14728_0 conda-forge
(tutorial) PS C:\Users\dsrshst> pip install notebook
Collecting notebook
  Downloading notebook-7.0.6-py3-none-any.whl.metadata (10 kB)
Collecting jupyter-server<3,>=2.4.0 (from notebook)
  Downloading jupyter_server-2.12.5-py3-none-any.whl.metadata (8.4 kB)
Collecting jupyterlab-server<3,>=2.22.1 (from notebook)
  Downloading jupyterlab_server-2.25.2-py3-none-any.whl.metadata (5.9 kB)
Collecting jupyterlab<5,>=4.0.2 (from notebook)
  Downloading jupyterlab-4.0.10-py3-none-any.whl.metadata (15 kB)
Collecting notebook-shim<0.3,>=0.2 (from notebook)
  Downloading notebook_shim-0.2.3-py3-none-any.whl (13 kB)
Collecting tornado>=6.2.0 (from notebook)
  Downloading tornado-6.4-cp38-abi3-win_amd64.whl.metadata (2.6 kB)
Collecting anyio>=3.1.0 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading anyio-4.2.0-py3-none-any.whl.metadata (4.6 kB)
Collecting argon2-cffi (from jupyter-server<3,>=2.4.0->notebook)
  Downloading argon2_cffi-23.1.0-py3-none-any.whl.metadata (5.2 kB)
Collecting Jinja2 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading Jinja2-3.1.3-py3-none-any.whl.metadata (3.3 kB)
Collecting jupyter-client>=7.4.4 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading jupyter_client-8.6.0-py3-none-any.whl.metadata (8.3 kB)
Collecting jupyter-core!=5.0.*,>=4.12 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading jupyter_core-5.7.1-py3-none-any.whl.metadata (3.4 kB)
Collecting jupyter-events>=0.9.0 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading jupyter_events-0.9.0-py3-none-any.whl.metadata (5.7 kB)
Collecting jupyter-server-terminals (from jupyter-server<3,>=2.4.0->notebook)
  Downloading jupyter_server_terminals-0.5.1-py3-none-any.whl.metadata (5.6 kB)
Collecting nbconvert>=6.4.4 (from jupyter-server<3,>=2.4.0->notebook)
  Downloading nbconvert-7.14.2-py3-none-any.whl.metadata (7.7 kB)
```


- Type “jupyter notebook” in Anaconda Powershell Prompt




Jupyter notebook test



Jupyter notebook test



 jupyter

T1 Last Checkpoint: 12 minutes ago



File Edit View Run Kernel Settings Help

Trusted

  Python 3 (ipykernel)

Yan Luo, 2024/Jan/19

About TA

PhD DS (CityU) 2022-now luo.yan@my.cityu.edu.hk

Lab 1

This is the first lab to let you get familiar with the python environment and basic exploratory data analysis (EDA) methods.

Library used

```
[1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import io as io
# from google.colab import files
```

Reading the data & exploring the data

Reading and basic exploratory data analysis (EDA)

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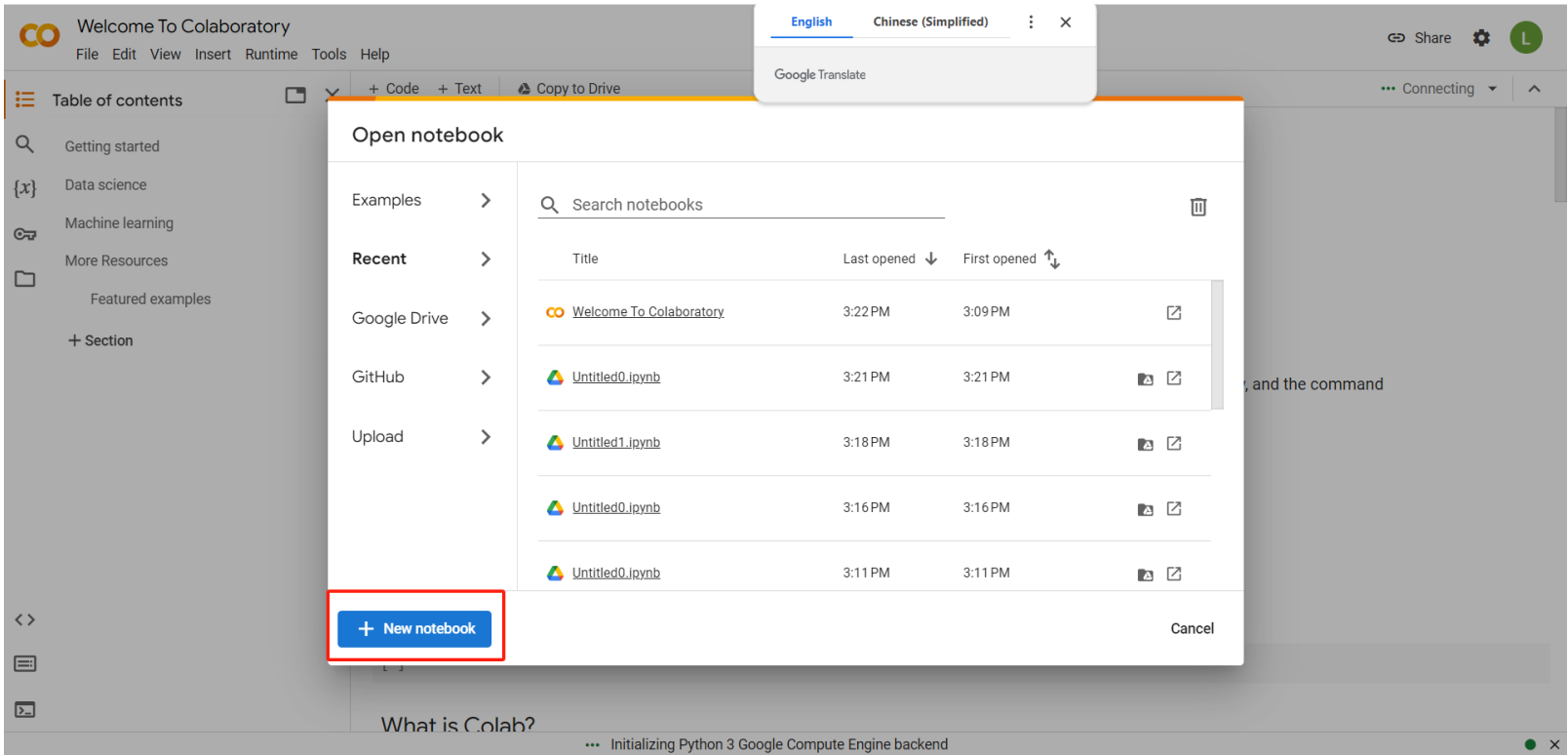
What is Google Colab?

Colab, or "Colaboratory", allows you to write and execute Python in your browser, with

- Zero configuration required
- Free access to GPUs
- Easy sharing

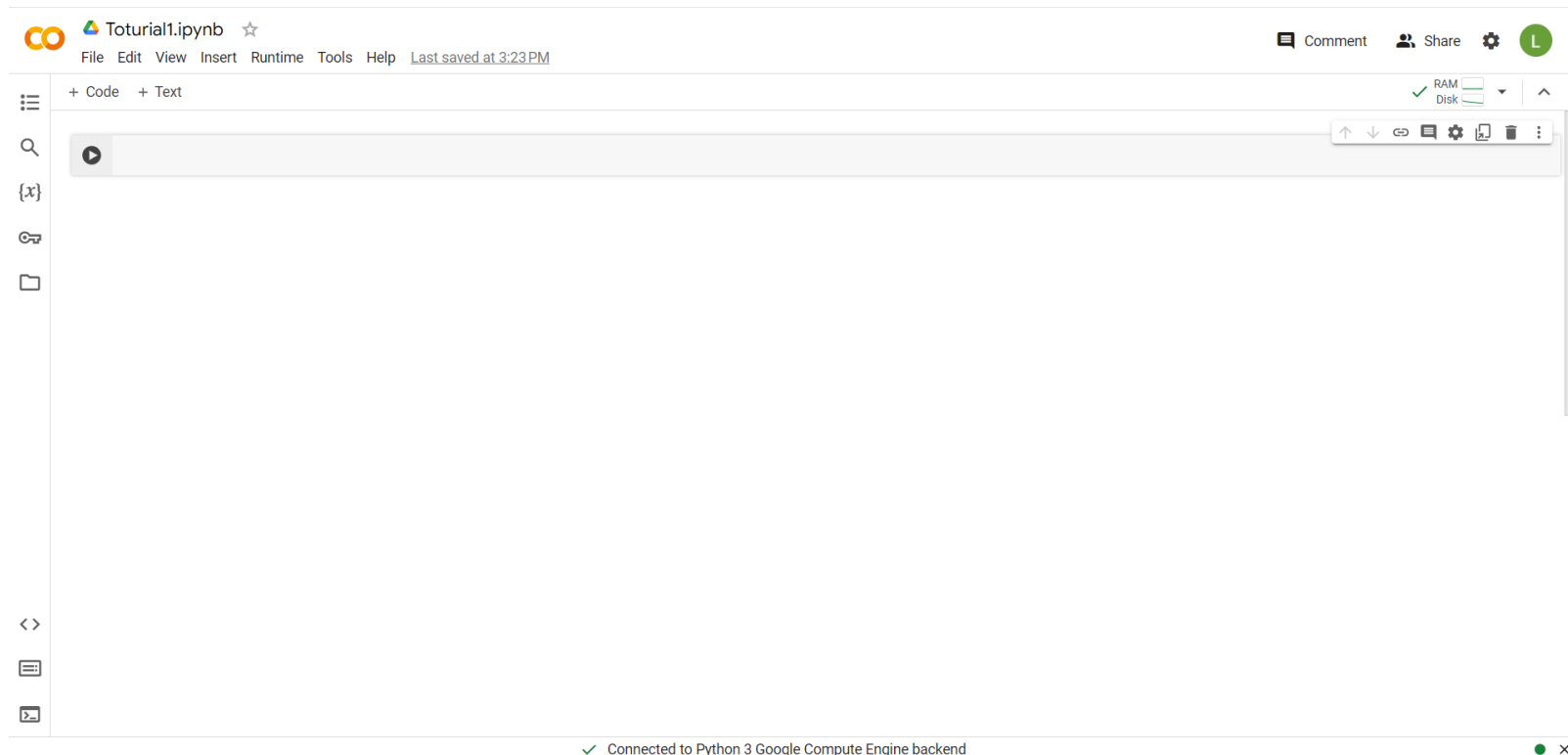
Getting Started

Creating a new notebook



Getting Started

Creating a new notebook

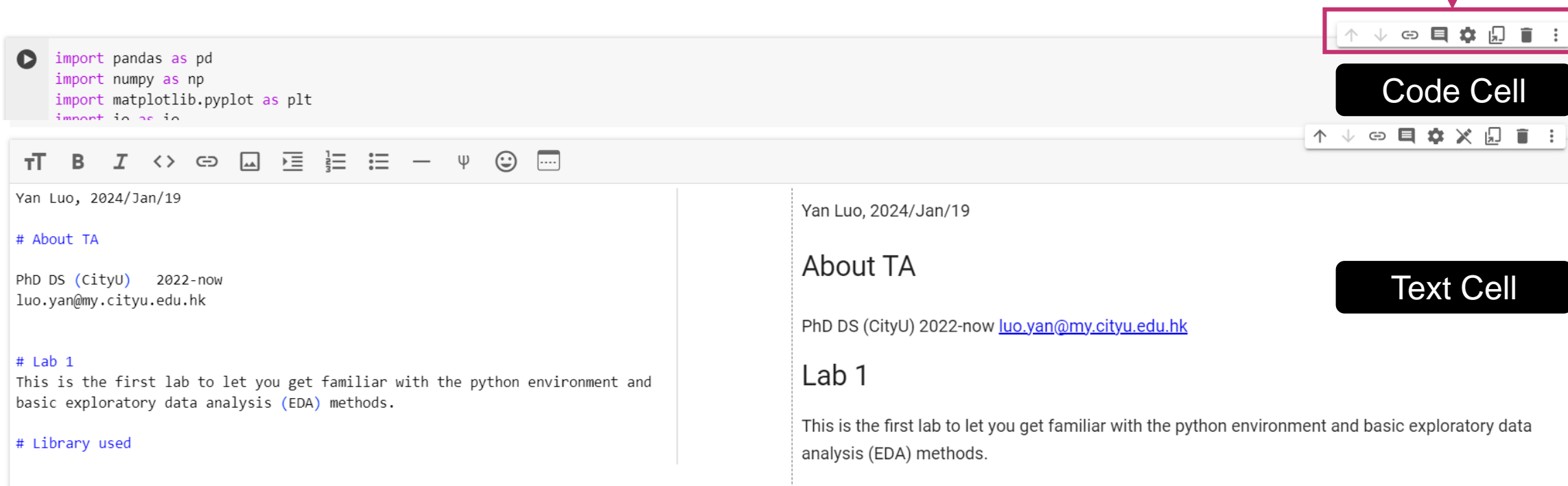


Getting Started

Creating a new cell

You can create a new code cell by clicking on **+ Code**, clicking on **+ Text** generates a text cell.

There are options for moving your cell up/down or copy or delete it.



The screenshot displays a Jupyter Notebook interface with two cells. The top cell is a **Code Cell** containing Python code for importing libraries and a toolbar with icons for moving, linking, commenting, settings, and deleting. The bottom cell is a **Text Cell** containing introductory text about the course and lab. A red box highlights the toolbar of the Code Cell, and a red arrow points from the text 'There are options for moving your cell up/down or copy or delete it.' to this toolbar.

Code Cell

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import io as io
```

Yan Luo, 2024/Jan/19

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Library used

Text Cell

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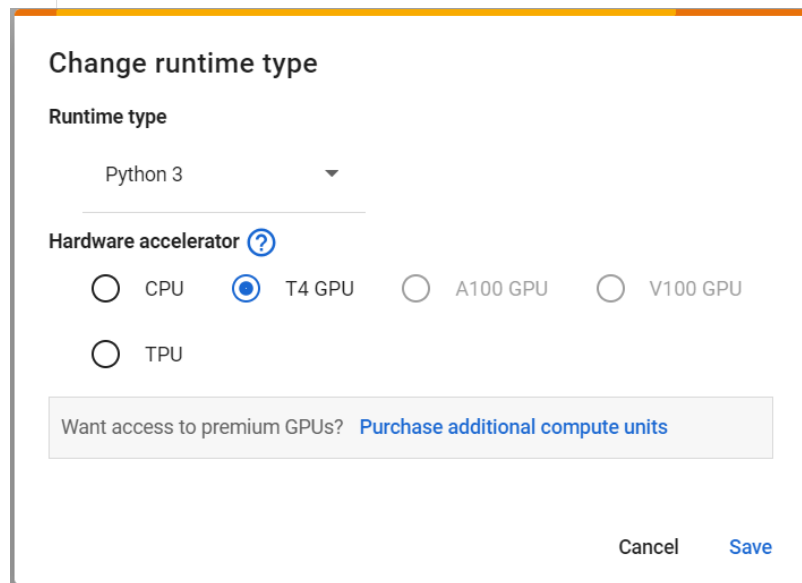
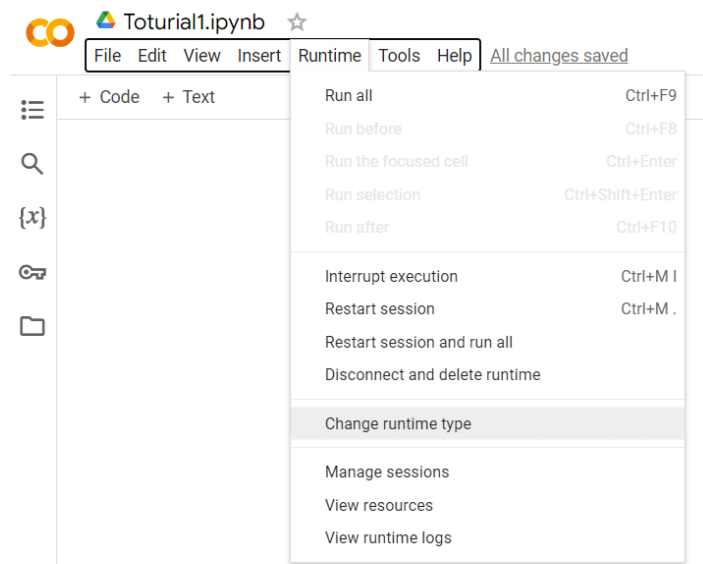
Lab 1

This is the first lab to let you get familiar with the python environment and basic exploratory data analysis (EDA) methods.

Changing Runtime

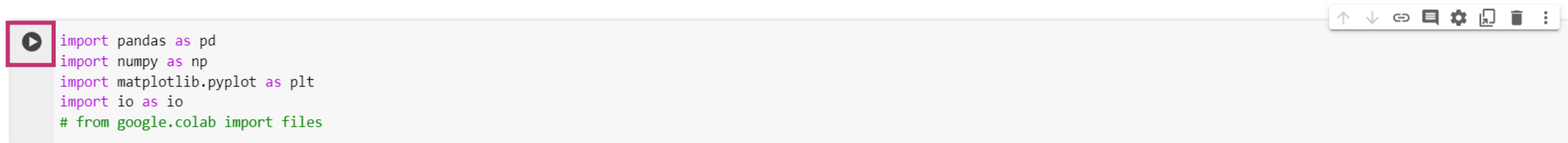
To utilize the free GPU provided by google,
click on "Runtime" → "Change Runtime Type"
select any "**GPU**" for "Hardware Accelerator"

Doing this will restart the session, so make sure you change to the desired runtime before executing any code.



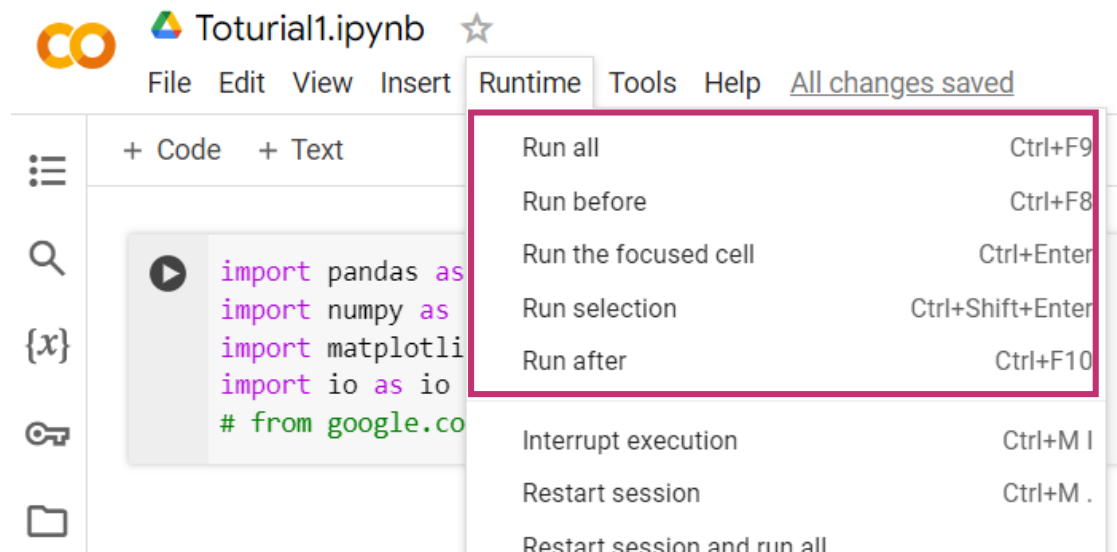
Executing Code Block

Click on the play button to execute a specific code cell



```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import io as io
# from google.colab import files
```

Other options to run your code



Tutorial1.ipynb ☆

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

Run all Ctrl+F9

Run before Ctrl+F8

Run the focused cell Ctrl+Enter

Run selection Ctrl+Shift+Enter

Run after Ctrl+F10

Interrupt execution Ctrl+M I

Restart session Ctrl+M .

Restart session and run all

Upload and Download Files

Download the file folder from the Canvas.

☰ 202402GE2343_SDSC2004 > Files > Tutorials

Search for files



0 items selected

+ Folder

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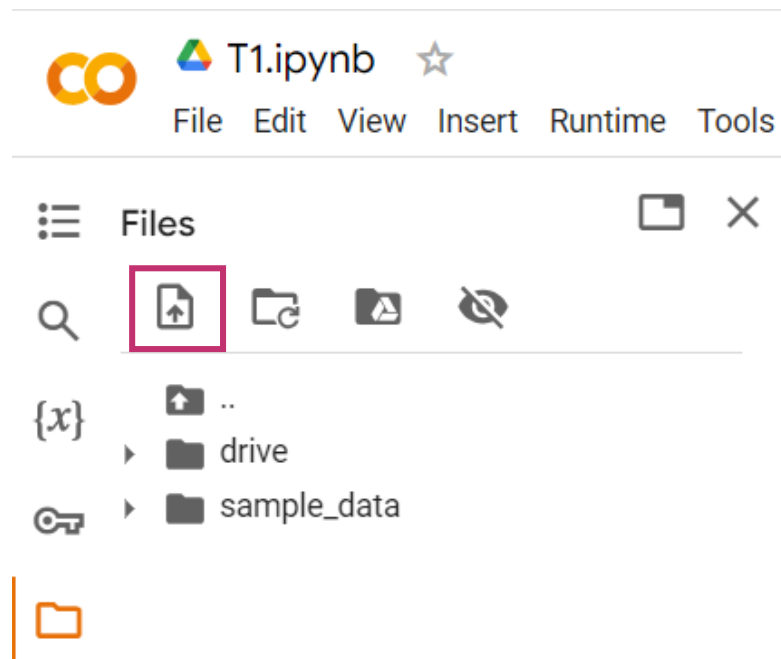
5:49pm

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Upload and Download Files

Click the upload icon to upload local files to your session.



Click **:** to download files to your local machine.

