Github: https://github.com/ReneStander/BMG_Intro_R_Python

Introduction to Python Programming

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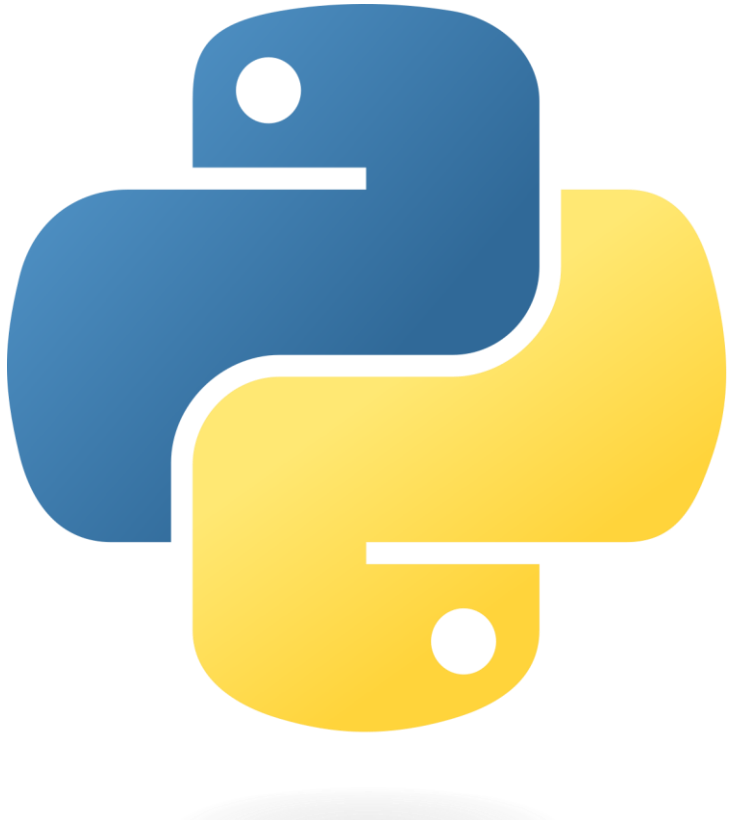
Outline

1. Introduction to Python
2. Basics of the programming language
3. Data manipulation
4. Data visualization
5. Basic statistical analysis



Program

09:00 – 10:30	Session 1
10:30 – 10:45	Break
10:45 – 12:00	Session 2
12:00 – 13:00	Lunch
13:00 – 14:30	Session 3
14:30 – 14:45	Break
14:45 – 16:00	Session 4

Resources

- Downey, A.B., 2012. *Think python*. O'Reilly Media, Inc. https://allendowney.github.io/ThinkPython/#

- Adhikari, A., DeNero, J. and Wagner, D., 2022. *Computational and Inferential Thinking: The Foundations of Data Science*, Second edition, University of California, Berkeley. https://inferentialthinking.com/

Introduction to Python

Why Python?

- Mature programming language.
- Has excellent properties for newbie programmers.
- Currently one of the most flexible programming languages.
- Has a large ecosystem of libraries making it easy for Data Scientists.

Applications developed with Python you may know…

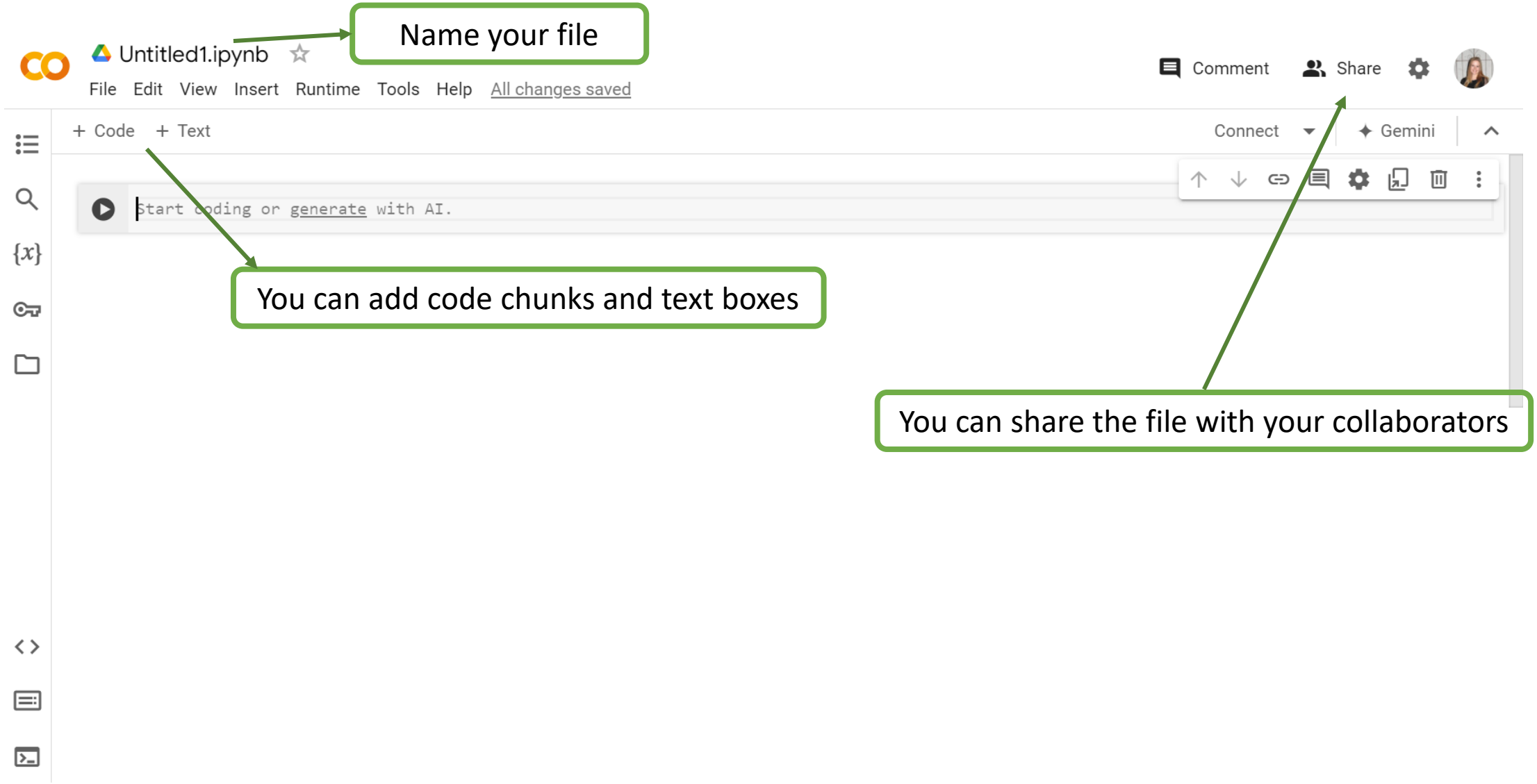
Running Python in Google Colab

Google Colab

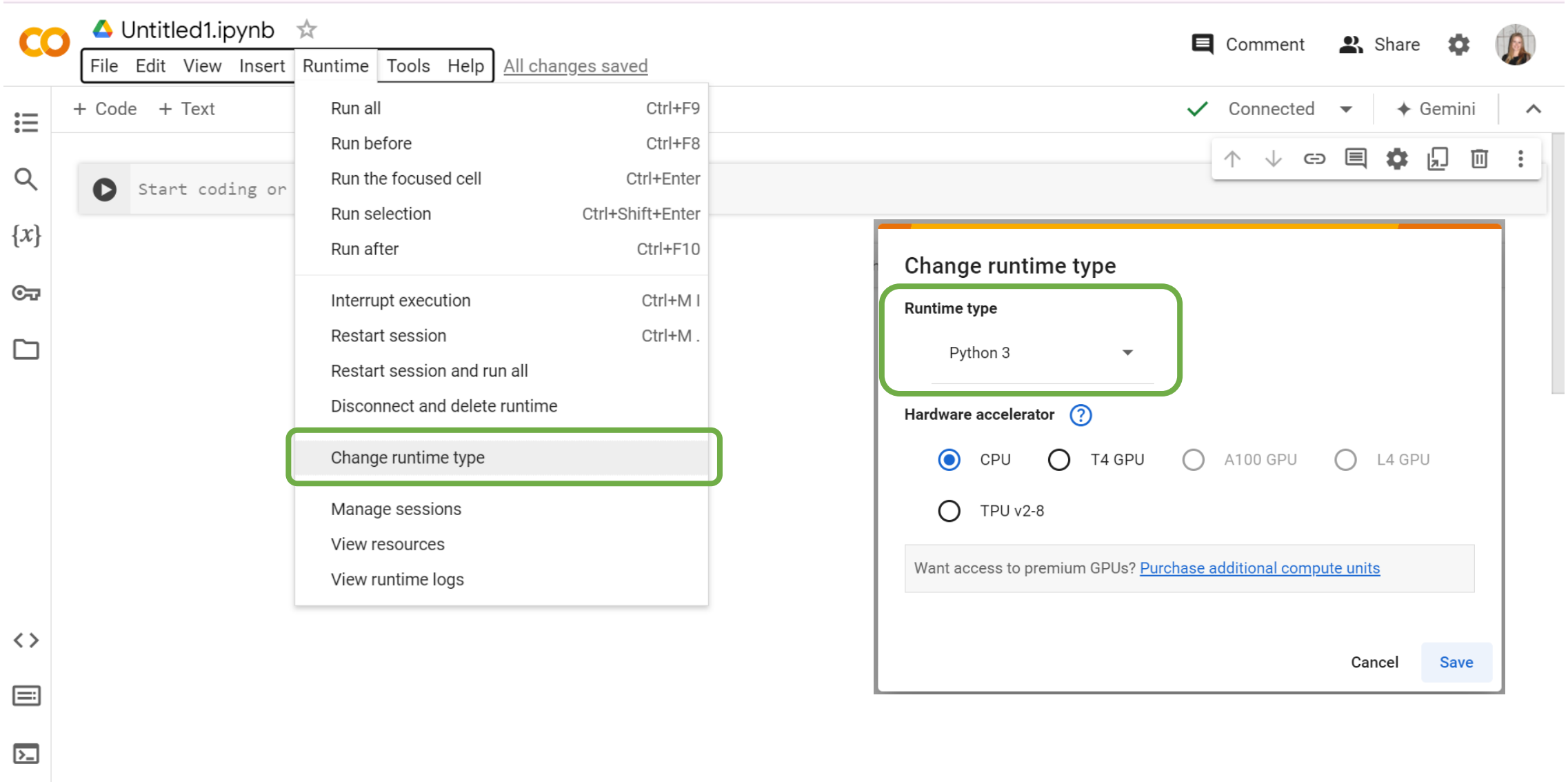
- Hosted **Jupyter Notebook** service.
- Required **no** hardware or software to be installed on your device.
- Provides free access to computing resources such as GPUs.

https://colab.google/notebooks/

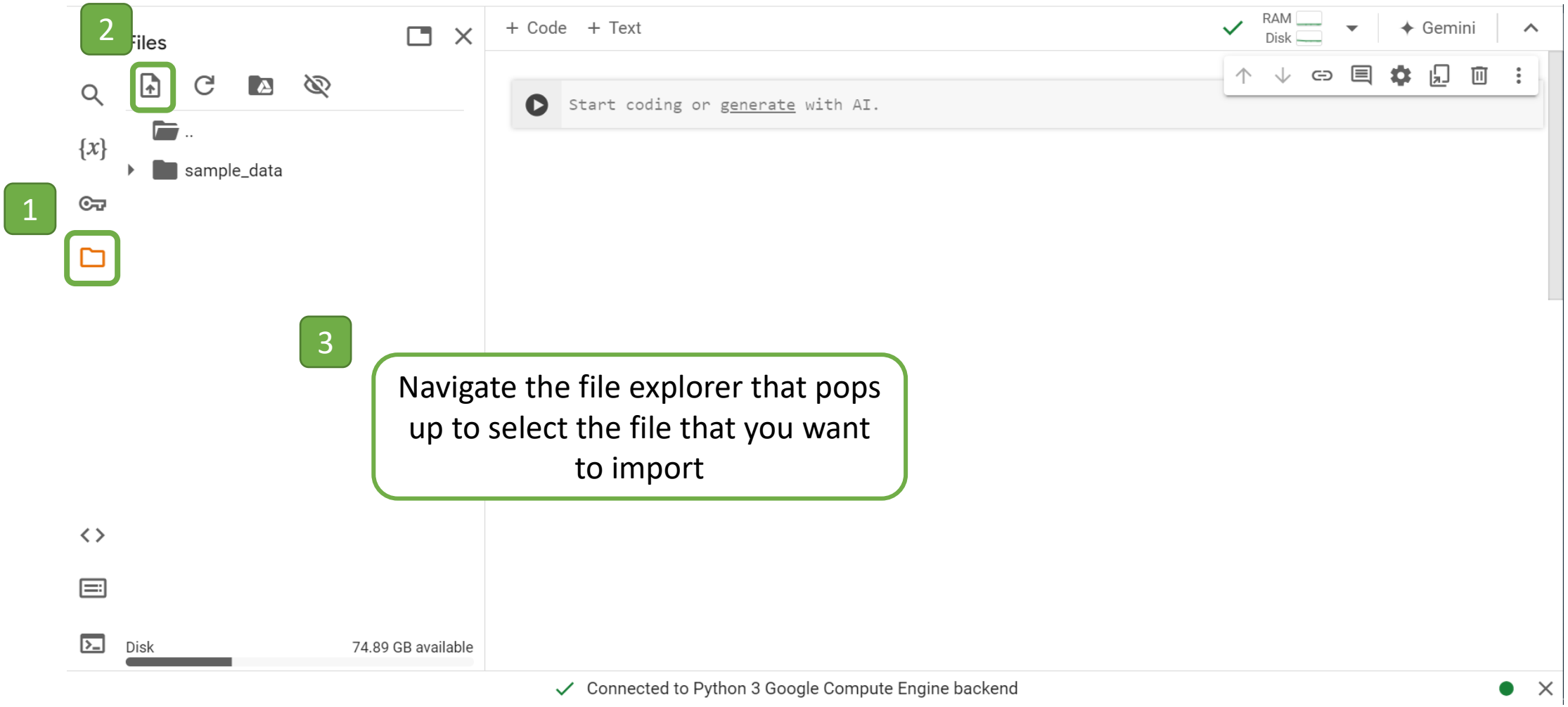
Running Python in Google Colab



Running Python in Google Colab



Running Python in Google Colab



Installing Python

1. Download Anaconda navigator. https://www.anaconda.com/download

2. Access the Python IDE, **Spyder**, through the Anaconda navigator.

Fundamental Python Libraries for Data Scientists

- **NumPy:** Provides support for multidimensional **arrays with basic operations on them** and useful linear algebra functions.
- **SciPy:** Provides a collection of **numerical algorithms** and domain-specific toolboxes, including signal processing, optimization and statistics.
- **Matplotlib:** Enables **data visualization**.
- **Pandas:** Provides high performance **data structures** and data analysis tools.
- **Scikit-Learn:** Offers simple an efficient tools for **common tasks in data analysis** such as classification, regression, clustering, and many more…

Coding scripts for this course

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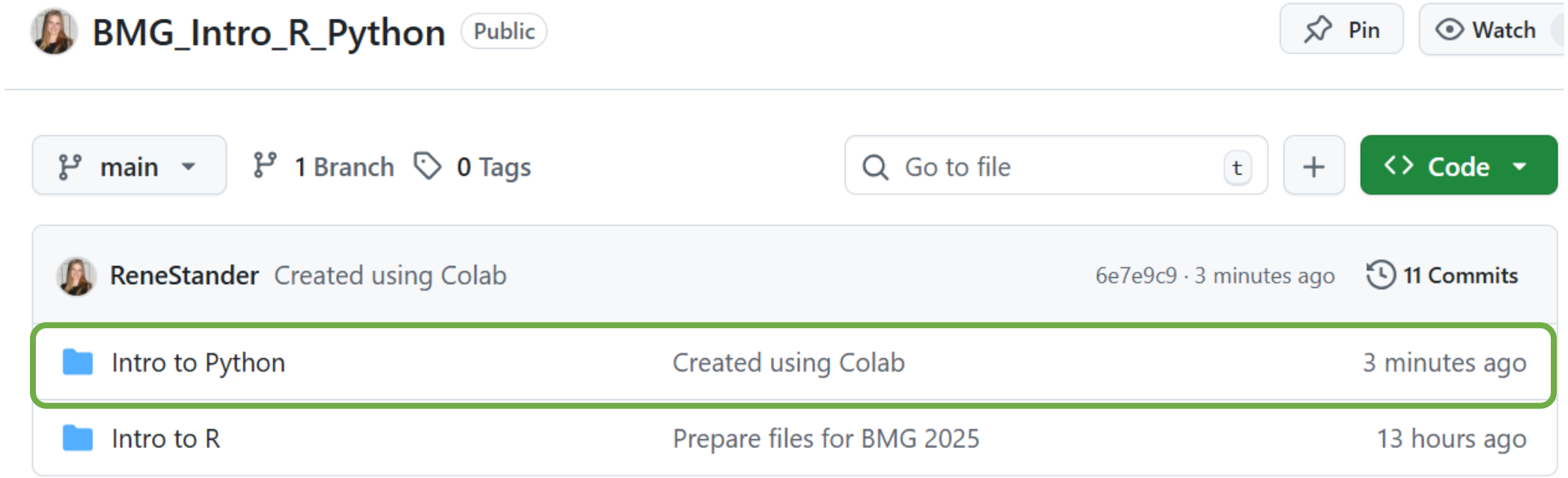
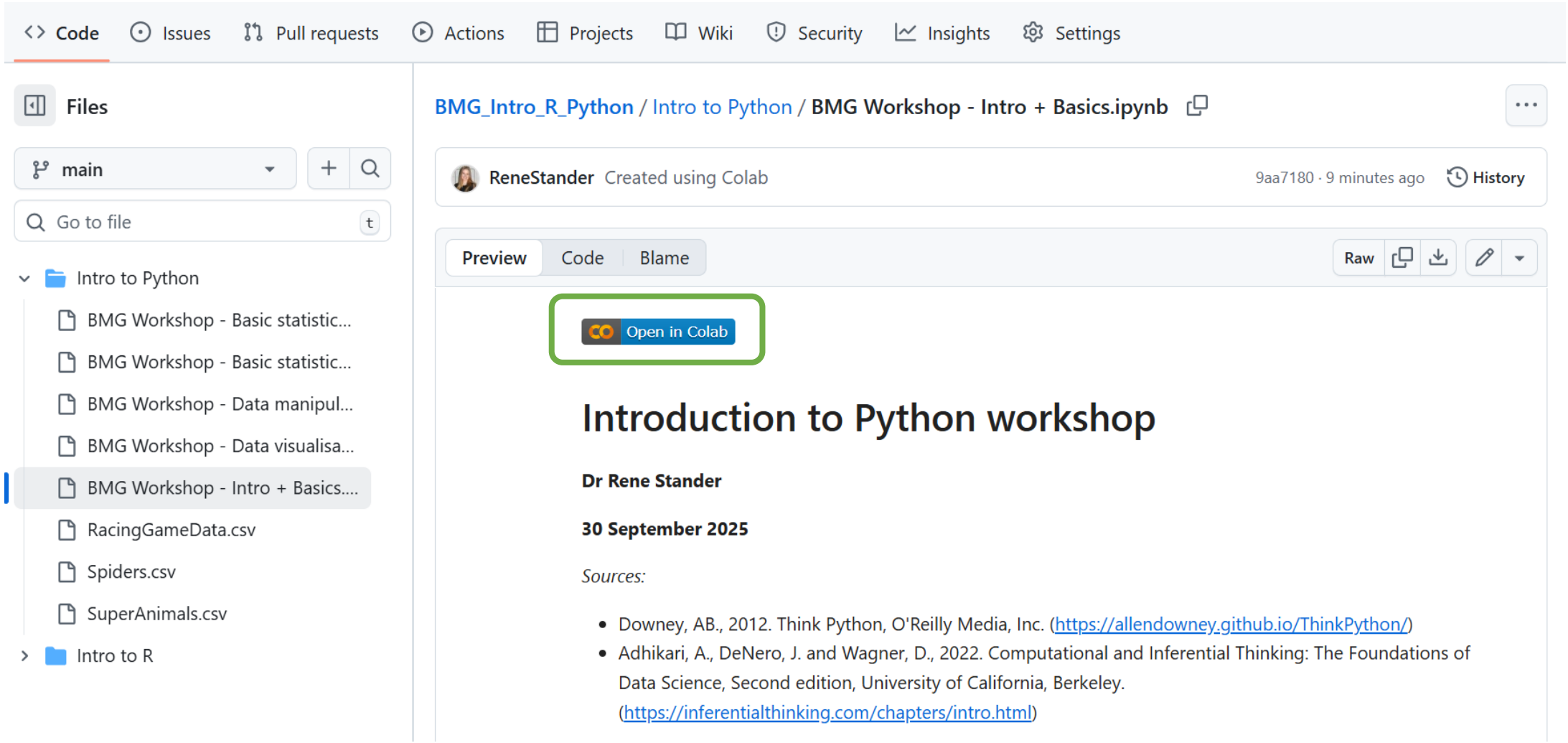
Coding scripts for this course



Coding scripts for this course



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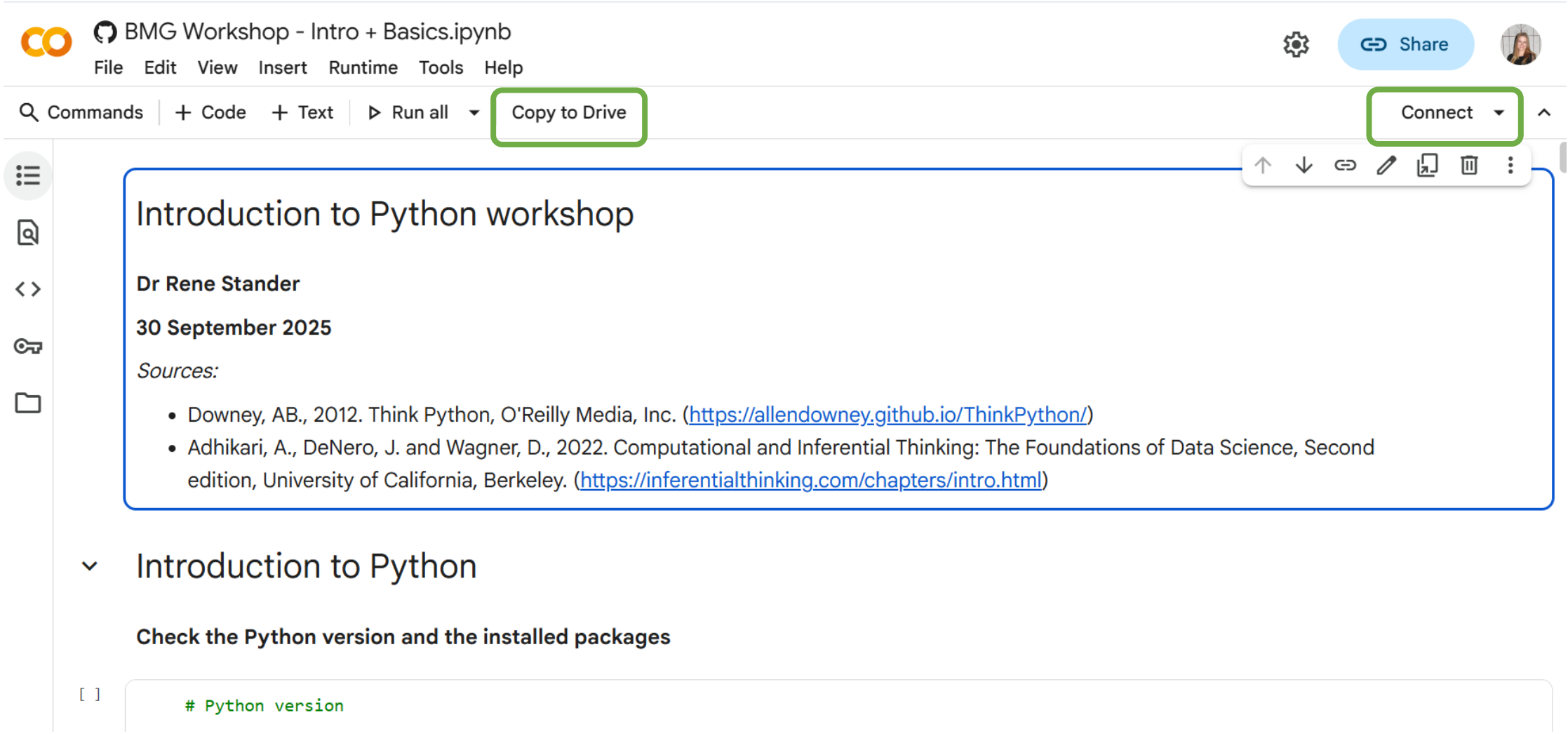

Intro + Basics

Open the notebook named **`BMG Workshop – Intro + Basics.ipynb`** in Google Colab

This part of the work does not require any additional data sets

Github:

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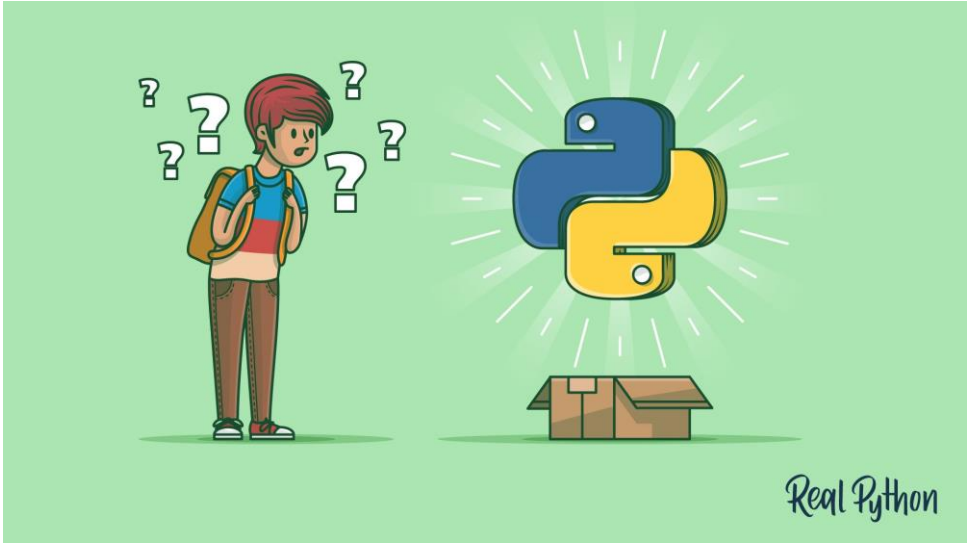

Data manipulation

Open the notebook named **`BMG Workshop – Data manipulation.ipynb`** in Google Colab

To run the code in this notebook, please upload the following data sets into Google Colab:

- **`RacingGameData.csv`**

Github:

https://github.com/ReneStander/BMG_Intro_R_Python

Data visualisation

Open the notebook named **`BMG Workshop – Data visualisation.ipynb`** in Google Colab

To run the code in this notebook, please upload the following data sets into Google Colab:

- **`SuperAnimals.csv`**
- **`Spiders.csv`**

Github:

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Data visualisation

Open the notebook named **`BMG Workshop – Data visualisation.ipynb`** in Google Colab

To run the code in this notebook, please upload the following data sets into Google Colab:

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- **`Spiders.csv`**

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Statistical analysis – Categorical variables

Open the notebook named **`BMG Workshop – Basic statistical analysis – Categorical variables.ipynb`** in Google Colab

This part of the work does not require any additional data sets

Github:

https://github.com/ReneStander/BMG_Intro_R_Python

Statistical analysis – Categorical variables

Open the notebook named **`BMG Workshop – Basic statistical analysis – Numerical variables.ipynb`** in Google Colab

To run the code in this notebook, please upload the following data sets into Google Colab:

- **`SuperAnimals.csv`**
- **`Spiders.csv`**

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