

Jupyter Notebook Demo

Open this notebook in [Callysto](#) or in [Colab](#).

A guidebook for this lesson is available [here](#) or as a [PDF](#) for download.

Lesson Objectives

By the end of this lesson, students will be able to:

- Explain what a Jupyter Notebook is and its relevance in the context of interactive computing and data science.
- Recognize the history and development of the Jupyter Notebook from IPython to the introduction of the Project Jupyter.
- Utilize Markdown to format text, create lists, headers, links, images, and tables within a Jupyter Notebook to enhance readability and presentation of the content.
- Differentiate between Markdown cells for text formatting and code cells for executing Python code in a Jupyter Notebook.
- Execute Python code directly within a Jupyter Notebook, observing the output inline with the code which enhances debugging and learning.
- Navigate and apply basic and advanced Markdown features to create structured and visually appealing Jupyter Notebook documents.

Colab vs Callysto

(Demo and discussion)

What are Jupyter Notebooks?

Jupyter Notebooks are **web applications** that allow users to create and share documents containing live code, equations, visualizations, and narrative text.

IPython, a predecessor of Jupyter, started in 2001. In 2011, the first version of Notebooks for **IPython** was released, and in 2014, a spin-off project called Project Jupyter was introduced.

The name Jupyter is an indirect acronym of the three core languages it was designed for: [JULia](#), [PYThon](#), and [R](#).

(For more details on the history of IPython and its transition to Jupyter, see [this document](#))

This is a Markdown cell (or block).

Text can be **bold**, *italics*, ~~struck out~~, or `monospaced`.

The markdown for that sentence looks like this:

Text can be **bold**, *italics*, ~~struck out~~, or `monospaced`.

You double-click on a cell to edit it.

Text can be indented.

> Text can be indented.

We can have code blocks in markdown:

```
name = 'Peter'
print(name)
```

(Enclose what you want in a markdown code block within a set of 3 back-ticks (`))

We can have links, like this: [Google](https://www.google.com/) which are formatted like this:

```
[Google](https://www.google.com/)
```

We can have headers, which makes our Jupyter Notebook more like a book:

Heading level 1

(# Heading level 1)

Heading level 2

Heading level 3

Heading level 4

Heading Level 5

Heading Level 6

Let's not forget pictures!



(![Python logo](https://raw.githubusercontent.com/pbeens/Data-Dunkers/main/Images/python2.5.png))

And tables...

X	Y
0	0
1	1
2	4
3	9

X	Y
0	0
1	1
2	4
3	9

(See this [file](#) for more details on Markdown tables.)

What if you want a line? (---)

...or an equation?

\$\$
a^2 + b^2 = c^2
\$\$

$$a^2 + b^2 = c^2$$

The formula $a^2 + b^2 = c^2$ is from the Pythagorean theorem.

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Code Cells

These are code cells, where we can run **Python** programs:

```
In [ ]: # Print the string 'Hello world!'
print('Hello world!')
```

Hello world!

```
In [ ]: # Assign the string 'Peter' to the variable name
name = 'Peter'

# Print the string 'Hello' followed by the value of the variable name
print('Hello', name)
```

Hello Peter

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