

Introduction to Jupyter Notebooks

A Tool for Interactively Developing and Presenting Data Science Projects

What is a “notebook”?

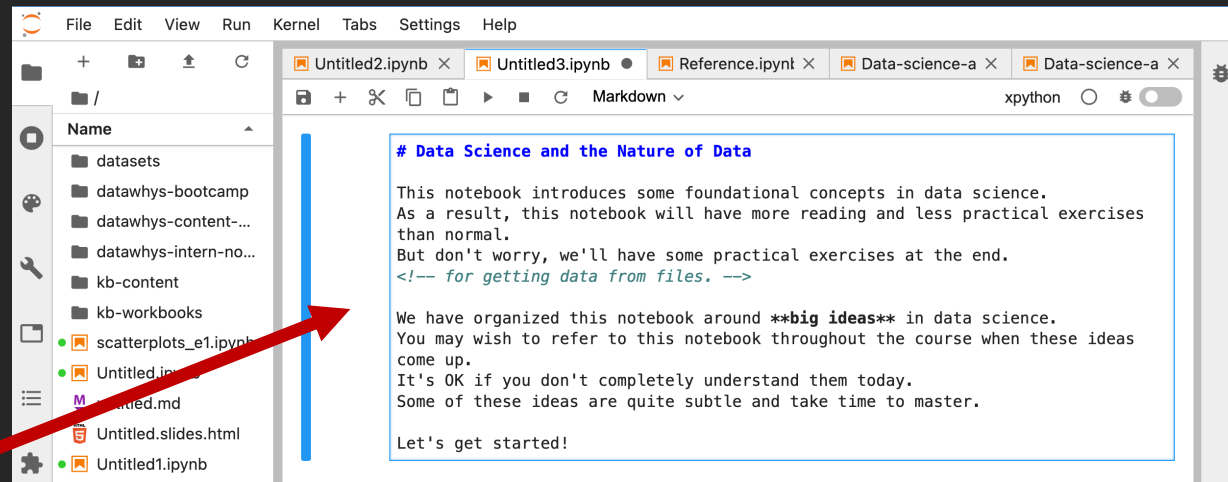
- It is a **computational document**.
- Computational documents allow users to create a single file with:
 - Prose elements
 - Images
 - Embedded code fragments
 - Code execution outputs
 - Formulas
 - Charts
- How are these elements combined?

Cells

- Each notebook is made up of distinct **cells**
- Each cell is **executable**
- Each cell has a **cell-type**
- Cells of different types can be used to make different document elements
- Two main types of cells:
 - **Markdown cells**
 - **Code cells**

Markdown Cells

- Contain:
 - Prose in Markdown syntax
 - HTML
 - LaTeX formulas
- Editor View
- Rendered View



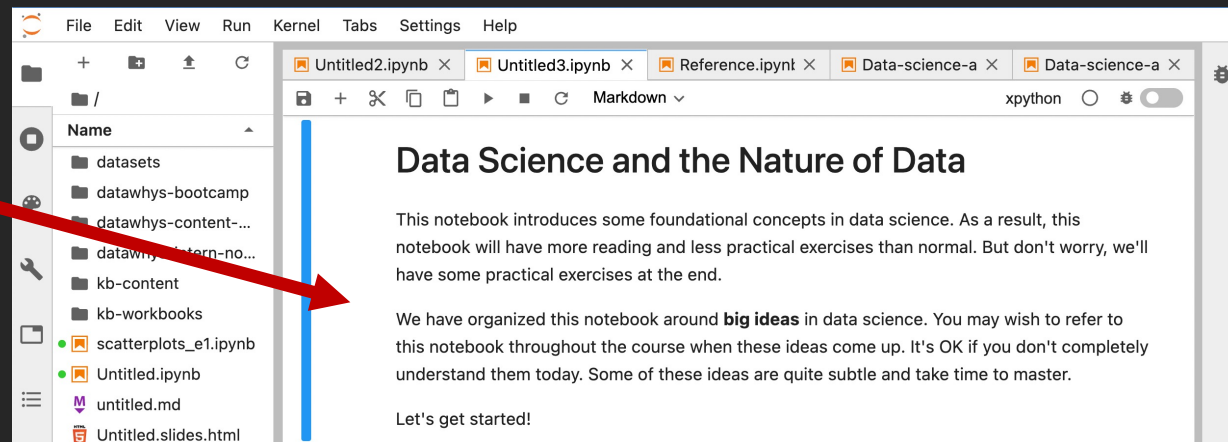
The screenshot shows the Jupyter Notebook interface in Editor View. On the left is a file explorer sidebar with a tree view of the workspace. The main area is a code editor with a menu bar (File, Edit, View, Run, Kernel, Tabs, Settings, Help) and a toolbar. The active cell is a Markdown cell, indicated by the 'Markdown' dropdown in the toolbar. The content of the cell is as follows:

```
# Data Science and the Nature of Data

This notebook introduces some foundational concepts in data science.
As a result, this notebook will have more reading and less practical exercises
than normal.
But don't worry, we'll have some practical exercises at the end.
<!-- for getting data from files. -->

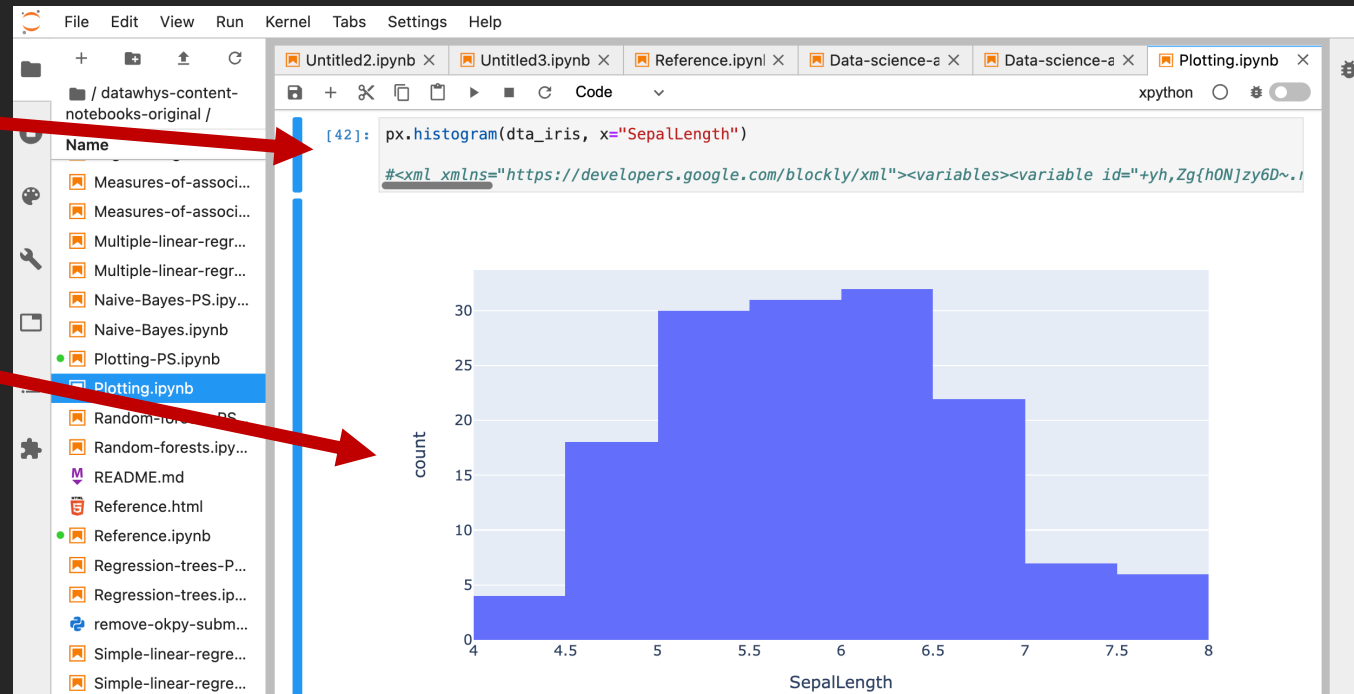
We have organized this notebook around big ideas in data science.
You may wish to refer to this notebook throughout the course when these ideas
come up.
It's OK if you don't completely understand them today.
Some of these ideas are quite subtle and take time to master.

Let's get started!
```



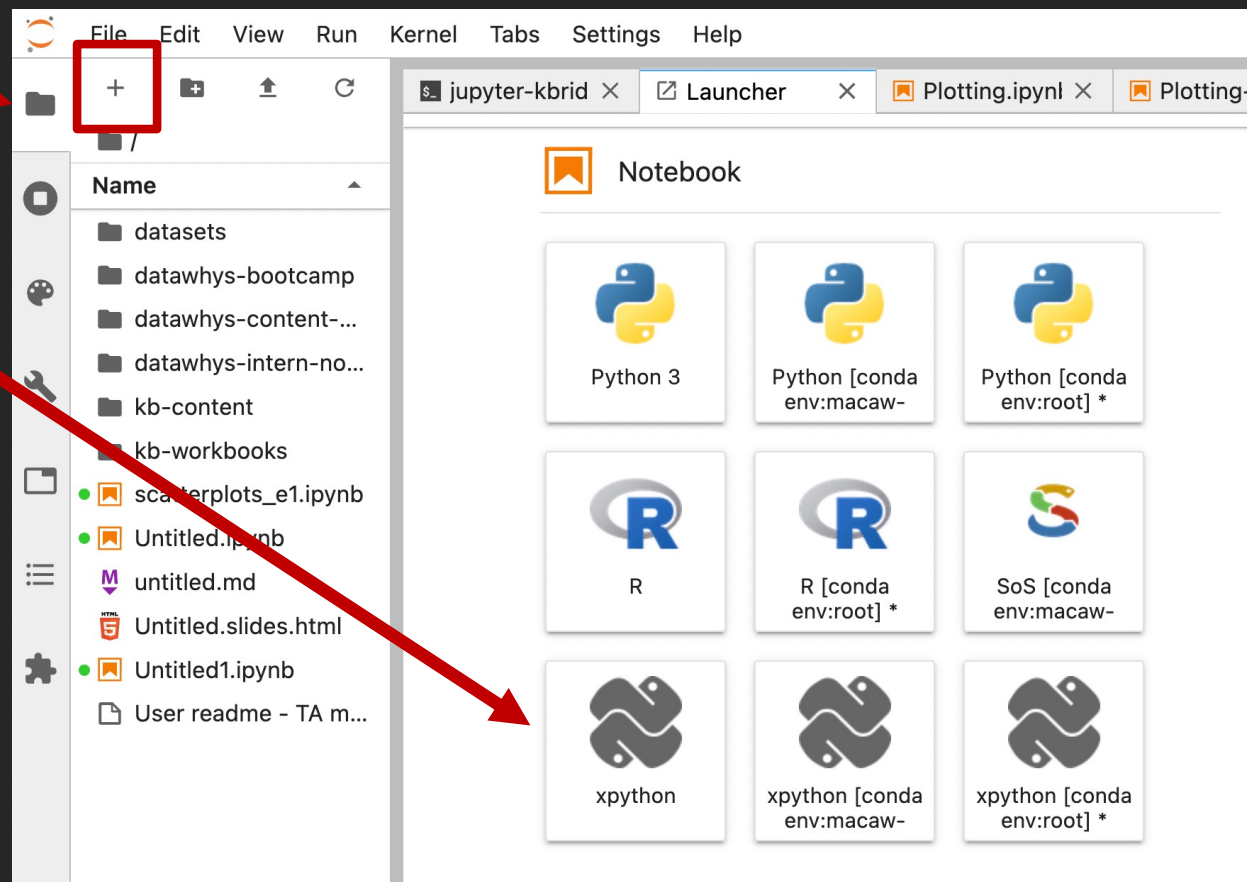
Code Cells

- Code Input
 - Python code
 - Blockly xml tag
- Code Output
- Code cells in same notebook have shared memory stack (**Kernel**)




How-to: Create a Notebook

1. Open File Browser
2. Open Launcher
3. Select xpython

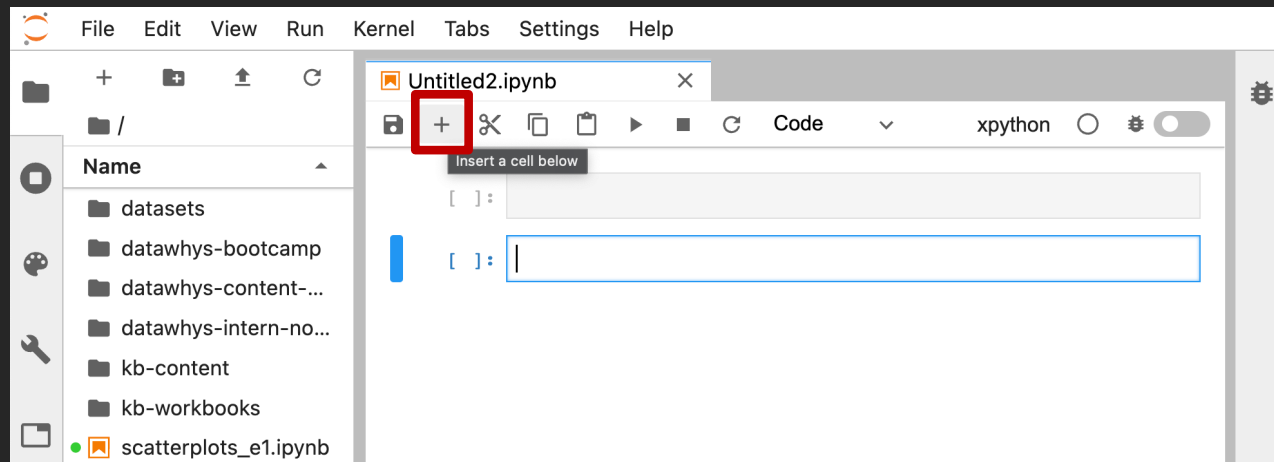


How-to: Create a Cell

From .ipynb file editor:

1. Click  to insert a new cell

This will insert a Code-type cell below the currently active cell.

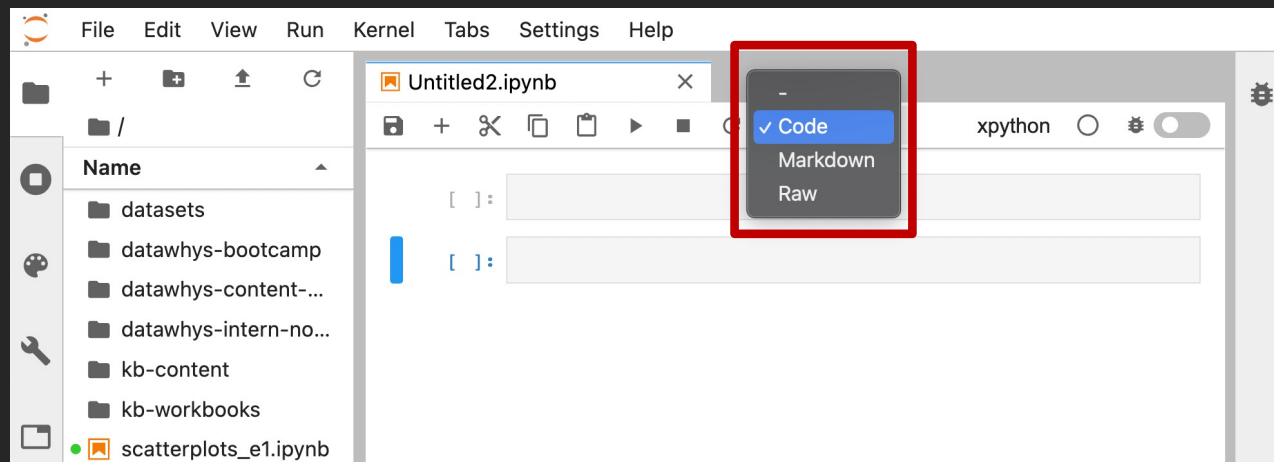
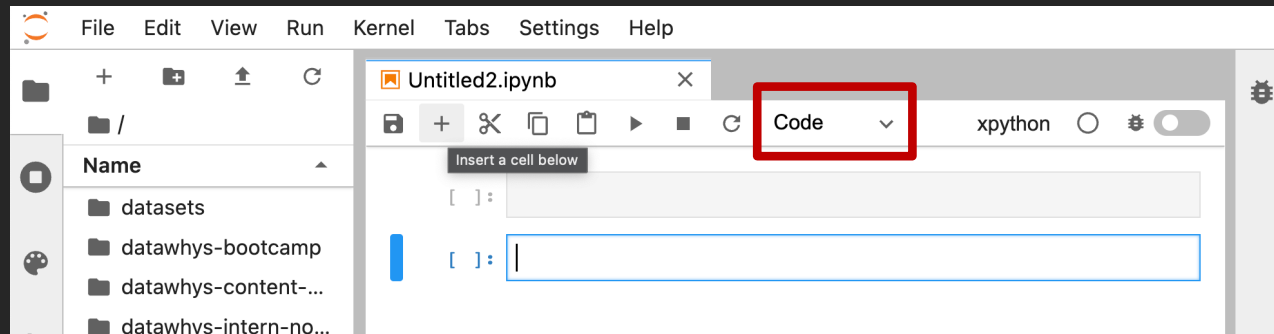


How-to: Change Cell-type

From .ipynb file editor:

1. Open cell-type dropdown
2. Select new cell-type

This will change the type of the currently active cell.

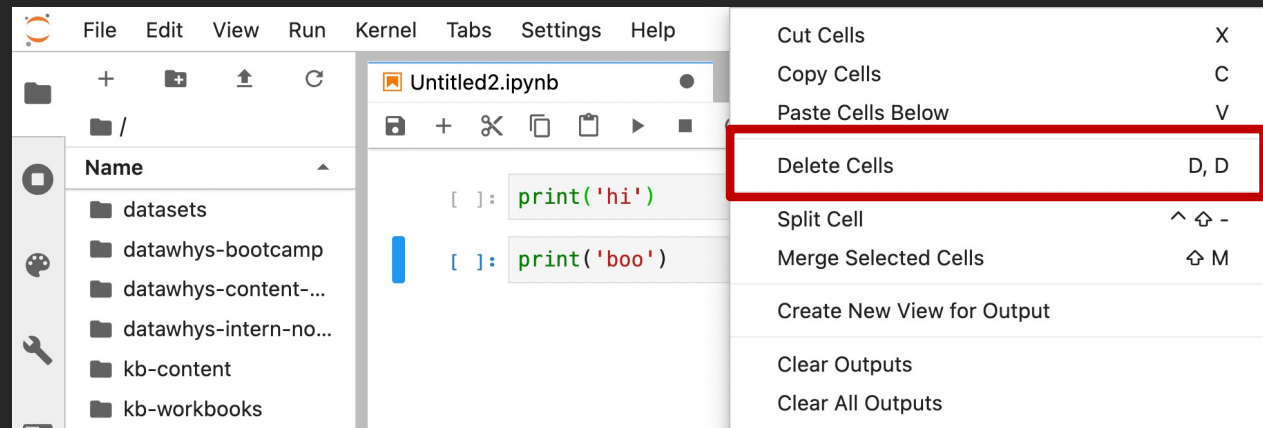


How-to: Delete a Cell

From .ipynb file editor:

1. Right-click inside cell area
2. Select “Delete Cells”

This will delete the currently active cell.



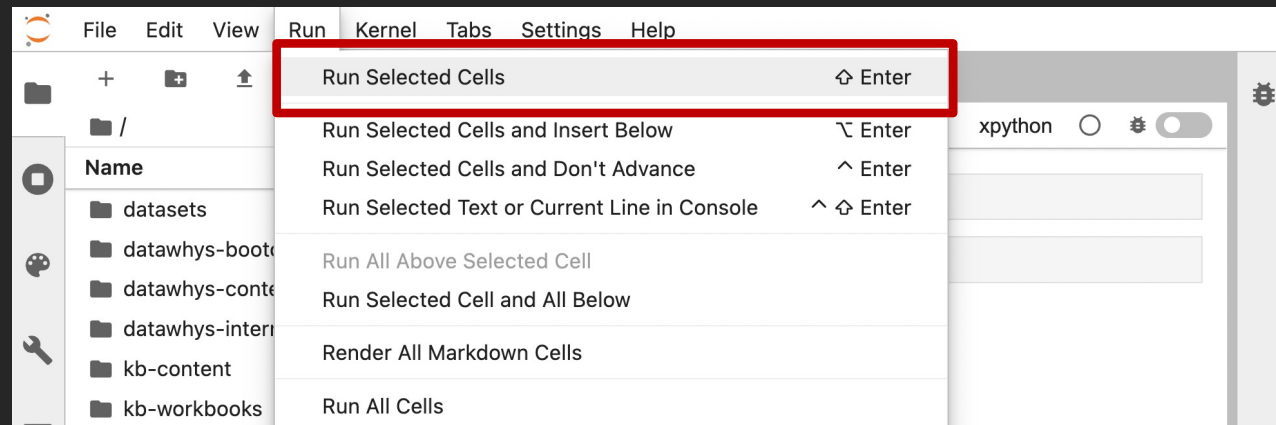
How-to: Run Currently-Active Cell

From .ipynb file editor:

1. Key press SHIFT-Enter

OR

1. Open Run Menu
2. Click “Run Selected Cells”



Summary

- Computational documents
- Cells and cell-types
- How to perform basic operations in a Jupyter Notebook