

# Introduction to Jupyter Notebooks

A Tool for Interactively Developing and Presenting Data Science Projects

# What is a “notebook”?

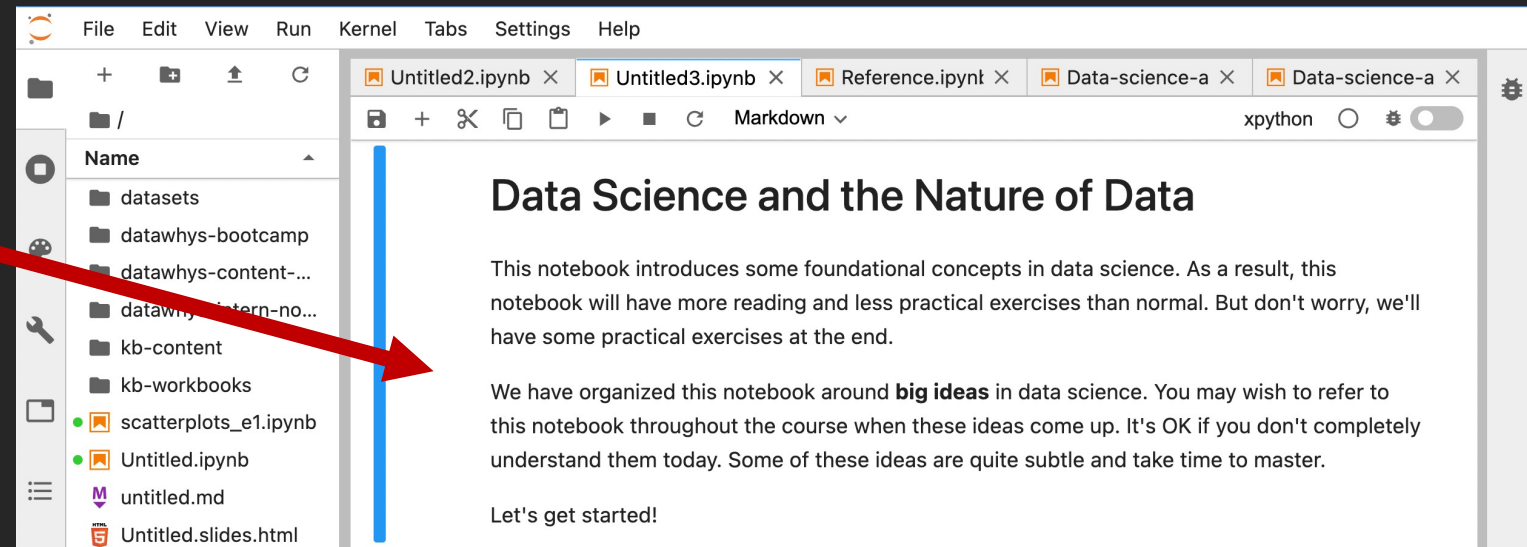
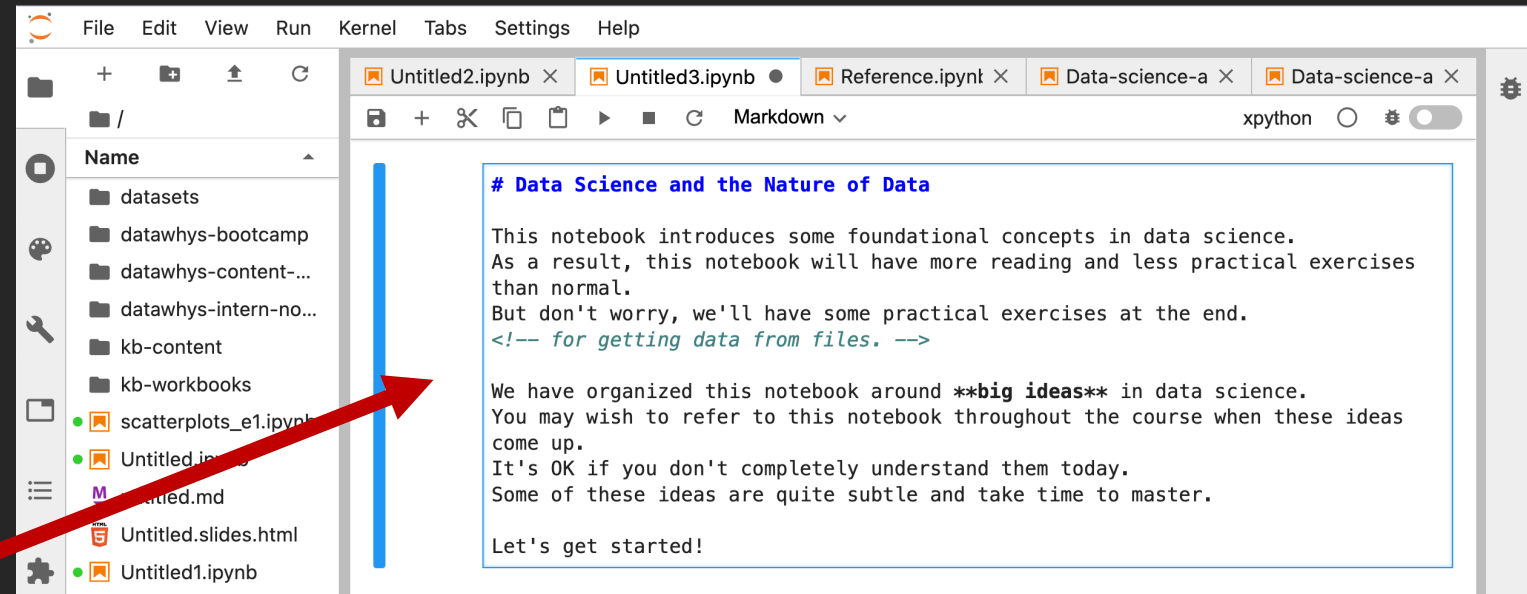
- It is a **computational document**.
- Computational documents allow users to create a single file with:
  - Prose elements
  - Images
  - Embedded code fragments
  - Code execution outputs
  - Formulas
  - Charts
- How are these elements combined?

# 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

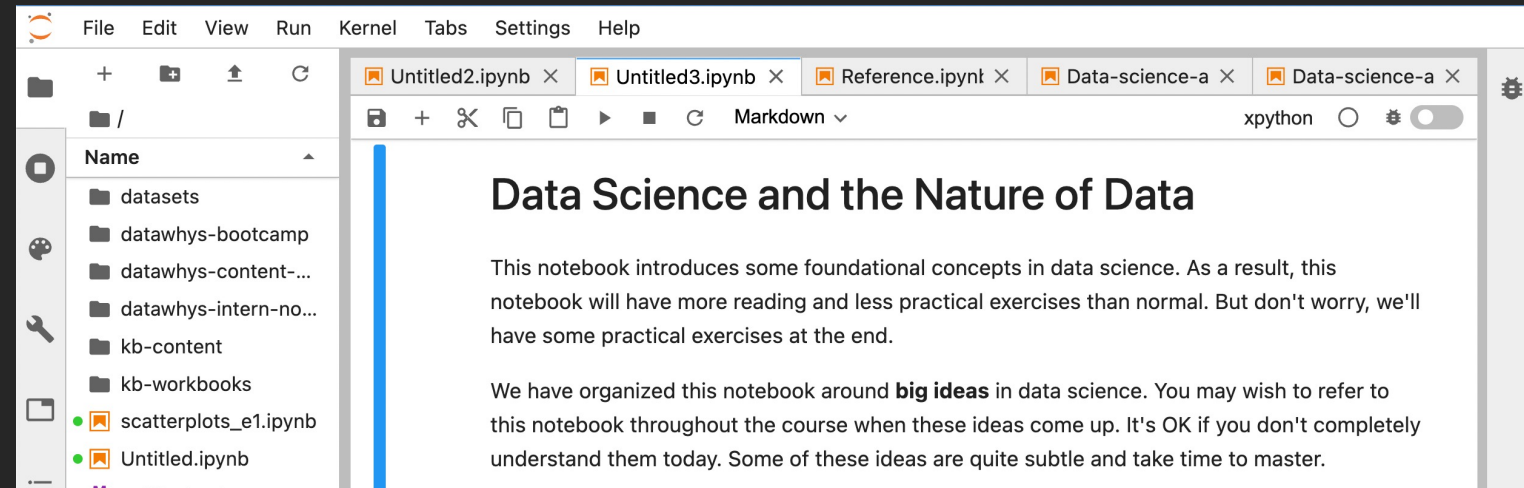
- Contain:
  - Prose in Markdown syntax
  - HTML
  - LaTeX formulas
- Editor View
- Rendered View



# How-to: Switch Between Editor & Render View

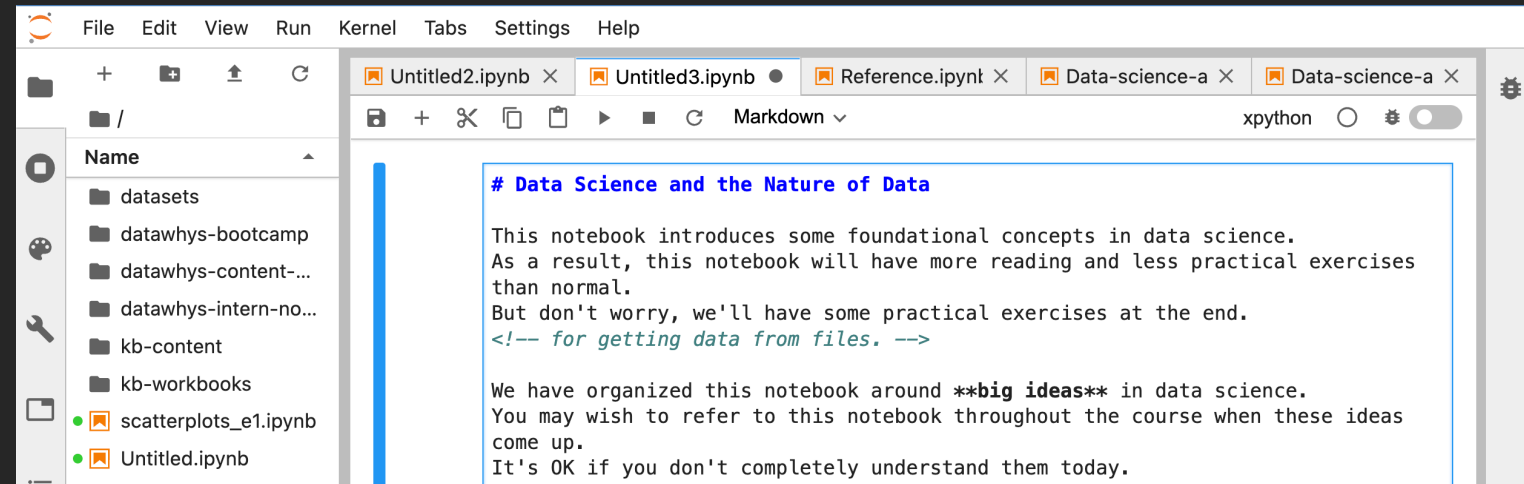
## Render to Editor:

1. Double-click inside cell



## Editor to Render:

1. Run the cell



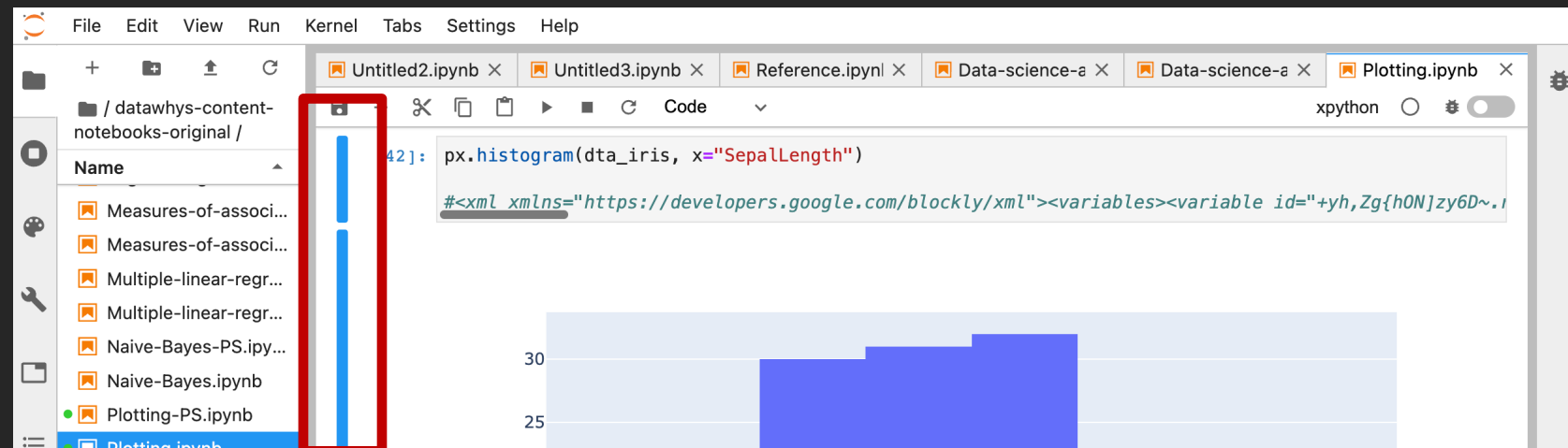
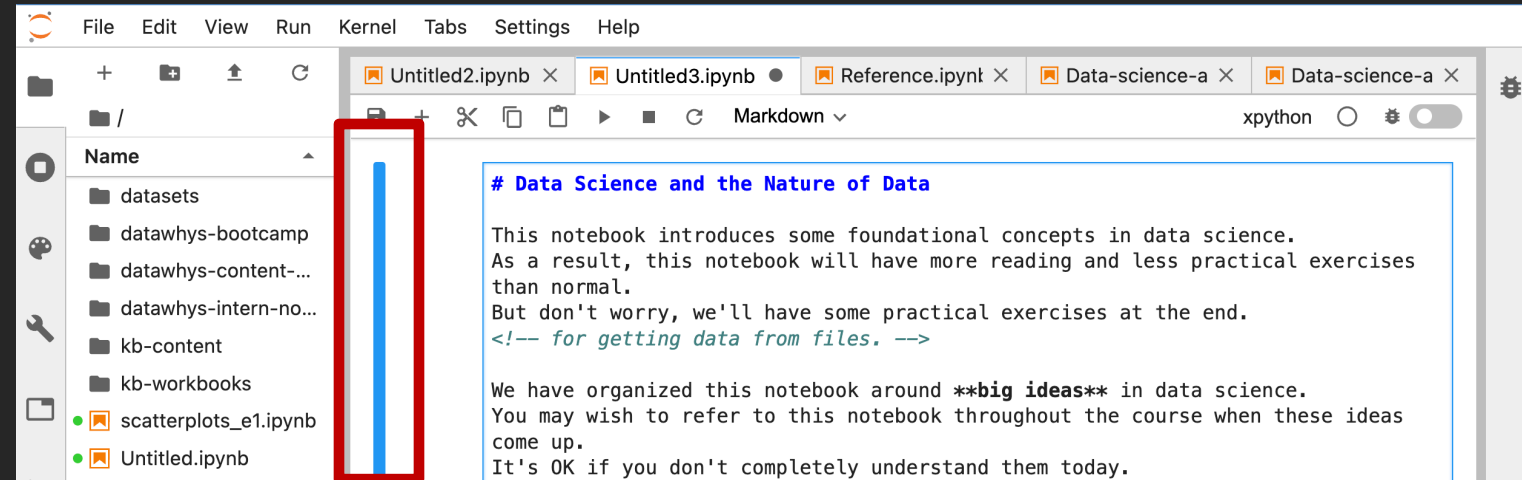
# Code Cells

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



# Currently Active Cell

- Indicated by blue bar to left of cell
- Click inside cell or surrounding area to make a cell active
- Only one cell is ever “active” at a time



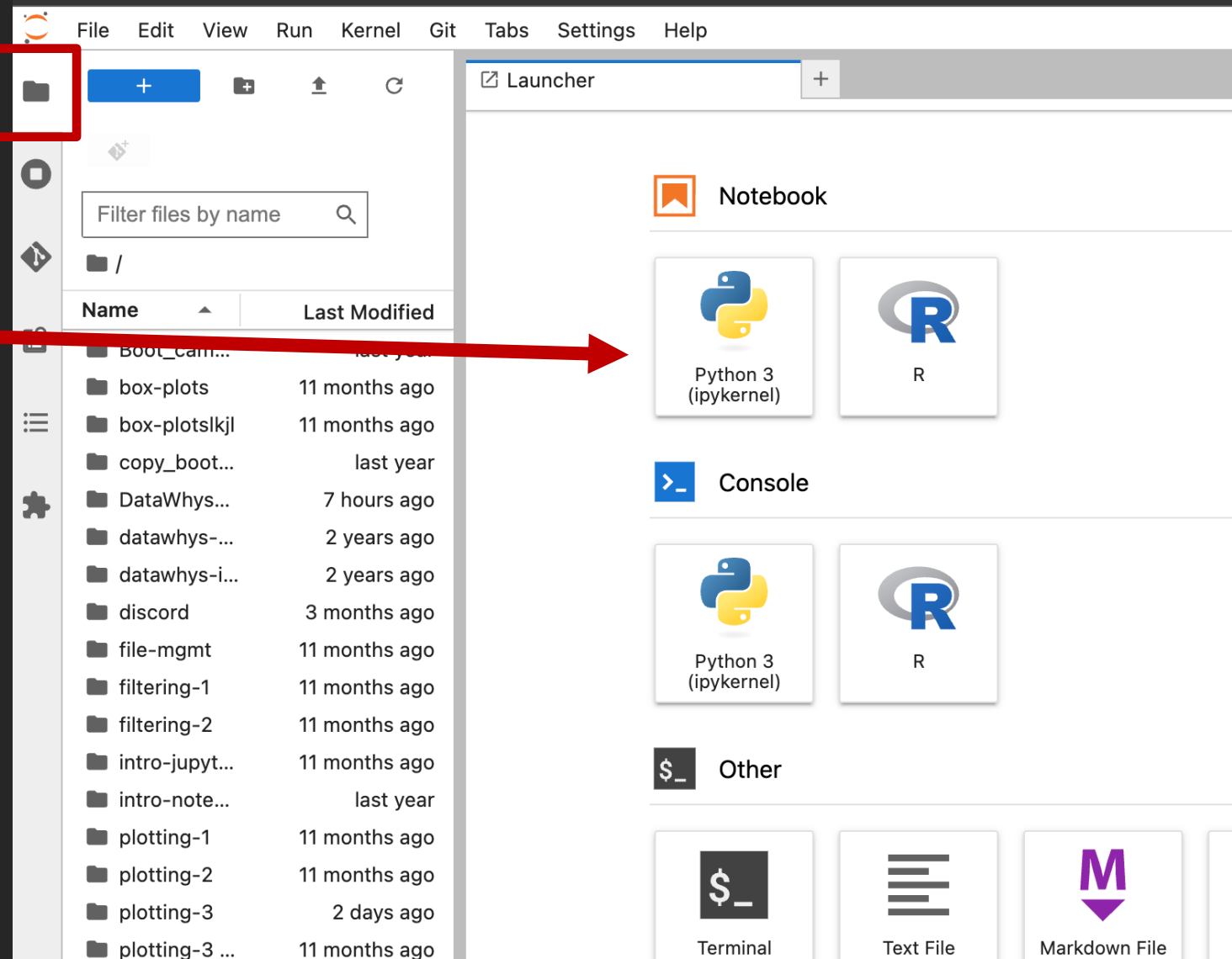
# Activity 1: Print Your Name

1. Open provided file **your\_name.ipynb**
2. Observe current value of variable **your\_name** in cell 1
3. Select “Run All Cells” from Run Menu
4. Observe outputs of cells 2 and 3 match preset **your\_name** value
5. Change value of **your\_name** in cell 1
6. Select “Run All Cells” from Run Menu
7. Observe the changes to the cell outputs
8. Take a screenshot and show to the mentor




# How-to: Create a Notebook

1. Open File Browser
2. Open Launcher
3. Select python3

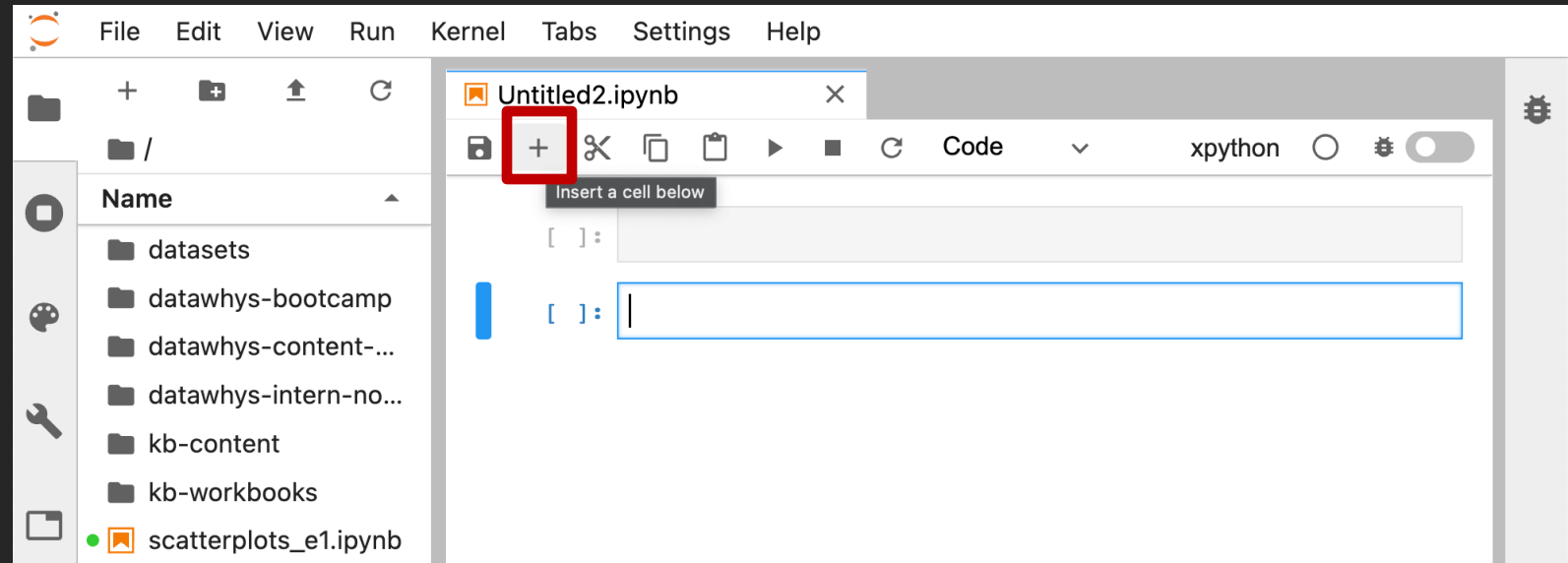


# How-to: Create a Cell

From .ipynb file editor:

1. Click  to **insert** a new cell

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

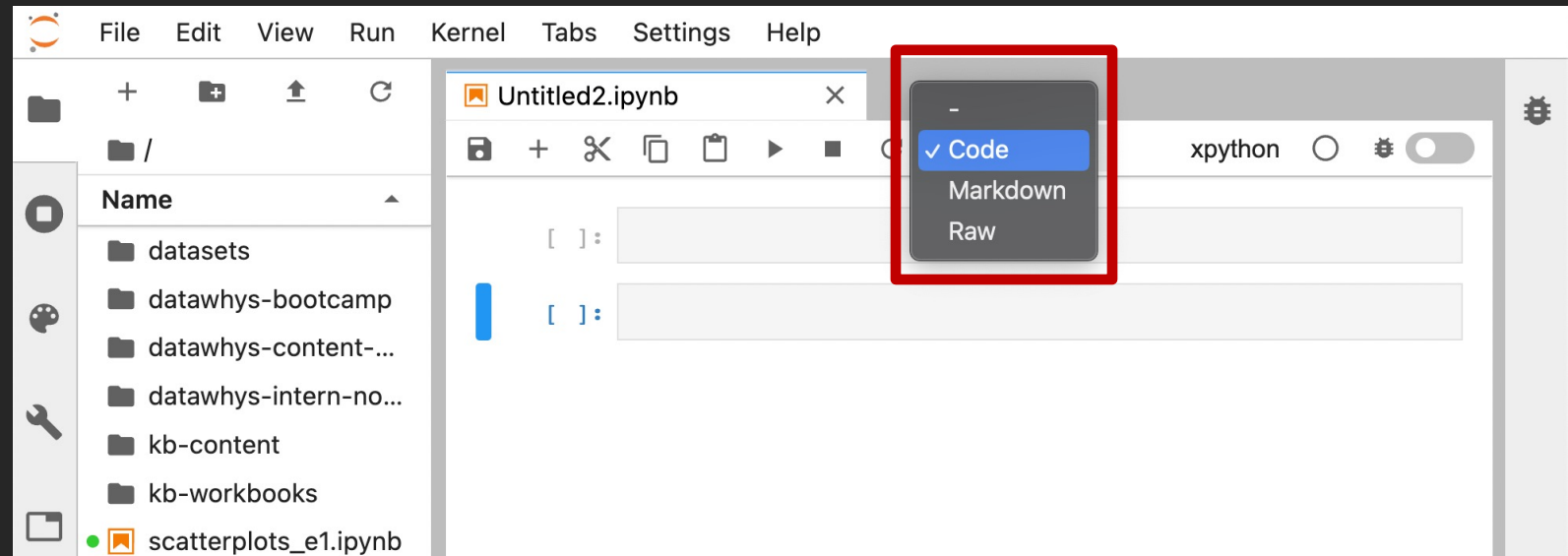
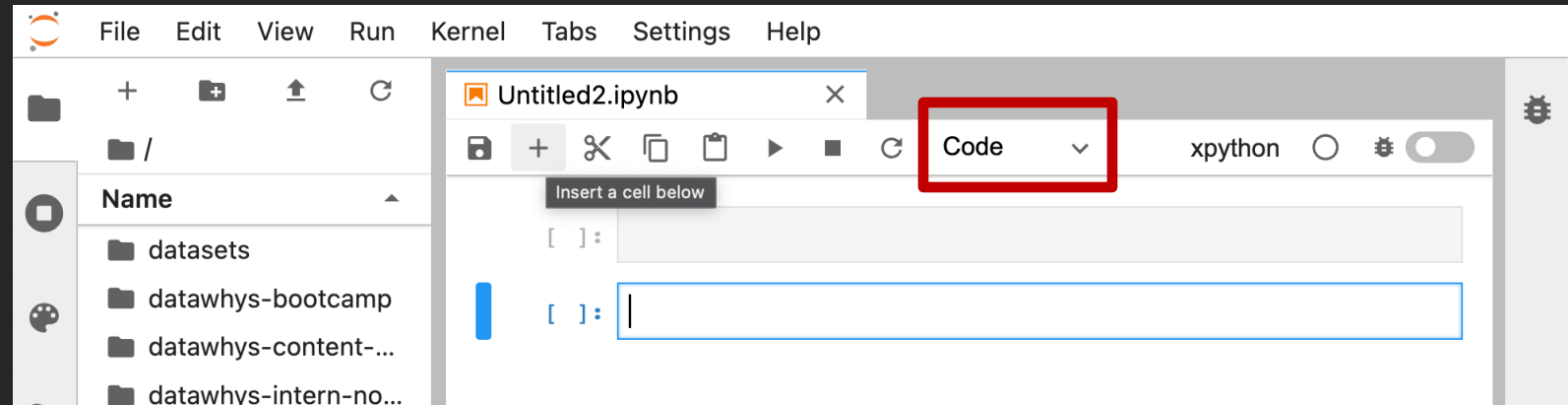


# How-to: Change Cell-type

From .ipynb file editor:

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

This will change the type of the currently active cell.

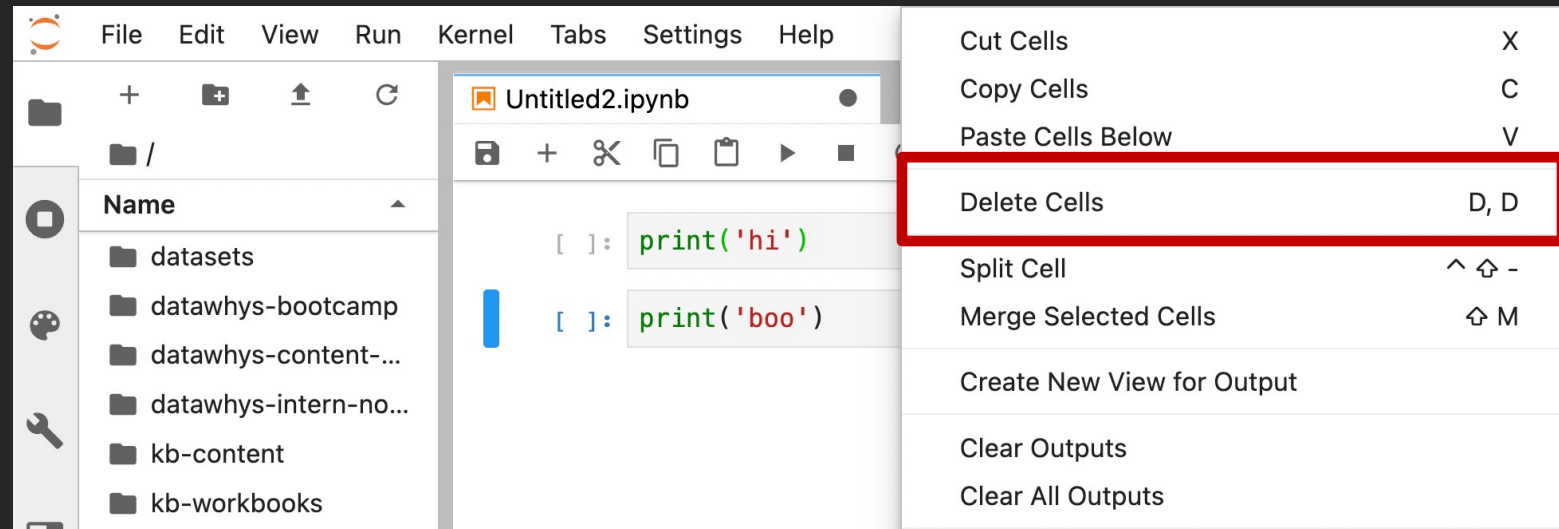


# How-to: Delete a Cell

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:

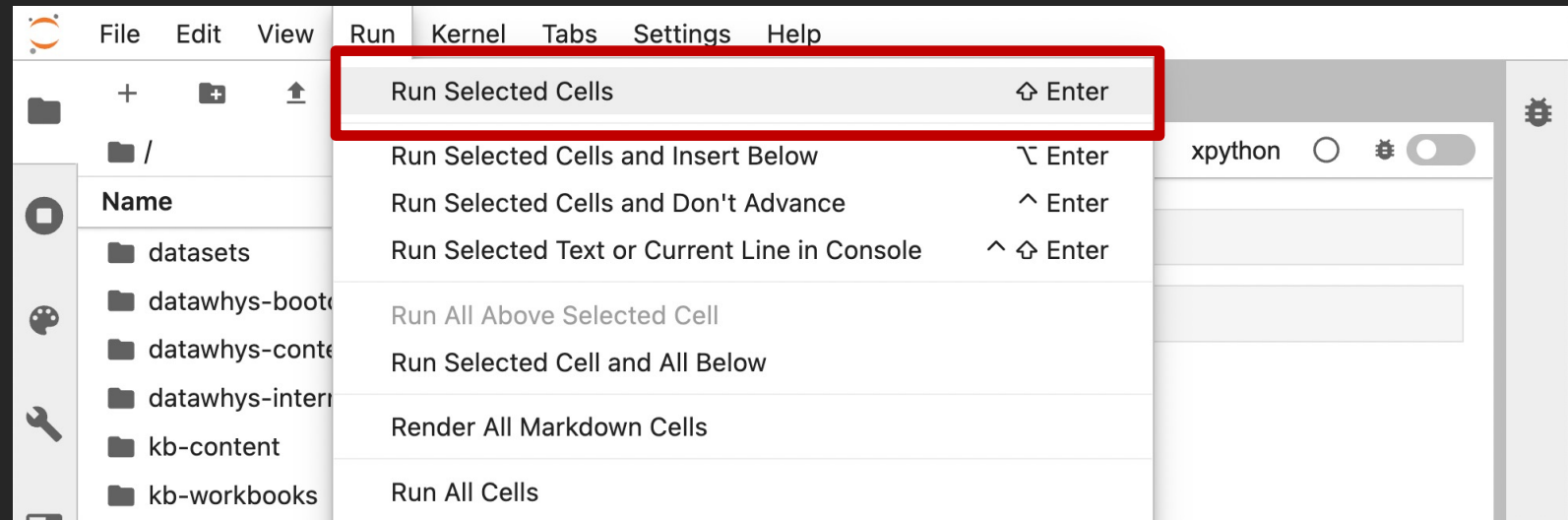
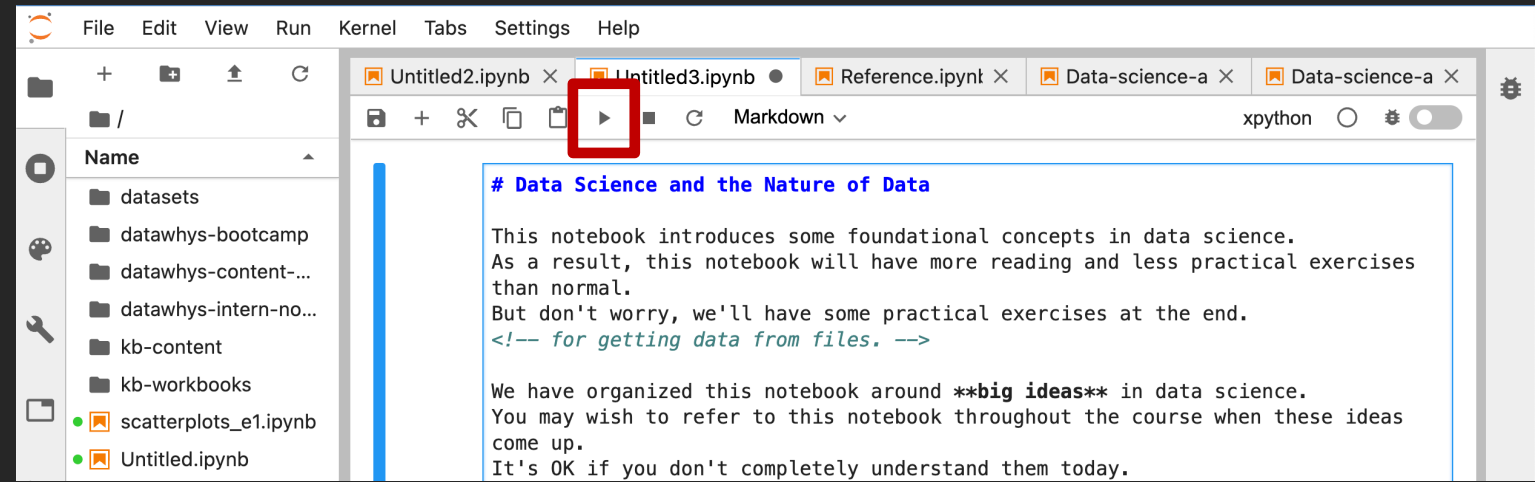
1. Key press SHIFT-Enter

OR

1. Click the  button

OR

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



# Activity 2: Create a Notebook

1. Create a new notebook
2. Rename the new notebook **age\_to\_seconds.ipynb**
3. Edit the notebook so it contains only the following 2 cells (in order):
  1. A Markdown cell with **# Age in Seconds Calculator**
  2. A Code cell with **<your age> \* 365.25 \* 24 \* 60 \* 60**  
(e.g.  $75 * 365.25 * 24 * 60 * 60$ )  
\*You can use a fake age, but not same as example (75).
4. Run both cells
5. Take a screenshot and show it to the mentor

# Summary

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