Data visualization with GitHub Co-pilot

GCAP3226 2025/09/09

Recap of week 1

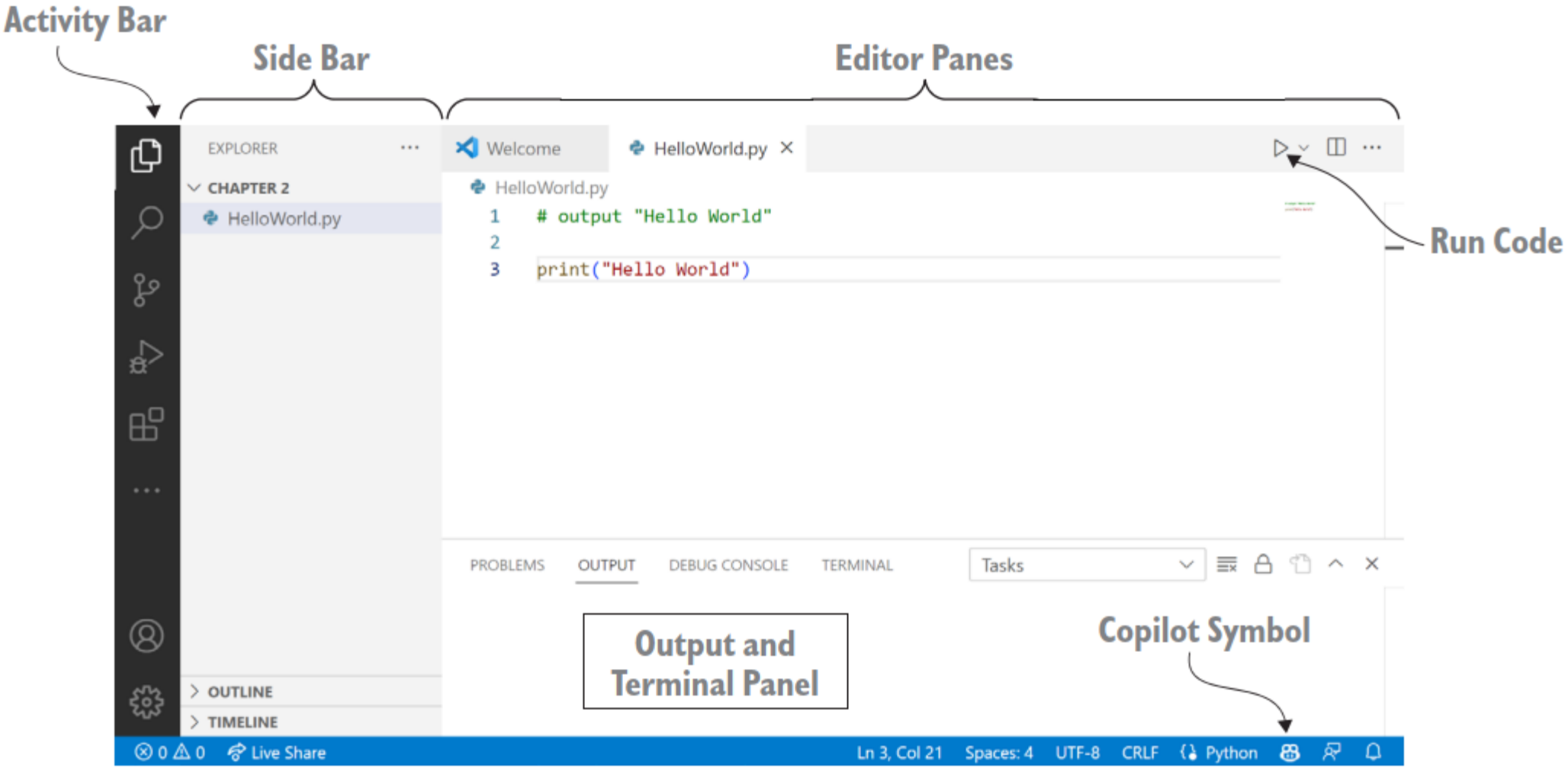
https://smartlessons.hkbu.tech/GCAP3226/intro.html

Course Objectives

- Equip students with analytical tools for data-informed policymaking in Hong Kong
- Integrate quantitative and qualitative insights to address social issues aligned with UN SDGs
- Evaluate government data use for transparency
- Engage students in practical projects for experiential learning

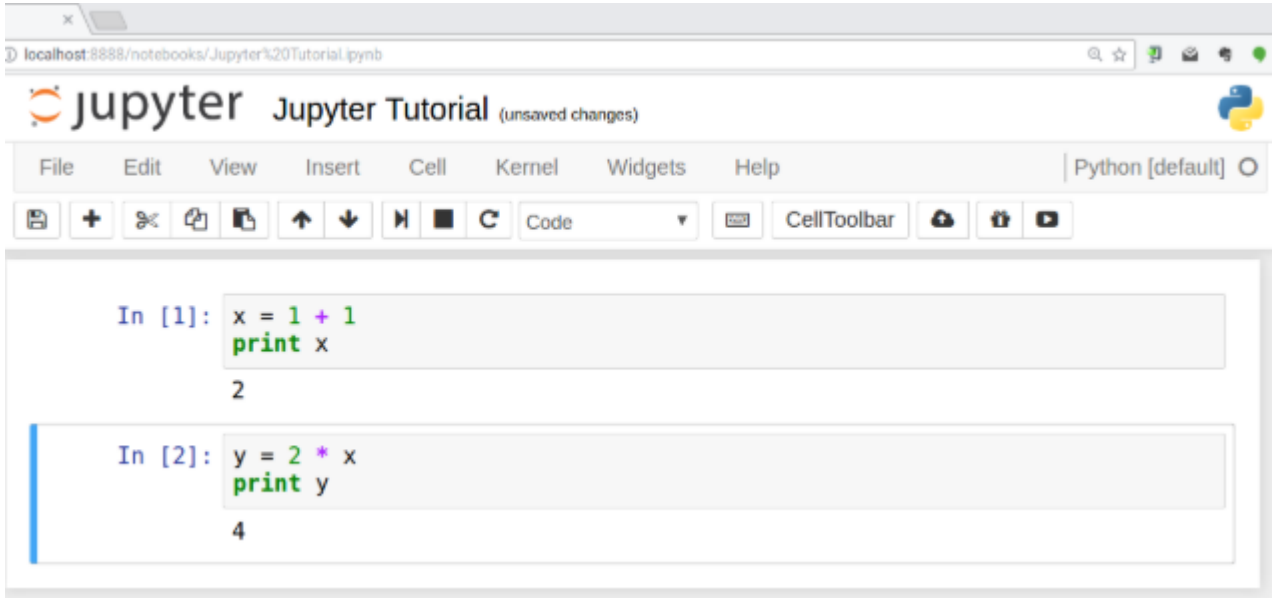
https://docs.google.com/forms/d/e/1FAIpQLSeLSXTJEWsmGncIF8POK4o_6ce_A6MmJ-_Ar2TvM9oBY7jWig/viewform

Visual Studio Code (VS Code) interface



Jupyter Notebook

A Jupyter Notebook (.ipynb) is an interactive tool that lets you write and run code, view results, and add notes.



Before we start…

- To install the Jupyter library in Python environment
  - On **Windows**: Click the Windows icon to open the Start menu, type "Command Prompt," and click it to open.
  - On **macOS**: Click the magnifying glass (top right) to open Spotlight Search, type "Terminal," and click it to open.

- Type `pip install jupyter`

- To install the Jupyter extension in VS code

File Edit Selection View Go Run Terminal Help

GCAP3226_week2_student.ipynb

D: > Incoming > 202526_S1 > GCAP3226 > GCAP3226_week2_student.ipynb > Data Visualization for Garbage Bag

Generate + Code + Markdown | Stop Execution Clear All Outputs Go To | Outline ...

Select Kernel

Type to choose a kernel source

Python Environments...

Existing Jupyter Server...

This Jupyter Notebook guides you through data visualization techniques using Python, focusing on the garbage bag charging scheme dataset in Hong Kong. This aligns with the SDG 12 (Responsible Consumption and Production). You will learn to:

1. Load and examine a dataset.
2. Understand its structure and variables.
3. Visualize categorical data with frequency tables, bar charts, and pie charts.
4. Analyze continuous data with summary statistics, box-whisker plots, and histograms.
5. Explore relationships using scatter plots.
6. Save visualizations to a directory.

Use GitHub Copilot to assist by writing prompts (e.g., comments like `# Write code to...`) to generate Python code. Libraries required: `pandas`, `matplotlib`, `seaborn`.

Section 0: Import Relevant Libraries

Before we start, let's make sure your computer has the tools we need, called libraries (`pandas`, `matplotlib`, and `seaborn`). If you see an error when running the code below, fo

- On **Windows**: Click the Windows icon to open the Start menu, type "Command Prompt," and click it to open.
- On **macOS**: Click the magnifying glass (top right) to open Spotlight Search, type "Terminal," and click it to open.

In the window that opens, type this command and press Enter: `pip install pandas matplotlib seaborn`. If it shows "command not found: pip", try `python3 -m pip inst`

- If you get a permission error, add `--user` at the end, like `pip install pandas matplotlib seaborn --user`. (If this doesn't work, ask your instructor.)

After installing the libraries, try running the next code cell (the one asks you to write prompt to import pandas, matplotlib, and seaborn). If it works without errors, you're ready t settings. To do this, click the kernel name (e.g., 'base') in the top-right corner—don't worry if it's different, just click it—and look for a 'Restart' option in the dropdown. If you don it. Restarting refreshes the notebook to use the new libraries. After restarting, run the next code cell again to confirm it works. If you're still stuck, ask your instructor for help.

Task: Use GitHub Copilot to generate the import statements for `pandas`, `matplotlib`, and `seaborn`. Write a prompt as a comment (e.g., `# Write code to import pandas,`

Stop Cell Executio

```
1  # Write a promt to import pandas, matplotlib, and seaborn
2  import pandas as pd
3
4
```

Select kernel?

- Python environment: restaurant
- Jupyter notebook: dining area
- Kernel: restaurant manager
- Interpreter: chef
- Python libraries: ingredients

Tips for beginners

- Stick to **One Environment** Initially: Start with the global python environment (default restaurant) to avoid confusion, and only create new environments when you need different library versions.

- VS Code Tip: When selecting a kernel in VS Code, choose Python Environments; avoid dealing with a Jupyter server (http://localhost:8888) for now.