Mini Project: Linear Fit and Reflection in Jupyter Notebook

(10 points)

Overview

This is a short project to practice basic data fitting and reflection. You will work in a Jupyter Notebook (`.ipynb`). The notebook must contain both your code and your written responses (as # comments).

Data (Use This Set)

$$X = [0,\ 1,\ 2,\ 3,\ 4,\ 5,\ 6], \quad Y = [1.0,\ 2.9,\ 4.2,\ 6.1,\ 8.2,\ 10.3,\ 12.1].$$

Tasks (10 points total)

T1. Modify the starter code to fit a line (4 pts).

- Use a simple fitting method (e.g., least squares or gradient descent).
- Report the final slope w and intercept b (print them in the notebook).

T2. Draw one graph (4 pts).

- Scatter plot the dataset (X, Y).
- Plot the fitted line $\hat{y} = wx + b$ on the same graph.
- Label axes and add a legend.

T3. Observations and Reflection (2 pts).

- In **comment cells**, write 3–5 sentences of observations: Does the line fit well? Any visible error?
- Add 2–3 sentences of reflection: What was easy or difficult? What would you try next time?

Deliverables

- Submit your single Jupyter Notebook file (`project.ipynb`).
- The notebook must contain:
  a) code to fit the line,
  b) the plot (inline in the notebook),
  c) your observations/reflection written as # comments.

Grading Rubric

- Correct code modification and fitted parameters: **4 pts**
- Clear and correct plot: **4 pts**
- Written comments (observations & reflection): **2 pts**