

## Set 1

A company records the monthly water consumption (in cubic meters) for 8 apartments over a year. The data is stored in a CSV file named `water_consumption.csv`:

1. Write a Python script to load the data from `water_consumption.csv` and perform polynomial curve fitting for **Apartment\_5** using polynomial orders 1, 2, and 3.
2. Using the fitted models, predict the water consumption for Apartment\_5 for the next three months (January, February, and March of the following year).
3. Create a user interface for the users to select which order they want to display in the graph. Example; order 1 or order 2 or order 3 or order 1,2 and 3.
4. Plot the original data and overlay the polynomial fitting curves on the same graph based on user selection.

Using the best-fit polynomial model from above, calculate and display the predicted water consumption for Apartment\_5 for the first, second, and third months of the following year.

## Set 2

A company tracks the monthly sales revenue (in \$1000s) of 5 departments over a year. The data is stored in a CSV file named `sales_data.csv`:

1. Write a Python script to load the data from `sales_data.csv` and perform polynomial curve fitting for **Dept\_C** using polynomial orders 1, 2, and 4.
2. Using the fitted models, forecast the sales for Dept\_C for the next three months (January, February, and March of the following year).
3. Create a user interface for the users to select which order they want to display in the graph. Example; order 1 or order 2 or order 3 or order 1,2 and 3.
4. Plot the original data and overlay the polynomial fitting curves on the same graph based on user selection.

Using the best-fit polynomial model from above, compute the sales revenue for Dept\_C for the next three months. Display the results in the Python console in a clear table format.

## Set 3

The monthly temperature (in °C) of a city is recorded for the past year and stored in a CSV file named `temperature_data.csv`:

1. Write a Python script to load the data from `temperature_data.csv` and perform polynomial curve fitting for the temperature data using polynomial orders 2, 3, and 4.
2. Using the fitted models, predict the temperature for the next three months (January, February, and March of the following year).
3. Create a user interface for the users to select which order they want to display in the graph. Example; order 1 or order 2 or order 3 or order 1,2 and 3.
4. Plot the original data and overlay the polynomial fitting curves on the same graph based on user selection.

Using the best-fit polynomial model from above, predict and display the temperatures for the first three months of the next year.