# Module 1: Python Programming & Data Structures

**Goal:** Strengthen Python fundamentals (loops, strings, lists, dictionaries).

### Extra Assignments

1. **Word Frequency Enhancements**
    - Modify the word-frequency program to:
        - Ignore case sensitivity.
        - Remove punctuation before counting.
        - Display the top 5 most frequent words.
2. **Student Record Enhancements**
    - Extend the student management system to:
        - Compute class average.
        - Sort students by marks.
        - Display topper(s) and students below average.
3. **Matrix Practice**
    - Without NumPy, perform:
        - Matrix addition, subtraction, and transpose using nested lists.
    - Then verify the same using NumPy.

# Module 2: Data Handling (CSV, JSON, Web Scraping, Data Cleaning)

**Goal:** Build comfort with real-world data files and data cleaning.

### Extra Assignments

1. **CSV & JSON Combo**
    - Import data from a CSV file and convert it into JSON format (and vice versa).
    - Save the new files locally.
2. **Data Cleaning Mini Task**
    - Create a small DataFrame with missing values and duplicates.
    - Write a program to:
        - Fill missing values with mean or median.
        - Remove duplicates.
3. **Simple Web Scraping**
    - Scrape top 5 news headlines from a site (like *Times of India* or *BBC*) using **BeautifulSoup**.
    - Store them in a CSV file.

# Module 3: Exploratory Data Analysis (EDA)

**Goal:** Reinforce understanding of summary statistics and visualization.

### Extra Assignments

1. **Mini EDA Project**
    - Take any small dataset (e.g., students' scores or sales data).
    - Find:
        - Mean, median, mode, variance, std. deviation.
        - Minimum and maximum values.
    - Write brief observations.
2. **Univariate Visualization**
    - Plot histograms and boxplots for 2–3 numeric columns.
    - Write what the distribution indicates (e.g., skewness, outliers).
3. **Bivariate Visualization**
    - Use **Seaborn's pairplot()** or **heatmap()** to visualize relationships.
    - Write observations about correlation.

# Module 4: Machine Learning Basics (Regression & Classification)

**Goal:** Strengthen ML workflow understanding — from loading to evaluation.

### Extra Assignments

1. **Regression Mini Task**
    - Use a small dataset (like salary vs. experience).
    - Apply **Linear Regression** using scikit-learn.
    - Predict salary for new experience values.
2. **Classification Practice**
    - Use a simple dataset (like Iris or Titanic).
    - Apply **Logistic Regression** or **Decision Tree** classifier.
    - Evaluate with accuracy, confusion matrix, precision, recall.
3. **Model Comparison**
    - Train two classifiers (e.g., Logistic Regression and KNN) on the same dataset.
    - Compare accuracy and explain which model performs better and why.