

# Task 1: Dataset Understanding and Basic Analytics

## Problem Statement:

To understand the dataset and perform basic analysis using Jupyter (Python), Excel, and Power BI in order to identify data structure, summary statistics, missing values, and basic patterns.

### A. Python (Pandas)

The dataset was analyzed in Jupyter Notebook. Data structure and data types were examined. Summary statistics such as average, minimum, maximum, and count were evaluated. Missing values were checked and basic charts were used to compare subject-wise and location-wise performance.

### B. Spreadsheet Tool (Excel / Google Sheets)

The dataset was opened and reviewed. Filters were applied to identify missing values. Average, minimum, maximum, and count were calculated using formulas. Basic bar charts were created for comparison.

### C. BI Tool (Power BI)

The dataset was imported into Power BI. Data structure was verified and basic visual dashboards were created to compare subjects and locations.

## D. Comparison

| Feature                 | Jupyter (Python)  | Excel              | Power BI               |
|-------------------------|-------------------|--------------------|------------------------|
| Ease of Use             | Medium (Coding)   | Easy               | Easy-Medium            |
| Large Data Handling     | Excellent         | Limited            | Good                   |
| Summary Statistics      | Automated         | Manual Formulas    | Auto Generated         |
| Missing Value Detection | Functions         | Filters            | Power Query            |
| Visualization           | Custom Charts     | Basic Charts       | Interactive Dashboards |
| Best For                | Detailed Analysis | Quick Calculations | Business Reporting     |

## E. Conclusion / Learning Outcome

This task improved understanding of dataset structure, summary statistics, and tool-based analysis. Jupyter is best for detailed and automated analysis, Excel is suitable for quick calculations, and Power BI is ideal for interactive visualization and reporting.