Home Assignment <1>: Analysis of Covid Cases

Learning Objective:

The objective of this assignment is to apply Python data analysis skills using Pandas and NumPy to explore, filter, aggregate, and analyze real-world COVID-19 case data.

Expected Completion Time:

Best Case: 75 minutes
Average Case: 100 minutes

Assignment Details:

1. You are provided with the dataset **country_wise_latest.csv** (from Kaggle's COVID-19 Dataset). Build a Python program using **classes and inheritance** to implement the following tasks given in the requirement.

   https://www.kaggle.com/datasets/imdevskp/corona-virus-report

Requirements:

1. Summarize Case Counts by Region
   - Display total confirmed, death, and recovered cases for each region.
2. Filter Low Case Records
   - Exclude entries where confirmed cases are < 10.
3. Identify Region with Highest Confirmed Cases
4. Sort Data by Confirmed Cases
   - Save sorted dataset into a new CSV file.
5. Top 5 Countries by Case Count
6. Region with Lowest Death Count
7. India's Case Summary (as of April 29, 2020)
8. Calculate Mortality Rate by Region
   - Death-to-confirmed case ratio.
9. Compare Recovery Rates Across Regions
10. Detect Outliers in Case Counts
    - Use mean ± 2*std deviation.
11. Group Data by Country and Region
12. Identify Regions with Zero Recovered Cases

Expected Outcome:

Upon completion of this assignment, you should be able to:

- Apply **class and inheritance concepts** to structure a data analysis project.

- Load and analyze real-world datasets with Pandas.
- Perform filtering, sorting, grouping, and aggregation.

- Compute metrics like mortality and recovery rates.
- Detect outliers and report unusual data patterns.
- Export processed data to CSV.