# Home Assignment <2>: Analysis of Covid Cases Extension

## Learning Objective:

The objective of this assignment is to extend the previously implemented COVID-19 dataset analysis project by incorporating **Exploratory Data Analysis (EDA)** techniques and **data visualization** using Matplotlib and Pandas plotting.

## Expected Completion Time:

Best Case: 60 minutes
Average Case: 90 minutes

## Assignment Details:

You have already built a project that analyzes the **COVID-19 dataset (`country_wise_latest.csv`)** using classes, inheritance, Pandas, and NumPy.

Now, extend your project by creating a new class for **data visualization and EDA**.

### Step 1: Class Design

- Create a new class **`CovidVisualization`** that inherits from your existing analysis class (`CovidAnalysis`).
- This class should focus on generating **charts** and providing **EDA insights**.

### Step 2: Visualization & EDA Tasks

Add the following methods inside `CovidVisualization`:

1. Bar Chart of Top 10 Countries by Confirmed Cases
2. Pie Chart of Global Death Distribution by Region
3. Line Chart comparing Confirmed and Deaths for Top 5 Countries
4. Scatter Plot of Confirmed Cases vs Recovered Cases
5. Histogram of Death Counts across all Regions
6. Stacked Bar Chart of Confirmed, Deaths, and Recovered for 5 Selected Countries
7. Box Plot of Confirmed Cases across Regions
8. Trend Line**:** Plot Confirmed cases for India vs another chosen country (side by side comparison).

## Hints to Solve:

- Use **Matplotlib**:
  - plt.bar(x, y) for bar charts
  - plt.pie(values, labels=…) for pie chart
  - plt.plot(x, y) for line plots
  - plt.scatter(x, y) for scatter plots

- plt.hist(values) for histogram
- plt.boxplot(values) for boxplots
- Use Pandas .plot(kind="bar") or .plot(kind="line") for quick visualizations.

 Use .head(), .nlargest(), and .groupby() to prepare data before plotting.
 Always include **titles, labels, legends** for readability.

## Expected Outcome:

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

- Extend the earlier COVID analysis project with visualization capability.
- Use inheritance to add a dedicated **visualization class**.
- Apply EDA techniques to explore dataset patterns.
- Generate **bar, pie, line, scatter, histogram, stacked bar, and box plots**.
- Present insights visually, not just numerically.