

## **Task 3: Seaborn**

### **1. What is Seaborn and how is it different from Matplotlib?**

Seaborn is a Python data visualization library built on top of Matplotlib. It is mainly used for statistical data visualization and provides a high-level interface with attractive default styles. Compared to Matplotlib, Seaborn requires less code, works easily with Pandas DataFrames, and is better suited for exploring relationships and distributions in data, while Matplotlib offers more low-level control and customization.

### **2. What is a Statistical Plot?**

A statistical plot is a type of graph that represents statistical properties of data such as distribution, central tendency, spread, and relationships between variables. These plots help in understanding patterns, variability, and correlations in data. Examples include histograms, boxplots, violin plots, and scatter plots.

### **3. Difference between Distplot / Histplot and Boxplot**

A distplot or histplot is used to show the distribution of data by displaying how frequently values occur within intervals (bins). It helps in understanding the shape of the data, such as skewness or normality.

A boxplot summarizes the data using quartiles, median, and outliers. It is useful for identifying data spread, symmetry, and extreme values and for comparing distributions across multiple groups.

### **4. What is a Heatmap and Where Is It Used?**

A heatmap is a graphical representation of data where values are shown using color intensity. It is commonly used to visualize correlation matrices, feature relationships, confusion matrices, and patterns in large datasets. Heatmaps make it easy to identify strong and weak relationships at a glance.

### **5. Why is Seaborn Useful for Data Exploration in AI Projects?**

Seaborn is useful for data exploration in AI projects because it allows quick and clear visualization of data distributions, relationships, and correlations. It helps in detecting outliers, understanding feature interactions, and identifying trends, which improves data preprocessing, feature selection, and model performance.

Its simplicity and visually appealing plots make exploratory data analysis faster and more effective.