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## Assignment 3

### Problem Statement:

Visualize the data using Python by plotting graphs for Assignment 1 and 2. Consider a suitable dataset. Use the following plots:

- Scatter Plot
- Bar Plot
- Box Plot
- Pie Chart
- Line Chart

### Objectives:

1. To explore basic visualization techniques in Python using Seaborn and Matplotlib.
2. To demonstrate how to visualize data using different plot types.
3. To analyse a dataset using these visualizations for better insights.

### Resources Used:

- **Software:** Visual Studio Code
- **Libraries:** Pandas, Matplotlib, Seaborn

### Theory:

#### Seaborn:

Seaborn is a Python visualization library built on Matplotlib, designed to simplify the creation of informative statistical graphics. It integrates well with Pandas and provides beautiful default themes.

#### Key Features:

- Built-in themes and colour palettes
- Works with Pandas Data Frames
- Supports complex visualizations like regression and categorical plots

#### Matplotlib:

Matplotlib is a widely used Python library for creating static, animated, and interactive visualizations. It offers a high level of customization and supports a variety of plots.

#### Key Features:

- Supports multiple plot types (line, scatter, bar, pie, etc.)

- Customizable appearance
- Integrates with NumPy and Pandas

**Methodology:**

For this assignment, we will use the following plots:

1. **Bar Plot:** Used for representing categorical data. The length of each bar is proportional to the value it represents.
2. **Scatter Plot:** Displays the relationship between two numerical variables using points on an x-y plane.
3. **Box Plot:** Shows the distribution of a dataset, highlighting the median, quartiles, and outliers.
4. **Pie Chart:** Represents categorical data as proportions of a whole. Each slice represents a category's contribution.
5. **Line Chart:** Used to visualize trends over time or continuous data points.

**Conclusion:**

Data visualization is an essential part of data analysis. Using Seaborn and Matplotlib, we can create various plots to make complex data more understandable. Each plot type helps in gaining unique insights, making data interpretation easier and more effective for decision-making.

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