

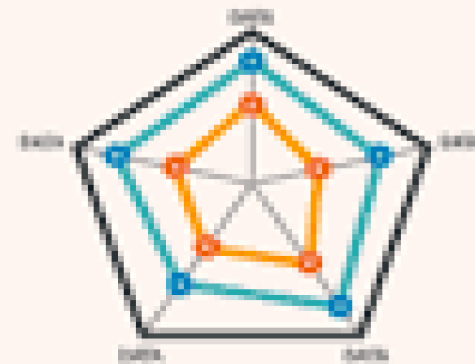
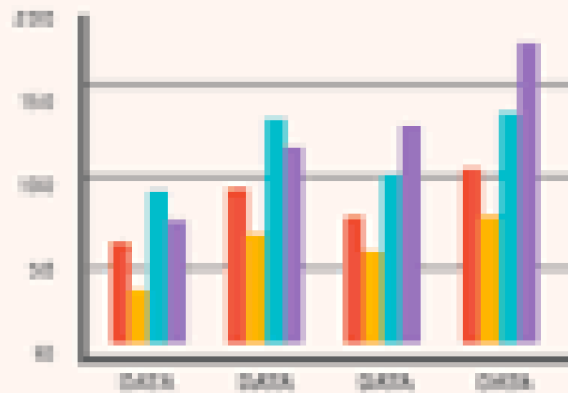


Visualization with Matplotlib

Figures • Axes • Axis • Colors • Markers • Legends • Subplots • 3D

Trainer: Mohd Salman

matplotlib



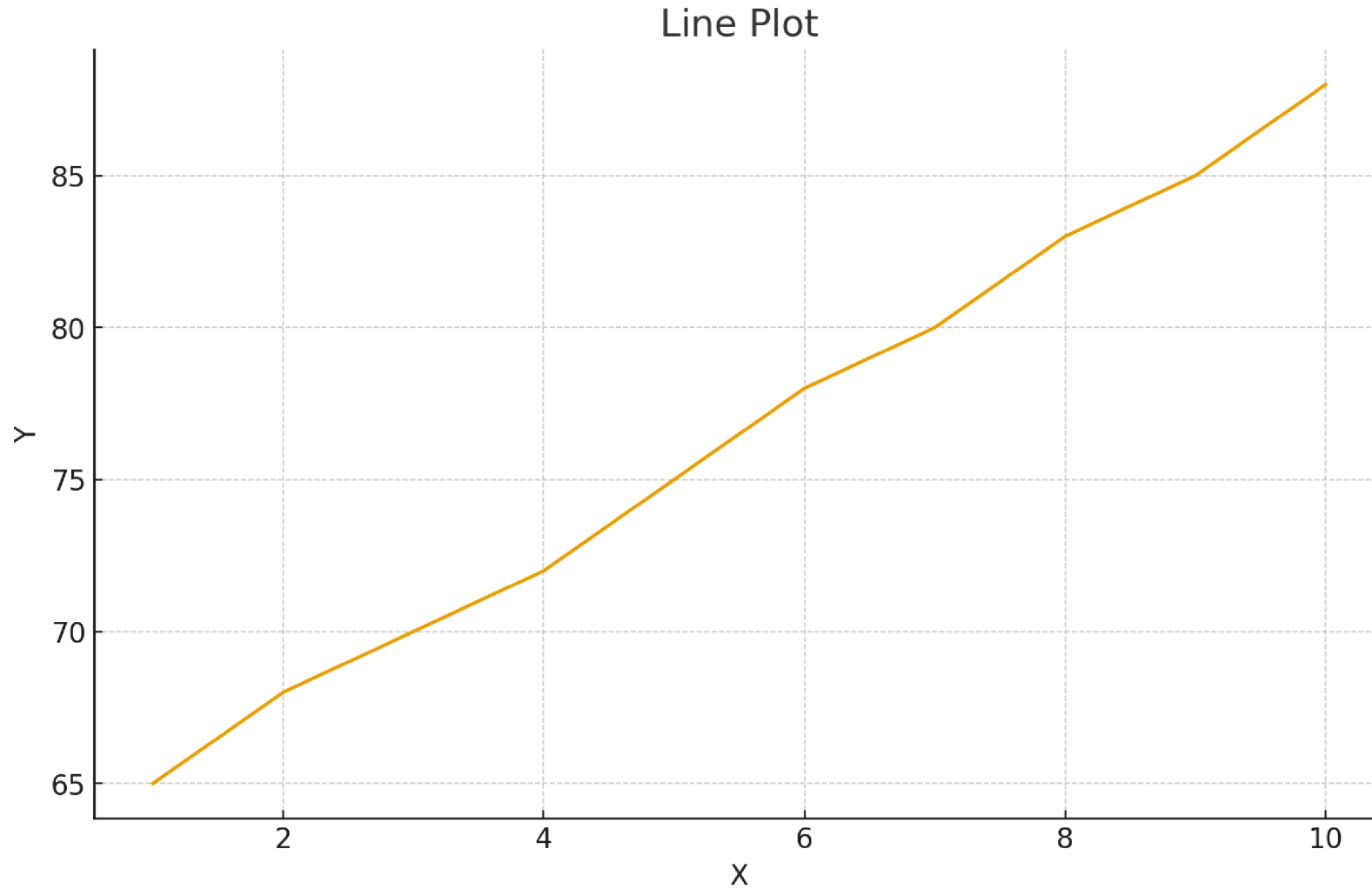
Part 1 — Introduction

Matplotlib is a powerful plotting library in Python for 2D visualizations. Used to generate static, animated, and interactive plots.

Code Snippet (animate on click):

```
import matplotlib.pyplot as plt
plt.plot([1,2,3,4], [10,20,25,30])
plt.show()
```

Part 1 — Introduction



Part 1 — Introduction

Matplotlib

Matplotlib is a Python library for creating static, animated and interactive visualizations.

Plot types



Line plot

01



Bar plot

02



Scatter plot

03



Pie plot

04



Histogram

05

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Why Visualization?

-

Communicate insights
Reveal patterns/outliers
Support decisions

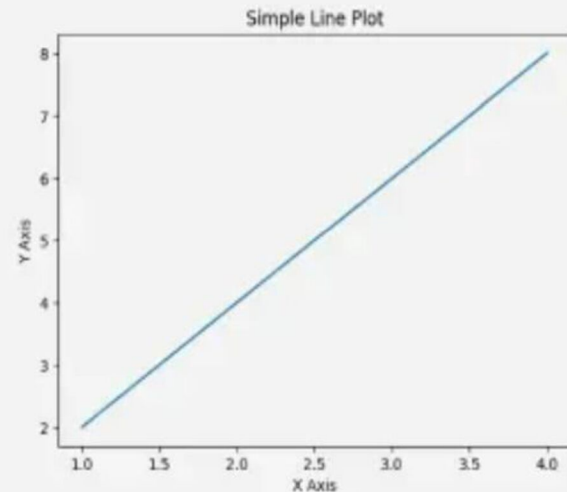
Part 1 — Introduction

Line plot

A line plot connects data points with straight lines to show trends. In Matplotlib, the `plot()` function is used to create it.

Common uses of line plots:

- Tracking time series data (e.g., stock prices, temperature).
- Comparing multiple datasets.
- Identifying patterns and trends in continuous data.



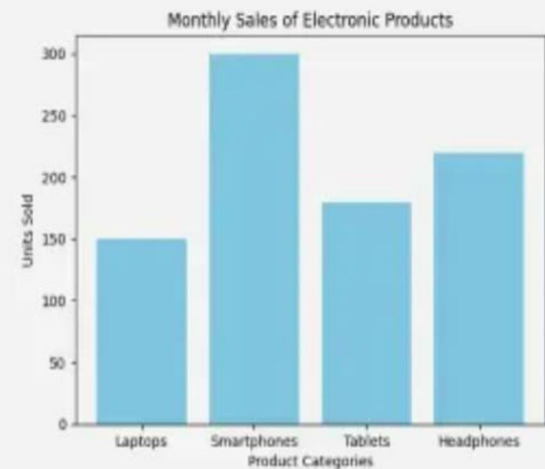
Part 1 — Introduction

Bar Plot

A bar plot uses rectangular bars to represent categorical data, with height indicating value. In Matplotlib, it's created using the `bar()` function.

Common uses of bar plots:

- Comparing categories or groups.
- Showing distributions and frequencies.
- Visualizing differences in data values.



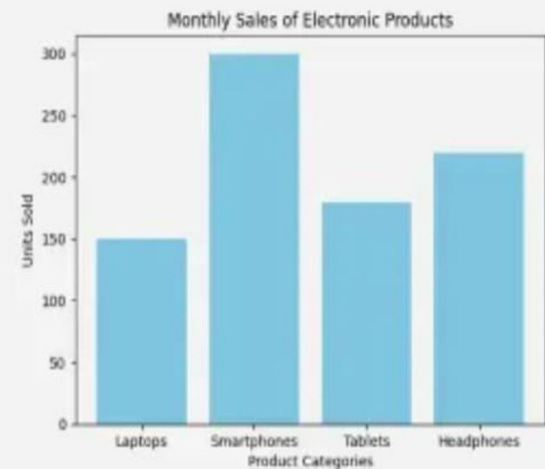
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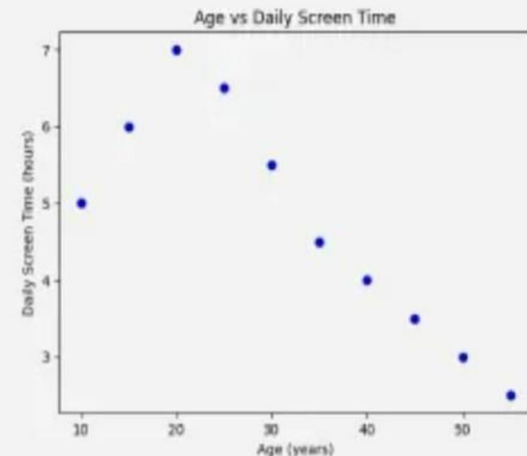
Part 1 — Introduction

Scatter Plot

A scatter plot visualizes relationships between two variables using individual data points. In Matplotlib, it's created with the `scatter()` function.

Common uses of scatter plots:

- Showing relationships between two numerical variables.
- Identifying trends, clusters, and outliers.
- Visualizing correlations in data.



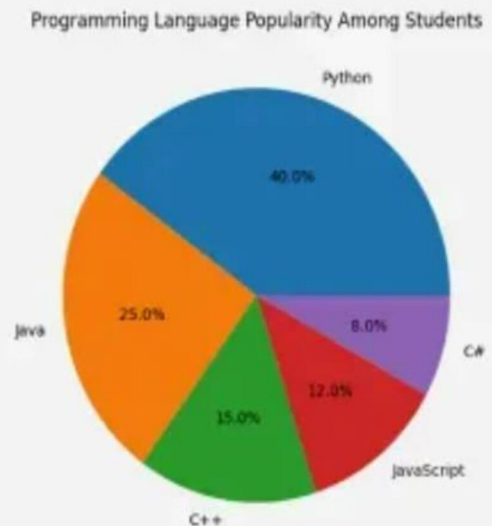
Part 1 — Introduction

Pie plot

A pie plot represents data as slices of a circle, showing proportions of a whole. In Matplotlib, it's created using the `pie()` function.

Common uses of pie plots:

- Showing proportions or percentage distribution.
- Visualizing categorical data as parts of a whole.
- Comparing relative sizes of different categories.



Part 1 — Introduction

Histogram

A histogram represents the distribution of numerical data using bars, where height indicates frequency. In Matplotlib, it's created using the `hist()` function.

Common uses of histograms:

- Visualizing the distribution of continuous data.
- Identifying patterns, skewness, and outliers.
- Understanding frequency distribution in datasets.

