

Unit-3

1. Explain matplotlib API with Suitable Examples

Matplotlib API

Matplotlib is a popular python library used for creating graphs, charts, & data visualizations. It is widely used in data science.

The Matplotlib API provides functions & classes

- Line plots
- Bar charts
- Histograms
- Scatter plots
- Pie charts
- Box plots

Function	Purpose
<code>plt.plot()</code>	Creates a line plot
<code>plt.bar()</code>	Creates a bar chart
<code>plt.scatter()</code>	Creates a scatter plot
<code>plt.hist()</code>	Creates a histogram
<code>plt.pie()</code>	Creates a pie chart

Basic structure of Matplotlib.

1. Import Matplotlib
2. Prepare the data
3. Select the type of plot
4. Add titles & labels

5. Customize the plot if required

6. Display the plot.

Advantages of Matplotlib

1. Easy to use

2. Many plot types

3. Highly customizable

4. Works with Numpy & Pandas

2. Different line plot, bar plot, histogram, & scatter plot.

Different types of plot are used for different purpose in data visualization. Line plots, bar plots, histogram, & scatter plots are four commonly used plots.

1. Line plot.

A plot represents data points connected by lines. mainly used to show trends or changes in an ordered sequence.

```
import matplotlib.pyplot as plt
```

```
months = ["Jan", "Feb", "Mar", "Apr"]
```

```
plt.plot(months, sales)
```

```
plt.show()
```

2. Bar plot

A bar plot represents data using rectangular bars. The height or length of each bar represents the value of a category.

3. Histogram

A histogram is used to represent the distribution of numerical data. It divides data into intervals called bins & shows how many observations fall into each interval.

4. Scatter plot

A scatter plot displays individual data points using dots. It is mainly used to examine the relationship or correlation between two numerical variables.

3 Explain seaborn FacetGrid & categorical plots.

Seaborn

Seaborn is a python data visualization library built on top of Matplotlib. It provides a high-level interface for creating attractive & informative.

It is commonly imported as

```
import seaborn as sns.
```

Two important concepts in Seaborn are

1. Face grid

2. Categorical plots.

A. Seaborn FacetGrid

Definition

FacetGrid is a Seaborn feature used to create multiple plots based on different subsets of a data set.

Basic syntax

```
Sns.FacetGrid (data, col="column")
```

Here data = dataset

col = variable used to create columns

Example

Suppose we have a dataset containing:

- Student
- Gender
- Marks
- Department

Important FacetGrid Parameters.

Parameter

Purpose

data

Dataset

row

Creates separate rows based on a variable

col

Creates separate columns

hue

Uses different colors for categories.