📊 MATPLOTLIB + SEABORN MASTER ROADMAP (PROJECT BASED)

PROJECT 1: Matplotlib Basics (Foundation)

Goal: Learn how to create and understand basic plots.

📂 **Dataset (sales_basic.csv)**

```
Month,Sales
Jan,12000
Feb,15000
Mar,18000
Apr,16000
May,20000
Jun,22000
```

🧩 **Tasks**

- Create a line plot
- Add X and Y axis labels
- Add a title
- Enable / disable grid
- Change figure size

📌 Concepts:

plt.plot(), plt.xlabel(), plt.ylabel(), plt.title(), plt.grid()

PROJECT 2: Bar, Histogram & Pie Charts

Goal: Master different chart types.

📁 **Dataset (product_sales.csv)**

```
Product,Sales
Laptop,50000
Mobile,70000
Tablet,30000
Headphones,20000
```

🧩 **Tasks**

- Vertical bar chart
- Horizontal bar chart
- Pie chart with percentages
- Histogram of sales values

📌 Concepts:

plt.bar(), plt.barh(), plt.pie(), plt.hist()

PROJECT 3: Advanced Matplotlib (Customization)

Goal: Create professional-looking plots.

📁 **Dataset (daily_sales.csv)**

```
Day,Sales
1,500
2,700
3,650
4,800
5,900
6,850
7,1000
```

🧩 **Tasks**

- Use markers and line styles
- Highlight and annotate highest value
- Plot multiple lines on the same graph
- Save plot as an image file

📌 Concepts:

markers, linestyles, plt.annotate(), plt.savefig()

PROJECT 4: Seaborn Basics (Statistical Plots)

Goal: Learn statistical visualization.

📂 **Dataset (built-in Seaborn dataset)**

sns.load_dataset("tips")

🧩 **Tasks**

- Scatter plot (total_bill vs tip)
- Box plot (day vs total_bill)
- Violin plot
- Count plot

📌 Concepts:

sns.scatterplot(), sns.boxplot(), sns.violinplot(), sns.countplot()

🔴 **PROJECT 5: Seaborn Advanced (Relationships & Distributions)**

Goal: Understand data relationships.

📂 **Dataset**

sns.load_dataset("iris")

🧩 **Tasks**

- Pair plot
- Distribution plot
- KDE plot
- Hue-based comparisons

📌 Concepts:

sns.pairplot(), sns.histplot(), sns.kdeplot(), hue

PROJECT 6: Matplotlib + Seaborn Together

Goal: Combine both libraries.

📂 **Dataset (sales_city.csv)**

```
City,Month,Sales
Delhi,Jan,20000
Delhi,Feb,22000
Mumbai,Jan,25000
Mumbai,Feb,27000
Bangalore,Jan,18000
Bangalore,Feb,20000
```

🧩 **Tasks**

- Create a Seaborn bar plot
- Add title and labels using Matplotlib
- Change styles and themes
- Customize legend

PROJECT 7: FINAL CAPSTONE PROJECT (MASTER LEVEL)

📊 **Business Dashboard (Static)**

📂 **Data Includes:**

- Sales data
- Customer data
- Product data
- Date/time data

🧩 **Dashboard Charts**

- Monthly sales trend (line plot)
- Category-wise revenue (bar chart)
- City-wise comparison (box plot)
- Correlation heatmap
- Sales distribution

📌 Concepts:

sns.heatmap(), plt.subplots(), layout management
