✅ SEABORN — FULLY PRACTICAL MASTERY PRACTICE SET (DATA ANALYST LEVEL)

Total: 35 Practical Tasks
Goal: After completing this you will be fully comfortable with Seaborn for Data Analysis and EDA.
Datasets allowed: seaborn (`tips`, `titanic`, `flights`, `iris`, `penguins`) OR your own CSV.

🔥 SECTION A — RELATIONAL PLOTS (7 tasks)

1. Create a scatterplot of total_bill vs tip (tips dataset) with:

- hue = sex
- style = smoker
- size = size
- Add title and custom palette

2. Create a line plot showing monthly passengers over time using flights dataset.

- Convert year + month → datetime
- Plot using seaborn

3. Plot a scatterplot of age vs fare (titanic) with hue = survived.

- Add regression line using `sns.regplot()` on the same figure

4. Create two scatterplots side-by-side (subplots):

- One using seaborn theme
- One using default matplotlib

5. Using iris dataset, create a 4x4 scatter matrix manually (not pairplot).

6. Create a bubble chart using penguins dataset:

- x = bill_length
- y = bill_depth
- size = body_mass

7. Use `relplot(kind='line')` to plot total bills per day from tips dataset.

- aggregator: mean
- column = time (Lunch/Dinner)

🔥 SECTION B — DISTRIBUTION PLOTS (7 tasks)

8. Plot a histogram of total_bill with KDE overlay using histplot.

- bins = 30
- transparency = 0.6

9. Plot a KDE distribution of tip amount separated by time.

- Single chart
- hue = time

10. Create a jointplot (kind="hex") for total_bill vs tip.

11. Create 3 KDE plots for petal_length (iris) on the same axes for all species.

12. Compare distribution of fare between survivors and non-survivors using violinplot.

13. Plot a rugplot + KDE combined.

14. Use displot (figure-level) to visualize the distribution of body_mass_g (penguins) using bins=25.

🔥 SECTION C — CATEGORICAL PLOTS (8 tasks)

15. Plot a barplot showing average tip per day.

- Remove confidence intervals
- Sort bars descending

16. Create a countplot of class (titanic) with hue = sex.

17. Create a boxplot of total_bill by day separated by smoker using hue.

18. Create a violinplot of body_mass by species.

- Show quartiles
- Inner = “quartile”

19. Create a swarmplot for tips dataset.

- x = day
- y = tip
- Combine with boxplot in background

20. Create catplot(kind="point") to show mean fare by class with confidence intervals.

21. Create 4 categorical charts in a 2x2 grid for tips dataset:

- barplot
- boxplot
- violinplot
- stripplot

🔥 SECTION D — STATISTICAL & REGRESSION PLOTS (5 tasks)

22. Use lmplot to create a regression plot of fare vs age (titanic) for each sex separately.

23. Create a residual plot for the above regression.

24. Create a lowess regression line for tips vs total_bill.

25. Add polynomial regression (order=3) on iris dataset (petal length vs width).

26. Create a heatmap showing correlation matrix of flights dataset pivoted by year/month → passengers.

🔥 SECTION E — MULTI-PLOT GRID / ADVANCED (5 tasks)

27. Using FacetGrid, plot histograms of total_bill for each day.

28. Create a PairGrid for iris dataset with:

- diagonal = KDE
- upper = scatter
- lower = regression

29. Create a clustermap of the flights pivot table.

- Show row & column dendrogram

30. Use FacetGrid to create scatterplots of bill_length vs bill_depth for each species (penguins).

31. Recreate a pairplot manually using:

- matplotlib subplots
- seaborn scatterplots
  (4x4 grid)

🔥 SECTION F — STYLING, THEMES, & CUSTOMIZATION (3 tasks)

32. Apply seaborn theme:

- style = “darkgrid”
- context = “talk”
- font = Arial
  Plot any chart afterward using this style.

33. Create a custom palette using your own RGB values and apply it to a bar chart.

34. Create a dashboard-style layout containing:

- 1 distribution plot
- 1 categorical plot
- 1 relational plot

- 1 heatmap
  All arranged using matplotlib GridSpec.

🔥 SECTION G — REAL BUSINESS CASE (2 tasks)

(Use any CSV dataset you have)

35. E-commerce Sales EDA Dashboard (Seaborn only):

Create at least **6 plots**:

- Monthly sales trend
- Category-wise sales
- Top 10 products
- Profit distribution
- Correlation heatmap
- Customer segmentation plot
  Must follow a clean theme + proper styling.

36. Build a "Customer Churn" EDA using seaborn:

Create at least **5 plots**:

- Churn vs Tenure (lmplot)
- Churn by contract type (barplot)
- MonthlyCharges distribution (kde)
- Correlation heatmap
- Countplot of churn by gender
