# Matplotlib Assignment 2

## Dataset:

https://drive.google.com/file/d/1gl8wGzUnUwIx-ASMEN3KX0Jkw5Y-Puqa/view?usp=sharing

**Q1. Mean Sepal Length Across Species**
The botanists want to compare the average **sepal length** of the three iris species.

- Compute the mean **sepal length** for each species.
- Create a line plot to show the trend of the average sepal length across species.
- Add markers and labels to highlight the differences.

**Q2. Sepal Length Variation Across Samples**
Plot the **sepal length** of all samples in the dataset in the order of their appearance.

- Add a horizontal grid to emphasize the range of variation.
- Highlight samples where **sepal length** exceeds 7 cm.

**Q3. Sample Count by Species**
Show how many samples belong to each iris species in a bar chart.

- Use distinct colors for each bar.
- Highlight the species with the highest sample count.

**Q4. Sepal vs. Petal Length for Different Species**
To study correlations, plot **sepal length** against **petal length** for all samples.

- Use different colors or markers to distinguish species.
- Add a legend, and discuss which species shows the strongest correlation.

**Q5. Stacked Bar Chart for Sepal and Petal Areas**
For each species, stack the average **sepal area** and **petal area** to visualize their relative contributions.

- Use distinct colors for sepal and petal areas.
- Discuss if the petal or sepal dominates the overall area for each species.

**Q6. Petal Width Contribution for Versicolor**
Select only the **versicolor** species and calculate the percentage contribution of each sample's **petal width** to the total petal width for the species.

- Create a pie chart to display this breakdown.

**Q7. Species-Wise Distribution of Petal Width**
Create separate histograms for **petal width** for each species.

- Use subplots for side-by-side comparison.
- Highlight the overlapping regions across species.

**Q8. Exploring Sepal and Petal Aspect Ratios**
Compute the **aspect ratio** for sepals and petals (length/width).

- Create two line plots: one for sepal aspect ratio and another for petal aspect ratio across species.
- Discuss how these ratios differentiate the species.