Matplotlib Assignment 1

Dataset:

<https://drive.google.com/file/d/1v6XkdVWF6HBL_2eb8CtZ0ut-mnLgmAUh/view?usp=sharing>

**Q1.** **Track the Profitability Over the Year**  
The company wants to analyse how its total profits evolved throughout the year. Create a line plot of **total profit** against **month\_number** to visualize this trend.

* Add markers and a title to make the trend more readable.
* Highlight any significant spikes or drops in profits.

**Q2.** **Seasonal Demand Analysis for Products**  
The marketing team wants to track seasonal demand for their products. Plot the monthly sales trends for **face cream**, **toothpaste**, and **shampoo** on the same graph.

* Use different line styles and colors for each product.
* Add a legend, grid, and appropriate labels for better clarity.

**Q3. Profit Growth by Month**

The finance team wants to see how profits grew month by month. Create a bar plot for **month\_number** versus **total\_profit**.

* Color-code the bars to indicate growth (e.g., green for increasing, red for decreasing).
* Highlight the month with the highest profit.

**Q4. Profitability vs. Sales Volume**  
Investigate whether higher sales volumes lead to higher profits. Create a scatter plot of **total\_units** versus **total\_profit**.

* Use color or size to represent another variable, such as **month\_number**.
* Identify any outliers where sales did not translate into higher profits.

**Q5. Comparing Face Cream and Face Wash Sales**  
The company wants to compare the monthly sales of **face cream** and **face wash**. Create a grouped bar plot for these two products.

* Add labels to each group to indicate exact sales.
* Analyze if their sales move together or independently.

**Q6. Monthly Product Contribution to Total Sales**  
Visualize how each product contributes to the total monthly sales using a stacked bar plot.

* Use distinct colors for each product category.
* Identify the product that consistently contributes the most to total sales.

**Q7. Product Share in Sales for June**  
The company wants to know the percentage share of each product in total sales for June. Create a pie chart for month 6, showing the contribution of each product.

* Add percentage labels to the pie slices.
* Highlight the product with the largest share using an exploded slice.

**Q8.** **Monthly Sales Breakdown**  
For a detailed view of monthly performance, create a subplot grid showing the monthly sales trends for each product individually.

* Use a consistent style for all subplots for easy comparison.
* Add a summary plot comparing **total\_units** and **total\_profit** to conclude the analysis.