Problem 1: Basic Line Plot (10 mins)

Task: Plot $y = x^2$ for values of x from 0 to 10.

Requirements:

- Blue solid line
- Add title: "Quadratic Plot"
- Label X-axis and Y-axis
- Add grid

Problem 2: Multiple Lines & Legend (10 mins)

Task: Plot sin(x) and cos(x) on the same graph for x = 0 to 2π.

Requirements:

- Add different colors & line styles
- Add a legend to differentiate lines
- Add title, labels, and grid

Problem 3: Subplots (10 mins)

Task: Plot sin(x) and cos(x) on two separate subplots (1 row, 2 columns)

Requirements:

- Use plt.subplot(1, 2, i)
- Add individual titles
- Add plt.tight_layout() at the end

Problem 4: Bar Chart with Custom Hatches (10 mins)

Task: Create a bar chart showing the population of 5 countries.

Requirements:

- Country names as X-axis labels
- Use custom hatch patterns (e.g. '/', 'x', '+')
- Add value labels on top of bars

- Add title and Y-label

Problem 5: Histogram (10 mins)

Task: Generate 1000 random numbers (normal distribution) and plot a histogram.

Requirements:

- Use np.random.randn(1000)
- Set bins=20
- Add grid, title, and axis labels

Problem 6: Scatter Plot with Color Mapping (10 mins)

Task: Plot a scatter plot of 100 random (x, y) points. Color the dots by their distance from the origin.

Requirements:

- Use np.random.rand(100)
- Use plt.scatter() with c= and cmap='viridis'
- Add colorbar
- Add title and axis labels