

Class XI – Artificial Intelligence

Instructor: Saptarshi Jana

Assignment 12: Assignment on Data Visualization using Matplotlib

Due date: 05.12.2025

Full Marks: 10

Problem 1–Line Plot

Write a Python program to plot a line graph showing the relationship between days of the week and temperature.

Data:

```
days = ['Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat', 'Sun']
temperature = [30, 32, 31, 29, 35, 36, 33]
```

Tasks:

- Plot days on X-axis and temperature on Y-axis.
- Add title: “Temperature Variation Over a Week”.
- Label both axes properly.
- Use a red line with circle markers.

Problem 2

Plot two lines on the same graph:

```
x = [1, 2, 3, 4, 5]
y1 = [2, 4, 6, 8, 10]
y2 = [1, 3, 5, 7, 9]
```

Tasks:

- Display both lines with different colors and styles (dashed, dotted).
- Add a legend to identify each line.

Problem 3–Bar Graph

Create a bar graph to represent the **sales of a company** over four quarters.

Data:

```
quarters = ['Q1', 'Q2', 'Q3', 'Q4']
sales = [15000, 18000, 12000, 20000]
```

Tasks:

- Plot bars in **sky blue** color.
- Add title: “**Quarterly Sales Report**”.
- Label axes as “Quarter” and “Sales (in Rs)”.
- Display grid lines.

Problem 4—Histogram

Draw a histogram showing the distribution of students’ marks.

Data:

```
marks = [45, 78, 56, 89, 90, 67, 55, 79, 81, 68,  
        72, 60, 84, 92, 73, 65, 70, 88, 59, 61]
```

Tasks:

- Use 5 bins to group the marks.
- Color bars in **light green**.
- Add labels and title: “**Distribution of Student Marks**”.

Problem 5—Pie Chart

Draw a pie chart showing how a student spends their time in a day.

Data:

```
activities = ['Study', 'Sleep', 'Play', 'Others']  
hours = [8, 7, 5, 4]
```

Tasks:

- Add labels and percentages using `autopct='%.1f%%'`.
- Use colors: `['gold', 'lightcoral', 'lightskyblue', 'yellowgreen']`.
- Add title: “**Daily Activity Distribution**”.
- Display chart using `plt.show()`.