

# 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='%1.1f%%'`.
- Use colors: `['gold', 'lightcoral', 'lightskyblue', 'yellowgreen']`.
- Add title: **“Daily Activity Distribution”**.
- Display chart using `plt.show()`.

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