

Plotting a Line Chart

Name		Date	
Class / Sec		Roll no.	

1 · AIM

To write a Python program that plots a **line chart** using the **Matplotlib** library, showing how a set of values changes over a sequence.

2 · SOFTWARE AND LIBRARIES USED

TOOL	WHAT IT IS FOR
Python 3	The programming language the program is written in
Jupyter Notebook	The environment used to write and run the code (IDLE or Colab also acceptable)
Matplotlib	The plotting library. We use matplotlib.pyplot , imported as plt by convention

3 · THEORY

A **line chart** plots data points and joins them with straight lines. It is the right chart when the horizontal axis has a natural **order** — time, dates, or a sequence of tests — because the line shows the **trend** between one point and the next.

CHART TYPE	SHOWS	USE IT WHEN
Line chart	Change across an ordered sequence	The x-axis is time or a sequence
Bar chart	Comparison between separate categories	The categories have no natural order
Scatter plot	Relationship between two variables	You are looking for correlation

Note: Joining points with a line implies the values are **connected in order**. That is why a line chart is wrong for unrelated categories — it suggests a trend where none exists.

4 · PROGRAM

```
import matplotlib.pyplot as plt

# Marks scored by one student across five unit tests
tests = ['Test 1', 'Test 2', 'Test 3', 'Test 4', 'Test 5']
marks = [52, 61, 58, 74, 83]

# Plot the line chart
plt.plot(tests, marks, marker='o', color='blue', linestyle='-')

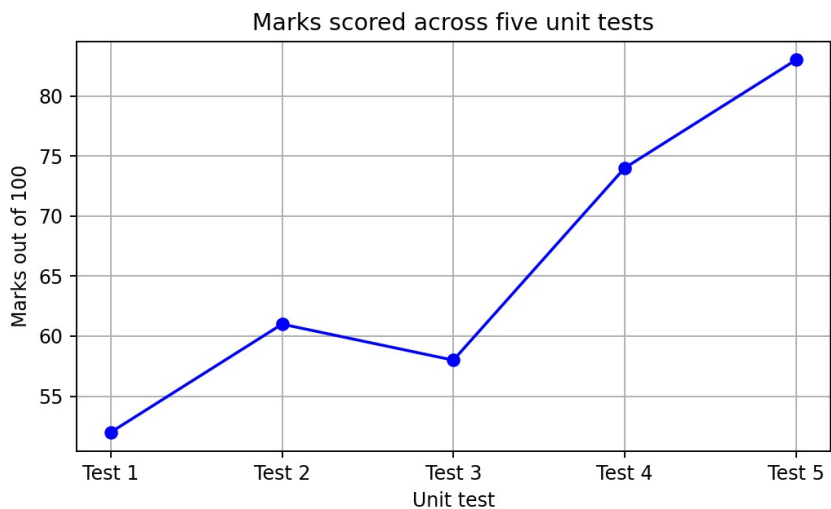
# Label the chart — an unlabelled chart loses marks
plt.title("Marks scored across five unit tests")
plt.xlabel("Unit test")
plt.ylabel("Marks out of 100")
plt.grid(True)

plt.show()
```

Do not skip the labels: A chart with no **title**, no **x-label** and no **y-label** is incomplete and loses marks in both the file and the practical exam — however correct the data is.

5 · EXPECTED OUTPUT

Running the program opens a chart window that looks like this.



[PASTE SCREENSHOT HERE]

Paste a screenshot of YOUR chart, with the code visible alongside it if possible

6 · READING THE CHART

Before writing your observation, read what the chart actually shows.

QUESTION	WHAT THE CHART SHOWS
Overall direction?	Rising — from 52 in Test 1 to 83 in Test 5, a gain of 31 marks
Any dip?	Yes — Test 3 falls to 58 from 61 in Test 2. The only fall in the series
Biggest single jump?	Test 3 to Test 4 — from 58 to 74, a rise of 16 marks
Why a line and not bars?	The tests happen in order over time, so the trend between them is meaningful

7 · OBSERVATION AND RESULT

Two or three sentences in your own words. A good observation describes the **trend**, not just the numbers.

Example observation: The chart shows a clear upward trend in marks across the five tests, rising from 52 to 83. The only fall was at Test 3, after which performance improved sharply by 16 marks. A line chart suits this data because the tests occur in a fixed order, so the direction of change between them is meaningful.

8 · VIVA QUESTIONS FOR THIS PROGRAM

LIKELY QUESTION	SHAPE OF A STRONG ANSWER
Why import matplotlib.pyplot as plt?	plt is the standard short alias. It saves typing and every Python programmer recognises it
What does plt.show() do?	Displays the finished chart. Without it the chart is built but never appears
When would a bar chart be better here?	If the x-axis were unrelated categories — subjects, say — rather than an ordered sequence
What does marker='o' change?	It draws a circle at each data point, so the individual values are visible on the line
Add a sixth test scoring 70. What happens?	The line dips at the end. Be ready to say the trend is no longer steadily upward

9 · HOW THIS ENTRY IS MARKED

FULL MARKS

Chart **fully labelled** — title, x-label, y-label · commented code · a screenshot of **your own** chart · an observation describing the **trend** · you can justify why a line chart was the right choice

LOSES MARKS

Unlabelled axes · no title · no screenshot, or someone else's · an observation that just lists the marks again · cannot say why a line chart rather than bars

Before you submit: Change the five values to **your own** marks and re-run it. An entry using the example data is obvious to an examiner, and you will struggle in the viva when asked about your own chart.