10. Matplotlib module for plotting in python. 24/9/25

Aim:- To analyze the performance of students in different subjects using various charts (Line, Bar and Pie) with the help Matphotlib. in python.

Algorithm

1. Start the program.
2. Import the Matplotlib and Numpy libraries.
3. Create a dataset for 5 students and their marks in 3 subjects (math, science, English).
4. Line chart:
   - plot marks of all students for each subject.
   - Add little, labels, legend and grid.
5. Bar chart:
   - Calculate average marks for each subject.
   - Plot a bar chart comparing the averages.
6. Pie chart:
   - Select one student.
   - Plot a pie chart showing the percentage of marks in each subject.
   - Add all chart using Plt.show().
7. End the program.

Program

```
import matplotlib.pyplot as plt
import numpy as np.

# Data.
students = ['S1', 'S2', 'S3', 'S4', 'S5']
maths = [85, 78, 92, 70, 90].
```

```
science = [80, 75, 85, 68, 90].
english = [78, 82, 88, 72, 85]

plt.figure (figsize =(10, 6))
plt.plot (students, maths, marker= 'o', label= 'maths')
plt.plot (students, science, marker = 'o', label= 'science')
plt.plot (students, english, marker = 'o', label = 'English')
plt.plot ('students performance in different subjects').
plt.xlabel ('students')
plt.Xlabel ('Marks')
plt.legend()
plt.grid (True)
plt.show()

avg_marks. =[np.mean (maths), np.mean (science),
                np.mean (english)].
subjects = ['maths', 'science', 'English'].

plt.figure (figsize = (8, 5)).
plt.bar (subjects, avg_marks, color =['blue', 'green',
        'orange']).
plt.title ('Average marks of Each subject')
plt.xlabel ('subjects')
plt.ylabel ('Average marks')
plt.grid (axis = 'y')
plt.show ().

Student1_marks. = [maths [0], science[0], english [0]].

plt.figure (figsize = (6, 6))
plt.pie. (student_marks, labels=subjects, autopct
        = '%1.1f%%', startangle = 90).
```

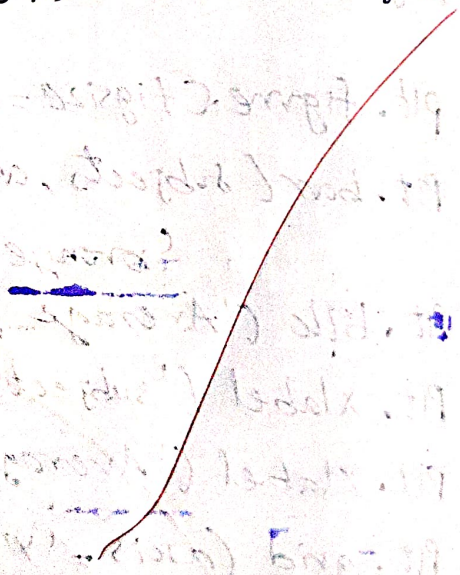
Input

Students: S1, S2, S3, S4, S5
Subjects: Maths, Science, English
Marks:

Maths = [85, 78, 92, 70, 88]
Science = [80, 75, 85, 68, 90]
English = [78, 82, 88, 72, 85]

Output

- Line chart: Marks of all 5 students across the 3 subjects.
- Bar chart: Comparision of average marks per subject.
- Pie chart: Distribution of marks across subjects for student 1.



Plt. title ('percentage of marks for student 1')
Plt. show().

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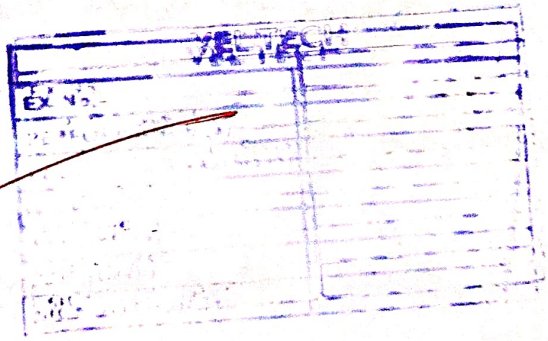

Result:

The program successfully visualized the Students performance using:

14/10/25