

LAB CYCLE: -3

Demonstrate creating various types of charts and plots using functions in matplotlib library

1) Sarah bought a new car in 2001 for \$24,000. The dollar value of her car changed each year as shown in the table below.

Value of Sarah's Car

Year Value

2001 \$24,000

2002 \$22,500

2003 \$19,700

2004 \$17,500

2005 \$14,500

2006 \$10,000

2007 \$ 5,800

Represent the following information using a line graph with following style properties

X- axis - Year

Y-axis - Car Value

title –Value Depreciation (left Aligned)

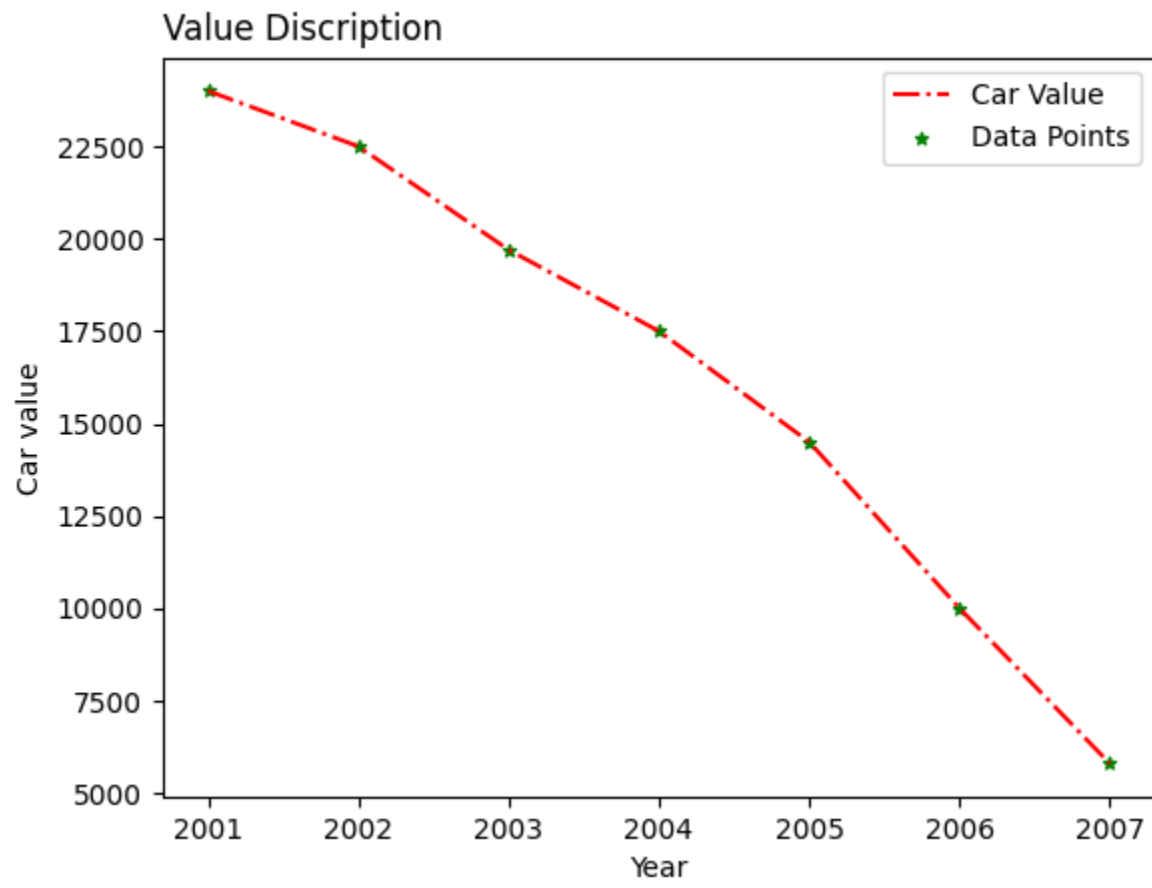
*Line Style dashdot and Line-color should be red
point using * symbol with green color and size 20*

Subplot() provides multiple plots in one figure.

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import matplotlib.pyplot as plt
import numpy as np
year=[2001,2002,2003,2004,2005,2006,2007]
car_values=[24000,22500,19700,17500,14500,10000,5800]
plt.plot(year,car_values,'r-.',label='Car Value')
plt.scatter(year,car_values,c='green',marker='*',s=20,label="Data Points")

plt.title("Value Discription",loc='left')
```

```
plt.xlabel("Year")
plt.ylabel("Car value")
plt.legend()
plt.show()
```



2) Following table gives the daily sales of the following items in a shop

Day	Mon	Tues	Wed	Thurs	Fri
Drinks	300	450	150	400	650
Food	400	500	350	300	500

Use subplot function to draw the line graphs with grids(color as blue and line style dotted) for the above information as 2 separate graphs in two rows

a) Properties for the Graph 1:

X label- Days of week

Y label-Sale of Drinks

Title-Sales Data1 (right aligned)

Line –dotted with cyan color

Points- hexagon shape with color magenta and outline black

b) Properties for the Graph 2:

X label- Days of Week

Y label-Sale of Food

Title-Sales Data2 (center aligned)

Line –dashed with yellow color

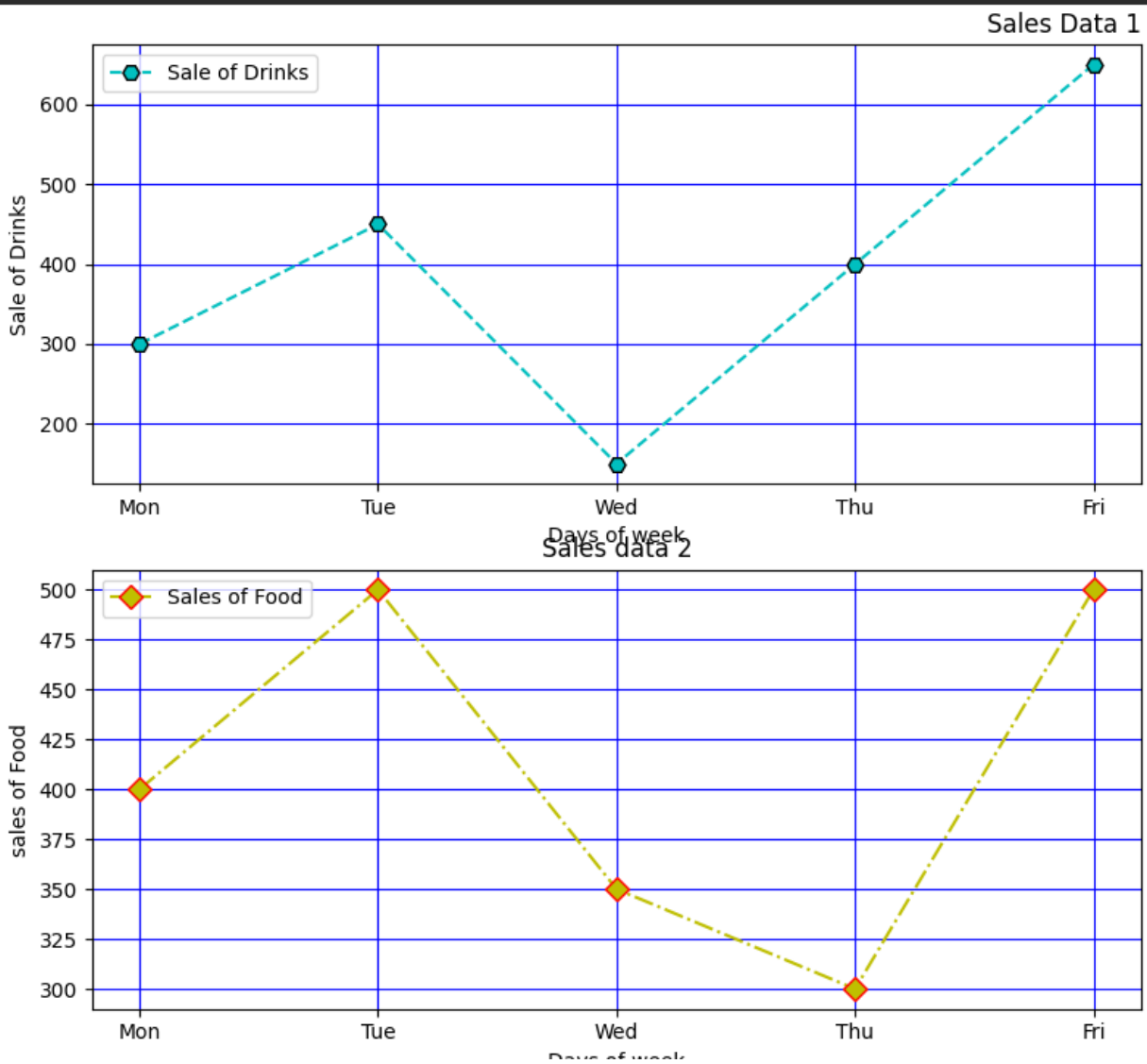
Points- diamond shape with color green and outline red

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import numpy as np
import matplotlib.pyplot as plt
days=['Mon','Tue','Wed','Thu','Fri']
drink_sales=[300,450,150,400,650]
food_sales=[400,500,350,300,500]
plt.figure(figsize=(8,10))
plt.subplot(2,1,1)
plt.plot(days,drink_sales,'c--H',markersize=8,markeredgecolor='black',label='Sale of Drinks')
plt.xlabel('Days of week')
plt.ylabel('Sale of Drinks')
plt.title('Sales Data 1',loc='right')
plt.grid(color='blue')
plt.legend()
plt.subplot(2,1,2)
```

```

plt.plot(days,food_sales,'y-.D',markersize=8,markeredgecolor='red',label='Sales
of Food')
plt.xlabel('Days of week')
plt.ylabel('sales of Food')
plt.title('Sales data 2',loc='center')
plt.grid(color='blue')
plt.legend()
plt.tight_layout()
plt.show()

```



3) Create scatter plot for the below data:(use Scatter function)

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Affordable Segment	173	153	195	147	120	144	148	109	174	130	172	131
Luxury Segment	189	189	105	112	173	109	151	197	174	145	177	161
Super Luxury Segment	185	185	126	134	196	153	112	133	200	145	167	110

Create scatter plot for each Segment with following properties within one graph

X Label- Months of Year with font size 18

Y-Label- Sales of Segments

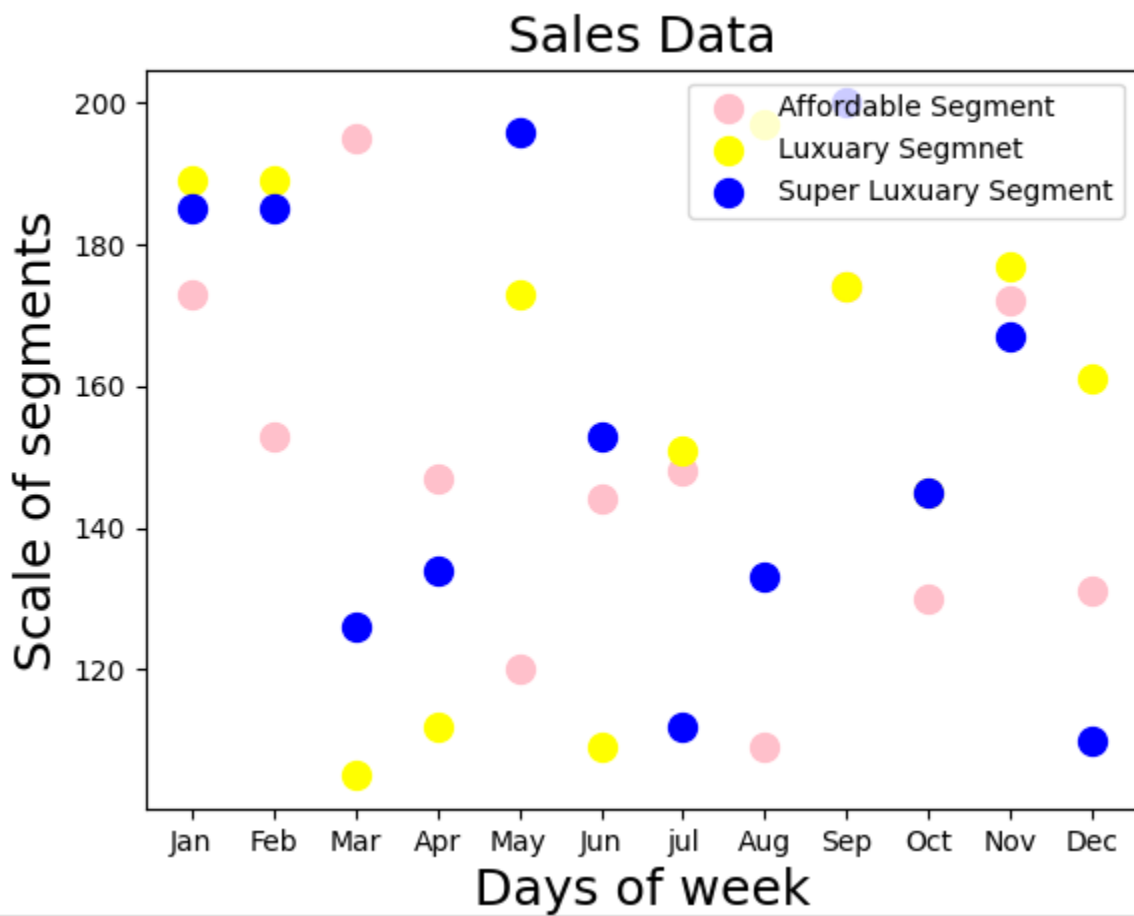
Title –Sales Data

Color for Affordable segment- pink

Color for Luxury Segment- Yellow

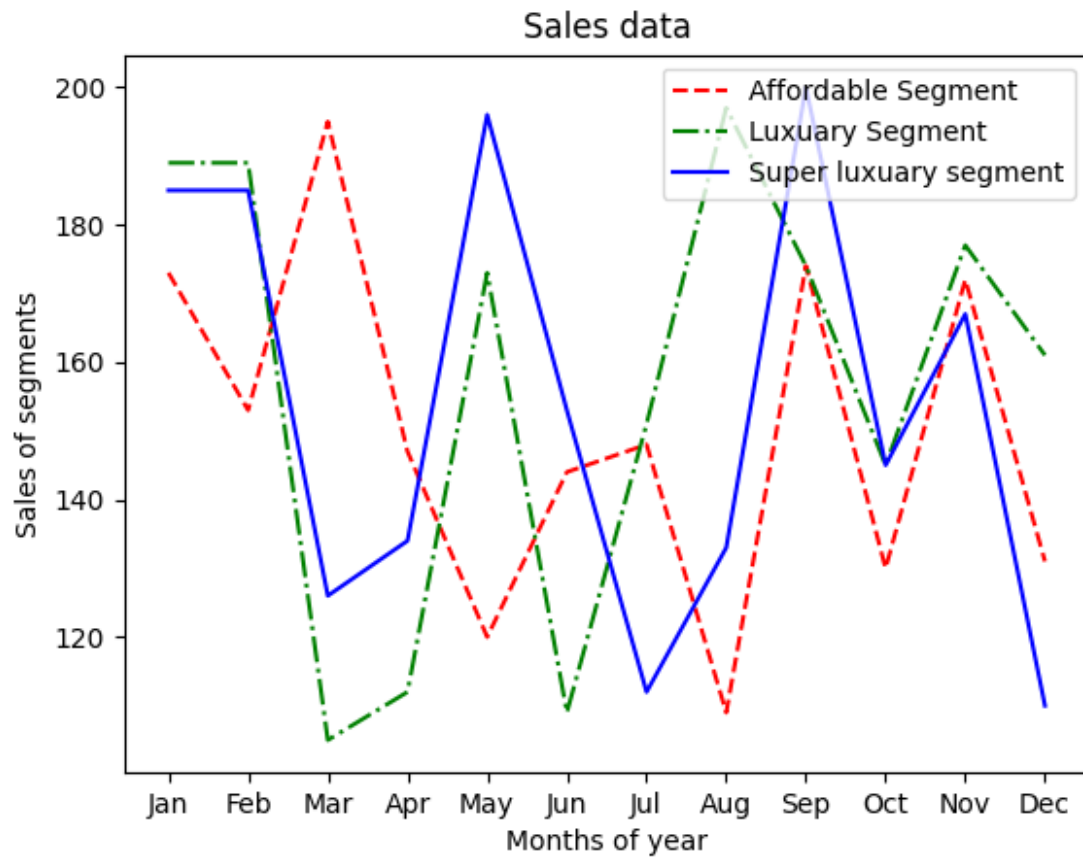
Color for Super luxury segment-blue

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import numpy as np
import matplotlib.pyplot as plt
product=['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']
affordable_segment=[173,153,195,147,120,144,148,109,174,130,172,131]
luxuary_segment=[189,189,105,112,173,109,151,197,174,145,177,161]
super_luxuary=[185,185,126,134,196,153,112,133,200,145,167,110]
plt.scatter(product,affordable_segment,c='pink',s=100,label='Affordable Segment')
plt.scatter(product,luxuary_segment,c='yellow',s=100,label='Luxuary Segmnet')
plt.scatter(product,super_luxuary,c='blue',s=100,label='Super Luxuary Segment')
plt.xlabel('Days of week',fontsize=18)
plt.ylabel('Scale of segments',fontsize=18)
plt.title('Sales Data',fontsize=18)
plt.legend()
plt.show()
```



4. Display the above data using multiline plot(3 different lines in same graph)
Display the description of the graph in upper right corner(use legend())
Use different colors and line styles for 3 different lines

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import numpy as np
import matplotlib.pyplot as plt
product=['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec
']
affordable_segment=[173,153,195,147,120,144,148,109,174,130,172,131]
luxuary_segment=[189,189,105,112,173,109,151,197,174,145,177,161]
super_luxuary=[185,185,126,134,196,153,112,133,200,145,167,110]
plt.plot(product,affordable_segment,'r--',label='Affordable Segment')
plt.plot(product,luxuary_segment, 'g-.',label='Luxuary Segment')
plt.plot(product,super_luxuary, 'b-',label='Super luxuary segment')
plt.xlabel('Months of year')
plt.ylabel('Sales of segments')
plt.title('Sales data')
plt.legend(loc='upper right')
plt.show()
```



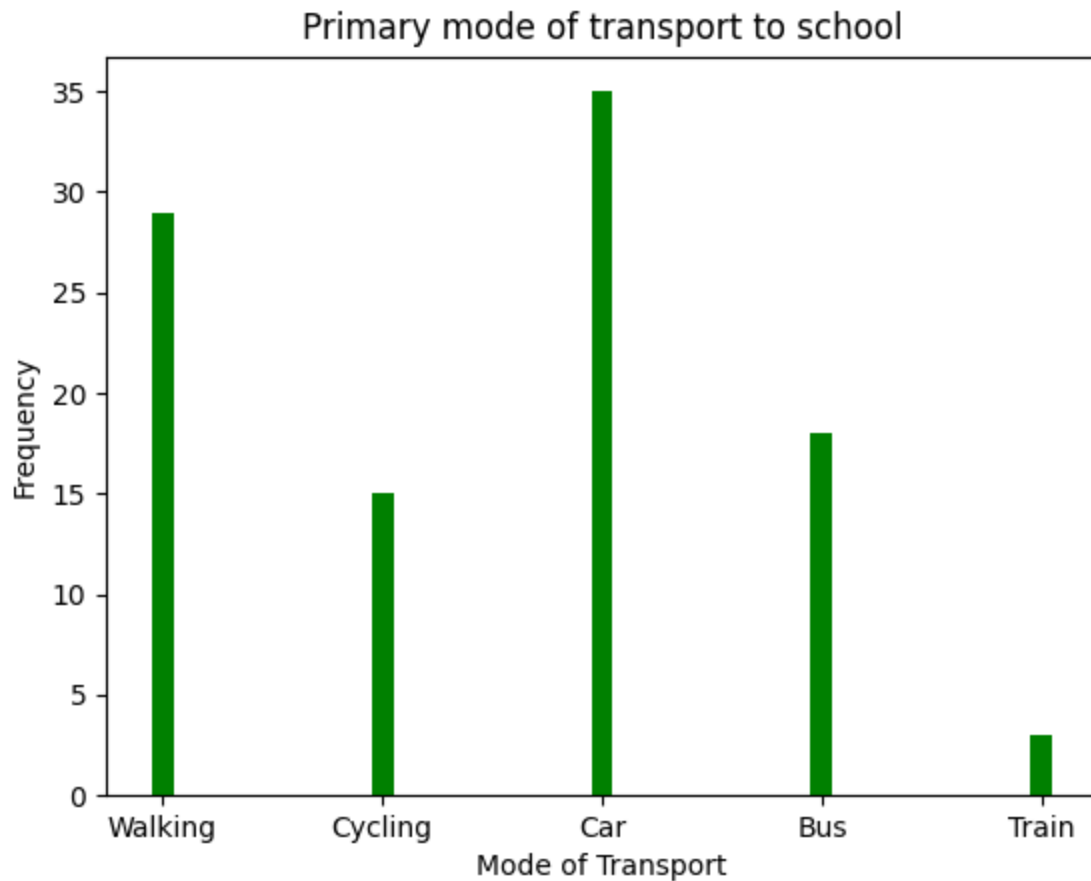
5. 100 students were asked what their primary mode of transport for getting to school was. The results of this survey are recorded in the table below. Construct a bar graph representing this information.

Mode of transport	Frequency
Walking	29
Cycling	15
Car	35
Bus	18
Train	3

Create a bar graph with

- ***X axis -mode of Transport and Y axis ‘frequency’***
- ***Provide appropriate labels and title***
- ***Width .1, color green***

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import numpy as np
import matplotlib.pyplot as plt
mode_of_transport=["Walking", "Cycling", "Car", "Bus", "Train"]
frequency=[29,15,35,18,3]
plt.bar(mode_of_transport,frequency,color="green",width=0.1)
plt.xlabel("Mode of Transport")
plt.ylabel("Frequency")
plt.title("Primary mode of transport to school")
plt.show()
```



6. We are provided with the height of 30 cherry trees.

The height of the trees (in inches): 61, 63, 64, 66, 68, 69, 71, 71.5, 72, 72.5, 73, 73.5, 74, 74.5, 76, 76.2,

76.5, 77, 77.5, 78, 78.5, 79, 79.2, 80, 81, 82, 83, 84, 85, 87. Create a histogram with a bin size of 5

```
print("SJC22MCA-2025-FEBIN FATHIMA\nS3MCA")
import numpy as np
import matplotlib.pyplot as plt
heights=[61,63,64,66,68,69,71,71.5,72,72.5,73,73.5,74,74.5,76,76.2,76.5,77,77.5,78,78.5,79,79.2,80,81,82,83,84,85,87]
plt.hist(heights,bins=range(60,90,5),color="skyblue",edgecolor="black")
plt.xlabel("Heights(in inches)")
plt.ylabel("Frequency")
plt.title("Cherry Tree Heights Histogram")
plt.show()
```

