DATA VISUALIZATION

EX NO: 6 DATE :	Matplotlib package and plotting different graphs

AIM:

To perform a python program for plotting different graphs using matplotlib package.

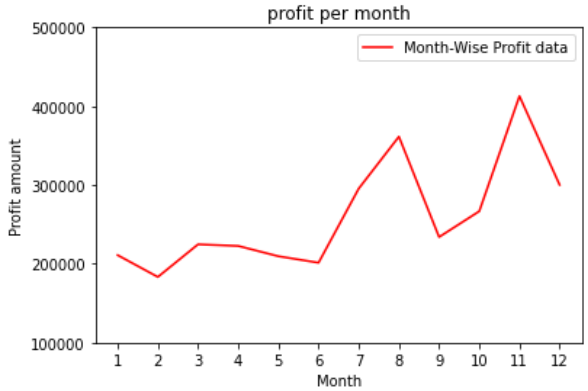
CODE:

i)To analyse the total profit of all the months and visualize it using line plot

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
ProfitList = df ['total_profit'].tolist()
MonthList  = df ['month_number'].tolist()
plt.plot(MonthList, ProfitList, color='red',label = 'Month-Wise Profit data')
plt.xlabel('Month')
plt.ylabel('Profit amount')
plt.xticks(MonthList)
plt.title('profit per month')
plt.yticks([100000, 200000, 300000, 400000, 500000])
plt.legend()
plt.show()
```

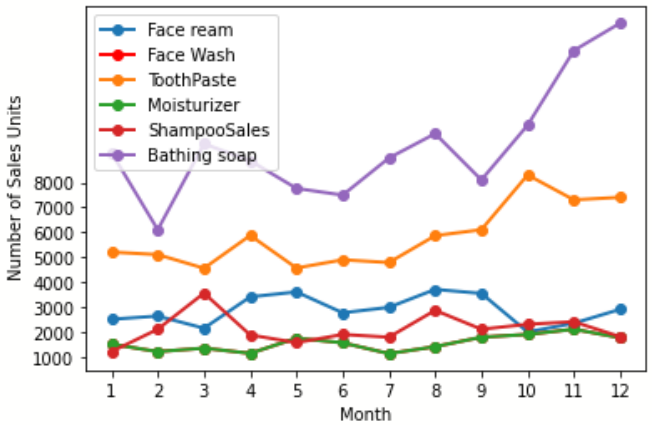
OUTPUT:



ii) Read all product sales data and show it using multi line plot

```
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
monthList  = df ['month_number'].tolist()
faceCreamSalesData   = df ['facecream'].tolist()
faceWashSalesData   = df ['facewash'].tolist()
toothPasteSalesData = df ['toothpaste'].tolist()
bathingsoapSalesData   = df ['bathingsoap'].tolist()
shampooSalesData   = df ['shampoo'].tolist()
moisturizerSalesData = df ['moisturizer'].tolist()
plt.plot(monthList, faceCreamSalesData,label='Face ream', marker='o', linewidth=2)
plt.plot(monthList, faceWashSalesData, color='red',  label = 'Face Wash',  marker='o'
, linewidth=2)
plt.plot(monthList, toothPasteSalesData, label = 'ToothPaste', marker='o', linewidth=
2)
plt.plot(monthList, moisturizerSalesData, label = 'Moisturizer', marker='o', linewidt
h=2)
plt.plot(monthList, shampooSalesData, label = 'ShampooSales', marker='o', linewidth=2
)
plt.plot(monthList, bathingsoapSalesData, label = 'Bathing soap', marker='o', linewid
th=2)
plt.xlabel('Month')
plt.ylabel(' Number of Sales Units')
plt.legend(loc='upper left')
plt.xticks(monthList)
plt.yticks([1000, 2000,3000, 4000,5000, 6000, 7000, 8000])
plt.show()
```

OUTPUT:



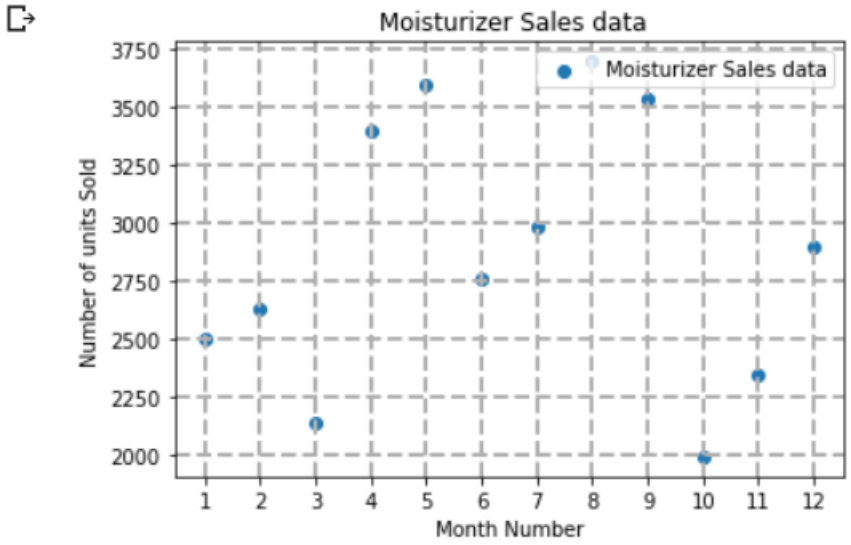
iii) Scatter plot of a product based on month

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
monthList  = df ['month_number'].tolist()
MoisturizerSalesData = df ['moisturizer'].tolist()
plt.scatter(monthList, faceCreamSalesData, label = ' Moisturizer Sales data')
plt.xlabel('Month')
plt.ylabel('Number of units Sold')

plt.xticks(monthList)
plt.grid(True, linewidth= 2, linestyle="--")
plt.legend(loc = 'upper right')
plt.show()
```

OUTPUT:



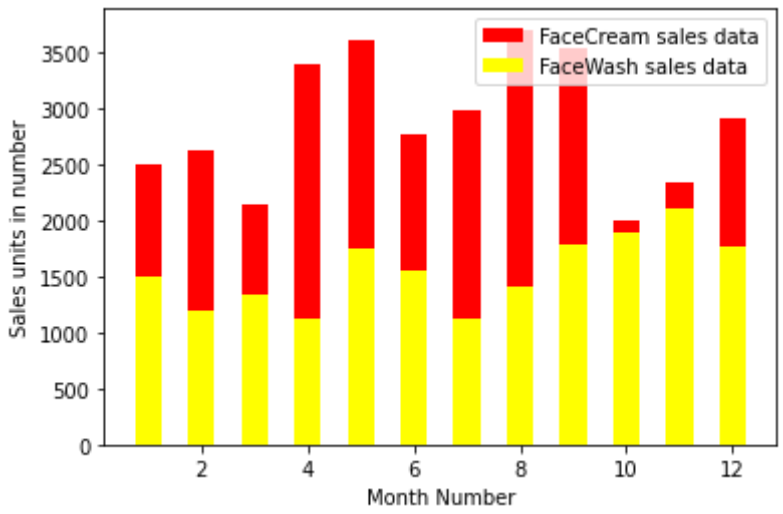
iv) Sales comparison of two products using bar chart

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
monthList  = df ['month_number'].tolist()
faceCreamSalesData    = df ['facecream'].tolist()
faceWashSalesData    = df ['facewash'].tolist()

plt.bar([a-
0.25 for a in monthList], faceCreamSalesData, width= 0.50, label = 'FaceCream s
ales data', align='edge',color='red')
plt.bar([a+0.25 for a in monthList], faceWashSalesData, width= -
0.50, label = 'FaceWash sales data', align='edge',color='yellow')
plt.xlabel('Month Number')
plt.ylabel('Sales units in number')
plt.legend(loc='upper right')
```

OUTPUT:

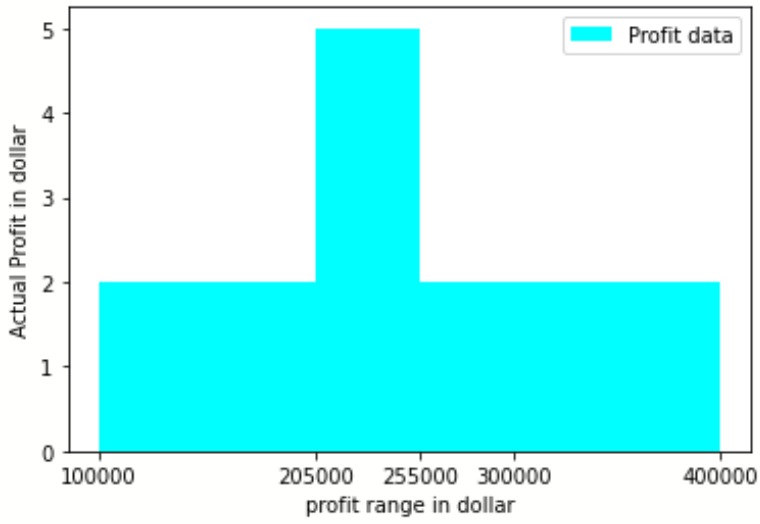


v) Consider the total profit of each month and show it using Histogram to see the most common profit ranges

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
profitList = df ['total_profit'].tolist()
labels = ['low', 'average', 'Good', 'Best']
profit_range = [100000, 205000, 255000, 300000, 400000]
plt.hist(profitList, profit_range, label = 'Profit data',color='cyan')
plt.xlabel('profit range in dollar')
plt.ylabel('Actual Profit in dollar')
plt.legend(loc='upper right')
plt.xticks(profit_range)
plt.show()
```

OUTPUT:



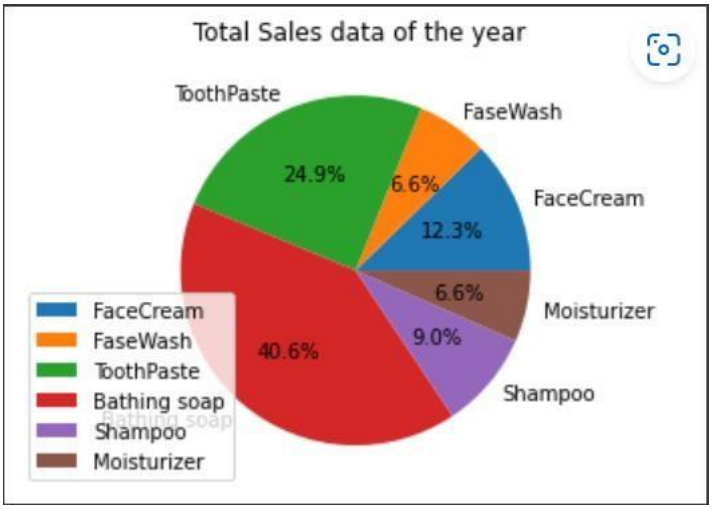
vi) Calculate the total sale of last year for each product and show it using pie chart

```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("/content/company_sales_data - company_sales_data.csv")
monthList  = df ['month_number'].tolist()

labels = ['FaceCream', 'FaseWash', 'ToothPaste', 'Bathing soap', 'Shampoo', 'Mo
isturizer']
salesData   = [df ['facecream'].sum(), df ['facewash'].sum(), df ['toothpaste']
.sum(),
         df ['bathingsoap'].sum(), df ['shampoo'].sum(), df ['moisturizer'].sum
()]
plt.axis("equal")
plt.pie(salesData, labels=labels, autopct='%1.2f%%')
plt.legend()
plt.title(' Total Sales data of the year')
plt.show()
```

OUTPUT:



RESULT:

The data visualization for different plotted graphs using matplotlib packages has been successfully executed.

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EX NO: 7 DATE :	**Adding text to different chart types and working with batches**

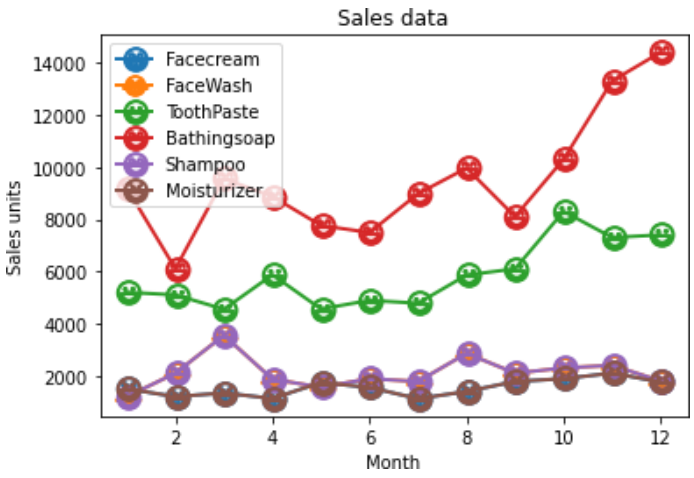
AIM:

To perform a python program for adding text to different chart types and working with batches.

CODE:

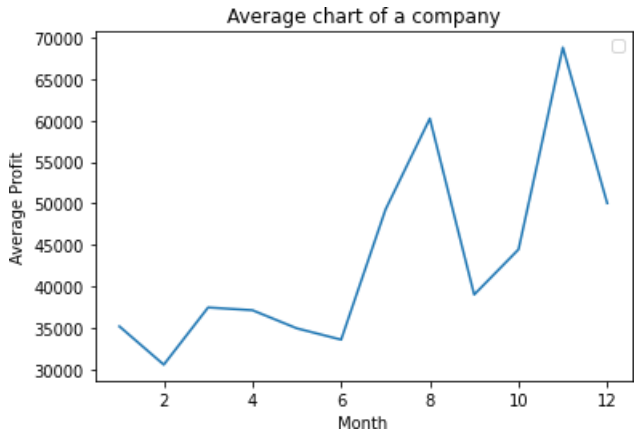
a) Adding emoji as a label to the graph type

```
plt.plot(monthList, faceCremSalesData, label = 'Facecream', marker='$\U0001F601$', ms=15, linewidth=2) plt.plot(monthList, faceWashSalesData, label = 'FaceWash', marker='$\U0001F602$', ms=15, linewidth=2)

plt.plot(monthList, toothPasteSalesData, label = 'ToothPaste', marker='$\U0001F603$', ms=15, linewidth=2)

plt.plot(monthList, bathingsoapSalesData, label = 'Bathingsoap', marker='$\U0001F604$', ms=15, linewidth=2)

plt.plot(monthList, shampooSalesData, label = 'Shampoo', marker='$\U0001F605$', ms=15, linewidth=2)

plt.plot(monthList, moisturizerSalesData, label = 'Moisturizer', marker='$\U0001F606$', ms=15, linewidth=2)


plt.xlabel('Month') plt.ylabel('Sales units') plt.legend(loc='upper left') plt.title('Sales data') plt.show()
```



a) Adding text "Average chart of a company " x axis name, y axis name

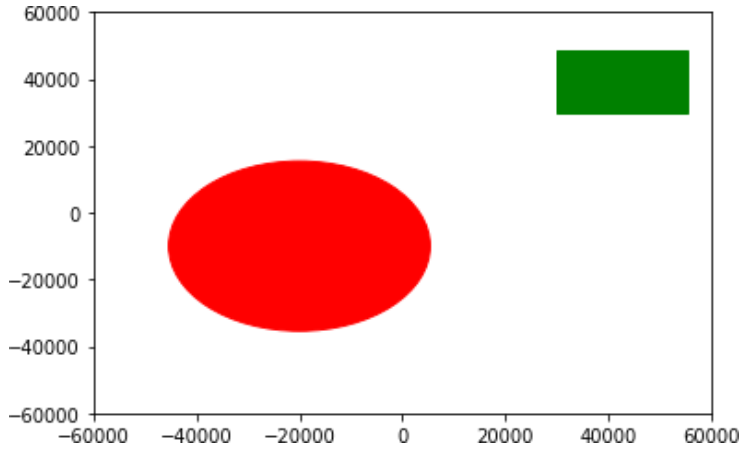
```
profitList = df ['total_profit'].tolist()
profitList = [i/6 for i in profitList]
 monthList        = df ['month_number'].tolist()
plt.plot(monthList, profitList) plt.xlabel('Month')
plt.ylabel('Average Profit')
plt.title('Average chart of a company') plt.legend()
    plt.show()
```



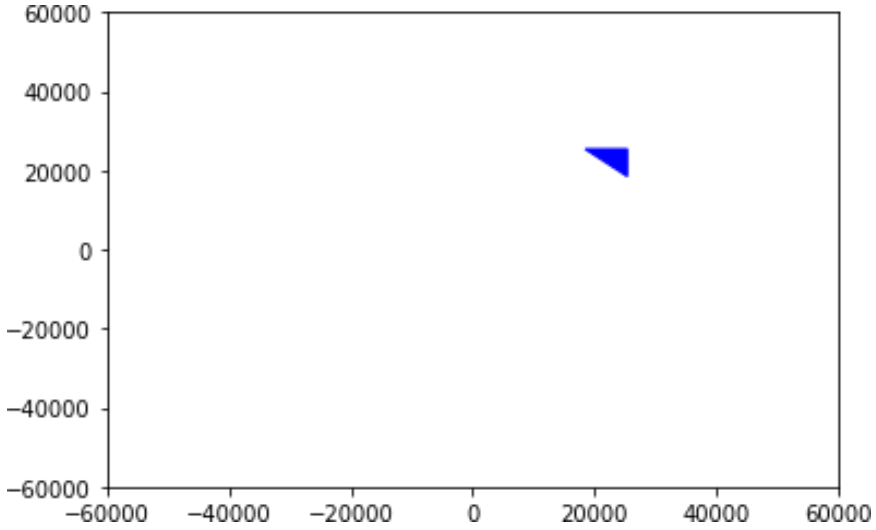
b) Consider any two features on the given dataset and create the different types of batches

shapes -polygon, rectangle and circle

```
import matplotlib
import matplotlib.pyplot as plt fig = plt.figure()
ax = fig.add_subplot(111) a= sum(faceCremSalesData) b=sum(toothPasteSalesData)
c=(bathingsoapSalesData) d=(shampooSalesData)
f = sum(faceWashSalesData)
m = sum(moisturizerSalesData)
rect = matplotlib.patches.Rectangle((30000, 30000),f, m,color ='green') cir =
matplotlib.patches.Circle((-20000, -10000),f,color ='red') ax.add_patch(rect)
ax.add_patch(cir) plt.xlim([-60000, 60000])
plt.ylim([-60000, 60000])
plt.show()
```




```
d = sum(shampooSalesData) f = sum(faceWashSalesData)
m = sum(moisturizerSalesData))
poly = matplotlib.patches.Polygon([[f,m],[m,d],[f,d]],color='blue') ax.add_patch(poly)
plt.xlim([-60000, 60000])
plt.ylim([-60000, 60000])
plt.show)
```



RESULT:

The program to perform a python program for adding text to differentchart types and working with batches is executed and verified successfully.