Team Application Exercises (tAPP-5)

A	B	C	D	E	F	G	H	I
month_number	facecream	facewash	toothpaste	bathingsoap	shampoo	moisturizer	total_units	total_profit
1	2500	1500	5200	9200	1200	1500	21100	211000
2	2630	1200	5100	6100	2100	1200	18330	183300
3	2140	1340	4550	9550	3550	1340	22470	224700
4	3400	1130	5870	8870	1870	1130	22270	222700
5	3600	1740	4560	7760	1560	1740	20960	209600
6	2760	1555	4890	7490	1890	1555	20140	201400
7	2980	1120	4780	8980	1780	1120	29550	295500
8	3700	1400	5860	9960	2860	1400	36140	361400
9	3540	1780	6100	8100	2100	1780	23400	234000
10	1990	1890	8300	10300	2300	1890	26670	266700
11	2340	2100	7300	13300	2400	2100	41280	412800
12	2900	1760	7400	14400	1800	1760	30020	300200

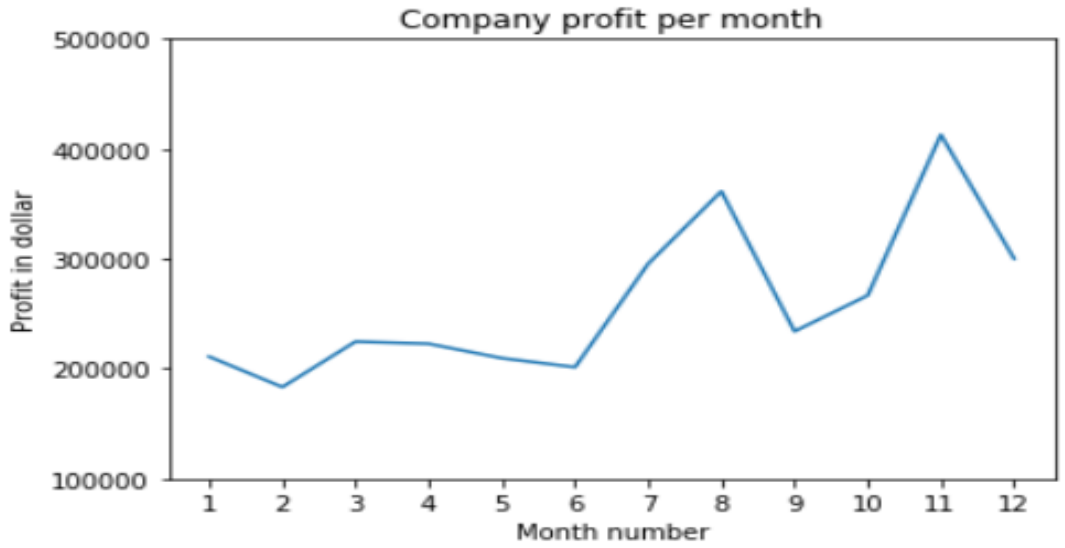
File name: company_sales_data.csv

Task 1: Write a program that will read the Total profit of all months and show it using a plot line.

Total profit data provided for each month. Generated line plot must include the following properties: –

- X label name = Month Number
- Y label name = Total profit

The line plot graph should look like this if run.



Solution

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

df = pd.read_csv("H:\\PASD\\tAPP5_company_sales_data.csv")
profitList = df ['total_profit'].tolist()
monthList  = df ['month_number'].tolist()
plt.plot(monthList, profitList, label = 'Month-wise Profit data of last year')
plt.xlabel('Month number')
plt.ylabel('Profit in dollar')
plt.xticks(monthList)
plt.title('Company profit per month')
plt.yticks([100000, 200000, 300000, 400000, 500000])
plt.show()
```

Task 2:

Create a program that will get Total profit of all months and show line plot with the following Style properties.

Generated line plot must include following Style properties: –

- Line Style dotted and Line-color should be red
- Show legend at the lower right location.
- X label name = Month Number
- Y label name = **Profit in dollars**
- Add a circle marker.
- Line marker colour as red
- Line width should be 3

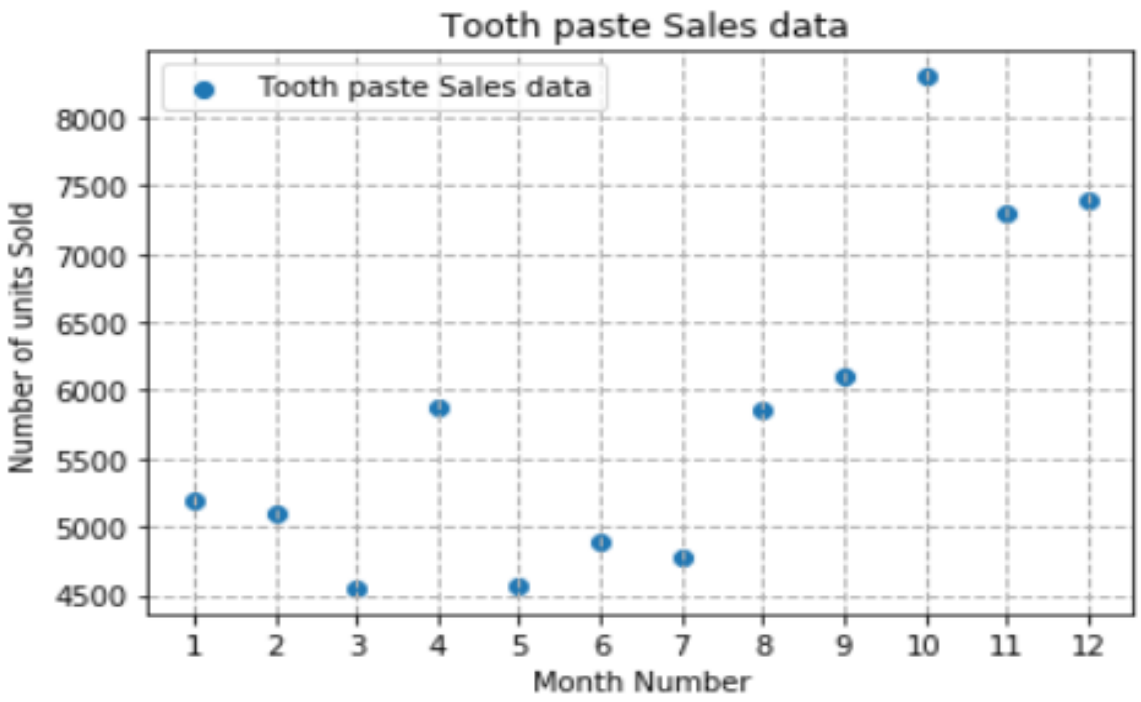
The line plot graph should look like this.

Solution:

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

df = pd.read_csv("H:\\PASD\\tAPP5_company_sales_data.csv")
profitList = df ['total_profit'].tolist()
monthList  = df ['month_number'].tolist()

plt.plot(monthList, profitList, label = 'Profit data of last year',
      color='r', marker='o', markerfacecolor='k',
      linestyle='--', linewidth=3)

plt.xlabel('Month Number')
plt.ylabel('Profit in dollar')
plt.legend(loc='lower right')
plt.title('Company Sales data of last year')
plt.xticks(monthList)
plt.yticks([100000, 200000, 300000, 400000, 500000])
plt.show()
```

Task 3: Write a program that will read toothpaste sales data of each month and show it using a scatter plot. Also, add a grid in the plot. gridline style should be "–"

The graph should look like this when the program is run.

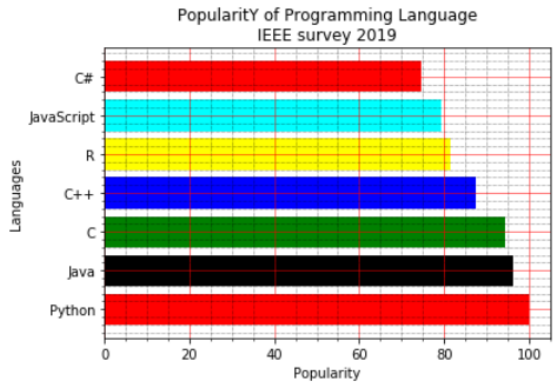


Solution

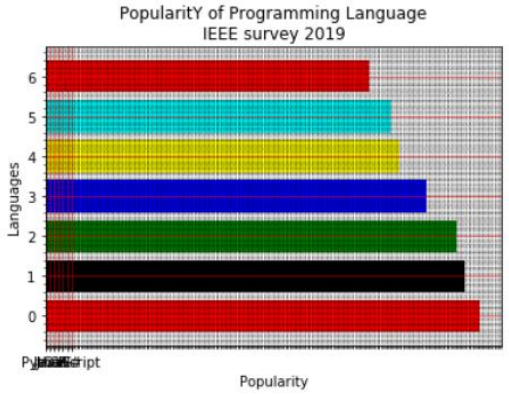
```
import pandas as pd
import matplotlib.pyplot as plt

df = pd.read_csv("H:\\PASD\\tAPP5_company_sales_data.csv")
monthList  = df ['month_number'].tolist()
toothPasteSalesData = df ['toothpaste'].tolist()
plt.scatter(monthList, toothPasteSalesData, label = 'Tooth paste Sales data')
plt.xlabel('Month Number')
plt.ylabel('Number of units Sold')
plt.legend(loc='upper left')
plt.title(' Tooth paste Sales data')
plt.xticks(monthList)
plt.grid(True, linewidth= 1, linestyle="--")
plt.show()
```

Task 4: A Python program should display a horizontal bar chart of the popularity of programming Languages in 2019. However, after running the program, the **current output** does not look like the **intended output**.

Intended out



Current output



Identify the issue in the code?

```
import matplotlib.pyplot as plt
x = ['Python', 'Java', 'C', 'C++', 'R', 'JavaScript', 'C#']
popularity = [100, 96.3, 94.4, 87.5, 81.5, 79.4, 74.5]
x_pos = [i for i, _ in enumerate(x)]
plt.barh(x_pos, popularity, color=['red', 'black', 'green', 'blue', 'yellow', 'cyan'])

plt.xlabel("Languages")
plt.ylabel("Popularity")
plt.title("PopularitY of Programming Language\n" + "IEEE survey 2019")
plt.xticks(x_pos, x)
# Turn on the grid
plt.minorticks_on()
plt.grid(which='major', linestyle='-', linewidth='0.5', color='red')
# Customize the minor grid
plt.grid(which='minor', linestyle=':', linewidth='0.5', color='black')
plt.show()
```

Solution:

Use yticks() function instead of xticks(). Also the plot labels plt.ylabel() and plt.xlabel ()

Pie chart (not included in tAPP 5 – used for extra comments)

```
import matplotlib.pyplot as plt

cars = 'VW Golf','Land rover','Audi TT','Audi R8', 'Audi A7','Audi Q7', 'Mazda 3'
popularity = [62, 59, 59, 58, 57, 46, 40]
colors = ["#1f77b4", "#ff7f0e", "#2ca02c","#d62728","#9467bd","#8c564b","#8c364b"]
explode = (0.2, 0.2, 2, 0, 0,0.5,0)
plt.pie(popularity, explode=explode, labels=cars, colors=colors,
        autopct='%1.1f%%', shadow=True, startangle=140)
```