

Python Programming Lab

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Roll no: 13


Batch: C1


PRACTICAL No. 8


Write a program to visualize Company Sales Data & perform the following task


1. 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 = Sold units number

 Add a circle marker.

 Line marker color as red

 Line width should be 3

```
In [5]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [6]: datafile="company_sales_data.csv"
```

```
In [7]: dataset=pd.read_csv(datafile)
dataset
```

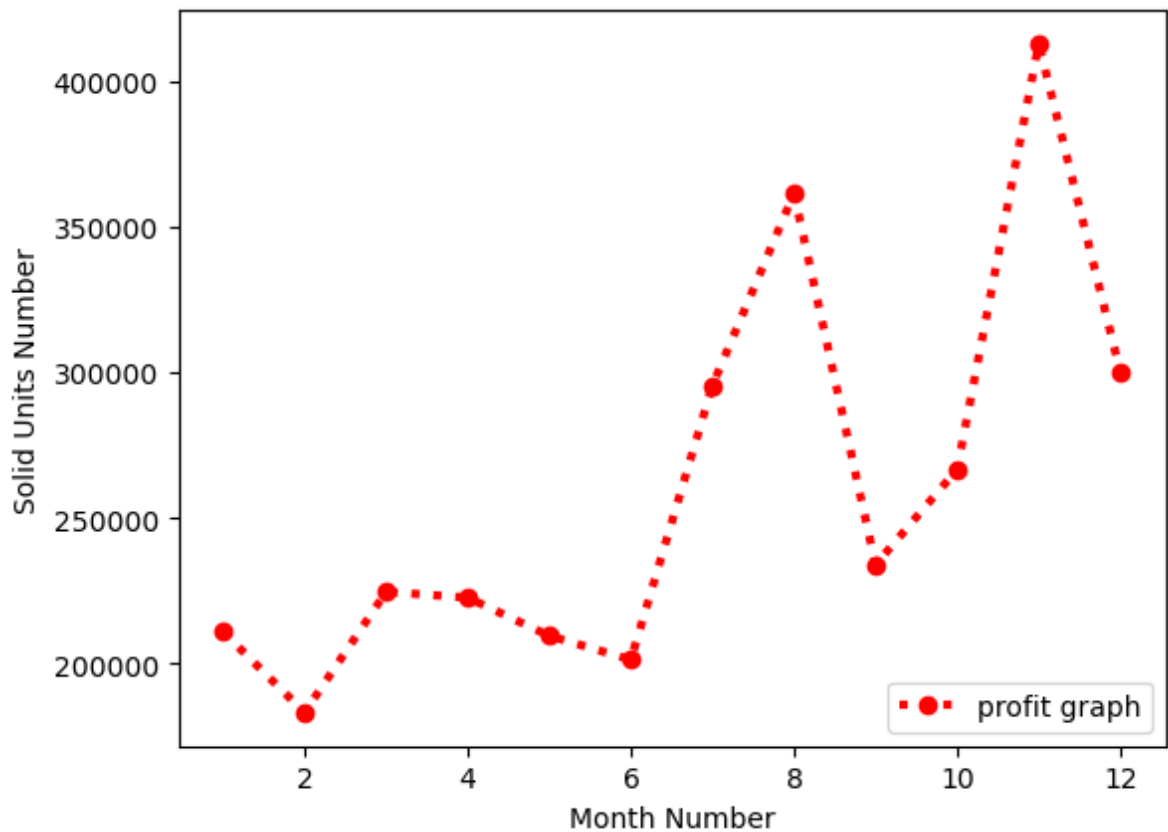
Out[7]:

| | month_number | facecream | facewash | toothpaste | bathingsoap | shampoo | moisturizer | total_ |
|----|--------------|-----------|----------|------------|-------------|---------|-------------|--------|
| 0 | 1 | 2500 | 1500 | 5200 | 9200 | 1200 | 1500 | 2 |
| 1 | 2 | 2630 | 1200 | 5100 | 6100 | 2100 | 1200 | 1 |
| 2 | 3 | 2140 | 1340 | 4550 | 9550 | 3550 | 1340 | 2 |
| 3 | 4 | 3400 | 1130 | 5870 | 8870 | 1870 | 1130 | 2 |
| 4 | 5 | 3600 | 1740 | 4560 | 7760 | 1560 | 1740 | 2 |
| 5 | 6 | 2760 | 1555 | 4890 | 7490 | 1890 | 1555 | 2 |
| 6 | 7 | 2980 | 1120 | 4780 | 8980 | 1780 | 1120 | 2 |
| 7 | 8 | 3700 | 1400 | 5860 | 9960 | 2860 | 1400 | 3 |
| 8 | 9 | 3540 | 1780 | 6100 | 8100 | 2100 | 1780 | 2 |
| 9 | 10 | 1990 | 1890 | 8300 | 10300 | 2300 | 1890 | 2 |
| 10 | 11 | 2340 | 2100 | 7300 | 13300 | 2400 | 2100 | 4 |
| 11 | 12 | 2900 | 1760 | 7400 | 14400 | 1800 | 1760 | 3 |

```
In [8]: df=pd.DataFrame(dataset)
```

```
In [9]: x=np.array(df.month_number)
y=np.array(df.total_profit)
plt.plot(x,y,linestyle="dotted",marker='o',color='r',linewidth='3')
plt.xlabel("Month Number")
plt.ylabel("Solid Units Number")
plt.legend(['profit graph'],loc='lower right')
```

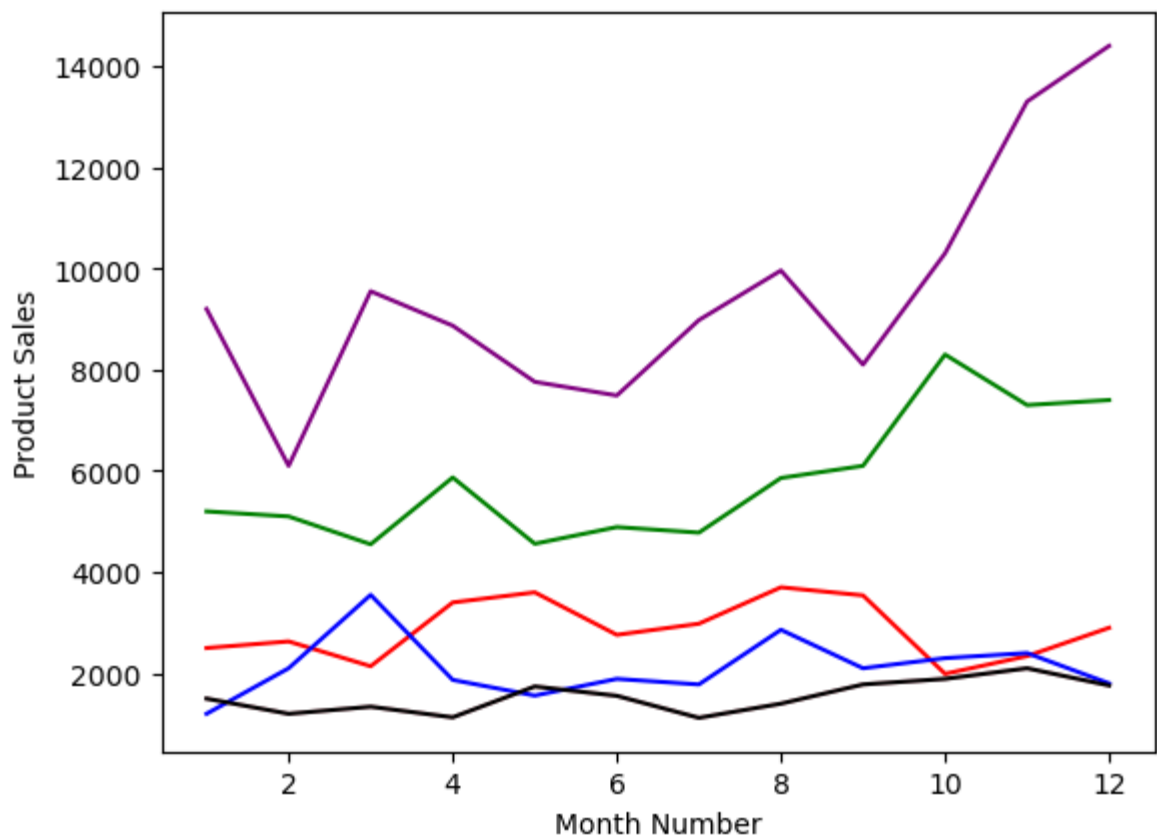
Out[9]: <matplotlib.legend.Legend at 0x20f9a68f040>



2. Read all product sales data and show it using a multiline plot Display the number of units sold per month for each product using multiline plots. (i.e., Separate Plotline for each product).

```
In [10]: x=np.array(df.month_number)
y1=np.array(df.facecream)
y2=np.array(df.facewash)
y3=np.array(df.toothpaste)
y4=np.array(df.bathingsoap)
y5=np.array(df.shampoo)
y6=np.array(df.moisturizer)
plt.plot(x,y1,color='red')
plt.plot(x,y2,color='pink')
plt.plot(x,y3,color='green')
plt.plot(x,y4,color='purple')
plt.plot(x,y5,color='blue')
plt.plot(x,y6,color='black')
plt.xlabel("Month Number")
plt.ylabel("Product Sales")
```

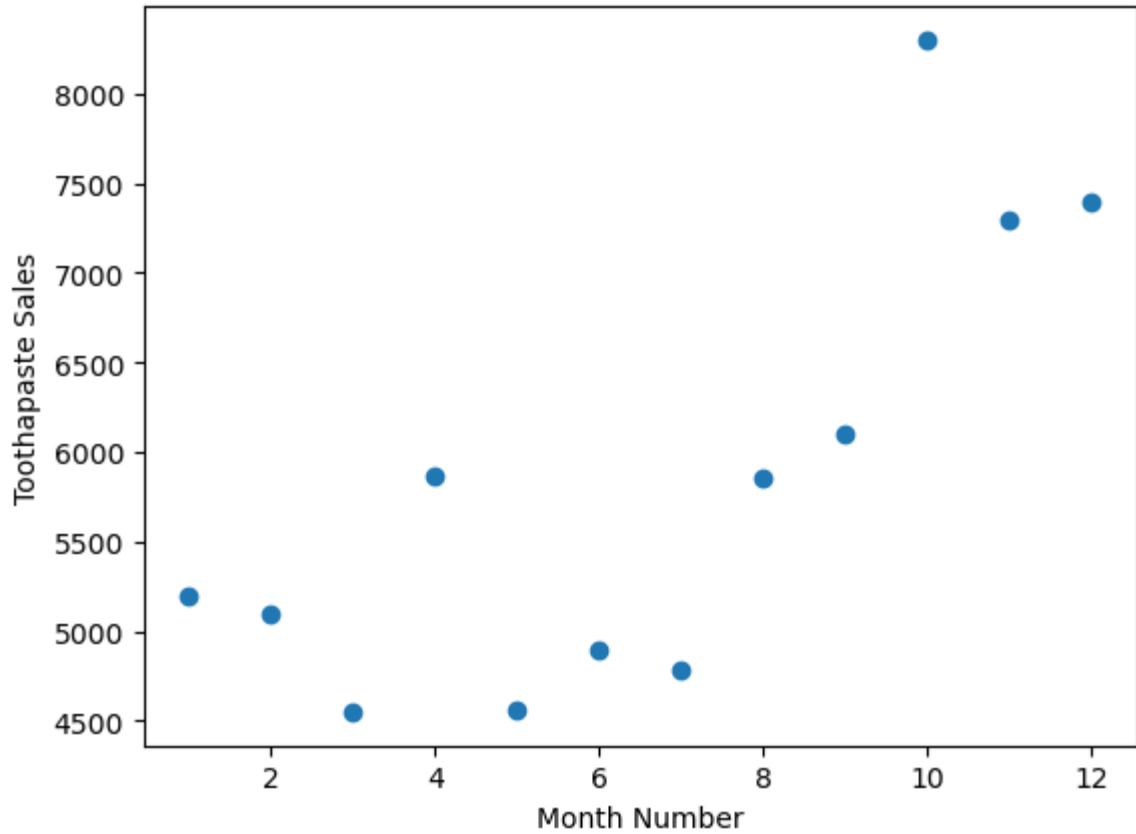
```
Out[10]: Text(0, 0.5, 'Product Sales')
```



3. Read toothpaste sales data of each month and show it using a scatter plot.

```
In [11]: x=np.array(df.month_number)
y=np.array(df.toothpaste)
plt.scatter(x,y)
plt.xlabel("Month Number")
plt.ylabel("Toothapaste Sales")
```

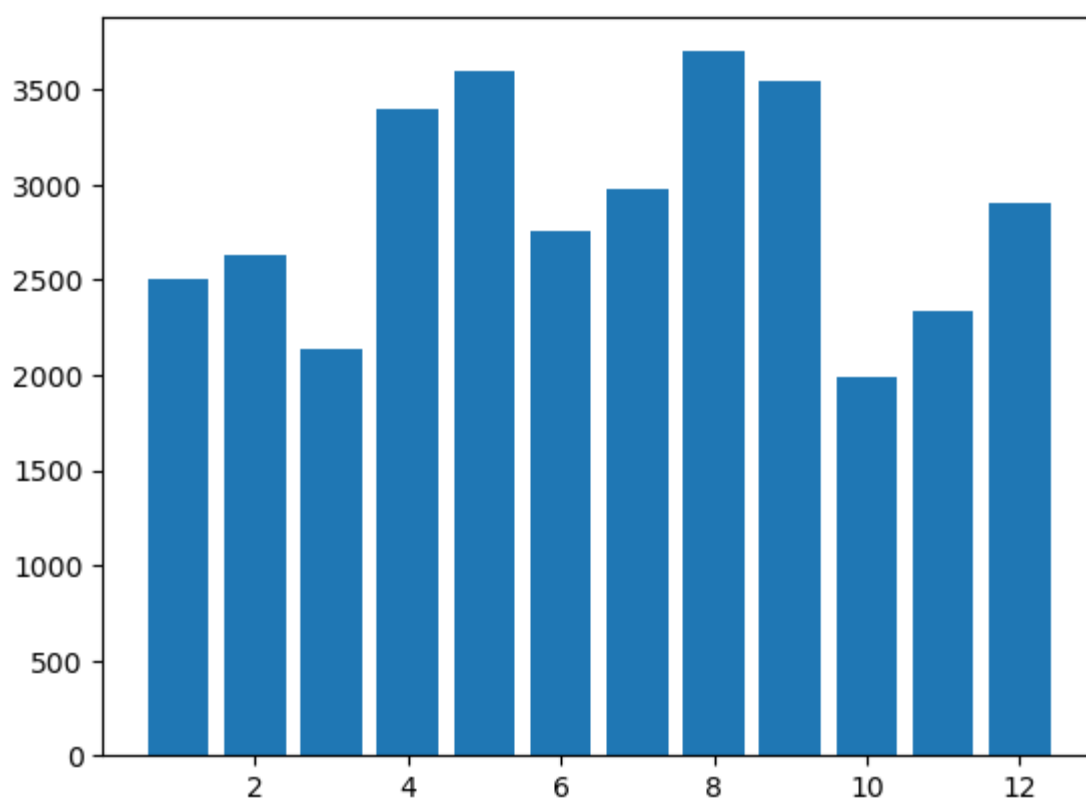
Out[11]: Text(0, 0.5, 'Toothapaste Sales')



4. Read face cream and facewash product sales data and show it using the bar chart.

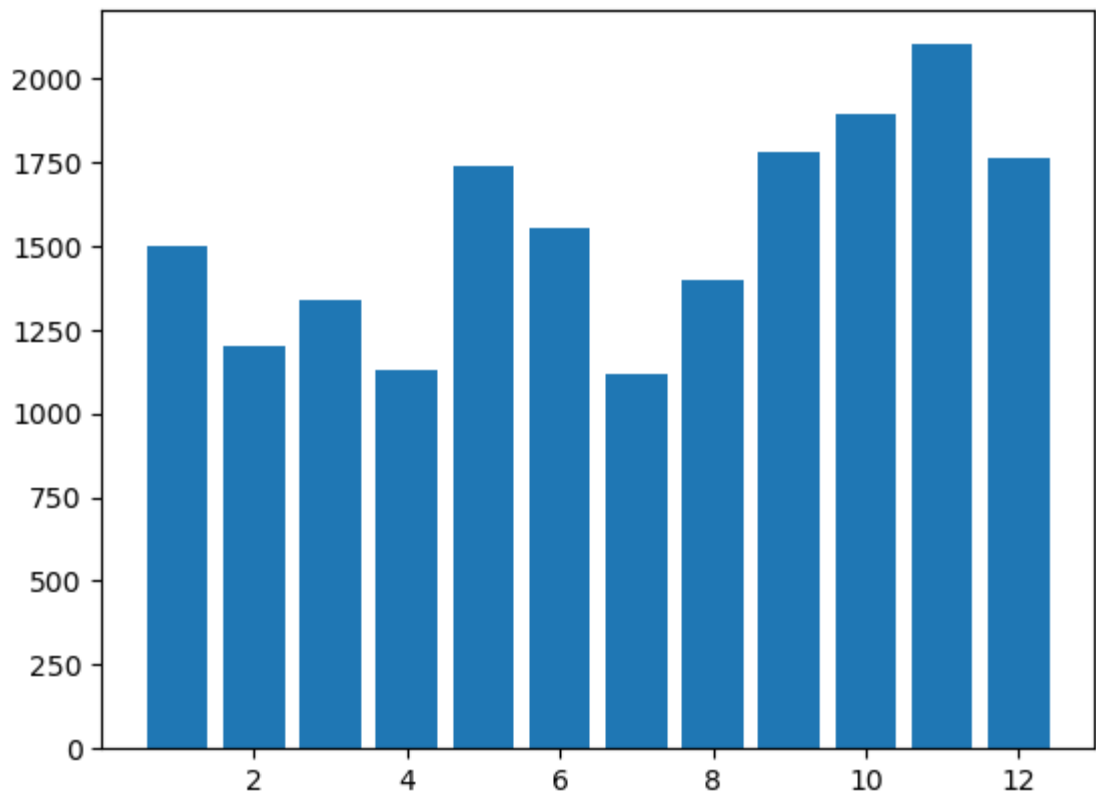
```
In [18]: x1=np.array(df.month_number)
         y1=np.array(df.facecream)
         plt.bar(x1,y1)
```

Out[18]: <BarContainer object of 12 artists>



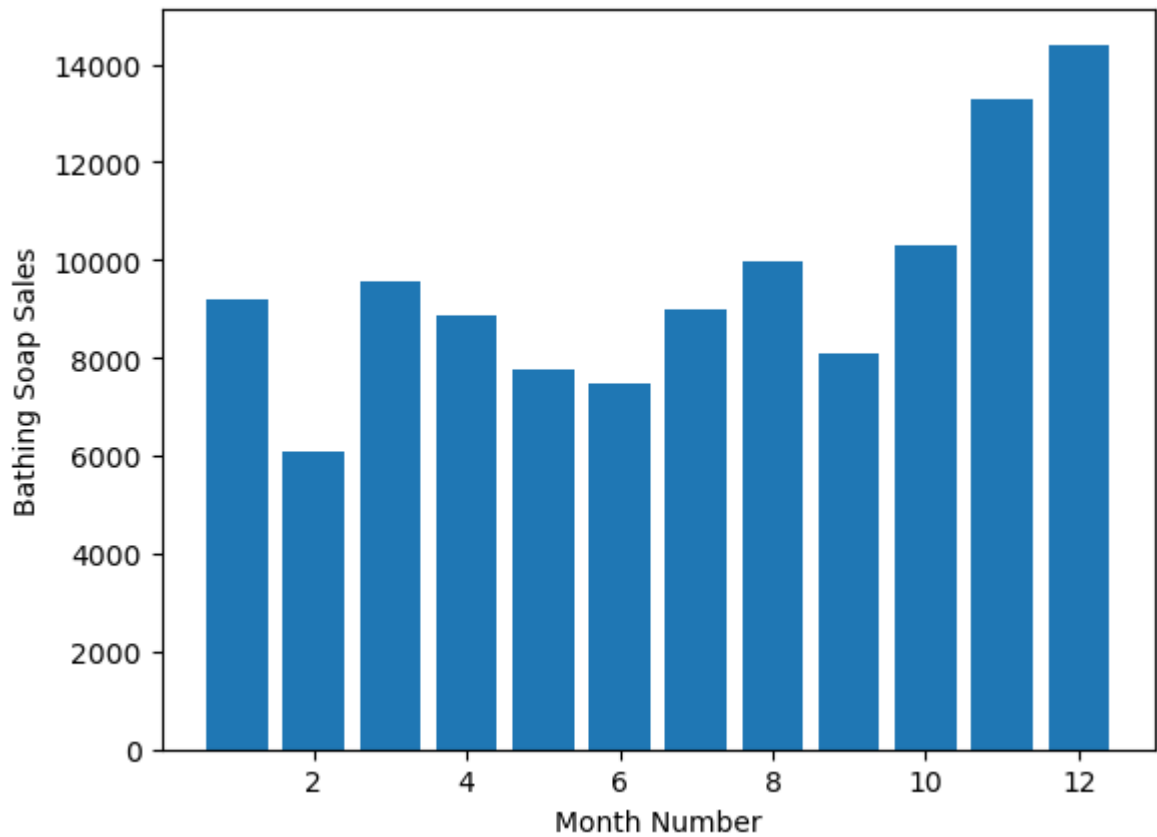
```
In [13]: x2=np.array(df.month_number)
          y2=np.array(df.facewash)
          plt.bar(x2,y2)
```

Out[13]: <BarContainer object of 12 artists>



5. Read sales data of bathing soap of all months and show it using a bar chart. Save this plot to your hard disk

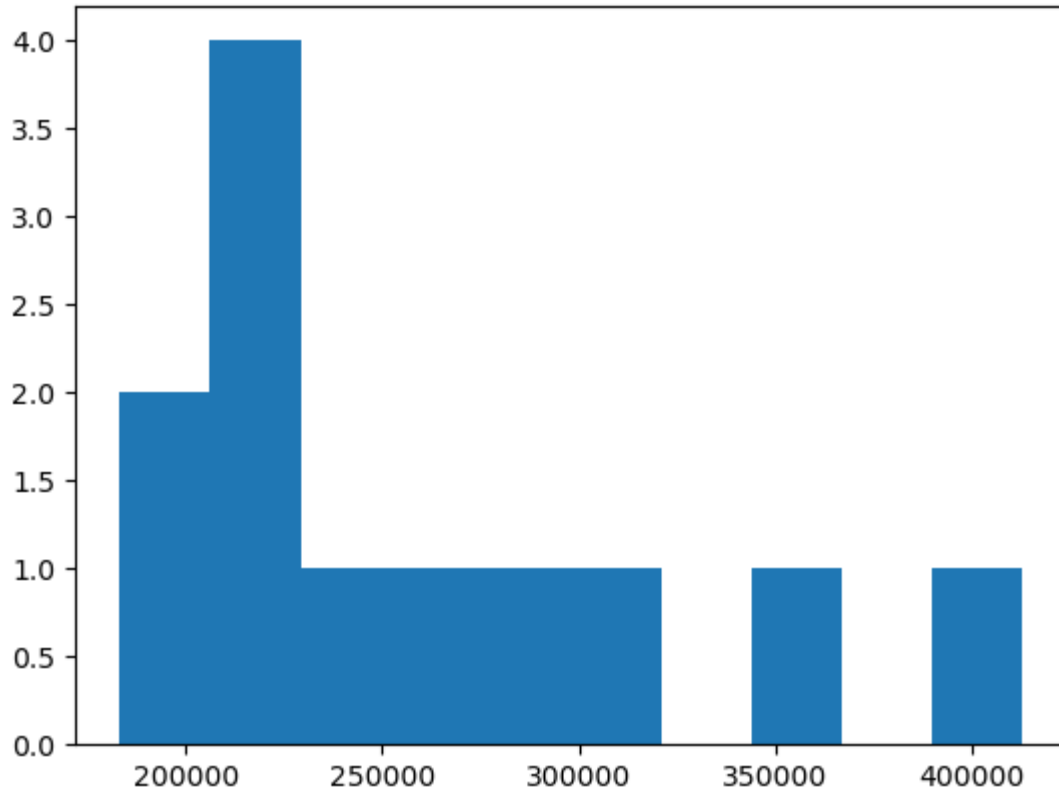
```
In [20]: x=np.array(df.month_number)
y=np.array(df.bathingsoap)
plt.bar(x,y)
plt.xlabel("Month Number")
plt.ylabel("Bathing Soap Sales")
plt.savefig("abc.jpg")
```



6. Read the total profit of each month and show it using the histogram to see the most common profit ranges


```
In [21]: x=np.array(df.total_profit)
plt.hist(x)
```

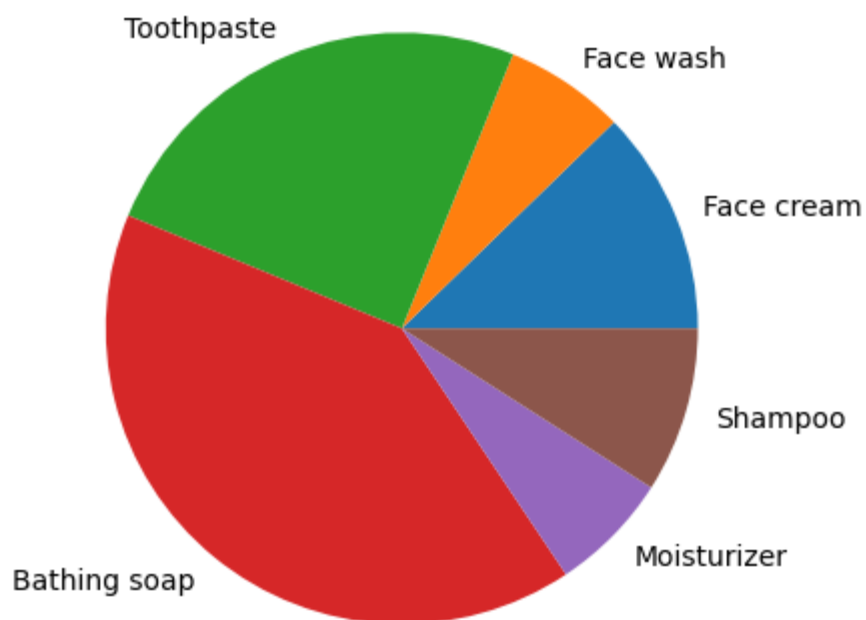
```
Out[21]: (array([2., 4., 1., 1., 1., 1., 0., 1., 0., 1.]),
array([183300., 206250., 229200., 252150., 275100., 298050., 321000.,
       343950., 366900., 389850., 412800.]),
<BarContainer object of 10 artists>)
```



7. Calculate total sale data for last year for each product and show it using a Pie chart.

```
In [16]: x=np.array([df['facecream'].sum(),df['facewash'].sum(),df['toothpaste'].sum(),
mylabels=["Face cream","Face wash","Toothpaste","Bathing soap","Moisturizer",
plt.pie(x, labels = mylabels)
```

```
Out[16]: ([<matplotlib.patches.Wedge at 0x20f9b20bf10>,
<matplotlib.patches.Wedge at 0x20f9b219430>,
<matplotlib.patches.Wedge at 0x20f9b219910>,
<matplotlib.patches.Wedge at 0x20f9b219df0>,
<matplotlib.patches.Wedge at 0x20f9b224310>,
<matplotlib.patches.Wedge at 0x20f9b2247f0>],
[Text(1.0191857113582774, 0.4138363030995739, 'Face cream'),
Text(0.6140655913722997, 0.912646398936953, 'Face wash'),
Text(-0.4252111998343268, 1.0144926986112084, 'Toothpaste'),
Text(-0.6978920809686103, -0.8502626907734472, 'Bathing soap'),
Text(0.7853933909714923, -0.7701670087833553, 'Moisturizer'),
Text(1.0558604387478188, -0.30847809304270474, 'Shampoo')])
```



8. Read Bathing soap facewash of all months and display it using the Subplot

```
In [17]: #plot 1
x = np.array(df.month_number)
y = np.array(df.facecream)

plt.subplot(6, 1, 6) # (R,C,No.)
plt.plot(x,y, color='r')
plt.xlabel("Month number")
plt.ylabel("Face cream sales")
    #add a title to each plot with the title() function:

#plot 2:
x = np.array(df.month_number)
y = np.array(df.facewash)
plt.subplot(6, 1, 5)
plt.plot(x,y,color='green')
plt.xlabel("Month number")
plt.ylabel("Face wash sales")

#You can add a title to the entire figure with the supitle() function:

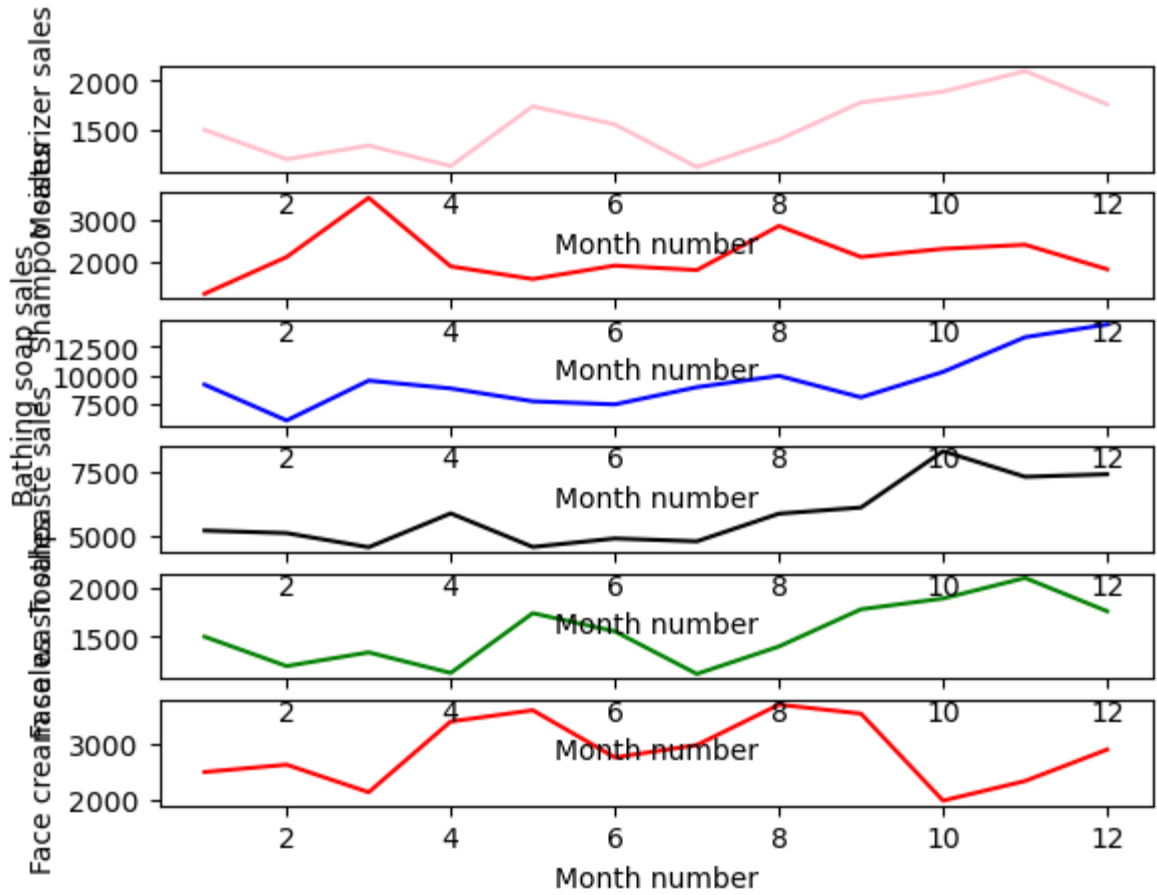
#plot 3:
x = np.array(df.month_number)
y = np.array(df.toothpaste)
plt.subplot(6, 1, 4)
plt.plot(x,y, color='black')
plt.xlabel("Month number")
plt.ylabel("Toothpaste sales")

#plot 4:
x = np.array(df.month_number)
y = np.array(df.bathingssoap)
plt.subplot(6, 1, 3)
plt.plot(x,y, color='blue')
plt.xlabel("Month number")
plt.ylabel("Bathing soap sales")

#plot 5:
x = np.array(df.month_number)
y = np.array(df.shampoo)
plt.subplot(6, 1, 2)
plt.plot(x,y, color='red')
plt.xlabel("Month number")
plt.ylabel("Shampoo sales")

#plot 6:
x = np.array(df.month_number)
y = np.array(df.moisturizer)
plt.subplot(6, 1, 1)
plt.plot(x,y, color='pink')
plt.xlabel("Month number")
plt.ylabel("Moisturizer sales")
```

```
Out[17]: Text(0, 0.5, 'Moisturizer sales')
```



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