Load Libraries ¶

In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
```

Import Dataset

In [2]:
```
df=pd.read_csv('company_sales_data.csv')
```

In [3]:
```
df
```

Out[3]:

	month_number	facecream	facewash	toothpaste	bathingsoap	shampoo	moisturizer	total_un
0	1	2500	1500	5200	9200	1200	1500	211
1	2	2630	1200	5100	6100	2100	1200	183
2	3	2140	1340	4550	9550	3550	1340	224
3	4	3400	1130	5870	8870	1870	1130	222
4	5	3600	1740	4560	7760	1560	1740	209
5	6	2760	1555	4890	7490	1890	1555	201
6	7	2980	1120	4780	8980	1780	1120	295
7	8	3700	1400	5860	9960	2860	1400	361
8	9	3540	1780	6100	8100	2100	1780	234
9	10	1990	1890	8300	10300	2300	1890	266
10	11	2340	2100	7300	13300	2400	2100	412
11	12	2900	1760	7400	14400	1800	1760	300

Explore Dataset

In [4]:
```
df.shape
```

Out[4]:
```
(12, 9)
```

In [5]:
```
df.dtypes
```

Out[5]:
```
month_number    int64
facecream       int64
facewash        int64
toothpaste      int64
bathingsoap     int64
shampoo         int64
moisturizer     int64
total_units     int64
total_profit    int64
dtype: object
```

In [6]:
```
df.head()
```

Out[6]:

	month_number	facecream	facewash	toothpaste	bathingsoap	shampoo	moisturizer	total_unit
0	1	2500	1500	5200	9200	1200	1500	2110
1	2	2630	1200	5100	6100	2100	1200	1833
2	3	2140	1340	4550	9550	3550	1340	2247
3	4	3400	1130	5870	8870	1870	1130	2227
4	5	3600	1740	4560	7760	1560	1740	2096

In [8]:
```
df.describe()
```

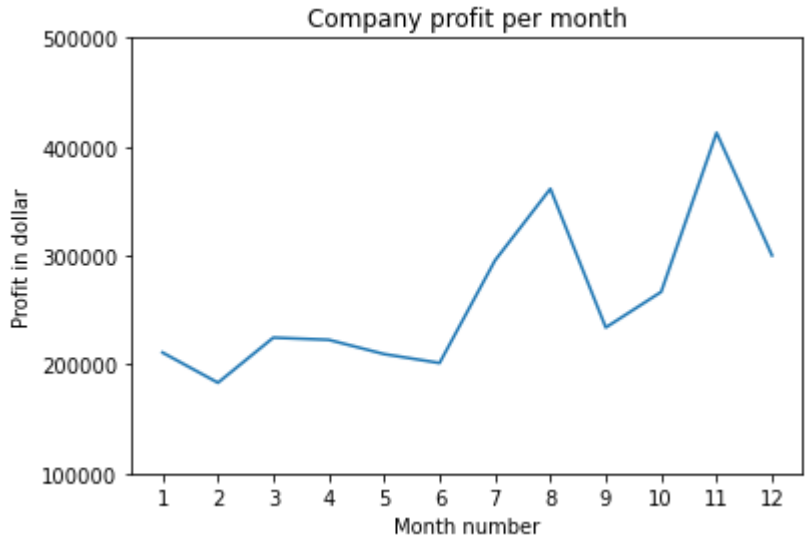
Out[8]:

	month_number	facecream	facewash	toothpaste	bathingsoap	shampoo	moistu
count	12.000000	12.000000	12.000000	12.000000	12.000000	12.000000	12.00
mean	6.500000	2873.333333	1542.916667	5825.833333	9500.833333	2117.500000	1542.91
std	3.605551	584.595172	316.733745	1242.032486	2348.095779	617.724931	316.73
min	1.000000	1990.000000	1120.000000	4550.000000	6100.000000	1200.000000	1120.00
25%	3.750000	2460.000000	1305.000000	4862.500000	8015.000000	1795.000000	1305.00
50%	6.500000	2830.000000	1527.500000	5530.000000	9090.000000	1995.000000	1527.50
75%	9.250000	3435.000000	1765.000000	6400.000000	10045.000000	2325.000000	1765.00
max	12.000000	3700.000000	2100.000000	8300.000000	14400.000000	3550.000000	2100.00

Exercise 1: Read Total profit of all months and show it using a line plot

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.

In [9]:
```
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()
```



Exercise 2: 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

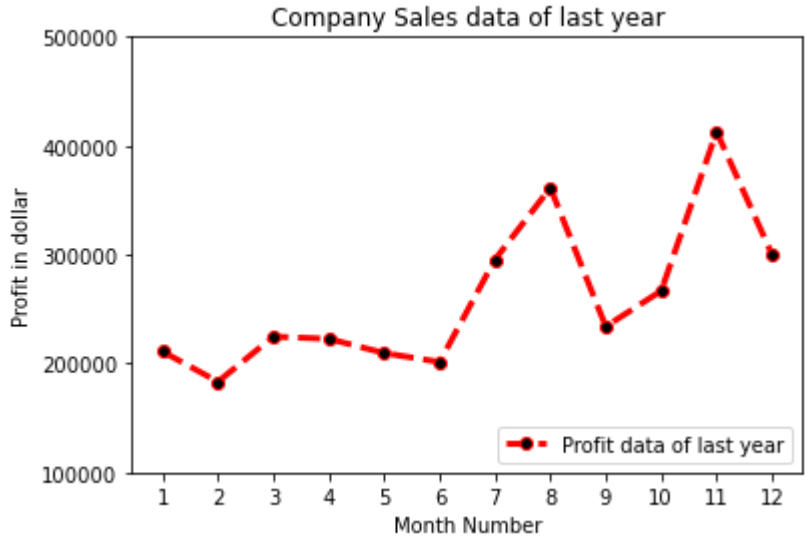
Y label name = Sold units number

Add a circle marker.

Line marker color as read

Line width should be 3

In [10]:
```
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()
```

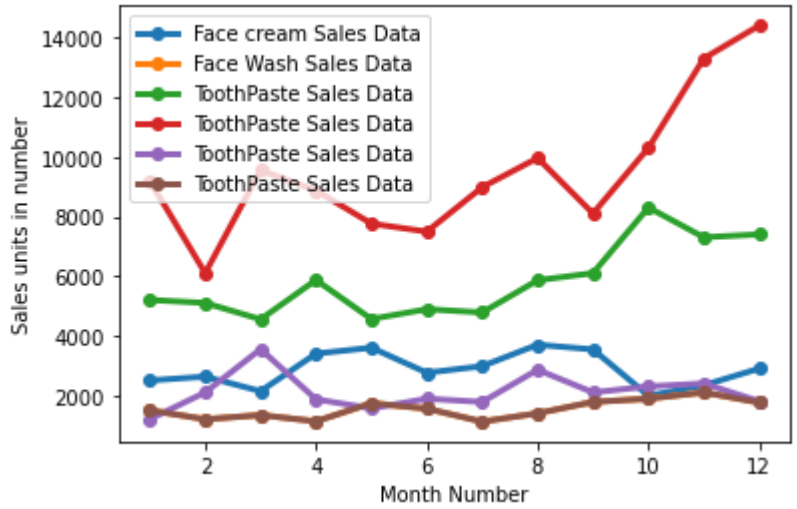


Exercise 3: Read all product sales data and show it using a multiline plot

Display the number of units sold per month for each product using multiline plots. (i.e., Separate Plotline for each product).

In [11]:
```
monthList  = df ['month_number'].tolist()

faceCremSalesData   = 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, faceCremSalesData,   label = 'Face cream Sales Data', marker=
plt.plot(monthList, faceWashSalesData,   label = 'Face Wash Sales Data',  marker=
plt.plot(monthList, toothPasteSalesData, label = 'ToothPaste Sales Data', marker=
plt.plot(monthList, bathingsoapSalesData, label = 'ToothPaste Sales Data', marker
plt.plot(monthList, shampooSalesData, label = 'ToothPaste Sales Data', marker='o'
plt.plot(monthList, moisturizerSalesData, label = 'ToothPaste Sales Data', marker

plt.xlabel('Month Number')
plt.ylabel('Sales units in number')

plt.legend(loc='upper left')
```

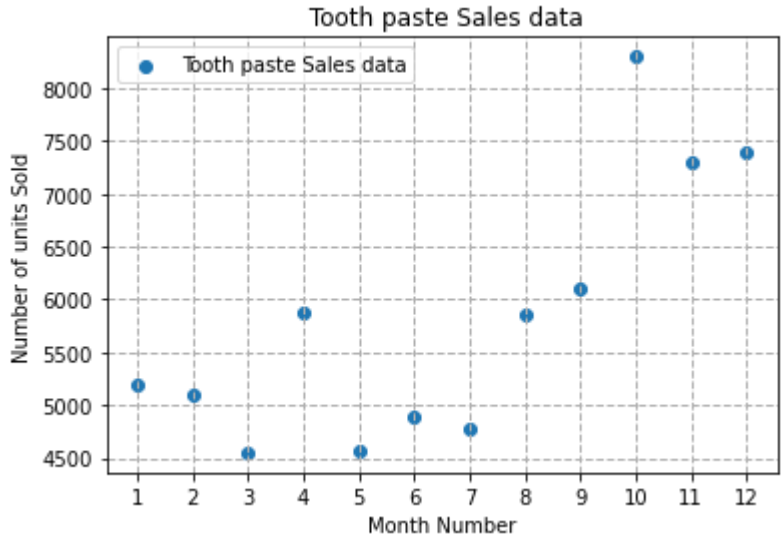
Out[11]: <matplotlib.legend.Legend at 0x1118c181df0>



Exercise 4: Read toothpaste sales data of each month and show it using a scatter

plot

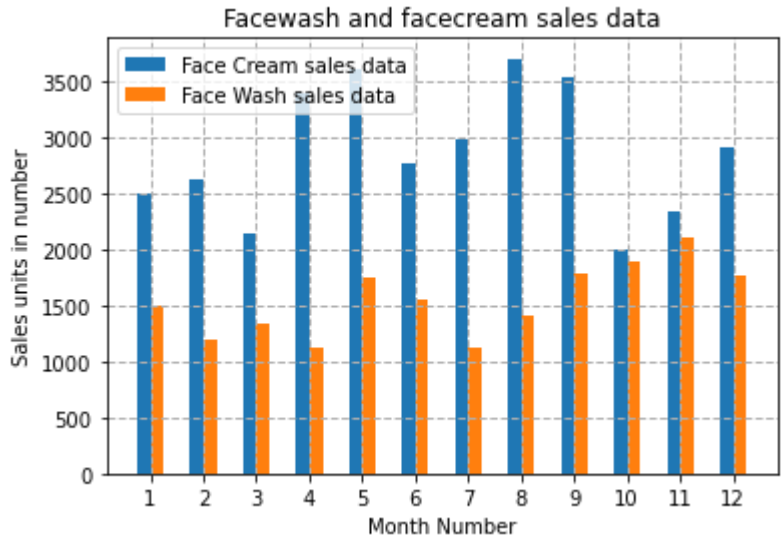
In [12]:
```
monthList  = df ['month_number'].tolist()

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()
```



Exercise 5: Read face cream and facewash product sales data and show it using the bar chart

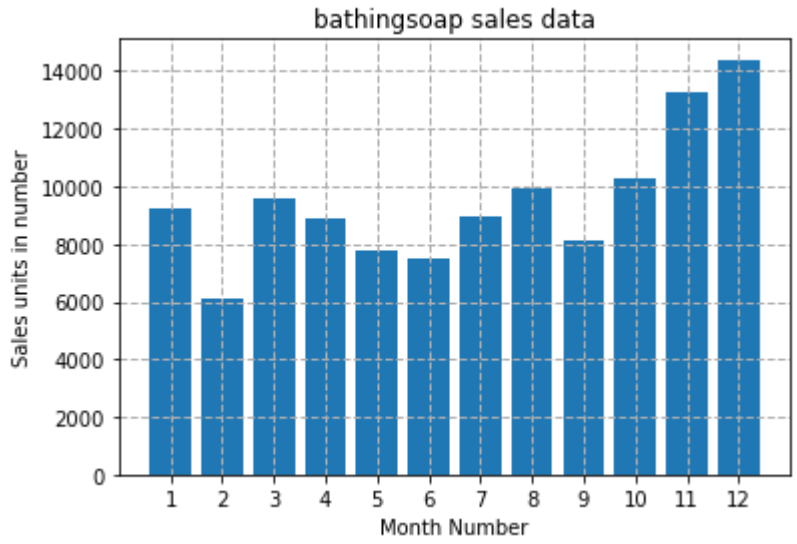
The bar chart should display the number of units sold per month for each product. Add a separate bar for each product in the same chart.

In [13]:
```
monthList  = df ['month_number'].tolist()
faceCremSalesData   = df ['facecream'].tolist()
faceWashSalesData   = df ['facewash'].tolist()

plt.bar([a-0.25 for a in monthList], faceCremSalesData, width= 0.25, label = 'Fac
plt.bar([a+0.25 for a in monthList], faceWashSalesData, width= -0.25, label = 'Fa


plt.xlabel('Month Number')
plt.ylabel('Sales units in number')
plt.legend(loc='upper left')
plt.title(' Sales data')

plt.xticks(monthList)
plt.grid(True, linewidth= 1, linestyle="--")
plt.title('Facewash and facecream sales data')
plt.show()
```



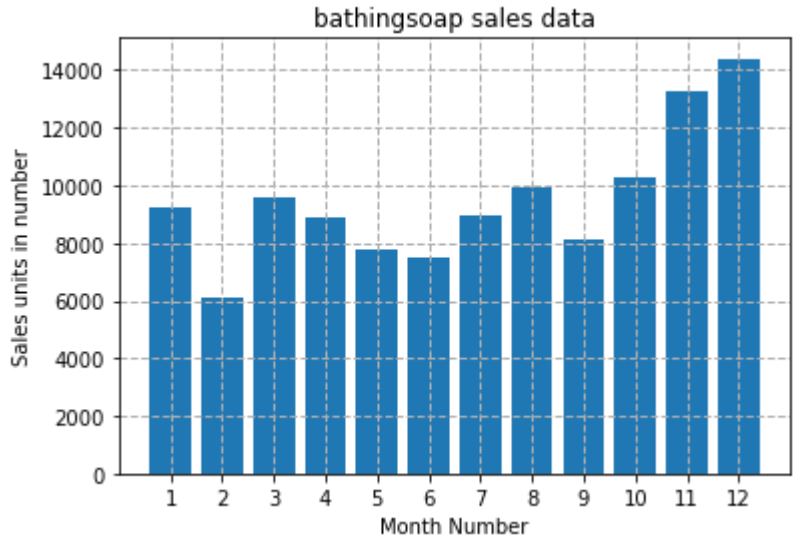
Exercise 6: Read sales data of bathing soap of all months and show it using a bar chart. Save this plot to your hard disk

In [14]:
```
monthList  = df ['month_number'].tolist()
bathingsoapSalesData   = df ['bathingsoap'].tolist()

plt.bar(monthList, bathingsoapSalesData)

plt.xlabel('Month Number')
plt.ylabel('Sales units in number')

plt.title(' Sales data')
plt.xticks(monthList)
plt.grid(True, linewidth= 1, linestyle="--")

plt.title('bathingsoap sales data')

plt.savefig('sales_data_of_bathingsoap.png', dpi=150)
plt.show()
```



Exercise 7: Read the total profit of each month and show it using the histogram to see the most common profit ranges

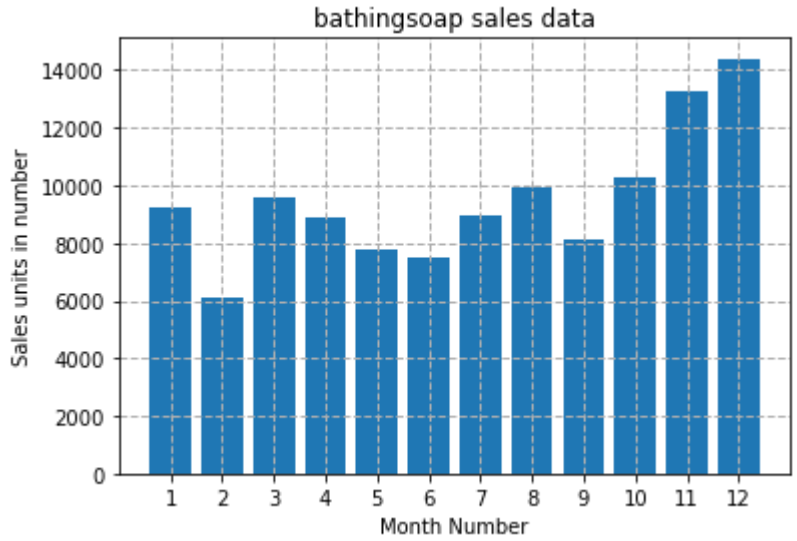
In [17]:
```
monthList  = df ['month_number'].tolist()
bathingsoapSalesData   = df ['bathingsoap'].tolist()

plt.bar(monthList, bathingsoapSalesData)

plt.xlabel('Month Number')
plt.ylabel('Sales units in number')

plt.title(' Sales data')
plt.xticks(monthList)
plt.grid(True, linewidth= 1, linestyle="--")

plt.title('bathingsoap sales data')

plt.savefig('sales_data_of_bathingsoap.png', dpi=150)
plt.show()
plt.show()
```



Exercise 8: Calculate total sale data for last year for each product and show it using a Pie chart

Note: In Pie chart display Number of units sold per year for each product in percentage.

In [18]:
```
monthList  = df ['month_number'].tolist()
bathingsoapSalesData   = df ['bathingsoap'].tolist()

plt.bar(monthList, bathingsoapSalesData)

plt.xlabel('Month Number')
plt.ylabel('Sales units in number')

plt.title(' Sales data')
plt.xticks(monthList)
plt.grid(True, linewidth= 1, linestyle="--")

plt.title('bathingsoap sales data')

plt.savefig('sales_data_of_bathingsoap.png', dpi=150)
plt.show()
plt.show()
plt.show()
```



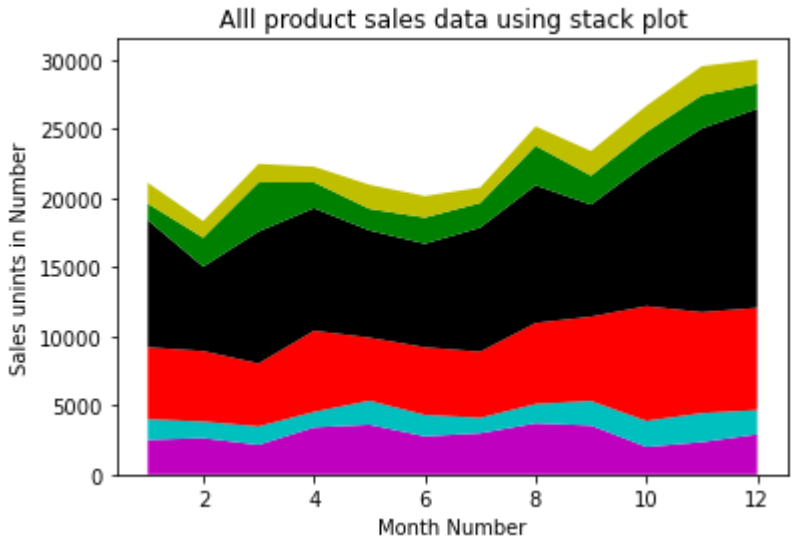
Exercise 9: Read Bathing soap facewash of all months and display it using the Subplot

In [19]:
```
monthList  = df ['month_number'].tolist()
bathingsoap   = df ['bathingsoap'].tolist()
faceWashSalesData   = df ['facewash'].tolist()

f, axarr = plt.subplots(2, sharex=True)

axarr[0].plot(monthList, bathingsoap, label = 'Bathingsoap Sales Data', color='k'
axarr[0].set_title('Sales data of  a Bathingsoap')

axarr[1].plot(monthList, faceWashSalesData, label = 'Face Wash Sales Data', color
axarr[1].set_title('Sales data of  a facewash')

plt.xticks(monthList)
plt.xlabel('Month Number')
plt.ylabel('Sales units in number')
plt.show()
```

Exercise Question 10: Read all product sales data and show it using the stack plot

In [20]:
```
monthList  = df
monthList  = df ['month_number'].tolist()

faceCremSalesData   = 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([],[],color='m', label='face Cream', linewidth=5)
plt.plot([],[],color='c', label='Face wash', linewidth=5)
plt.plot([],[],color='r', label='Tooth paste', linewidth=5)
plt.plot([],[],color='k', label='Bathing soap', linewidth=5)
plt.plot([],[],color='g', label='Shampoo', linewidth=5)
plt.plot([],[],color='y', label='Moisturizer', linewidth=5)

plt.stackplot(monthList, faceCremSalesData, faceWashSalesData, toothPasteSalesDat
              bathingsoapSalesData, shampooSalesData, moisturizerSalesData,
              colors=['m','c','r','k','g','y'])

plt.xlabel('Month Number')
plt.ylabel('Sales unints in Number')
plt.title('Alll product sales data using stack plot')
plt
```

Out[20]:
```
<module 'matplotlib.pyplot' from 'C:\\Users\\HP\\anaconda3\\lib\\site-packages
\\matplotlib\\pyplot.py'>
```



In [ ]: