IBM Python Exercise 4 : Matplotlib
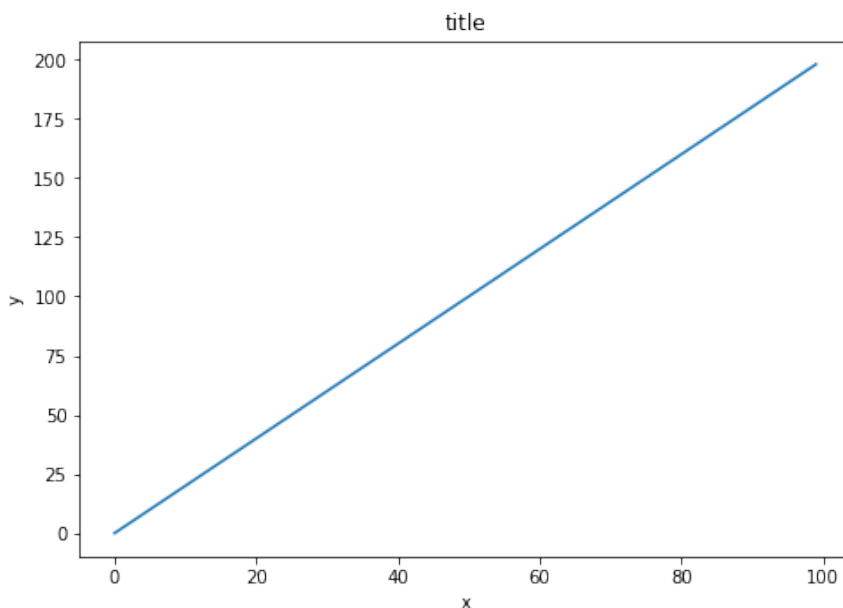
<u>Set 1</u>
1) <u>code:</u>
```
import numpy as np
x = np.arange(0,100)
y = x*2
import matplotlib.pyplot as plt
%matplotlib inline
fig = plt.figure()
ax = fig.add_axes([0,0,1,1])
ax.plot(x,y)
ax.set_title('title')
ax.set_xlabel('x')
ax.set_ylabel('y')
```
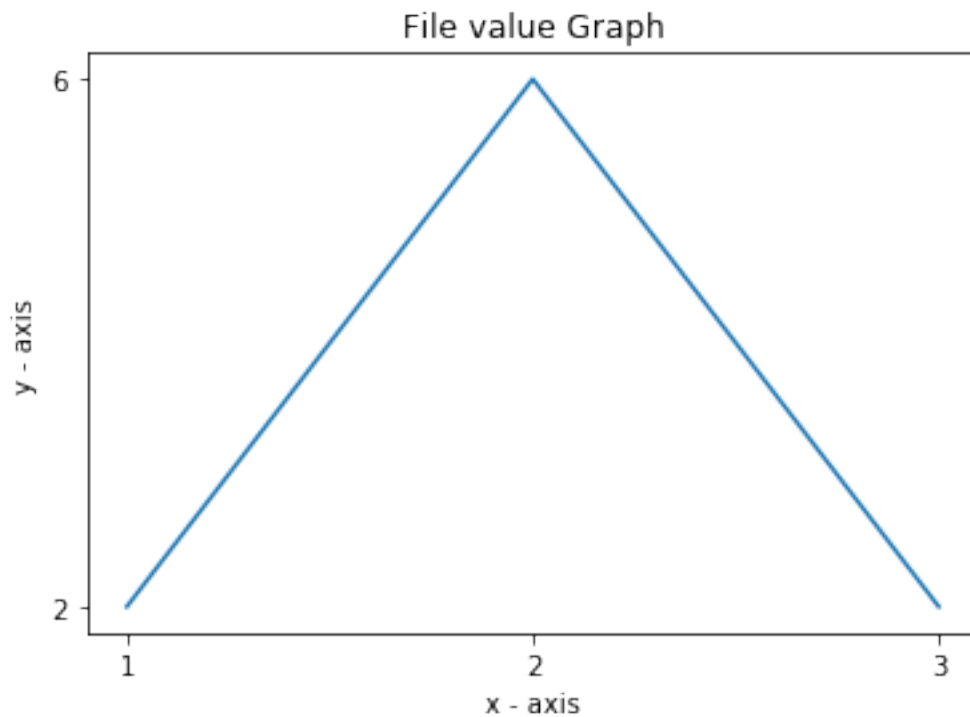
<u>output:</u>
```
Text(0, 0.5, 'y')
```


2) <u>code:</u>

```
import matplotlib.pyplot as plt
with open("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\test.txt") as f:
    test = f.read()
test = test.split('\n')
x = [row.split(' ')[0] for row in data]
y = [row.split(' ')[1] for row in data]
plt.plot(x, y)
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('File value Graph')
plt.show()
```
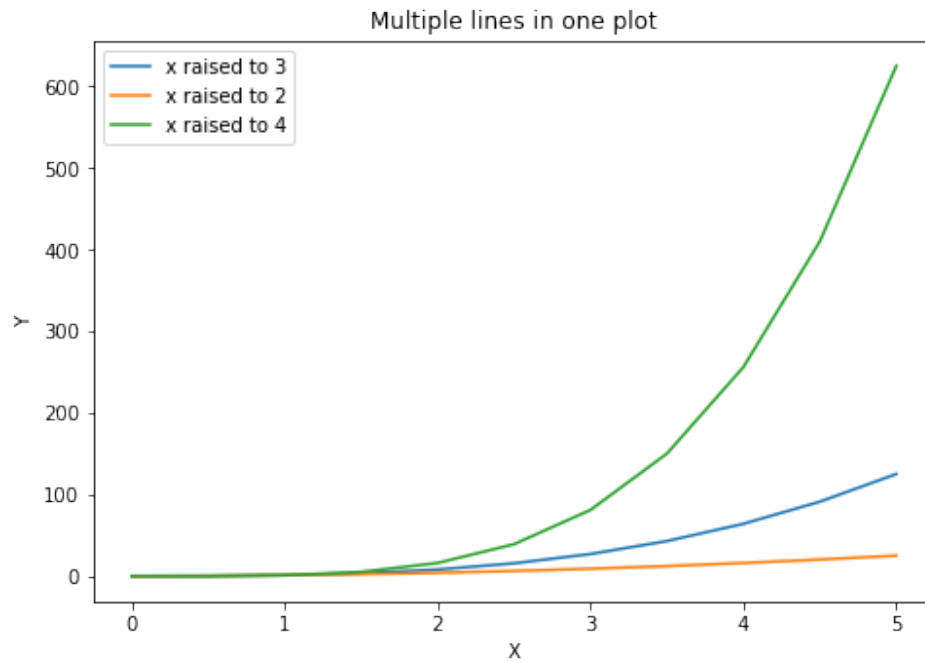
<u>output:</u>

File value Graph

3) code:
```
import numpy as np
x = np.linspace(0,5,11)
y = x**3
z = x**2
a = x**4
import matplotlib.pyplot as plt
%matplotlib inline
fig=plt.figure()
ax = fig.add_axes([0,0,1,1])
ax.plot(x,y,label="x raised to 3")
ax.plot(x,z,label="x raised to 2")
ax.plot(x,a,label="x raised to 4")
ax.set_title('Multiple lines in one plot')
ax.set_ylabel('Y')
ax.set_xlabel('X')

ax.legend()
```

output:

```
<matplotlib.legend.Legend at 0x2ce8c85ad48>
```
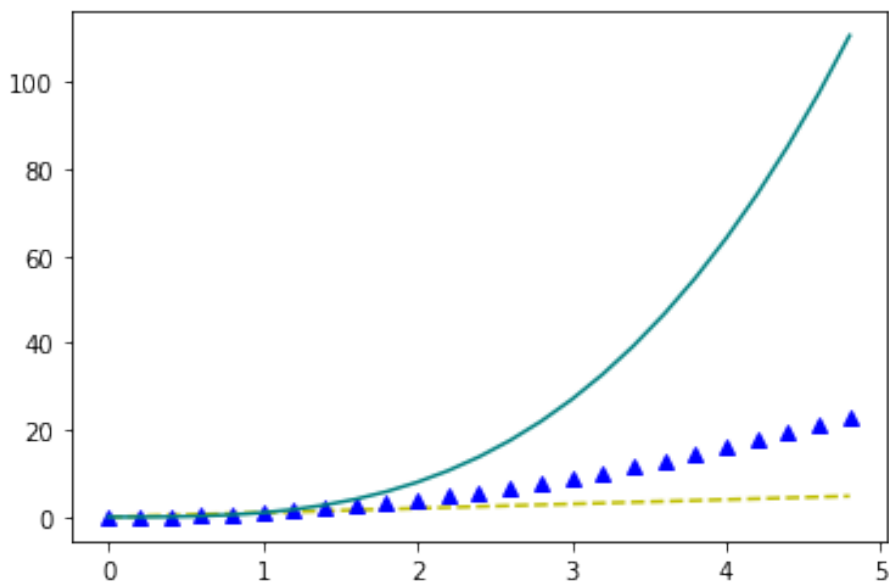
Multiple lines in one plot

4) code:
```
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
t = np.arange(0., 5., 0.2)
plt.plot(t, t, 'y--', t, t**2, 'b^', t, t**3, 'teal')
```

output:

```
[<matplotlib.lines.Line2D at 0x2ce8af7a6c8>,
 <matplotlib.lines.Line2D at 0x2ce8af7a848>,
 <matplotlib.lines.Line2D at 0x2ce8af7aac8>]
```


5) code:
```
import numpy as np
x = np.linspace(0,5,11)
```

```python
y = x**3
z = x**2
import matplotlib.pyplot as plt

%matplotlib inline

fig,axes=plt.subplots(nrows=1,ncols=4)
axes[0].plot(x,y)
axes[0].set_title('first')
axes[0].set_xlabel('X')
axes[0].set_ylabel('Y')

axes[1].plot(y,x)
axes[1].set_title('second')
axes[1].set_xlabel('Y')
axes[1].set_ylabel('X')

axes[2].plot(x,z)
axes[2].set_title('third')
axes[2].set_xlabel('X')
axes[2].set_ylabel('Z')

axes[3].plot(z,x)
axes[3].set_title('fourth')
axes[3].set_xlabel('Z')
axes[3].set_ylabel('X')

plt.tight_layout()
```
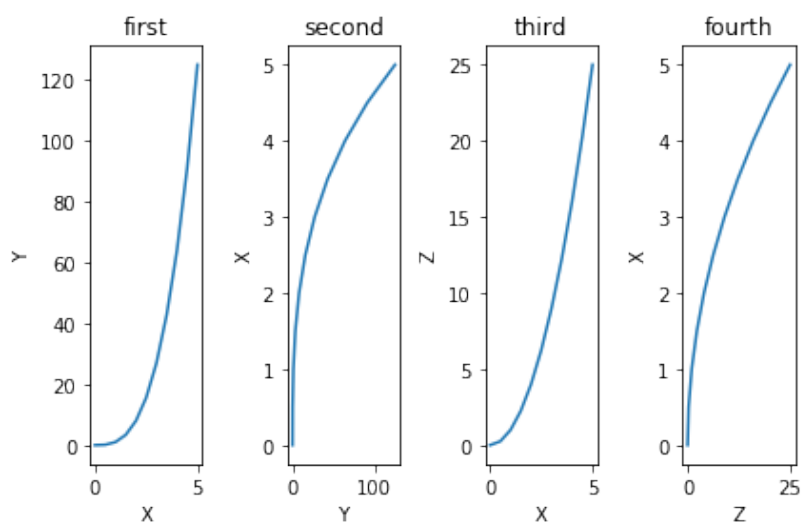
output:

Set 2

1)code:

```python
import pandas as pd
```

```
import matplotlib.pyplot as plt
%matplotlib inline
df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
profit=df['total_profit'].tolist()
months=df['month_number'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,1,1])
ax.plot(months,profit,label="Monthly Profit")
ax.set_ylabel('Profit')
ax.set_xlabel('Month Number')
plt.title("Monthly Profit")
```

output:

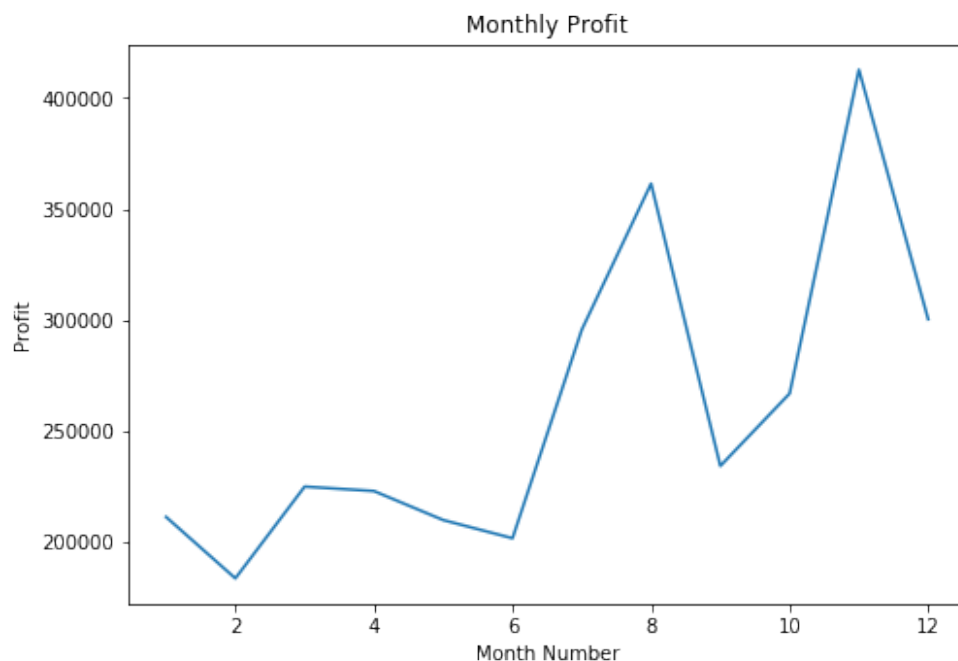`Text(0.5, 1.0, 'Monthly Profit')`

2)code:

```
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
profit=df['total_profit'].tolist()
months=df['month_number'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,1,1])
ax.plot(months, profit, label = 'Monthly Profit', color='r', marker='o', linestyle=':', linewidth=3)
ax.legend(loc='lower right')
ax.set_ylabel('Profit')
ax.set_xlabel('Month Number')
plt.title("Monthly Profit")
```

output:

```
Text(0.5, 1.0, 'Monthly Profit')
```


Monthly Profit

3)code:

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

df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
months=df['month_number'].tolist()
facecreamsales = df['facecream'].tolist()
facewashsales = df['facewash'].tolist()
toothpastesales = df['toothpaste'].tolist()
bathingsoapsales = df['bathingsoap'].tolist()
shampoosales = df['shampoo'].tolist()
moisturizersales=df['moisturizer'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,2,2])

ax.plot(months, facecreamsales, label = 'Facecream sales', marker='o', linewidth=3)
ax.plot(months, facewashsales, label = 'Facewash sales', marker='o', linewidth=3)
ax.plot(months, toothpastesales, label = 'Toothpaste sales', marker='o', linewidth=3)
ax.plot(months, bathingsoapsales, label = 'Bathing soap sales', marker='o', linewidth=3)
ax.plot(months, shampoosales, label = 'Shampoo sales', marker='o', linewidth=3)
ax.plot(months, moisturizersales, label = 'Moisturizer sales', marker='o', linewidth=3)

ax.legend()
ax.set_ylabel('Product Sales')
ax.set_xlabel('Month Number')
plt.title("Monthly Product Sales")
```
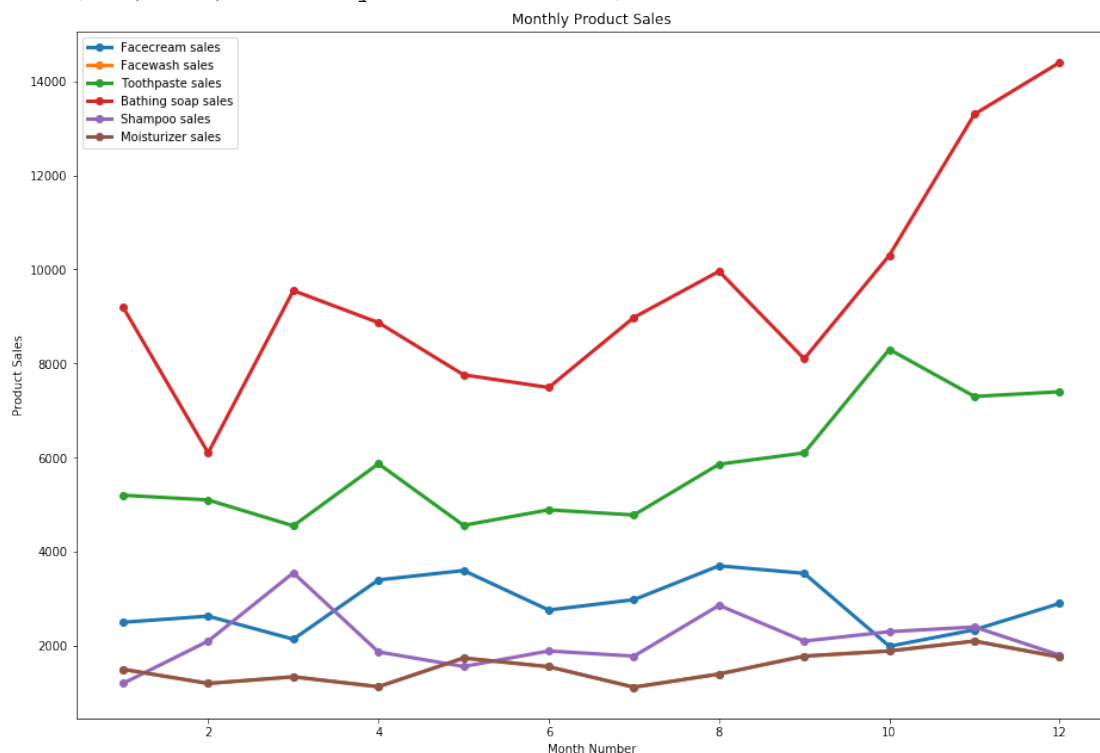
output:

```
Text(0.5, 1.0, 'Monthly Product Sales')
```
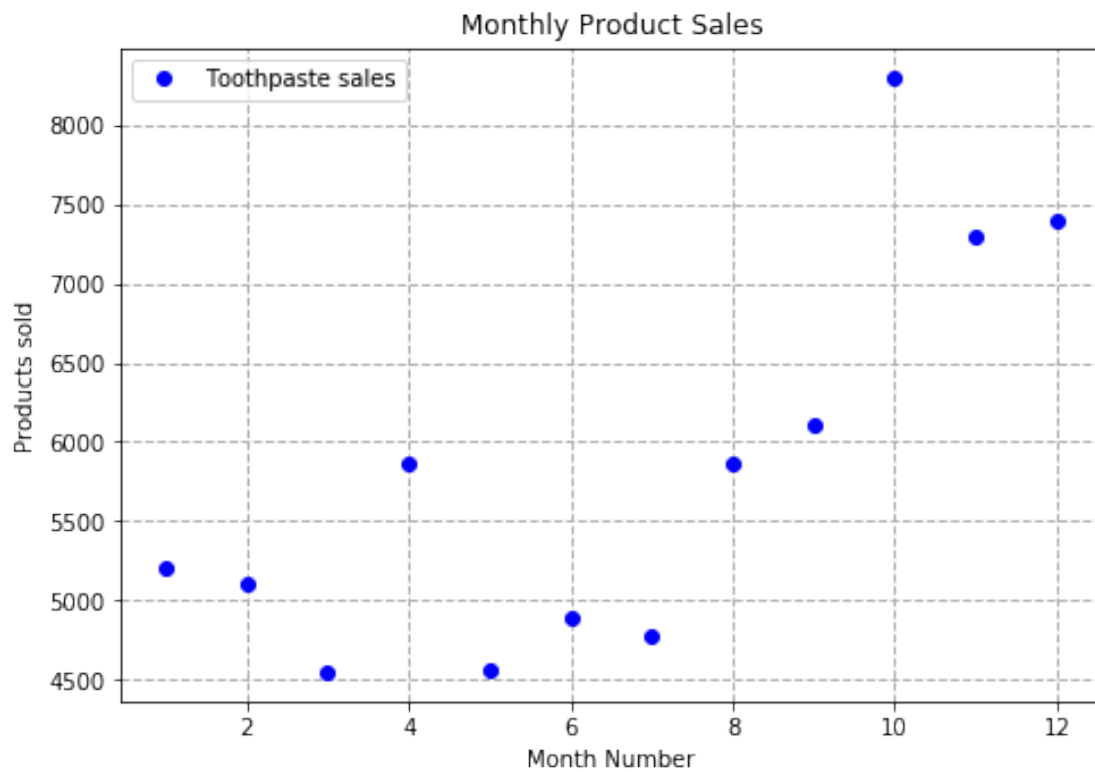

4)code:

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

df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
months=df['month_number'].tolist()
toothpastesales = df['toothpaste'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,1,1])
ax.plot(months, toothpastesales,'bo',label = 'Toothpaste sales')
ax.legend()
ax.set_ylabel('Products sold')
ax.set_xlabel('Month Number')
plt.title("Monthly Product Sales")
plt.grid(True, linewidth= 1, linestyle="--")
```
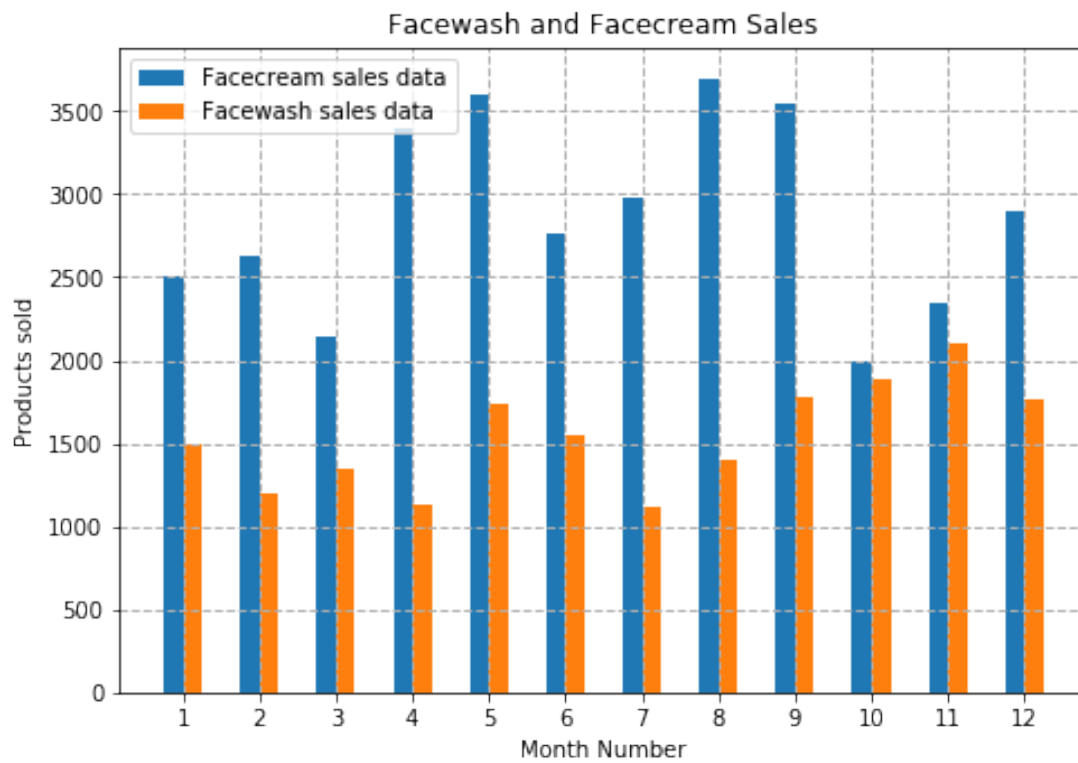
output:

Monthly Product Sales

5)code:

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

df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
months=df['month_number'].tolist()
facecreamsales = df['facecream'].tolist()
facewashsales = df['facewash'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,1,1])
ax.bar([a-0.25 for a in months],facecreamsales, width= 0.25, label = 'Facecream sales data', align='edge')
ax.bar([a+0.25 for a in months],facewashsales, width= -0.25, label = 'Facewash sales data', align='edge')
ax.legend(loc='upper left')
ax.set_ylabel('Products sold')
ax.set_xlabel('Month Number')
plt.xticks(months)
plt.title("Facewash and Facecream Sales")
plt.grid(True, linewidth= 1, linestyle="--")
```

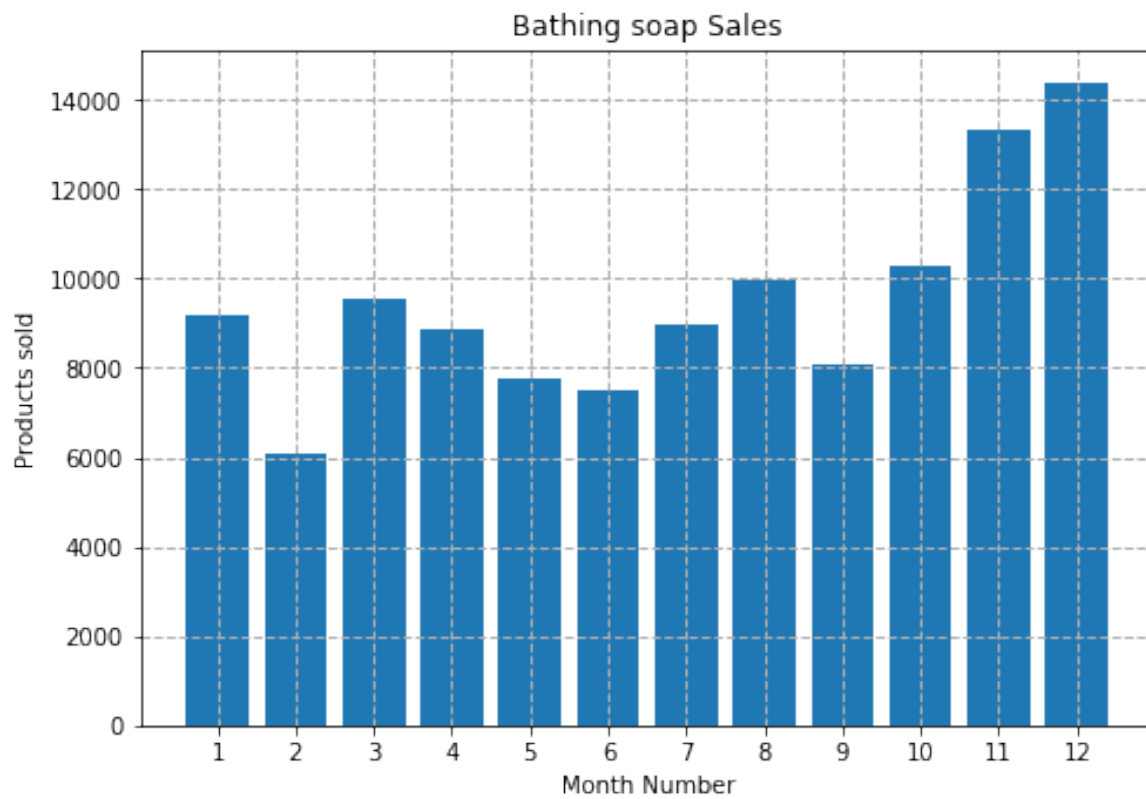output:

Facewash and Facecream Sales

6)code:

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

df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
months=df['month_number'].tolist()
bathingsoapsales = df['bathingsoap'].tolist()
fig = plt.figure()
ax =  fig.add_axes([0,0,1,1])
ax.bar(months,bathingsoapsales)
ax.set_ylabel('Products sold')
ax.set_xlabel('Month Number')
plt.xticks(months)
plt.title("Bathing soap Sales")
plt.grid(True, linewidth= 1, linestyle="--")
plt.savefig('C:\\Users\\Uditi\\Desktop\\ibm python exercises\\bathingsoapdata.png', dpi=150)
```

output:

Bathing soap Sales

7)code:

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

df = pd.read_csv("C:\\Users\\Uditi\\Desktop\\ibm python exercises\\company_sales_data.csv")
profitList = df ['total_profit'].tolist()
labels = ['low', 'average', 'Good', 'Best']
profit_range = [150000, 175000, 200000, 225000, 250000, 300000, 350000]
plt.hist(profitList, profit_range, label = 'Profit data')
plt.xlabel('profit range')
plt.ylabel('Actual Profit')
plt.legend(loc='upper right')
plt.xticks(profit_range)
plt.title('Profit data')
```

output:
```
Text(0.5, 1.0, 'Profit data')
```

Profit data