230962322_Pratyush(mllab-2)

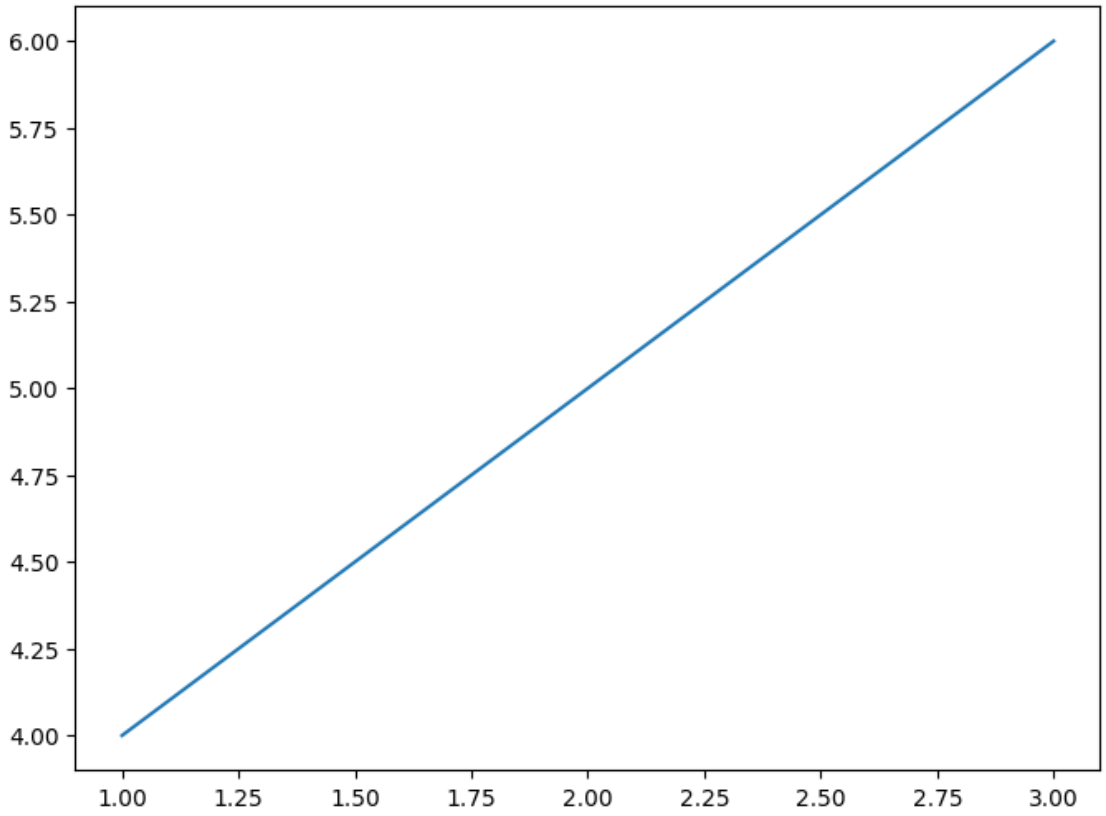
July 31, 2025

[32]:
```
import pandas as pd
import matplotlib.pyplot as plt
```

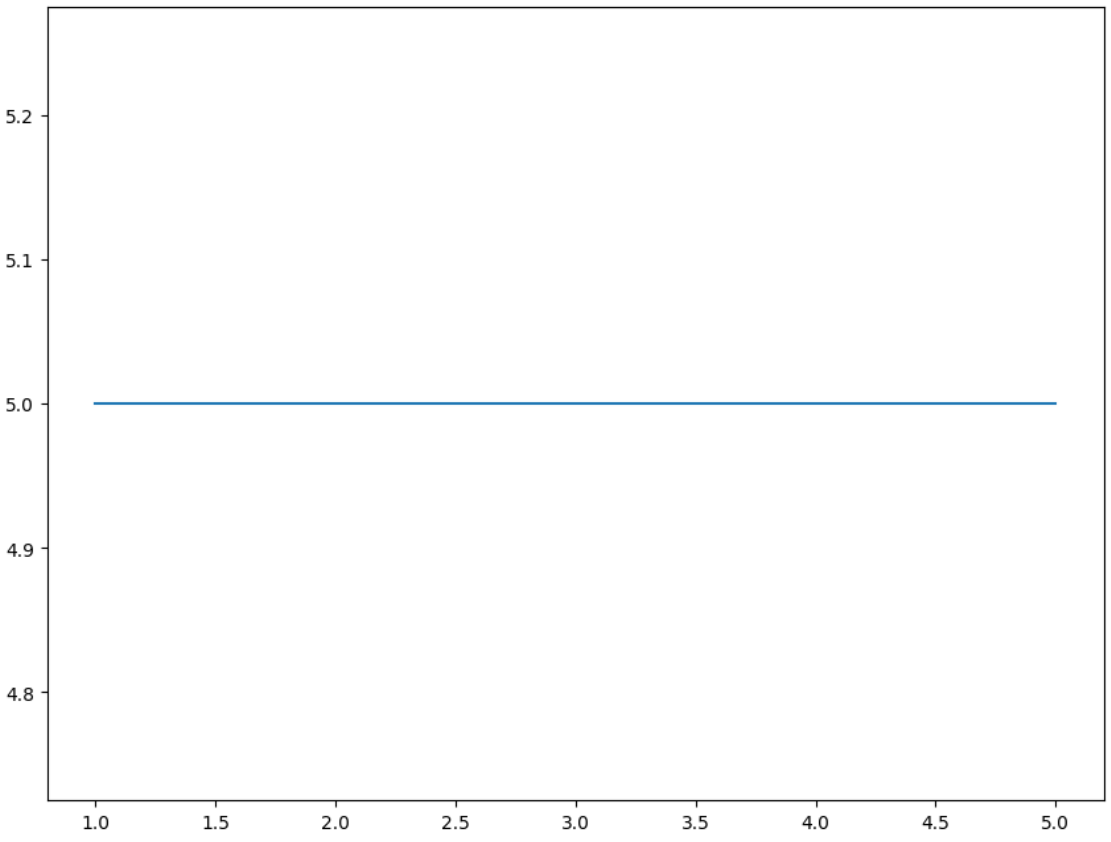
1. Follow along with these steps:

a) Create a figure object called fig using plt.figure()
b) Use add_axes to add an axis to the figure canvas at [0,0,1,1]. Call this new axis ax.
c) Plot (x,y) on that axes and set the labels and titles to match the plot below:

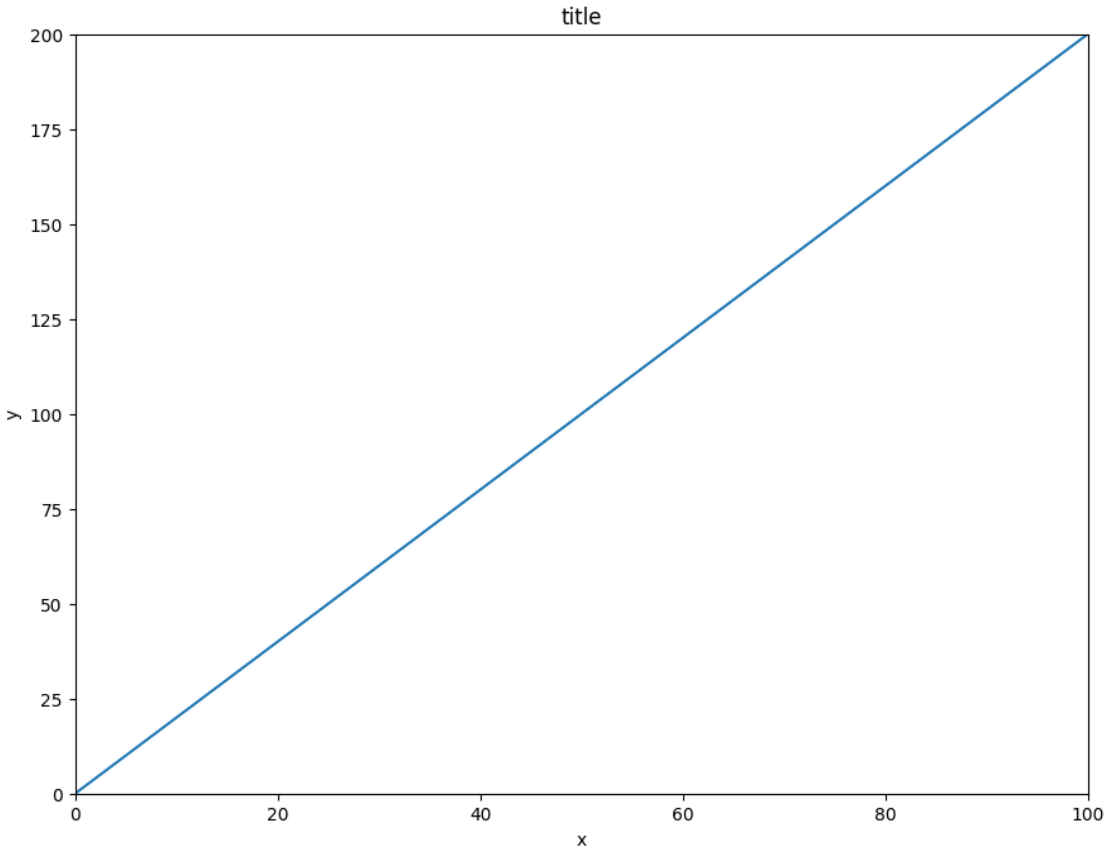
[12]:
```
#a)
fig1=plt.figure(figsize=(8,6))
ax=fig1.add_subplot(111)
ax.plot([1,3], [4, 6])
plt.show()
```



[20]:
```
#b)
fig2=plt.figure(figsize=(8,6))
ax=fig2.add_axes([0.5,0.5,1,1])
ax.plot([1,5],[5,5])
plt.show()
```

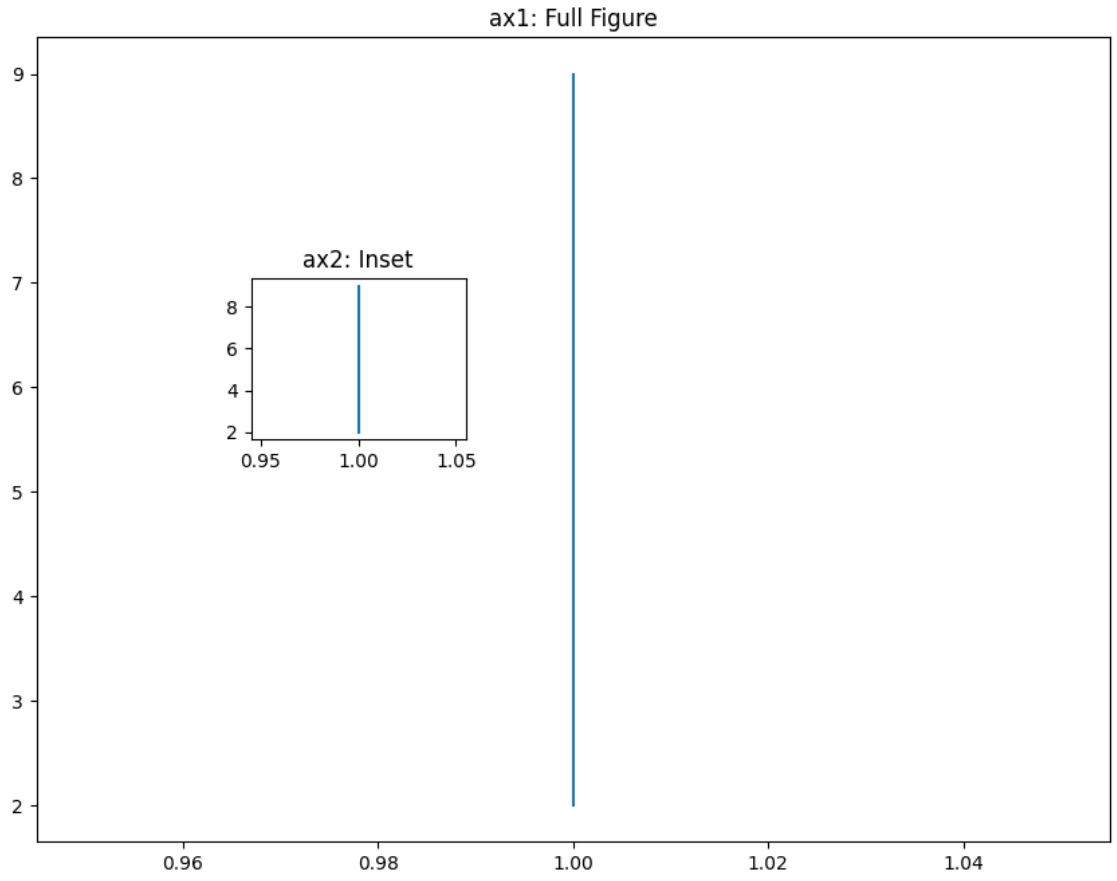


[25]:
```
#c)
fig3=plt.figure(figsize=(8,6))
ax=fig3.add_axes([0.5,0.5,1,1])
ax.plot([0,100],[0,200])
ax.set_xlim(0, 100)
ax.set_ylim(0, 200)
plt.xlabel('x')
plt.ylabel('y')
plt.title('title')
plt.show()
```



2. Create a figure object and put two axes on it, ax1 and ax2. Located at [0,0,1,1] and [0.2,0.5,.2,.2] respectively. Now plot (x,y) on both axes. And call your figure object to show it.

[ ]:
```
x = [1,1]
y = [9,2]

fig4= plt.figure(figsize=(8, 6))

ax1 = fig4.add_axes([0, 0, 1, 1]) # [left, bottom, width, height]
ax1.plot(x, y)
ax1.set_title("ax1: Full Figure")


ax2 = fig4.add_axes([0.2, 0.5, 0.2, 0.2])
ax2.plot(x, y)
ax2.set_title("ax2: Inset")
plt.show()
```

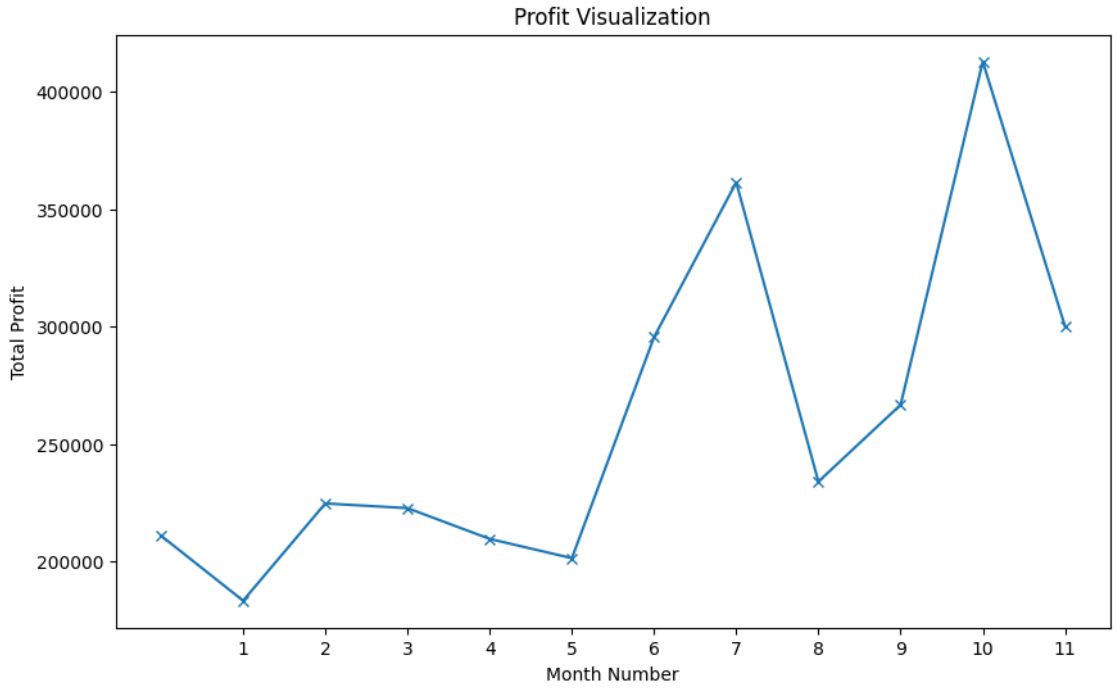


3. Use the company sales dataset csv file, read Total profit of all months and show it using a line plot Total profit data provided for each month. Generated line plot must include the following properties: –

a. X label name = Month Number
b. Y label name = Total profit

[56]:
```
db=pd.read_csv('company_sales_data.csv')
profit=db['total_profit']


fig5=plt.figure(figsize=(10,6))

plt.title('Profit Visualization')
plt.xticks(db['month_number'])

plt.xlabel('Month Number')
plt.ylabel('Total Profit')
plt.plot(profit,marker='x')
```

[56]: [<matplotlib.lines.Line2D at 0x7fbbe279f050>]

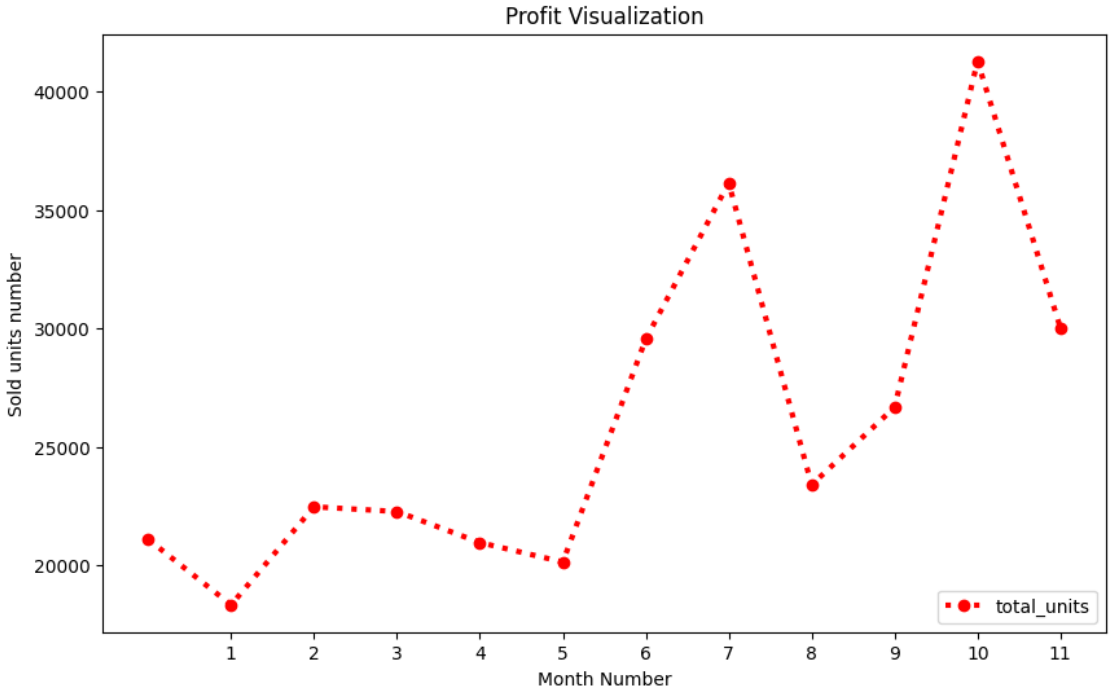


4. Use the company sales dataset csv file, get total profit of all months and show line plot with the following Style properties. Generated line plot must include following Style properties: –

a. Line Style dotted and Line-color should be red
b. Show legend at the lower right location.
c. X label name = Month Number
d. Y label name = Sold units number
e. Add a circle marker.
f. Line marker color as read
g. Line width should be 3

[52]:
```
db=pd.read_csv('company_sales_data.csv')
total=db['total_units']


fig5=plt.figure(figsize=(10,6))

plt.title('Profit Visualization')
plt.xlabel('Month Number')
plt.ylabel('Sold units number')
plt.xticks(db['month_number'])
plt.
 ↪plot(total,marker='o',linestyle='dotted',color='red',markerfacecolor='red',linewidth=3,labe
```

```
plt.legend(loc='lower right')
plt.show()
```

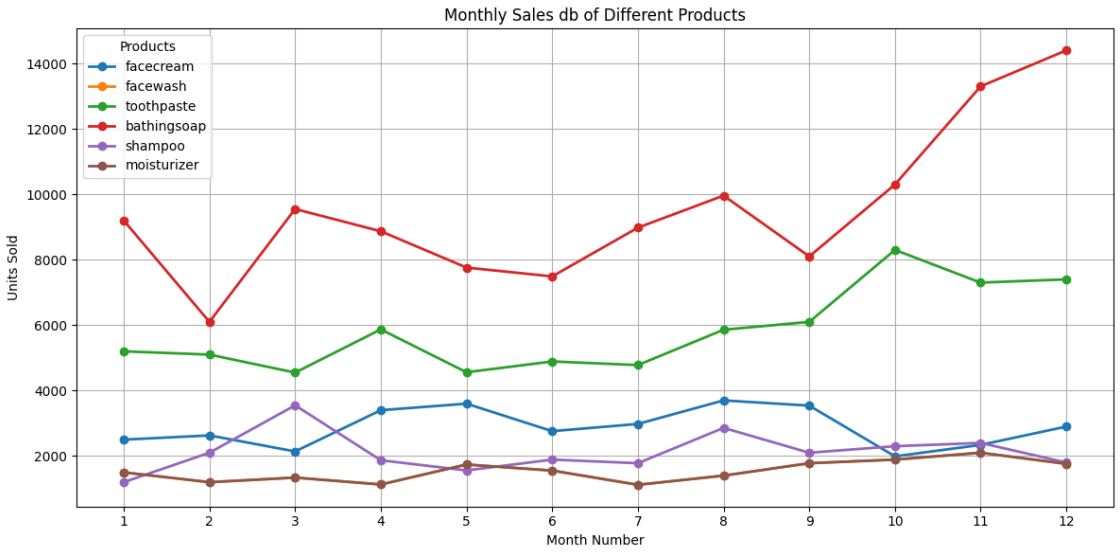


Additional Questions

1. Use the company sales dataset csv file, read all product sales data and show it using a multiline plot.
   Display the number of units sold per month or each product using multiline plots. (i.e., Separate Plotline for each product).

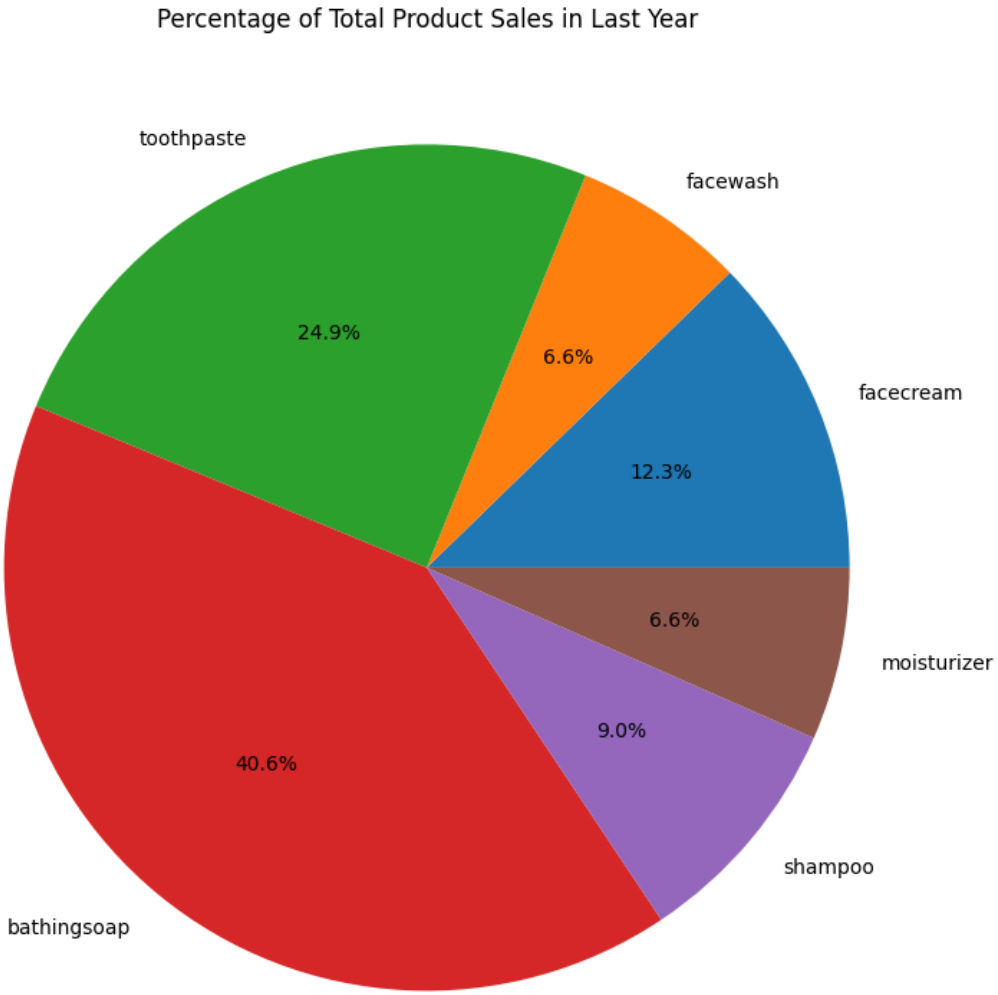
[ ]:
```
months = db['month_number']

#columns (excluding total_units and total_profit)
products = ['facecream', 'facewash', 'toothpaste', 'bathingsoap', 'shampoo',␣
 ↪'moisturizer']


plt.figure(figsize=(12, 6))

for product in products:
    plt.plot(months, db[product], marker='o', linewidth=2, label=product)


plt.title('Monthly Sales data of Different Products')
plt.xlabel('Month Number')
```

```
plt.ylabel('Units Sold')
plt.xticks(months)
plt.legend(title='Products')
plt.grid(True)
plt.tight_layout()

plt.show()
```



2. Use the company sales dataset csv file, 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.

[ ]:
```
products = ['facecream', 'facewash', 'toothpaste', 'bathingsoap', 'shampoo',␣
 ↪'moisturizer']
total_sales = db[products].sum()

plt.figure(figsize=(8, 8))
plt.pie(total_sales,
        labels=products,
        autopct='%1.1f%%')

plt.title('Percentage of Total Product Sales in Last Year')
plt.tight_layout()
plt.show()
```


Percentage of Total Product Sales in Last Year
toothpaste
facewash
facecream
moisturizer
shampoo
bathingsoap
24.9%
6.6%
12.3%
6.6%
9.0%
40.6%

[ ]: