Data Visualization with Matplotlib - Exercises 2

จงทำตามคำสั่งต่อไปนี้ด้วย data ที่กำหนดให้ต่อไปนี้

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

อ่านไฟล์ Superstore.csv

In [4]:
```
df = pd.read_csv('Superstore.csv',encoding = 'iso-8859-1')
```

In [5]:
```
df.head()
```

Out[5]:

	Order ID	Customer Name	Segment	Day	Month	Year	Ship Mode	City	State	Category	C
0	CA-2016-152156	Claire Gute	Consumer	8	11	2016	Second Class	Henderson	Kentucky	Furniture	Bc
1	CA-2016-152156	Claire Gute	Consumer	8	11	2016	Second Class	Henderson	Kentucky	Furniture	
2	CA-2016-138688	Darrin Van Huff	Corporate	12	6	2016	Second Class	Los Angeles	California	Office Supplies	
3	US-2015-108966	Sean O'Donnell	Consumer	11	10	2015	Standard Class	Fort Lauderdale	Florida	Furniture	
4	US-2015-108966	Sean O'Donnell	Consumer	11	10	2015	Standard Class	Fort Lauderdale	Florida	Office Supplies	

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

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9994 entries, 0 to 9993
Data columns (total 16 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Order ID       9994 non-null   object 
 1   Customer Name  9994 non-null   object 
 2   Segment        9994 non-null   object 
 3   Day            9994 non-null   int64  
 4   Month          9994 non-null   int64  
 5   Year           9994 non-null   int64  
 6   Ship Mode      9994 non-null   object 
 7   City           9994 non-null   object 
 8   State          9994 non-null   object 
 9   Category       9994 non-null   object 
 10  Sub-Category   9994 non-null   object 
 11  Product Name   9994 non-null   object 
 12  Sales          9994 non-null   float64
 13  Quantity       9994 non-null   int64  
 14  Discount       9994 non-null   float64
 15  Profit         9994 non-null   float64
dtypes: float64(3), int64(4), object(9)
memory usage: 1.2+ MB
```

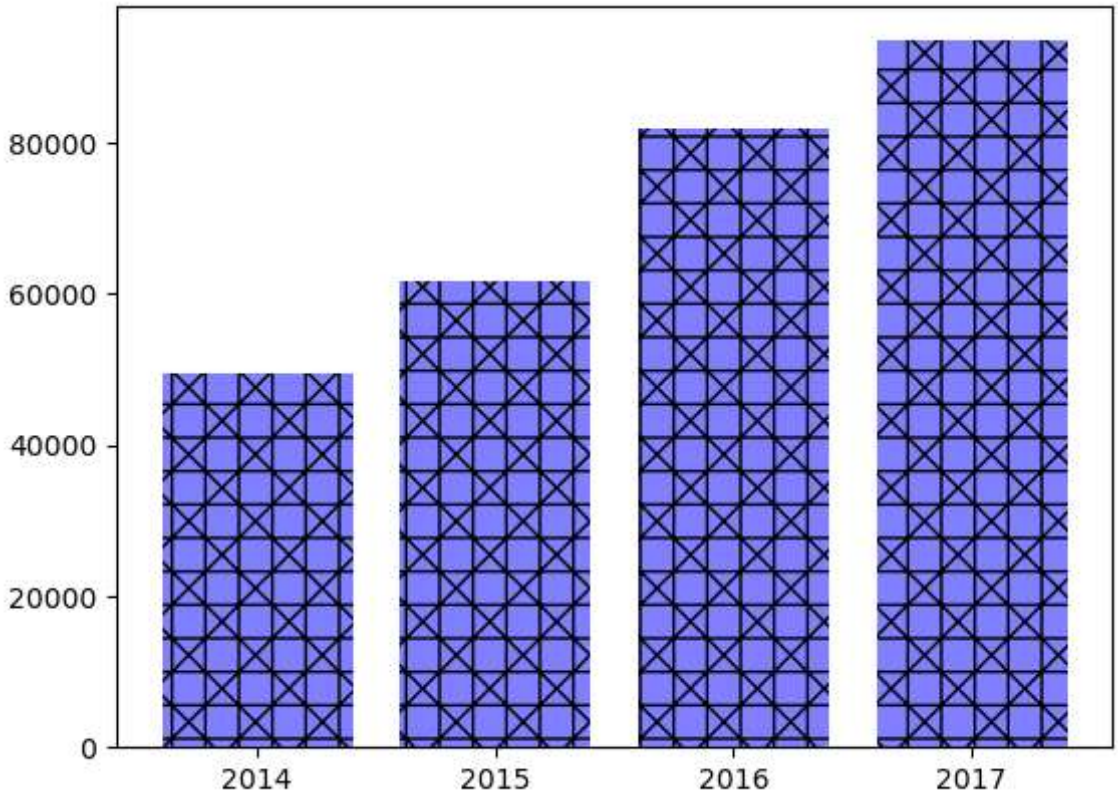
Exercise 1

จงวาดกราฟแท่งแสดงรายได้ของปี 2014 - 2017 และตกแต่งให้สวยงาม

In [36]:
```
df1 = df.groupby('Year')['Profit'].sum()
x = df1.index
y = df1
```

In [93]:
```
plt.bar(x,y,color = 'b',alpha = 0.5,hatch = '\/-|')
plt.xticks([2014,2015,2016,2017])
plt.show
```

Out[93]:
```
<function matplotlib.pyplot.show(close=None, block=None)>
```



Exercise 2

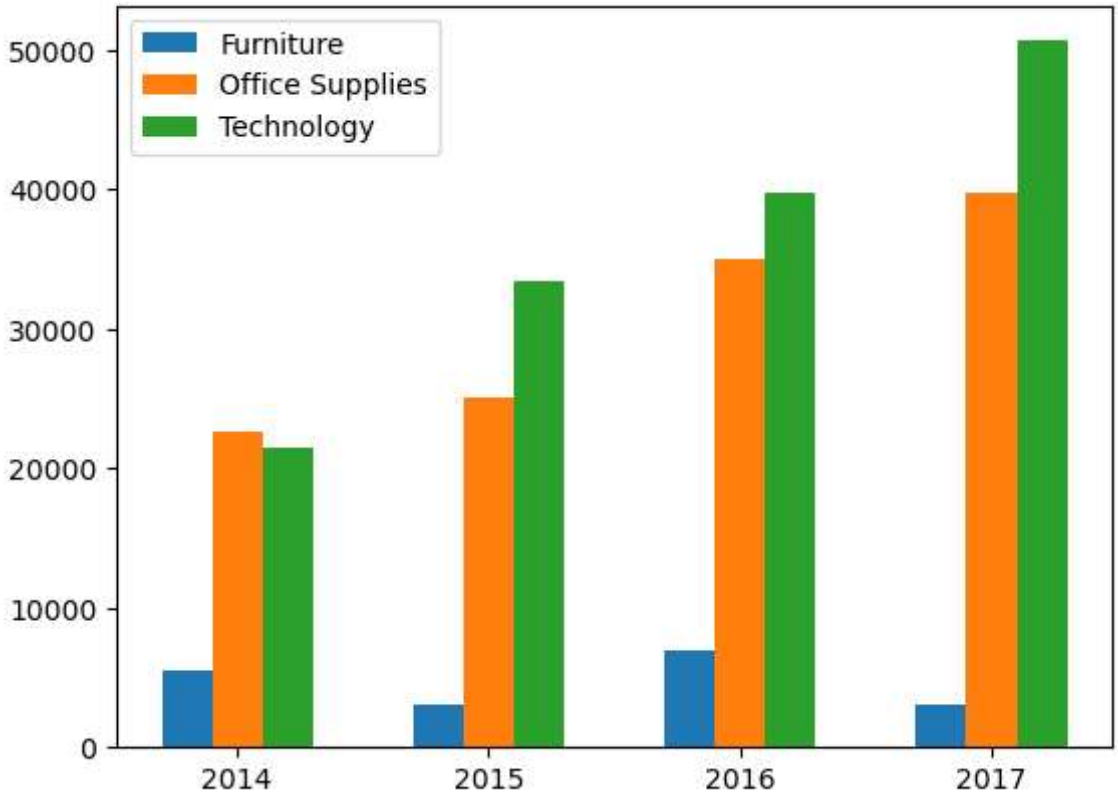
จงวาดกราฟแท่งแสดงรายได้ของปี 2014 - 2017 ในกราฟเดียวแยกตามหมวดหมู่ พร้อมตกแต่งให้สวยงาม

In [118…
```
arr_df = {}
for i in range(0,df['Category'].nunique()) :
    arr_df[df['Category'].unique()[i]] = df[ df['Category'] == df['Category'].uniqu
```

In [119…
```
x = np.array([2014, 2015, 2016, 2017])
y1 = arr_df['Furniture']
y2 = arr_df['Office Supplies']
y3 = arr_df['Technology']
```

In [120…
```
bw =0.2
plt.bar(x-bw,y1,width=bw,label='Furniture')
plt.bar(x,y2,width=bw,label='Office Supplies')
plt.bar(x+bw,y3,width=bw,label='Technology')

plt.yticks(np.arange(0,60000,10000))
plt.xticks(x,[2014,2015,2016,2017])
plt.legend(loc ='best')
plt.show()
```



Exercise 3

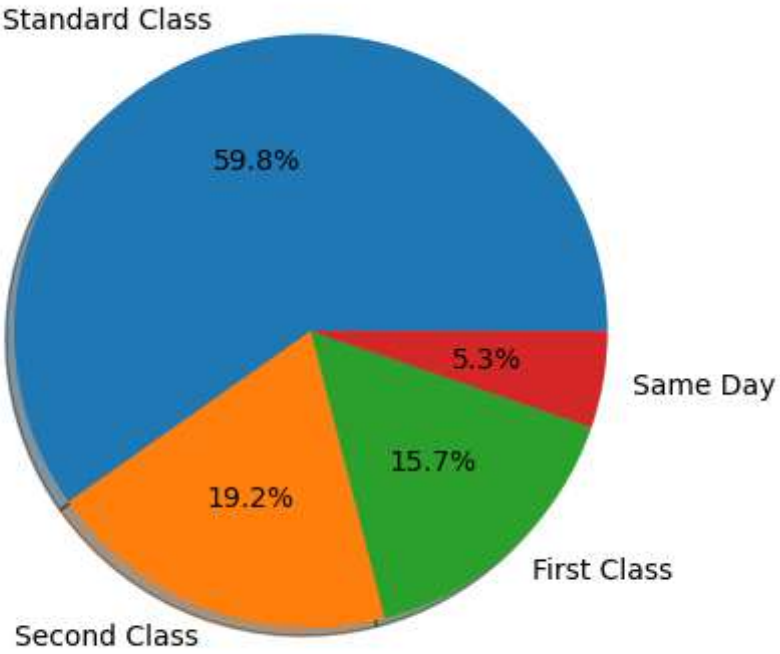
จงวาดกราฟวงกลม แสดงเปอร์เซ็นต์การขนส่งแต่ละแบบ (Ship Mode) พร้อมตกแต่งให้สวยงาม

In [100…
```
df.groupby('Order ID')['Ship Mode'].unique().value_counts()
```

Out[100]:
```
Ship Mode
[Standard Class]    2994
[Second Class]       964
[First Class]        787
[Same Day]           264
Name: count, dtype: int64
```

In [101…
```
data = df.groupby('Order ID')['Ship Mode'].unique().value_counts()
lb = ['Standard Class', 'Second Class', 'First Class', 'Same Day']
```

In [102…
```
plt.pie(ship_counts, labels=ship_modes,shadow = True, autopct = "%.1f%%")
plt.show()
```



Exercise 4

จงวาดกราฟความถี่ แสดงจำนวนการขนส่งแต่ละแบบ (Ship Mode) พร้อมตกแต่งให้สวยงาม

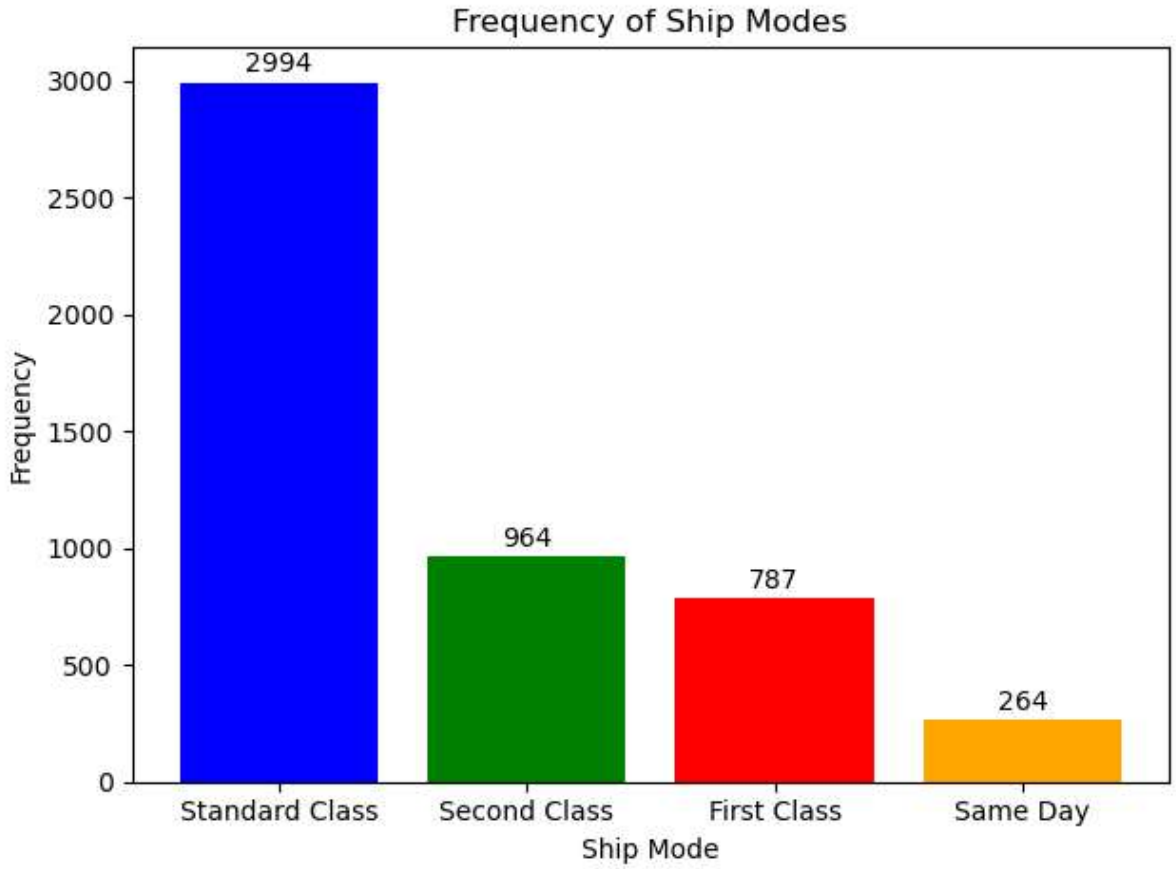
In [113…

```
plt.bar(ship_modes, ship_counts, color=['b', 'g', 'red', 'orange'])

plt.title('Frequency of Ship Modes')
plt.xlabel('Ship Mode')
plt.ylabel('Frequency')

for i, count in enumerate(ship_counts):
    plt.text(i, count + 20, str(count), ha='center', va='bottom')

plt.tight_layout()
plt.show()
```



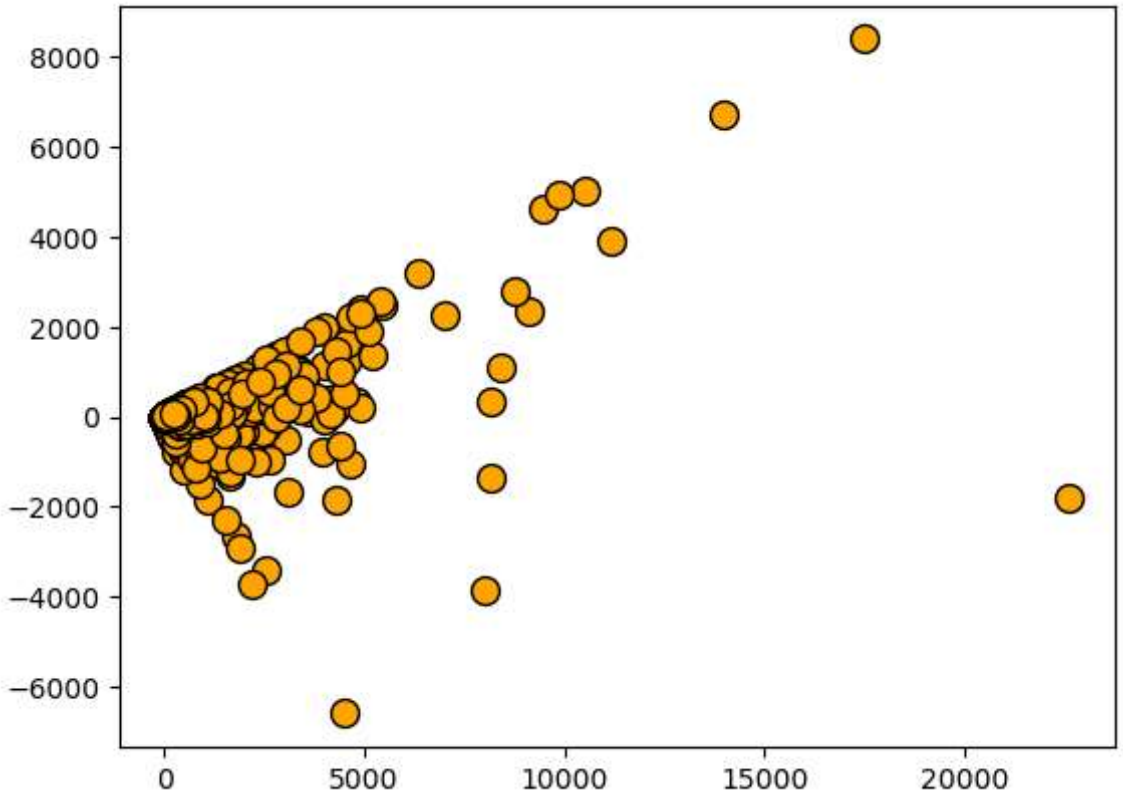
Exercise 5

จงวาดกราฟจุด(Scatter) แสดงราคาขายกับกำไรที่ได้ (Sales , Profit) พร้อมตกแต่งให้สวยงาม

In [114…
```
x = df['Sales']
y = df['Profit']

plt.scatter(x,y,marker = 'o',c = 'orange',s = 100,ec = 'k',lw = 1)
plt.show
```

Out[114]:
```
<function matplotlib.pyplot.show(close=None, block=None)>
```



In [ ]: