Data Visualization with Matplotlib - Exercises 2

จงทำตามคำสั่งต่อไปนี้ด้วย data ที่กำหนดให้ต่อไปนี้

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

อ่านไฟล์ Superstore.csv

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

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

Out[ ]:

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

In [ ]:
```
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
```

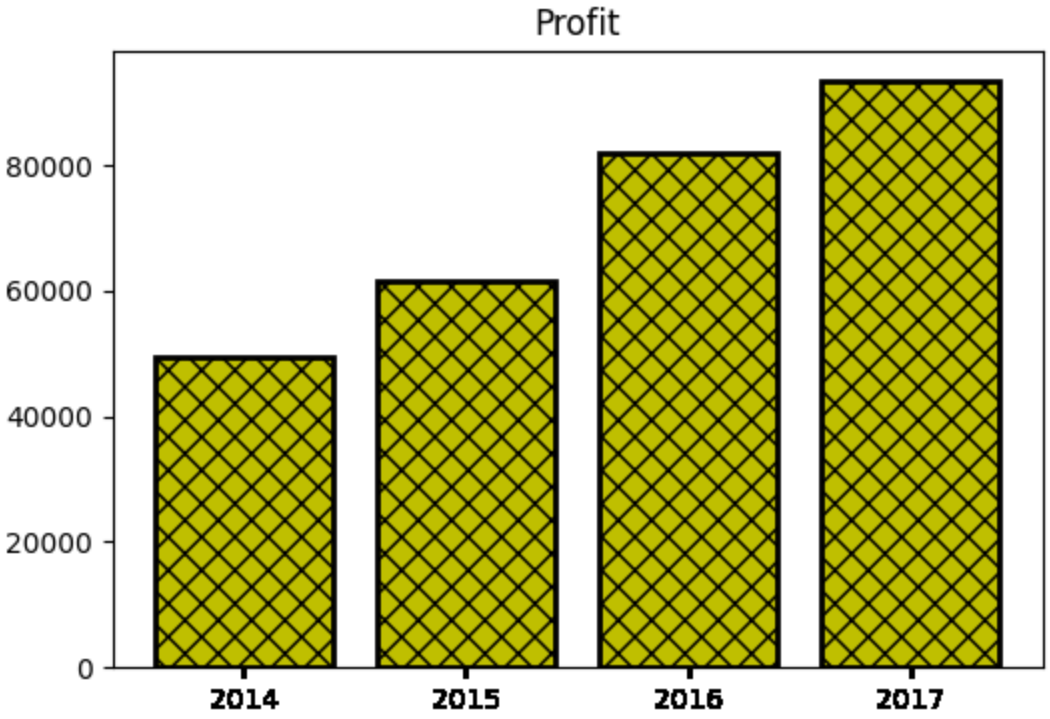
Exercise 1

จงวาดกราฟแท่งแสดงรายได้ของปี 2014 - 2017 และตกแต่งให้สวยงาม

In [ ]:
```
df1 = df.groupby('Year')['Profit'].sum()
a = df1.index
b = df1
```

In [ ]:
```
plt.figure(figsize = [6,4])
plt.bar(a, b,color = 'y',hatch = 'xx',lw = 2,ec = 'k')
plt.xticks(df['Year'])
plt.title('Profit')
```

Out[ ]:
```
Text(0.5, 1.0, 'Profit')
```



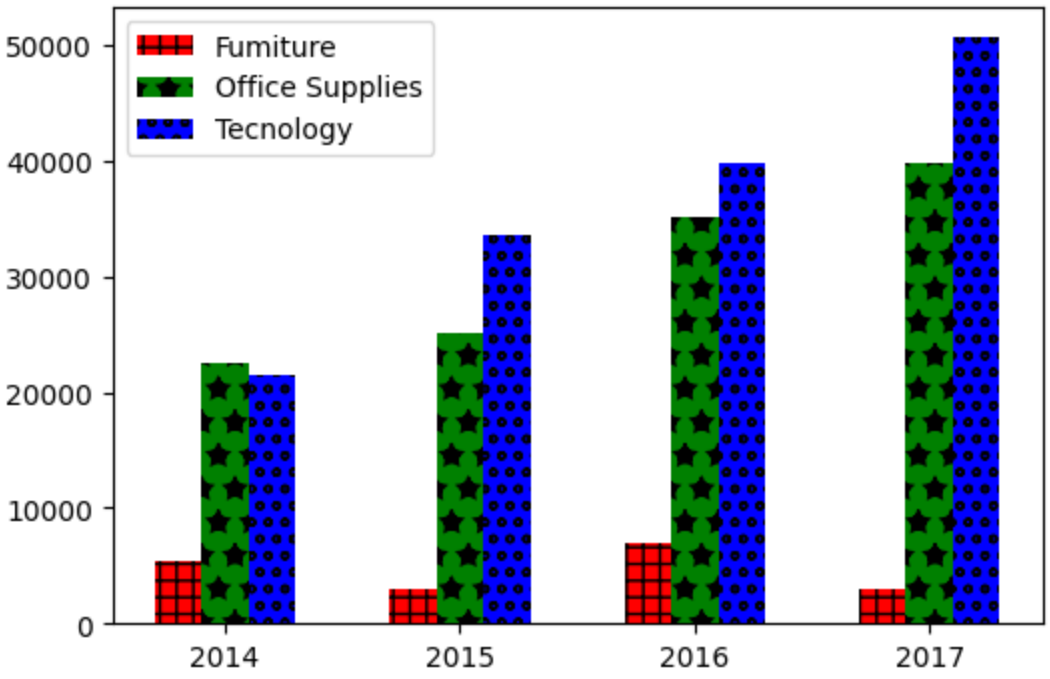
Exercise 2

จงวาดกราฟแท่งแสดงรายได้ของปี 2014 - 2017 ในกราฟเดียวแยกตามหมวดหมู่ พร้อมตกแต่งให้สวยงาม

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

In [ ]:
```
x = arr_df['Furniture'].index
g = arr_df['Furniture']
y = arr_df['Office Supplies']
z = arr_df['Technology']
```

In [ ]:
```
plt.figure(figsize = [6,4])
bw = 0.2
plt.bar(x, g, color = 'r', label = 'Fumiture',width = 0.2, hatch = '++')
plt.bar(x+0.2, y, color = 'g', label = 'Office Supplies',width = 0.2, hatch = 'o*')
plt.bar(x+0.2*2, z, color = 'b', label = 'Tecnology',width = 0.2, hatch = 'oo')
plt.xticks(x+bw,[2014, 2015, 2016, 2017])
plt.legend(loc = 'best')
plt.show()
```



Exercise 3

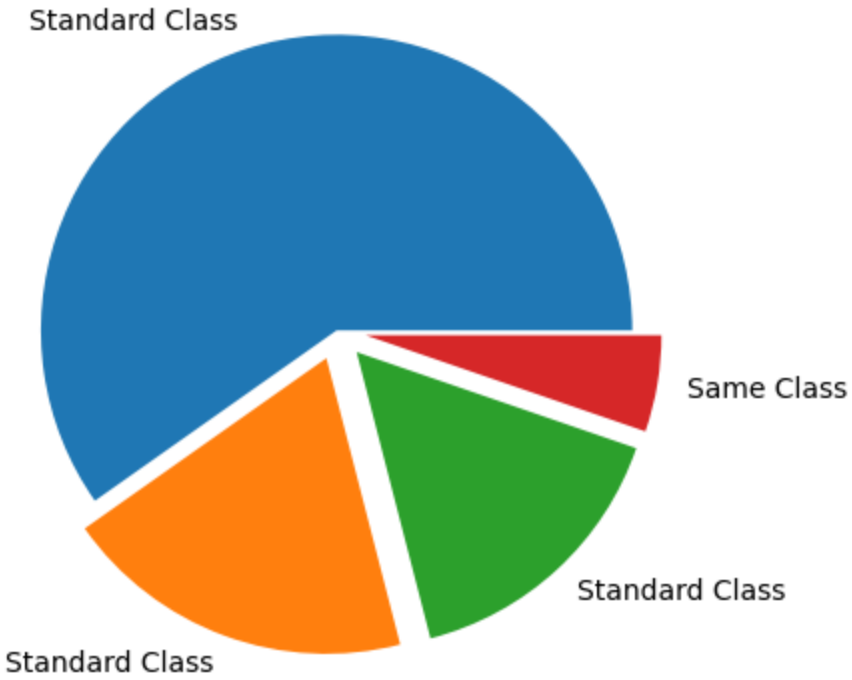
จงวาดกราฟวงกลม แสดงเปอร์เซ็นต์การขนส่งแต่ละแบบ (Ship Mode) พร้อมตกแต่งให้สวยงาม

In [ ]:
```
df['Ship Mode'].unique()
```

Out[ ]:
```
array(['Second Class', 'Standard Class', 'First Class', 'Same Day'],
      dtype=object)
```

In [ ]:
```
dataShipMode =df.groupby('Order ID')['Ship Mode'].unique().value_counts()
dataShipModeLabel = ['Standard Class','Standard Class','Standard Class','Same Class
```

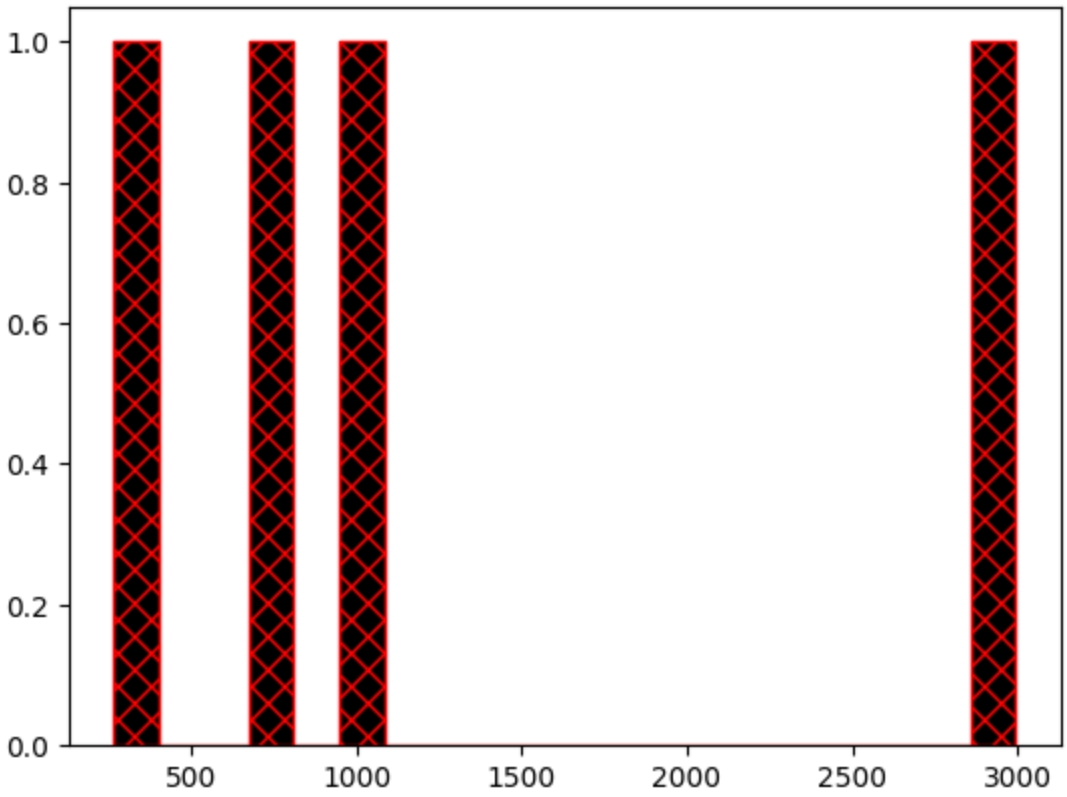
In [ ]:
```
plt.pie(dataShipMode,labels=dataShipModeLabel,explode=[0,0.1,0.1,0.1])
plt.show()
```



Exercise 4

จงวาดกราฟความถี่ แสดงจำนวนการขนส่งแต่ละแบบ (Ship Mode) พร้อมตกแต่งให้สวยงาม

In [ ]:
```
plt.hist(dataShipMode,bins=20,ec='k', color = 'k',hatch = 'xx', edgecolor='r')
plt.show()
```

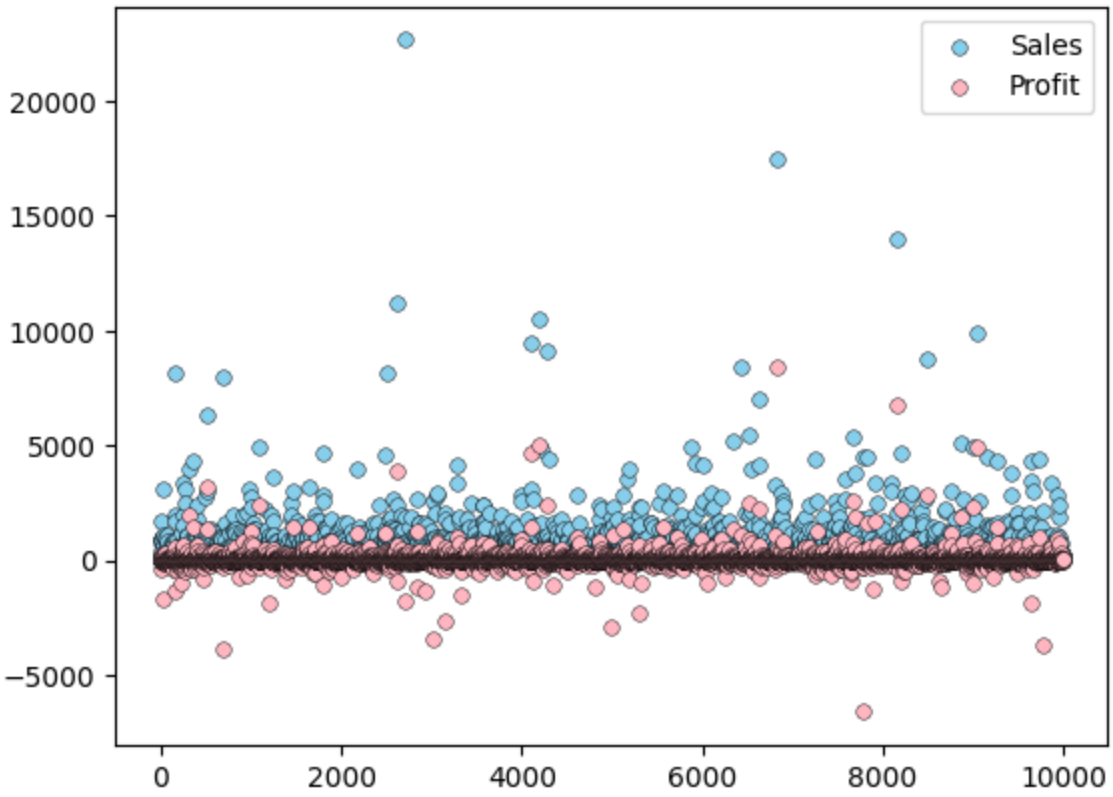


Exercise 5

จงวาดกราฟจุด(Scatter) แสดงราคาขายกับกำไรที่ได้ (Sales , Profit) พร้อมตกแต่งให้สวยงาม

In [ ]:
```
sales = df.Sales
profit = df.Profit
```

In [ ]:
```
plt.scatter(x = sales.index,y=sales,marker = 'o',c = 'skyblue',s = 30,ec = 'k',lw =
plt.scatter(x = profit.index,y=profit,marker = 'o',c = 'lightpink',s = 30,ec = 'k',
plt.legend(loc = 'best')
plt.show()
```


Sales
Profit
20000
15000
10000
5000
0
−5000
0
2000
4000
6000
8000
10000