# Data Visualization with Matplotlib - Exercises 2

จงทำตามคำสั่งต่อไปนี้ด้วย data ที่กำหนดให้ต่อไปนี้

In [5]:
```
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
```

## อ่านไฟล์ Superstore.csv

In [6]:
```
df = pd.read_csv("Superstore.csv", encoding = "windows-1254")
```

In [7]:
```
df.head()
```

Out[7]:

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

In [8]:
```
1 df.info()
```

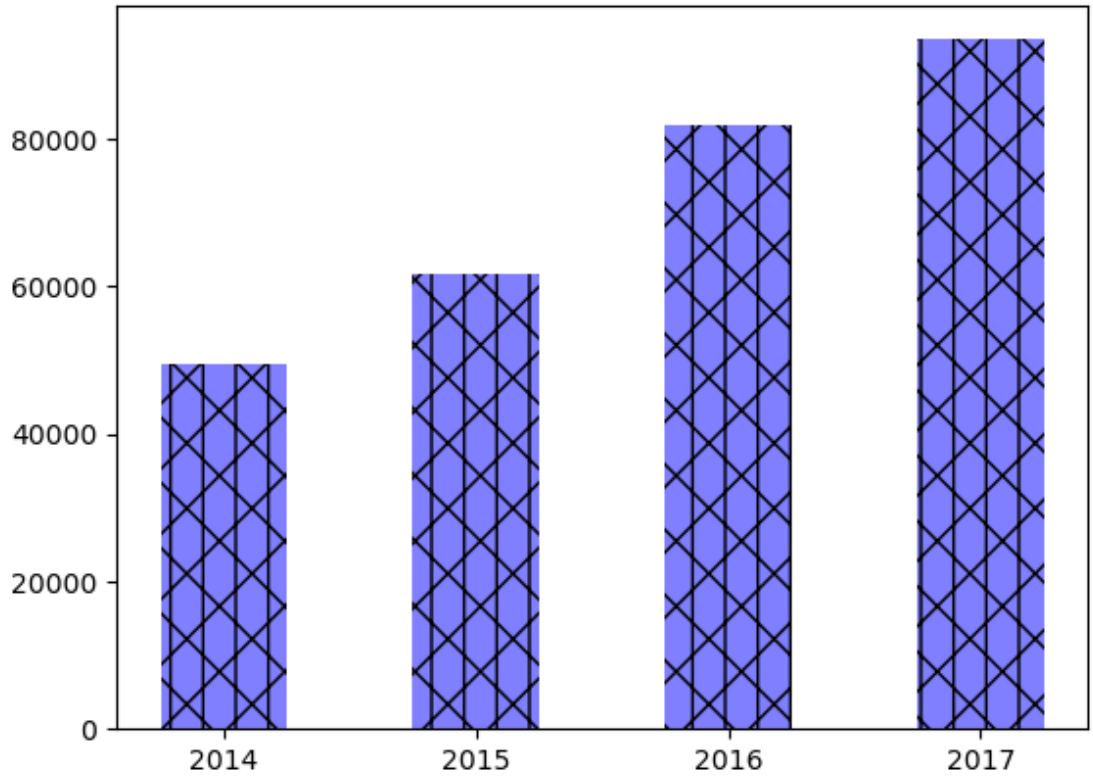
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9994 entries, 0 to 9993
Data columns (total 16 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Order ID       9994 non-null   object
 1   Customer Name  9994 non-null   object
 2   Segment        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 [159]:
```
df1 = df.groupby('Year')['Profit'].sum()
plt.xticks(df1.index, [2014, 2015, 2016, 2017])
plt.bar(df1.index, df1, color = "b", alpha = .5, hatch = "\|/", width = .5)
```

Out[159]: <BarContainer object of 4 artists>




## Exercise 2

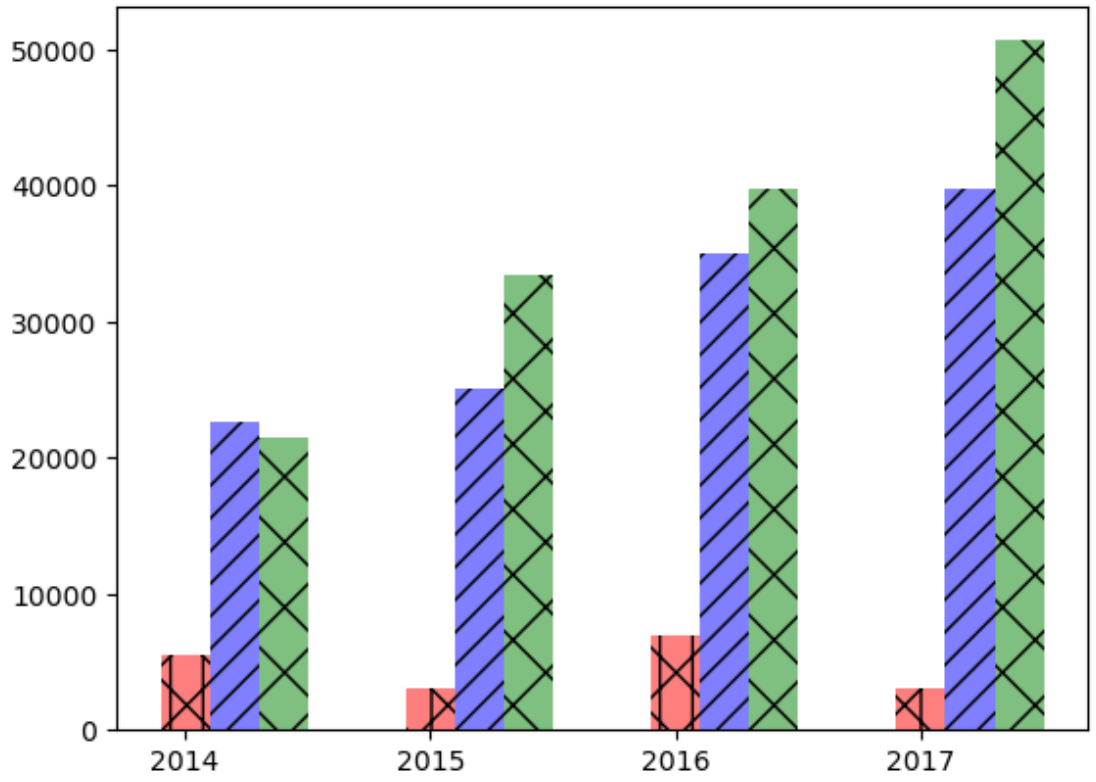
จงวาดกราฟแท่งแสดงรายได้ของปี 2014 - 2017 ในกราฟเดียวแยกตามหมวดหมู่ พร้อมตกแต่งให้สวยงาม

In [50]:
```
arr_df = {}
for i in range(0,df['Category'].nunique()) :
    arr_df[df['Category'].unique()[i]] = df[ df['Category'] == df['Category'].

a = arr_df["Furniture"]
b = arr_df["Office Supplies"]
c = arr_df["Technology"]

bw = .2
plt.xticks(df1.index, [2014, 2015, 2016, 2017])
plt.bar(a.index, a, color = "r", alpha = .5, hatch = "\|/", width = .2)
plt.bar(b.index + bw, b, color = "b", alpha = .5, hatch = "//", width = .2)
plt.bar(c.index + bw*2, c, color = "g", alpha = .5, hatch = "x", width = .2)
```

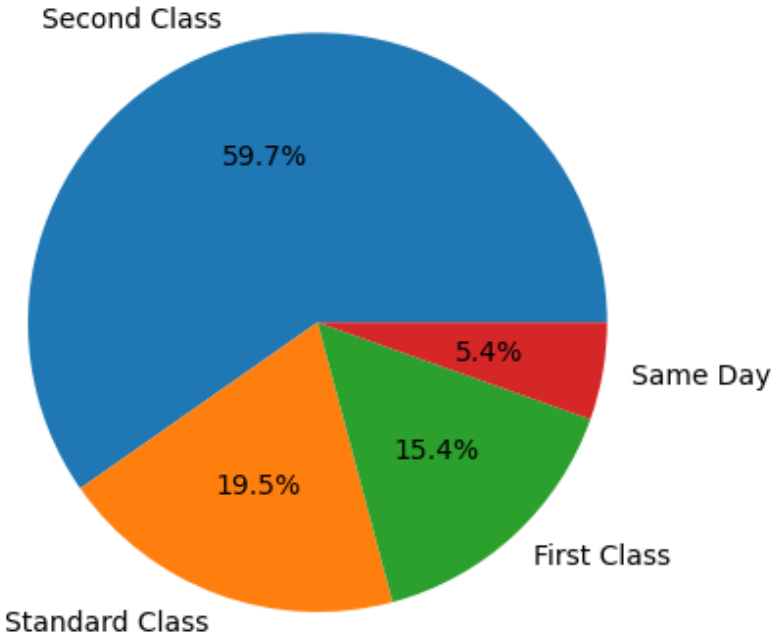
Out[50]: <BarContainer object of 4 artists>




# Exercise 3

จงวาดกราฟวงกลม แสดงเปอร์เซ็นต์การขนส่งแต่ละแบบ ( Ship Mode ) พร้อมตกแต่งให้สวยงาม

In [67]:
```
lb = df['Ship Mode'].unique()
data = df['Ship Mode'].value_counts()
plt.pie(data, labels=lb, autopct="%.1f%%")
plt.show()
```

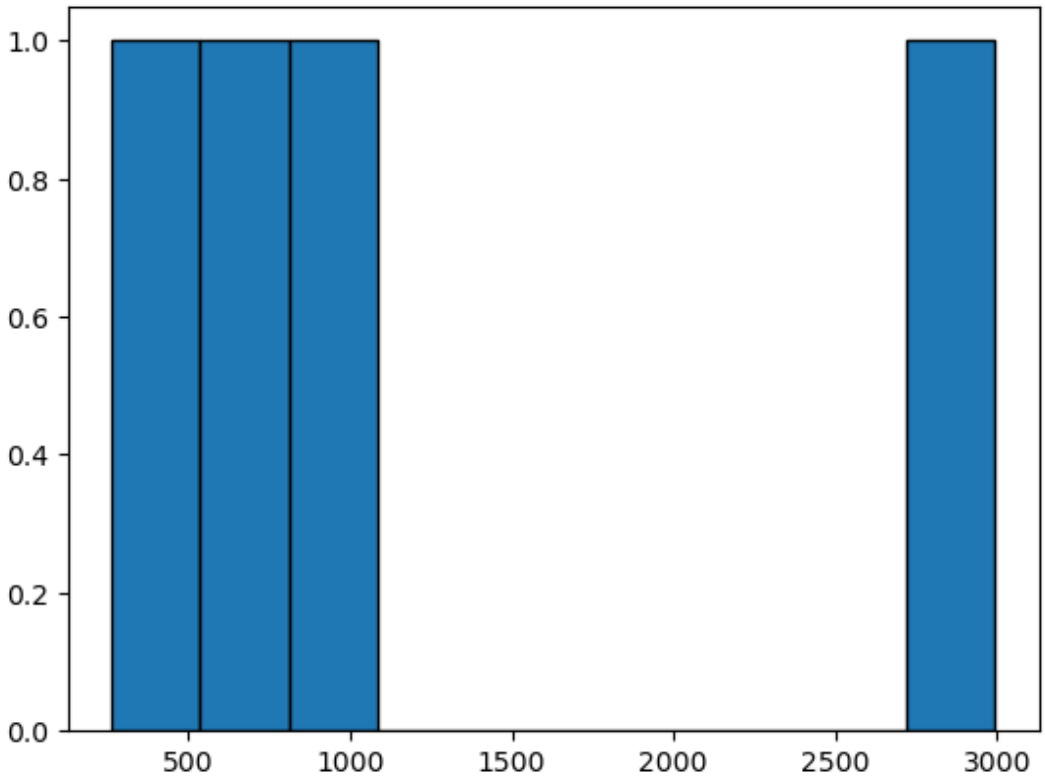



## Exercise 4

จงวาดกราฟความถี่ แสดงจำนวนการขนส่งแต่ละแบบ ( Ship Mode ) พร้อมตกแต่งให้สวยงาม

In [171]:
```
1 plt.hist(df.groupby('Order ID')['Ship Mode'].unique().value_counts(), ec = "k"
```

Out[171]:
```
(array([1., 1., 1., 0., 0., 0., 0., 0., 0., 1.]),
 array([ 264.,  537.,  810., 1083., 1356., 1629., 1902., 2175., 2448.,
        2721., 2994.]),
 <BarContainer object of 10 artists>)
```

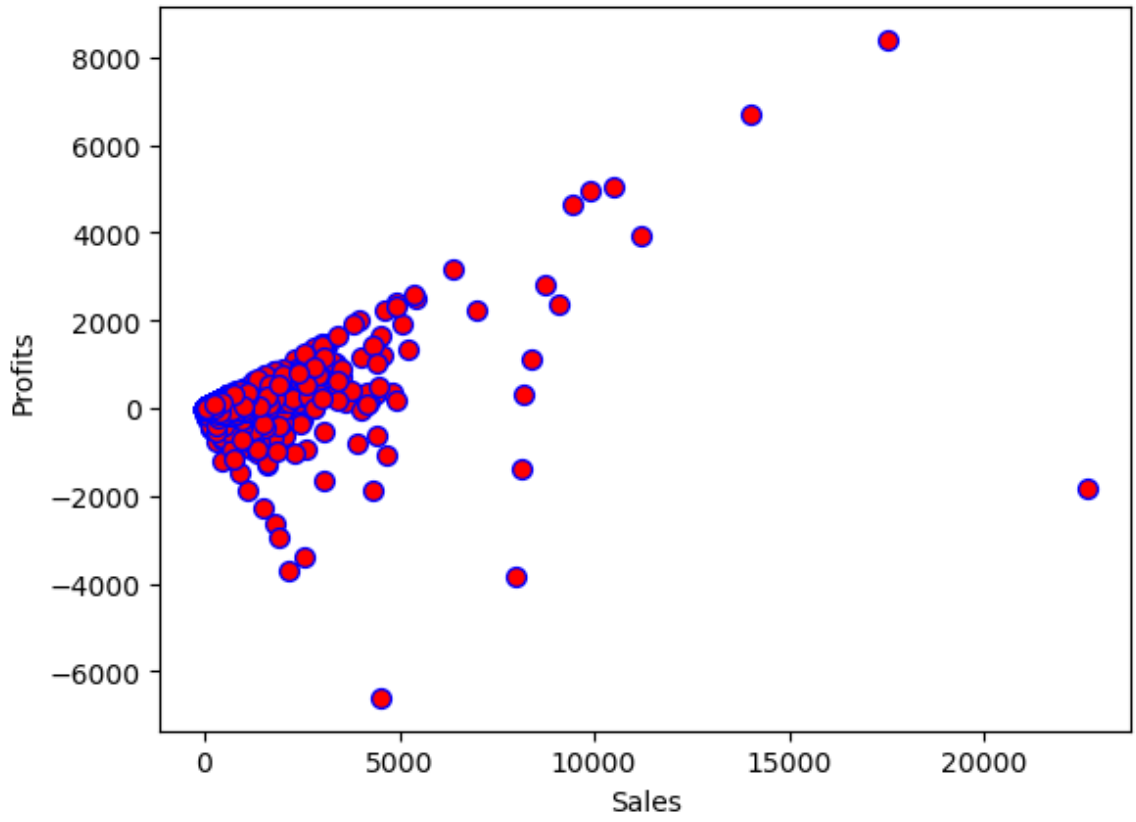



# Exercise 5

จงวาดกราฟจุด(Scatter) แสดงราคาขายกับกำไรที่ได้ (Sales , Profit) พร้อมตกแต่งให้สวยงาม

In [144]:
```
x = df['Sales']
y = df['Profit']
plt.xlabel("Sales")
plt.ylabel("Profits")
plt.scatter(x, y, marker = 'o', c = 'r', s = 50, ec = 'b', lw = 1)
```

Out[144]: <matplotlib.collections.PathCollection at 0x22385875f10>




In [ ]:
```
1
```