

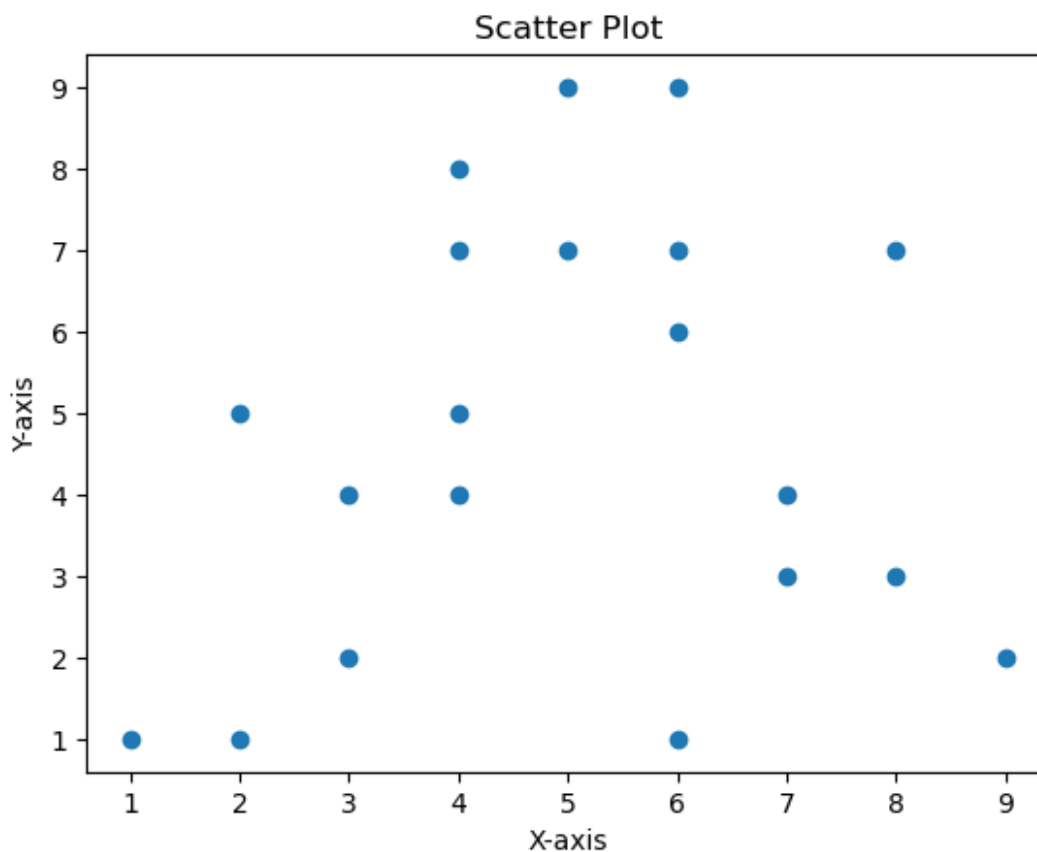
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

Scatter Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y)
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

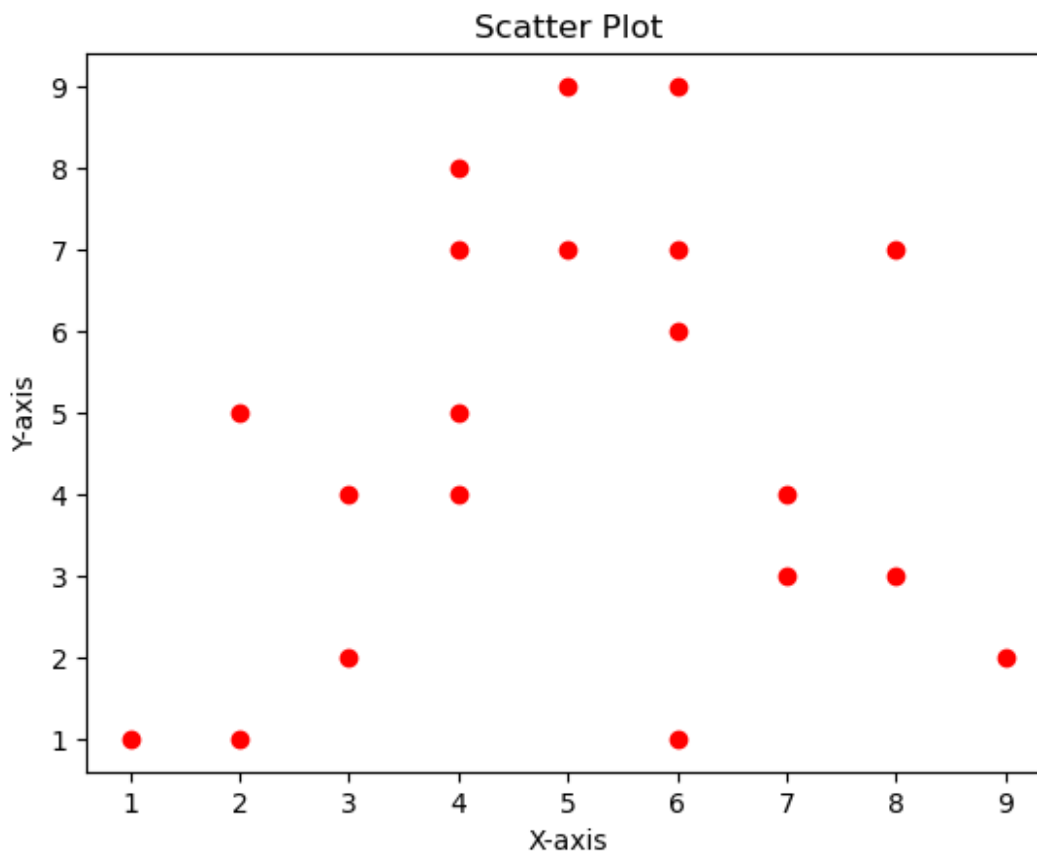


Change The Color

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]  
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y, color='red')  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

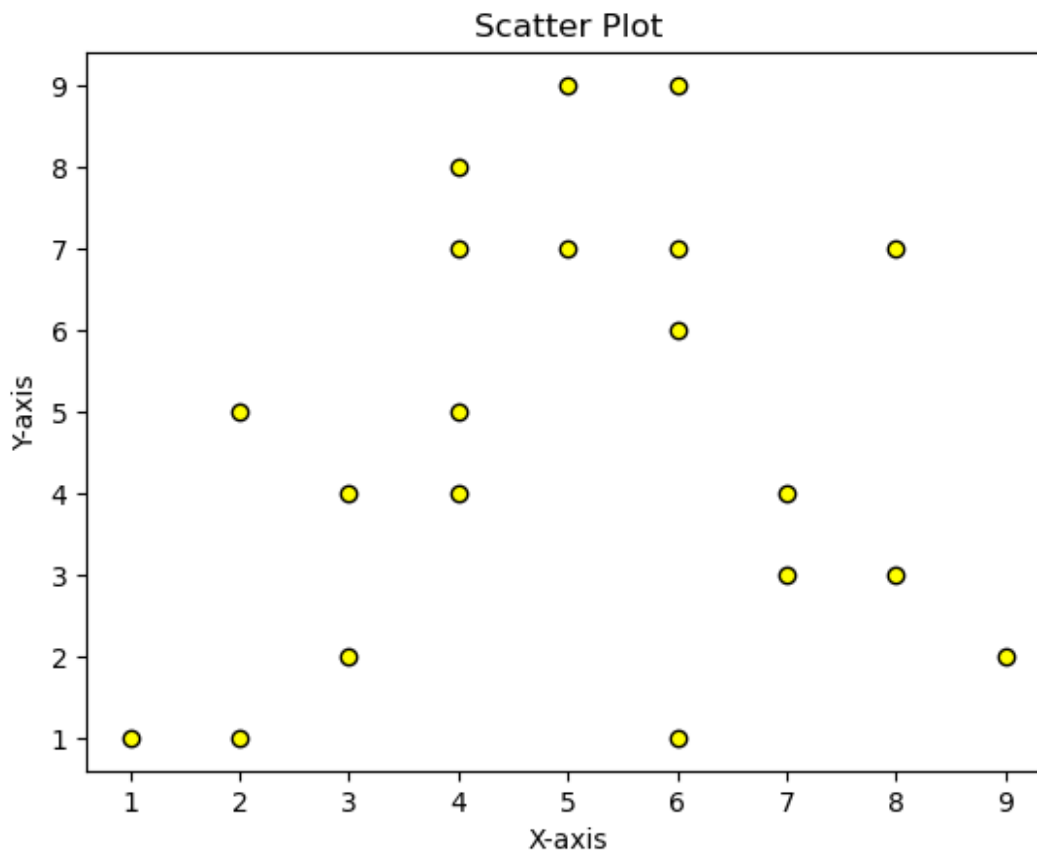


Add Edges To The Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]  
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y, edgecolors='black', color="yellow")  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

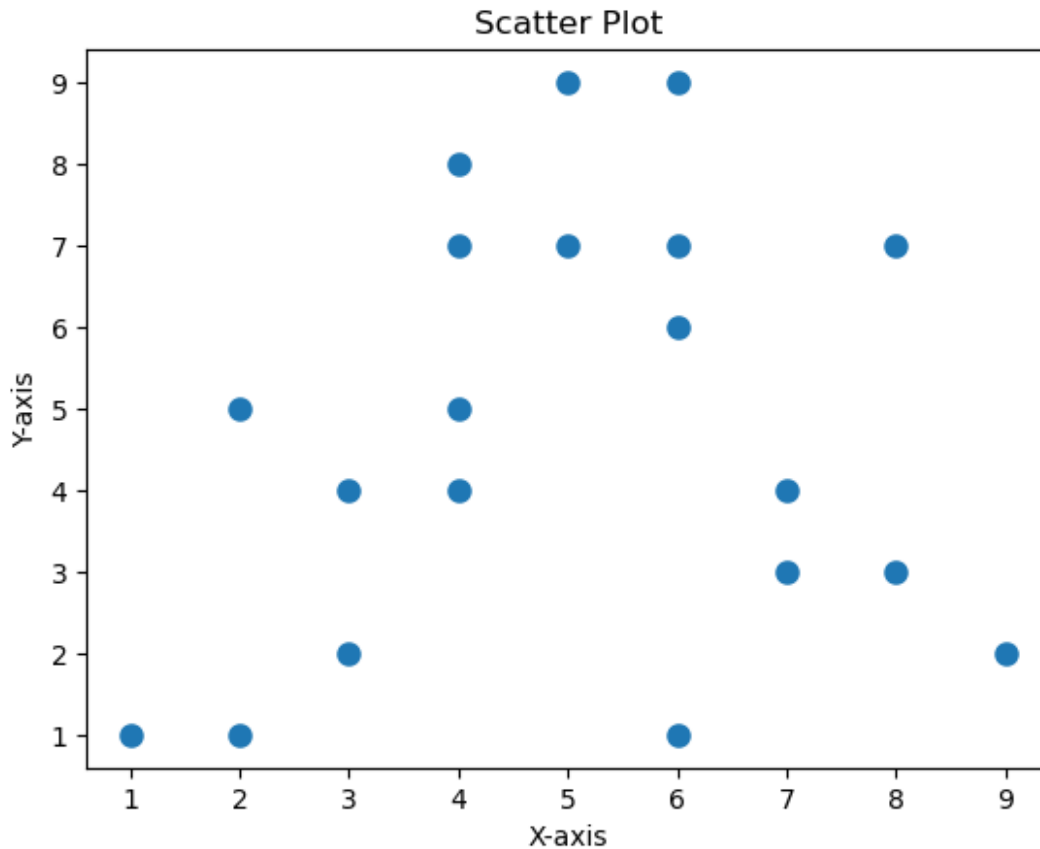


Change The Linewidth Of The Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]  
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y, linewidth=3)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

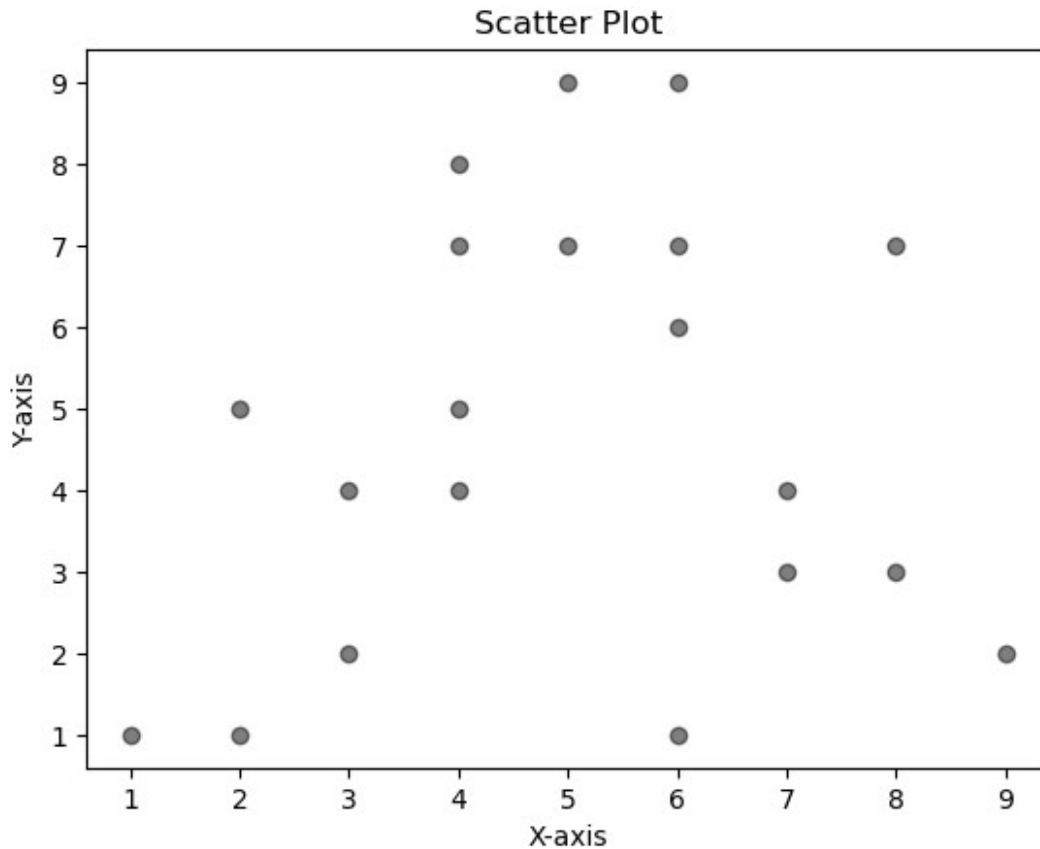


Change The Transparent Of The Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]  
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y, color='black', alpha=0.5)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```



Change The Size Of The Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
# s: refers to the size of the plots
```

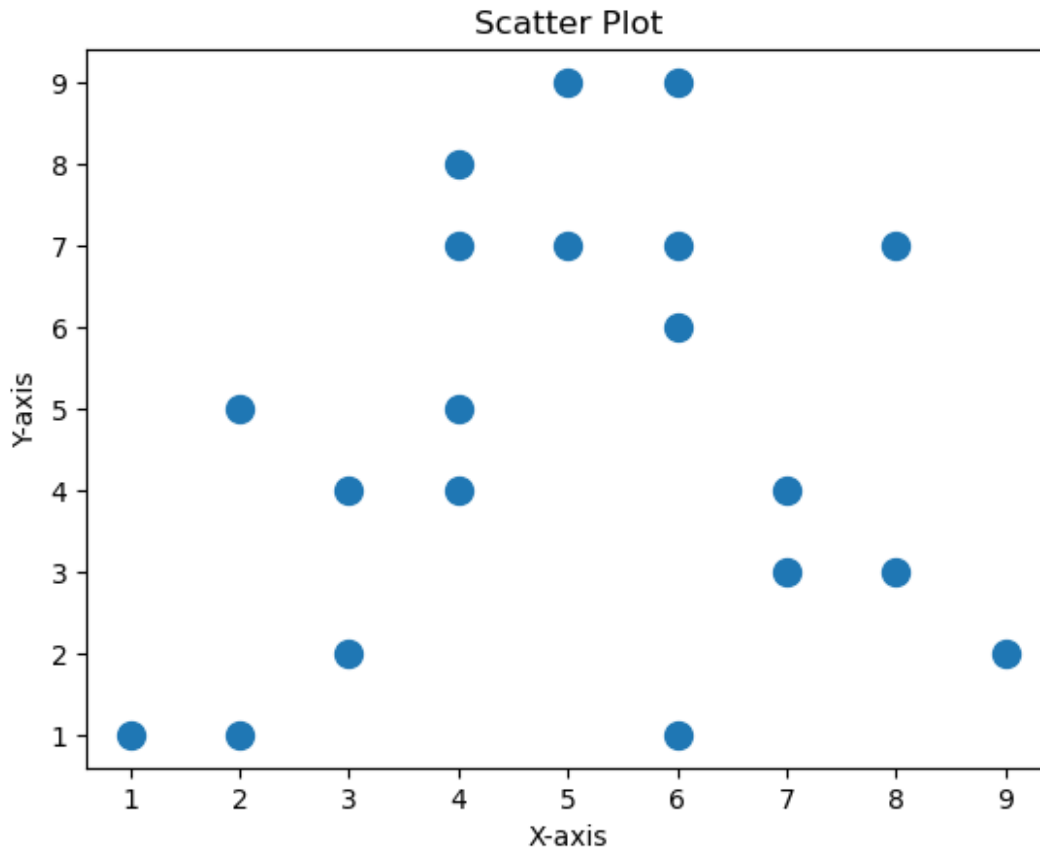
```
plt.scatter(x, y, s = 100)
```

```
plt.xlabel('X-axis')
```

```
plt.ylabel('Y-axis')
```

```
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

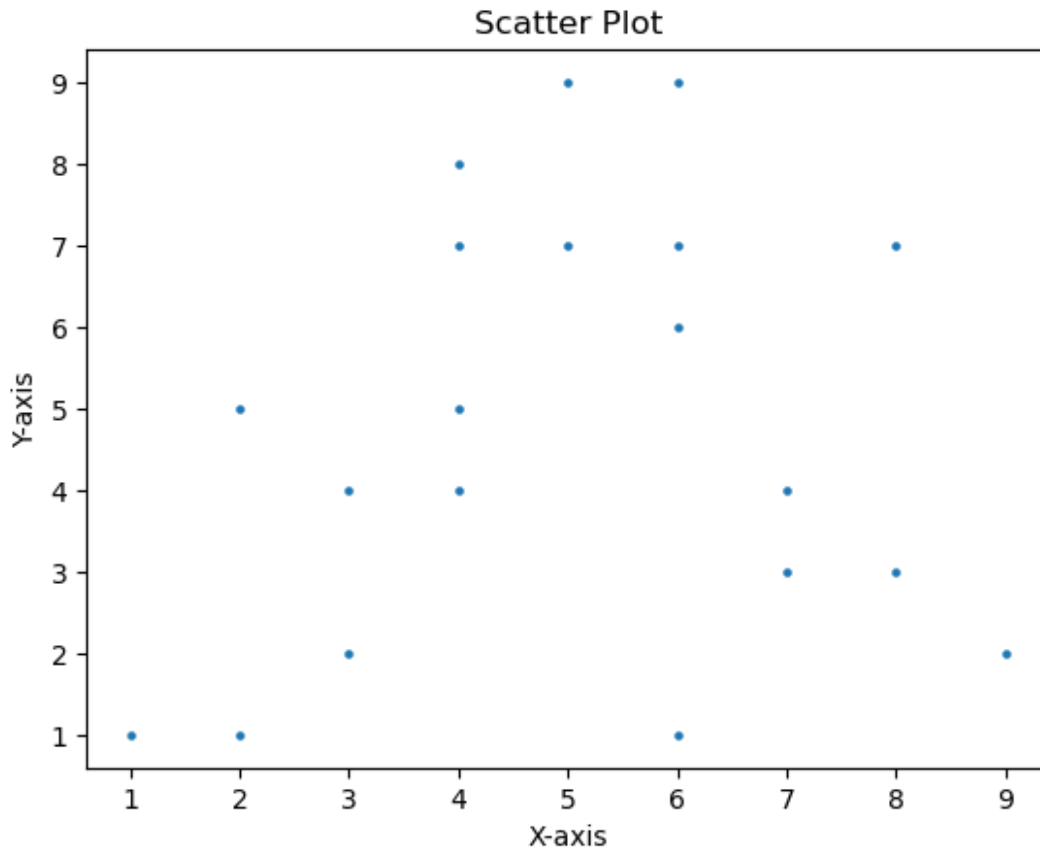


Change The Size Of The Plots

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]  
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]
```

```
plt.scatter(x, y, s=5)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```



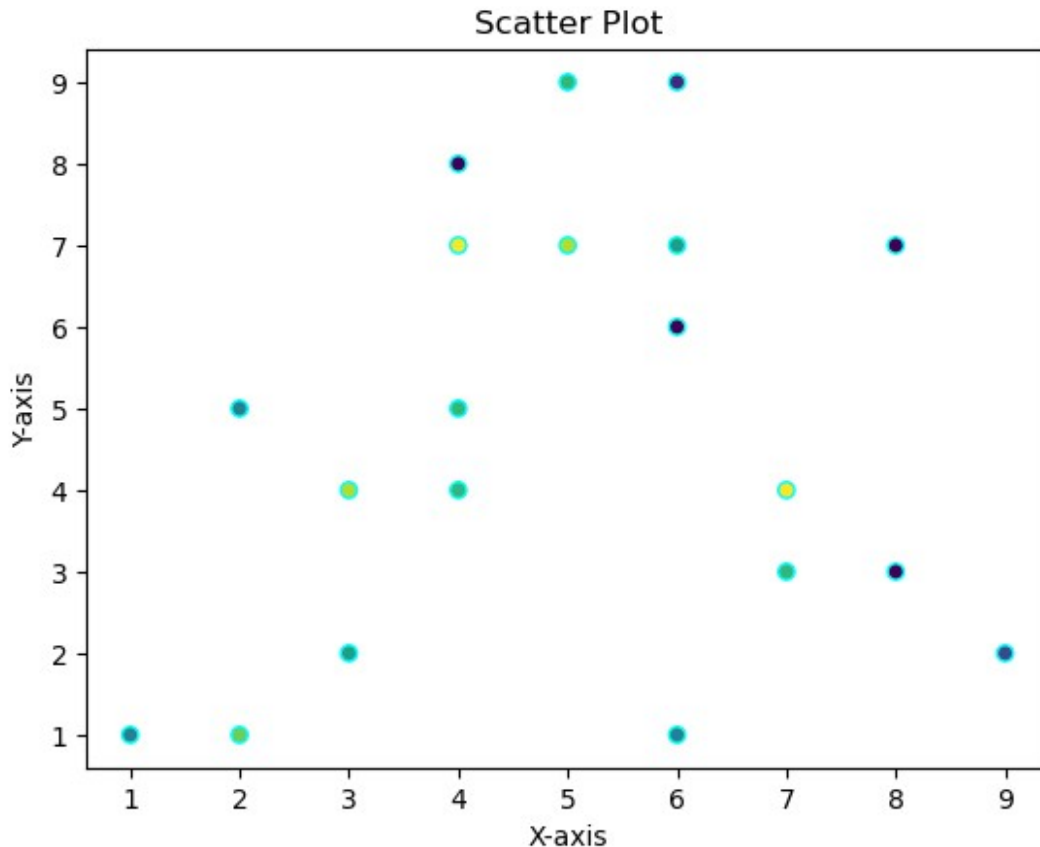
Change The Colors Of The Plots Based On Other Data

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]

colors = [9, 10, 1, 7, 5, 7, 3, 5, 6, 7, 1, 10, 8, 1, 9, 2, 1, 6, 7, 5]
```

```
# c: refers to the colors
# change the colors of plots that based on the data exists on colors list
plt.scatter(x, y, c=colors, edgecolors='cyan')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```



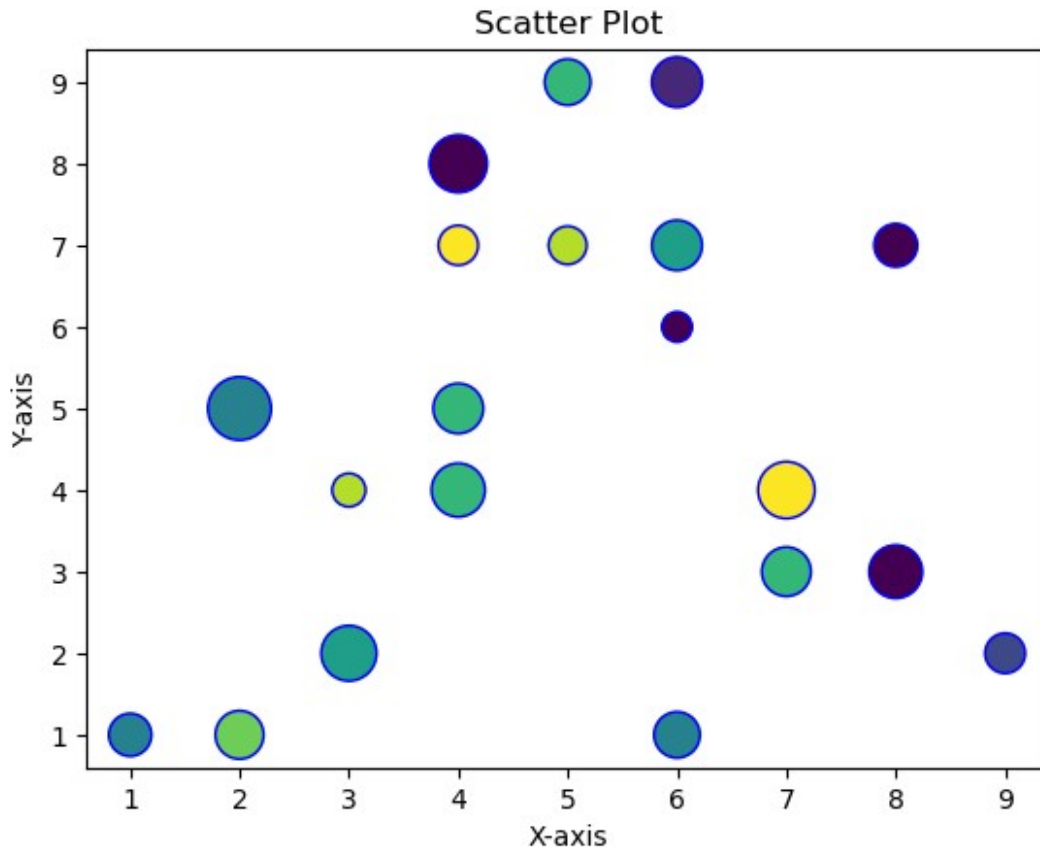
Change The Size Of Plots Based On Other Data

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]

colors = [9, 10, 1, 7, 5, 7, 3, 5, 6, 7, 1, 10, 8, 1, 9, 2, 1, 6, 7, 5]
sizes = [200, 443, 390, 291, 291, 333, 222, 551, 422, 394, 458, 217, 321, 126, 154, 349, 257, 347, 345, 251]
```

```
# s: refers to the size of the plots
plt.scatter(x, y, c=colors, edgecolors='blue', s=sizes)
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```

Change The Colors Of Plots

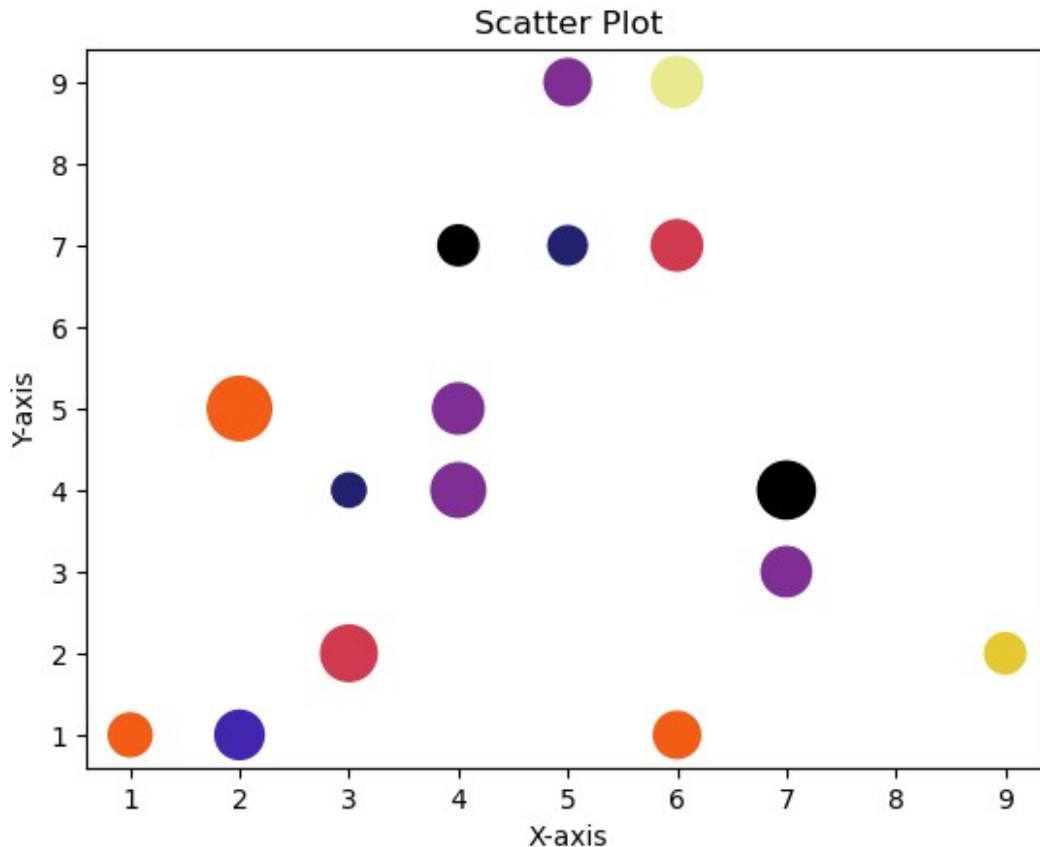
- cmap: refers to "color Map"
- the colors that can be used: Accent_r Blues_r BrBG_r BuGn_r BuPu_r CMRmap_r Dark2_r GnBu_r Greens_r Greys_r OrRd_r gist_earth_r Oranges_r binary_r

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]

colors = [9, 10, 1, 7, 5, 7, 3, 5, 6, 7, 1, 10, 8, 1, 9, 2, 1, 6, 7, 5]
sizes = [200, 443, 390, 291, 291, 333, 222, 551, 422, 394, 458, 217, 321, 126, 154, 349, 257, 347, 345, 251]
```

```
# change the color of the plots
plt.scatter(x, y, c=colors, s=sizes, cmap='CMRmap_r')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```



Write Labels That Identify Name For Each Color

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]

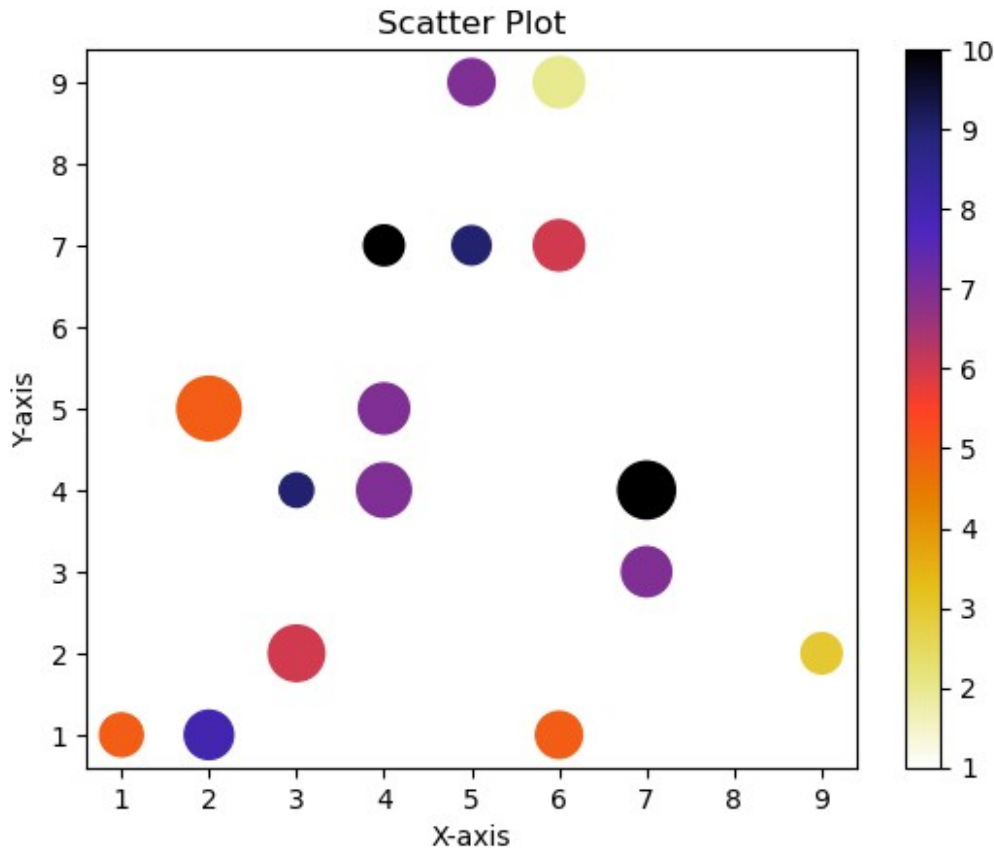
colors = [9, 10, 1, 7, 5, 7, 3, 5, 6, 7, 1, 10, 8, 1, 9, 2, 1, 6, 7, 5]
sizes = [200, 443, 390, 291, 291, 333, 222, 551, 422, 394, 458, 217, 321, 126, 154, 349, 257, 347, 345, 251]

# change the color of the plots
plt.scatter(x, y, c=colors, s=sizes, cmap='CMRmap_r')

# show the color bar
plt.colorbar()

plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")

Text(0.5, 1.0, 'Scatter Plot')
```



Title The Color Bar

```
x = [5, 7, 8, 5, 6, 7, 9, 2, 3, 4, 4, 4, 2, 6, 3, 6, 8, 6, 4, 1]
y = [7, 4, 3, 9, 1, 3, 2, 5, 2, 4, 8, 7, 1, 6, 4, 9, 7, 7, 5, 1]

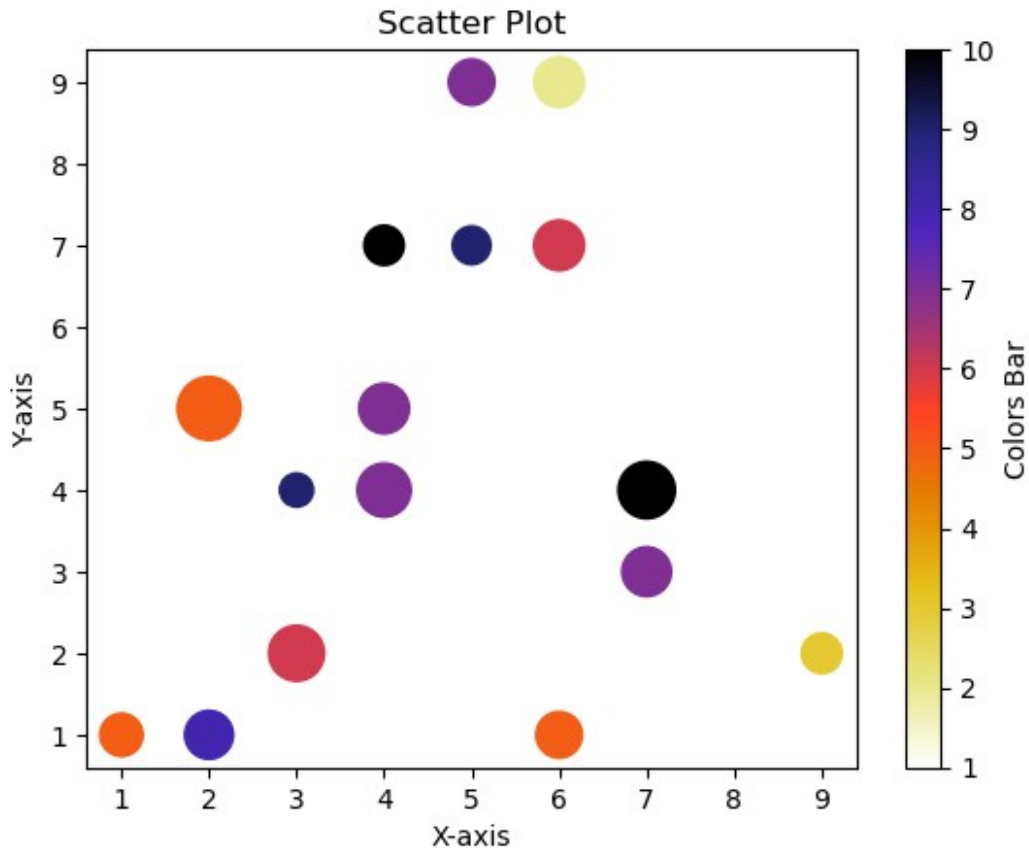
colors = [9, 10, 1, 7, 5, 7, 3, 5, 6, 7, 1, 10, 8, 1, 9, 2, 1, 6, 7, 5]
sizes = [200, 443, 390, 291, 291, 333, 222, 551, 422, 394, 458, 217, 321, 126, 154, 349, 257, 347, 345, 251]
```

```
# change the color of the plots
plt.scatter(x, y, c=colors, s=sizes, cmap='CMRmap_r')
```

```
# name the color bar
cbar = plt.colorbar()
cbar.set_label("Colors Bar")
```

```
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title("Scatter Plot")
```

```
Text(0.5, 1.0, 'Scatter Plot')
```



Make Scatter Plot To Real Data

Read The DataSet

```
data = pd.read_csv('train.csv')
data.head()
```

	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape
0	1	60	RL	65.0	8450	Pave	NaN	Reg
1	2	20	RL	80.0	9600	Pave	NaN	Reg
2	3	60	RL	68.0	11250	Pave	NaN	IR1
3	4	70	RL	60.0	9550	Pave	NaN	IR1
4	5	60	RL	84.0	14260	Pave	NaN	IR1

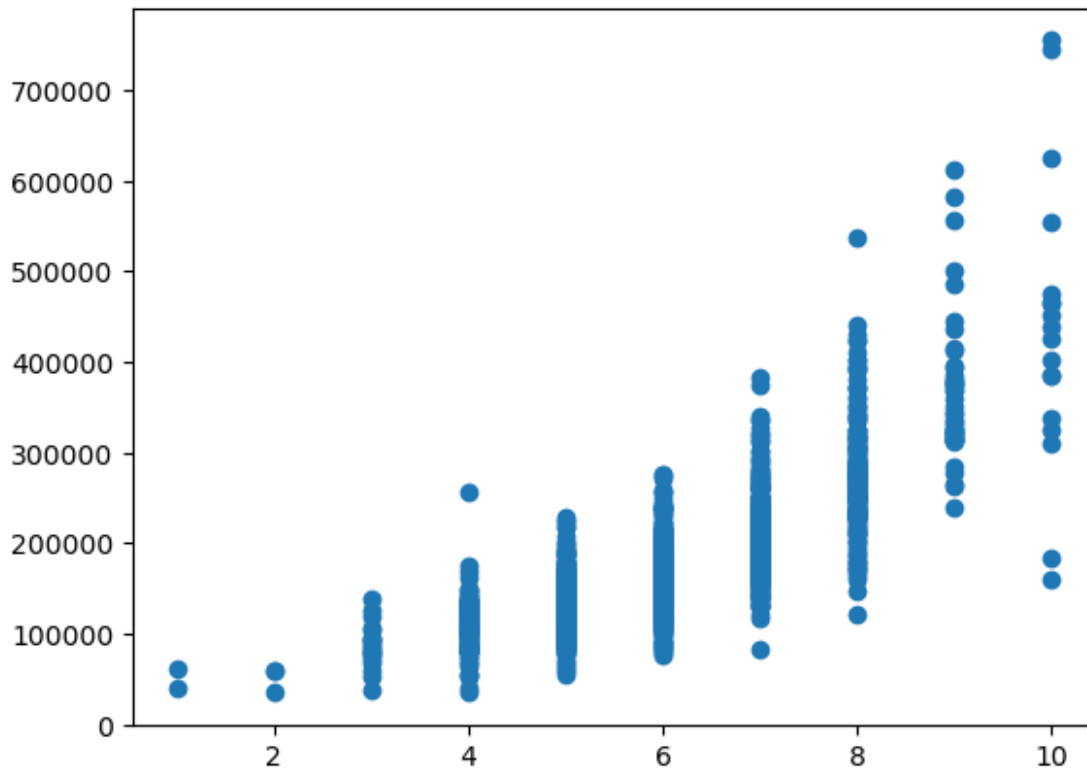
0	Lvl	AllPub	...	0	NaN	NaN	NaN	0
2								
1	Lvl	AllPub	...	0	NaN	NaN	NaN	0
5								
2	Lvl	AllPub	...	0	NaN	NaN	NaN	0
9								
3	Lvl	AllPub	...	0	NaN	NaN	NaN	0
2								
4	Lvl	AllPub	...	0	NaN	NaN	NaN	0
12								

	YrSold	SaleType	SaleCondition	SalePrice
0	2008	WD	Normal	208500
1	2007	WD	Normal	181500
2	2008	WD	Normal	223500
3	2006	WD	Abnorml	140000
4	2008	WD	Normal	250000

[5 rows x 81 columns]

Make Scatter plot To The OverallQual, and SalePrie Columns On The Dataset

```
plt.scatter(data['OverallQual'], data['SalePrice'])
<matplotlib.collections.PathCollection at 0x2254ab3e030>
```



Make Scatter Plot Between The YearBuilt, and SalePrice, Then Color Them Using Color Bar

```
plt.scatter(data['YearBuilt'], data['SalePrice'],  
c=data['OverallQual'], cmap='gray_r')  
cbar = plt.colorbar()  
cbar.set_label("Quality")
```

