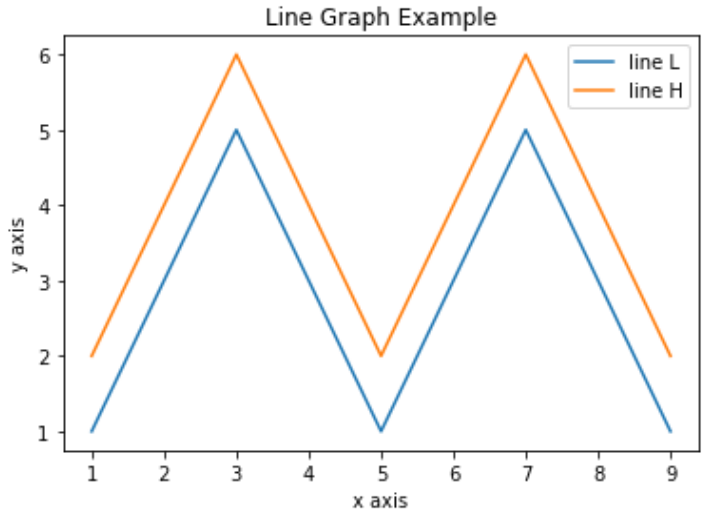
DATA VISUALIZATION

Line graph

```
import matplotlib.pyplot as plt

x  = [1, 2, 3, 4, 5, 6, 7, 8, 9]
y1 = [1, 3, 5, 3, 1, 3, 5, 3, 1]
y2 = [2, 4, 6, 4, 2, 4, 6, 4, 2]
plt.plot(x, y1, label="line L")
plt.plot(x, y2, label="line H")
plt.plot()

plt.xlabel("x axis")
plt.ylabel("y axis")
plt.title("Line Graph Example")
plt.legend()
plt.show()
```

output

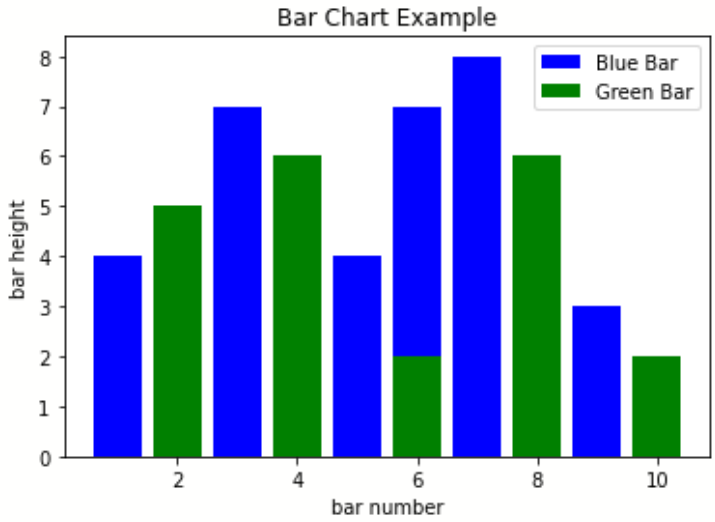


Bar chart

```
import matplotlib.pyplot as plt

x1 = [1, 3, 4, 5, 6, 7, 9]
y1 = [4, 7, 2, 4, 7, 8, 3]

x2 = [2, 4, 6, 8, 10]
y2 = [5, 6, 2, 6, 2]

plt.bar(x1, y1, label="Blue Bar", color='y')
plt.bar(x2, y2, label="Green Bar", color='r')
```

```
plt.plot()

plt.xlabel("bar number")
plt.ylabel("bar height")
plt.title("Bar Chart Example")
plt.legend()
plt.show()
```

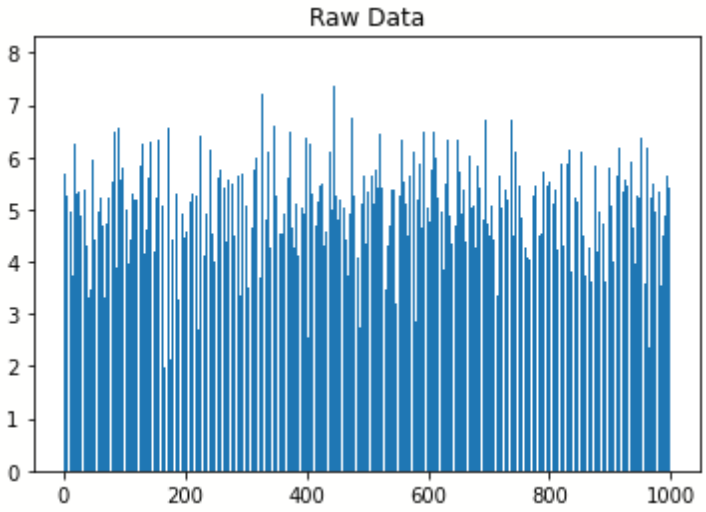
output

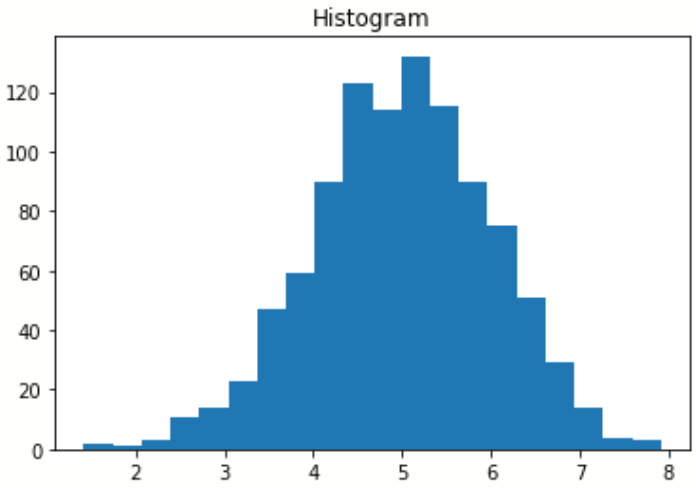


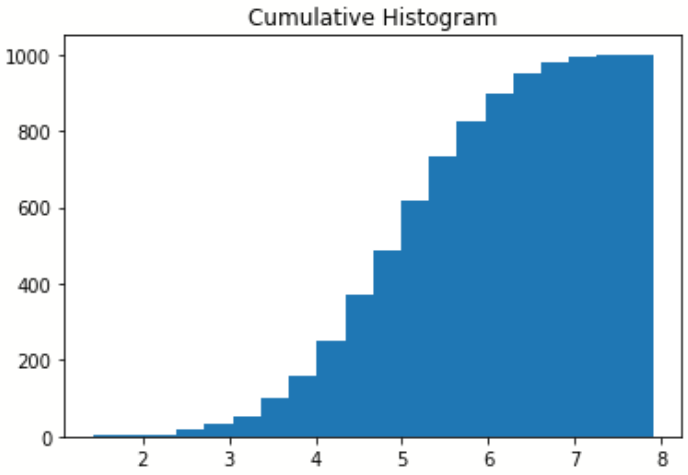
Raw Data, Histogram and Cumulative Histogram

```
import matplotlib.pyplot as plt
import numpy as np
n = 5 + np.random.randn(1000)

m = [m for m in range(len(n))]
plt.bar(m, n)
plt.title("Raw Data")
plt.show()

plt.hist(n, bins=20)
plt.title("Histogram")
plt.show()

plt.hist(n, cumulative=True, bins=20)
plt.title("Cumulative Histogram")
plt.show()
```

output



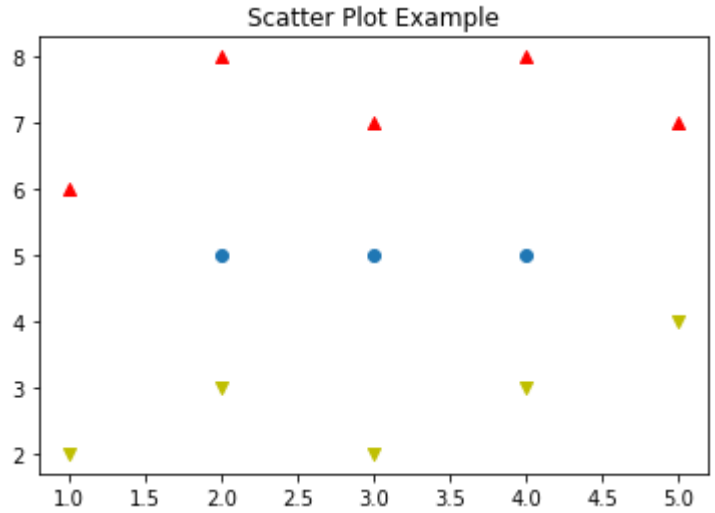




Scatter Plot

```
import matplotlib.pyplot as plt

x1 = [2, 3, 4]
y1 = [5, 5, 5]

x2 = [1, 2, 3, 4, 5]
y2 = [2, 3, 2, 3, 4]
y3 = [6, 8, 7, 8, 7]


plt.scatter(x1, y1)
plt.scatter(x2, y2, marker='v', color='y')
plt.scatter(x2, y3, marker='^', color='r')
plt.title('Scatter Plot Example')
plt.show()
```

output



Box plot

```
plt.figure()
plt.suptitle("Boxplot for X vs Y split into 5 bins")
ax = plt.gca()

df2.boxplot(showmeans=True)
# Rotate x axis text values
for tick in ax.get_xticklabels():
    tick.set_rotation(30)

print("\nIn the boxplot below, the box extends from the lower to upper
quartile values of the data, with a line at the median.\n \
```

```
The whiskers extend from the box to show the range of the data. The tri
angle indicates the mean value.\n")
```

output

```
In the boxplot below, the box extends from the lower to upper quartile
values of the data, with a line at the median.
 The whiskers extend from the box to show the range of the data. The
triangle indicates the mean value.
```