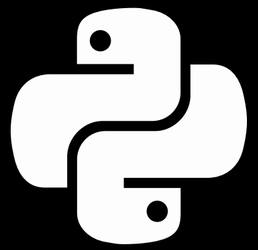


Working with Matplotlib

Matplotlib

- Matplotlib is a graph plotting library in python that serves as a visualization utility.

- It has a module named pyplot which makes things easy for plotting by providing many feature.

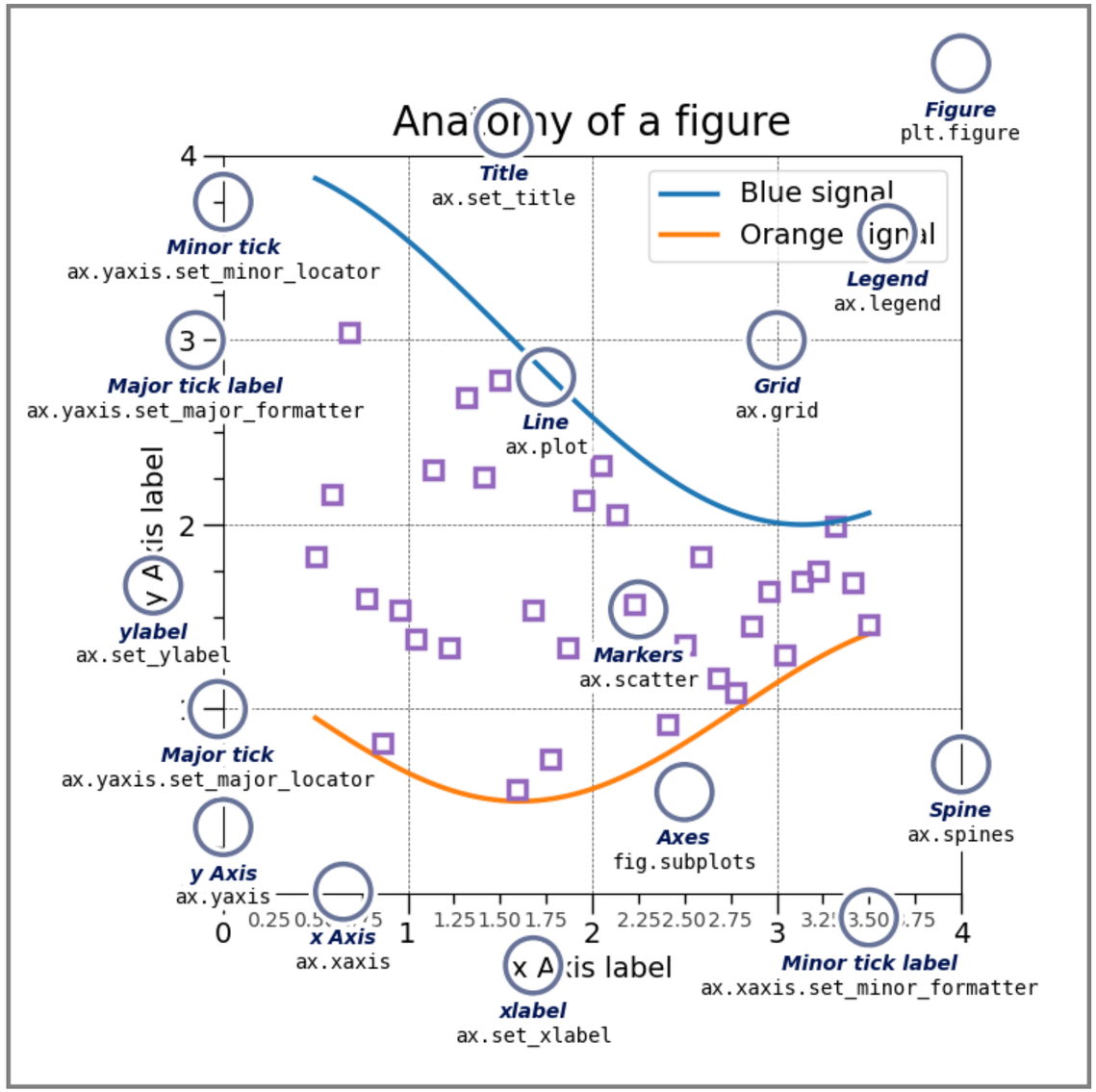
- It is able to create different types of visualization reports like line plots, scatter plots, histograms, bar charts, pie charts, box plots, and many more different plots.

Installation

Import matplotlib

```
import matplotlib.pyplot as plt
```

Anatomy of a matplotlib figure



Line plot

Line Plot

```
x = np.array([0, 50])

y = np.array([0, 50])



plt.plot(x, y)

plt.show()
```

Draw multiple line

```
x = np.array([1, 2, 6, 8])

y = np.array([3, 8, 1, 10])



plt.plot(x, y)

plt.show()
```

line style

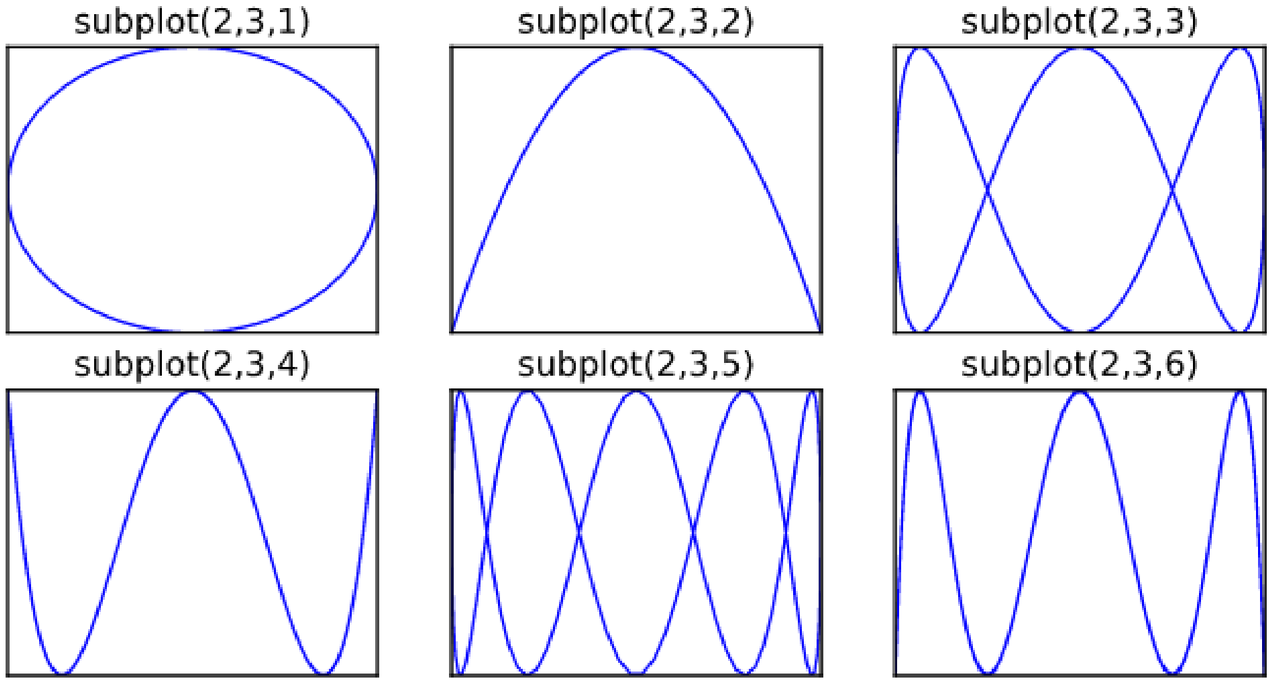
```
x = np.array([2, 6, 3, 10])



plt.plot(x, linestyle = 'dotted')

plt.show()
```

Labels, Title, Grid

```
x = np.array([20, 25, 30, 35, 40, 45, 50, 55, 60, 65])

y = np.array([25, 40, 55, 70, 85, 100, 115, 130, 145, 160])



plt.plot(x, y)

plt.xlabel("Average Pulse")

plt.ylabel("Calorie Burnage")

plt.title("Sports Watch Data")

plt.grid()

plt.show()
```

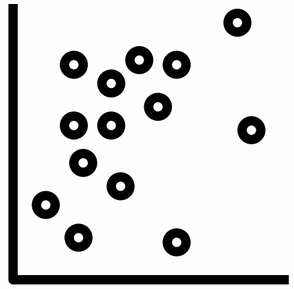
Sub plots

Sub plot




```
x = np.array([0, 1, 2, 3])

y = np.array([3, 8, 1, 10])

plt.subplot(1, 2, 1)

plt.plot(x,y)


x = np.array([0, 1, 2, 3])

y = np.array([10, 20, 30, 40])

plt.subplot(1, 2, 2)

plt.plot(x,y)


plt.show()
```

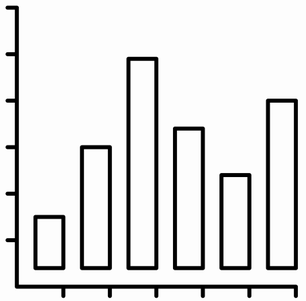
Scatter plots



Scatter plot

```
x1 = np.array([5,7,8,7,2,17,2,9,4,11,12,9,6])

y1 = np.array([99,86,87,88,111,86,103,87,94,78,77,85,86])

plt.scatter(x1, y1)


x2 = np.array([2,2,8,1,15,8,12,9,7,3,11,4,7,14,12]

y2 = np.array([100,105,84,105,90,99,90,95,94,100,79,112,91,80,85])

plt.scatter(x2, y2)


plt.show()
```

Bar plot



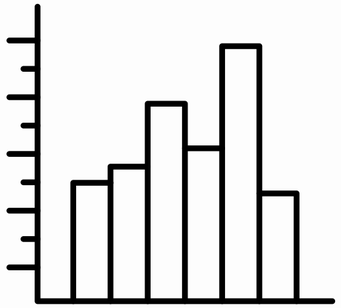
Bar plot

```
x = np.array(["A", "B", "C", "D"])

y = np.array([3, 8, 1, 10])



plt.bar(x,y)
```

Horizontal bars

```
x = np.array(["A", "B", "C", "D"])

y = np.array([3, 8, 1, 10])



plt.barh(x,y)
```

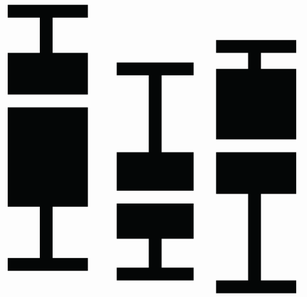
Histogram



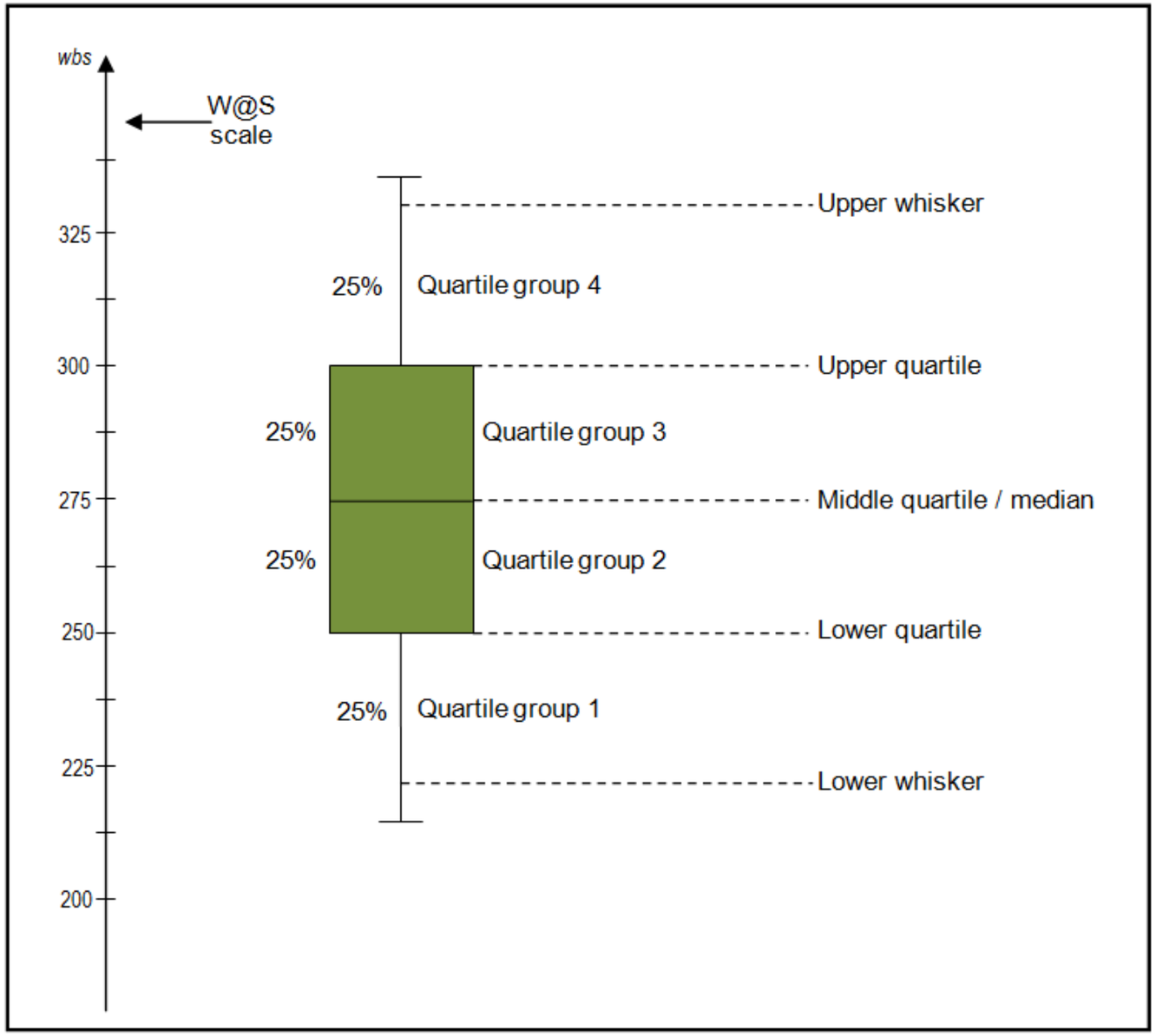
Histogram

```
x = [21,22,23,4,5,6,77,8,9,10,31,32,33,34,35,36,37,18,49,50,100]



plt.hist(x, bins)

plt.show()
```

Box plot

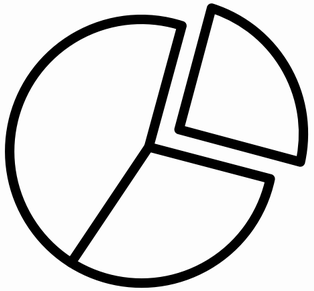


Box plot




```
plt.boxplot(data)
```

Pie chart



Pie chart

```
y = np.array([35, 25, 25, 15])


plt.pie(y)

plt.show()
```

Pie chart

```
y = np.array([35, 25, 25, 15])

mylabels = ["Apples", "Bananas", "Cherries", "Dates"]



plt.pie(y, labels = mylabels)

plt.legend()

plt.show()
```