In [1]:

```
import numpy as np
import pandas as pd
import math
```

In [2]:

```
x=np.array([[2,4],[4,2],[4,4],[4,6],[6,2],[6,4]])
y=np.array([0,0,1,0,1,0])  #  0=negative 1=positive class
```

In [3]:

```
def eucledian_distance(x1,y1,x2,y2):
    return math.sqrt((x1-x2)**2+(y1-y2)**2)
```

In [4]:

```
def chooseK(arr):
    print("Size of array :",arr.shape[0])
    k=round(math.sqrt(arr.shape[0]))
    if(k%2==0):
        k=k+1;
    #k should be odd so that classfication can be done properly(No chance of 50%-50% classification)
    print("Choosen value of K : ",k)
    return k;
```

In [5]:

```
chooseK(x)
```

```
Size of array : 6
Choosen value of K :  3
```

Out[5]:

```
3
```

In [6]:

```
def classifyPoint(x,y,point,k):
    inputSize=x.shape[0];

    distance=[]; #for string eucledian distance
    for i in range(inputSize):
        distance.append(eucledian_distance(point[0],point[1],x[i][0],x[i][1]));

    mergedList=list(zip(distance,y));
    mergedList.sort(); #sort according to increasing distance

    freq0=0; #Freq of group 0 (negative)
    freq1=0; #Freq of group 1 (positive)

    for i in range(k): #Iterate for k neighbours
        if(mergedList[i][1]==0):
            freq0=freq0+1;
        elif (mergedList[i][1]==1):
            freq1=freq1+1;

    if(freq0>freq1):
        return 0;
    else:
        return 1;
```

In [7]:

```
def main():

    print("Input X coordinate");
    x_co=int(input())
    print("Enter Y coordinate ")
    y_co=int(input())

    pointt=(x_co,y_co)
    print(pointt)
    k=chooseK(x);
    label="--"
    if(classifyPoint(x=x,y=y,point=pointt,k=k)==0):
        label="Negative";
    else:
        label:"Positive";
    print("Point {} belongs to {} class".format(pointt,label))
    print (classifyPoint(x=x,y=y,point=pointt,k=k))
```

In [8]:

```
main()
```

```
Input X coordinate
6
Enter Y coordinate
6
(6, 6)
Size of array : 6
Choosen value of K :  3
Point (6, 6) belongs to Negative class
0
```

In [9]:

```
main()
```

```
Input X coordinate
5
Enter Y coordinate
10
(5, 10)
Size of array : 6
Choosen value of K :  3
Point (5, 10) belongs to Negative class
0
```

In [ ]: