In [15]:
```
import math

def sortfunc(l):
    return(l[1])
def distance(x,y):
    distances=[]
    for i in range(len(xt)):
        xd=(x-xt[i])**2
        yd=(y-yt[i])**2
        d=math.sqrt(xd+yd)
        distances.append([i,d])
    distances.sort(key=sortfunc)
    return distances
def KNN(x,y,k):
    c1=0
    c0=0
    d=distance(x,y)
    nc=classes[d[0][0]]

    for i in range(k):
        classind=d[i][0]

        if(classes[classind]==1):
            c1+=1
        else:
            c0+=1
    print("Using KNN with K=",k)
    if(c1>c0):
        print("(",x,",",y,") is labelled as 1")
    elif(c0>c1):
        print("(",x,",",y,") is labelled as 0")
    else:
        print("(",x,",",y,") is labelled as",nc)
    print()
xt = [4, 5, 10, 4, 3, 11, 14 , 8, 10, 12]
yt = [21, 19, 24, 17, 16, 25, 24, 22, 21, 21]
classes = [0, 0, 1, 0, 0, 1, 1, 0, 1, 1]

KNN(8,21,1)
KNN(14,25,1)
KNN(11,22,4)
KNN(5,20,4)
```

```
Using KNN with K= 1
( 8 , 21 ) is labelled as 0

Using KNN with K= 1
( 14 , 25 ) is labelled as 1

Using KNN with K= 4
( 11 , 22 ) is labelled as 1

Using KNN with K= 4
( 5 , 20 ) is labelled as 0
```

In [ ]: