X_1	X_2
2	3
5	4
0	5
-3	0

By using Manhattan distance and the initial clusterr centers given below, find new position of the cluster centers after the first iteration. Consider as c1=(0 , 1) and c2=(5 , 5).

d1c1=|0-2| + |1-3|=4 d1c2=|5-2|+|5-3|=5 (the first sample belongs to c1)
d2c1=|0-5| + |1-4|=8 d2c2=|5-5|+|5-4|=1 (the second sample belongs to c2)
d3c1=|0-0| + |1-5|=4 d3c2=|5-0|+|5-5|=5 (the third sample belongs to c1)
d4c1=|0-(-3)| + |1-0|=4 d4c2=|5-(-3)|+|5-0|=13 (the fourth sample belongs to c1)

according to data points, we can update the cluster centers
c1 = mean(xi belongs to c1) (-1/3 , 8/3)
c2 = (5, 4)

X_1	X_2	D
2	3	A
5	4	B
0	5	A
-3	0	B

By using Manhattan distance and K=1, find the class of (-2, 2)

d1=|-2-2|+|2-3|=**5** d2=|-2-5|+|2-4|=**9** d3=|-2-0|+|2-5|=**5**
d4=|-2+3|+|2-0|=**3**

because the nearest one point is fourth data point, its class is B

for K=3, find the class of (-2, 2)

We found the nearest three data points in dataset are x1,x3,x4. Among (A,A,B) classes we have to choose “A” as major

for K=3, find the class of (5, 3)

Because the nearest three points are the first three data points, its class is A.