

Ex. Clustering

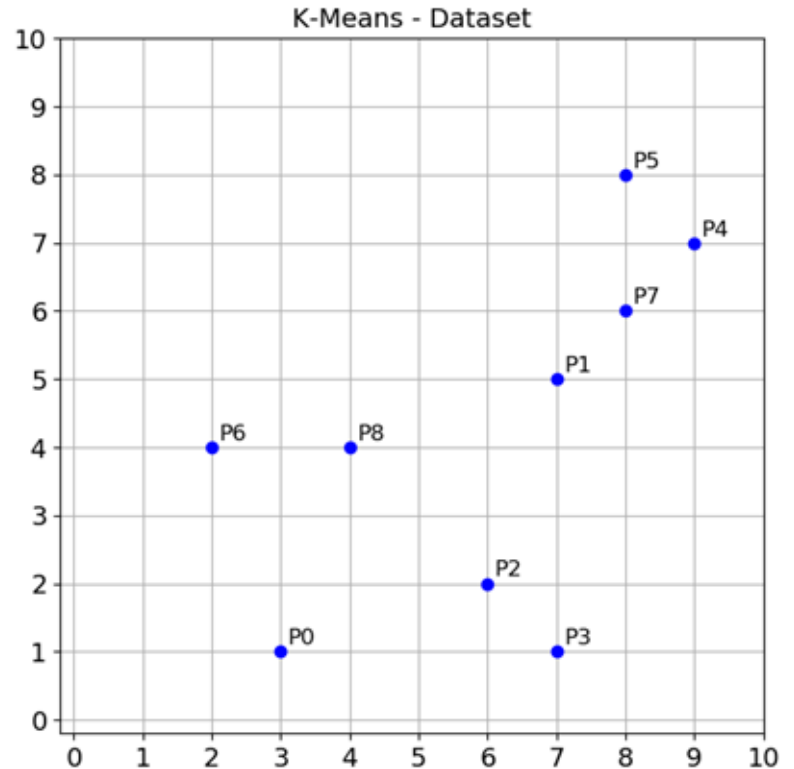
Exercise 1

K-means simulation

Initial centroids:

C1 = P2=(6,2)

C2 = P1=(7,5)



Solution: Identify the Bisecting lines dividing the plane between pairs of centroids

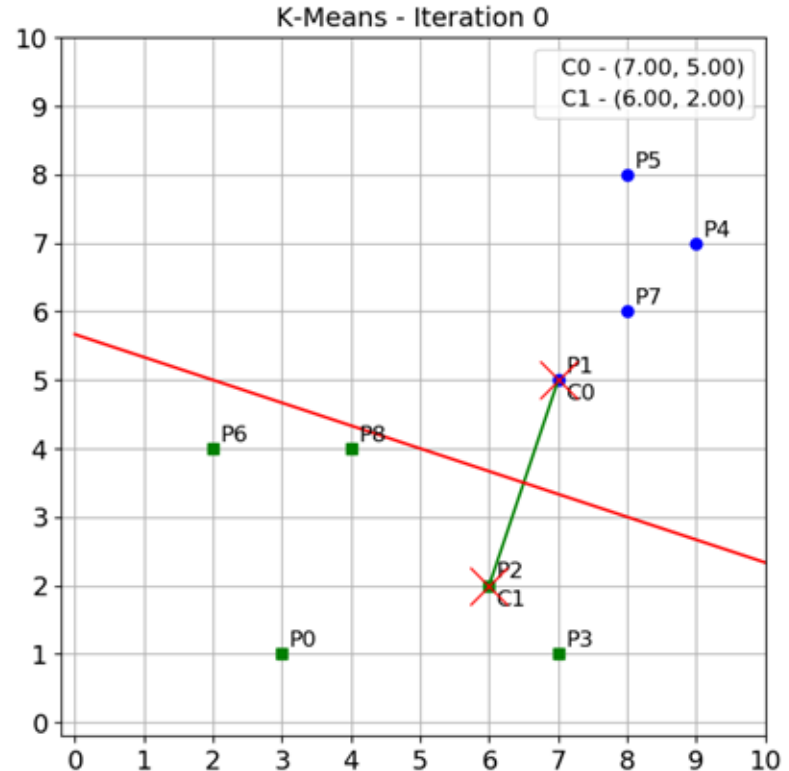
Cluster 1: P0,P2,P3,P6,P8

Cluster 2: P1,P4,P5,P7

Centrod1:

$$X1 = (2+3+4+6+7)/5 = 4.4 \quad Y1 = (4+1+4+2+1)/5 = 2.4$$

$$X2 = (6+8+8+9)/4 = 8 \quad Y2 = (5+6+8+7)/4 = 6.5$$

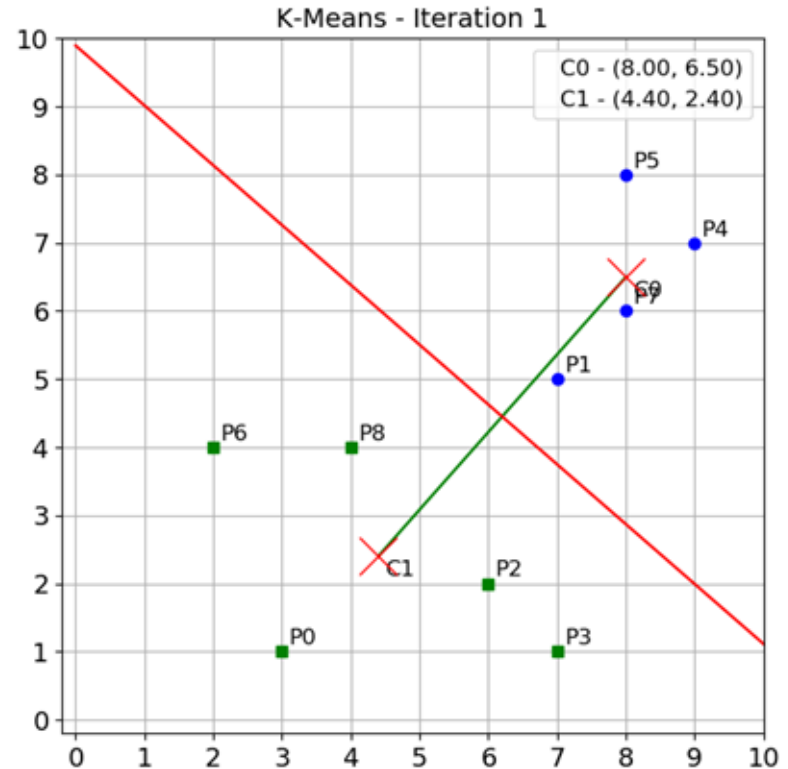


Solution: Identify the Bisecting lines dividing the plane between pairs of centroids

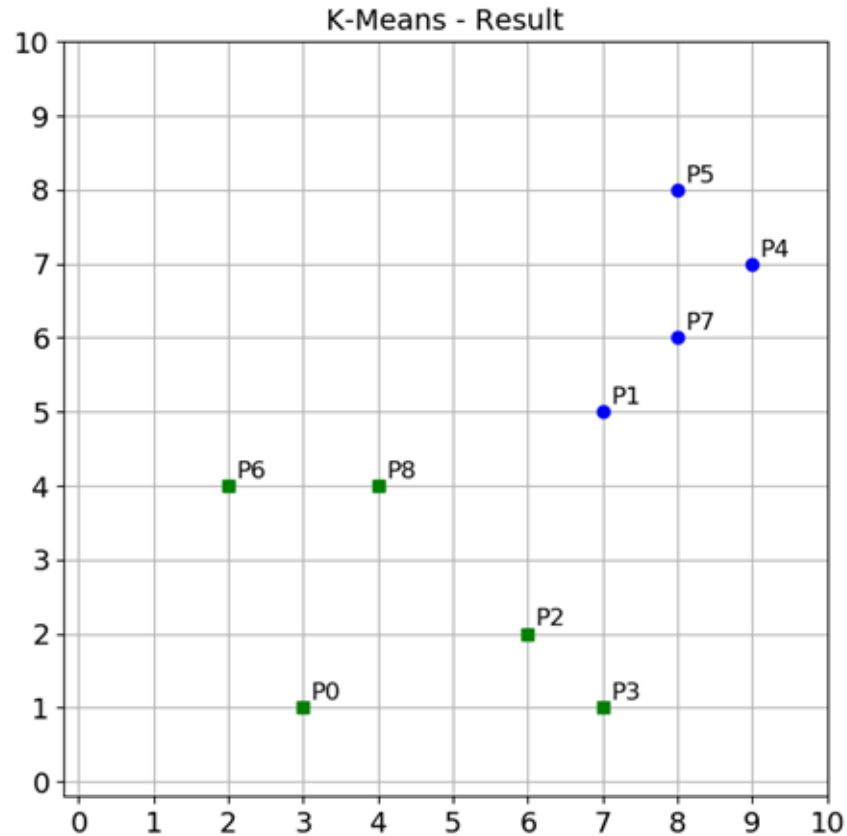
Cluster 1: P0,P2,P3,P6,P8

Cluster 2: P1,P4,P5,P7

**The cluster composition does not change,
so K-means stops**

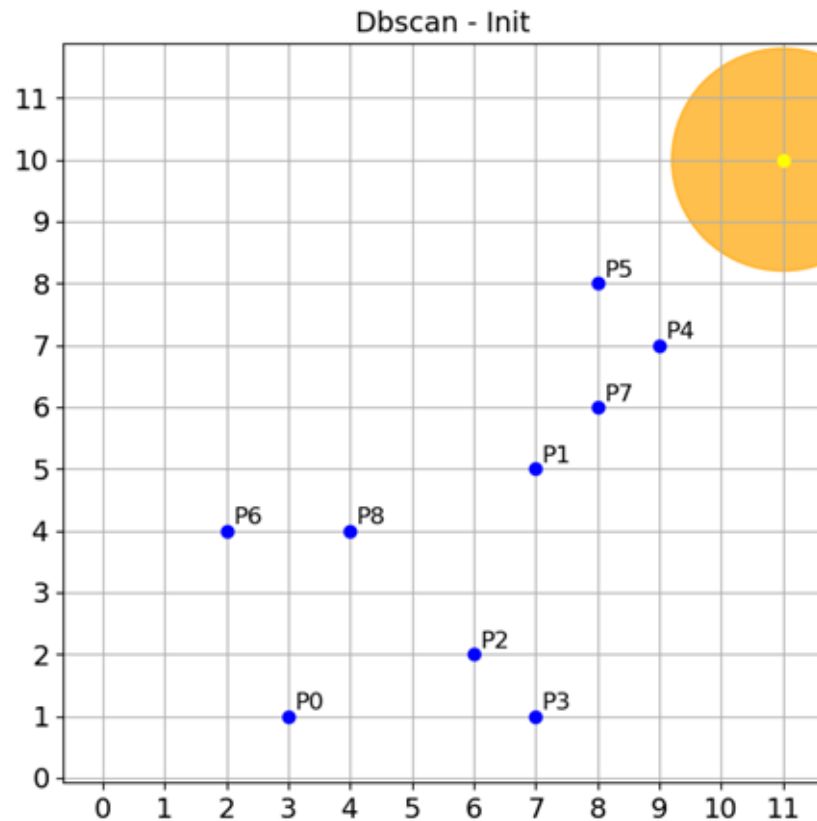


K-means result



DBSCAN simulation

- Eps=1.8
- MinPoints=3 (included the point)



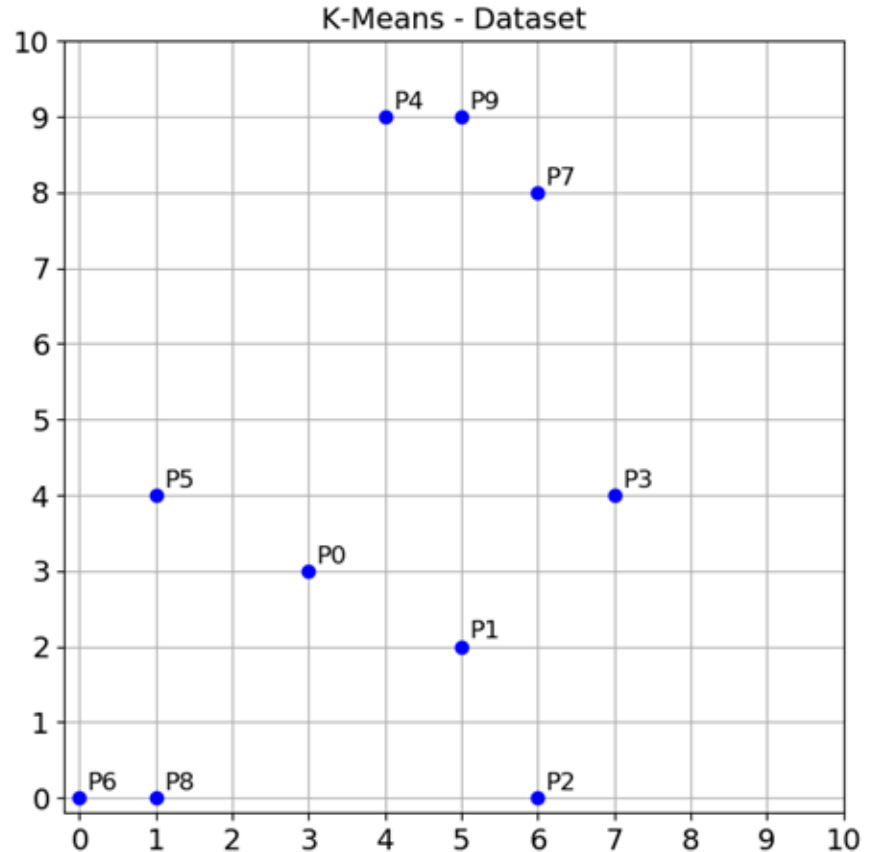
Exercise 2

K-means simulation

Initial centroids:

C1 = P1=(5,2)

C2 = P5=(1,4)



Solution: Identify the Bisecting lines dividing the plane between pairs of centroids

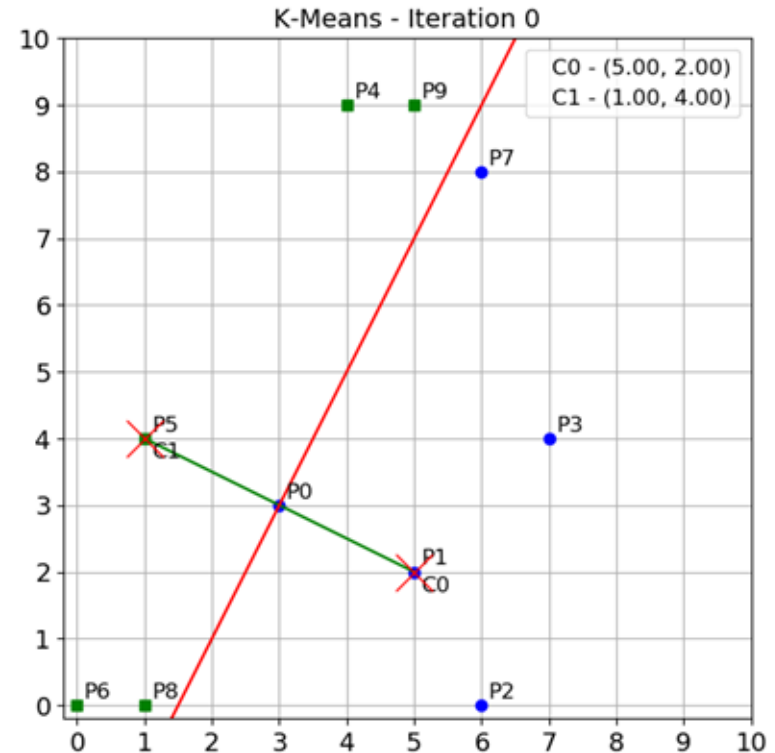
Cluster 1: P0,P1,P2,P3,P7

Cluster 2: P5,P4,P6,P8,P9

Centrod1:

C1= (5.40, 3.40)

C2= (2.20, 4.40)



Solution: Identify the Bisecting lines dividing the plane between pairs of centroids

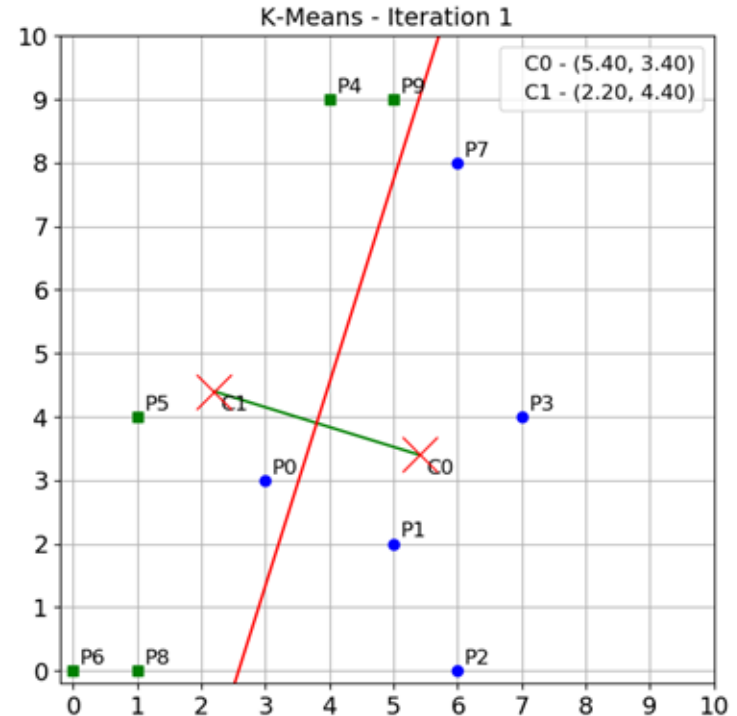
Cluster 1: P1,P2,P3,P7

Cluster 2: P5,P4,P6,P8,P9,P0

Centrod1:

C1= (6.00, 3.50)

C2= (2.33, 4.17)

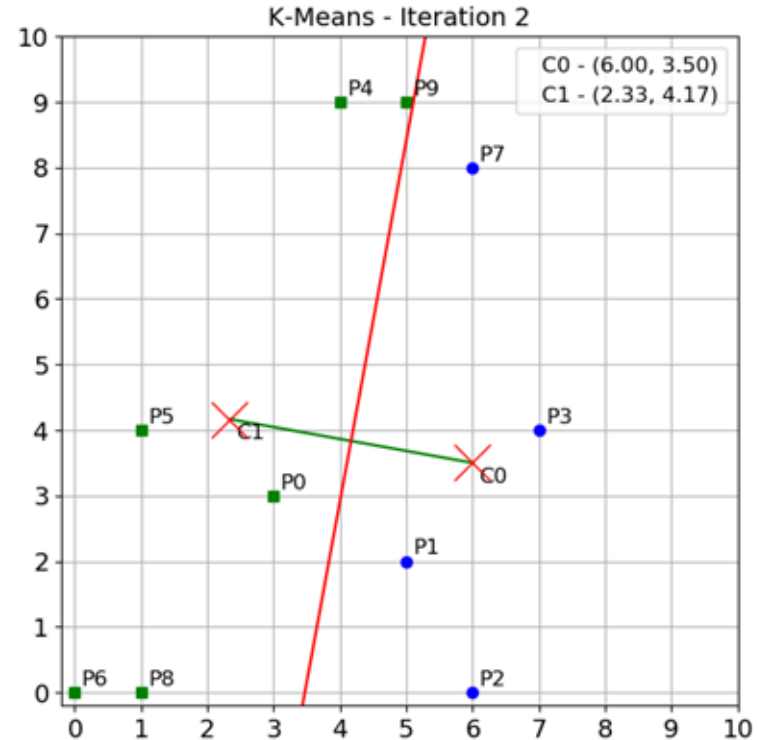


Solution: Identify the Bisecting lines dividing the plane between pairs of centroids

Cluster 1: P1,P2,P3,P7

Cluster 2: P5,P4,P6,P8,P9,P0

The cluster composition does not change,
so K-means stops



K-means result

