1.2.4.3.1    K-Means Example 1

Q:  K = 3
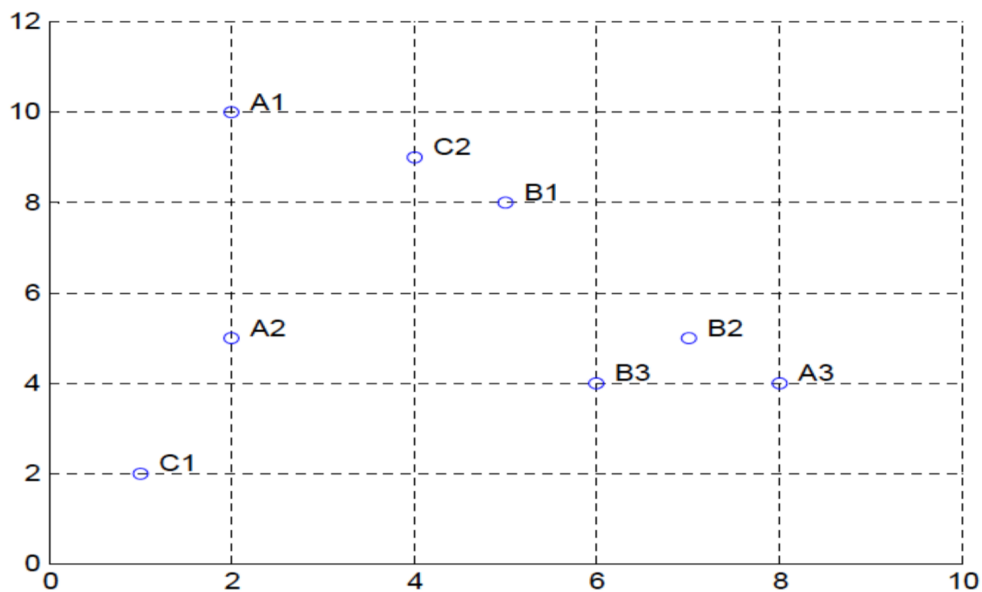
    10 points
    Euclidean distance.

    Center :  A1    B1    C1

    K - Means

- A1=(2, 10); A2=(2,5); A3=(8,4); B1=(5,8); B2=(7,5); B3=(6,4); C1=(1,2); C2=(4,9)

Solution : ① initialization
② distance calculation

|    | A1   | B1   | C1   |
|----|------|------|------|
| A1 | 0    | 3.61 | 8.06 |
| A2 | 5    | 4.24 | 3.16 |
| B1 | 8.49 | 5    | 7.28 |
| B2 | 3.61 | 0    | 7.21 |
| B3 | 7.21 | 4.12 | 5.39 |
| C1 | 8.06 | 7.21 | 0    |
| C2 | 2.24 | 1.41 | 7.62 |

③ Cluster 1   = {A1}

Cluster 2 = {B1   B2   B3   A3   C2}

Cluster 3 = {A2   C1}

④ Average

$C_1 = (2, 10)$

$C_2 = (6, 6)$

$C_3 = (1.5, 3.5)$

⑤ keep doing   until no change.