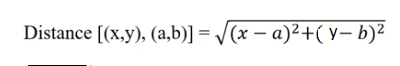
Kmean

| **x** | **y** |
| --- | --- |
| 2 | 10 |
| 2 | 5 |
| 8 | 4 |
| 5 | 8 |
| 7 | 5 |
| 6 | 4 |
| 1 | 2 |
| 4 | 9 |

Step 1: Converting input x & y into points

| **x** | **y** | **Points (x,y)** | **Name** |
| --- | --- | --- | --- |
| 2 | 10 | (2,10) | A1 |
| 2 | 5 | (2,5) | A2 |
| 8 | 4 | (8,4) | A3 |
| 5 | 8 | (5,8) | A4 |
| 7 | 5 | (7,5) | A5 |
| 6 | 4 | (6,4) | A6 |
| 1 | 2 | (1,2) | A7 |
| 4 | 9 | (4,9) | A8 |



Distance between (2,10) and (5,8) = square Root of ((2-5)^2 +(10-8)^2)= square Root of(9 +4)=3.60

Iteration 1

|  |  | Cluster 1  (2,10) | Cluster 2  (5,8) | Cluster 3  (1,2) |  |
| --- | --- | --- | --- | --- | --- |
|  | Point | Distance Mean 1 | Distance Mean 2 | Distance Mean 3 | Cluster Group |
| A1 | (2,10) | 0 | 3.16 | 8.06 | C1 |
| A2 | (2,5) | 5 | 4.24 | 3.16 | C3 |
| A3 | (8,4) | 8.48 | 5 | 7.28 | C2 |
| A4 | (5,8) | 3.60 | 0 | 7.21 | C2 |
| A5 | (7,5) | 7.07 | 3.60 | 6.70 | C2 |
| A6 | (6,4) | 7.21 | 4.12 | 5.38 | C2 |
| A7 | (1,2) | 8.06 | 7.21 | 0 | C3 |
| A8 | (4,9) | 2.23 | 1.41 | 7.61 | C2 |

Points of C1 = (2,10)

Points of C2 = ( 8,4) ( 5,8 ) (7,5) (6,4) (4,9)

Points of C3 = (2,5) (1,2)

New Cluster Points

Average of C1 = CN1 = (2,10)

Average of C2 = CN2 =average of [ (8,4) (5,8) (7,5) (6,4) (4,9) ]

= [average of x values , average of y values ]

= [( (8+5+7+6+4) / 5 ,(4+8+5+4+9) / 5 ) ]

= (6, 6)

Average of C3 = CN3 = average of [(2,5) (1,2) ]

= [average of x values, average of y values]

= [ ( ( 2+1) / 2 , (5+2) / 2 ) ]

= [ (3/2, 7/2)]

= (1.5, 3.5)

Iteration 2

|  |  | Cluster 1  (2,10) | Cluster 2  (6,6) | Cluster 3  (1.5,3.5) |  |
| --- | --- | --- | --- | --- | --- |
|  | Point | Distance Mean 1 | Distance Mean 2 | Distance Mean 3 | Cluster Group |
| A1 | (2,10) | 0 |  |  |  |
| A2 | (2,5) |  |  |  |  |
| A3 | (8,4) |  |  |  |  |
| A4 | (5,8) |  |  |  |  |
| A5 | (7,5) |  |  |  |  |
| A6 | (6,4) |  |  |  |  |
| A7 | (1,2) |  |  |  |  |
| A8 | (4,9) |  |  |  |  |