K=3

(2,10) **(5,8)**

Point (x,y)		Dist Mean 1	Dist Mean 2	Cluster
2	10	2.0	7.6	1
2	5	4.3	5.0	3
8	4	6.6	1.0	2
5	8	1.6	4.2	1
7	5	5.2	0.7	2
6	4	5.5	1.0	2
1	2	7.5	6.4	3
4	9	0.3	5.6	1

Mean X	Mean Y
3.7	9
7	4.3
1.5	3.5

Cluster 1		Cluster 2		Cluster 3	
2	10	8	4	2	5
4	9			1	2
5	8	7	5		
		6	4		
3.7	9	7	4.3	1.5	3.5

K=2

(3,0) **(2,0)**

	Point (x,y)		Dist Mean 1	Dist Mean 2	Cluster odd	even
Jay	0	1	3.4	0.8	2	2
Stuart	3	0	3.0	2.4	2	2
Pavel	2	4	1.2	3.5	1	1
Andrey	2	1	2.1	1.3	2	2
Weifeng	3	5	2.0	4.9	1	1

Cluster 1		Cluster 2	
0	0	0	1
3	5	3	0
2	4	2	1
1.7	**3**	**1.7**	**0.7**

centroid 1		**centroid 2**	
2.7	3	0.7	0.7

update centroids here for calculating distance

centroid 1		**centroid 2**		
3	0	2	0	Initial Centroids
3	2.5	1.3	2	Updated Centroids
2.7	3	0.7	0.7	
1.7	3	1.7	0.7	

Movies	IMDB ratings	TOI Ratings (Scaled between 1 to 10)
A	2	2
B	5	8
C	2	4
D	4	3
E	3	5

Single Linkage

	A	B	C	D	E	
A	0	6.71	2.00	2.24	3.16	
B		0	5.00	5.10	3.61	
C			0	2.24	1.41	Lowest distance
D				0	2.24	
E					0	

	A	**B**	**D**	**CE**
A	0	6.71	2.24	2.00 [1]
B		0.00	5.10	3.60
D			0.00	2.24
CE				0

				C	2	4		SSE	
				E	3	5		0.5	
					2.5	4.5			
								0.5	1

	C1	A,C	C2	B,D

Distance Matrix is given

	A	**B**	**C**	**D**
A	0	2	2.3	3.2
B	2	0	2.2	1.4
C	2.3	2.2	0	2.2
D	3.2	1.4	2.2	0

>=0.5	Evidence of good clustering
0.25<=s<0.5	some evidence of eality,check with domain expert
<0.25	not adequate evidence of cluster quality

	a(o)	b(o)	b(o)-a(o) /(max(a(o),b(o))
A	2.3 [2]	2.6 [3]	0.12
B	1.4	2.1	0.33
C	2.3	2.2	-0.04
D	1.4	2.7	0.48
C1			0.04
C2			0.41
Overall			**0.22**

[1] Put the value which is minimum between AC and AE

[2] Since there are only two points in cluster C1, i.e. A and C , therefore the average distance of point A and all other point in C1 = 2.3/1

[3] Here since A belongs to cluster C1 hence we will take the average of distance it has from all the points in cluster C2