Week 3: Homework 1: K-means

Initial part:

Subject	A	B	centroid
1	1.5	1.0	1.25
2	1.0	2.0	1.5
3	2.0	3.5	2.75
4	5.0	6.0	5.5
5	3.5	4.0	3.75
6	4.5	5.0	4.75
7	2.5	4.5	3.5

	Individual	Mean vector centroid
Group 1	1	(1.5,1.0)
Group 2	4	(5.0,6.0)

First cluster:

Subject	A	B	centroid	Distance from 1.25	Distance from 5.5
1	1.5	1.0	1.25	0	4.25
2	1.0	2.0	1.5	0.25	4
3	2.0	3.5	2.75	1.5	2.75
4	5.0	6.0	5.5	4.25	0
5	3.5	4.0	3.75	2.5	1.75
6	4.5	5.0	4.75	3.5	0.75
7	2.5	4.5	3.5	2.25	2

	Cluster 1		cluster 2	
Step	Individual	Mean vector	Individual	Mean vector
1	1	(1.5,1.0)	4	(5.0,6.0)
2	1, 2	(1.2, 1.5)	4	(5.0,6.0)
3	1, 2, 3	(1.5, 2.1)	4	(5.0,6.0)
4	1, 2, 3	(1.5, 2.1)	4, 5	(4.25,5.0)
5	1, 2, 3	(1.5, 2.1)	4, 5, 6	(4.3, 5.0)
6	1, 2, 3	(1.5, 2.1)	4, 5, 6, 7	(3.8, 4.8)

Individual	Distance to mean of cluster 1 (1.5, 2.1)	Distance to mean of cluster 2 (3.8, 4.8)
1	1.1	4.4
2	0.5	3.9
3	1.4	2.2
4	5.2	1.6
5	2.7	0.8
6	4.1	1.0
7	2.6	1.3

Relocation

	Individual	Mean vector centroid
Cluster 1	1, 2	(1.2, 1.5)
Cluster 2	3, 4, 5, 6, 7	(3.5, 4.6)