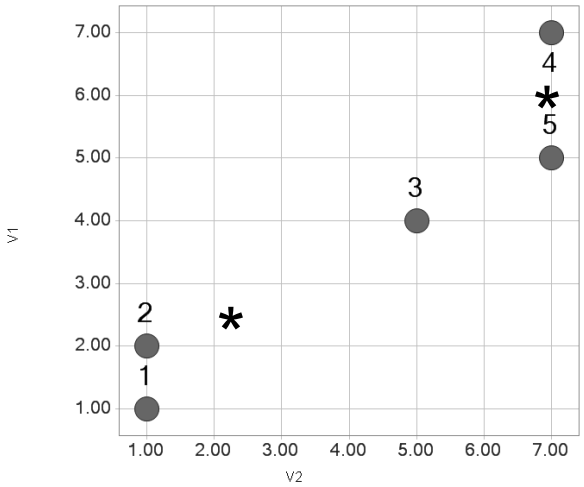
Example: K=2

item	v1	v2
1	1	1
2	2	1
3	4	5
4	7	7
5	5	7



Start with cluster A: 1,2,3 and cluster B: 4,5

Compute cluster centroids (next slide)

What are the centroids of clusters A and B?

item	v1	v2
1	1	1
2	2	1
3	4	5
4	7	7
5	5	7

1. A= (1,1.5,4.5) and B=(7,6)
2. A= (2.33) and B=(6.5)
3. A= (2.33,2.33) and B=(6,7)

Example – cont.

Compute Euclidean distance of each record from each centroid, and re-assign to closest cluster.

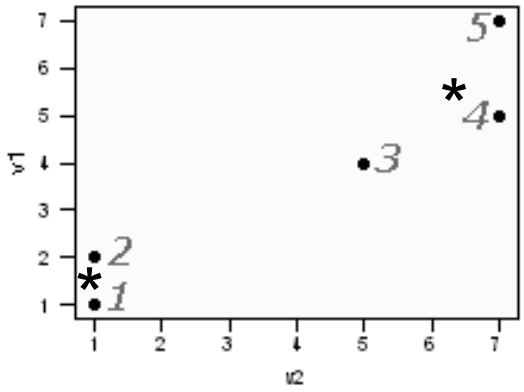
	Cluster A	**Cluster B**
Item 1	$\sqrt{(1-2.33)^2+(1-2.33)^2} = 1.89$	$\sqrt{(1-6)^2+(1-7)^2} = 7.81$
Item 2	1.37	7.21
Item 3	$\sqrt{(4-2.33)^2+(5-2.33)^2} = 3.14$	$\sqrt{(4-6)^2+(5-7)^2} = 2.83$
Item 4	6.60	1
Item 5	5.37	1

First iteration results

Cluster A: 1,2 Cluster B: 3,4,5

Re-compute centroids:

cent(A)= (1.5 , 1) cent(B)= (5.33 , 6.33)



Re-compute distances of records to centroids

	Cluster A	**Cluster B**
Item 1	$\sqrt{(1-1.5)^2 + (1-1)^2} = 0.5$	$\sqrt{(1-5.33)^2+(1-6.33)^2} = 6.87$
Item 2	0.5	6.29
Item 3	$\sqrt{(4-1.5)^2+ (5-1)^2} = 4.72$	$\sqrt{(4-5.33)^2+ (5-6.33)^2} =1.89$
Item 4	8.14	1.80
Item 5	6.95	0.75

Stop here!