Mini-Assignment: K-Means

Due Mar 20 at 11:59pm **Points** 18 **Questions** 9
Available until Mar 21 at 2:59am **Time Limit** None
Allowed Attempts 2

This quiz was locked Mar 21 at 2:59am.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	1 minute	17 out of 18
LATEST	Attempt 2	1 minute	17 out of 18
	Attempt 1	2 minutes	16.67 out of 18

Score for this attempt: **17** out of 18
Submitted Mar 20 at 10:18pm
This attempt took 1 minute.

Question 1

2 / 2 pts

Which of the following should be taken into consideration in order to obtain good results when using the K-means algorithm? (select all that apply)

- [ ] Standard deviation of input features at each iteration.
- [x] Selection of the initial cluster centers — Correct!
- [x] Selection of the number of clusters — Correct!
- [x] Existence of the outliers — Correct!

Question 2

2 / 2 pts

Which of the following is true for K-Means clustering? (Select all that apply)

Correct!

- [x] The overall goal is to minimize the total squared distance from all points of their cluster centers.
- [ ] The final clusters are not sensitive to the initial cluster centers.

Correct!

- [x] There is no guarantee that it reaches the global optimum.

Correct!

- [x] Completely different clusters may arise from small changes in the initial random choice.

Question 3

1 / 2 pts

Which of the following is one of the properties of the K-means algorithm? (Select all that apply)?

Correct!

- [x] It finds a local optimum.
- [ ] No matter which initial cluster centers are selected, it always ends up with same clusters.

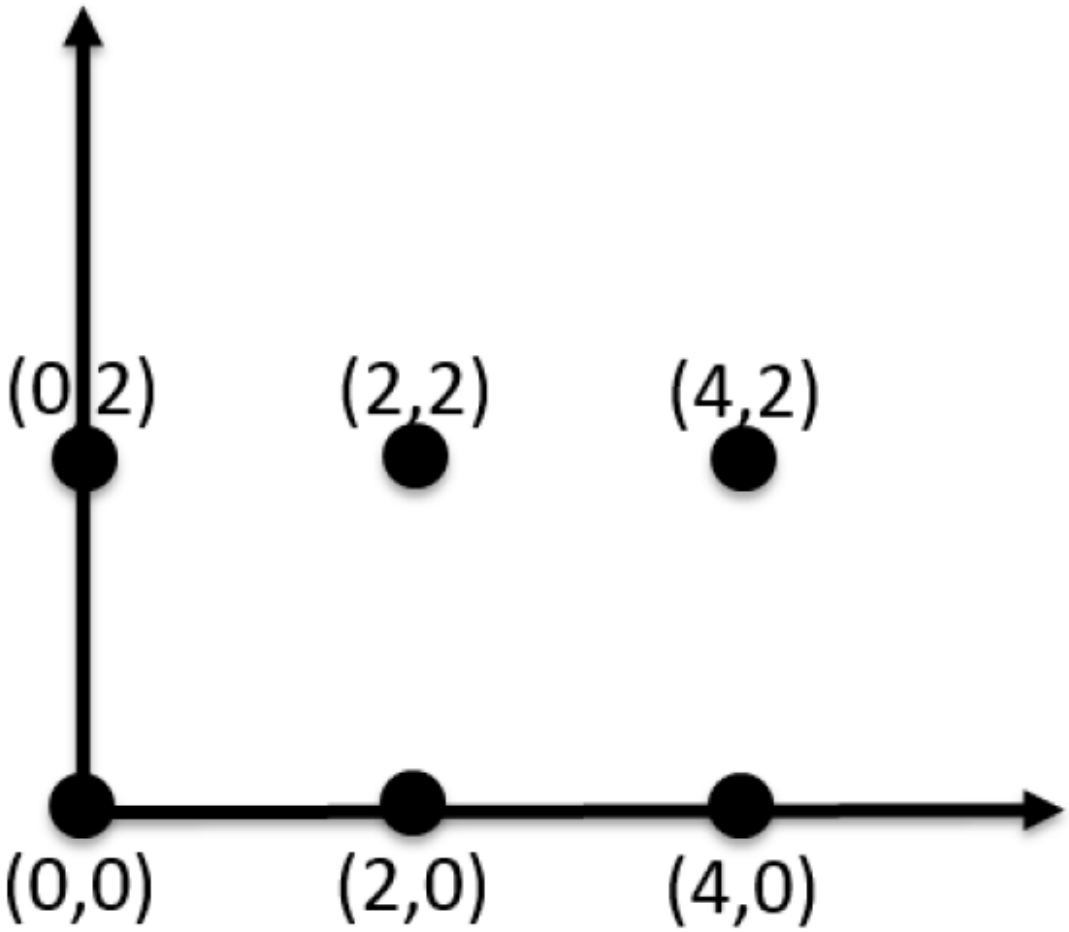
orrect Answer

- [ ] The initial choice of cluster centers may have a large effect on the result.
- [ ] It converges for most cases but not always.

Question 4

2 / 2 pts

Suppose we run K-means on the following dataset with six data points to find two clusters.



Suppose the initial cluster centers are (0,0) and (5,0). How many iterations does the algorithm take until convergence?

- The algorithm cannot converge.
- It is not possible to determine.
- At least 5

Correct!

- Less than 3

Question 5

2 / 2 pts

Following the previous question. What is the cluster assignment for each data point after iteration 1?

- bottom three belong to the first cluster, and the upper three belong to the second cluster.
- No answer text provided.
- Left two belong to the first cluster, and the right four belong to the second cluster.

Correct!

- Left four belong to the first cluster, and the right two belong to the second cluster.

Question 6

2 / 2 pts

Following the previous question. What are new cluster centers after one iteration of update?

Correct!

- (1,1) and (4,1)
- (1,1) and (3,1)

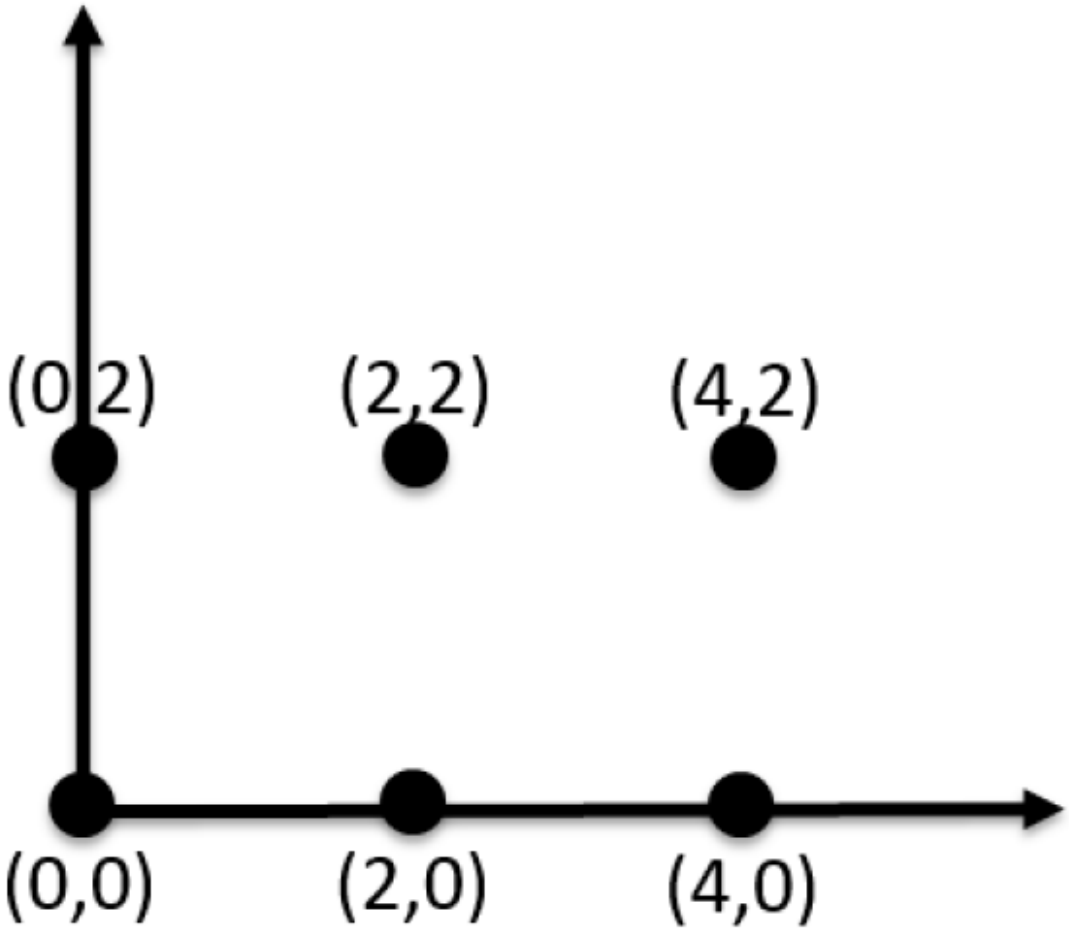
(1,1) and (5,1)

(0,0) and (3,1)

Question 7

2 / 2 pts

We run k-means on the following dataset with six data points to find two clusters. If the initial cluster centers are (2,0) and (2,2), How many iterations does the algorithm take until convergence?



Correct!

- (selected) Less than 3
- It is not possible to determine.

More than 3

The algorithm cannot converge.

Question 8

2 / 2 pts

Following the previous question. What is the cluster assignment for each data point after Step1?

No answer text provided.

Left two belong to the first cluster, and the right four belong to the second cluster.

Correct!

bottom three belong to the first cluster, and the upper three belong to the second cluster.

Left four belong to the first cluster, and the right two belong to the second cluster

Question 9

2 / 2 pts

Following the previous question. What are new cluster centers after one iteration?

Correct!

(2,0) and (2,2)

- (1,1) and (2,1)
- (2,2) and (3,1)
- (2,0) and (4,1)

Quiz Score: **17** out of 18