Istanbul Technical University
Faculty of Computer and Informatics
Computer Engineering Department

BLG 454E
Learning From Data
Homework IV

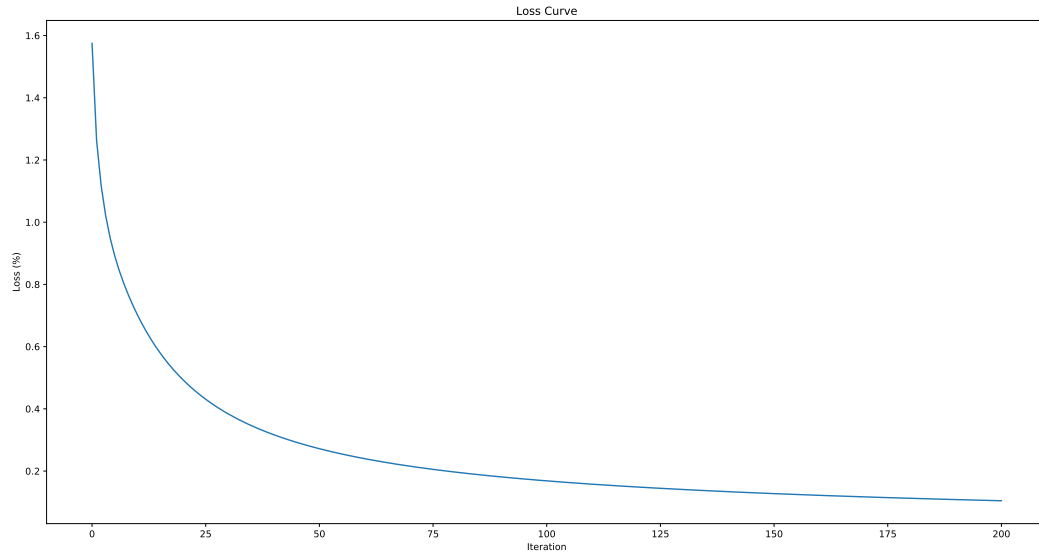Uğur Uysal - 150140012

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Contents

1 Question I

1.1 Part A

Figure 1: Loss Curve

1.2 Part B

Accuracy on train data is 0.97
Accuracy on test data is 0.95

2 Question II

2.1 Part A

The table show errors to corresponding number of centroids.

Number of Centroids	Error
1	3654901.19
2	1828742.99
5	736137.67
10	433438.51
20	253211.57

2.2 Part B

Figures are added to show decision boundaries.

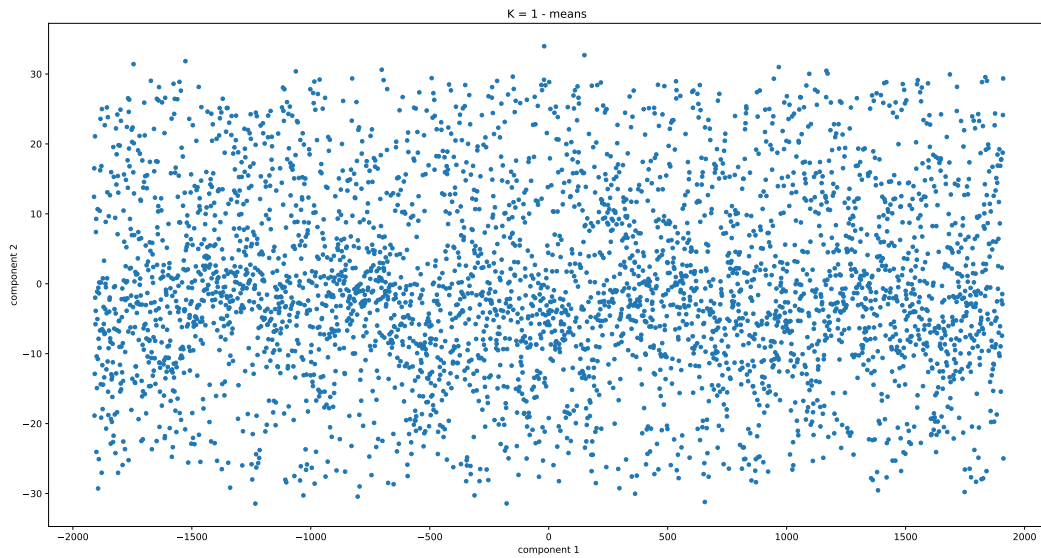**Figure 2:** K-Means where K = 1

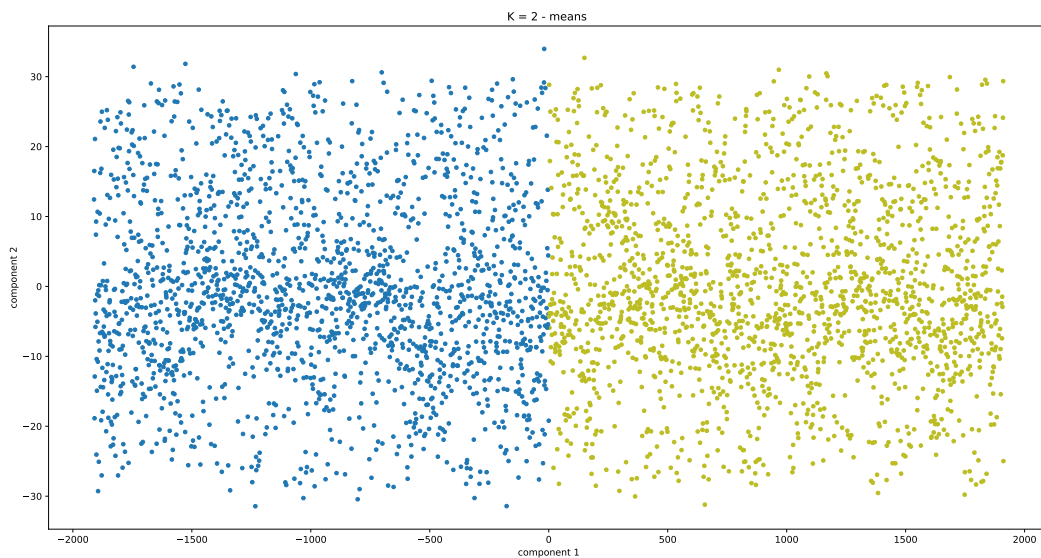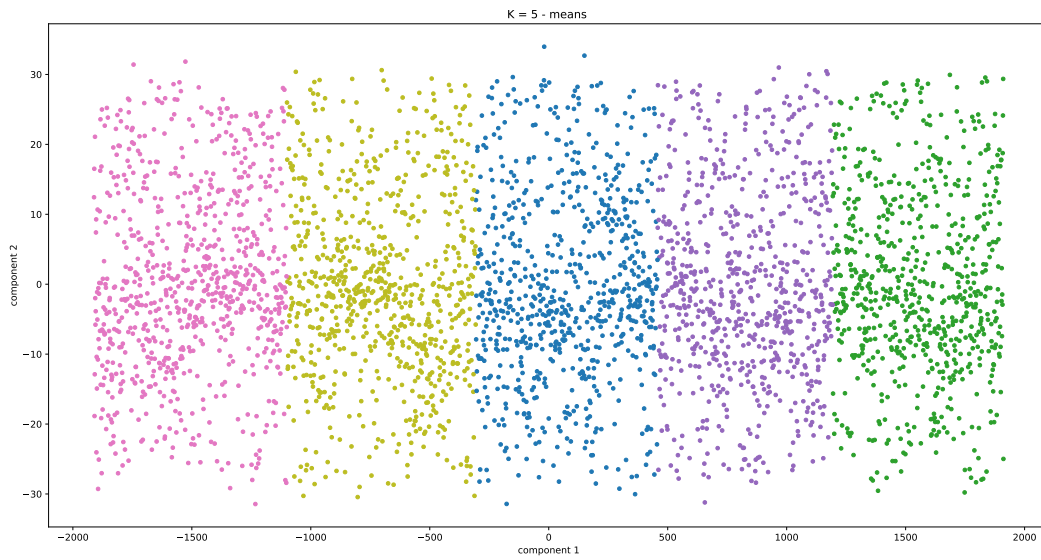**Figure 3:** K-Means where K = 2
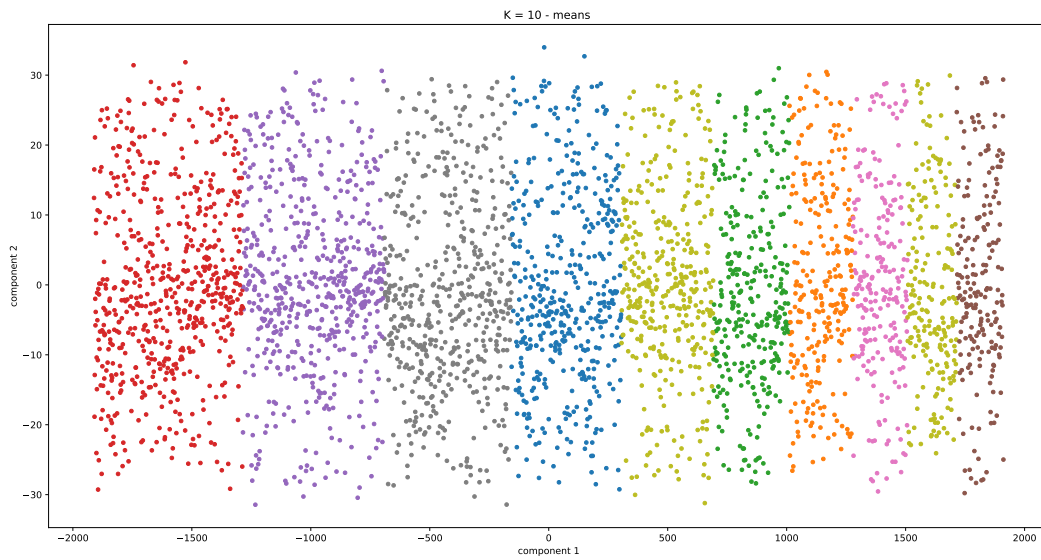
Figure 4: K-Means where K = 5

Figure 5: K-Means where K = 10

Figure 6: K-Means where K = 20

K = 20 - means