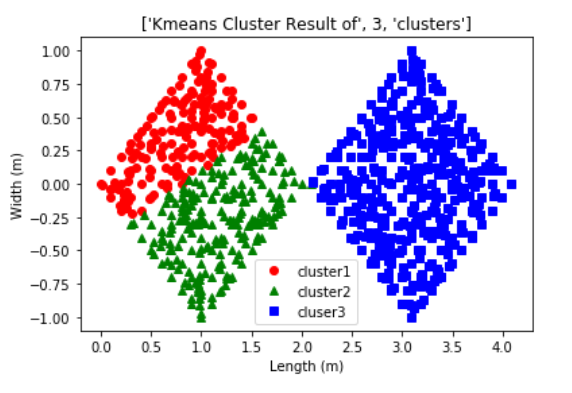
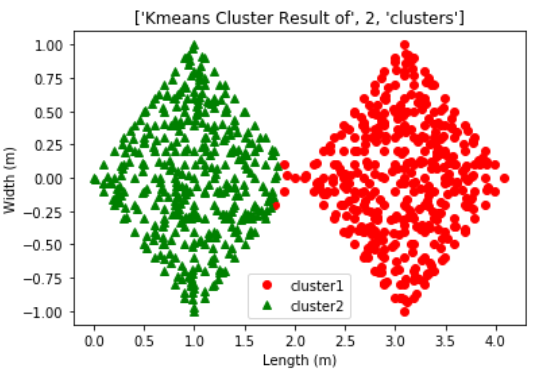
**Assignment 3 Ruojun Li**

**Problem 1 output:**

K-means with 3 clusters:



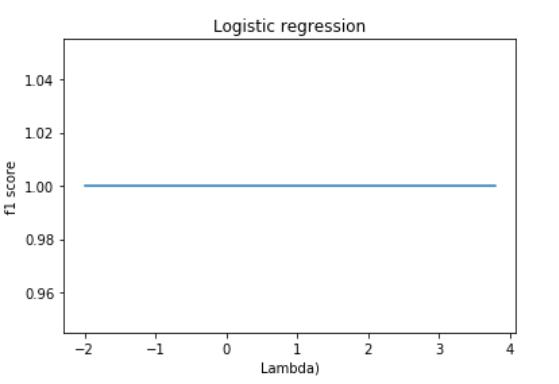
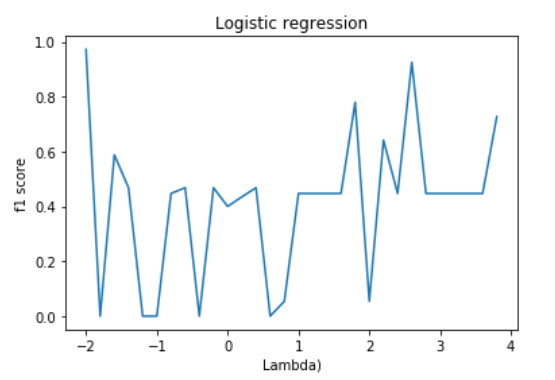
K-means with 2 clusters:



Problem2 output:

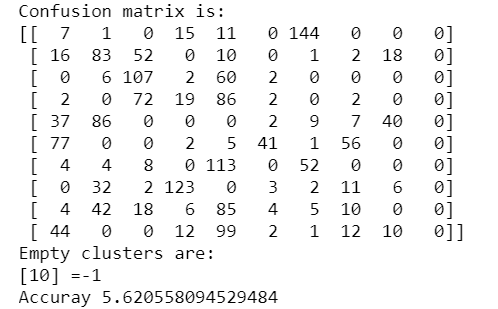
Left : Logistic regression’s f-measure vs lambda. Final accuracy is 75%.

Right: Standardization Logistic regression’s f-measure vs lambda. Final accuracy is 100%

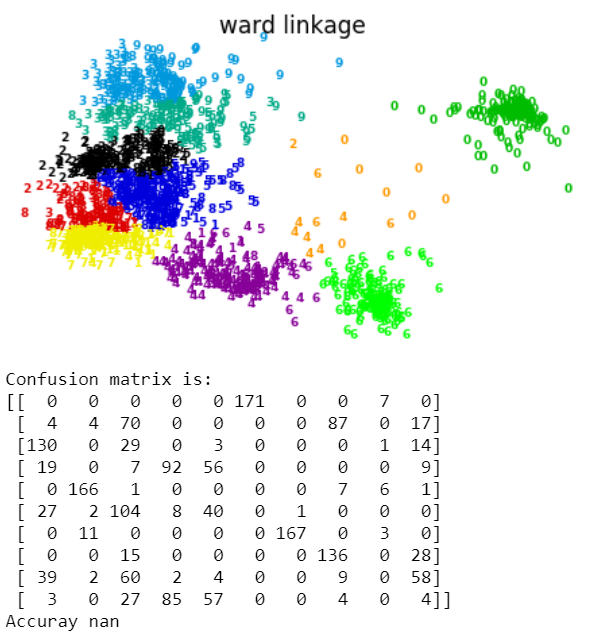


**Problem3 output:**

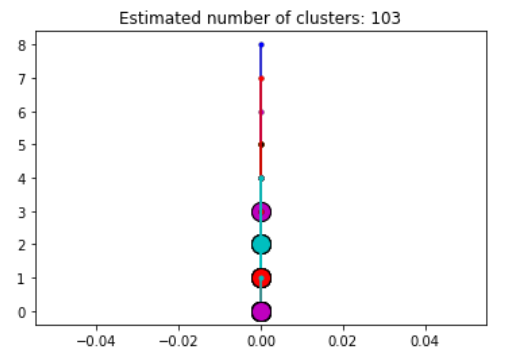
**a.**



b.

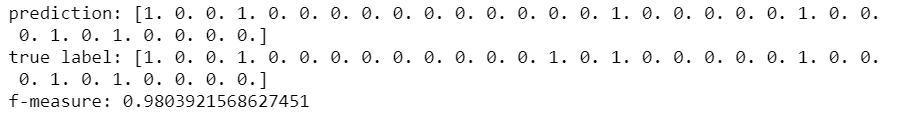


c.

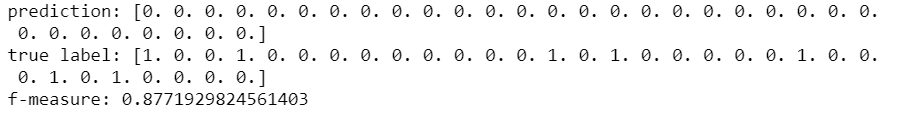


**Problem 4 output:**

a.



b.



c.

