Task 2.3

Q4 need to rewritten.

Centroids don't change: The algorithm stops when the centroids of the clusters no longer move. This means that the data points have been assigned to the closest clusters and there is no further improvement to be made.

Maximum number of iterations reached: The algorithm can also be stopped after a certain number of iterations, even if the centroids are still moving. This is done to prevent the algorithm from running forever.

Minimum change in the objective function: The objective function for K-means clustering is the sum of the squared distances between each data point and its assigned centroid. The algorithm can be stopped when the change in the objective function is less than some threshold.

Q5

The best number of clusters can be determined using the mean silhouette scores calculated for different values of K. The highest mean silhouette score generally indicates the most appropriate number of clusters.