k-Means

THEORY

1) It is a machine learning algorithm under unsupervised learning. It is a centroid-based algorithm where each cluster is associated with a centroid.
2) Our aim to minimize the within-cluster sum squared error (SSE):

$$C_{\text{best}} = \arg\min_{c} \sum_{i=1}^{k} \sum_{x \in S_i} ||x - c^{(i)}||^2 \tag{1}$$

3) C stands for the set of centroid of clusters and S stands for the set of data points in i^{th} cluster.
4) k-means clustering is an NP-hard optimization problem.

QUIZ

1) k-Means is a ML algorithm based on:
   a) Unsupervised Learning
   b) Supervised Learning
   c) Reinforcement Learning
2) Centroid-based clustering organizes the data into hierarchical clusters. True/False