"K-means clustering" is a popular unsupervised machine learning algorithm used for clustering data points into a specified number of clusters. The algorithm aims to partition a set of data points into clusters where each point belongs to the cluster with the nearest mean (centroid). Here's how the K-means clustering algorithm works:

Initialization: The algorithm starts by randomly initializing K centroids, where K is the number of clusters specified by the user.

Assignment: Each data point is assigned to the nearest centroid based on a distance metric, commonly the Euclidean distance. This step forms initial clusters.

Update Centroids: The centroids of the clusters are recalculated by taking the mean of all data points assigned to each cluster.

Reassignment: Data points are reassigned to the cluster with the closest centroid based on the updated centroids.

Repeat: Steps 3 and 4 are iteratively repeated until convergence criteria are met. Convergence occurs when the centroids no longer change significantly, or when a specified number of iterations is reached.

Result: The final output of the K-means algorithm is K clusters with data points grouped together based on similarity, where each cluster is represented by its centroid.

K-means clustering is widely used in various fields such as image segmentation, customer segmentation, anomaly detection, and pattern recognition. It is efficient, easy to implement, and suitable for large datasets. However, the algorithm's performance can be sensitive to the initial selection of centroids and may converge to local optima depending on the data distribution.