Solution to the bonus problem

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What's K-means clustering

k-means clustering aims to partition n observations into k clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster.

We need to create 7 clusters(7 possible grades) and label all the marks as per their respective clusters.

Solution

For this task, we used KMeans functionaly from sklearn library:

KMeans(n-clusters=7, random-state=0).fit(marks)

It fits all the entries of the array(marks) in 7 clusters. And the labels to these 7 clusters are given by grade-dict.

cluster-centers finds the co-ordinates of cluster centers.