Program No:12

Aim:Program to implement k-means clustering technique using any standard dataset available in the public domain

Program

import numpy as np  
import matplotlib.pyplot as mtp  
import pandas as pd  
dataset=pd.read\_csv('world\_country\_and\_usa\_states\_latitude\_and\_longitude\_values.csv')  
x=dataset.iloc[:,[1,2]].values  
print(x)  
from sklearn.cluster import KMeans  
wcss\_list = []  
for i in range(1, 11):  
 kmeans = KMeans(n\_clusters=i, init='k-means++')  
 kmeans.fit(x)  
 wcss\_list.append(kmeans.inertia\_)  
mtp.plot(range(1,11), wcss\_list)  
mtp.title('The elbow method Graph')  
mtp.xlabel('Number of clusters (k)')  
mtp.ylabel('wcss\_list')  
mtp.show()  
kmeans = KMeans(n\_clusters=3,init='k-means++',random\_state=42)  
y\_predict=kmeans.fit\_predict(x)  
print(y\_predict)  
mtp.scatter(x[y\_predict == 0,0], x[y\_predict ==0,1], s=100, c='blue', label='Cluster0')  
mtp.scatter(x[y\_predict == 1,0], x[y\_predict ==1,1], s=100, c='green', label= 'Cluster1')  
mtp.scatter(x[y\_predict == 2,0], x[y\_predict ==2,1], s=100, c='red', label= 'Cluster2')  
mtp.scatter(kmeans.cluster\_centers\_[:,0],kmeans.cluster\_centers\_[:,1], s = 300,)  
mtp.title('clusters of customers')  
mtp.xlabel('latitude')  
mtp.ylabel('longitude')  
mtp.legend()  
mtp.show()

OUTPUT











