

Experiment No.: 14 Implementation of clustering techniques - k-Means

Aim:

To implement a k-Means clustering technique using python language.

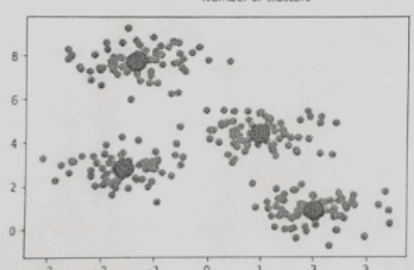
Source code:

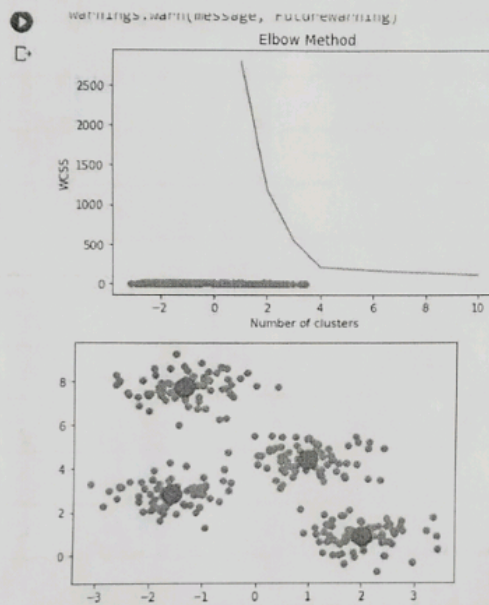
```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
from sklearn.datasets import sample_generator
import make_blobs
from sklearn.cluster import KMeans
X, Y = make_blobs(n_samples=300, centers=4, cluster_std=
random_state=0)

plt.scatter(X[:,0], X[:,1])
wcss = []
for i in range(1,11):
    kmeans = KMeans(n_clusters=i, init='k-means++',
max_iter=300, n_init=10, random_state=0)
    kmeans.fit(X)
    wcss.append(kmeans.inertia_)
plt.plot(range(1,11), wcss)
plt.title('Elbow method')
plt.xlabel('Number of clusters')
plt.ylabel('Wcss')
plt.show()
kmeans = KMeans(n_clusters=4, init='k-means++',
max_iter=300, n_init=10, random_state=0)
pred_y = kmeans.fit_predict(X)
plt.scatter(X[:,0], X[:,1])
```



```
plt.scatter(kmeans.cluster_centers_[:, 0],
            kmeans.cluster_centers_[:, 1], s=300, c='red')
plt.show()
```

Output: 



Result:

Thus the program for kmeans are successfully executed and the output is verified.