

EX:15

Date:

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._sample_generator import make_blobs
from sklearn.cluster import KMeans
X, y = make_blobs(n_samples=300, centers=4, cluster_std=0.60, 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)
```

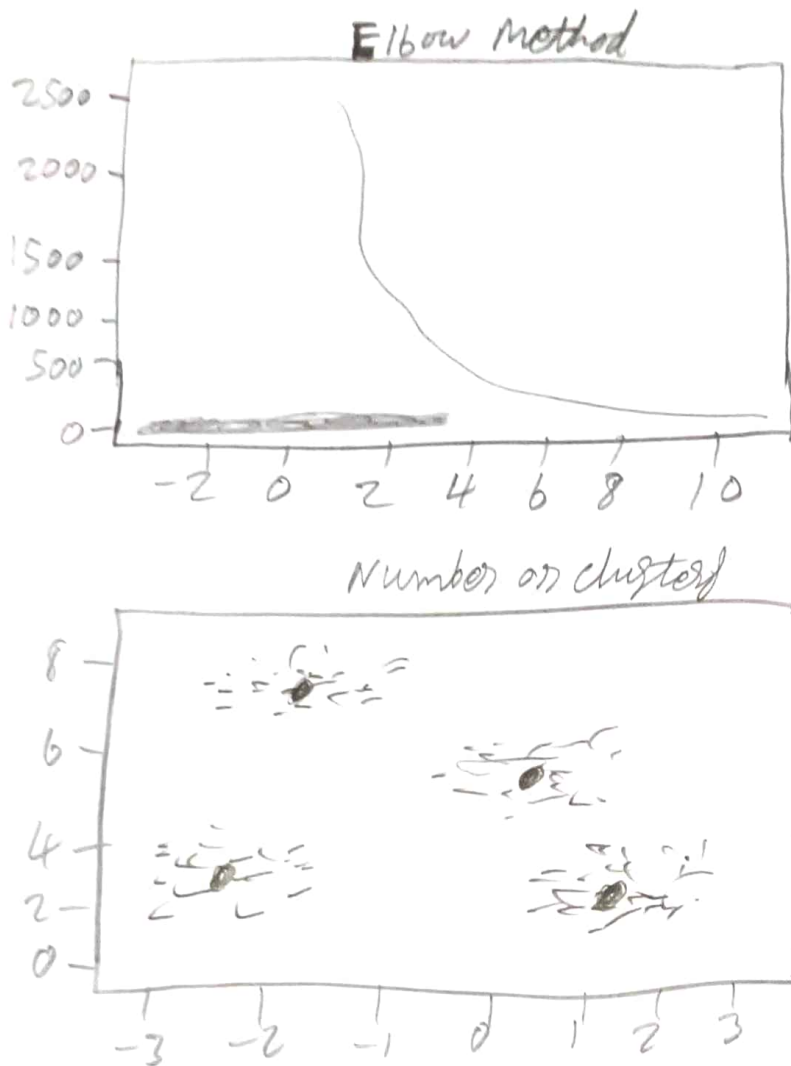
```
Pred_Y = kmeans.fit_predict(X)
```

```
plt.scatter(X[:,0], X[:,1])
```

```
plt.scatter(kmeans.cluster_centers[:,0], kmeans.cluster_centers[:,1], s=300, c='b')
```

```
plt.show()
```

Output:



Result:

That kmeans clustering technique using Python language is successfully executed & output verified.