

Ex no: 14.

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 import _samples_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='kmeans  
++', 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('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)
```

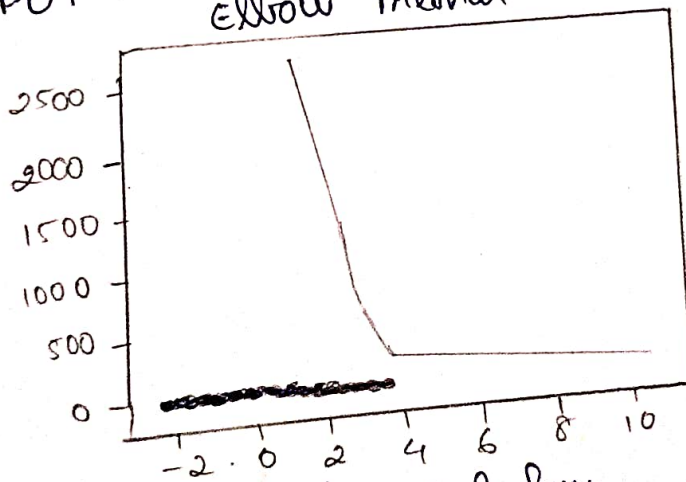
```
plt.scatter(x[:,0], x[:,1]).
```

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

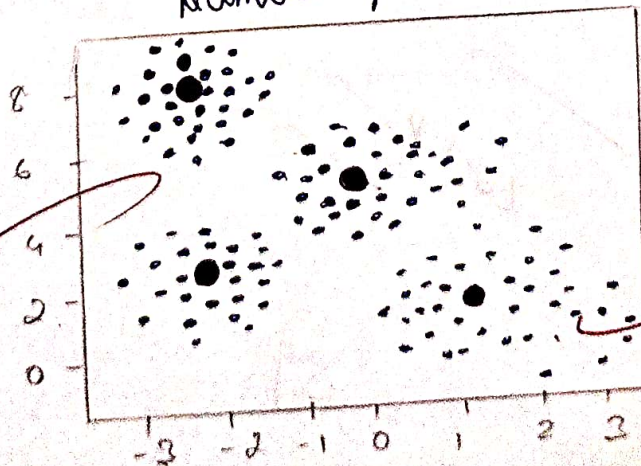
```
plt.show()
```

OUTPUT :-

Elbow Method.



Number of clusters.



RESULT :- The program is successfully executed & the output is verified.