

Exp. no

Date

# Implementation of clustering

## Techniques k-means

### Aim

To implement a k means clustering technique using python language

### Explanation

- \* Import k-means from sklearn cluster
- \* Assign x and y
- \* call the function kmeans()
- \* Perform scatter operation and display

### output

### source code

```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
from sklearn.datasets import make_blobs
from sklearn.cluster import kmeans
```

```
x, y = make_blobs(n_samples=300, centers=4,
                  cluster=0.0, random_state=0)
```

```
plt.figure(figsize=(6,6))
```

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

```
plt.title('Data points')
```

```
plt.xlabel('feature1')
```

```
plt.xlabel('feature2')
```

```
plt.show()
```

```
wcss = []
```

```
for i in range(1,11):
```

```
    kmeans = kmeans(n_clusters=i, init='k-means++', max_iter=10, random_state=0)
```

```
kmeans.fit(x)
```

```
wcss.append(kmeans.inertia_)
```

```
plt.figure(figsize=(8,6))
```

```
plt.plot(range(1,11), wcss, marker='o')
```

```
plt.title('Elbow method')
```

```
plt.ylabel('WCSS')
```

```
plt.show
```

```
kmeans = KMeans(n_clusters=4, init='k-means++',
```

```
max_iter=300, init=10, random=0)
```

```
pred.y = kmeans.fit_predict(x)
```

```
plt.figure(figsize=(8,6))
```

```
plt.scatter(x[:,0], x[:,1], c=pred.y, cmap='viridis',  
            marker='o')
```

```
plt.title('K means clustering')
```

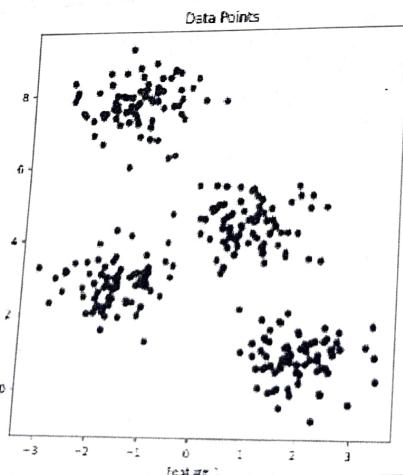
```
plt.xlabel('Feature 1')
```

```
plt.ylabel('Feature 2')
```

```
plt.legend()
```

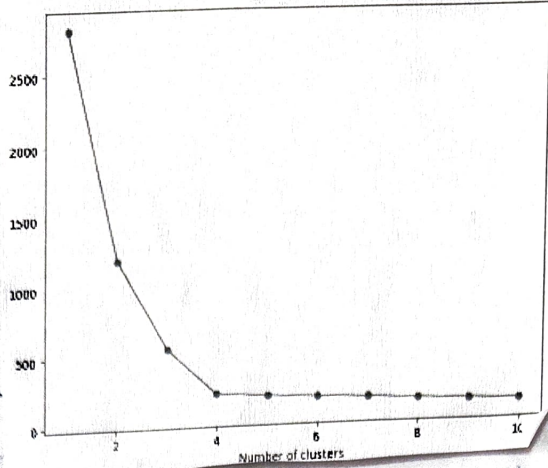
```
plt.show()
```

Output

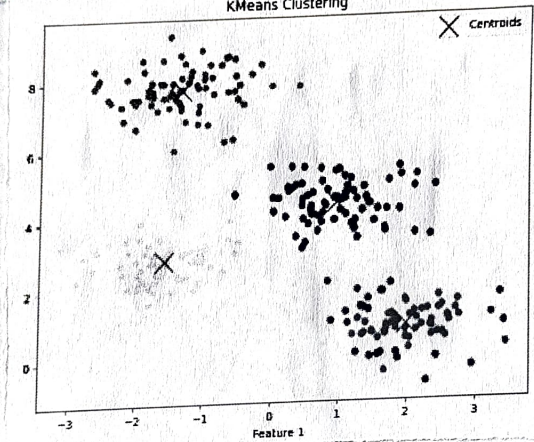


Handwritten notes at the bottom of the page, partially obscured and difficult to read, appear to discuss clustering results and model performance.

Elbow Method



KMeans Clustering



correct

Yes

Result

Thus implement k-means clustering technique using python language is implemented and executed successfully.