

Ex no: 14

Implementation of Clustering techniques K means

Code

Import python necessary libraries

```
x, y = make_blobs (n_samples=300, centers=4,  
cluster_std = 0.60, random_state=0)
```

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

```
plt.title ('Dataset')
```

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

```
plt.ylabel ('feature2')
```

```
plt.show()
```

```
users = []
```

```
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)
```

```
    users.append (kmeans.inertia_)
```

```
plt.plot (range (1,11) uses)
```

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

```
plt.xlabel ('Number of clusters')
```

```
plt.ylabel ('uses')
```

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

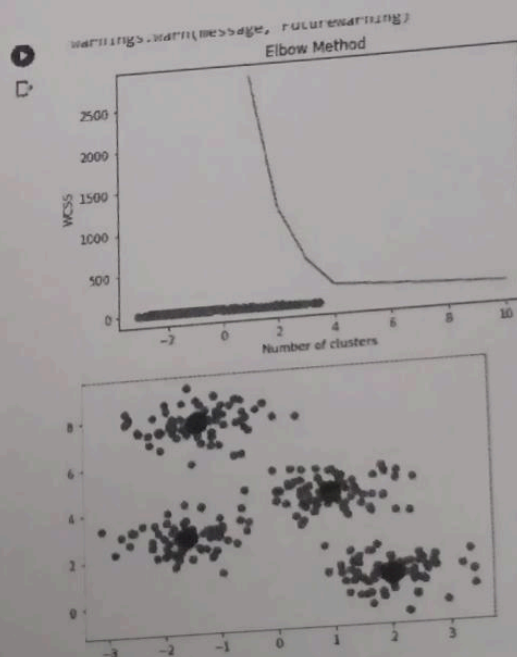
```
plt.ylabel ('Feature 2')
```

```
plt.legend()
```

```
plt.show()
```

O/P

OUTPUT :



(1) $\text{Total} = 100$
 (2) $\text{Total} = 100$
 (3) $\text{Total} = 100$
 (4) $\text{Total} = 100$
 (5) $\text{Total} = 100$
 (6) $\text{Total} = 100$
 (7) $\text{Total} = 100$
 (8) $\text{Total} = 100$
 (9) $\text{Total} = 100$
 (10) $\text{Total} = 100$

Result

Thus the O/P is successfully executed & O/P is verified