Date :

Expno 12

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K means clustering

Aim

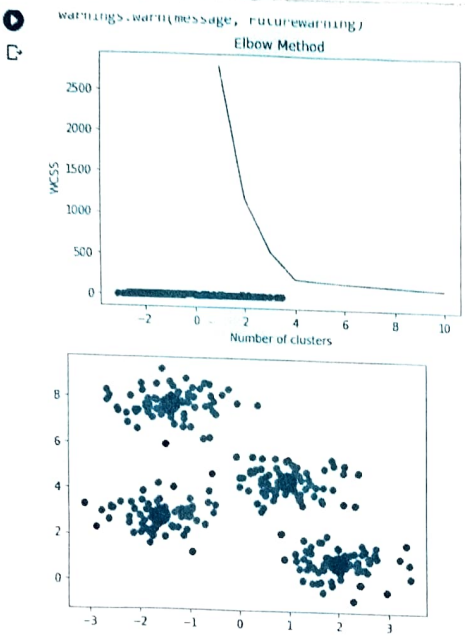
To implement a K-means clustering technique using Python language

Code:

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

np.random.seed(42)
n_samples = 300
n_features = 2
n_clusters = 4

data, tree_labels = make_blobs(n_samples=n_samples,
  centers=n_clusters, cluster_std=1.2, random_state=42)

kmeans = KMeans(n_clusters=n_clusters, random_state=42)
  kmeans.fit(data)

predicted_labels = kmeans.labels_
cluster_centers = kmeans.cluster_centers_

plt.figure(figsize=(10,7))
```

```
for i in range(n_clusters):
    cluster_points = data[predicted_labels == i]
    plt.scatter(cluster_points[:, 0], cluster_points[:, 1],
                label=f"Cluster {i}")

plt.scatter(cluster_centers[:, 0], cluster_centers[:, 1],
s=100, c='red', marker='x', label="Centroids")

plt.title('K-means Clustering')
plt.xlabel('Feature 1')
plt.legend()
plt.show()
```

Output



Result: Thus the output verified Successfully from the Kmeans Program using Python