EXP NO: 12 - IMPLEMENTATION OF CLUSTERING TECHNIQUES :k-Means

AIM:

To implement a k-means clustering techniques using python.

ALGORITHM:

1) import kmeans from sklearn.cluster

2) Assign x and y.

3) call the function kmeans()

4) Perform scatter operation and display the output.

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 = 'red')

plt.show().
```
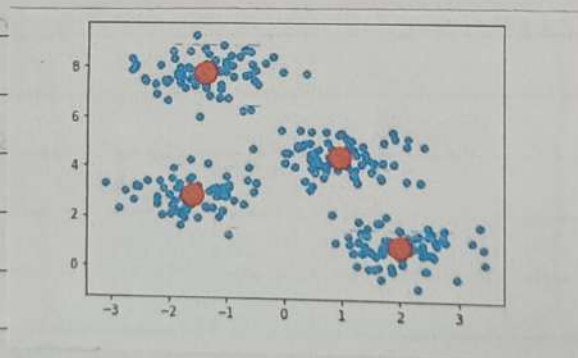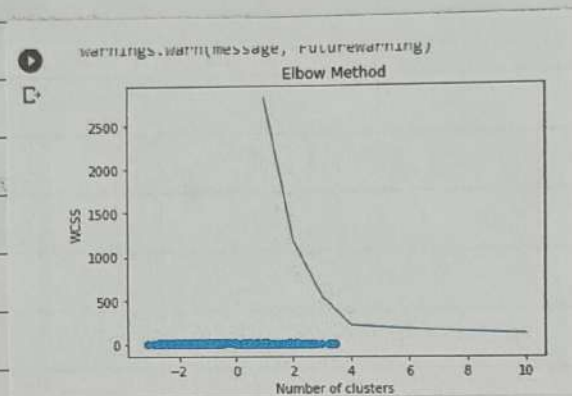
OUTPUT:

RESULT:

Thus the implementation of clustering technique by k-means is successfully executed.