**3. Write a program to implement k-means clustering algorithm**

**OUTPUT:**

=== Run information ===

Scheme: weka.clusterers.SimpleKMeans -init 0 -max-candidates 100 -periodic-pruning 10000 -min-density 2.0 -t1 -1.25 -t2 -1.0 -N 2 -A "weka.core.EuclideanDistance -R first-last" -I 500 -num-slots 1 -S 10

Relation: vote

Instances: 435

Attributes: 17

handicapped-infants

water-project-cost-sharing

adoption-of-the-budget-resolution

physician-fee-freeze

el-salvador-aid

religious-groups-in-schools

anti-satellite-test-ban

aid-to-nicaraguan-contras

mx-missile

immigration

synfuels-corporation-cutback

education-spending

superfund-right-to-sue

crime

duty-free-exports

export-administration-act-south-africa

Class

Test mode: evaluate on training data

=== Clustering model (full training set) ===

kMeans

======

Number of iterations: 3

Within cluster sum of squared errors: 1510.0

Initial starting points (random):

Cluster 0: n,n,y,y,y,y,n,n,y,n,n,n,y,y,y,y,democrat

Cluster 1: n,n,y,n,y,n,y,y,y,n,n,n,n,y,n,y,democrat

Missing values globally replaced with mean/mode

Final cluster centroids:

Cluster#

Attribute Full Data 0 1

(435.0) (214.0) (221.0)

=========================================================================

handicapped-infants n n y

water-project-cost-sharing y y n

adoption-of-the-budget-resolution y n y

physician-fee-freeze n y n

el-salvador-aid y y n

religious-groups-in-schools y y n

anti-satellite-test-ban y n y

aid-to-nicaraguan-contras y n y

mx-missile y n y

immigration y y y

synfuels-corporation-cutback n n n

education-spending n y n

superfund-right-to-sue y y n

crime y y n

duty-free-exports n n y

export-administration-act-south-africa y y y

Class democrat republican democrat

Time taken to build model (full training data) : 0.01 seconds

=== Model and evaluation on training set ===

Clustered Instances

0 214 ( 49%)

1 221 ( 51%)