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\* @Date : 10 Nov 2018

\* @Course : CS620 Applied Algorithms

\* @Program : Clustering Algorithm

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import java.util.ArrayList;

import java.math.\*;

public class ClusteringAlgorithm {

// Give Number of Clusters required to be 2

private static int NumofClusters = 2, randomNum1, randomNum2, flag,status;

private static float[] mean,prevmean = new float[NumofClusters];

private static float[] oldmean = new float[NumofClusters];

private static int[] inputsequence = {3,15,2,5,17,1,18,4,20,16};

private static ArrayList<Integer> Array1 = new ArrayList<Integer>();

private static ArrayList<Integer> Array2 = new ArrayList<Integer>();

// Function to generate Random Number

public int randomGen()

{

int randomNum = (int) (Math.random()\*10);

System.out.println("Randomnly chosen Number is : "+randomNum);

return randomNum;

}

// Function to Calculate Mean of Each Cluster

public float[] calculateMean()

{

int sum1 = 0, sum2 = 0;

float avg1, avg2, size1, size2;

size1 = Array1.size();

size2 = Array2.size();

for (int i=0; i< Array1.size(); i++)

{

sum1 += Array1.get(i);

}

avg1 = sum1 / size1;

for (int j=0; j< Array2.size(); j++)

{

sum2 += Array2.get(j);

}

avg2 = sum2 / size2;

mean[0] = avg1;

mean[1] = avg2;

System.out.println("Mean 1 is : "+mean[0]);

System.out.println("Mean 2 is : "+mean[1]);

for(int f=0;f<NumofClusters;f++)

{

if(mean[f]==oldmean[f])

{

flag = 1;

}

else

{

flag = 2;

break;

}

}

if(flag==1)

{

System.out.println("flag is : "+flag);

status = 1;

System.out.println("status is : "+status);

}

else if(flag==2)

{

System.out.println("flag is : "+flag);

status = 2;

System.out.println("status is : "+status);

}

return mean;

}

public int calculateMinMean(int inputseqnum)

{

float minmean = Math.abs(mean[0]-inputseqnum);

int array=0;

for(int d=0;d<mean.length;d++)

{

float temp = Math.abs(mean[d]-inputseqnum);

if (temp<minmean)

{

array = d;

}

}

return array;

}

public void addElements()

{

while(status!=1)

{

for (int i=0; i< inputsequence.length-2; i++)

{

prevmean = calculateMean();

// checkmeansequality();

// Add Elements to Array1

int arr = calculateMinMean(inputsequence[i]);

if(arr==0 && i!=randomNum1 && i!=randomNum2)

{

Array1.add(inputsequence[i]);

}

// Add Elements to Array2

else if(arr==1 && i!=randomNum1 && i!=randomNum2)

{

Array2.add(inputsequence[i]);

}

}

}

}

// MAIN Function where program starts Execution

public static void main(String[] args) {

// TODO Auto-generated method stub

// Instantiate the Clustering Algorithm class

ClusteringAlgorithm ca = new ClusteringAlgorithm();

// Generate a Random number

randomNum1 = ca.randomGen();

Array1.add(inputsequence[randomNum1]);

System.out.println("Array 1 is "+Array1);

randomNum2 = ca.randomGen();

Array2.add(inputsequence[randomNum2]);

System.out.println("Array 2 is "+Array2);

// Add Elements

ca.addElements();

System.out.println("Array 1 is : ");

for(int k=0;k<Array1.size();k++)

System.out.print(Array1.get(k)+" ");

System.out.println();

System.out.println("Array 2 is : ");

for(int k=0;k<Array2.size();k++)

System.out.print(Array2.get(k)+" ");

System.out.println();

// ca.calculateMean(oldmean1, oldmean2);

// if

}

}