Experiment 7

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Class: TE4

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Batch: D

Aim: Implementation of Clustering algorithm K-means 2D

2d K-means Clustering

Program:

```
package expt;

import java.util.ArrayList;

import java.util.*;


public class Clustter_2d {

    public static void main(String[] args) {
        int[] columnOne = new int[] {
            185,
            170,
            168,
            179,
            182,
            188,
            180,
            180,
            183,
```

```java
        180,
        180,
        177
    };
    int[] columnTwo = new int[] {
        72,
        56,
        60,
        68,
        72,
        77,
        71,
        70,
        84,
        88,
        67,
        76
    };
    if (columnOne.length != columnTwo.length)
        System.out.println("Wrong Dataset");
    List < Integer > groupOne =
        new ArrayList < Integer > ();
    List < Integer > groupTwo =
        new ArrayList < Integer > ();
    groupOne.add(0);
    groupTwo.add(1);
    int x1 = columnOne[0];
```
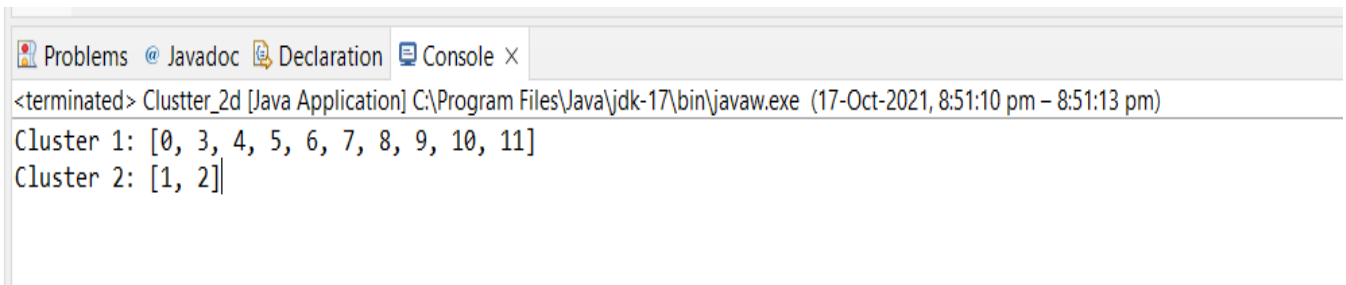
```java
int y1 = columnTwo[0];
int sumX1 = columnOne[0];
int sumY1 = columnTwo[0];
int x2 = columnOne[1];
int y2 = columnTwo[1];
int sumX2 = columnOne[1];
int sumY2 = columnTwo[1];
int length = columnOne.length;
double calc1;
double calc2;
for (int i = 2; i < length; i++) {
    int xi = columnOne[i];
    int yi = columnTwo[i];
    calc1 = Math.sqrt((xi - x1) * (xi - x1) + (yi - y1) * (yi -
        y1));
    calc2 = Math.sqrt((xi - x2) * (xi - x2) + (yi - y2) * (yi -
        y2));
    if (calc1 > calc2) {
        groupTwo.add(i);
        sumX2 += x2;
        sumY2 += y2;
        x2 = sumX2 / groupTwo.size();
        y2 = sumY2 / groupTwo.size();
    } else {
        groupOne.add(i);
        sumX1 += x1;
        sumY1 += y1;
```

```java
                x1 = sumX1 / groupOne.size();

                y1 = sumY1 / groupOne.size();

            }

        }

        System.out.println("Cluster 1: " + groupOne);

        System.out.println("Cluster 2: " + groupTwo);

    }

}
```

Output:

Problems @ Javadoc Declaration Console ×

<terminated> Clustter_2d [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (17-Oct-2021, 8:51:10 pm – 8:51:13 pm)

```
Cluster 1: [0, 3, 4, 5, 6, 7, 8, 9, 10, 11]
Cluster 2: [1, 2]
```