Experiment-2.3

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Branch: CSE
Section: 905/A
Semester: 6
Date of Performance: 26/04/2023
Subject Name: Data Mining Lab
Subject Code: 20CSP-376

1) Aim:

To perform the cluster analysis by k-means clustering method.

2) Objective:

Making the cluster of the data using K-means algorithm on a pre dataset.

3) Code:

```
library(cluster)

setwd("/home/heefe/Documents/DMClassWork/")

dataset = read.csv('mall.csv')

X = dataset[4:5]

set.seed(6)

wcss = vector()

for (i in 1:10) wcss[i] = sum(kmeans(X, i)$withinss)

pdf("elbow-graph.pdf", paper="a4")

plot(x = 1:10,

    y = wcss,
```

```
    type = 'b',
    main = 'The Elbow Method',
    xlab = 'Number of clusters',
    ylab = 'WCSS')
dev.off()


set.seed(29)
kmeans = kmeans(x = X,
                centers = 6,
                iter.max = 300,
                nstart = 10)
pdf("clusterplot.pdf", paper="a4")
clusplot(x = X,
         clus = kmeans$cluster,
         lines = 0,
         shade = TRUE,
         color = TRUE,
         labels = 4,
         plotchar = TRUE,
         span = TRUE,
```

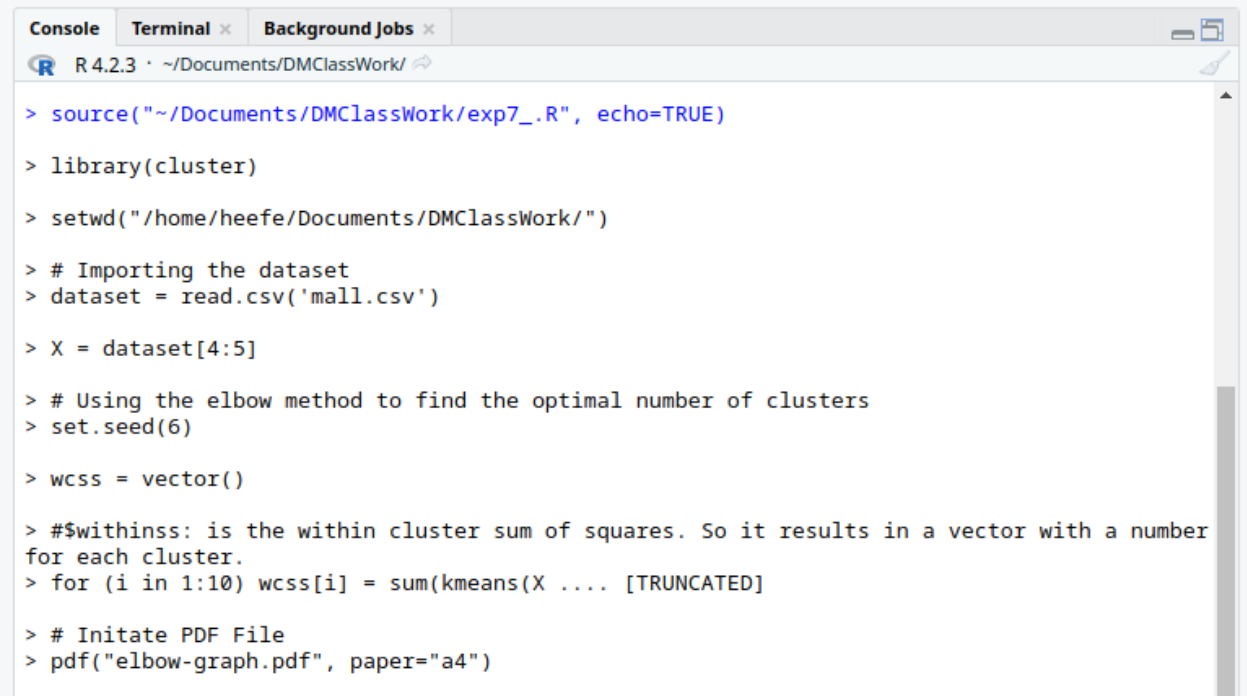
main = 'Clusters of customers',

xlab = 'Annual Income',

ylab = 'Spending Score')

dev.off()

4) Output:



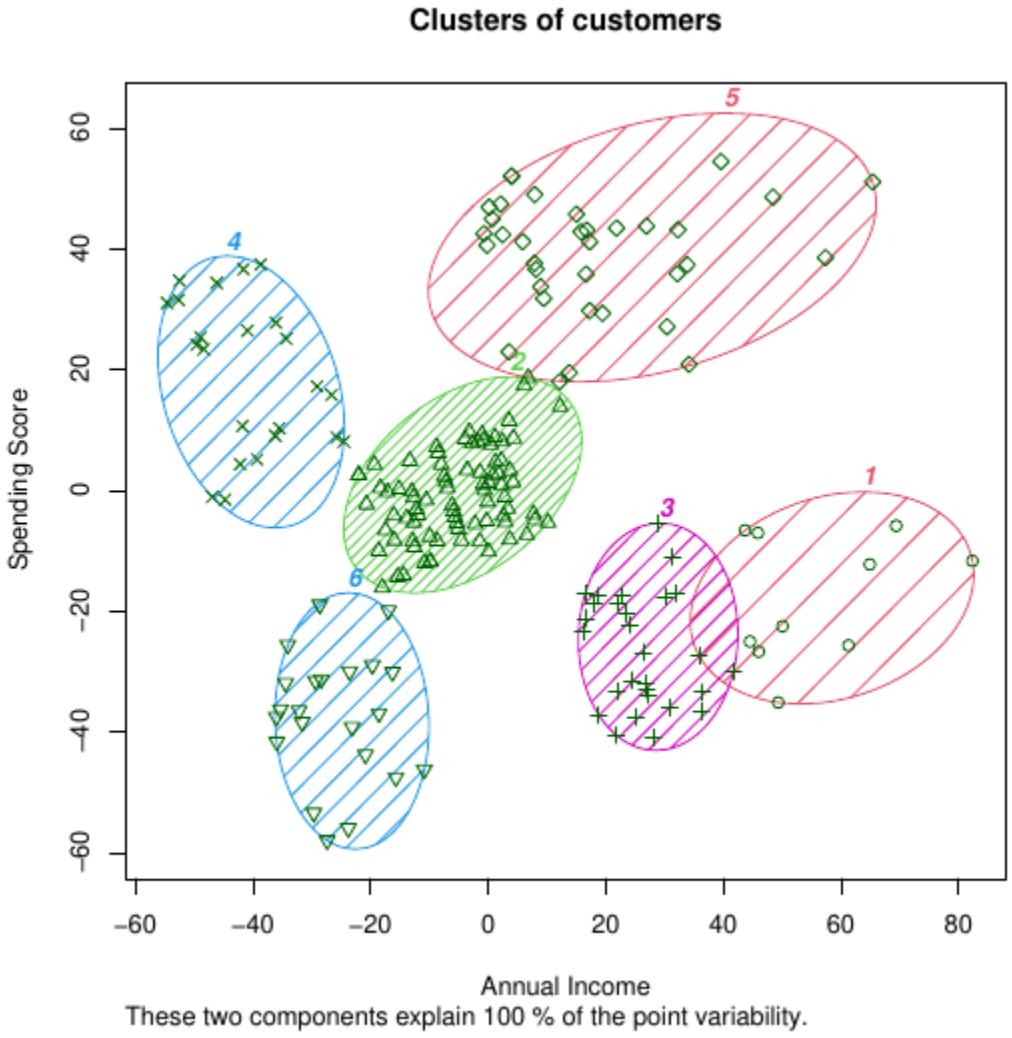
Console | Terminal | Background Jobs

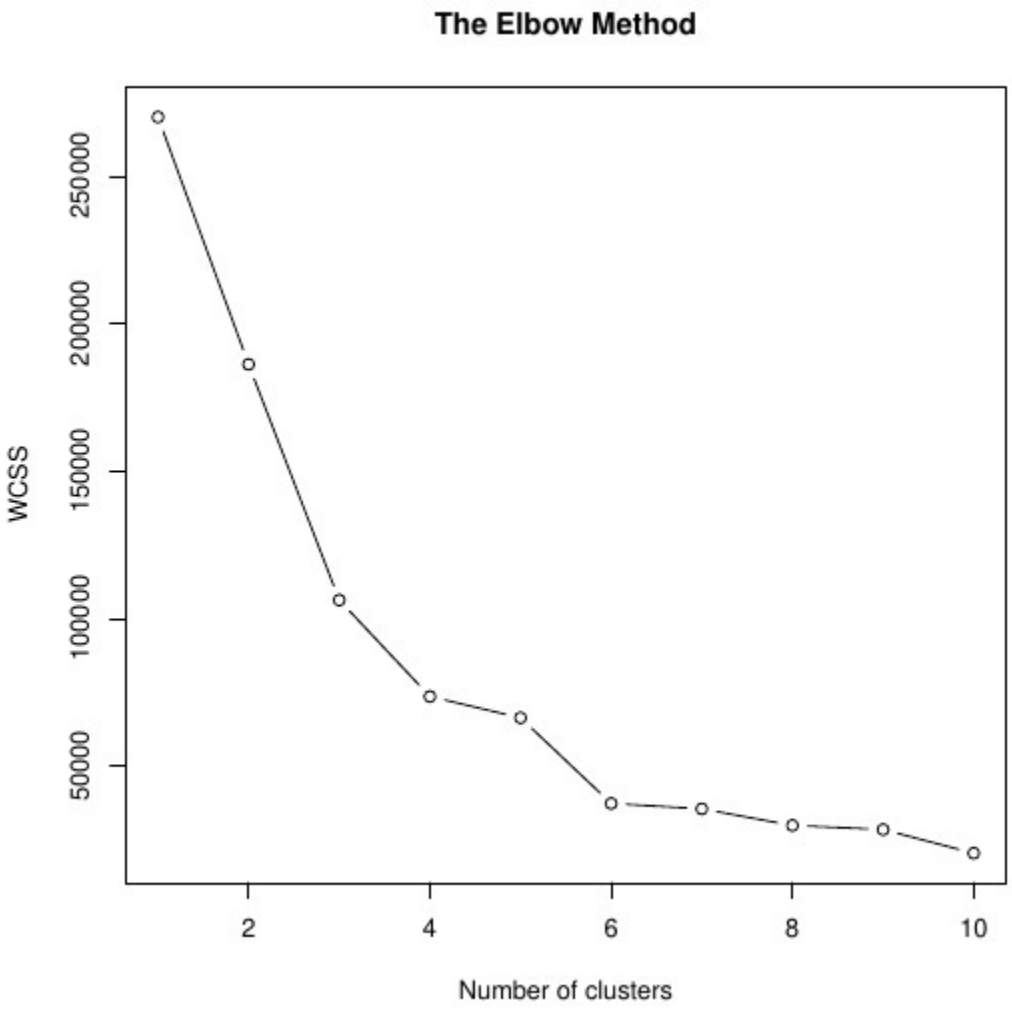
R 4.2.3 · ~/Documents/DMClassWork/

```
> plot(x = 1:10,
+      y = wcss,
+      type = 'b',
+      main = 'The Elbow Method',
+      xlab = 'Number of clusters',
+      ylab = 'WCSS')

> #Close PDF file
> dev.off()
null device
          1

> # Fitting K-Means to the dataset
> set.seed(29)

> kmeans = kmeans(x = X,
+                 centers = 6,
+                 iter.max = 300,
+                 nstart = 10)

> # Initate PDF File
> pdf("clusterplot.pdf", paper="a4")
```

```
> # Fitting K-Means to the dataset
> set.seed(29)

> kmeans = kmeans(x = X,
+                 centers = 6,
+                 iter.max = 300,
+                 nstart = 10)

> # Initate PDF File
> pdf("clusterplot.pdf", paper="a4")

> clusplot(x = X,
+          clus = kmeans$cluster,
+          lines = 0,
+          shade = TRUE,
+          color = TRUE,
+          labels = 4,
+    .... [TRUNCATED]

> #Close PDF file
> dev.off()
null device
          1
>
```

```
Console   Terminal ×   Background Jobs ×
Terminal 1 ▾   /home/heefe/Documents/DMClassWork
[heefe@fedora DMClassWork]$ ls l | grep clu*
ls: cannot access 'l': No such file or directory
[heefe@fedora DMClassWork]$ ls -l | grep clu*
-rw-r--r--. 1 heefe heefe 24254 Apr 26 11:34 clusterplot.pdf
[heefe@fedora DMClassWork]$ ls -l | grep elb*
-rw-r--r--. 1 heefe heefe  5369 Apr 26 11:34 elbow-graph.pdf
[heefe@fedora DMClassWork]$
```




The Elbow Method
WCSS
50000
100000
150000
200000
250000
2
4
6
8
10
Number of clusters