rm(list=ls())

#install.packages("factoextra")

#install.packages("cluster")

library(factoextra)

library(cluster)

#\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#Load and preparing the data

#\*\*\*\*\*\*\*\*\*\*\*\*\*\*

df <- USArrests

df <- na.omit(df)

head(df)

df <- scale(df) # scaling to normalize the values >>>> x-xbar/SD

head(df)

#\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# Hierachical clustering "complete linkage"

#\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

dist\_mat <- dist(df, method = 'euclidean')

hclust\_complete <- hclust(dist\_mat, method = 'complete')

plot(hclust\_complete,cex=0.5, hang = -1)

# hang = A negative value will cause the labels to hang down from 0.

# cex= font size

cut<- cutree(hclust\_complete, k = 4)

abline(h =4 , col = 'red')

rect.hclust(hclust\_complete , k = 4, border = 2:5)