CS 6375

ASSIGNMENT \_\_\_\_6\_\_\_\_\_\_\_\_

Names of students in your group:

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Number of free late days used: \_\_\_\_\_\_\_\_\_\_\_\_0\_\_\_\_\_\_\_\_   
Note: You are allowed a **total** of 4 free late days for the **entire semester**. You can use at most 2 for each assignment. After that, there will be a penalty of 10% for each late day.

Please list clearly all the sources/references that you have used in this assignment.

**Language Used: R**

**Packages Used**: package ggplot2 and jpeg

**Steps to compile and Run the program**:

Open the part3.r in RStudio and click on Source.

Note: We need to change the path of the input,output dir file.

**Best Parameters:**

We have run the program for different images with different number of clusters.

We ran the code for all images and saved the outputs in the clustered image folder.

**Sample R Code:**

library(jpeg)

library(ggplot2)

#Image 1

img <- readJPEG ("C:/Users/perip/Downloads/ML/HomeWork/Assignment6/Part3/image3.jpg")

direct = "C:/Users/perip/Downloads/ML/HomeWork/Assignment6/Part3"

sub\_direct = "clustered\_images"

imgDm <- dim(img) # Obtaining the image dimension

imgRGB <- data.frame(

x = rep(1:imgDm[2], each = imgDm[1]),

y = rep(imgDm[1]:1, imgDm[2]),

R = as.vector(img[,,1]),

G = as.vector(img[,,2]),

B = as.vector(img[,,3])

)

kClusters <- 2

kMeans <- kmeans(imgRGB[, c("R", "G", "B")], centers = kClusters)

kColours <- rgb(kMeans$centers[kMeans$cluster,])

ggp<-ggplot(data = imgRGB, aes(x = x, y = y)) +

geom\_point(colour = kColours) +

labs(title = paste("k-Means Clustering of", kClusters, "Colours")) +

xlab("x") +

ylab("y")

dir.create(file.path(direct,sub\_direct),showWarnings = FALSE)

setwd(file.path(direct,sub\_direct))

ggsave(ggp, file = "image3\_2.jpg")

**Output Images:**





