P8 k-means clustering using R

```
newiris <- iris
newiris$Species<-NULL
(kc <- kmeans(newiris,3))


 table(iris$Species,kc$cluster)
  plot(newiris[c("Sepal.Length", "Sepal.Width")], col = kc$cluster)
points(kc$centers[, c("Sepal.Length", "Sepal.Width")], col = 1:3, pch = 8, cex = 2)
```

P 9 Prediction Using Linear Regression

```
 x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
relation <- lm(y~x)
print(relation)


x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
relation <- lm(y~x)
print(summary(relation))



x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
relation <- lm(y~x)
a <- data.frame(x = 170)
result <- predict(relation,a)
print(result)


x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)
relation <- lm(y~x)
png(file = "linearregression.png")
plot(y,x,col = "blue",main = "Height & Weight Regression",
abline(lm(x~y)),cex = 1.3,pch = 16,xlab = "Weight in Kg",ylab = "Height in
cm")
dev.off()
```

p10 Data Analysis using Time Series Analysis

```
rainfall <- c(799, 1174.8, 865.1, 1334.6, 635.4, 918.5, 685.5, 998.6, 784.2, 985,
882.8, 1071)


rainfall.timeseries <- ts(rainfall, start = c(2012, 1), frequency = 12)
print(rainfall.timeseries)
png(file = "rainfall.png")
plot(rainfall.timeseries)
dev.off()
```

practical 6

```
# Define the annual rainfall data
rainfall <- c(799, 1174.8, 865.1, 1334.6, 635.4, 918.5, 685.5, 998.6, 784.2, 985,
882.8, 1071)

# Define the classification function
classify_rainfall <- function(rainfall) {
  ifelse(rainfall < 800, "Low",
         ifelse(rainfall >= 800 & rainfall <= 1000, "Medium", "High"))
}

# Apply the classification function to the rainfall data
classified_rainfall <- classify_rainfall(rainfall)

# Create a time series object for rainfall
rainfall_timeseries <- ts(rainfall, start = c(2012, 1), frequency = 12)

# Plot the time series of rainfall
plot(rainfall_timeseries, type = "l", col = "blue", xlab = "Year", ylab = "Rainfall
(mm)")

# Add classified rainfall as points on the plot
points(rainfall_timeseries, col = ifelse(classified_rainfall == "Low", "green",
                                         ifelse(classified_rainfall == "Medium", "yellow",
"red")),
       pch = 19)

# Add a legend
legend("topright", legend = c("Low", "Medium", "High"), fill = c("green",
"yellow", "red"))
```