Worksheet-5

Jan James Lennox Tahumar BSIT-2A

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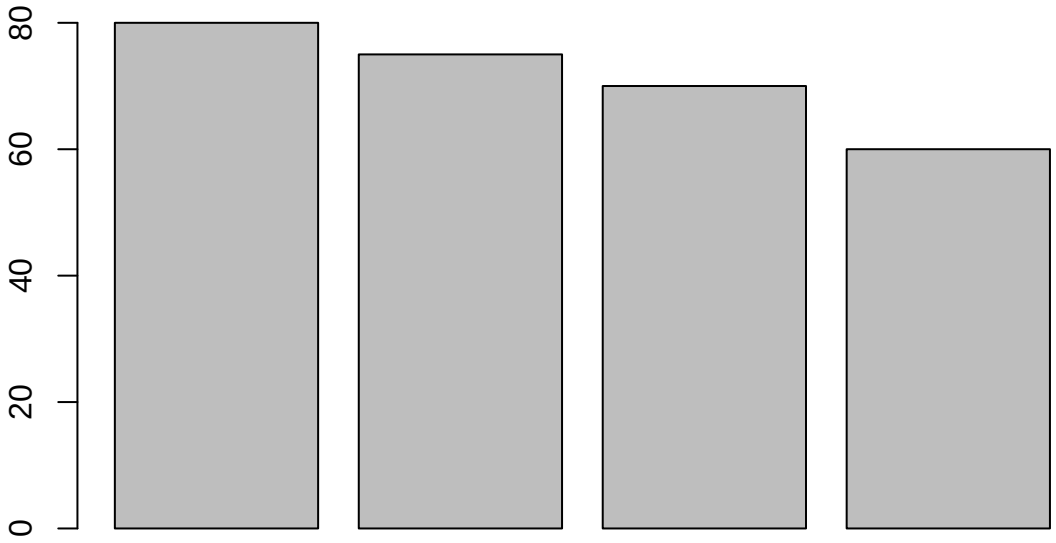
```
x2019_2020 <- c(80,75,70,60)
numb_1a <- barplot(x2019_2020)
```

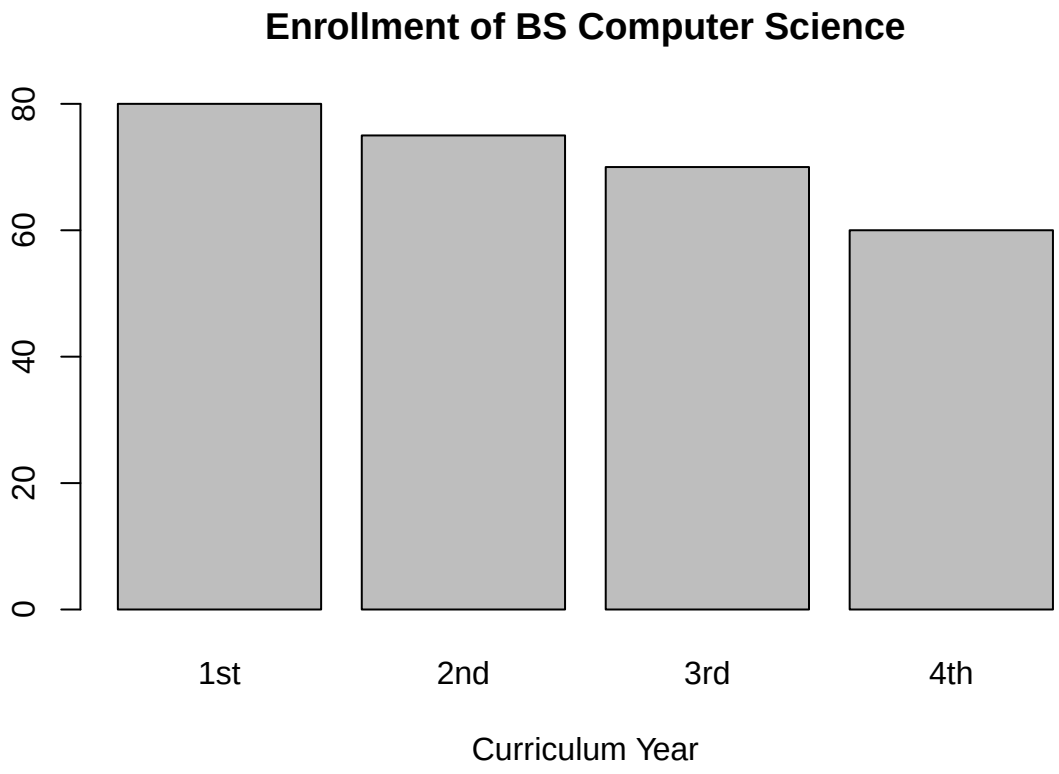



```
numb_1a
```

```
##      [,1]
## [1,]  0.7
## [2,]  1.9
## [3,]  3.1
## [4,]  4.3
```

b. Using the same table, label the barchart with Title = " Enrollment of BS Computer Science horizontal axis = "Curriculum Year" and vertical axis = "number of students"

```
course <- c("1st","2nd","3rd","4th")
numb_1b <- barplot(x2019_2020,
        main = "Enrollment of BS Computer Science",
        xlab = "Curriculum Year", names.arg = course)
```



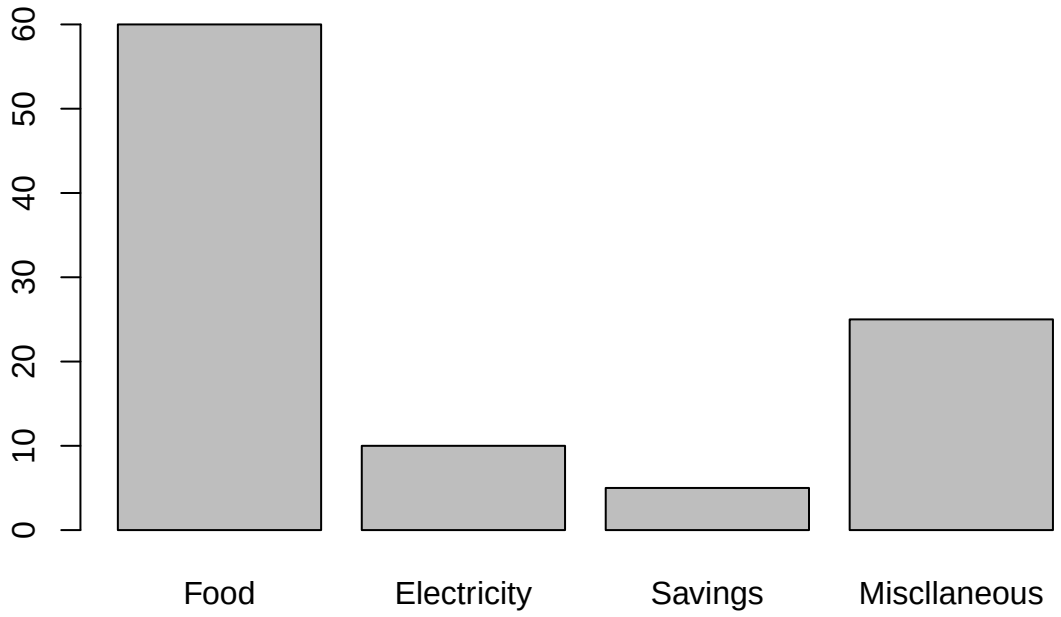
2. The monthly income of De Jesus family was spent on the following: 60% on Food, 10% on electricity, 5% for savings, and 25% for other miscellaneous expenses.

a. Create a table for the above scenario. Write the codes and its result.

```
num2a <- data.frame(
  expenses = c("Food", "Electricity", "Savings", "Miscllaneous"),
  Percentage = c(60,10,5,25)
)
num2a
```

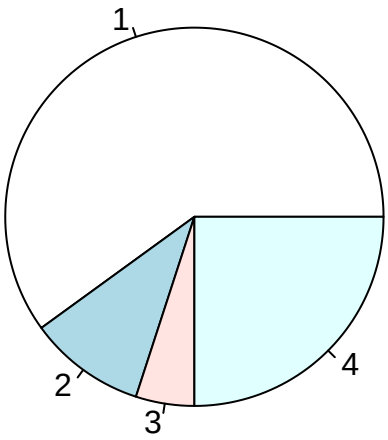
```
##       expenses Percentage
## 1         Food         60
## 2  Electricity         10
## 3      Savings          5
## 4 Miscllaneous         25
```

```
expenses <- c(60,10,5,25)
barplot(expenses,names.arg = c("Food", "Electricity", "Savings", "Miscllaneous"))
```

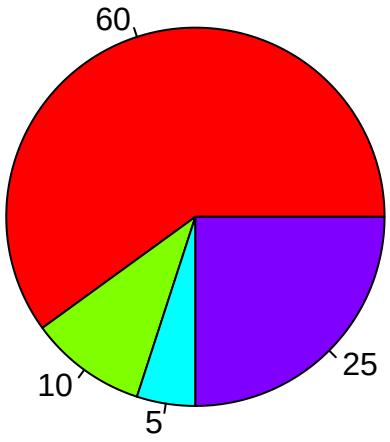


b. Plot the data using a pie chart. Add labels, colors and legend. Write the codes and its result.

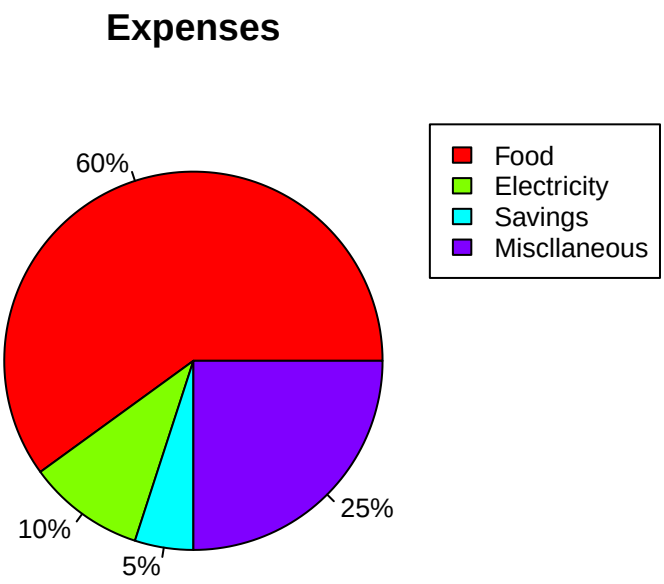
```
pie(expenses)
```




```
numb2b <- pie(expenses,
    col = rainbow(length(expenses)),
    labels = c(60,10,5,25))
```




```
ex_labels <- round(expenses/sum(expenses) * 100, 1)
ex_labels <- paste(ex_labels,"%",sep = "")
pie(expenses, main = "Expenses",col=rainbow(length(expenses)),labels = ex_labels,cex=0.8)
legend(1, c("Food", "Electricity", "Savings", "Miscllaneous"),
           cex = 0.8,fill = rainbow((length(expenses))))
```

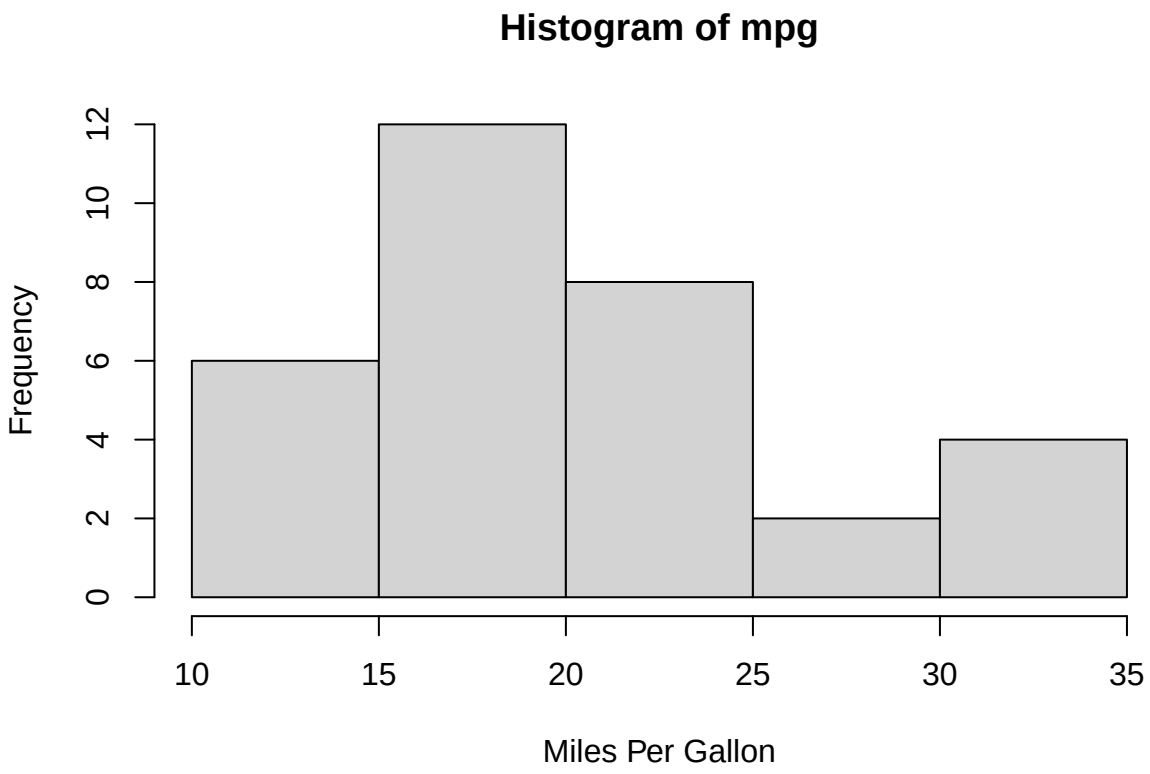


3. Open the mtcars dataset.

```
data("mtcars")
numb3 <- mtcars$mpg
```

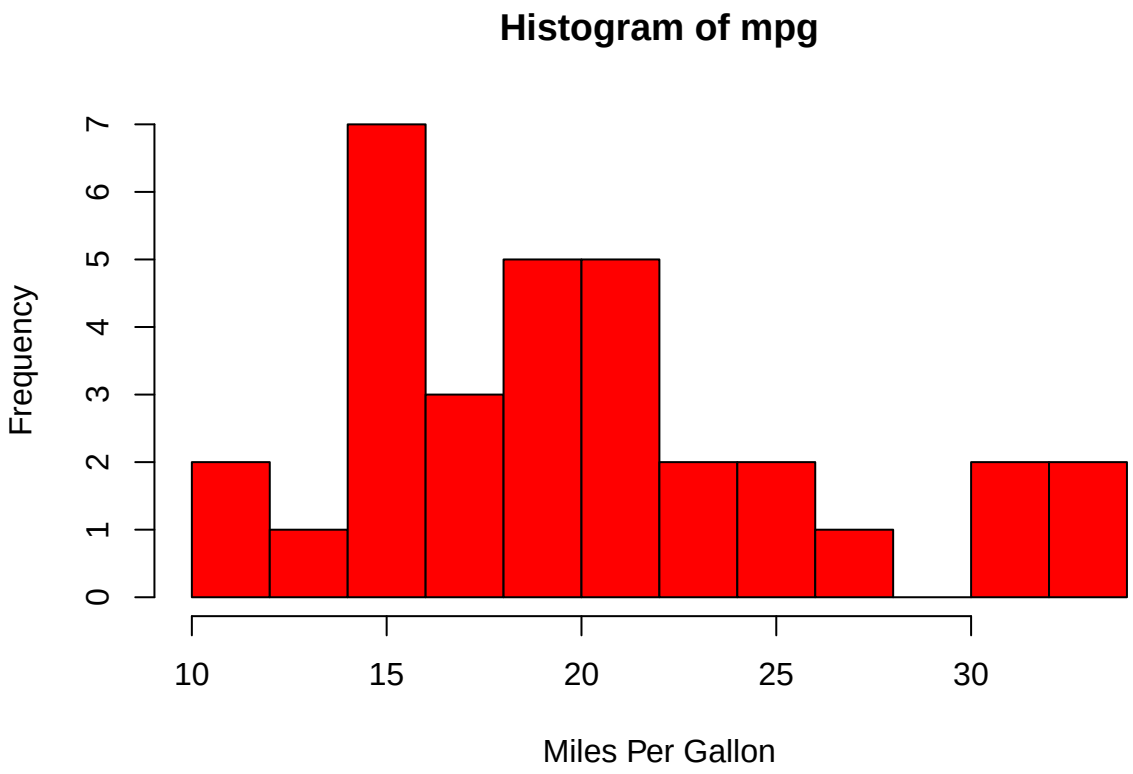
a. Create a simple histogram specifically for mpg (miles per gallon) variable. Use $ to select the mpg only. Write the codes and its result.

```
numb3a <-hist(numb3, xlab="Miles Per Gallon",
              main="Histogram of mpg")
```



b. Colored histogram with different number of bins.

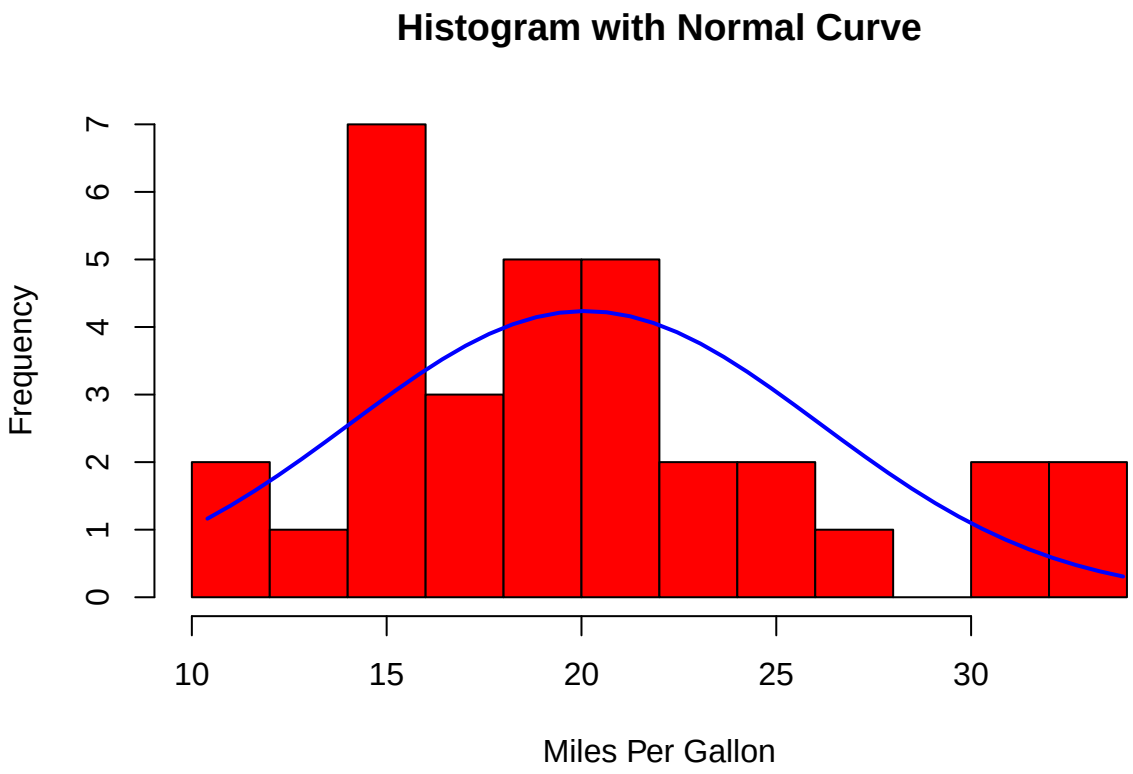
```
numb3b <-hist(numb3, breaks=12, col="red", xlab="Miles Per Gallon",
              main="Histogram of mpg")
```



Note: breaks= controls the number of bins

c. Add a Normal Curve

```
numb3c <-hist(numb3, breaks=12, col="red", xlab="Miles Per Gallon",
        main="Histogram with Normal Curve")
xfit<-seq(min(numb3),max(numb3),length=40)
yfit<-dnorm(xfit,mean=mean(numb3),sd=sd(numb3))
yfit <- yfit*diff(numb3c$mids[1:2])*length(numb3)
lines(xfit, yfit, col="blue", lwd=2)
```



Copy the result.

4. Open the iris dataset. Create a subset for each species.

a. Write the codes and its result.

```
data("iris")
set <- subset(iris, Species == "setosa")
ver <- subset(iris, Species == "versicolor")
vir <- subset(iris, Species == "virginica")
```

b. Get the mean for every characteristics of each species using colMeans(). Write the codes and its result.

```
set <- subset(iris, Species == "setosa")
setosa <- colMeans(set[sapply(set,is.numeric)])
setosa
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##        5.006        3.428        1.462        0.246
```

```
ver <- subset(iris, Species == "versicolor")
versicolor <- colMeans(ver[sapply(ver,is.numeric)])
versicolor
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##        5.936        2.770        4.260        1.326
```

```
vir <- subset(iris, Species == "virginica")
virginica <- colMeans(vir[sapply(vir,is.numeric)])
virginica
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##        6.588        2.974        5.552        2.026
```

Example: setosa <- colMeans(setosa[sapply(setosaDF,is.numeric)]) ***c. Combine all species by using rbind() The table should be look like this:***

```
trans3 <- rbind(setosa,
                versicolor,
                virginica)
trans3
```

```
##            Sepal.Length Sepal.Width Petal.Length Petal.Width
## setosa            5.006       3.428        1.462       0.246
## versicolor        5.936       2.770        4.260       1.326
## virginica         6.588       2.974        5.552       2.026
```

d. From the data in 4-c: Create the barplot(). Write the codes and its result. The barplot should be like this.

```
barplot(trans3, beside = TRUE,
        main = "Iris Mean",
        xlab = "Characteristics",
        ylab = "Mean Scores",
        col = c("red","green","blue"))
```

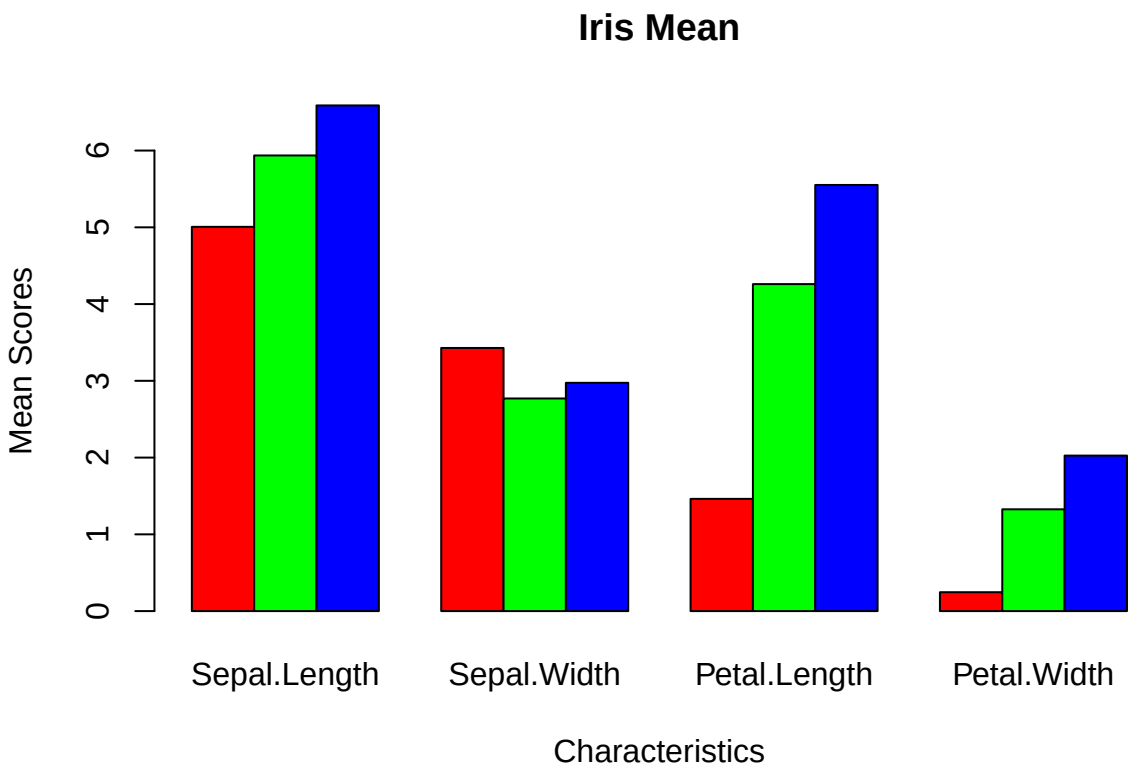


Figure 1: Iris Data using Barplot