

# Worksheet-5

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**1. The table shows the enrollment of BS in Computer Science, SY 2010-2011.**

```
enrollment <- data.frame("Course Year" = c ("1st", "2nd", "3rd", "4th"), " 2019-2020" = c(80, 75, 70, 60))
enrollment
```

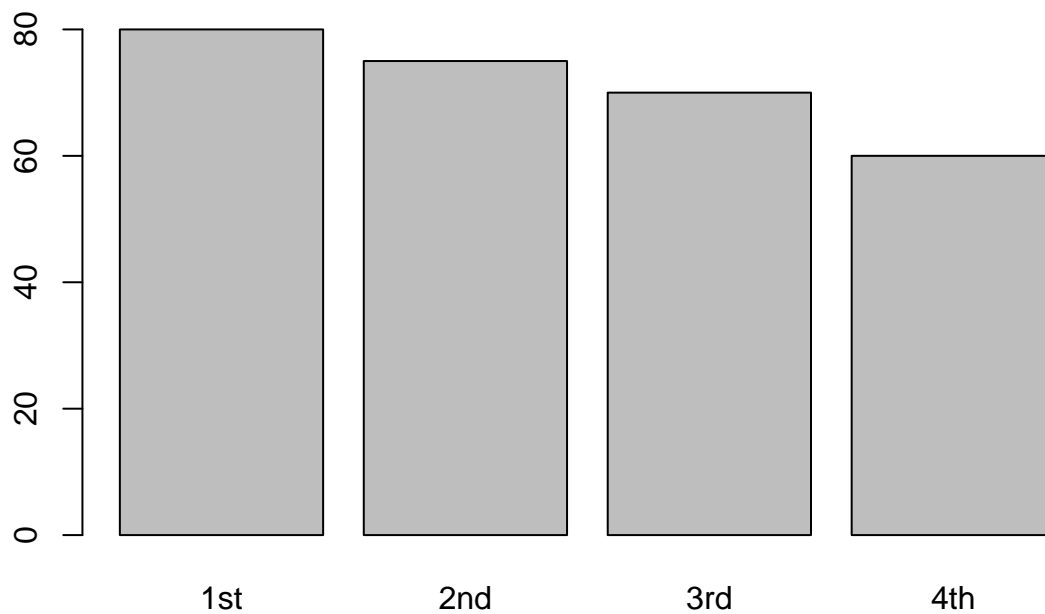
```
##   Course.Year X.2019.2020
## 1         1st          80
## 2         2nd          75
## 3         3rd          70
## 4         4th          60
```

**a. Plot the data using a bar graph. Write the codes and copy the result.**

```
bardt <- c("1st" = 80, "2nd" = 75, "3rd" = 70, "4th" = 60)
bardt
```

```
## 1st 2nd 3rd 4th
## 80 75 70 60
```

```
barplot(bardt)
```

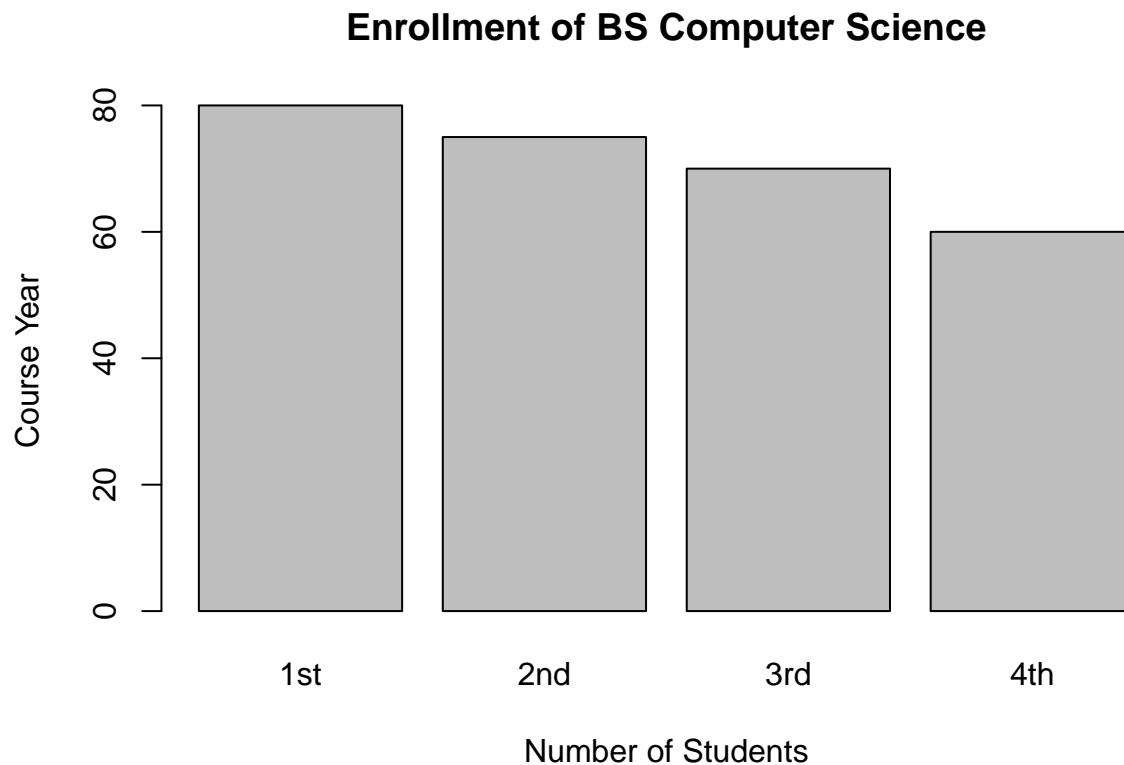


# b. Using the same table, label the barchart with Title = " Enrollment of BS Computer Science" horizontal axis = "Curriculum Year" and vertical axis = "number of students"

```
bartb <- c("1st" = 80 , "2nd" = 75, "3rd" = 70, "4th" = 60)
bartb
```

```
## 1st 2nd 3rd 4th
## 80 75 70 60
```

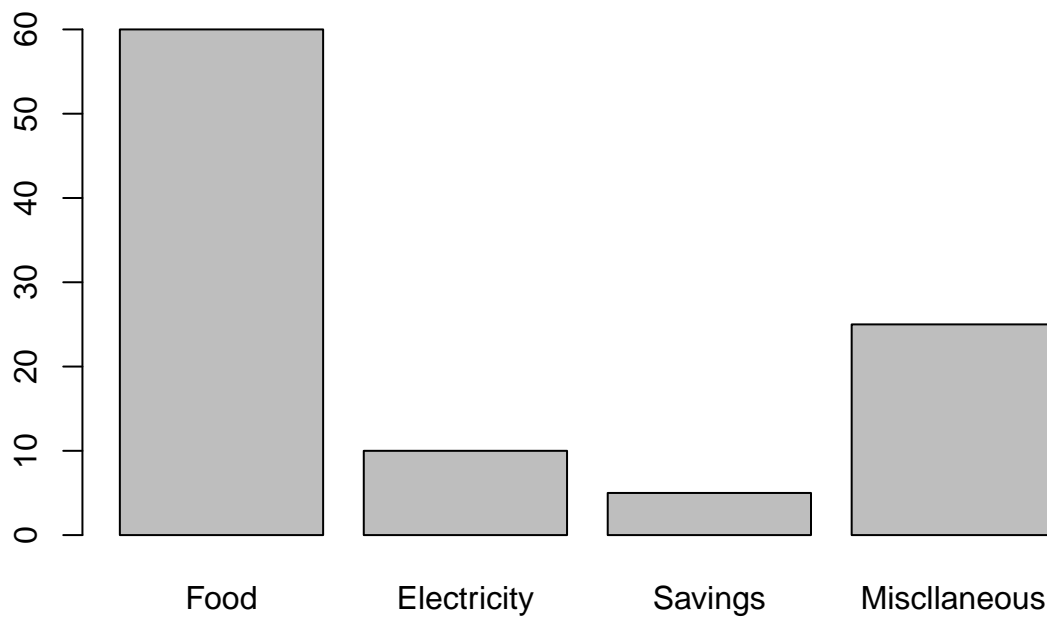
```
barplot(bartb,
  main = "Enrollment of BS Computer Science",
  xlab = "Number of Students",
  ylab = "Course Year")
```



# 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.

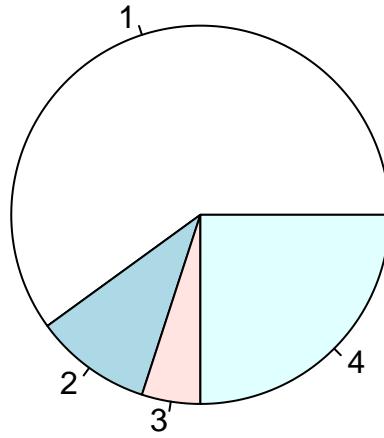
a. Create a table for the above scenario. Write the codes and its result.

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

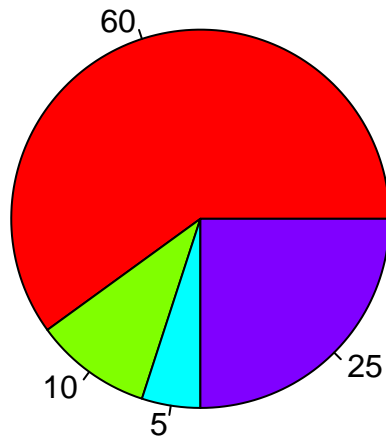


# b. Plot the data using a pie chart. Add labels, colors and legend. Write the codes and its result.

```
pie(expenses)
```



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

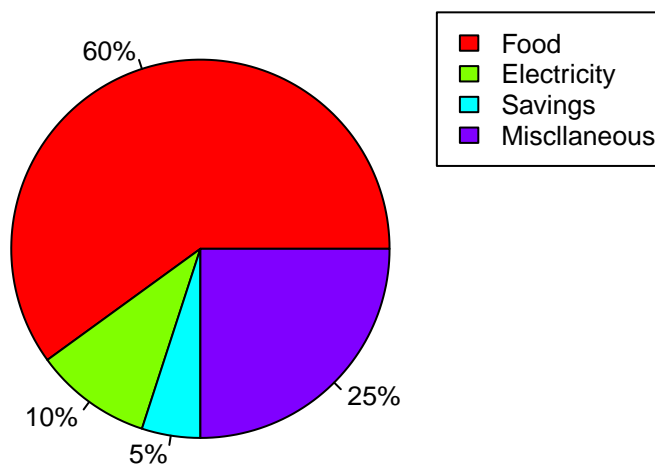


```
ex_labels <- round(expenses/sum(expenses) * 100, 1)

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", "Miscellaneous"),
      cex = 0.8,fill = rainbow((length(expenses))))
```

## Expenses



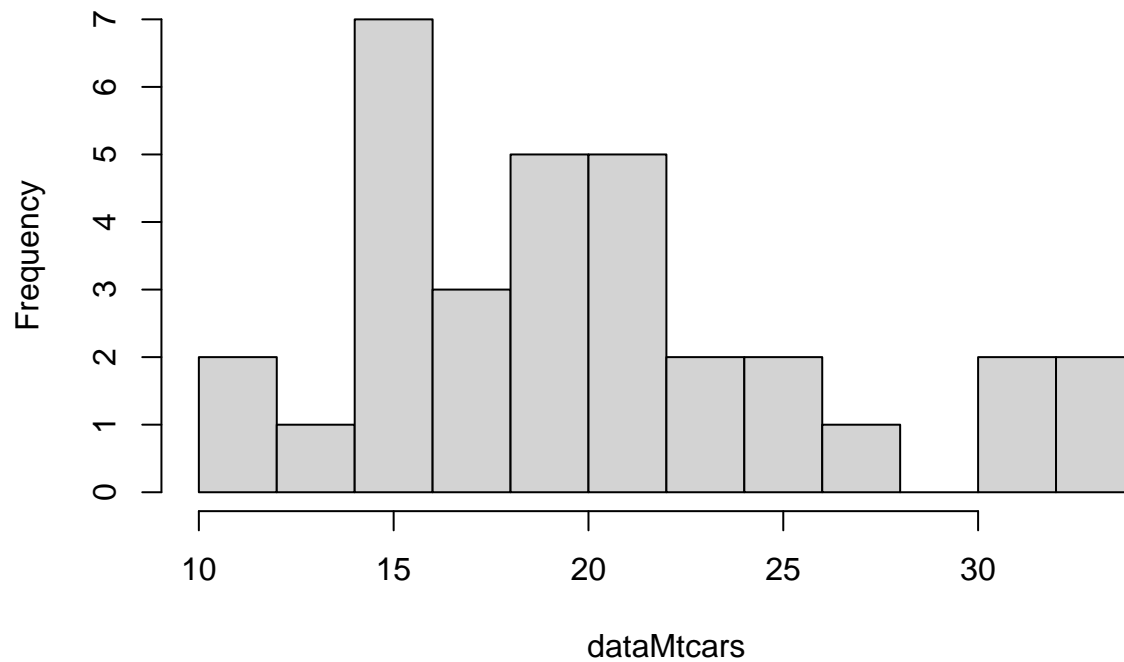
# 3. Open the mtcars dataset. # a. Create a simple histogram specifically for mpg (miles per gallon) variable. Use \$ to select the mpg only. Write the codes and its result.

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

```
## [1] 21.0 21.0 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 17.8 16.4 17.3 15.2 10.4
## [16] 10.4 14.7 32.4 30.4 33.9 21.5 15.5 15.2 13.3 19.2 27.3 26.0 30.4 15.8 19.7
## [31] 15.0 21.4
```

```
hist(dataMtcars, breaks = 12)
```

## Histogram of dataMtcars

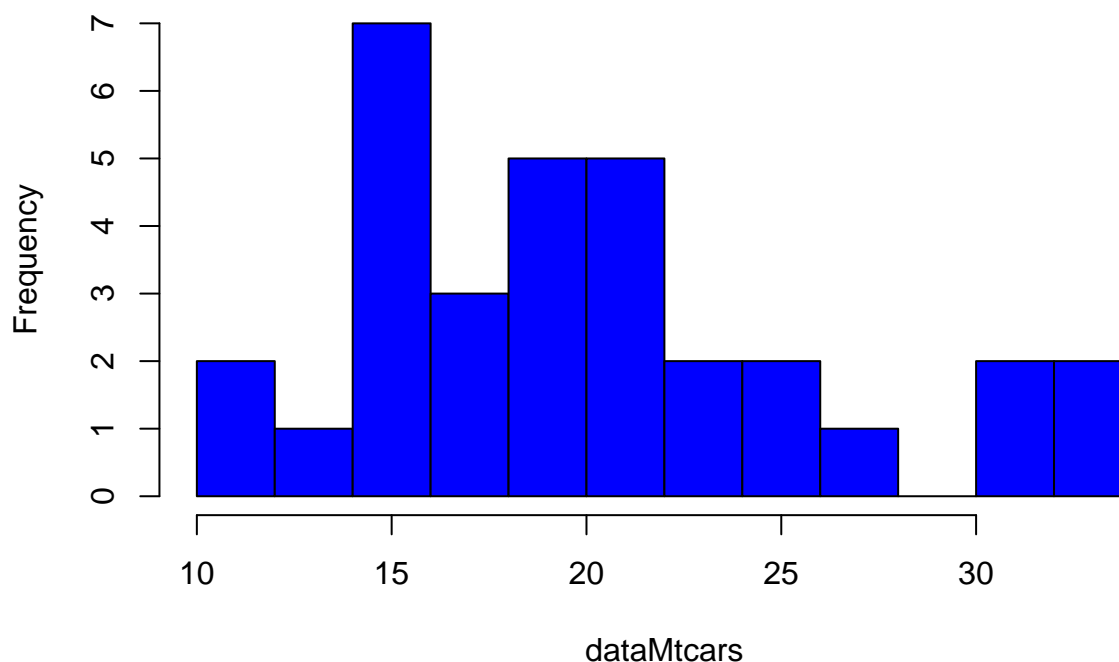


# b. Colored histogram with different number of bins. `hist(mtcars$mpg, breaks=12, col="red")` Note: `breaks=` controls the number of bins.

```
hist(dataMtcars, breaks=12, col="blue")
```



## Histogram of dataMtcars



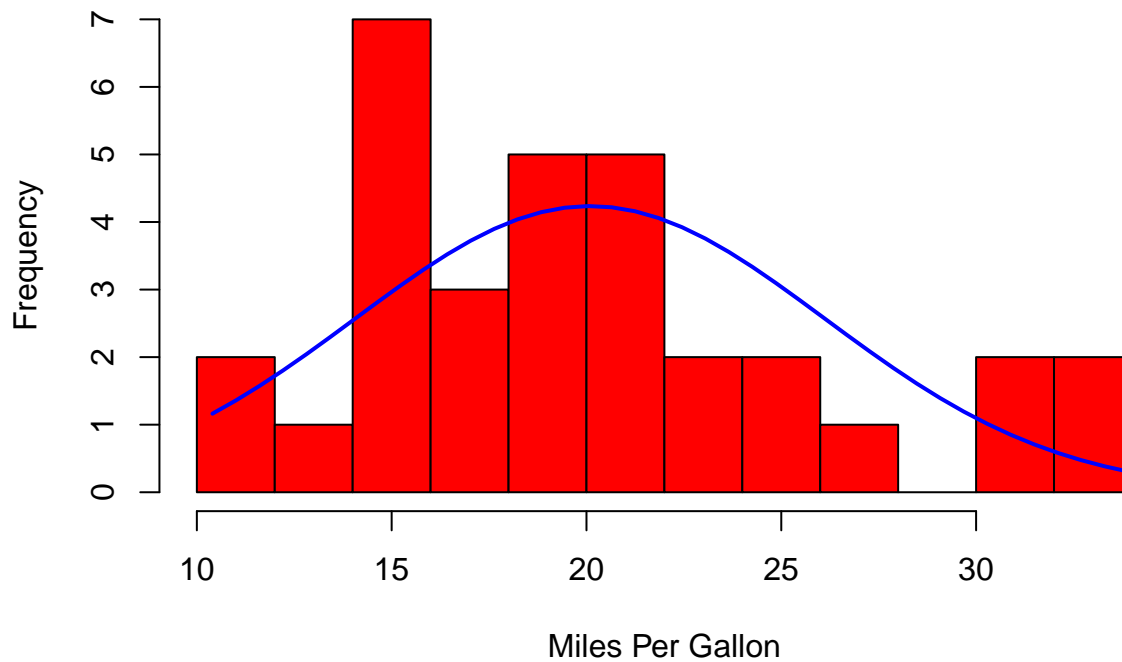
# c. Add a Normal Curve `x <- mtcars$mpg < -hist(x, breaks = 10, col = "red", xlab = "MilesPerGallon", main = "HistogramwithNormalCurve")`  
`xfit <- seq(min(x), max(x), length = 40)`  
`yfit <- dnorm(xfit, mean = mean(x), sd = sd(x))`  
`yfit <- yfit * diff(hmids[1:2]) * length(x)`  
`lines(xfit, yfit, col="blue", lwd=2)` Copy the result.

```
dataCurve <- dataMtcars
dataCurve
```

```
## [1] 21.0 21.0 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 17.8 16.4 17.3 15.2 10.4
## [16] 10.4 14.7 32.4 30.4 33.9 21.5 15.5 15.2 13.3 19.2 27.3 26.0 30.4 15.8 19.7
## [31] 15.0 21.4
```

```
dataHist <- hist(dataCurve, breaks=10, col="red", xlab="Miles Per Gallon",
                 main="Histogram with Normal Curve")
xfit<-seq(min(dataCurve),max(dataCurve),length=40)
yfit<-dnorm(xfit,mean=mean(dataCurve),sd=sd(dataCurve))
yfit <- yfit*diff(dataHist$mids[1:2])*length(dataCurve)
lines(xfit, yfit, col="blue", lwd=2)
```

## Histogram with Normal Curve



```
dataHist
```

```
## $breaks
## [1] 10 12 14 16 18 20 22 24 26 28 30 32 34
##
## $counts
## [1] 2 1 7 3 5 5 2 2 1 0 2 2
##
## $density
## [1] 0.031250 0.015625 0.109375 0.046875 0.078125 0.078125 0.031250 0.031250
## [9] 0.015625 0.000000 0.031250 0.031250
##
## $mids
## [1] 11 13 15 17 19 21 23 25 27 29 31 33
##
## $xname
## [1] "dataCurve"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

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

a. Write the codes and its result.

```
data("iris")
data_iris <- data.frame(iris)
data_iris
```

##	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
## 1	5.1	3.5	1.4	0.2	setosa
## 2	4.9	3.0	1.4	0.2	setosa
## 3	4.7	3.2	1.3	0.2	setosa
## 4	4.6	3.1	1.5	0.2	setosa
## 5	5.0	3.6	1.4	0.2	setosa
## 6	5.4	3.9	1.7	0.4	setosa
## 7	4.6	3.4	1.4	0.3	setosa
## 8	5.0	3.4	1.5	0.2	setosa
## 9	4.4	2.9	1.4	0.2	setosa
## 10	4.9	3.1	1.5	0.1	setosa
## 11	5.4	3.7	1.5	0.2	setosa
## 12	4.8	3.4	1.6	0.2	setosa
## 13	4.8	3.0	1.4	0.1	setosa
## 14	4.3	3.0	1.1	0.1	setosa
## 15	5.8	4.0	1.2	0.2	setosa
## 16	5.7	4.4	1.5	0.4	setosa
## 17	5.4	3.9	1.3	0.4	setosa
## 18	5.1	3.5	1.4	0.3	setosa
## 19	5.7	3.8	1.7	0.3	setosa
## 20	5.1	3.8	1.5	0.3	setosa
## 21	5.4	3.4	1.7	0.2	setosa
## 22	5.1	3.7	1.5	0.4	setosa
## 23	4.6	3.6	1.0	0.2	setosa
## 24	5.1	3.3	1.7	0.5	setosa
## 25	4.8	3.4	1.9	0.2	setosa
## 26	5.0	3.0	1.6	0.2	setosa
## 27	5.0	3.4	1.6	0.4	setosa
## 28	5.2	3.5	1.5	0.2	setosa
## 29	5.2	3.4	1.4	0.2	setosa
## 30	4.7	3.2	1.6	0.2	setosa
## 31	4.8	3.1	1.6	0.2	setosa
## 32	5.4	3.4	1.5	0.4	setosa
## 33	5.2	4.1	1.5	0.1	setosa
## 34	5.5	4.2	1.4	0.2	setosa
## 35	4.9	3.1	1.5	0.2	setosa
## 36	5.0	3.2	1.2	0.2	setosa
## 37	5.5	3.5	1.3	0.2	setosa
## 38	4.9	3.6	1.4	0.1	setosa
## 39	4.4	3.0	1.3	0.2	setosa
## 40	5.1	3.4	1.5	0.2	setosa
## 41	5.0	3.5	1.3	0.3	setosa
## 42	4.5	2.3	1.3	0.3	setosa
## 43	4.4	3.2	1.3	0.2	setosa

## 44	5.0	3.5	1.6	0.6	setosa
## 45	5.1	3.8	1.9	0.4	setosa
## 46	4.8	3.0	1.4	0.3	setosa
## 47	5.1	3.8	1.6	0.2	setosa
## 48	4.6	3.2	1.4	0.2	setosa
## 49	5.3	3.7	1.5	0.2	setosa
## 50	5.0	3.3	1.4	0.2	setosa
## 51	7.0	3.2	4.7	1.4	versicolor
## 52	6.4	3.2	4.5	1.5	versicolor
## 53	6.9	3.1	4.9	1.5	versicolor
## 54	5.5	2.3	4.0	1.3	versicolor
## 55	6.5	2.8	4.6	1.5	versicolor
## 56	5.7	2.8	4.5	1.3	versicolor
## 57	6.3	3.3	4.7	1.6	versicolor
## 58	4.9	2.4	3.3	1.0	versicolor
## 59	6.6	2.9	4.6	1.3	versicolor
## 60	5.2	2.7	3.9	1.4	versicolor
## 61	5.0	2.0	3.5	1.0	versicolor
## 62	5.9	3.0	4.2	1.5	versicolor
## 63	6.0	2.2	4.0	1.0	versicolor
## 64	6.1	2.9	4.7	1.4	versicolor
## 65	5.6	2.9	3.6	1.3	versicolor
## 66	6.7	3.1	4.4	1.4	versicolor
## 67	5.6	3.0	4.5	1.5	versicolor
## 68	5.8	2.7	4.1	1.0	versicolor
## 69	6.2	2.2	4.5	1.5	versicolor
## 70	5.6	2.5	3.9	1.1	versicolor
## 71	5.9	3.2	4.8	1.8	versicolor
## 72	6.1	2.8	4.0	1.3	versicolor
## 73	6.3	2.5	4.9	1.5	versicolor
## 74	6.1	2.8	4.7	1.2	versicolor
## 75	6.4	2.9	4.3	1.3	versicolor
## 76	6.6	3.0	4.4	1.4	versicolor
## 77	6.8	2.8	4.8	1.4	versicolor
## 78	6.7	3.0	5.0	1.7	versicolor
## 79	6.0	2.9	4.5	1.5	versicolor
## 80	5.7	2.6	3.5	1.0	versicolor
## 81	5.5	2.4	3.8	1.1	versicolor
## 82	5.5	2.4	3.7	1.0	versicolor
## 83	5.8	2.7	3.9	1.2	versicolor
## 84	6.0	2.7	5.1	1.6	versicolor
## 85	5.4	3.0	4.5	1.5	versicolor
## 86	6.0	3.4	4.5	1.6	versicolor
## 87	6.7	3.1	4.7	1.5	versicolor
## 88	6.3	2.3	4.4	1.3	versicolor
## 89	5.6	3.0	4.1	1.3	versicolor
## 90	5.5	2.5	4.0	1.3	versicolor
## 91	5.5	2.6	4.4	1.2	versicolor
## 92	6.1	3.0	4.6	1.4	versicolor
## 93	5.8	2.6	4.0	1.2	versicolor
## 94	5.0	2.3	3.3	1.0	versicolor
## 95	5.6	2.7	4.2	1.3	versicolor
## 96	5.7	3.0	4.2	1.2	versicolor
## 97	5.7	2.9	4.2	1.3	versicolor

## 98	6.2	2.9	4.3	1.3	versicolor
## 99	5.1	2.5	3.0	1.1	versicolor
## 100	5.7	2.8	4.1	1.3	versicolor
## 101	6.3	3.3	6.0	2.5	virginica
## 102	5.8	2.7	5.1	1.9	virginica
## 103	7.1	3.0	5.9	2.1	virginica
## 104	6.3	2.9	5.6	1.8	virginica
## 105	6.5	3.0	5.8	2.2	virginica
## 106	7.6	3.0	6.6	2.1	virginica
## 107	4.9	2.5	4.5	1.7	virginica
## 108	7.3	2.9	6.3	1.8	virginica
## 109	6.7	2.5	5.8	1.8	virginica
## 110	7.2	3.6	6.1	2.5	virginica
## 111	6.5	3.2	5.1	2.0	virginica
## 112	6.4	2.7	5.3	1.9	virginica
## 113	6.8	3.0	5.5	2.1	virginica
## 114	5.7	2.5	5.0	2.0	virginica
## 115	5.8	2.8	5.1	2.4	virginica
## 116	6.4	3.2	5.3	2.3	virginica
## 117	6.5	3.0	5.5	1.8	virginica
## 118	7.7	3.8	6.7	2.2	virginica
## 119	7.7	2.6	6.9	2.3	virginica
## 120	6.0	2.2	5.0	1.5	virginica
## 121	6.9	3.2	5.7	2.3	virginica
## 122	5.6	2.8	4.9	2.0	virginica
## 123	7.7	2.8	6.7	2.0	virginica
## 124	6.3	2.7	4.9	1.8	virginica
## 125	6.7	3.3	5.7	2.1	virginica
## 126	7.2	3.2	6.0	1.8	virginica
## 127	6.2	2.8	4.8	1.8	virginica
## 128	6.1	3.0	4.9	1.8	virginica
## 129	6.4	2.8	5.6	2.1	virginica
## 130	7.2	3.0	5.8	1.6	virginica
## 131	7.4	2.8	6.1	1.9	virginica
## 132	7.9	3.8	6.4	2.0	virginica
## 133	6.4	2.8	5.6	2.2	virginica
## 134	6.3	2.8	5.1	1.5	virginica
## 135	6.1	2.6	5.6	1.4	virginica
## 136	7.7	3.0	6.1	2.3	virginica
## 137	6.3	3.4	5.6	2.4	virginica
## 138	6.4	3.1	5.5	1.8	virginica
## 139	6.0	3.0	4.8	1.8	virginica
## 140	6.9	3.1	5.4	2.1	virginica
## 141	6.7	3.1	5.6	2.4	virginica
## 142	6.9	3.1	5.1	2.3	virginica
## 143	5.8	2.7	5.1	1.9	virginica
## 144	6.8	3.2	5.9	2.3	virginica
## 145	6.7	3.3	5.7	2.5	virginica
## 146	6.7	3.0	5.2	2.3	virginica
## 147	6.3	2.5	5.0	1.9	virginica
## 148	6.5	3.0	5.2	2.0	virginica
## 149	6.2	3.4	5.4	2.3	virginica
## 150	5.9	3.0	5.1	1.8	virginica

```
data_setosa <- subset(data_iris, Species == 'setosa' )
data_setosa
```

##	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
## 1	5.1	3.5	1.4	0.2	setosa
## 2	4.9	3.0	1.4	0.2	setosa
## 3	4.7	3.2	1.3	0.2	setosa
## 4	4.6	3.1	1.5	0.2	setosa
## 5	5.0	3.6	1.4	0.2	setosa
## 6	5.4	3.9	1.7	0.4	setosa
## 7	4.6	3.4	1.4	0.3	setosa
## 8	5.0	3.4	1.5	0.2	setosa
## 9	4.4	2.9	1.4	0.2	setosa
## 10	4.9	3.1	1.5	0.1	setosa
## 11	5.4	3.7	1.5	0.2	setosa
## 12	4.8	3.4	1.6	0.2	setosa
## 13	4.8	3.0	1.4	0.1	setosa
## 14	4.3	3.0	1.1	0.1	setosa
## 15	5.8	4.0	1.2	0.2	setosa
## 16	5.7	4.4	1.5	0.4	setosa
## 17	5.4	3.9	1.3	0.4	setosa
## 18	5.1	3.5	1.4	0.3	setosa
## 19	5.7	3.8	1.7	0.3	setosa
## 20	5.1	3.8	1.5	0.3	setosa
## 21	5.4	3.4	1.7	0.2	setosa
## 22	5.1	3.7	1.5	0.4	setosa
## 23	4.6	3.6	1.0	0.2	setosa
## 24	5.1	3.3	1.7	0.5	setosa
## 25	4.8	3.4	1.9	0.2	setosa
## 26	5.0	3.0	1.6	0.2	setosa
## 27	5.0	3.4	1.6	0.4	setosa
## 28	5.2	3.5	1.5	0.2	setosa
## 29	5.2	3.4	1.4	0.2	setosa
## 30	4.7	3.2	1.6	0.2	setosa
## 31	4.8	3.1	1.6	0.2	setosa
## 32	5.4	3.4	1.5	0.4	setosa
## 33	5.2	4.1	1.5	0.1	setosa
## 34	5.5	4.2	1.4	0.2	setosa
## 35	4.9	3.1	1.5	0.2	setosa
## 36	5.0	3.2	1.2	0.2	setosa
## 37	5.5	3.5	1.3	0.2	setosa
## 38	4.9	3.6	1.4	0.1	setosa
## 39	4.4	3.0	1.3	0.2	setosa
## 40	5.1	3.4	1.5	0.2	setosa
## 41	5.0	3.5	1.3	0.3	setosa
## 42	4.5	2.3	1.3	0.3	setosa
## 43	4.4	3.2	1.3	0.2	setosa
## 44	5.0	3.5	1.6	0.6	setosa
## 45	5.1	3.8	1.9	0.4	setosa
## 46	4.8	3.0	1.4	0.3	setosa
## 47	5.1	3.8	1.6	0.2	setosa
## 48	4.6	3.2	1.4	0.2	setosa
## 49	5.3	3.7	1.5	0.2	setosa

```
## 50          5.0          3.3          1.4          0.2 setosa
```

```
data_ver <- subset(data_iris, Species == 'versicolor' )  
data_ver
```

##	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
## 51	7.0	3.2	4.7	1.4	versicolor
## 52	6.4	3.2	4.5	1.5	versicolor
## 53	6.9	3.1	4.9	1.5	versicolor
## 54	5.5	2.3	4.0	1.3	versicolor
## 55	6.5	2.8	4.6	1.5	versicolor
## 56	5.7	2.8	4.5	1.3	versicolor
## 57	6.3	3.3	4.7	1.6	versicolor
## 58	4.9	2.4	3.3	1.0	versicolor
## 59	6.6	2.9	4.6	1.3	versicolor
## 60	5.2	2.7	3.9	1.4	versicolor
## 61	5.0	2.0	3.5	1.0	versicolor
## 62	5.9	3.0	4.2	1.5	versicolor
## 63	6.0	2.2	4.0	1.0	versicolor
## 64	6.1	2.9	4.7	1.4	versicolor
## 65	5.6	2.9	3.6	1.3	versicolor
## 66	6.7	3.1	4.4	1.4	versicolor
## 67	5.6	3.0	4.5	1.5	versicolor
## 68	5.8	2.7	4.1	1.0	versicolor
## 69	6.2	2.2	4.5	1.5	versicolor
## 70	5.6	2.5	3.9	1.1	versicolor
## 71	5.9	3.2	4.8	1.8	versicolor
## 72	6.1	2.8	4.0	1.3	versicolor
## 73	6.3	2.5	4.9	1.5	versicolor
## 74	6.1	2.8	4.7	1.2	versicolor
## 75	6.4	2.9	4.3	1.3	versicolor
## 76	6.6	3.0	4.4	1.4	versicolor
## 77	6.8	2.8	4.8	1.4	versicolor
## 78	6.7	3.0	5.0	1.7	versicolor
## 79	6.0	2.9	4.5	1.5	versicolor
## 80	5.7	2.6	3.5	1.0	versicolor
## 81	5.5	2.4	3.8	1.1	versicolor
## 82	5.5	2.4	3.7	1.0	versicolor
## 83	5.8	2.7	3.9	1.2	versicolor
## 84	6.0	2.7	5.1	1.6	versicolor
## 85	5.4	3.0	4.5	1.5	versicolor
## 86	6.0	3.4	4.5	1.6	versicolor
## 87	6.7	3.1	4.7	1.5	versicolor
## 88	6.3	2.3	4.4	1.3	versicolor
## 89	5.6	3.0	4.1	1.3	versicolor
## 90	5.5	2.5	4.0	1.3	versicolor
## 91	5.5	2.6	4.4	1.2	versicolor
## 92	6.1	3.0	4.6	1.4	versicolor
## 93	5.8	2.6	4.0	1.2	versicolor
## 94	5.0	2.3	3.3	1.0	versicolor
## 95	5.6	2.7	4.2	1.3	versicolor
## 96	5.7	3.0	4.2	1.2	versicolor
## 97	5.7	2.9	4.2	1.3	versicolor
## 98	6.2	2.9	4.3	1.3	versicolor

```
## 99          5.1          2.5          3.0          1.1 versicolor
## 100         5.7          2.8          4.1          1.3 versicolor
```

```
data_vir <- subset(data_iris, Species == 'virginica' )
data_vir
```

```
##      Sepal.Length Sepal.Width Petal.Length Petal.Width  Species
## 101          6.3          3.3          6.0          2.5 virginica
## 102          5.8          2.7          5.1          1.9 virginica
## 103          7.1          3.0          5.9          2.1 virginica
## 104          6.3          2.9          5.6          1.8 virginica
## 105          6.5          3.0          5.8          2.2 virginica
## 106          7.6          3.0          6.6          2.1 virginica
## 107          4.9          2.5          4.5          1.7 virginica
## 108          7.3          2.9          6.3          1.8 virginica
## 109          6.7          2.5          5.8          1.8 virginica
## 110          7.2          3.6          6.1          2.5 virginica
## 111          6.5          3.2          5.1          2.0 virginica
## 112          6.4          2.7          5.3          1.9 virginica
## 113          6.8          3.0          5.5          2.1 virginica
## 114          5.7          2.5          5.0          2.0 virginica
## 115          5.8          2.8          5.1          2.4 virginica
## 116          6.4          3.2          5.3          2.3 virginica
## 117          6.5          3.0          5.5          1.8 virginica
## 118          7.7          3.8          6.7          2.2 virginica
## 119          7.7          2.6          6.9          2.3 virginica
## 120          6.0          2.2          5.0          1.5 virginica
## 121          6.9          3.2          5.7          2.3 virginica
## 122          5.6          2.8          4.9          2.0 virginica
## 123          7.7          2.8          6.7          2.0 virginica
## 124          6.3          2.7          4.9          1.8 virginica
## 125          6.7          3.3          5.7          2.1 virginica
## 126          7.2          3.2          6.0          1.8 virginica
## 127          6.2          2.8          4.8          1.8 virginica
## 128          6.1          3.0          4.9          1.8 virginica
## 129          6.4          2.8          5.6          2.1 virginica
## 130          7.2          3.0          5.8          1.6 virginica
## 131          7.4          2.8          6.1          1.9 virginica
## 132          7.9          3.8          6.4          2.0 virginica
## 133          6.4          2.8          5.6          2.2 virginica
## 134          6.3          2.8          5.1          1.5 virginica
## 135          6.1          2.6          5.6          1.4 virginica
## 136          7.7          3.0          6.1          2.3 virginica
## 137          6.3          3.4          5.6          2.4 virginica
## 138          6.4          3.1          5.5          1.8 virginica
## 139          6.0          3.0          4.8          1.8 virginica
## 140          6.9          3.1          5.4          2.1 virginica
## 141          6.7          3.1          5.6          2.4 virginica
## 142          6.9          3.1          5.1          2.3 virginica
## 143          5.8          2.7          5.1          1.9 virginica
## 144          6.8          3.2          5.9          2.3 virginica
## 145          6.7          3.3          5.7          2.5 virginica
## 146          6.7          3.0          5.2          2.3 virginica
## 147          6.3          2.5          5.0          1.9 virginica
```



```
## 148      6.5      3.0      5.2      2.0 virginica
## 149      6.2      3.4      5.4      2.3 virginica
## 150      5.9      3.0      5.1      1.8 virginica
```

b. Get the mean for every characteristics of each species using `colMeans()`. Write the codes and its result. Example: `setosa <- colMeans(setosa[sapply(setosaDF,is.numeric)])`

```
setosa <- colMeans(data_setosa[sapply(data_setosa,is.numeric)])
setosa
```

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

```
versicolor <- colMeans(data_ver[sapply(data_ver,is.numeric)])
versicolor
```

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

```
virginica <- colMeans(data_vir[sapply(data_vir,is.numeric)])
virginica
```

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

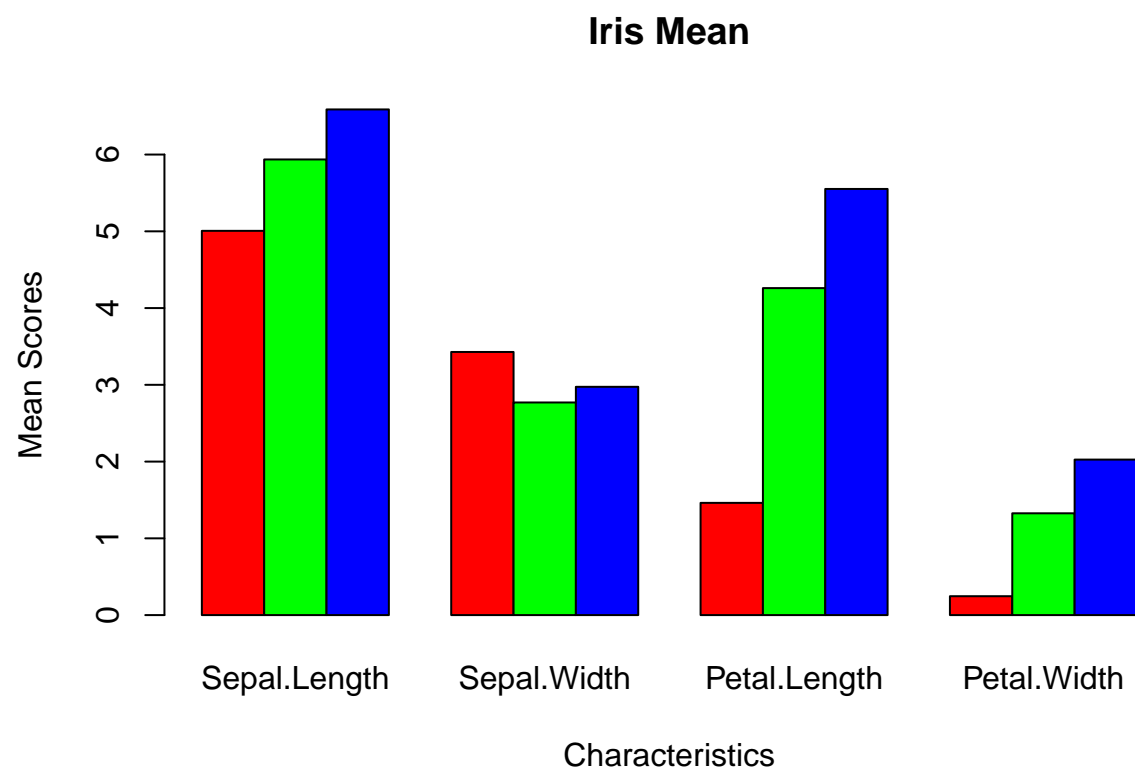
#c. Combine all species by using `rbind()`

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

```
##      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.

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



*#Figure 1: Iris Data using Barplot*