## Worksheet5

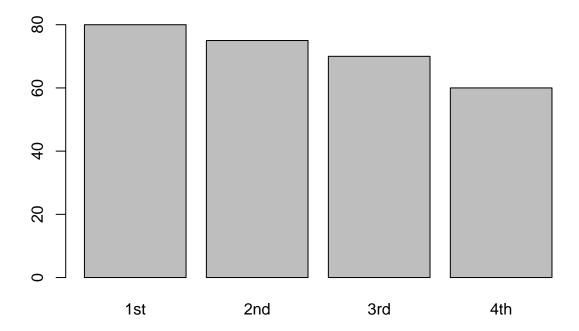
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#### 2022-12-13

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

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

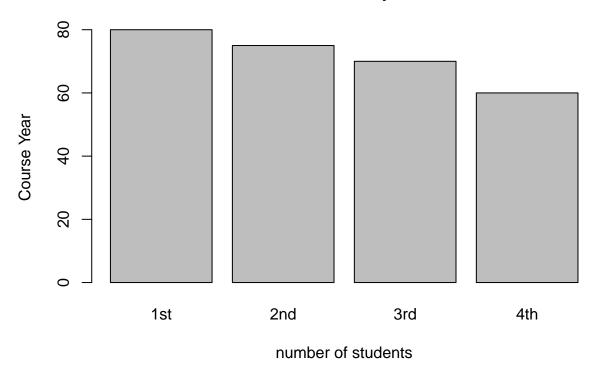
```
stud_data <- c("1st" = 80, "2nd" = 75, "3rd" = 70, "4th" = 60)
barplot(stud_data)
```



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"

```
stud_data <- c("1st" = 80, "2nd" = 75, "3rd" = 70, "4th" = 60)
barplot(stud_data, main = "Enrollment of BS Computer Science", xlab = "number of students", ylab = "County"</pre>
```

### **Enrollment of BS Computer Science**

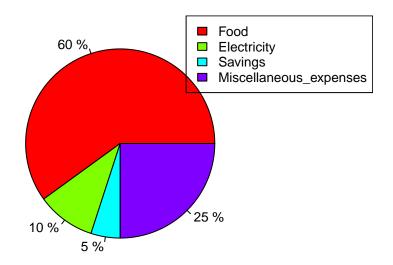


- 2. The monthly income of De Jesus family was spent on the following: 60% on Food, 10% on electricity, 5% for savings, and 25% for other miscellaneous expenses.
- a. Create a table for the above scenario. Write the codes and its result.

```
debit <- c("Food", "Electricity", "Savings", "Miscellaneous_expenses")</pre>
money \leftarrow c(60, 10, 5, 25)
spend <- data.frame(debit, money)</pre>
spend
##
                        debit money
## 1
                         Food
                                   60
## 2
                  Electricity
                                   10
## 3
                      Savings
                                   5
## 4 Miscellaneous_expenses
                                  25
tbl <- table(spend)
tbl
                              money
##
## debit
                               5 10 25 60
##
     Electricity
##
     Food
                               0
                                  0
                                      0
##
     Miscellaneous_expenses 0
                                  0
                                      1
                                  0
                                     0
##
     Savings
```

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

### **De Jesus family Monthly Expense**

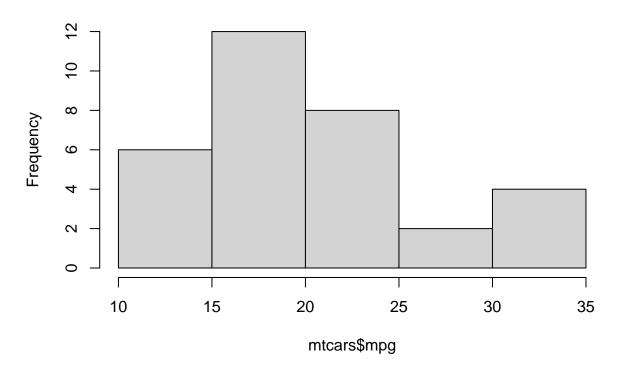


- 3. Open the mtcars dataset.
- a. Create a simple histogram specifically for mpg (miles per gallon) variable. Use \$ to select the mpg only. Write the codes and its result.

```
data(mtcars)
mcars <-(mtcars$mpg)
mcars

## [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</pre>
```

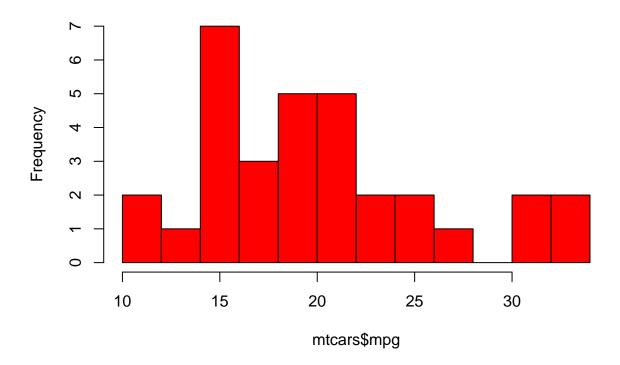
# Histogram of mtcars\$mpg



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

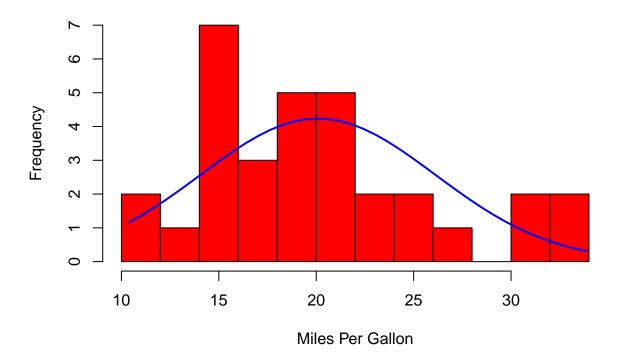
hist(mtcars\$mpg, breaks=12, col="red")

## Histogram of mtcars\$mpg



c. Add a Normal Curve x <- mtcars mpgh < -hist(x, breaks = 10, col = "red", xlab = "Miles Per Gallon", main = "Histogram with Normal Curve") 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.

# **Histogram with Normal Curve**



- 4. Open the iris dataset. Create a subset for each species.
- a. Write the codes and its result.

```
data("iris")
species <- data.frame(iris)
species</pre>
```

##		Senal Length	Senal 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	
##	46	4.8	3.0	1.4	0.3	setosa
##	47					setosa
		5.1	3.8	1.6	0.2	setosa
##	48	4.6	3.2 3.7	1.4	0.2	setosa
##	49	5.3		1.5		setosa
##	50	5.0	3.3	1.4	0.2	setosa
##	51	7.0	3.2	4.7	1.4 vers	
##		6.4	3.2	4.5	1.5 vers	
##		6.9	3.1	4.9	1.5 vers	
##		5.5	2.3	4.0	1.3 vers	
	55	6.5	2.8	4.6	1.5 vers	
	56	5.7	2.8	4.5	1.3 vers	
	57	6.3	3.3	4.7	1.6 vers	
	58	4.9	2.4	3.3	1.0 vers	
	59	6.6	2.9	4.6	1.3 vers	
##	60	5.2	2.7	3.9	1.4 vers	sicolor
##	61	5.0	2.0	3.5	1.0 vers	
	62	5.9	3.0	4.2	1.5 vers	
##	63	6.0	2.2	4.0	1.0 vers	
##	64	6.1	2.9	4.7	1.4 vers	sicolor
##	65	5.6	2.9	3.6	1.3 vers	sicolor
##	66	6.7	3.1	4.4	1.4 vers	sicolor
##	67	5.6	3.0	4.5	1.5 vers	sicolor
##	68	5.8	2.7	4.1	1.0 vers	sicolor
##	69	6.2	2.2	4.5	1.5 vers	sicolor

## 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
## 80 ## 87	6.7		4.7	1.5 versicolor
## 88	6.3	3.1 2.3	4.4	1.3 versicolor
## 89	5.6	3.0	4.1	1.3 versicolor
## 99 ## 90		2.5	4.0	1.3 versicolor
## 90 ## 91	5.5 5.5	2.6	4.4	1.2 versicolor
		3.0	4.4	1.4 versicolor
	6.1 5.8	2.6		
## 93			4.0	1.2 versicolor
## 94	5.0	2.3	3.3	1.0 versicolor
## 95 ## 96	5.6 5.7	2.7	4.2	1.3 versicolor
		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

шш	101	C 2	0.7	1 0	1 0	
	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

setosaDF <- data.frame(iris)
setosaDF</pre>

##		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		sicolor
## 52	6.4	3.2	4.5		sicolor
## 53	6.9	3.1	4.9		sicolor
	5.5	2.3	4.0		sicolor
## 54					
## 54 ## 55					rsicolor
## 55	6.5	2.8	4.6	1.5 ver	sicolor
## 55 ## 56	6.5 5.7	2.8 2.8	4.6 4.5	1.5 ver 1.3 ver	sicolor
## 55 ## 56 ## 57	6.5 5.7 6.3	2.8 2.8 3.3	4.6 4.5 4.7	1.5 ver 1.3 ver 1.6 ver	sicolor sicolor
## 55 ## 56 ## 57 ## 58	6.5 5.7 6.3 4.9	2.8 2.8 3.3 2.4	4.6 4.5 4.7 3.3	1.5 ver 1.3 ver 1.6 ver 1.0 ver	sicolor sicolor sicolor
## 55 ## 56 ## 57 ## 58 ## 59	6.5 5.7 6.3 4.9 6.6	2.8 2.8 3.3 2.4 2.9	4.6 4.5 4.7 3.3 4.6	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver	sicolor sicolor sicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60	6.5 5.7 6.3 4.9 6.6 5.2	2.8 2.8 3.3 2.4 2.9 2.7	4.6 4.5 4.7 3.3 4.6 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver	esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61	6.5 5.7 6.3 4.9 6.6 5.2 5.0	2.8 2.8 3.3 2.4 2.9 2.7 2.0	4.6 4.5 4.7 3.3 4.6 3.9 3.5	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.0 ver	esicolor esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.0 ver 1.5 ver	esicolor esicolor esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2	4.6 4.7 3.3 4.6 3.9 3.5 4.2 4.0	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.0 ver 1.5 ver	esicolor esicolor esicolor esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9	4.6 4.7 3.3 4.6 3.9 3.5 4.2 4.0	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.0 ver 1.4 ver	esicolor esicolor esicolor esicolor esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.0 ver 1.4 ver 1.3 ver	sicolor sicolor sicolor sicolor sicolor sicolor sicolor sicolor sicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 65	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.0 ver 1.5 ver 1.4 ver 1.4 ver 1.4 ver	esicolor esicolor esicolor esicolor esicolor esicolor esicolor esicolor esicolor esicolor esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 66	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.0 ver 1.5 ver 1.4 ver 1.3 ver 1.5 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.4 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver 1.7 ver 1.8 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 69	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2	4.6 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.9 ver 1.10 ver 1.2 ver 1.3 ver 1.4 ver 1.5 ver 1.5 ver 1.5 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 69 ## 70	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.6	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2 2.5	4.6 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.3 ver 1.4 ver 1.5 ver 1.5 ver 1.1 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 69 ## 70 ## 71	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.6 5.9	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 2.7 2.2 2.5 3.2	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.3 ver 1.4 ver 1.5 ver 1.5 ver 1.5 ver 1.8 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 65 ## 66 ## 67 ## 68 ## 69 ## 70 ## 71 ## 72	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.6 5.9	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2 2.5 3.2 2.8	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.3 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.7 ver 1.8 ver 1.8 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 69 ## 70 ## 71 ## 72 ## 73	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.9 6.1 6.3	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2 2.5 3.2 2.8 2.5	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 4.1 4.5 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver	esicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 70 ## 71 ## 72 ## 73 ## 74	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.6 5.9 6.1 6.3 6.1	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2 2.5 3.2 2.8 2.5 2.8	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 3.9 4.8 4.0 4.9 4.7	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.7 ver 1.8 ver 1.8 ver 1.8 ver 1.9 ver 1.9 ver 1.9 ver 1.1 ver 1.1 ver 1.1 ver 1.2 ver	esicolor esi
## 55 ## 56 ## 57 ## 58 ## 59 ## 60 ## 61 ## 62 ## 63 ## 64 ## 65 ## 66 ## 67 ## 68 ## 69 ## 70 ## 71 ## 72 ## 73	6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.9 6.1 6.3	2.8 2.8 3.3 2.4 2.9 2.7 2.0 3.0 2.2 2.9 2.9 3.1 3.0 2.7 2.2 2.5 3.2 2.8 2.5	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1 4.5 4.1 4.5 3.9	1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.1 ver 1.2 ver 1.3 ver	esicolor

==				
## 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	1.4 versicolor
		2.3	3.3	
	5.0 5.6			1.0 versicolor 1.3 versicolor
## 95		2.7	4.2	
## 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
100	1 . 2	0.0	0.0	1.0 VIIgIIICa

##	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

versicolorDF <- data.frame(iris)
versicolorDF</pre>

##		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 v	ersicolor
##	52	6.4	3.2	4.5	1.5 v	ersicolor
##	53	6.9	3.1	4.9	1.5 v	ersicolor
	54	5.5	2.3	4.0		ersicolor
	55	6.5	2.8	4.6		ersicolor
	56	5.7	2.8	4.5		ersicolor
	57	6.3	3.3	4.7		ersicolor
	58	4.9	2.4	3.3		ersicolor
	59		2.9	4.6		ersicolor
		6.6				
	60	5.2	2.7	3.9		rersicolor
	61	5.0	2.0	3.5		ersicolor
	62	5.9	3.0	4.2		ersicolor
	63	6.0	2.2	4.0		ersicolor
	64	6.1	2.9	4.7		ersicolor
	65	5.6	2.9	3.6	1.3 v	ersicolor
##	66	6.7	3.1	4.4		ersicolor
##	67	5.6	3.0	4.5	1.5 v	ersicolor
##	68	5.8	2.7	4.1	1.0 v	ersicolor
##	69	6.2	2.2	4.5	1.5 v	ersicolor
##	70	5.6	2.5	3.9	1.1 v	ersicolor
##	71	5.9	3.2	4.8	1.8 v	ersicolor
##	72	6.1	2.8	4.0	1.3 v	ersicolor
	73	6.3	2.5	4.9	1.5 v	ersicolor
	74	6.1	2.8	4.7		ersicolor
	75	6.4	2.9	4.3		ersicolor
	76	6.6	3.0	4.4		ersicolor
	77	6.8	2.8	4.8		ersicolor
	78	6.7	3.0			ersicolor
				5.0		
	79	6.0	2.9	4.5		ersicolor
	80	5.7	2.6	3.5		ersicolor
##		5.5	2.4	3.8		ersicolor
##		5.5	2.4	3.7		ersicolor
##	83	5.8	2.7	3.9	1.2 v	ersicolor

## 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
## 9 <del>1</del> ## 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
## 112				_
	6.8	3.0	5.5	_
## 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
## 131 ## 132	7.4	3.8	6.4	_
				_
## 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

virginicaDF <- data.frame(iris)
virginicaDF</pre>

##		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

## 27		2 5	1 0	0.0
## 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			1.3 versicolor
		3.0	4.1	
## 90	5.5	2.5	4.0	1.3 versicolor

"" 04		0 0	4 4	
## 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
## 103	7.2	3.6	6.1	2.5 virginica
## 110 ## 111	6.5	3.2	5.1	•
## 111	6.4	2.7	5.3	•
## 112 ## 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
		J.2	0.0	,11511100

```
6.7
                         5.7
5.2
                                         2.5 virginica
## 145
                     3.3
## 146
            6.7
                     3.0
                                         2.3 virginica
## 147
                                         1.9 virginica
            6.3
                     2.5
                               5.0
## 148
            6.5
                     3.0
                               5.2
                                         2.0 virginica
                                          2.3 virginica
## 149
            6.2
                      3.4
                                5.4
## 150
            5.9
                      3.0
                                5.1
                                          1.8 virginica
```

setosa <- subset(setosaDF, Species == 'setosa')
setosa</pre>

##		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
##		5.1	3.8	1.5	0.3	setosa
##		5.4	3.4	1.7	0.2	setosa
##		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
##		5.5	4.2	1.4	0.2	setosa
	35	4.9	3.1	1.5	0.2	setosa
##		5.0	3.2	1.2	0.2	setosa
##		5.5	3.5	1.3	0.2	
##		4.9	3.6	1.4	0.1	
##		4.4	3.0	1.3	0.2	
##		5.1	3.4	1.5	0.2	
##		5.0	3.5	1.3	0.3	
##		4.5	2.3	1.3	0.3	
##	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
             5.3
                                                0.2 setosa
## 49
                        3.7
                                    1.5
## 50
             5.0
                                                0.2 setosa
                        3.3
                                    1.4
```

versicolor <- subset(versicolorDF, Species == 'versicolor')
versicolor</pre>

##		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		versicolor
##	62	5.9	3.0	4.2		versicolor
	63	6.0	2.2	4.0		versicolor
##	64	6.1	2.9	4.7		versicolor
##		5.6	2.9	3.6		versicolor
	66	6.7	3.1	4.4		versicolor
##	67	5.6	3.0	4.5		versicolor
##	68	5.8	2.7	4.1		versicolor
##	69	6.2	2.2	4.5		versicolor
	70	5.6	2.5	3.9		versicolor
##	71	5.9	3.2	4.8		versicolor
	72	6.1	2.8	4.0		versicolor
	73	6.3	2.5	4.9		versicolor
	74	6.1	2.8	4.7		versicolor
	75	6.4	2.9	4.3		versicolor
	76	6.6	3.0	4.4		versicolor
	77	6.8	2.8	4.8		versicolor
	78	6.7	3.0	5.0		versicolor
##	79	6.0 5.7	2.9 2.6	4.5 3.5		versicolor versicolor
##		5.7	2.6	3.8		versicolor
	82		2.4	3.7		versicolor
##		5.5 5.8	2.4	3.7		versicolor
	84	6.0	2.7	5.1		versicolor
	85	5.4	3.0	4.5		versicolor
	86	6.0	3.4	4.5		versicolor
	87	6.7	3.1	4.7		versicolor
	88	6.3	2.3	4.4		versicolor
##	89	5.6	3.0	4.1		versicolor
	90	5.5	2.5	4.0		versicolor
##	91	5.5	2.6	4.4		versicolor
##		6.1	3.0	4.6		versicolor
##	92	0.1	5.0	4.0	1.4	AGIPICOTOL

```
## 93
               5.8
                                       4.0
                           2.6
                                                   1.2 versicolor
## 94
               5.0
                           2.3
                                       3.3
                                                   1.0 versicolor
## 95
                                                   1.3 versicolor
               5.6
                           2.7
                                       4.2
## 96
               5.7
                           3.0
                                       4.2
                                                   1.2 versicolor
## 97
                                       4.2
                                                   1.3 versicolor
               5.7
                           2.9
## 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
```

virginica <- subset(virginicaDF, Species == 'virginica')
virginica</pre>

##		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		virginica
##	108	7.3	2.9	6.3	1.8	virginica
	109	6.7	2.5	5.8		virginica
##	110	7.2	3.6	6.1	2.5	virginica
##	111	6.5	3.2	5.1		virginica
	112	6.4	2.7	5.3		virginica
	113	6.8	3.0	5.5		virginica
	114	5.7	2.5	5.0		virginica
	115	5.8	2.8	5.1		virginica
	116	6.4	3.2	5.3		virginica
	117	6.5	3.0	5.5		virginica
	118	7.7	3.8	6.7		virginica
##	119	7.7	2.6	6.9		virginica
	120	6.0	2.2	5.0		virginica
	121	6.9	3.2	5.7		virginica
	122	5.6	2.8	4.9		virginica
	123 124	7.7	2.8	6.7		virginica
	124	6.3	2.7	4.9		virginica
	126	6.7 7.2	3.3 3.2	5.7 6.0		virginica
##	127	6.2	2.8	4.8		virginica
##	128	6.1	3.0	4.9		virginica
	129	6.4	2.8	5.6		virginica virginica
	130	7.2	3.0	5.8		virginica
##	131	7.4	2.8	6.1		virginica
	132	7.9	3.8	6.4		virginica
	133	6.4	2.8	5.6		virginica
	134	6.3	2.8	5.1		virginica
	135	6.1	2.6	5.6		virginica
##	136	7.7	3.0	6.1		virginica
	137	6.3	3.4	5.6		virginica
	138	6.4	3.1	5.5		virginica
	139	6.0	3.0	4.8		virginica
	140	6.9	3.1	5.4		virginica
	141	6.7	3.1	5.6		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
                             3.3
                                                       2.5 virginica
## 145
                6.7
                                          5.7
## 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
                                                       2.3 virginica
                             3.4
                                          5.4
## 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)])

```
setosa1 <- colMeans(setosa[sapply(setosaDF, is.numeric)])</pre>
setosa1
## Sepal.Length Sepal.Width Petal.Length Petal.Width
          5.006
                        3.428
                                     1.462
                                                   0.246
virginica1 <- colMeans(virginica[sapply(virginicaDF, is.numeric)])</pre>
virginica1
## Sepal.Length Sepal.Width Petal.Length Petal.Width
          6.588
                        2.974
                                     5.552
versicolor1 <- colMeans(versicolor[sapply(versicolorDF, is.numeric)])</pre>
versicolor1
## Sepal.Length Sepal.Width Petal.Length Petal.Width
          5.936
                        2.770
##
                                     4.260
                                                   1.326
```

c. Combine all species by using rbind() The table should be look like this:

```
combine <- rbind(setosa1, versicolor1, virginica1)
dfcombine <- data.frame(combine)
dfcombine</pre>
```

```
##
               Sepal.Length Sepal.Width Petal.Length Petal.Width
## setosa1
                      5.006
                                   3.428
                                                1.462
                                                             0.246
                      5.936
                                   2.770
                                                4.260
                                                             1.326
## versicolor1
## virginica1
                      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.

