RWorksheet_Pineda#4b.Rmd

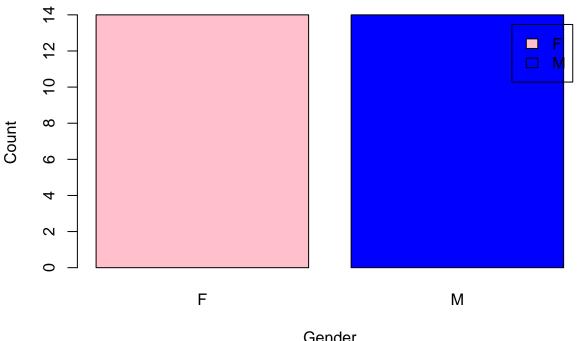
2023-11-08

```
#1
VectorA \leftarrow c(1,2,3,4,5)
  matrixA <- matrix(0,nrow = 5, ncol = 5)</pre>
  for(e in 1:5)
 for(f in 1:5)
    matrixA[e,f] <- abs(VectorA[e]-VectorA[f])</pre>
 matrixA
##
        [,1] [,2] [,3] [,4] [,5]
## [1,]
              1
## [2,]
                0
                          2
          1
                     1
## [3,]
         2
                1
                     0
                          1
## [4,]
        3
              2
                     1
                          0
                               1
## [5,]
                     2
                        1
#2
 for(e in 1:5)
  cat(paste0("\"",rep("*",e),"\""),"\n")
}
## "*"
## "*" "*"
## "*" "*" "*"
## "*" "*" "*" "*"
## "*" "*" "*" "*"
#3
    User_Input <- as.integer(readline("Enter starting number for Fibonacci Sequence: "))</pre>
## Enter starting number for Fibonacci Sequence:
if(is.na(User_Input || User_Input <0)){</pre>
  cat("Please Enter a Number")
}else {
  x <- User_Input
  y <- 0
  cat("Fibonacci Sequence starting from", User_Input, ":\n")
  repeat {
    next_num <- x + y</pre>
    if (next_num > 500){
```

```
break
   }
   cat(next_num, " ")
   x <- y
   y <- next_num
}
}
## Please Enter a Number
#4
DataPrevious <- read.csv("DataHousehold.csv")</pre>
head(DataPrevious)
## X ShoeSize Height Gender
## 1 1
       6.5 66.0
## 2 2
         9.0
                68.0
## 3 3
         8.5 64.5
                       F
## 4 4
         8.5
                65.0
                        F
## 5 5
       10.5 70.0
                       М
## 6 6
         7.0 64.0
#4.b
Males <- DataPrevious[DataPrevious$Gender == "M",]</pre>
Males
##
      X ShoeSize Height Gender
## 5 5
           10.5 70.0
## 9 9
           13.0 72.0
                           М
## 11 11
           10.5 74.5
                           Μ
          12.0 71.0
## 13 13
                           М
## 14 14
          10.5 71.0
## 15 15
          13.0 77.0
                          М
## 16 16
          11.5 72.0
                           Μ
## 19 19
          10.0 72.0
                          М
## 22 22
           8.5 67.0
                         M
## 23 23
          10.5 73.0
                           Μ
## 25 25
          10.5 72.0
                          М
## 26 26
           11.0 70.0
                           Μ
## 27 27
           9.0 69.0
                           M
## 28 28
           13.0 70.0
                           Μ
Females <- DataPrevious[DataPrevious$Gender == "F",]
Females
      X ShoeSize Height Gender
##
## 1
            6.5
                  66.0
     1
                           F
                           F
## 2 2
            9.0
                  68.0
## 3 3
            8.5
                64.5
                           F
## 4 4
            8.5
                65.0
                           F
                           F
## 6 6
            7.0 64.0
## 7
     7
            9.5 70.0
                           F
## 8 8
            9.0 71.0
                           F
## 10 10
            7.5 64.0
                           F
## 12 12
            8.5
                 67.0
```

```
## 17 17
              8.5
                     59.0
                     62.0
## 18 18
              5.0
                               F
## 20 20
                     66.0
              6.5
## 21 21
              7.5
                     64.0
                               F
## 24 24
              8.5
                     69.0
NumofMales <- nrow(Males)</pre>
NumofMales
## [1] 14
NumofFemales <- nrow(Females)</pre>
NumofFemales
## [1] 14
\#4.c
MaleFemTotal <- table(DataPrevious$Gender)</pre>
barplot(MaleFemTotal,
        main = "Number of Males and Females",
        xlab = "Gender",
        ylab = "Count",
        col = c("pink", "blue"),
        legend.text = rownames(MaleFemTotal),
        beside = TRUE)
```

Number of Males and Females



Gender

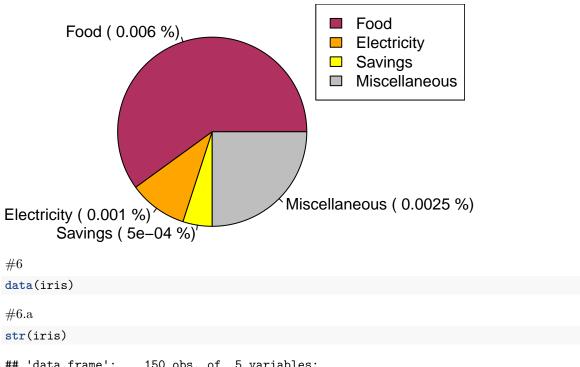
```
#5
SpendingData <- data.frame(Category = c("Food", "Electricity", "Savings", "Miscellaneous"), Value = c(6
SpendingData$Percentage <- SpendingData$Value / sum(SpendingData$Value * 100)
```

```
colors <- c("maroon", "orange", "yellow", "gray")

pie(SpendingData$Value,
    labels = paste(SpendingData$Category,"(",SpendingData$Percentage,"%)"),
    col = colors,
    main = "Monthly Income Spending of Dela Cruz Family")

legend("topright", SpendingData$Category, fill = colors)</pre>
```

Monthly Income Spending of Dela Cruz Family



```
## 'data.frame': 150 obs. of 5 variables:
## $ Sepal.Length: num 5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
## $ Sepal.Width : num 3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
## $ Petal.Length: num 1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
## $ Petal.Width : num 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
## $ Species : Factor w/ 3 levels "setosa", "versicolor", ..: 1 1 1 1 1 1 1 1 1 1 1 1 1 ...
#The dataset contains information about iris flowers
#It contains information on the length and width of the sepal as well as the length and width of the pe
#It also keeps track of the iris species to which each flower belongs.
#The dataset contains three species:setosa, versicolor, and virginica
```

```
#6.b

MeanofFlowers <- colMeans(iris[,1:4])

MeanofFlowers

## Sepal.Length Sepal.Width Petal.Length Petal.Width
```

1.199333

3.758000

#6.c

5.843333

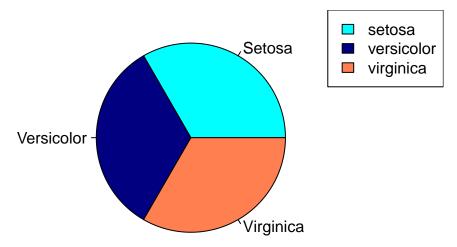
3.057333

```
Species <- table(iris$Species)
NameofSpecies <- c("Setosa", "Versicolor", "Virginica")

pie(Species,
    labels = NameofSpecies,
    col = c("cyan", "navy", "coral"),
    main = "Species Distribution in Iris Dataset")

legend("topright", legend = levels(iris$Species), fill = c("cyan", "navy", "coral"),)</pre>
```

Species Distribution in Iris Dataset



 $\#6.\mathrm{d}$ iris

	Sepal.Length	${\tt Sepal.Width}$	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
	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 5.1 2 4.9 3 4.7 4 4.6 5 5.0 6 5.4 7 4.6 8 5.0 9 4.4 10 4.9 11 5.4 12 4.8 13 4.8 14 4.3 15 5.8 16 5.7 17 5.4 18 5.1 19 5.7 20 5.1 21 5.4	1 5.1 3.5 2 4.9 3.0 3 4.7 3.2 4 4.6 3.1 5 5.0 3.6 6 5.4 3.9 7 4.6 3.4 8 5.0 3.4 9 4.4 2.9 10 4.9 3.1 11 5.4 3.7 12 4.8 3.4 13 4.8 3.0 14 4.3 3.0 15 5.8 4.0 16 5.7 4.4 17 5.4 3.9 18 5.1 3.5 19 5.7 3.8 20 5.1 3.8 21 5.4 3.4	1 5.1 3.5 1.4 2 4.9 3.0 1.4 3 4.7 3.2 1.3 4 4.6 3.1 1.5 5 5.0 3.6 1.4 6 5.4 3.9 1.7 7 4.6 3.4 1.4 8 5.0 3.4 1.5 9 4.4 2.9 1.4 10 4.9 3.1 1.5 11 5.4 3.7 1.5 12 4.8 3.4 1.6 13 4.8 3.0 1.4 14 4.3 3.0 1.1 15 5.8 4.0 1.2 16 5.7 4.4 1.5 17 5.4 3.9 1.3 18 5.1 3.5 1.4 19 5.7 3.8 1.7 20 5.1 3.8 1.5 21 5.4 3.4 1.7	2 4.9 3.0 1.4 0.2 3 4.7 3.2 1.3 0.2 4 4.6 3.1 1.5 0.2 5 5.0 3.6 1.4 0.2 6 5.4 3.9 1.7 0.4 7 4.6 3.4 1.4 0.3 8 5.0 3.4 1.5 0.2 9 4.4 2.9 1.4 0.2 10 4.9 3.1 1.5 0.1 11 5.4 3.7 1.5 0.2 12 4.8 3.4 1.6 0.2 13 4.8 3.0 1.4 0.1 14 4.3 3.0 1.1 0.1 15 5.8 4.0 1.2 0.2 16 5.7 4.4 1.5 0.4 17 5.4 3.9 1.3 0.4 18 5.1 3.5 1.4 0.3 19 5.7 3.8 1.7 0.3

## 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
	0.0	0.2			
## 54	5.5	2.3	4.0		
## 54 ## 55	5.5 6.5	2.3	4.0 4.6	1.3 ver	
## 55	6.5	2.8	4.6	1.3 ver 1.5 ver	sicolor
## 55 ## 56	6.5 5.7	2.8 2.8	4.6 4.5	1.3 ver 1.5 ver 1.3 ver	rsicolor rsicolor
## 55 ## 56 ## 57	6.5 5.7 6.3	2.8 2.8 3.3	4.6 4.5 4.7	1.3 ver 1.5 ver 1.3 ver 1.6 ver	sicolor 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	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver	rsicolor rsicolor rsicolor rsicolor
## 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	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver	esicolor esicolor esicolor esicolor
## 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	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver	rsicolor rsicolor rsicolor rsicolor rsicolor
## 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	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.0 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.0 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.5 ver 1.0 ver 1.4 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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 2.9	4.6 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 ver 1.3 ver 1.4 ver 1.5 ver 1.0 ver 1.5 ver 1.2 ver 1.3 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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	1.3 ver 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 1.4 ver	rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor rsicolor
## 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	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 4.5	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.5 ver 1.2 ver 1.3 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver	rsicolor
## 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 4.1	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.0 ver 1.4 ver 1.5 ver 1.4 ver 1.5 ver 1.7 ver 1.8 ver 1.9 ver 1.9 ver	rsicolor
## 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	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 4.5 4.7 3.3 4.6 3.9 3.5 4.2 4.0 4.7 3.6 4.4 4.5 4.1	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.4 ver 1.4 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver 1.5 ver	rsicolor
## 55 ## 56 ## 57 ## 58 ## 59 ## 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 4.5 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	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.2 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 1.5 ver 1.5 ver 1.1 ver	rsicolor
## 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 5.9	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	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	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.2 ver 1.5 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 1.8 ver	rsicolor
## 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 5.9	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 4.8 4.0	1.3 ver 1.5 ver 1.3 ver 1.6 ver 1.0 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 1.8 ver 1.8 ver	rsicolor
## 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 3.9 4.8 4.0	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.2 ver 1.3 ver 1.4 ver 1.5 ver 1.6 ver 1.7 ver 1.8 ver 1.8 ver 1.8 ver 1.8 ver 1.8 ver 1.8 ver 1.8 ver	rsicolor
## 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 5.9 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 4.7	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.4 ver 1.5 ver 1.6 ver 1.7 ver 1.8 ver 1.9 ver 1.9 ver 1.9 ver 1.10 ver 1.10 ver 1.10 ver 1.2 ver 1.3 ver 1.4 ver 1.5 ver 1.5 ver 1.6 ver 1.7 ver 1.8 ver 1.9 ver	rsicolor
## 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 3.9 4.8 4.0	1.3 ver 1.5 ver 1.6 ver 1.0 ver 1.4 ver 1.0 ver 1.5 ver 1.4 ver 1.5 ver 1.7 ver 1.8 ver 1.8 ver 1.8 ver 1.1 ver 1.8 ver 1.1 ver 1.3 ver	rsicolor

## 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
				5

##	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

SetosaSubset <- iris[iris\$Species == "setosa",]
SetosaSubset</pre>

##		${\tt Sepal.Length}$	${\tt Sepal.Width}$	${\tt Petal.Length}$	${\tt Petal.Width}$	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

VersicolorSubset <- iris[iris\$Species == "versicolor",]
VersicolorSubset</pre>

##		Sepal.Length	${\tt Sepal.Width}$	${\tt Petal.Length}$		Species
##	51	7.0	3.2	4.7		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		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		versicolor
##	77	6.8	2.8	4.8		versicolor
##	78	6.7	3.0	5.0		versicolor
##	79	6.0	2.9	4.5		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

VirginicaSubset <- iris[iris\$Species == "virginica",]
VirginicaSubset</pre>

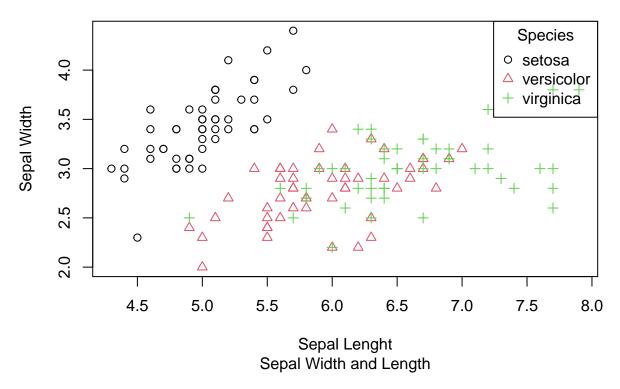
##		Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
##	101	6.3	3.3	6.0	2.5	virginica
##	102	5.8	2.7	5.1	1.9	virginica
##	103	7.1	3.0	5.9	2.1	virginica
##	104	6.3	2.9	5.6	1.8	virginica
##	105	6.5	3.0	5.8	2.2	virginica
##	106	7.6	3.0	6.6	2.1	virginica
##	107	4.9	2.5	4.5	1.7	virginica
##	108	7.3	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		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
                                          6.1
                             2.8
                                                       1.9 virginica
## 132
                7.9
                             3.8
                                          6.4
                                                       2.0 virginica
## 133
                                          5.6
                6.4
                             2.8
                                                       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
                                          5.1
                6.9
                             3.1
                                                       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
                                          5.2
                6.5
                             3.0
                                                       2.0 virginica
## 149
                6.2
                             3.4
                                          5.4
                                                       2.3 virginica
## 150
                5.9
                             3.0
                                          5.1
                                                       1.8 virginica
tail(SetosaSubset)
##
      Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 45
               5.1
                            3.8
                                         1.9
                                                      0.4 setosa
## 46
               4.8
                            3.0
                                         1.4
                                                      0.3 setosa
## 47
                                                      0.2 setosa
               5.1
                            3.8
                                          1.6
## 48
               4.6
                            3.2
                                          1.4
                                                      0.2 setosa
## 49
               5.3
                                                      0.2 setosa
                            3.7
                                          1.5
                            3.3
## 50
               5.0
                                          1.4
                                                      0.2 setosa
tail(VersicolorSubset)
##
       Sepal.Length Sepal.Width Petal.Length Petal.Width
                                                              Species
## 95
                5.6
                             2.7
                                          4.2
                                                       1.3 versicolor
## 96
                5.7
                             3.0
                                          4.2
                                                       1.2 versicolor
## 97
                                                       1.3 versicolor
                5.7
                             2.9
                                          4.2
## 98
                6.2
                             2.9
                                          4.3
                                                       1.3 versicolor
## 99
                5.1
                             2.5
                                          3.0
                                                       1.1 versicolor
                                           4.1
                                                       1.3 versicolor
## 100
                5.7
                             2.8
tail(VirginicaSubset)
       Sepal.Length Sepal.Width Petal.Length Petal.Width
                                                             Species
## 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
                                          5.2
                             3.0
                                                       2.0 virginica
## 149
                6.2
                             3.4
                                          5.4
                                                       2.3 virginica
## 150
                5.9
                             3.0
                                          5.1
                                                       1.8 virginica
\#6.e
plot(iris$Sepal.Length, iris$Sepal.Width,
 xlab = "Sepal Lenght",
  ylab = "Sepal Width",
 main = "Iris Dataset", sub = "Sepal Width and Length",
```

```
pch = as.numeric(iris$Species), col = as.numeric(iris$Species))

legend("topright", legend = levels(iris$Species),
   pch = 1:3, col = 1:3,
   title = "Species")
```

Iris Dataset



#6.f #The scatterplot shows how different species of iris blooms differ in terms of speal length and width. #Setosa flowers have short spela lengths and wide sepla width. They are gathered in the plot's upper left corner. #The sepal length and width of Versicolor blooms are ordinary. They are in the center. #Virgininca flowers often have lengthy speal lengths and shorter sepal widths. They establish a group in the appropriate location. #The graphic clearly shows the differences in sepal length and width between the three iris species.

#7

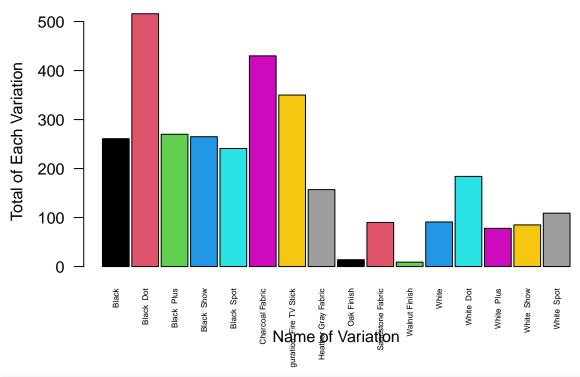
```
library(readxl)
Alexa <- read_excel("alexa_file.xlsx")
Alexa</pre>
```

```
##
  # A tibble: 3,150 x 5
##
      rating date
                                   variation
                                                        verified reviews
                                                                               feedback
##
       <dbl> <dttm>
                                   <chr>
                                                        <chr>
                                                                                   <dbl>
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                        Love my Echo!
                                                                                       1
##
    1
##
    2
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                                                       1
                                                        Loved it!
           4 2018-07-31 00:00:00 Walnut Finish
##
    3
                                                        Sometimes while play~
                                                                                       1
           5 2018-07-31 00:00:00 Charcoal Fabric
##
    4
                                                        I have had a lot of ~
                                                                                       1
##
    5
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                        Music
                                                                                       1
##
    6
           5 2018-07-31 00:00:00 Heather Gray Fabric I received the echo ~
                                                                                       1
##
    7
           3 2018-07-31 00:00:00 Sandstone Fabric
                                                        Without having a cel~
                                                                                       1
           5 2018-07-31 00:00:00 Charcoal Fabric
##
    8
                                                        I think this is the ~
                                                                                       1
```

```
5 2018-07-30 00:00:00 Heather Gray Fabric looks great
## 10
           5 2018-07-30 00:00:00 Heather Gray Fabric Love it! I've listen~
## # i 3,140 more rows
#7.a
Alexa$variation <- gsub("Black Dot", "BlackDot", Alexa$variation)
Alexa$variation <- gsub("Black Plus", "BlackPlus", Alexa$variation)
Alexa$variation <- gsub("Black Show", "BlackShow", Alexa$variation)
Alexa$variation <- gsub("Black Spot", "BlackSpot", Alexa$variation)
Alexa$variation <- gsub("White Dot", "WhiteDot", Alexa$variation)</pre>
Alexa$variation <- gsub("White Plus", "WhitePlus", Alexa$variation)
Alexa$variation <- gsub("White Show", "WhiteShow", Alexa$variation)
Alexa$variation <- gsub("White Spot", "WhiteSpot", Alexa$variation)
Alexa
## # A tibble: 3,150 x 5
##
                                                                               feedback
      rating date
                                  variation
                                                        verified_reviews
##
       <dbl> <dttm>
                                   <chr>
                                                        <chr>>
                                                                                  <dbl>
## 1
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                        Love my Echo!
                                                                                      1
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                        Loved it!
                                                                                      1
## 3
           4 2018-07-31 00:00:00 Walnut Finish
                                                                                      1
                                                        Sometimes while play~
           5 2018-07-31 00:00:00 Charcoal Fabric
## 4
                                                        I have had a lot of ~
                                                                                      1
           5 2018-07-31 00:00:00 Charcoal Fabric
## 5
                                                       Music
                                                                                      1
## 6
           5 2018-07-31 00:00:00 Heather Gray Fabric I received the echo \sim
                                                                                      1
## 7
           3 2018-07-31 00:00:00 Sandstone Fabric Without having a cel~
                                                                                      1
## 8
           5 2018-07-31 00:00:00 Charcoal Fabric
                                                       I think this is the ~
                                                                                      1
           5 2018-07-30 00:00:00 Heather Gray Fabric looks great
## 9
                                                                                      1
           5 2018-07-30 00:00:00 Heather Gray Fabric Love it! I've listen~
                                                                                      1
## 10
## # i 3,140 more rows
\#7.b
#install.packages("dplyr")
library("dplyr")
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##
       filter, lag
## The following objects are masked from 'package:base':
##
##
       intersect, setdiff, setequal, union
variations total <- Alexa %>%
  count(Alexa$variation)
variations_total
## # A tibble: 16 x 2
##
      `Alexa$variation`
##
      <chr>>
                                     <int>
## 1 Black
                                       261
```

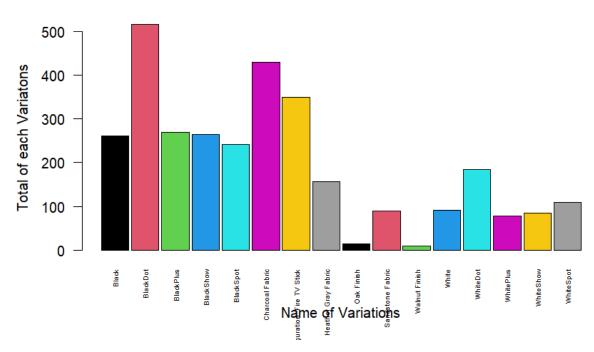
```
## 2 Black Dot
                                     516
## 3 Black Plus
                                     270
## 4 Black Show
                                     265
## 5 Black Spot
                                     241
## 6 Charcoal Fabric
                                     430
## 7 Configuration: Fire TV Stick
                                     350
## 8 Heather Gray Fabric
                                    157
## 9 Oak Finish
                                     14
## 10 Sandstone Fabric
                                      90
## 11 Walnut Finish
                                     9
## 12 White
                                     91
## 13 White Dot
                                     184
## 14 White Plus
                                     78
## 15 White Show
                                      85
## 16 White Spot
                                     109
save(variations_total, file = "variations.RData")
#7.c
load("variations.RData")
variations_total
## # A tibble: 16 x 2
     `Alexa$variation`
##
                                       n
##
     <chr>
                                   <int>
## 1 Black
                                     261
## 2 Black Dot
                                     516
## 3 Black Plus
                                     270
## 4 Black Show
                                     265
## 5 Black Spot
                                     241
## 6 Charcoal Fabric
                                     430
## 7 Configuration: Fire TV Stick
                                     350
## 8 Heather Gray Fabric
                                     157
## 9 Oak Finish
                                     14
## 10 Sandstone Fabric
                                     90
## 11 Walnut Finish
                                      9
## 12 White
                                     91
## 13 White Dot
                                     184
## 14 White Plus
                                     78
## 15 White Show
                                      85
                                     109
## 16 White Spot
VarNames <- variations_total$`Alexa$variation`</pre>
TotalPlot <- barplot(variations_total$n,</pre>
                     names.arg = VarNames,
                     main = "Total Number of Each Variations",
                     xlab = "Name of Variation",
                     ylab = "Total of Each Variation",
                     col = 1:16,
                     space = 0.1,
                     cex.names = 0.5,
                     las = 2)
```

Total Number of Each Variations



knitr::include_graphics("/cloud/project/RWorksheet_Pineda#4/VariationTotal.png")

Total number of each variations

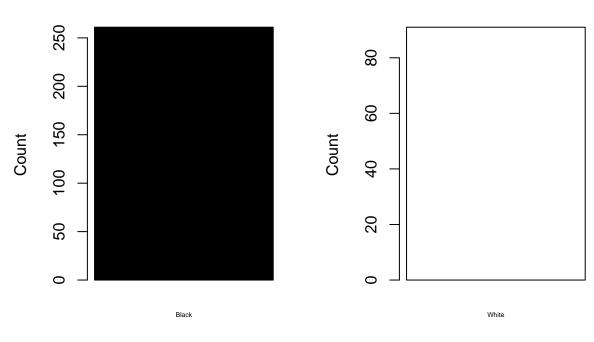


 $\#7.\mathrm{d}$

```
BlackVars <- variations_total[variations_total$`Alexa$variation` %in% c("Black", "BlackDot", "BlackPlus
WhiteVars <- variations_total[variations_total$`Alexa$variation` %in% c("White", "WhiteDot", "WhitePlus
par(mfrow = c(1,2))
BlackVars
## # A tibble: 1 x 2
##
     `Alexa$variation`
##
     <chr>
                       <int>
## 1 Black
                         261
BlackPlot <- barplot(height = BlackVars$n,</pre>
                     names.arg = BlackVars$`Alexa$variation`,
                     col = c("black"),
                     main = "Black Variations",
                     xlab = "variations",
                     ylab = "Count",
                     border = "black",
                     space = 0.5,
                     cex.names = 0.4)
WhitePlot <- barplot(height = WhiteVars$n,
                     names.arg = WhiteVars$`Alexa$variation`,
                     col = c("white"),
                     main = "White Variations",
                     xlab = "Variations",
                     ylab = "Count",
                     border = "black",
                     space = 0.5,
                     cex.names = 0.4)
```

Black Variations

White Variations



variations Variations

