Rworksheet_Aguas4b

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#1.

```
vectorA <- c(1,2,3,4,5)

matrixA <- matrix(0,nrow = 5, ncol =5)

for (j in 1:5)
  for (k in 1:5)
  {
    matrixA[j,k] <- abs (vectorA[j] - vectorA[k])
  }

matrixA
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    0    1    2    3    4
## [2,]    1    0    1    2    3
## [3,]    2    1    0    1    2
## [4,]    3    2    1    0    1
## [5,]    4    3    2    1    0
```

2.

```
for (j in 1:5) {
  cat(paste0("\"", rep("*", j), "\""), "\n")
}
```

```
## "*"
## "*" "*"
## "*" "*" "*"
## "*" "*" "*" "*"
## "*" "*" "*" "*" "*"
```

#3.

```
userInput <- as.integer(readline("Enter starting number for Fibonacci sequence: "))
```

```
## Enter starting number for Fibonacci sequence:
```

```
if(is.na(userInput || userInput < 0)) {
  cat("Please enter something")
} else {
  x <- userInput
```

```
  y <- 0


cat("Fibonacci sequence starting from", userInput, ":\n")

repeat {

  next_num <- x + y

  if (next_num > 500){
    break
  }
  cat(next_num, " ")
  x <- y
  y <- next_num

}
}
```

```
## Please enter something
```

#4a.Import the dataset as shown in Figure 1 you have created previously.

#4a.

```
import<- read.csv("householdData.csv")
head(import)
```

```
##   X ShoeSize Height Gender
## 1 1      6.5   66.0      F
## 2 2      9.0   68.0      F
## 3 3      8.5   64.5      F
## 4 4      8.5   65.0      F
## 5 5     10.5   70.0      M
## 6 6      7.0   64.0      F
```

#4b.

```
Males <- import[import$Gender == "M",]
Males
```

```
##     X ShoeSize Height Gender
## 5   5     10.5   70.0      M
## 9   9     13.0   72.0      M
## 11 11     10.5   74.5      M
## 13 13     12.0   71.0      M
## 14 14     10.5   71.0      M
## 15 15     13.0   77.0      M
## 16 16     11.5   72.0      M
## 19 19     10.0   72.0      M
## 22 22      8.5   67.0      M
## 23 23     10.5   73.0      M
## 25 25     10.5   72.0      M
## 26 26     11.0   70.0      M
## 27 27      9.0   69.0      M
## 28 28     13.0   70.0      M
```

```
Females <- import[import$Gender == "F",]
Females
```

```
##     X ShoeSize Height Gender
## 1   1      6.5   66.0      F
## 2   2      9.0   68.0      F
## 3   3      8.5   64.5      F
## 4   4      8.5   65.0      F
## 6   6      7.0   64.0      F
## 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      F
## 17 17      8.5   59.0      F
## 18 18      5.0   62.0      F
## 20 20      6.5   66.0      F
## 21 21      7.5   64.0      F
## 24 24      8.5   69.0      F
```

```
NumOfMale <- nrow(Males)
NumOfMale
```

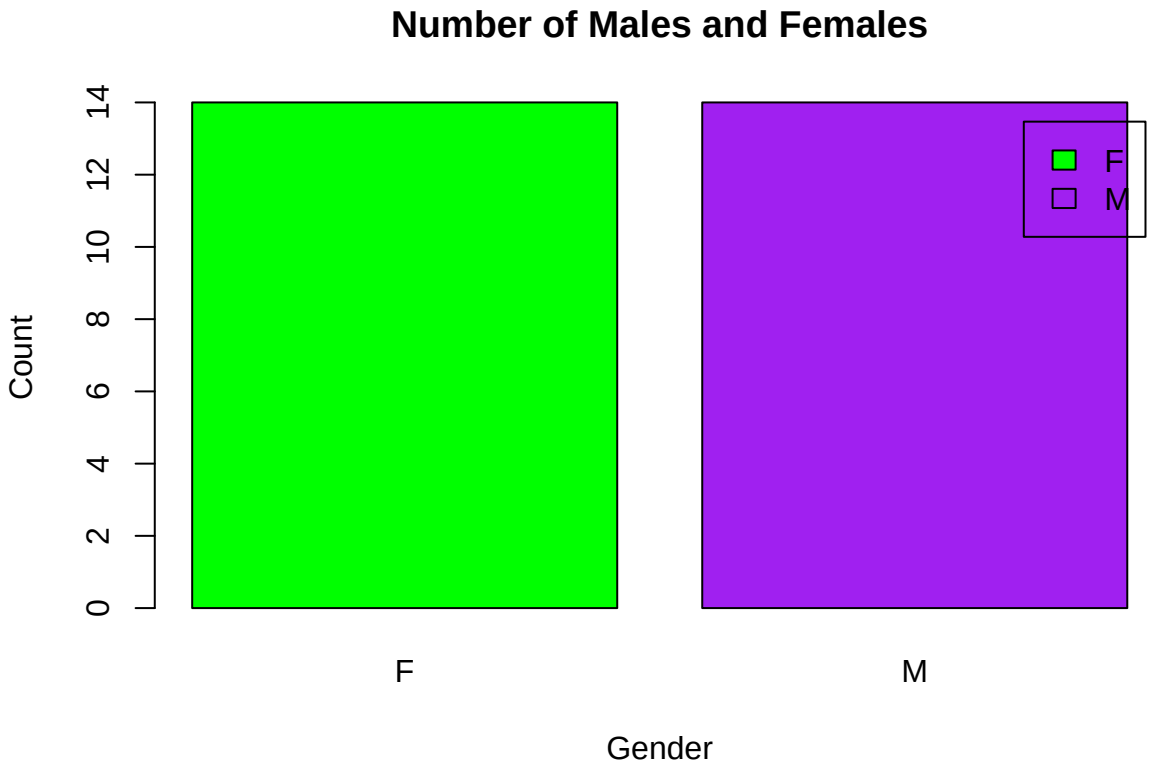
```
## [1] 14
```

```
NumOfFem <- nrow(Females)
NumOfFem
```

```
## [1] 14
```

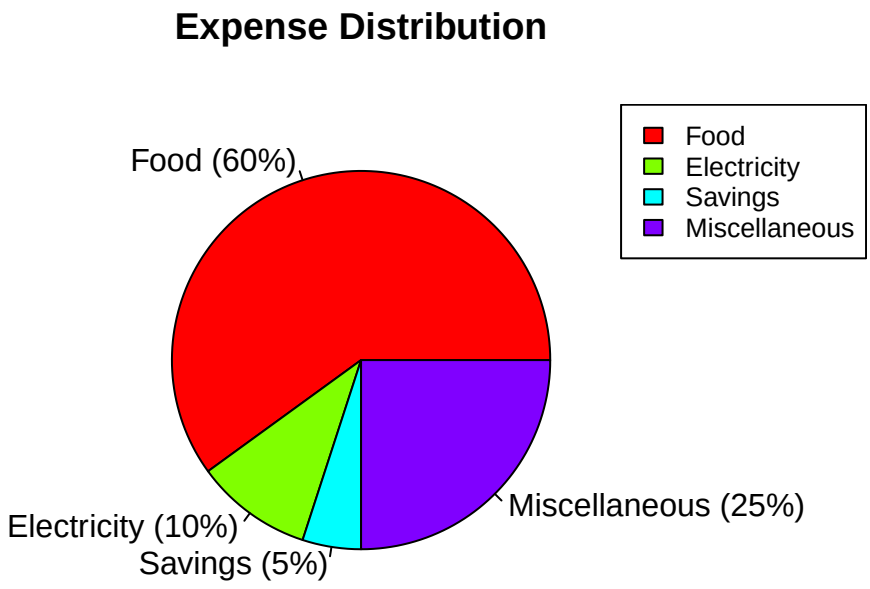
4c.

```
TotalOfMaleFemale <- table(import$Gender)
barplot(TotalOfMaleFemale,
        main = "Number of Males and Females",
        xlab = "Gender",
        ylab = "Count",
        col = c("green", "purple"),
        legend.text = rownames(TotalOfMaleFemale),
        beside = TRUE)
```



#5a.

```
data <- c(Food = 60, Electricity = 10, Savings = 5, Miscellaneous = 25)
percentages <- paste(round(100 * data / sum(data), 1), "%", sep = "")
pie(data, labels = paste(names(data), " (", percentages, ")", sep = ""), col = rainbow(length(data)), ma
legend("topright", names(data), cex = 0.8, fill = rainbow(length(data)))
```



#6a.

```
data(iris)
str(iris)
```

```
## '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 0.2 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 ...
```

```
#The dataset includes information about iris flowers, including measurements of the length and width of
```

#6b.

```
meanofIris <- c(mean(iris$Sepal.Length), mean(iris$Sepal.Width), mean(iris$Petal.Length), mean(iris$Peta
meanofIris
```

```
## [1] 5.843333 3.057333 3.758000 1.199333
```

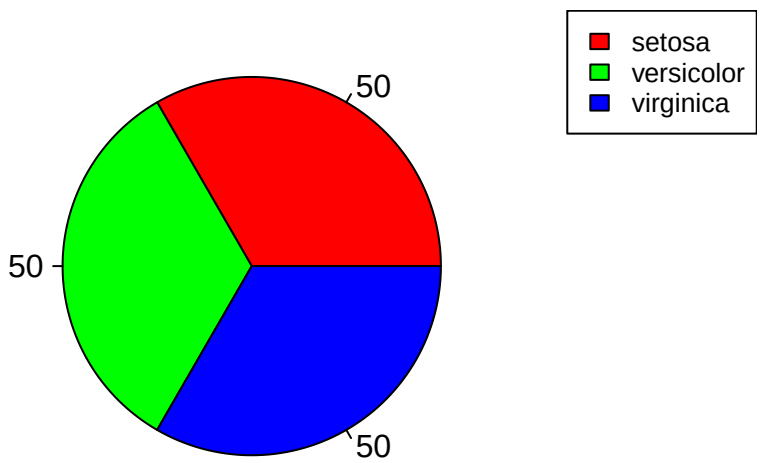
```
meanSepalLength <- mean(iris$Sepal.Length)
meanSepalWidth <- mean(iris$Sepal.Width)
meanPetalLength <- mean(iris$Petal.Length)
meanPetalWidth <- mean(iris$Petal.Width)

meanIris <- data.frame(Sepal_Length = meanSepalLength,
                       Sepal_Width = meanSepalWidth,
                       Petal_Length = meanPetalLength,
                       Petal_Width = meanPetalWidth)
meanIris
```

```
##   Sepal_Length Sepal_Width Petal_Length Petal_Width
## 1     5.843333    3.057333        3.758    1.199333
```

```
#6c.


SpeciesCount <- table(iris$Species)
pie(SpeciesCount, labels = SpeciesCount, col = rainbow(length(SpeciesCount)), main = "Species Distributi
legend("topright", names(SpeciesCount), cex = 0.8, fill = rainbow(length(SpeciesCount)))
```




```
SpeciesCount
```

```
##
##     setosa versicolor  virginica
```

```
##         50         50         50
```

```
#6d.

SetosalSubset <- subset(iris, Species == "setosa")
VersicolorSubset <- subset(iris, Species == "versicolor")
VirginicaSubset <- subset(iris, Species == "virginica")
tail(SetosalSubset, 6)
```

```
##    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          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
```

```
tail(VersicolorSubset, 6)
```

```
##     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           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
```

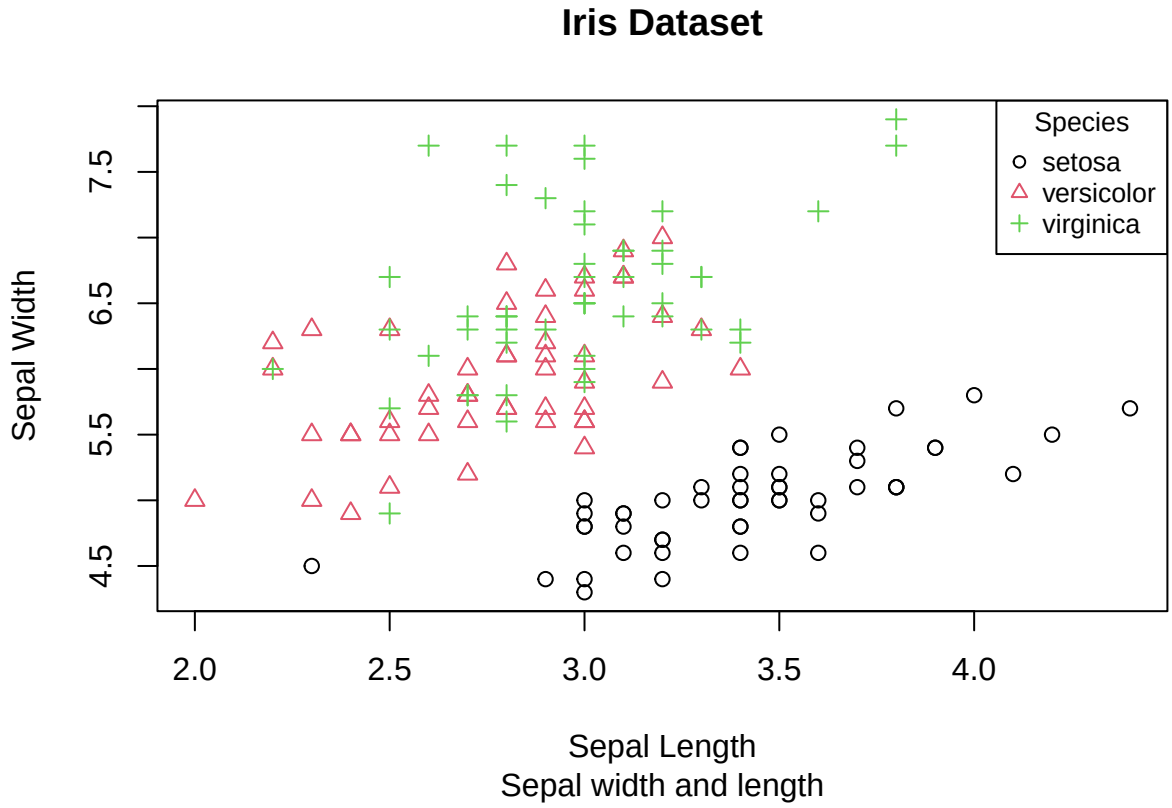
```
tail(VirginicaSubset, 6)
```

```
##     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         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
```

```
#6e.

iris$Species <- as.factor(iris$Species)
plot(
  Sepal.Length ~ Sepal.Width,
  data = iris,
  pch = as.integer(iris$Species),  # Use different pch symbols for each species
  col = as.integer(iris$Species),  # Use different colors for each species
  xlab = "Sepal Length",
  ylab = "Sepal Width",
  main = "Iris Dataset",
  sub = "Sepal width and length"
)


legend("topright", legend = levels(iris$Species), col = 1:3, pch = 1:3, cex = 0.8, title = "Species")
```



#f.Interpret the result.

The dataset is organized into a data frame with 150 observations (rows) and five variables (columns).

length, width, length, and sepal of a petal. The names of the four numerical variables are width. These represent the length and width of the petals, in that order.

The sixth variable is Species, the component variable that represents the species of iris flowers. "Setosa," "versicolor," and "virginica," which represent the numerous iris flower species included in the dataset, are its three tiers.

#7.

```
library(readxl)
Alexa<- read_excel("alexa_file.xlsx")
FilePath <- "/cloud/project/alexa_file.xlsx"
Alexa
```

```
## # A tibble: 3,150 x 5
##    rating date                variation          verified_reviews      feedback
##     <dbl> <dttm>              <chr>              <chr>                    <dbl>
##  1      5 2018-07-31 00:00:00 Charcoal Fabric    Love my Echo!                1
```

```
##  2      5 2018-07-31 00:00:00 Charcoal Fabric     Loved it!                   1
##  3      4 2018-07-31 00:00:00 Walnut Finish       Sometimes while play~       1
##  4      5 2018-07-31 00:00:00 Charcoal Fabric     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
##  8      5 2018-07-31 00:00:00 Charcoal Fabric     I think this is the ~       1
##  9      5 2018-07-30 00:00:00 Heather Gray Fabric looks great                 1
## 10      5 2018-07-30 00:00:00 Heather Gray Fabric Love it! I've listen~       1
## # i 3,140 more rows
```

#7b.

```
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)

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
##    rating date                variation           verified_reviews      feedback
##     <dbl> <dttm>              <chr>               <chr>                    <dbl>
##  1      5 2018-07-31 00:00:00 Charcoal Fabric     Love my Echo!                1
##  2      5 2018-07-31 00:00:00 Charcoal Fabric     Loved it!                    1
##  3      4 2018-07-31 00:00:00 Walnut Finish       Sometimes while play~        1
##  4      5 2018-07-31 00:00:00 Charcoal Fabric     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
##  8      5 2018-07-31 00:00:00 Charcoal Fabric     I think this is the ~        1
##  9      5 2018-07-30 00:00:00 Heather Gray Fabric looks great                  1
## 10      5 2018-07-30 00:00:00 Heather Gray Fabric Love it! I've listen~        1
## # i 3,140 more rows
```

7b.

```
install.packages("dplyr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
```

```
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
```

```
VariationsTotal <- Alexa %>%
  count(Alexa$variation)

VariationsTotal
```

```
## # A tibble: 16 x 2
##    `Alexa$variation`                n
##    <chr>                        <int>
##  1 Black                          261
##  2 BlackDot                       516
##  3 BlackPlus                      270
##  4 BlackShow                      265
##  5 BlackSpot                      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 WhiteDot                       184
## 14 WhitePlus                       78
## 15 WhiteShow                       85
## 16 WhiteSpot                      109
```

```
save(VariationsTotal, file = "variations.RData")
```

7c.

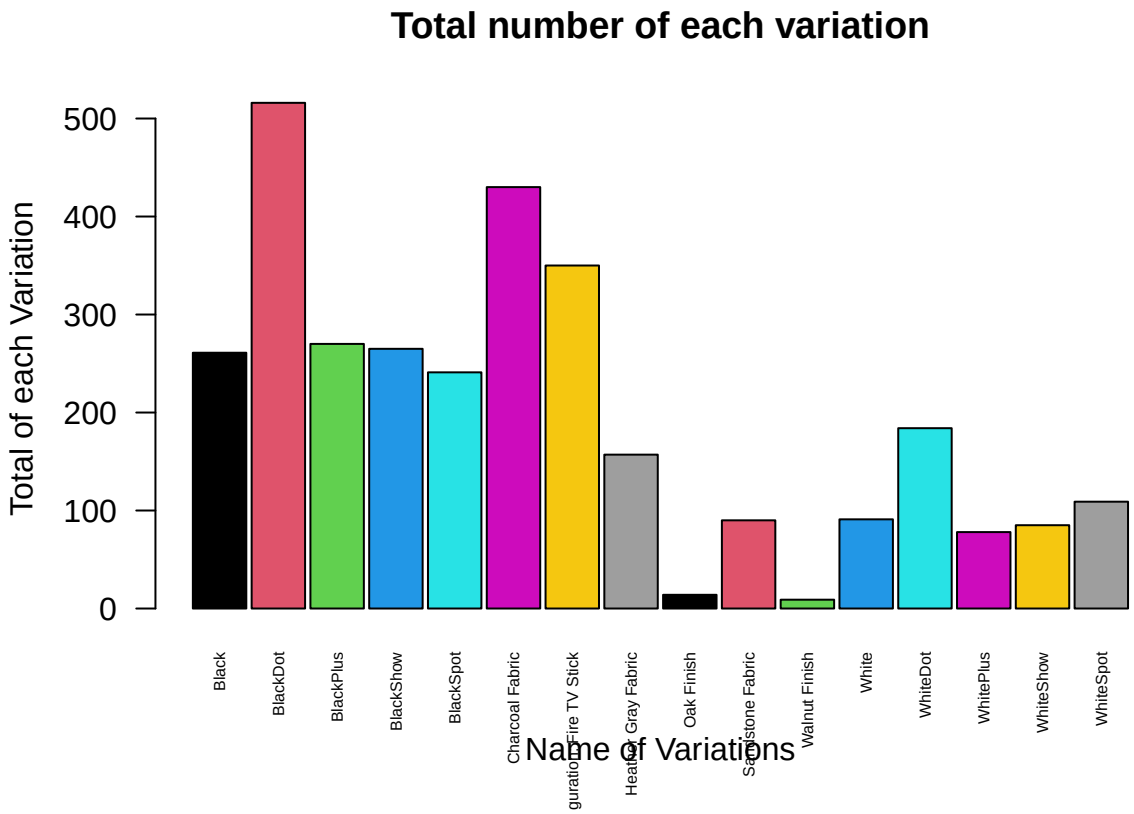
```
load("variations.RData")
VariationsTotal
```

```
## # A tibble: 16 x 2
##    `Alexa$variation`                n
##    <chr>                        <int>
##  1 Black                          261
##  2 BlackDot                       516
##  3 BlackPlus                      270
##  4 BlackShow                      265
##  5 BlackSpot                      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 WhiteDot                       184
## 14 WhitePlus                       78
```

```
## 15 WhiteShow                         85
## 16 WhiteSpot                        109
```

```
varNames <- VariationsTotal$`Alexa$variation`

totalPlot <- barplot(VariationsTotal$n,
        names.arg = varNames,
        main = "Total number of each variation",
        xlab = "Name of Variations",
        ylab = "Total of each Variation",
        col = 1:16,
        space = 0.1,
        cex.names = 0.5,
        las = 2)
```




```
png("/cloud/project/RWorksheet#4b/VariationsTotal.png", width = 800, height = 600, units = "px", points

knitr::include_graphics("/cloud/project/RWorksheet#4b/VariationsTotal.png")
```

```
## Error in knitr::include_graphics("/cloud/project/RWorksheet#4b/VariationsTotal.png"): Cannot find the
```

7d.

```
blackVars <- VariationsTotal[VariationsTotal$`Alexa$variation` %in% c("Black", "BlackPlus", "BlackShow"
whiteVars <- VariationsTotal[VariationsTotal$`Alexa$variation` %in% c("White", "WhiteDot", "WhitePlus",

par(mfrow = c(1, 2))

blackPlot <- barplot(height = blackVars$n,
                     names.arg = blackVars$`Alexa$variation`,
```

```
                      col = c("blue"),
                      main = "Black Variations",
                      xlab = "Variation",
                      ylab = "Count",
                      border = "black",
                      space = 0.5,
                      cex.names = 0.4)
png("/cloud/project/RWorksheet_Suero#4/blackVars.png", width = 800, height = 400, units = "px", pointsi
png("/cloud/project/RWorksheet_Suero#4/whiteVars.png", width = 800, height = 400, units = "px", pointsi


knitr::include_graphics("/cloud/project/RWorksheet#4b/blackVars.png")
```

```
## Error in knitr::include_graphics("/cloud/project/RWorksheet#4b/blackVars.png"): Cannot find the file
```

```
knitr::include_graphics("/cloud/project/RWorksheet#4b/whiteVars.png")
```

```
## Error in knitr::include_graphics("/cloud/project/RWorksheet#4b/whiteVars.png"): Cannot find the file
```