

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("\n", rep("*", j), "\n"), "\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
```

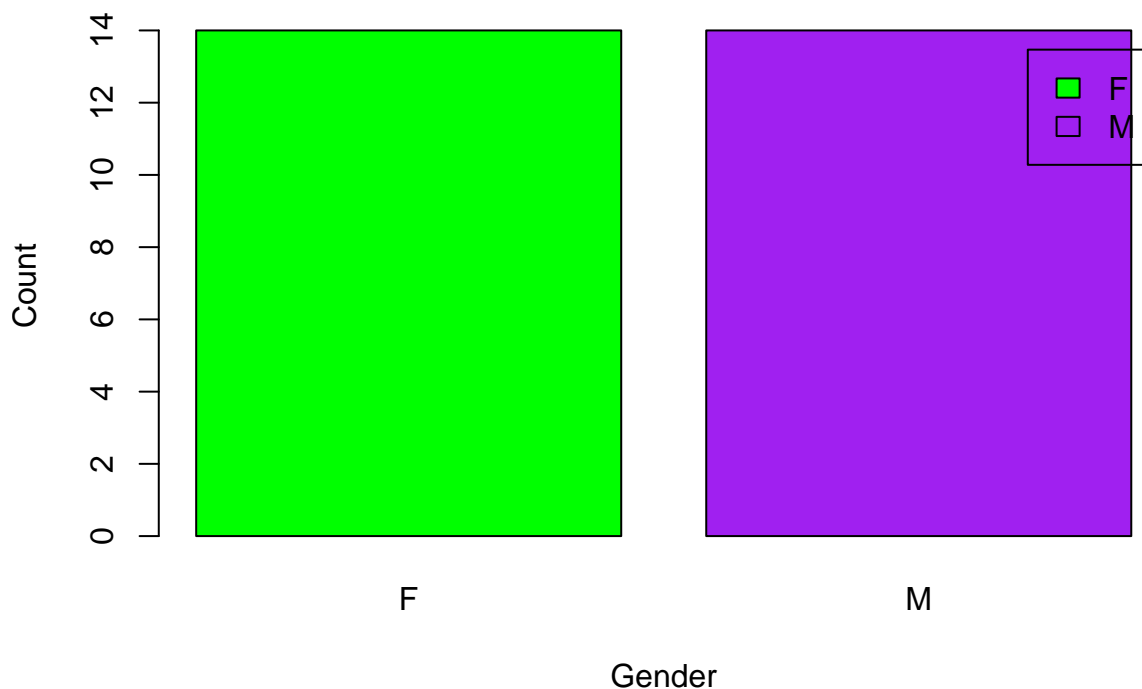
```
NumOfFem <- nrow(Females)
NumOfFem
```

```
## [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)
```

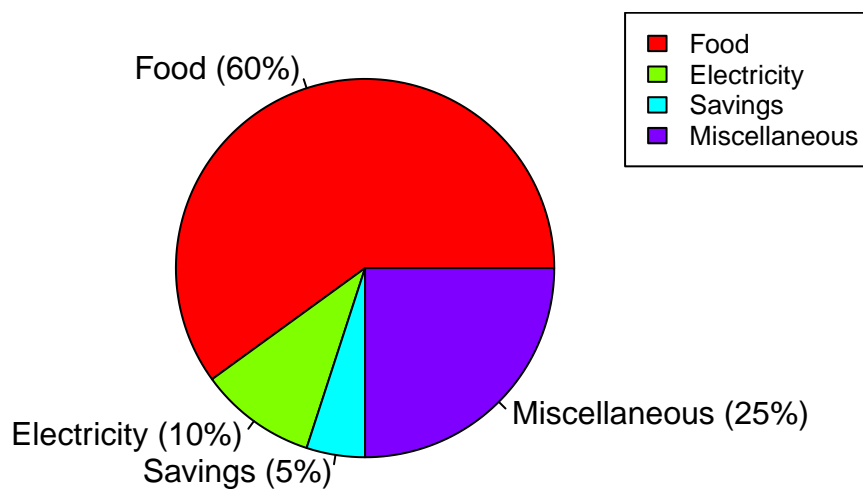
Number of Males and Females



#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)),
    legend("topright", names(data), cex = 0.8, fill = rainbow(length(data)))
```

Expense Distribution



#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$Petal.Length), mean(iris$Petal.Width))
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)
```

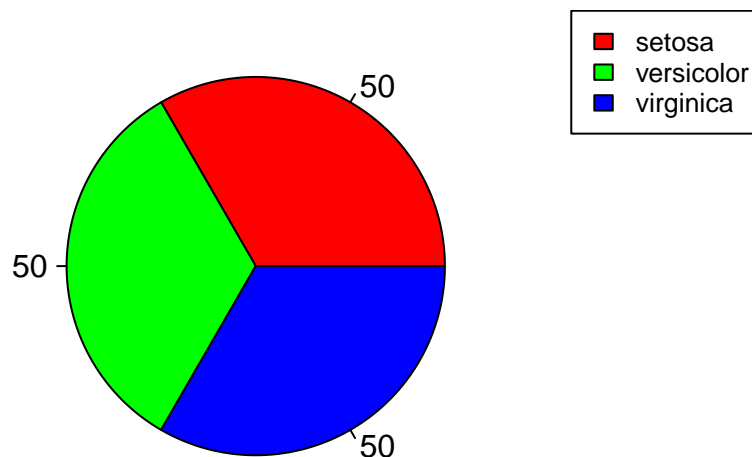
```
meanIris <- data.frame(Sepal_Length = meanSepalLength,
                      Sepal_Width = meanSepalWidth,
                      Petal_Length = meanPetalLength,
                      Petal_Width = meanPetalWidth)
meanIris
```

```
## 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 Distribution",
legend("topright", names(SpeciesCount), cex = 0.8, fill = rainbow(length(SpeciesCount)))
```

Species Distribution



```
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
```

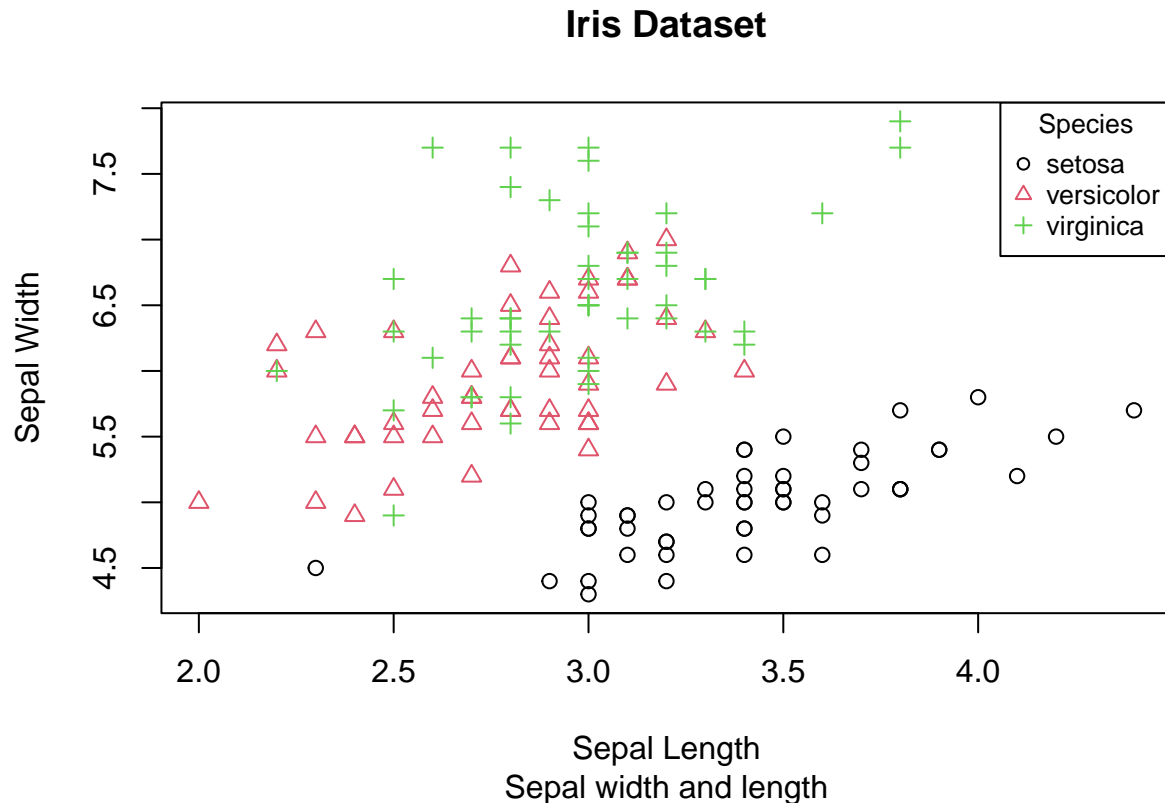
```
tail(VirginicaSubset, 6)
```

```
##      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> <dtm>          <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> <dtm>      <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.

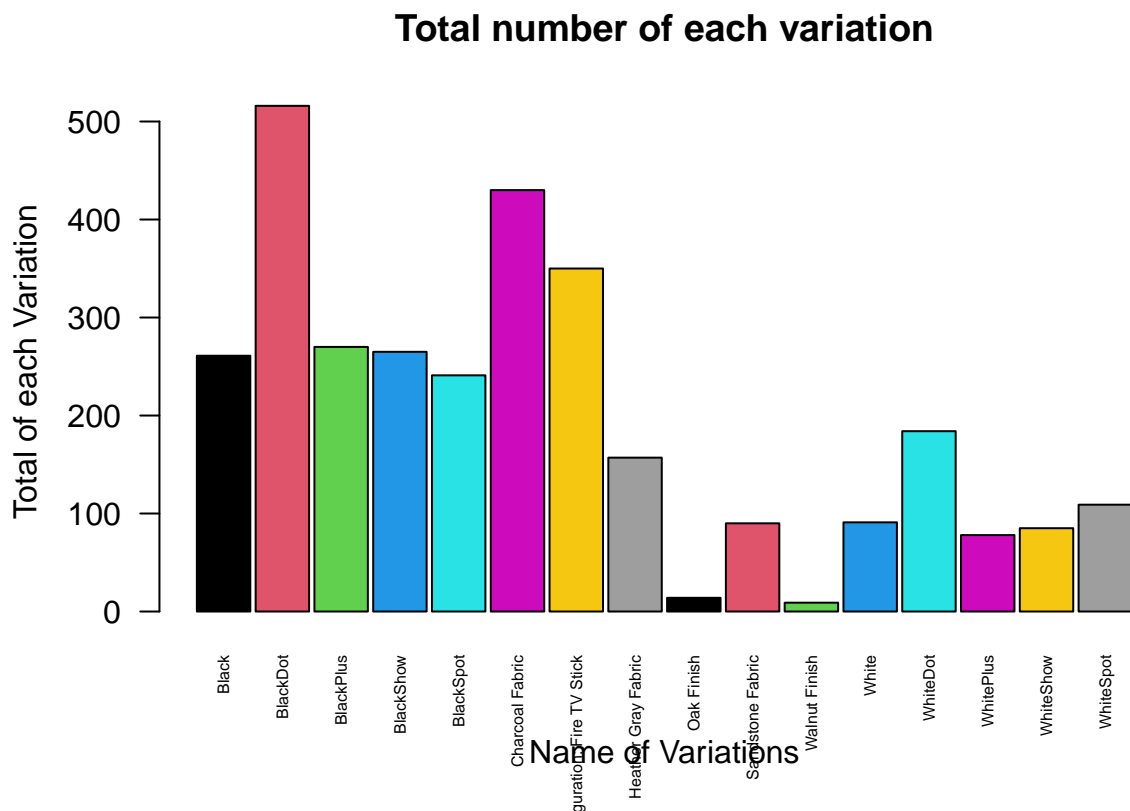
```
load("variations.RData")
VariationsTotal
```

```
## # 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

```