Rworksheet_cadiz#4b

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1. Using the for loop, create an R script that will displat a 5x5 matrix as shown in Figure 1. It must contain vectorA = [1,2,3,4,5] and a 5 x 5 zero matrix.

```
vectorA <- c(1,2,3,4,5)
 matrixfive <- matrix(0, nrow = 5, ncol = 5)
  for ( i in 1:5) {
    for (  j in 1:5) {
    matrixfive [i, j] <- vectorA[abs(i - j) + 1] - 1
    }
  }
 print(matrixfive)
```

```
##      [,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. Print the string "*" using for() function. The output should be the same as shown in Figure.

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

```
## *
## * *
## * * *
## * * * *
## * * * * *
```

3. Get an input from the user to print the Fibonacci sequence starting from the 1st input up to 500. Use repeat and break statements. Write the R scripts and its output

```
printFibonacci <- function(start){
  first <- 0
  second <- 1
  next_num <- 0

  if (start == 1){
      cat(first, "", second, "", second, " ")
  }

  for (i in 0:start){
    next_num <- first + second
    first <- second
    second <- next_num
  }

  repeat{
    if (next_num > 500) break
    cat(next_num, " ")
    next_num <- first + second
    first <- second
    second <- next_num
  }
}

#start <- readline(prompt = "Enter starting term: ")
start <- 1
printFibonacci(start)
```

```
## 0  1  1  2  3  5  8  13  21  34  55  89  144  233  377
```

4. Import the dataset as shown in Figure 1 you have created priviously.

a. What us the R script for importing an excel or a csv file? Display the the first 6 rows of the dataset? Show your codes and its result.

```
shoedata <- read.csv("shoesizes - Sheet1.csv")
shoedata[(1:6), ]
```

```
##   Shoe.size Height Gender Shoe.size.1 Height.1 Gender.1
## 1       6.5   66.0      F        13.0       77        M
## 2       9.0   68.0      F        11.5       72        M
## 3       8.5   64.5      F         8.5       59        F
## 4       8.5   65.0      F         5.0       62        F
## 5      10.5   70.0      M        10.0       72        M
## 6       7.0   64.0      F         6.5       66        F
```

b. Create a subset for gender (female and male). How many observations are there in Male? How about in Female? Show your code and its results.

```
male <- subset(shoedata, Gender == "M")
print(male)
```

```
##    Shoe.size Height Gender Shoe.size.1 Height.1 Gender.1
## 5       10.5   70.0      M        10.0       72        M
## 9       13.0   72.0      M        10.5       73        M
## 11      10.5   74.5      M        10.5       72        M
## 13      12.0   71.0      M         9.0       69        M
## 14      10.5   71.0      M        13.0       70        M
```

```
female <- subset(shoedata, Gender == "F")
print(female)
```

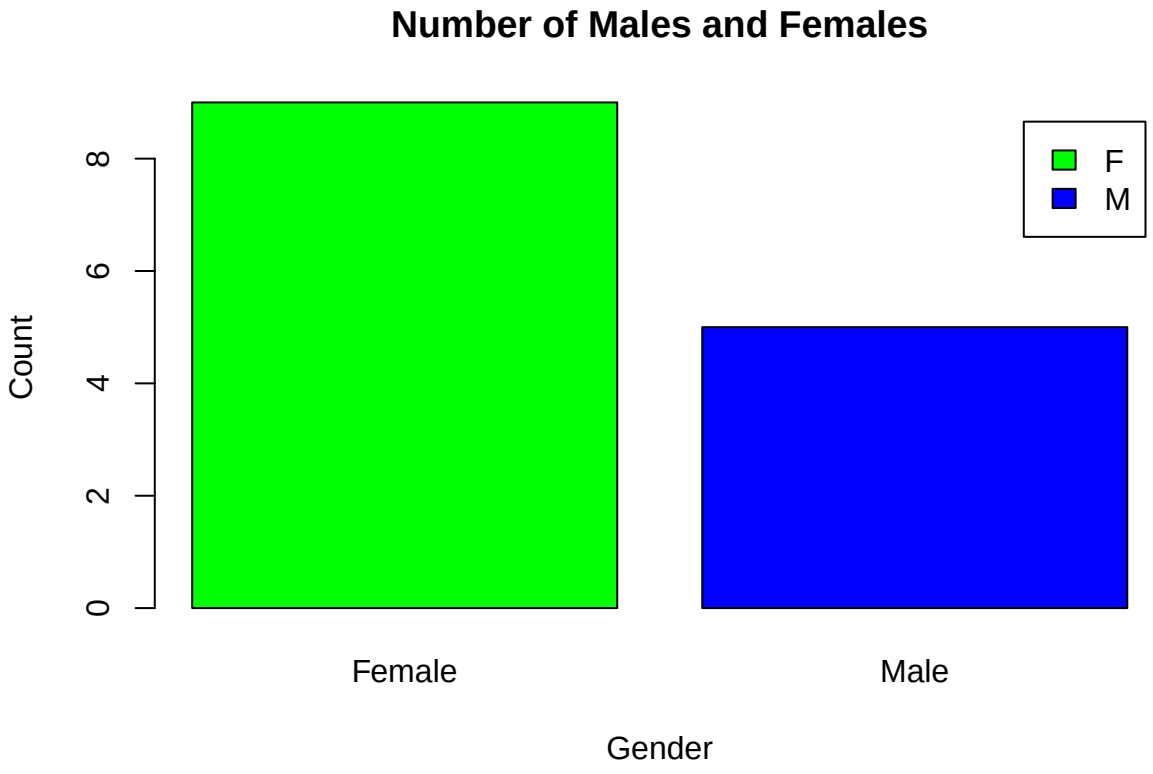
```
##    Shoe.size Height Gender Shoe.size.1 Height.1 Gender.1
## 1         6.5   66.0      F        13.0       77        M
## 2         9.0   68.0      F        11.5       72        M
## 3         8.5   64.5      F         8.5       59        F
## 4         8.5   65.0      F         5.0       62        F
## 6         7.0   64.0      F         6.5       66        F
## 7         9.5   70.0      F         7.5       64        F
## 8         9.0   71.0      F         8.5       67        M
## 10        7.5   64.0      F         8.5       69        F
## 12        8.5   67.0      F        11.0       70        M
```

c. Create a graph for the numbers of male and females for Household Data.

##Use plot(), chart type = barplot. Make sure to place title, legends, ## and colors. Write the R scripts and its result.

```
householddata<- table(shoedata$Gender)

barplot(householddata,
        main = "Number of Males and Females",
        xlab = "Gender",
        ylab = "Count",
        col = c("Green", "Blue"),
        names.arg = c("Female", "Male"),
        legend = rownames(householddata))
```



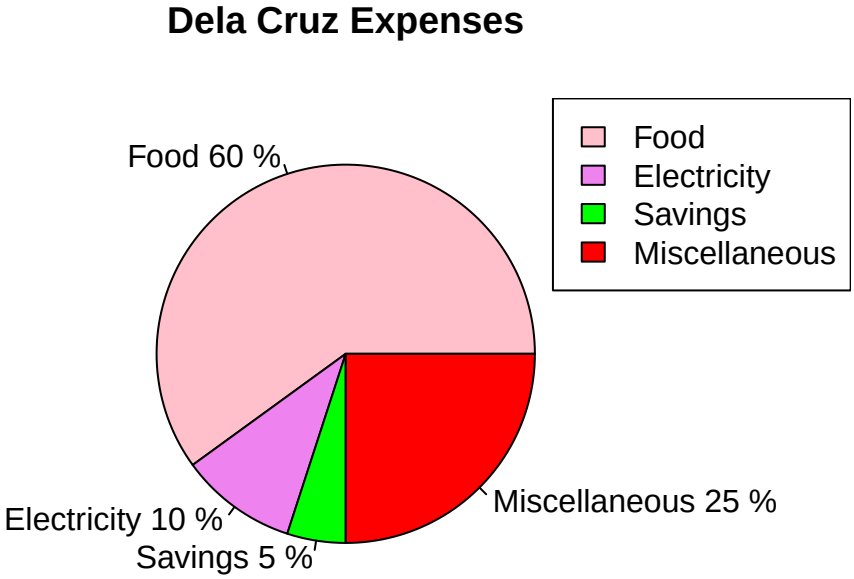
5. The monthly income of Dela Cruz family was spent on the following:

a. Create a piechart that will include labels in percentage. Add some colors and title of the chart.. Write the R scripts and show its output.

```
category <- c("Food", "Electricity", "Savings", "Miscellaneous")
value <- c(60, 10, 5, 25 )
color = c("pink", "violet", "green", "red")
percentage <- round(value / sum(value) * 100)
percent_label <- paste(category, percentage, "%")

pie(
  value,
  col = color,
  main = "Dela Cruz Expenses",
  label = percent_label
)

legend("topright", category, fill = color)
```



6. Use the iris dataset.

a. Check for the structure of the dataset using the str() function. Describe what you have seen in the output.

```
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 output shows the data frame of the Iris data that contains the length
# and width of Sepal and Petal.
```

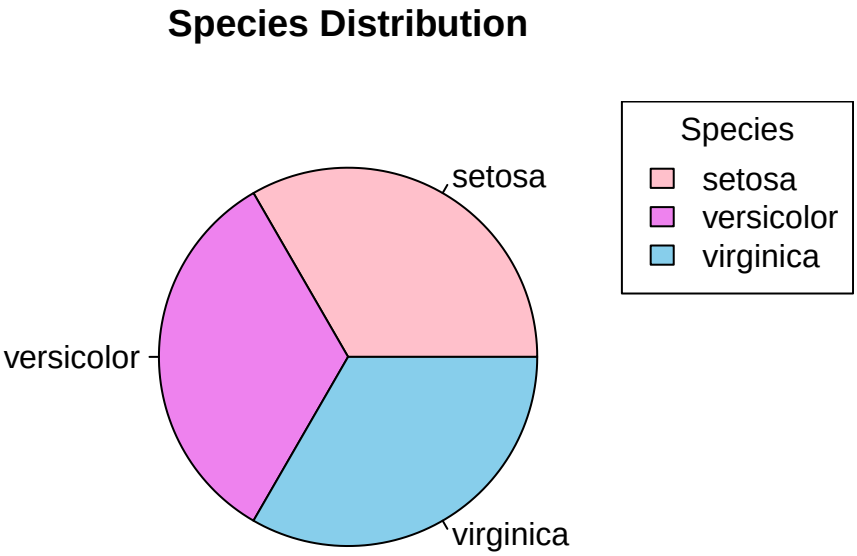
b. Create an R object that will contain the mean of the sepal.length, sepal. width, petal.length, and petal.width. What is the R scripts and its result?

```
datameans <-c(
  Sepal.Length = mean(iris$Sepal.Length),
  Sepal.Width = mean(iris$Sepal.Width),
  Petal.Length = mean(iris$Petal.Length),
  Petal.Width = mean(iris$Sepal.Width)
)
print(datameans)
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     3.057333
```

c. Create a pie chart for the Species distribution. Add titles, legends, and colors. Write the R script and its result.

```
iris_species <- table(iris$Species)
species_color <- c("pink", "violet", "skyblue")
pie(
  iris_species,
  main = "Species Distribution",
  col = species_color
)
legend("topright", names(iris_species), fill = species_color, title = "Species")
```



d. Subset the species into setosa, versicolor, and virginica. Write the R scripts and show the last six (6) rows of each species.

```
setosa <- subset(iris, Species == "setosa")
versicolor <- subset(iris, Species == "versicolor")
virginica <- subset(iris, Species == "virginica")
tail(setosa)
```

```
##    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(versicolor)
```

```
##     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(virginica)
```

```
##     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
```

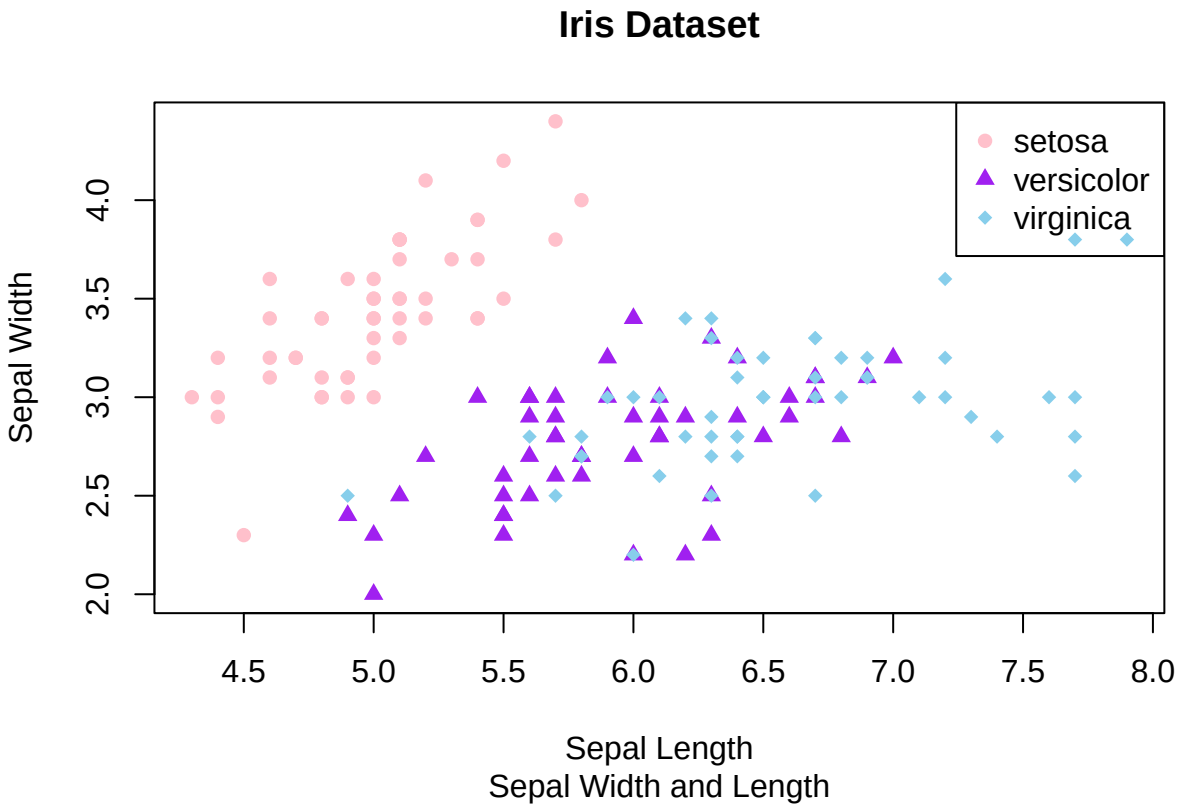
e. Create a scatterplot of the sepal.length and sepal.width using the different species(setosa,versicolor, virginica). Add a title = "Iris Dataset, subtitle = "Sepal width and length, labels for the x and y axis, the pch symbol and colors shoulds be based on the species.

```
iris$Species <- as.factor(iris$Species)

colors <- c("pink", "purple", "skyblue")
pch_symbols <- c(16, 17, 18)

plot(iris$Sepal.Length, iris$Sepal.Width,
     col = colors[iris$Species],
     pch = pch_symbols[iris$Species],
     main = "Iris Dataset",
     sub = "Sepal Width and Length",
     xlab = "Sepal Length",
     ylab = "Sepal Width")

legend("topright", legend = levels(iris$Species),
       col = colors, pch = pch_symbols)
```



f. Interpret the result.

```
#it shows that the scatter plot displays the relationship between Sepal.Length
#and Sepal.Width of the three given species in the iris data.

#secondly, the colors helps to track the species which shows in the figure,
#by this we we can see the overlapping relationship of the versicolor and
#virginica mean while, the setosa also portray above the overlapping relationship
#of the two, in this scatterplot helps me to identify that there is a positive
#relationship
```

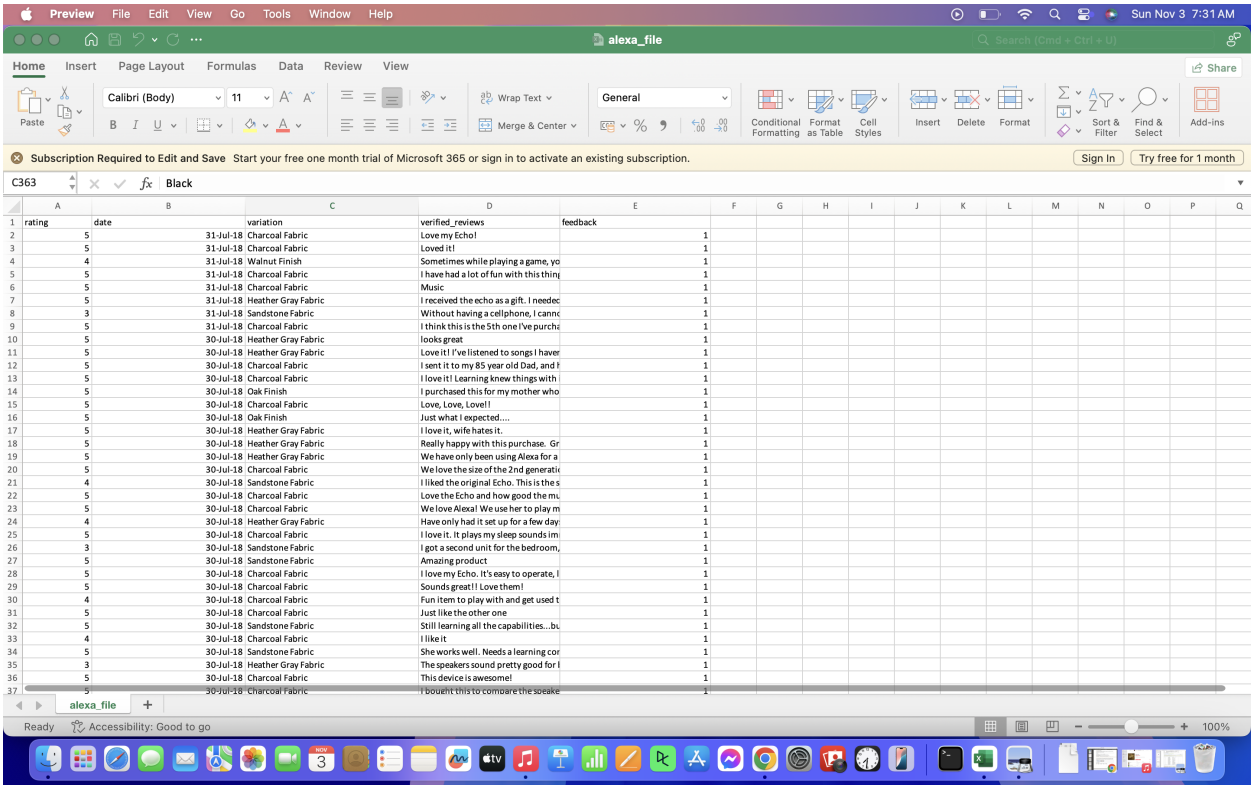
7. Import the alexa-file.xlsx. Check on the variations. Notice that there are extra whitespaces among black variants (Black Dot,Black Plus, Black Show, Black Spot). Also on the white variants (White Dot, White Plus, White Show, White Spot).

```
#Imported alexafile
library(readxl)
alexafile <- read_xlsx("alexa_file.xlsx")
print(alexafile)
```

```
## # 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
```

```
knitr::include_graphics("alexadfilesnippet.png")
```



a. Rename the white and black variants by using gsub() function.

```
alexafile$variation <- gsub("Black Dot", "BlackDot", alexafile$variation)
alexafile$variation <- gsub("Black Plus", "BlackPlus", alexafile$variation)
alexafile$variation <- gsub("Black Show", "BlackShow", alexafile$variation)
alexafile$variation <- gsub("Black Spot", "BlackSpot", alexafile$variation)
alexafile$variation <- gsub("White Spot", "WhiteSpot", alexafile$variation)
alexafile$variation <- gsub("White Show", "WhiteShow", alexafile$variation)
alexafile$variation <- gsub("White Plus", "WhitePlus", alexafile$variation)
alexafile$variation <- gsub("White Dot", "WhiteDot", alexafile$variation)

alexafile$variation[1050:2000]
```

```
##   [1] "Heather Gray Fabric" "Black  Spot"         "White  Spot"
##   [4] "Black  Spot"         "Black  Spot"         "Black  Spot"
##   [7] "Black  Spot"         "White  Spot"         "Black  Spot"
```

```
##  [10] "Black  Spot"         "Black  Spot"         "Black  Spot"
##  [13] "Black  Spot"         "White  Spot"         "White  Spot"
##  [16] "Black  Spot"         "White  Spot"         "White  Spot"
##  [19] "White  Spot"         "White  Spot"         "Black  Spot"
##  [22] "Black  Spot"         "White  Spot"         "Black  Spot"
##  [25] "Black  Spot"         "Black  Spot"         "White  Spot"
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## [172] "White  Spot"         "Black  Spot"         "White  Spot"
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```

b. Get the total number of each variations and save it to another object.

##Save the object as variations.RData. Write the RScripts. What is its result?

```
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
```

```
alexavar <- alexafile %>%
  count(alexafile$variation)
  alexavar
```

```
## # A tibble: 16 x 2
##    `alexafile$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
## 16 White  Spot                   109
```

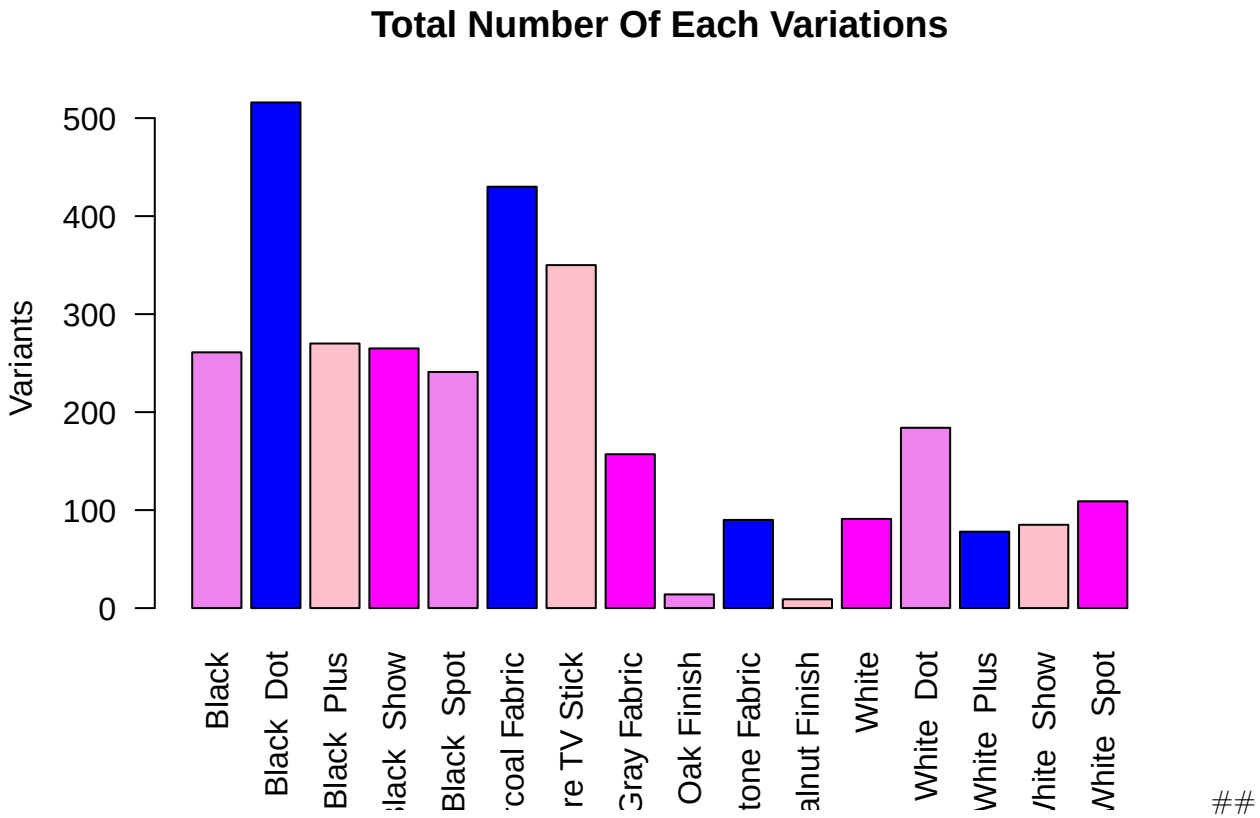
```
save(alexavar, file = "variations.RData")
```

c. Create the variations.RData, create a barplot(). Complete the details of

##the chart which include the title, color, labels of each bar.

```
load("variations.RData")

barplot(
  alexavar$n,
  col = c("violet", "blue", "pink", "magenta"),
  main = "Total Number Of Each Variations",
  ylab = "Variants",
  names.arg = alexavar$`alexafile$variation`,
  las = 2
)
```



##

d. Create a barplot() for the black and white variations. Plot it in 1 ## frame, side by side. Complete the details of the chart.

```
load("variations.RData")

par(mfrow = c(1, 2))

blackvar <- alexavar %>%
  filter(`alexafile$variation` %in% c("Black", "BlackDot", "BlackPlus", "BlackShow", "BlackSpot"))

barplot(
  height = blackvar$n,
  names.arg = blackvar$`alexafile$variation`,
  col = c("pink", "magenta", "skyblue", "grey", "purple"),
  main = "Black Variants",
  xlab = "Total Numbers",
  ylab = "Variations",
  las = 2
)

whitevar <- alexavar %>%
  filter(`alexafile$variation` %in% c("White", "WhiteDot", "WhitePlus", "WhiteShow", "WhiteSpot"))

barplot(
  height = whitevar$n,
  names.arg = whitevar$`alexafile$variation`,
  col = c("pink", "magenta", "skyblue", "grey", "purple"),
  main = "White Variants",
  xlab = "Total Numbers",
```

```
  ylab = "Variations",
  las = 2
)
```