RWorksheet_Sadural#4b

2023-11-08

```
#1. Using the for loop, create an R script that will display a 5x5 matrix as shown in Figure 1. It must

vec0 <- c(0)
mat0 <- matrix(vec0, nrow = 5, ncol = 5)

mat0
```

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

```
vecA <- c(1,2,3,4,5)
mat_A <- matrix(vecA, nrow = 5, ncol = 5)

for(i in 1:length(vecA)){
    mat0[i, ] <- abs(vecA - vecA[i] )
}

print(mat0)
```

```
##      [,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(i in 1:5){
  starstar <- rep("*",i)
  print(starstar)
}
```

```
## [1] "*"
## [1] "*" "*"
## [1] "*" "*" "*"
## [1] "*" "*" "*" "*"
## [1] "*" "*" "*" "*" "*"
```

#3.

```
n <- as.numeric(readline(prompt = "Enter a number to start the Fibonacci sequence: "))
```

```
## Enter a number to start the Fibonacci sequence:
```

```
a <- 0
b <- 1
c <- a + b

repeat {
  if (c > 500) {
    break
  }
  if (a == 0 & b == 1) {
    cat(b, " ")
  }
  cat(c, " ")
  a <- b
  b <- c
  c <- a + b
}
```

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

#4a.

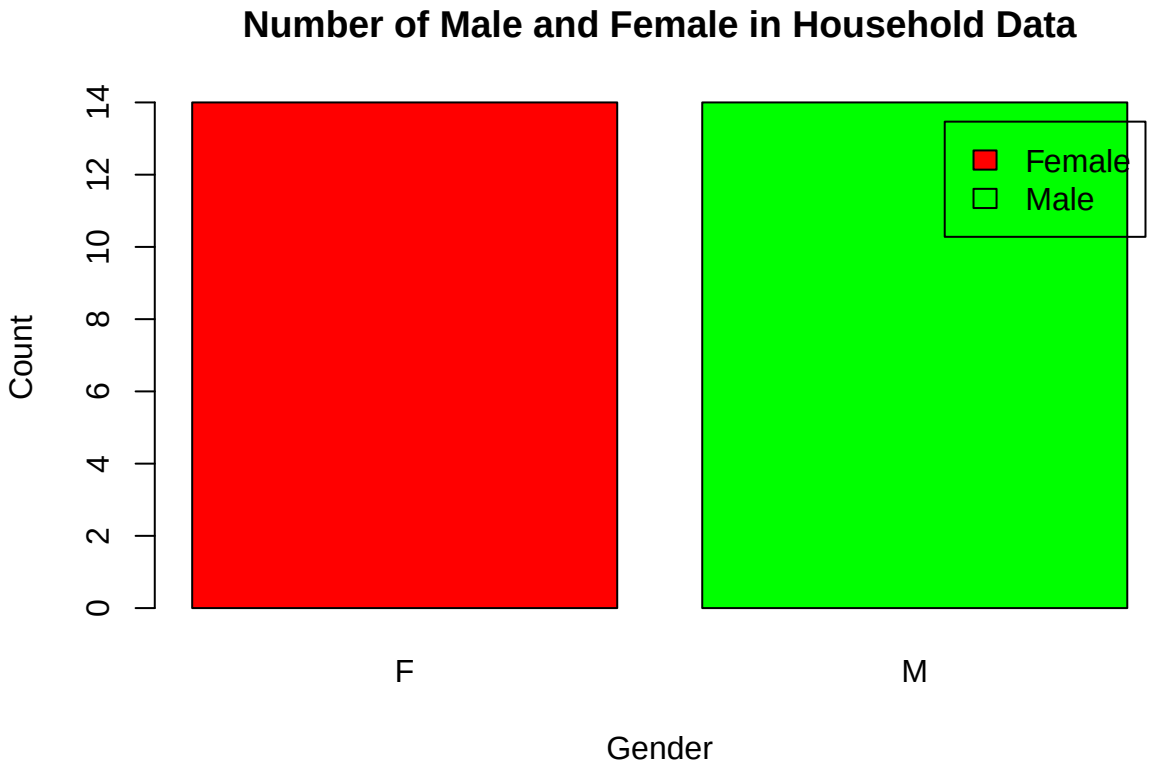
```
ShoesData <- read.csv("Shoe sizes.csv")

#4b.
maleSub <- subset(ShoesData, Gender == "M")
femSub <- subset(ShoesData, Gender == "F")

cat("The number of observation in male subset:", nrow(maleSub),"\n")
```

```
## The number of observation in male subset: 14
```

```
cat("The number of observation in female subset:", nrow(femSub),"\n")
```

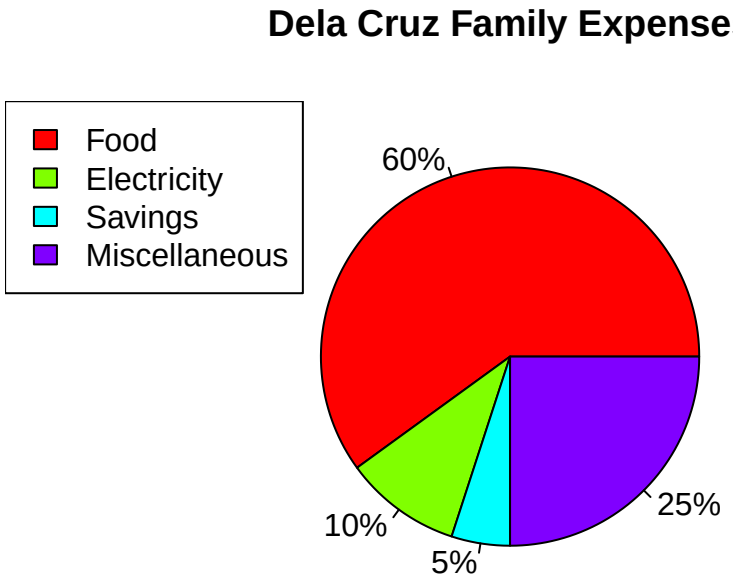
```
## The number of observation in female subset: 14
```

```
#4c.
GenderMF <- table(ShoesData$Gender)

barplot(GenderMF,
        main = "Number of Male and Female in Household Data",
        xlab = "Gender",
        ylab = "Count" ,
        col = c("red", "green"),
        legend.text = c("Female", "Male"))
```



#5.

```
Incomemonth <- c(60,10,5,25)

pie(Incomemonth,labels = paste0(Incomemonth,"%"),
    main = "Dela Cruz Family Expenses", col = rainbow(length(Incomemonth)))

legend("topleft", legend = c("Food","Electricity", "Savings","Miscellaneous"),
       fill = rainbow(length(Incomemonth)))
```



#6.

```r
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 ...
```

```r
#there are 150 observation and 5 variables in iris dataset. there are numeric measurements in sepal.wid
```

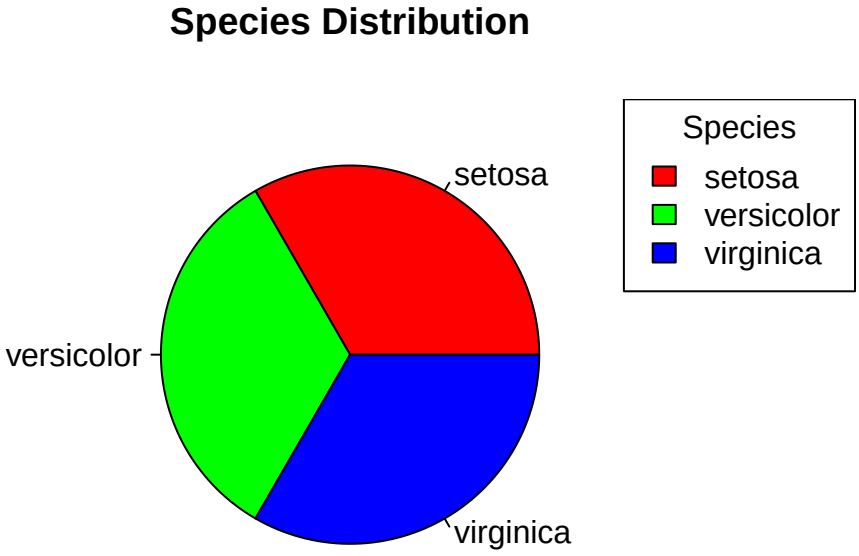
#6b

```r
data(iris)

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

meaniris
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     1.199333
```

#6c.

```r
data(iris)

species <- table(iris$Species)

pie(species, labels = names(species),
    col = rainbow(length(species)),
    main = "Species Distribution")

legend("topright", legend = names(species),
       fill = rainbow(length(species)), title = "Species")
```



#6d.

```r
data(iris)
```

```r
setosa_subs <- subset(iris, Species == "setosa")
versicolor_subs <- subset(iris, Species == "versicolor")
virginica_subs <- subset(iris, Species == "virginica")

#to display the last 6 rows of each species

tail(setosa_subs)
```

```
##    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
```

```r
tail(versicolor_subs)
```

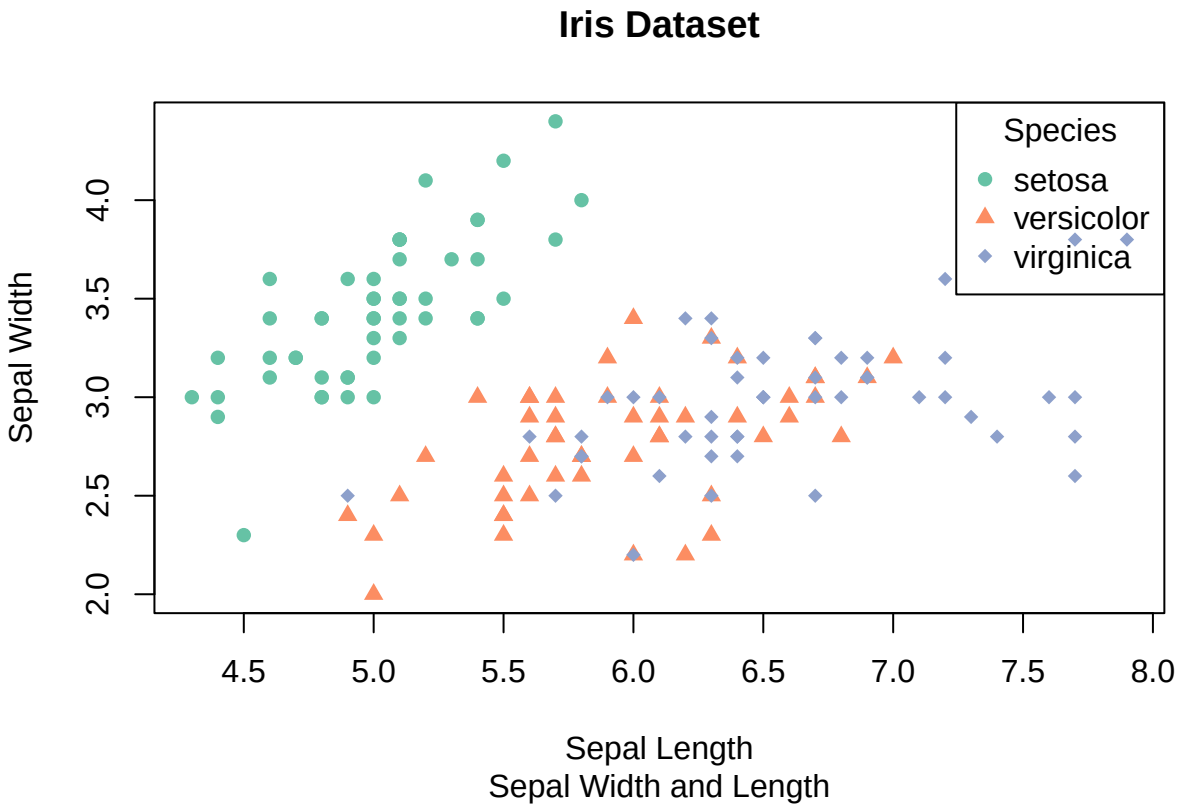
```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 95           5.6         2.7          4.2         1.3 versicolor
## 96           5.7         3.0          4.2         1.2 versicolor
## 97           5.7         2.9          4.2         1.3 versicolor
## 98           6.2         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
```

```r
tail(virginica_subs)
```

```
##     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.

```r
data(iris)

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

colors <- c("setosa" = "#66c2a5", "versicolor" = "#fc8d62", "virginica" = "#8da0cb")
symbols <- c("setosa" = 16, "versicolor" = 17, "virginica" = 18)

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

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




```
#6e
#by factoring the species, it will be represents as a categories in R.
```

#7.

```
library(readxl)

alexadata <- read_excel("alexa_file.xlsx")

alexadata
```

```
## # 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
```

#7a.

```
#black
alexadata$variation <- gsub("Black Dot", "BlackDot", alexadata$variation)
```

```
alexadata$variation <- gsub("Black Plus", "BlackPlus", alexadata$variation)
alexadata$variation <- gsub("Black Show", "BlackShow", alexadata$variation)
alexadata$variation <- gsub("Black Spot", "BlackSpot", alexadata$variation)

#white
alexadata$variation <- gsub("White Dot", "WhiteDot", alexadata$variation)
alexadata$variation <- gsub("White Plus", "WhitePlus", alexadata$variation)
alexadata$variation <- gsub("White Show", "WhiteShow", alexadata$variation)
alexadata$variation <- gsub("White Spot", "WhiteSpot", alexadata$variation)

alexadata
```

```
## # 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.

```
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
```

```
var_DATA <- alexadata %>%
  count(alexadata$variation)

var_DATA
```

```
## # A tibble: 16 x 2
##    `alexadata$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
```

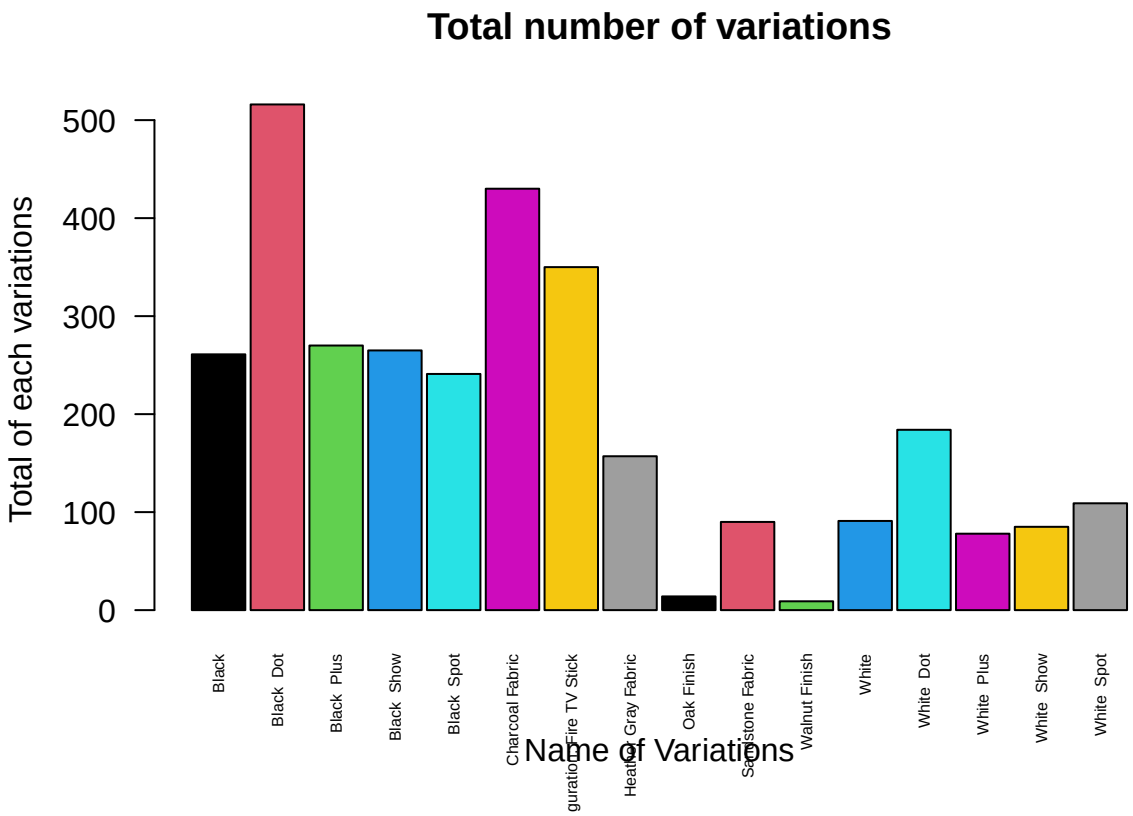
```
save(var_DATA, file= "variations.RData")
```

#7c.

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

```
## # A tibble: 16 x 2
##    `alexadata$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
```

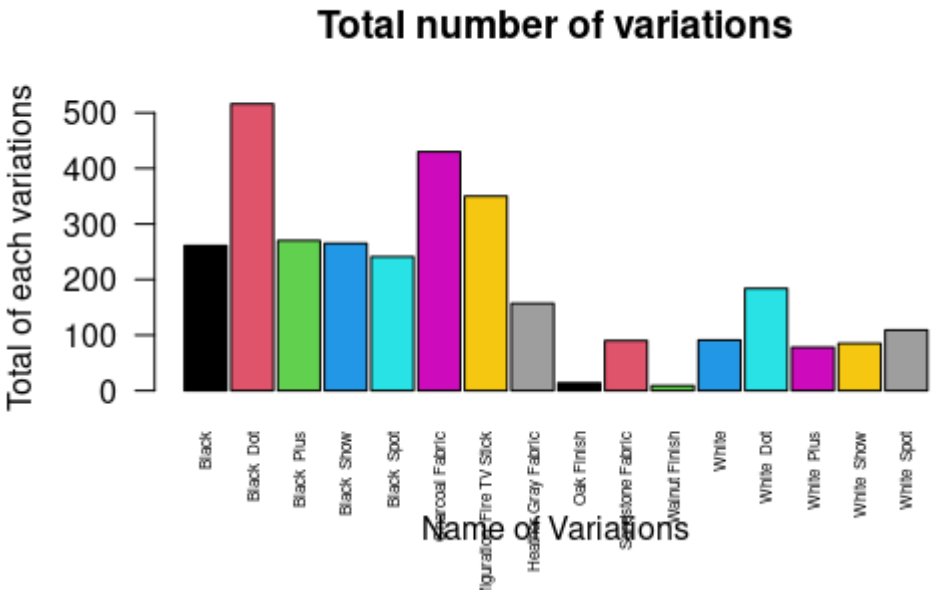
```
namevar <- var_DATA$`alexadata$variation`

alexaplot <- barplot(var_DATA$n,
                     names.arg = namevar,
                     main = "Total number of variations",
                     xlab = "Name of Variations",
                     ylab = "Total of each variations",
                     col = 1:16,
                     space = 0.1,
                     cex.names = 0.5,
                     las = 2)
```




```
png("var_Data.png")
dev.off()
```

```
## pdf
##   2
```

```
knitr::include_graphics("/cloud/project/RWorksheet_Sadural#4A/var_Data.png")
```

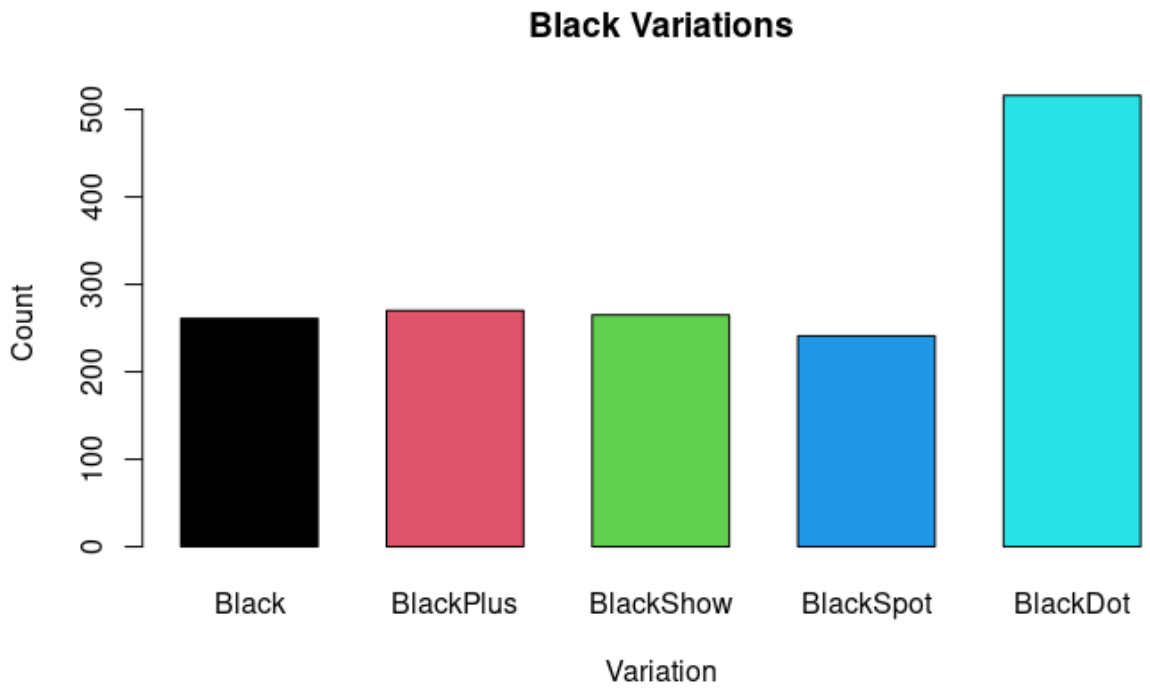


#7d.

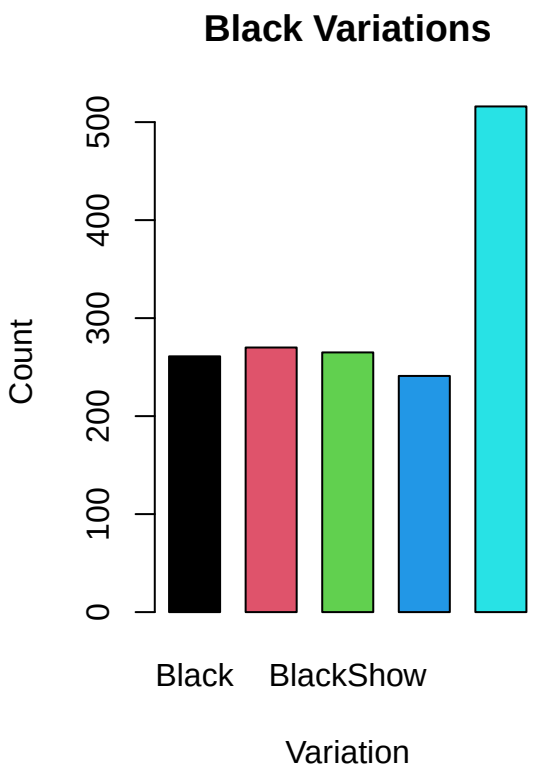
```
library(RColorBrewer)

par(mfrow = c(1,2))


blackvarplot <- barplot(height = c(261,270,265,241,516),
                        names.arg = c("Black","BlackPlus","BlackShow","BlackSpot","BlackDot"), main = "
                        col = 1:5,
                        space = 0.5,
                        xlab = "Variation",
                        ylab = "Count")

png("blackvarplot.png")
dev.off()
```

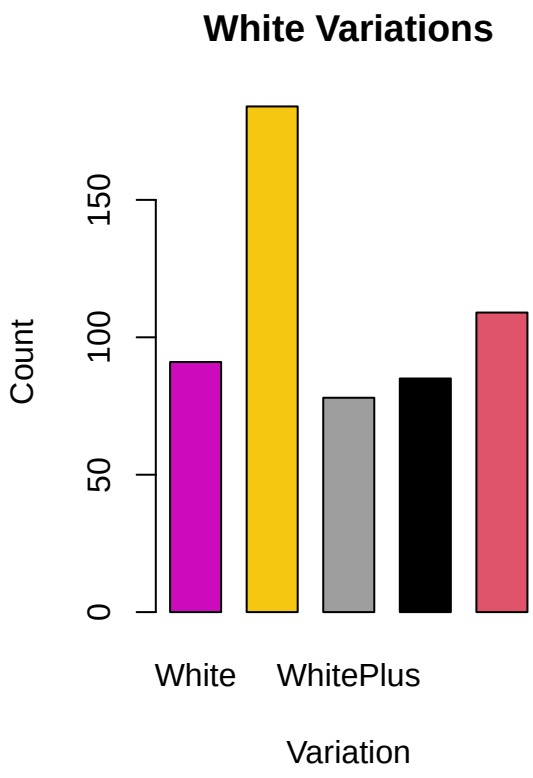
```
## pdf
##   2
```

```
knitr::include_graphics("/cloud/project/RWorksheet_Sadural#4A/varblackplot.png")
```




```
whitevarplot <- barplot(height = c(91,184,78,85,109),
                        names.arg = c("White", "WhiteDot", "WhitePlus", "WhiteShow", "WhiteSpot"),
                        main = "White Variations",
                        space = 0.5,
                        col = 6:10,
                        xlab = "Variation",
                        ylab = "Count",)
```

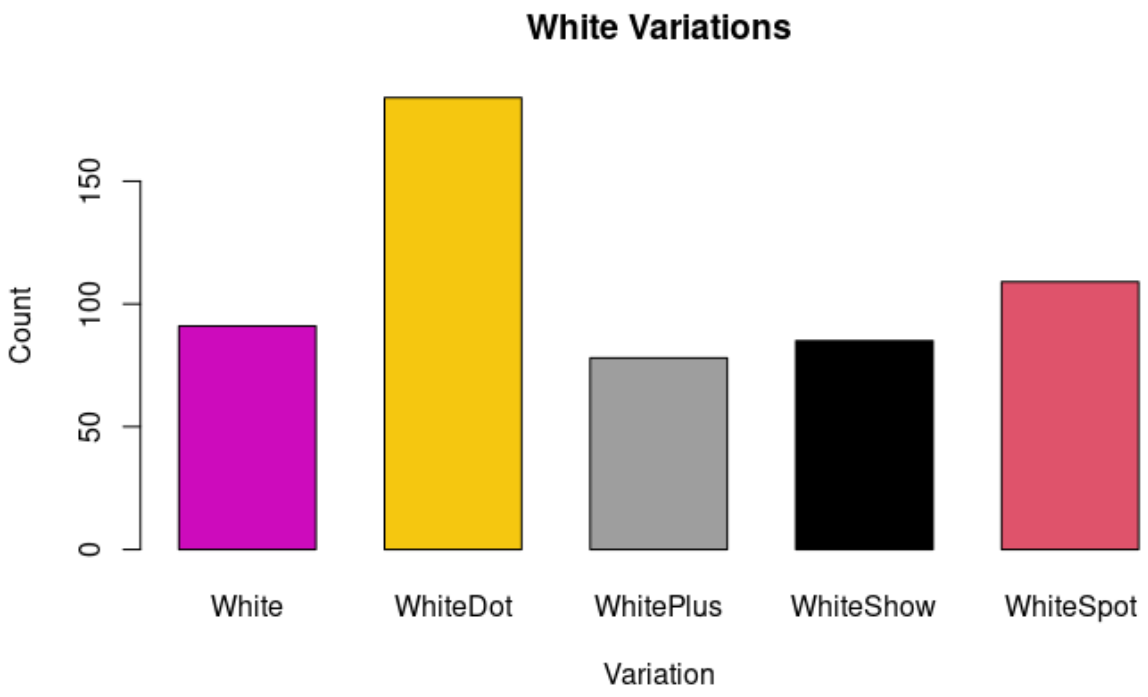





```
png("whitevarplot.png")
dev.off()
```

```
## pdf
##   2
```

```
knitr::include_graphics("/cloud/project/RWorksheet_Sadural#4A/varwhiteplot.png")
```


White Variations
Count
0
50
100
150
White
WhiteDot
WhitePlus
WhiteShow
WhiteSpot
Variation