RWork- sheet_Obas#4b.Rmd

Barbie Joy Obas

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```
#1.
Vector_A <- c(1,2,3,4,5)
matrix_A <- matrix(0, nrow=5, ncol=5)

for (b in 1:5)
for(j in 1:5)
{
  matrix_A[b,j] <- abs (Vector_A[b]-Vector_A[j])
}
matrix_A
```

```
##      [,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 (a in 1:5)
{
  cat(paste0("\"", rep ("*",a),"\""), "\n")
}
```

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

```
#3
Input <- as.integer(readline("Enter starting number for Fibonacci sequence: "))
```

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

```
if (is.na(Input) || Input < 0) {
  cat("Please enter a valid non-negative number.")
} else {
  x <- Input
  y <- 0

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

  repeat {
```

```
    next_num <- x + y

    if (next_num > 500) {
      break
    }

    cat(next_num, " ")
    x <- y
    y <- next_num
  }
}
```

```
## Please enter a valid non-negative number.
```

```
#4.A

importData <- read.csv("/cloud/project/Household_Data.csv")

head(importData)
```

```
##   X Shoe_Size 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
```

```
#4.B

males <- importData[importData$Gender == "M",]
males
```

```
##     X Shoe_Size 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 <- importData[importData$Gender == "F",]
females
```

```
##     X Shoe_Size 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
```

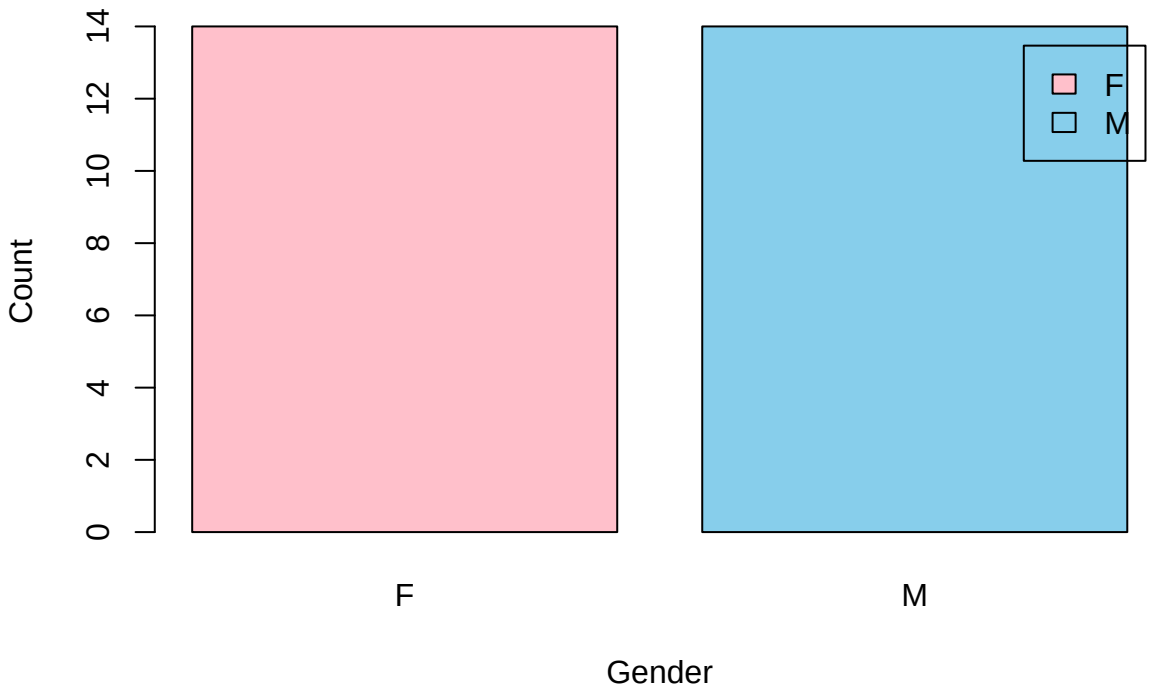
```
MaleNum <- nrow(males)
MaleNum
```

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

```
FemNum <- nrow(females)
FemNum
```

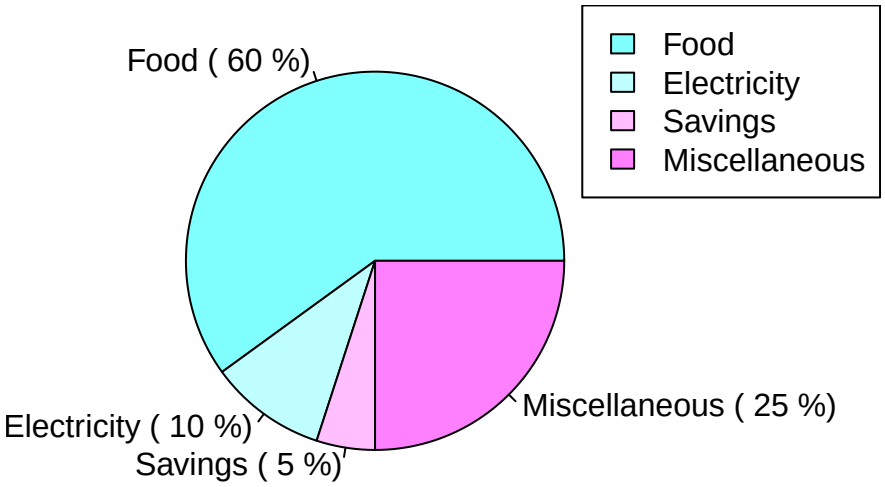
```
## [1] 14
```

```
#4.C

Male_Female <- table(importData$Gender)
barplot(Male_Female,

        main = "Number of Males and Females",

        xlab = "Gender",

        ylab = "Count",

        col = c("pink", "skyblue"),

        legend.text = rownames(Male_Female),

        beside = TRUE)
```




```r
#5.A
expenses <- data.frame(
  expenseCat = c("Food", "Electricity", "Savings", "Miscellaneous"),
  cost = c(60, 10, 5, 25)
)

expenses$Percentage <- expenses$cost / sum(expenses$cost) * 100

colors <- (col=cm.colors(4))

pie(expenses$cost,

    labels = paste(expenses$expenseCat, "(",expenses$Percentage,"%)"),
    col = colors,
    main = "Monthly Expenses of Dela Cruz Family")

legend("topright", expenses$expenseCat, fill = colors)
```

Monthly Expenses of Dela Cruz Family




```
#6.A

data(iris)
str(iris)
```

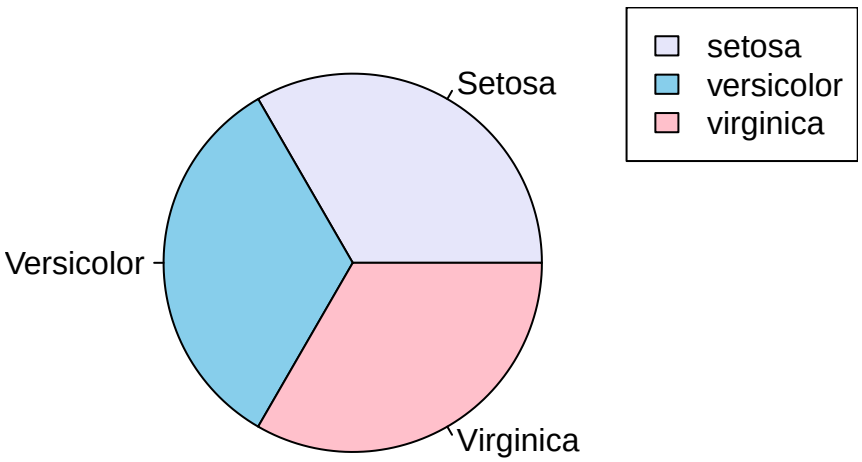
```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

```
#The structure of the iris dataset can be quickly summarized using this R function, which loads from pr
```

```
#6.B
mean <- colMeans(iris[,1:4])
mean
```

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

```
#6.C
SpeciesDistribution <- table(iris$Species)
Species <- c("Setosa", "Versicolor", "Virginica")
pie(SpeciesDistribution,
    labels = Species,

    col = c("lavender", "skyblue", "pink"),

    main = "Species distribution")

legend("topright", legend = levels(iris$Species), fill = c("lavender", "skyblue", "pink"),)
```




```
#6.D
setosa <- subset(iris, Species == "setosa")
versicolor <- subset(iris, Species == "versicolor")
virginica <- subset(iris, Species == "virginica")


tail(setosa, 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(versicolor, 6)
```

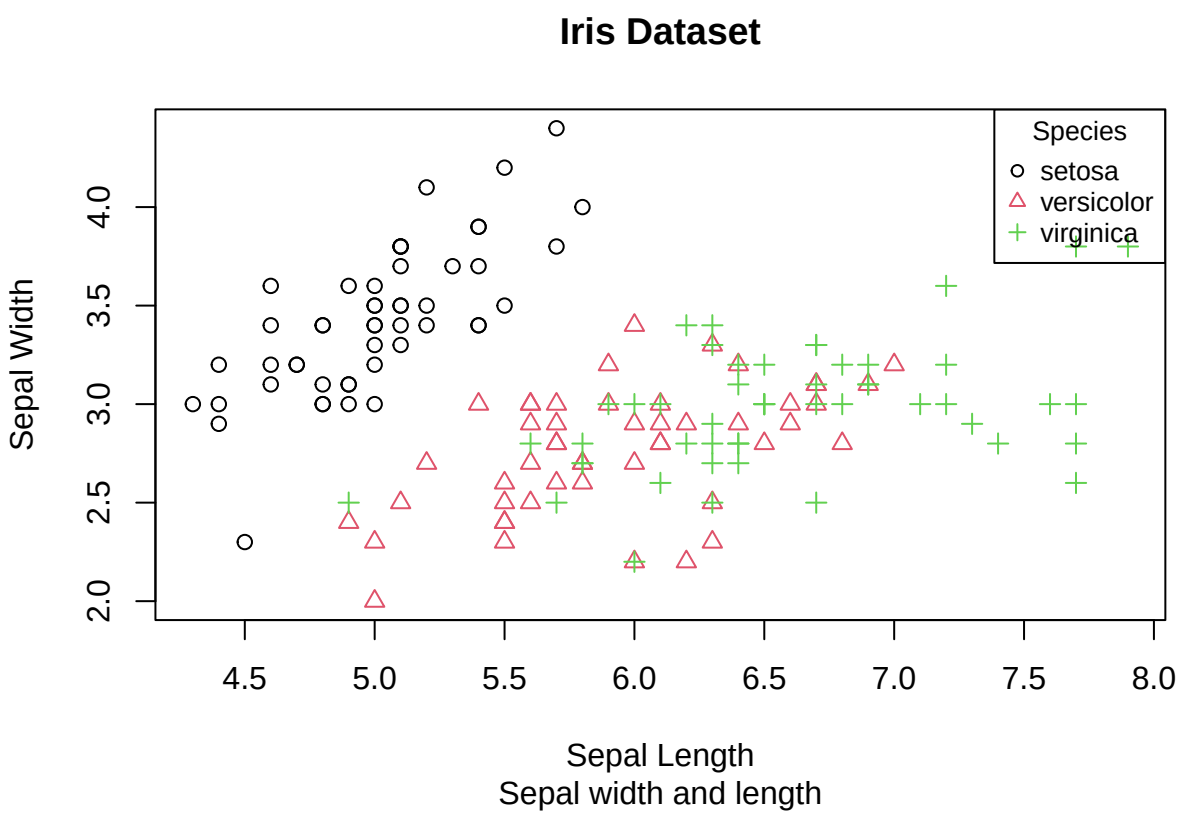
```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 95           5.6         2.7          4.2         1.3 versicolor
## 96           5.7         3.0          4.2         1.2 versicolor
## 97           5.7         2.9          4.2         1.3 versicolor
## 98           6.2     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

```
#6.E
```

```r
plot(iris$Sepal.Length, iris$Sepal.Width,
     xlab = "Sepal Length", 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), col = 1:3, pch = 1:3, cex = 0.8, title = "Species")
```




```r
#6.F

#The scatter plot illustrates the correlation between the lengths and widths of sepals for each species


#7.A
library(readxl)
alexa <- read_excel("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
```

```
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
```

```
#7.B

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
```

```
vartotalnum <- alexa %>%
  count(alexa$variation)

vartotalnum
```

```
## # 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
```

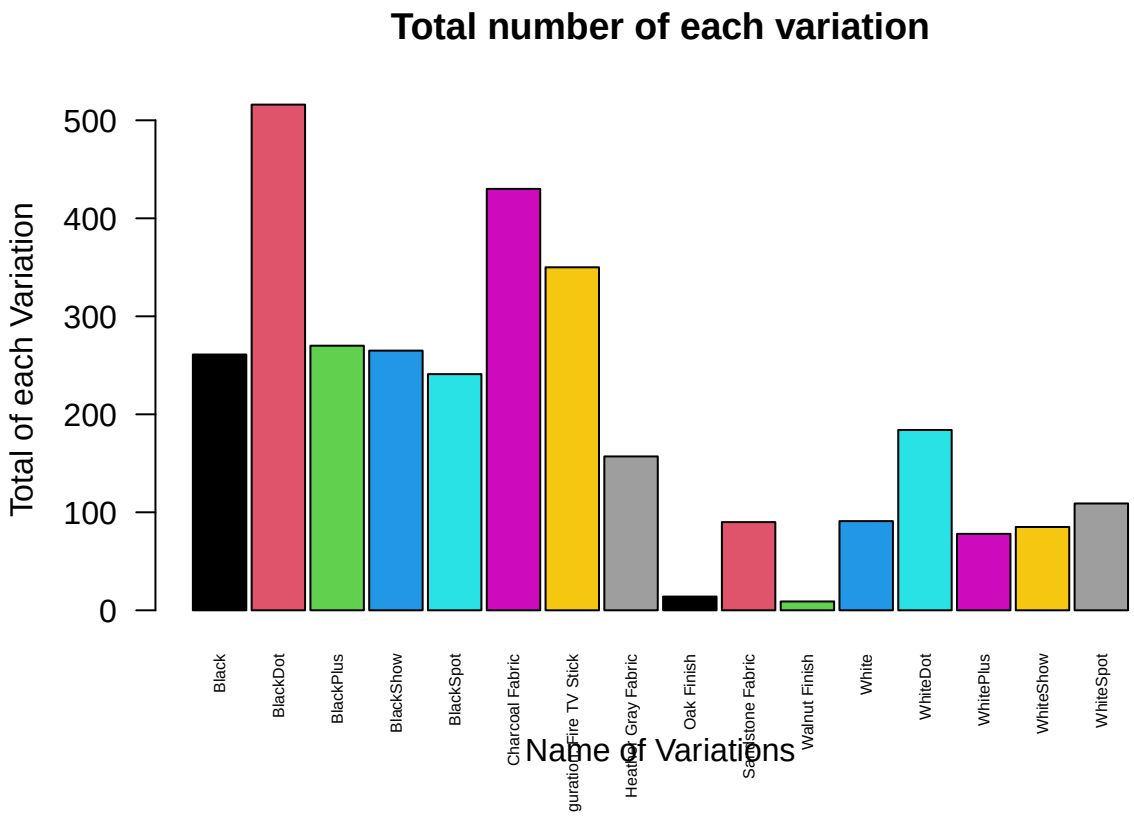
```
save(vartotalnum, file = "variations.RData")
```

```
#7.C

load("variations.RData")

vartotalnum
```

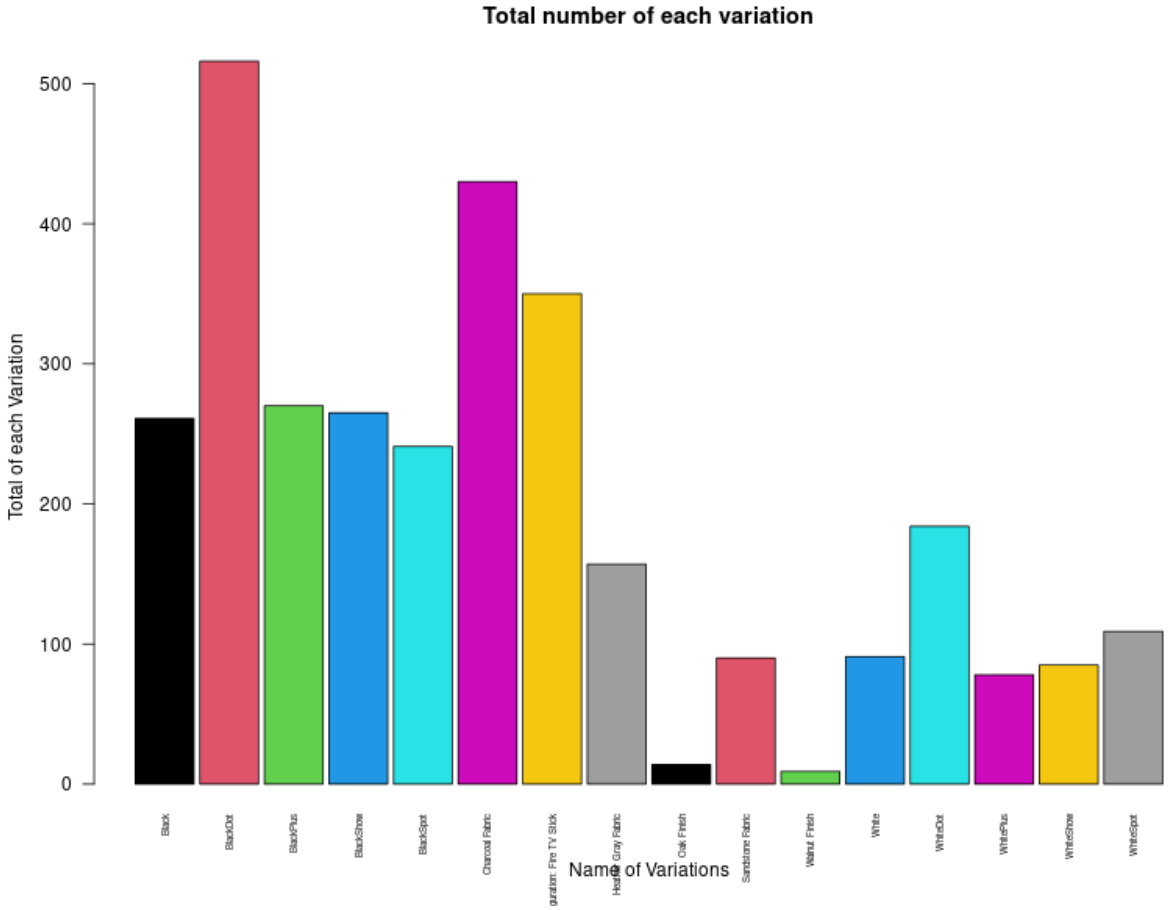
```
## # A tibble: 16 x 2
##    `alexa$variation`                n
##    <chr>                        <int>
##  1 Black                          261
##  2 BlackDot                       516
##  3 BlackPlus                      270
##  4 BlackShow                      265
##  5 BlackSpot                      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 <- vartotalnum$`alexa$variation`

totalPlot <- barplot(vartotalnum$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/Worksheet#4/variationsTotal.png", width = 800, height = 600, units = "px", pointsiz
knitr::include_graphics("/cloud/project/Worksheet#4/variationsTotal.png")
```

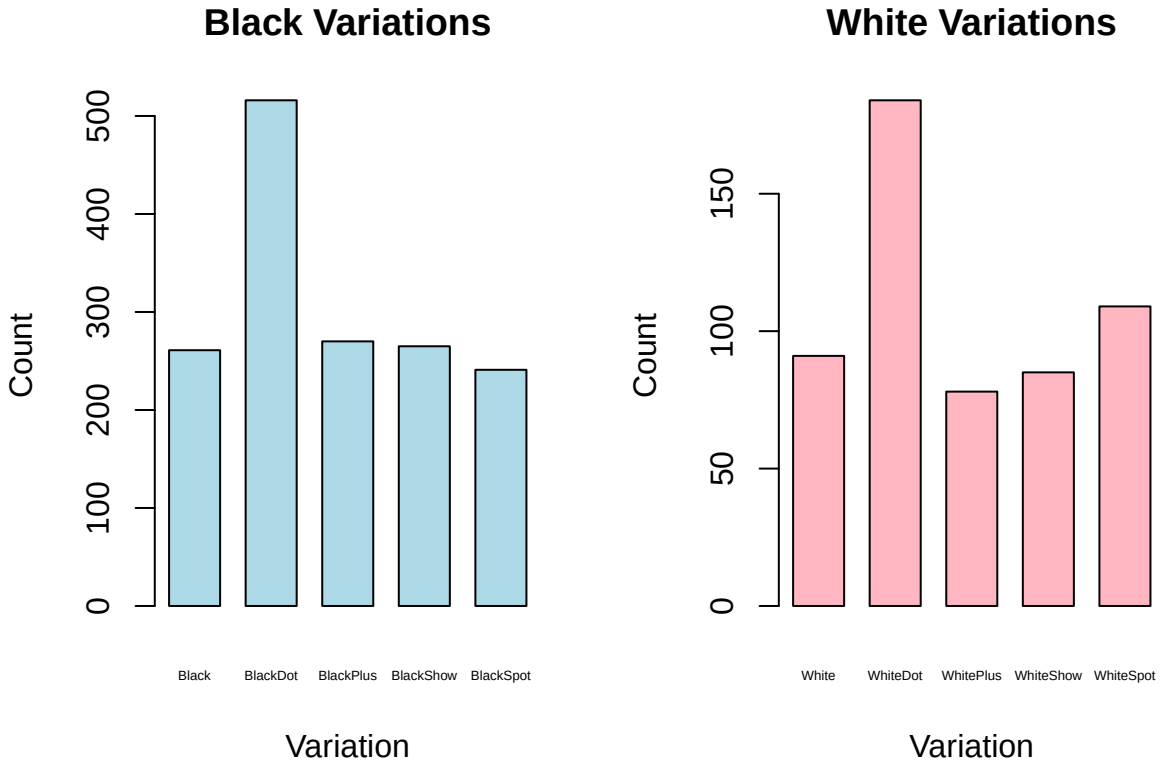



```
#7.D

blackVariations <- vartotalnum[vartotalnum$`alexa$variation` %in% c("Black", "BlackPlus" , "BlackShow"

whiteVariations <- vartotalnum[vartotalnum$`alexa$variation` %in% c("White", "WhiteDot", "WhitePlus", "

par(mfrow = c(1,2))
blackVariations
```

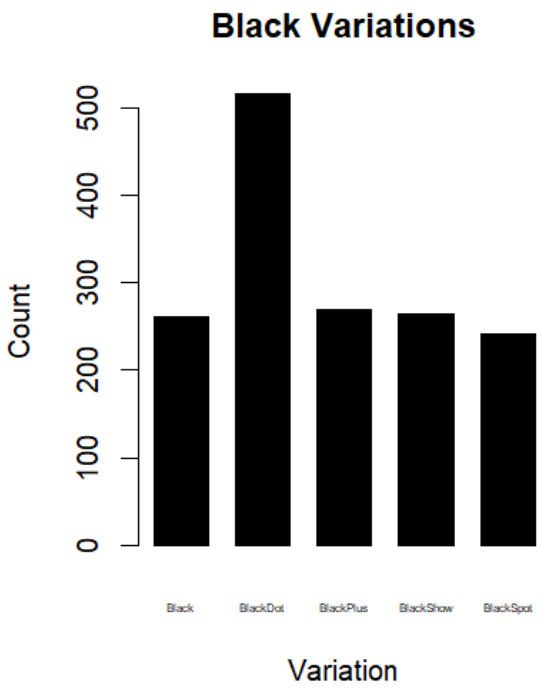
```
## # A tibble: 5 x 2
##   `alexa$variation`     n
##   <chr>             <int>
## 1 Black               261
## 2 BlackDot            516
## 3 BlackPlus           270
## 4 BlackShow           265
## 5 BlackSpot           241
```

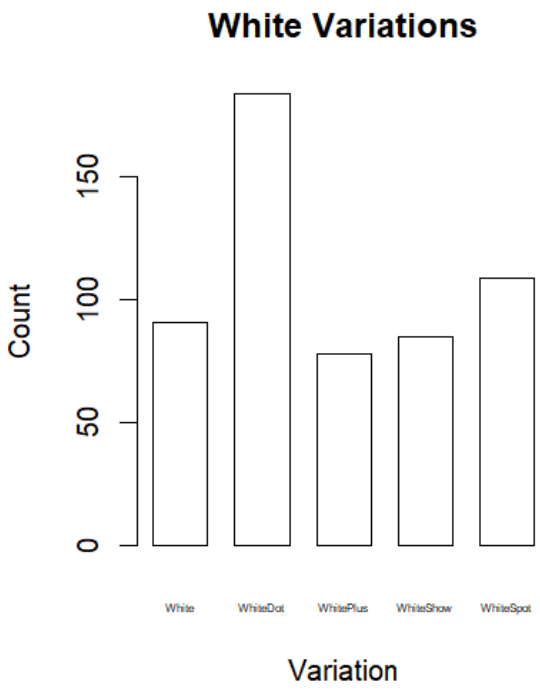
```
blackPlot <- barplot(height = blackVariations$n,
        names.arg = blackVariations$`alexa$variation`,
        col = c("lightblue"),
        main = "Black Variations",
        xlab = "Variation",
        ylab = "Count",
        border = "black",
```

```
        space = 0.5,
        cex.names = 0.4)


whitePlot <- barplot(height = whiteVariations$n,
        names.arg = whiteVariations$`alexa$variation`,
        col = c("lightpink"),
        main = "White Variations",
        xlab = "Variation",
        ylab = "Count",
        border = "black",
        space = 0.5,
        cex.names = 0.4)
```




```
knitr::include_graphics("/cloud/project/Worksheet#4/blackNwhiteVars.png")
```


Black Variations
Count
0
100
200
300
400
500
Black
BlackDot
BlackPlus
BlackShow
BlackSpot
Variation


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