RWorksheet_Lomibao#4b

lomibao

2024-10-29

1.

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

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

for (i in 1:5) {
  for (j in 1:5) {
    mtr[i, j] <- abs(i - vectorA[j])
  }
}
print(mtr)
```

```
##      [,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.

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

for(i in vec){
  cat(rep("*", i),"\n")
}
```

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

3.

```r
start_num <- as.integer(readline(prompt="Enter the starting number for the Fibonacci sequence: "))
```

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

```r
a <- 0
b <- 1
if (!is.na(start_num) < 0) {
1
cat("Please enter a non-negative starting number.\n")
} else {
repeat {
```

```r
if (!is.na(start_num) && a >= start_num) {
cat(a, "\n")
}
temp <- a + b
a <- b
b <- temp
if (!is.na(start_num) && a > 500) {
break
}
}
}
```

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

4.A

```r
data <- read.csv("/cloud/project/shoesz.csv")

head(data)
```

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

B. Both male and female got 14.

```r
male_data <- subset(data, Gender == "M")
female_data <- subset(data, Gender == "F")

num_males <- nrow(male_data)
num_females <- nrow(female_data)

cat("Number of observations for Male: ", num_males, "\n")
```

```
## Number of observations for Male:  14
```

```r
cat("Number of observations for Female: ", num_females, "\n")
```

```
## Number of observations for Female:  14
```
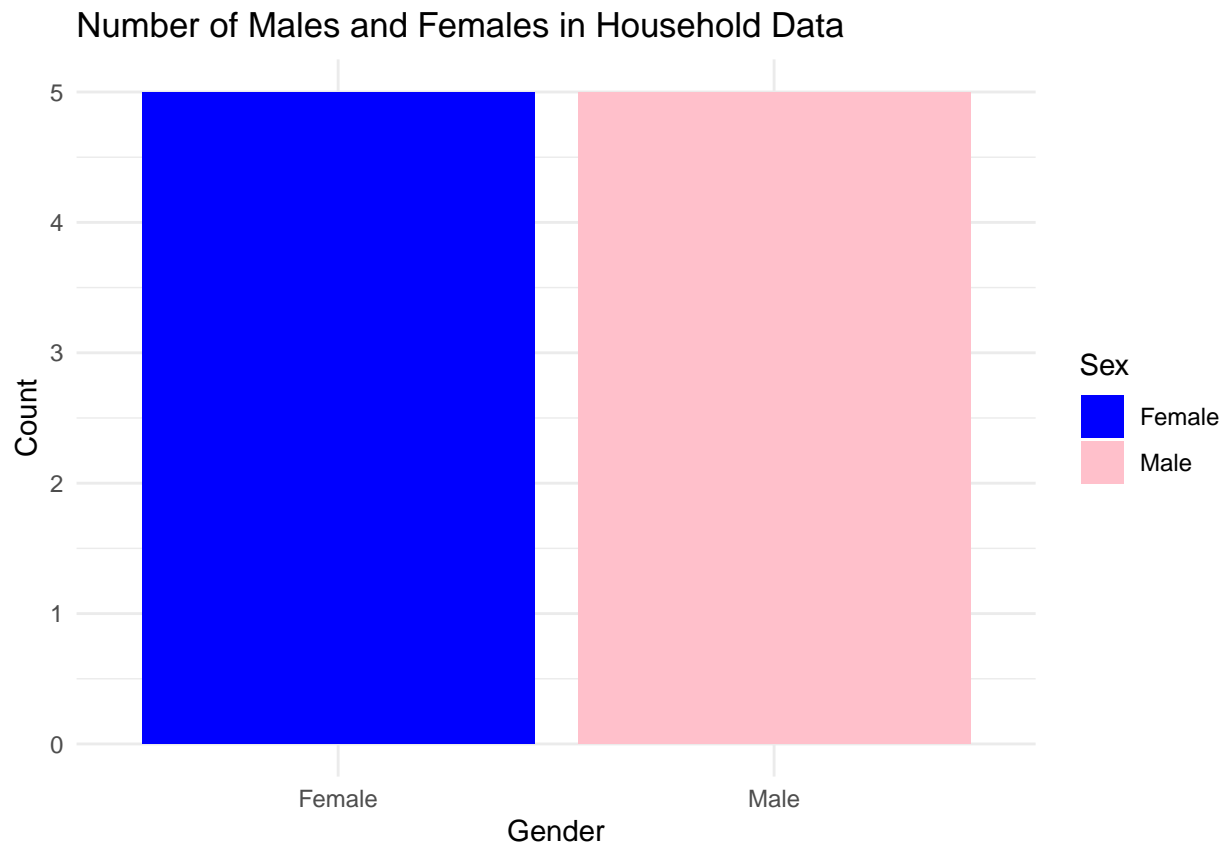
C.

```r
library(ggplot2)

HouseHoldData <-read.csv("/cloud/project/HouseholdData - Sheet1.csv")


ggplot(HouseHoldData, aes(x=Sex, fill=Sex)) +
  geom_bar() +
  ggtitle("Number of Males and Females in Household Data") +
  xlab("Gender") +
  ylab("Count") +
  scale_fill_manual(values = c("blue", "pink")) +
  theme_minimal()
```
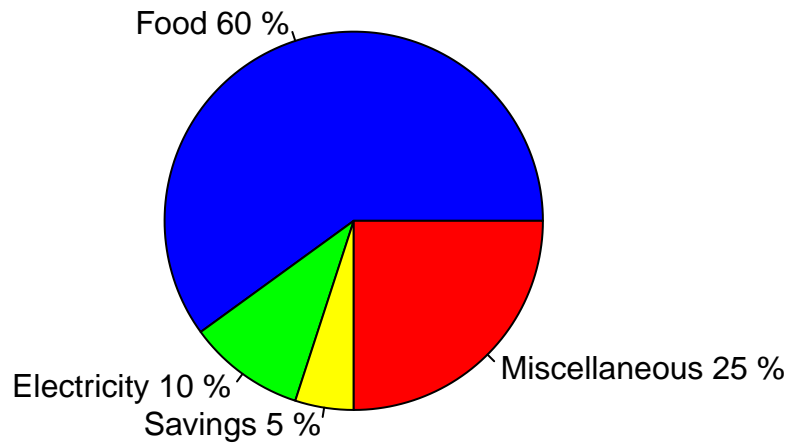
Number of Males and Females in Household Data

5.

```r
exp <- c(Food = 60, Electricity = 10, Savings = 5, Miscellaneous = 25)

percent <- round(100 * exp/ sum(exp), 1)

labels <- paste(names(exp), percent, "%")

colors <- c("blue", "green", "yellow", "red")

pie(exp, labels = labels, col = colors, main = "Dela Cruz Family Monthly Expenses")
```

Dela Cruz Family Monthly Expenses

Food 60 %

Miscellaneous 25 %

Electricity 10 %

Savings 5 %

6.

```
data(iris)
iris
```

```
##    Sepal.Length Sepal.Width Petal.Length Petal.Width  Species
## 1           5.1         3.5          1.4         0.2   setosa
## 2           4.9         3.0          1.4         0.2   setosa
## 3           4.7         3.2          1.3         0.2   setosa
## 4           4.6         3.1          1.5         0.2   setosa
## 5           5.0         3.6          1.4         0.2   setosa
## 6           5.4         3.9          1.7         0.4   setosa
## 7           4.6         3.4          1.4         0.3   setosa
## 8           5.0         3.4          1.5         0.2   setosa
## 9           4.4         2.9          1.4         0.2   setosa
## 10          4.9         3.1          1.5         0.1   setosa
## 11          5.4         3.7          1.5         0.2   setosa
## 12          4.8         3.4          1.6         0.2   setosa
## 13          4.8         3.0          1.4         0.1   setosa
## 14          4.3         3.0          1.1         0.1   setosa
## 15          5.8         4.0          1.2         0.2   setosa
## 16          5.7         4.4          1.5         0.4   setosa
## 17          5.4         3.9          1.3         0.4   setosa
## 18          5.1         3.5          1.4         0.3   setosa
## 19          5.7         3.8          1.7         0.3   setosa
## 20          5.1         3.8          1.5         0.3   setosa
## 21          5.4         3.4          1.7         0.2   setosa
## 22          5.1         3.7          1.5         0.4   setosa
## 23          4.6         3.6          1.0         0.2   setosa
## 24          5.1         3.3          1.7         0.5   setosa
## 25          4.8         3.4          1.9         0.2   setosa
## 26          5.0         3.0          1.6         0.2   setosa
## 27          5.0         3.4          1.6         0.4   setosa
## 28          5.2         3.5          1.5         0.2   setosa
## 29          5.2         3.4          1.4         0.2   setosa
## 30          4.7         3.2          1.6         0.2   setosa
## 31          4.8         3.1          1.6         0.2   setosa
## 32          5.4         3.4          1.5         0.4   setosa
```

```
## 33            5.2         4.1         1.5         0.1     setosa
## 34            5.5         4.2         1.4         0.2     setosa
## 35            4.9         3.1         1.5         0.2     setosa
## 36            5.0         3.2         1.2         0.2     setosa
## 37            5.5         3.5         1.3         0.2     setosa
## 38            4.9         3.6         1.4         0.1     setosa
## 39            4.4         3.0         1.3         0.2     setosa
## 40            5.1         3.4         1.5         0.2     setosa
## 41            5.0         3.5         1.3         0.3     setosa
## 42            4.5         2.3         1.3         0.3     setosa
## 43            4.4         3.2         1.3         0.2     setosa
## 44            5.0         3.5         1.6         0.6     setosa
## 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
## 51            7.0         3.2         4.7         1.4 versicolor
## 52            6.4         3.2         4.5         1.5 versicolor
## 53            6.9         3.1         4.9         1.5 versicolor
## 54            5.5         2.3         4.0         1.3 versicolor
## 55            6.5         2.8         4.6         1.5 versicolor
## 56            5.7         2.8         4.5         1.3 versicolor
## 57            6.3         3.3         4.7         1.6 versicolor
## 58            4.9         2.4         3.3         1.0 versicolor
## 59            6.6         2.9         4.6         1.3 versicolor
## 60            5.2         2.7         3.9         1.4 versicolor
## 61            5.0         2.0         3.5         1.0 versicolor
## 62            5.9         3.0         4.2         1.5 versicolor
## 63            6.0         2.2         4.0         1.0 versicolor
## 64            6.1         2.9         4.7         1.4 versicolor
## 65            5.6         2.9         3.6         1.3 versicolor
## 66            6.7         3.1         4.4         1.4 versicolor
## 67            5.6         3.0         4.5         1.5 versicolor
## 68            5.8         2.7         4.1         1.0 versicolor
## 69            6.2         2.2         4.5         1.5 versicolor
## 70            5.6         2.5         3.9         1.1 versicolor
## 71            5.9         3.2         4.8         1.8 versicolor
## 72            6.1         2.8         4.0         1.3 versicolor
## 73            6.3         2.5         4.9         1.5 versicolor
## 74            6.1         2.8         4.7         1.2 versicolor
## 75            6.4         2.9         4.3         1.3 versicolor
## 76            6.6         3.0         4.4         1.4 versicolor
## 77            6.8         2.8         4.8         1.4 versicolor
## 78            6.7         3.0         5.0         1.7 versicolor
## 79            6.0         2.9         4.5         1.5 versicolor
## 80            5.7         2.6         3.5         1.0 versicolor
## 81            5.5         2.4         3.8         1.1 versicolor
## 82            5.5         2.4         3.7         1.0 versicolor
## 83            5.8         2.7         3.9         1.2 versicolor
## 84            6.0         2.7         5.1         1.6 versicolor
## 85            5.4         3.0         4.5         1.5 versicolor
## 86            6.0         3.4         4.5         1.6 versicolor
```

```
## 87            6.7         3.1         4.7            1.5 versicolor
## 88            6.3         2.3         4.4            1.3 versicolor
## 89            5.6         3.0         4.1            1.3 versicolor
## 90            5.5         2.5         4.0            1.3 versicolor
## 91            5.5         2.6         4.4            1.2 versicolor
## 92            6.1         3.0         4.6            1.4 versicolor
## 93            5.8         2.6         4.0            1.2 versicolor
## 94            5.0         2.3         3.3            1.0 versicolor
## 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
## 101           6.3         3.3         6.0            2.5  virginica
## 102           5.8         2.7         5.1            1.9  virginica
## 103           7.1         3.0         5.9            2.1  virginica
## 104           6.3         2.9         5.6            1.8  virginica
## 105           6.5         3.0         5.8            2.2  virginica
## 106           7.6         3.0         6.6            2.1  virginica
## 107           4.9         2.5         4.5            1.7  virginica
## 108           7.3         2.9         6.3            1.8  virginica
## 109           6.7         2.5         5.8            1.8  virginica
## 110           7.2         3.6         6.1            2.5  virginica
## 111           6.5         3.2         5.1            2.0  virginica
## 112           6.4         2.7         5.3            1.9  virginica
## 113           6.8         3.0         5.5            2.1  virginica
## 114           5.7         2.5         5.0            2.0  virginica
## 115           5.8         2.8         5.1            2.4  virginica
## 116           6.4         3.2         5.3            2.3  virginica
## 117           6.5         3.0         5.5            1.8  virginica
## 118           7.7         3.8         6.7            2.2  virginica
## 119           7.7         2.6         6.9            2.3  virginica
## 120           6.0         2.2         5.0            1.5  virginica
## 121           6.9         3.2         5.7            2.3  virginica
## 122           5.6         2.8         4.9            2.0  virginica
## 123           7.7         2.8         6.7            2.0  virginica
## 124           6.3         2.7         4.9            1.8  virginica
## 125           6.7         3.3         5.7            2.1  virginica
## 126           7.2         3.2         6.0            1.8  virginica
## 127           6.2         2.8         4.8            1.8  virginica
## 128           6.1         3.0         4.9            1.8  virginica
## 129           6.4         2.8         5.6            2.1  virginica
## 130           7.2         3.0         5.8            1.6  virginica
## 131           7.4         2.8         6.1            1.9  virginica
## 132           7.9         3.8         6.4            2.0  virginica
## 133           6.4         2.8         5.6            2.2  virginica
## 134           6.3         2.8         5.1            1.5  virginica
## 135           6.1         2.6         5.6            1.4  virginica
## 136           7.7         3.0         6.1            2.3  virginica
## 137           6.3         3.4         5.6            2.4  virginica
## 138           6.4         3.1         5.5            1.8  virginica
## 139           6.0         3.0         4.8            1.8  virginica
## 140           6.9         3.1         5.4            2.1  virginica
```

```
## 141          6.7          3.1          5.6          2.4  virginica
## 142          6.9          3.1          5.1          2.3  virginica
## 143          5.8          2.7          5.1          1.9  virginica
## 144          6.8          3.2          5.9          2.3  virginica
## 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
```

A.It show the no.objeccts, variable, length and etc.

```r
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 ...
```

B.

```r
mean_length <- colMeans(iris[, c("Sepal.Length", "Sepal.Width", "Petal.Length", "Petal.Width")])

mean_length
```

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

C.

```r
species_distribution <- table(iris$Species)

colors <- c("blue", "red", "green")

pie(species_distribution,
    main = "Distribution of Iris Species",
    col = colors,
    labels = paste(names(species_distribution), "(", species_distribution, ")", sep=""))

legend("topright", legend = names(species_distribution), fill = colors, title = "Species")
```

Distribution of Iris Species
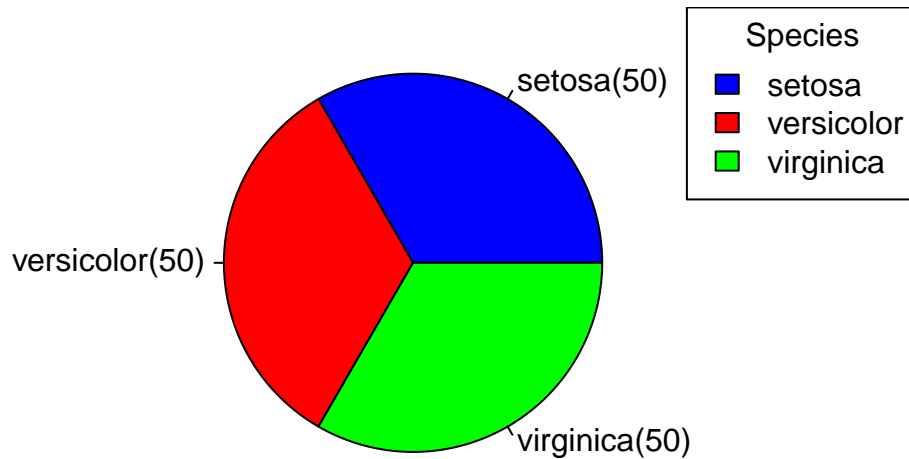
D.

```
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.

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

colors <- c("setosa" = "blue", "versicolor" = "pink", "virginica" = "blueviolet")
```

```
symbols <- c("setosa" = 16, "versicolor" = 17, "virginica" = 18)

plot(iris$Sepal.Length, iris$Sepal.Width,
     col = colors[iris$Species],
     pch = symbols[iris$Species],
     xlab = "Sepal Length",
     ylab = "Sepal Width",
     main = "Iris Dataset",
     sub = "Sepal width and length",
     cex = 1.5)

legend("topright", legend = levels(iris$Species),
       col = c("blue", "pink", "blueviolet"),
       pch = c(16, 17, 18),
       title = "Species")
```

Iris Dataset
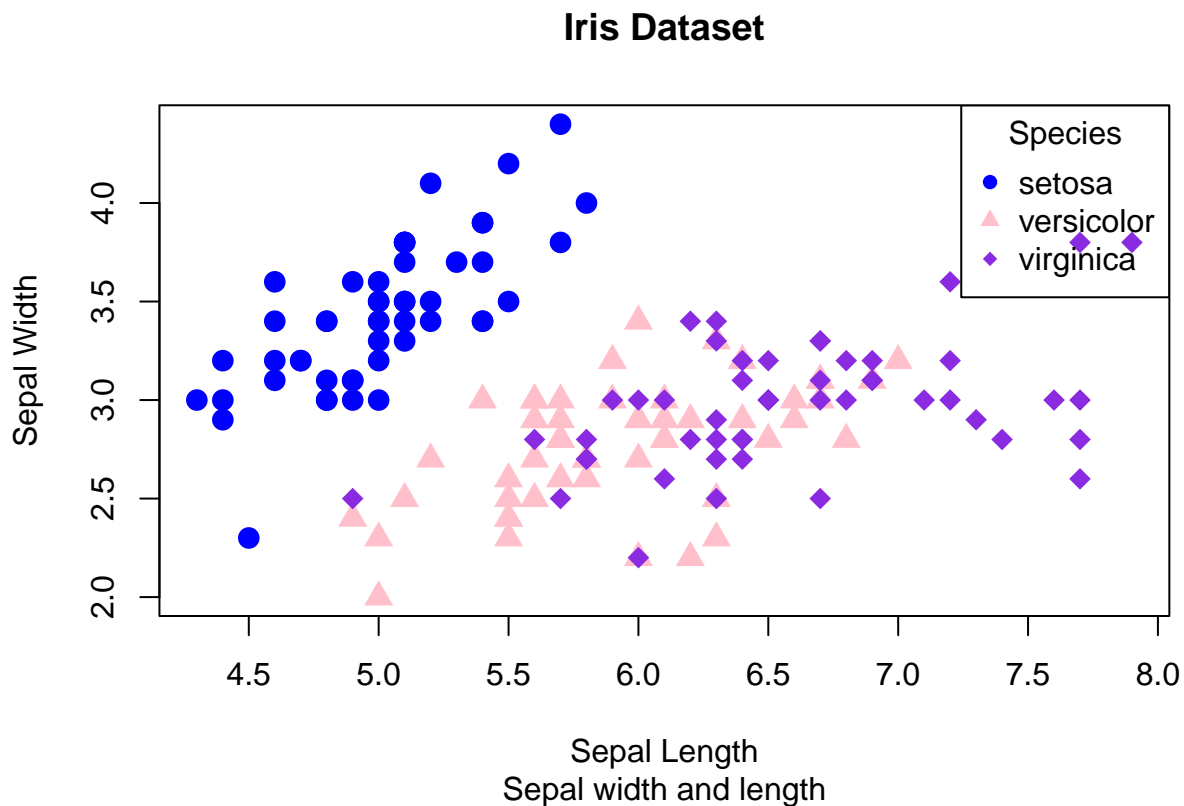
F.

The scatterplot shows clear separation between setosa and the other two species based on Sepal Length and Sepal Width.

8.

A.

```
library(readxl)

alexa <- read_excel("alexa_file.xlsx")

alexa$variation <- gsub("Black  Show", "BlackShow", alexa$variation)

alexa$variation <- gsub("Black  Dot", "BlackDot", alexa$variation)
```

```r
alexa$variation <- gsub("Black  Plus", "BlackPlus", alexa$variation)

alexa$variation <- gsub("Black  Spot", "BlackSpot", alexa$variation)

alexa$variation <- gsub("White  Show", "WhiteShow", alexa$variation)

alexa$variation <- gsub("White  Dot", "WhiteDot", alexa$variation)

alexa$variation <- gsub("White  Plus", "WhitePlus", alexa$variation)

alexa$variation <- gsub("White  Spot", "WhiteSpot", alexa$variation)

#knitr::include_graphics("file path")
```

B.

```r
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
```

```r
variations.RData <- alexa %>%
  count (alexa$variation)

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

print(variations.RData)
```

```
## # 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
```
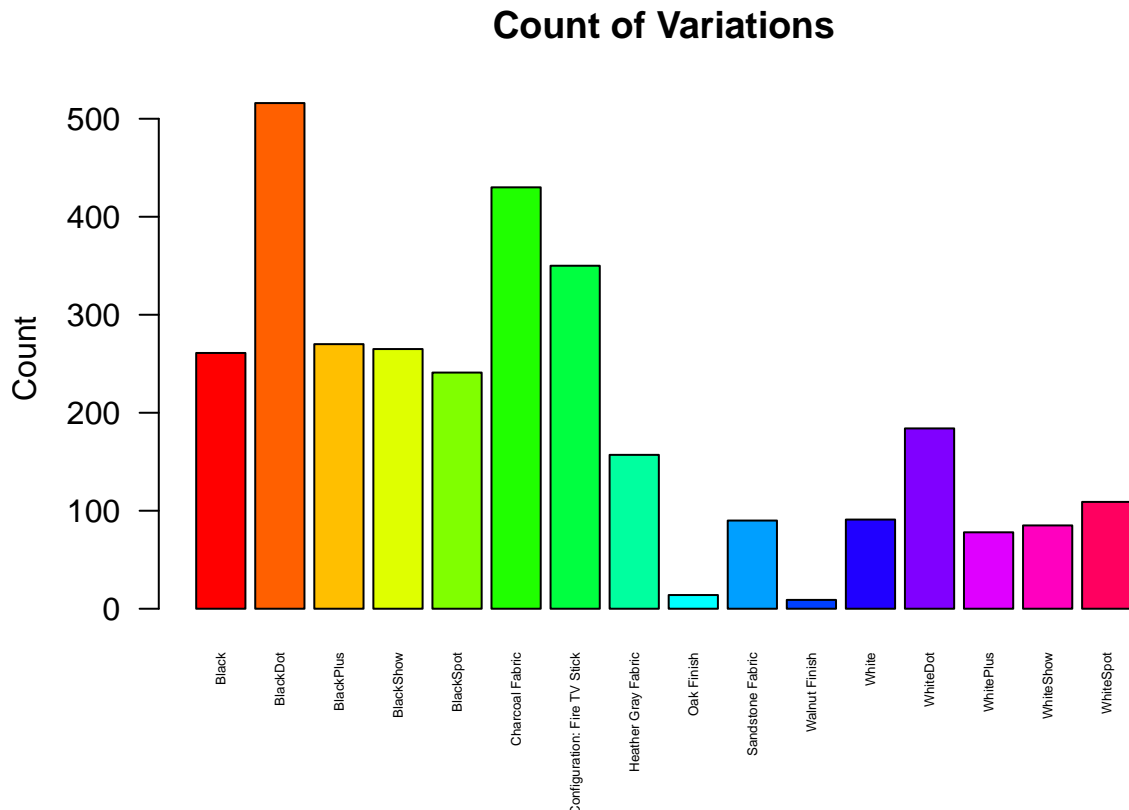
C.

```r
barplot(
  variations.RData$n,
  names.arg = variations.RData$`alexa$variation`,
  cex.names = 0.4,
  main = "Count of Variations",
  ylab = "Count",
  col = rainbow(length(variations.RData$n)),
  border = "black",
  las = 2
)
```


Count of Variations

D.

```r
bar <- variations.RData %>%
  filter(grepl("^Black|^White", `alexa$variation`))

par(mfrow = c(1, 2))

barplot(
  bar$n[bar$`alexa$variation` %in% c("Black", "BlackPlus", "BlackShow", "BlackSpot", "BlackDot")],
  names.arg = bar$`alexa$variation`[bar$`alexa$variation` %in% c("Black", "BlackPlus", "BlackShow", "Bla
  las = 3,
  cex.names = 1,
  main = "Black Variations",
  ylab = "Count",
  col = "black",
  border = "black"
)
```

```
barplot(
  bar$n[bar$`alexa$variation` %in% c("White", "WhitePlus", "WhiteShow", "WhiteSpot", "WhiteDot")],
  names.arg = bar$`alexa$variation`[bar$`alexa$variation` %in% c("White", "WhitePlus", "WhiteShow", "Whi
  las = 2,
  cex.names = 1,
  main = "White Variations",
  ylab = "Count",
  col = "white",
  border = "black"
)
```

Black Variations

White Variations