Rworksheet_Mijares#4b

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No. 1

```
vectorA <- c(1,2,3,4,5)
matrix5by5 <- matrix(nrow = 5, ncol = 5)

for(i in 1:5){
  for(j in 1:5){
    matrix5by5[i,j]<- abs(i-j)
 }
}

matrix5by5
```

```
##      [,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
```

No. 2

```
x <- 5

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

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

No. 3

```
## start_index <- as.integer(readline(prompt = "Enter the starting index for the Fibonacci sequence: ")

start_index <- 3
```

```r
a <- 0
b <- 1
sequence <- c()

for (index in 1:1000) {
  if (index >= start_index) {
    sequence <- c(sequence, a)
  }

  if (a > 500) {
    break
  }

  temp <- a + b
  a <- b
  b <- temp
}

print(sequence)
```

```
##  [1]   1   2   3   5   8  13  21  34  55  89 144 233 377 610
```

No.4

```r
## a.
ShoeSize <- read.csv("ShoeSizeData.csv")
ShoeSize
```

```
##    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
## 7        9.5   70.0      F
## 8        9.0   71.0      F
## 9       13.0   72.0      M
## 10       7.5   64.0      F
## 11      10.5   74.5      M
## 12       8.5   67.0      F
## 13      12.0   71.0      M
## 14      10.5   71.0      M
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 19      10.0   72.0      M
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 24       8.5   69.0      F
## 25      10.5   72.0      M
```

```
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```
head(ShoeSize,6)
```

```
##   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.

male_subset <- subset(ShoeSize, Gender == "M")
male_subset
```

```
##    Shoe_Size Height Gender
## 5       10.5   70.0      M
## 9       13.0   72.0      M
## 11      10.5   74.5      M
## 13      12.0   71.0      M
## 14      10.5   71.0      M
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 19      10.0   72.0      M
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```
female_subset <- subset(ShoeSize, Gender == "F")
female_subset
```

```
##    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
## 6        7.0   64.0      F
## 7        9.5   70.0      F
## 8        9.0   71.0      F
## 10       7.5   64.0      F
## 12       8.5   67.0      F
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 24       8.5   69.0      F
```

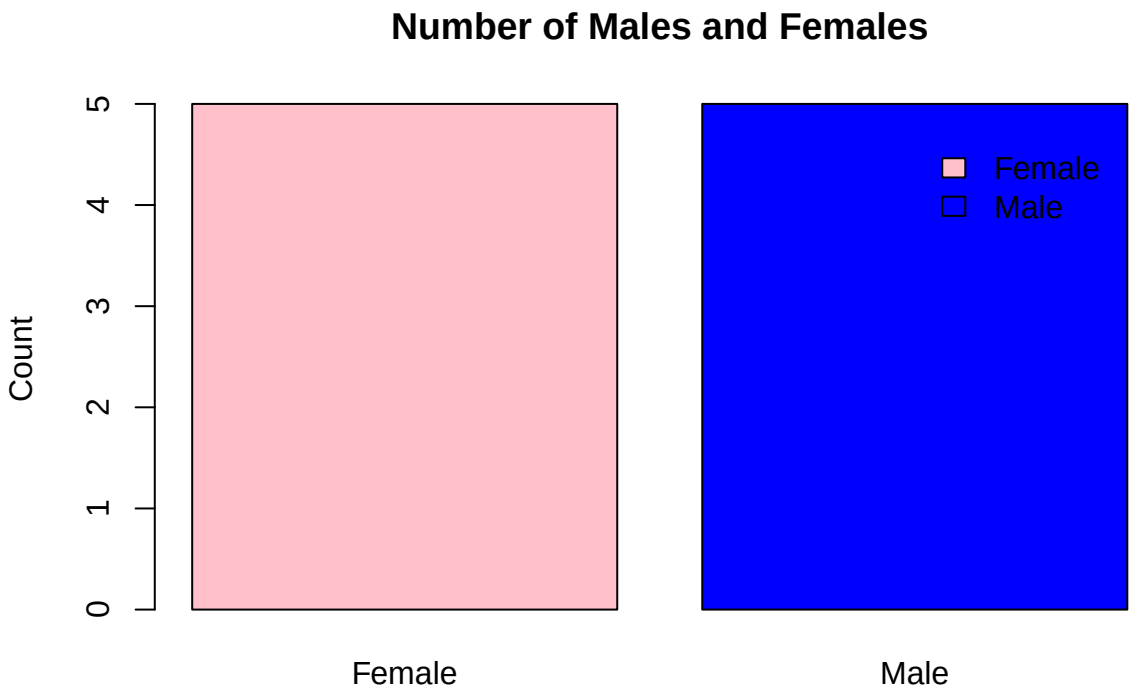
```
## c.

HouseHold <- read.csv("HouseholdData.csv")
```

```r
genderCount <-table(HouseHold$Sex)

bplot <- barplot(genderCount, main = "Number of Males and Females", xlab = "Gender", ylab = "Count", col

legend("topright", legend = names(genderCount), fill = c("pink", "blue"), bty = "n", inset = c(0.05, 0.0
```

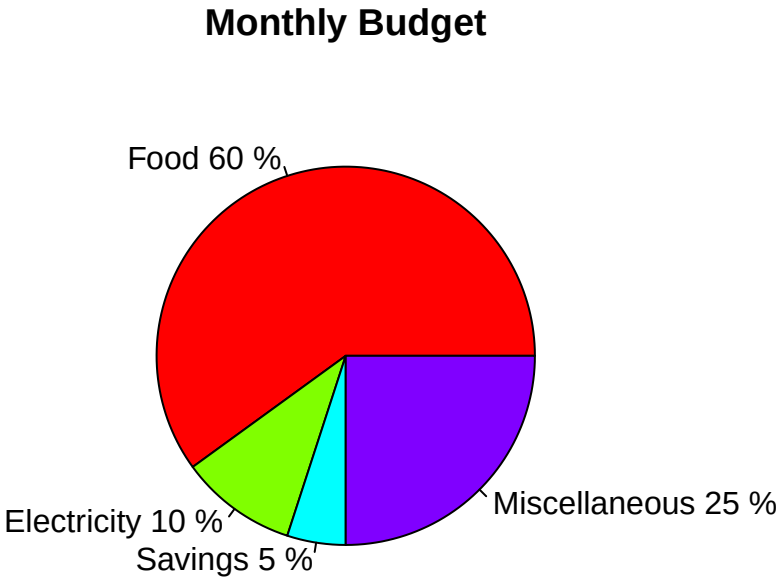


No. 5

```r
values <- c(60, 10, 5, 25)
incomeLabel <- c("Food", "Electricity", "Savings", "Miscellaneous")

percentages <- round(100 * values / sum(values), 1)
incomeLabel <- paste(incomeLabel, percentages, "%", sep = " ")

pie(
  values,
  labels = incomeLabel,
  main = "Monthly Budget",
  col = rainbow(length(values))
)
```



No. 6

```
data(iris)
```

```
## a.

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 ...
```

```
## Describing the output: It presents the sepal & petal length and width of 3 types of Iris flowers
```

```
## b.

irisMean <- colMeans(subset(iris, select = -Species))
irisMean
```

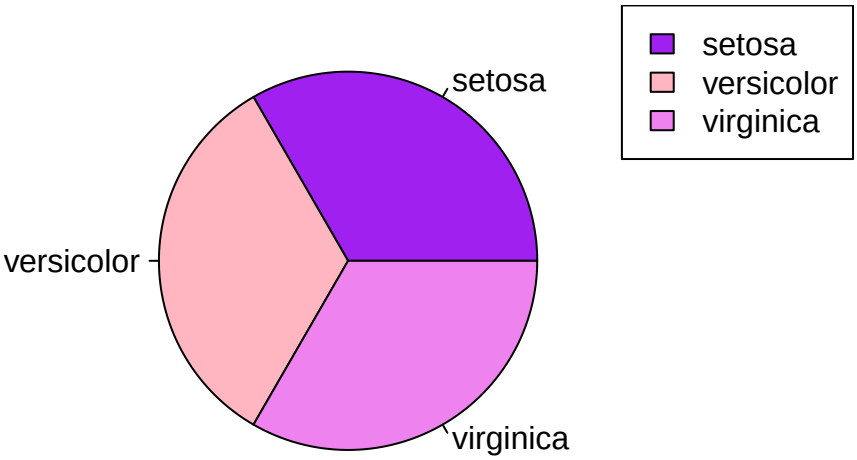
```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     1.199333
```

```
## c.

speciesDistribution <- table(iris$Species)

pie(speciesDistribution, main = "Iris Species Distribution", col = c("purple","lightpink","violet"), lab

legend("topright", legend = names(speciesDistribution), fill = c("purple", "lightpink","violet"))
```




```
## 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
```

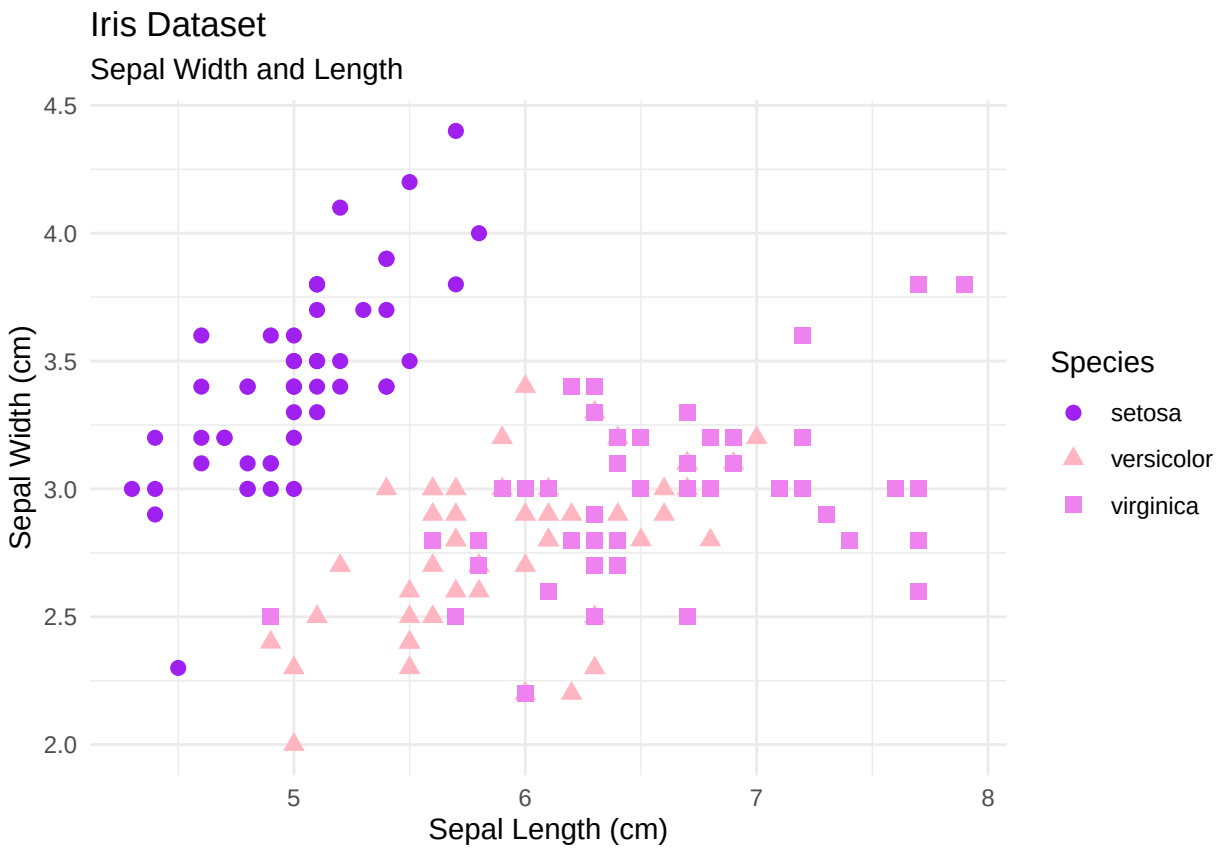
```
tail(Virginica)
```

```
##     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.

library(ggplot2)
```

```r
ggplot(data = iris, aes(x = Sepal.Length, y = Sepal.Width, color = Species, shape = Species))+
  geom_point(size=2.5) +
  labs(title = "Iris Dataset", subtitle = "Sepal Width and Length", x = "Sepal Length (cm)", y = "Sepal
```




```r
## f.

## The scatter plot presents the relationship of the sepals width and length for the three species of I
## The Setosa species tend to have wide width and an average length among the other species, with one o
## Versicolor has a strong concentration in the average level of the plot, making it have an average se
## Virginica species has a long length and an average width and also has a strong concentration in the
```

No. 7

```r
library(readxl)

alexaxlsx <- read_excel("alexa_file.xlsx")
```

```r
## a.

alexaxlsx$variation <- gsub("Black  Dot", "BlackDot", alexaxlsx$variation)
alexaxlsx$variation <- gsub("Black  Plus", "BlackPlus", alexaxlsx$variation)
alexaxlsx$variation <- gsub("Black  Show", "BlackShow", alexaxlsx$variation)
alexaxlsx$variation <- gsub("Black  Spot", "BlackSpot", alexaxlsx$variation)

alexaxlsx$variation <- gsub("White  Dot", "WhiteDot", alexaxlsx$variation)
alexaxlsx$variation <- gsub("White  Plus", "WhitePlus", alexaxlsx$variation)
```

```r
alexaxlsx$variation <- gsub("White  Show", "WhiteShow", alexaxlsx$variation)
alexaxlsx$variation <- gsub("White  Spot", "WhiteSpot", alexaxlsx$variation)

alexaxlsx$variation[1052:2000]
```

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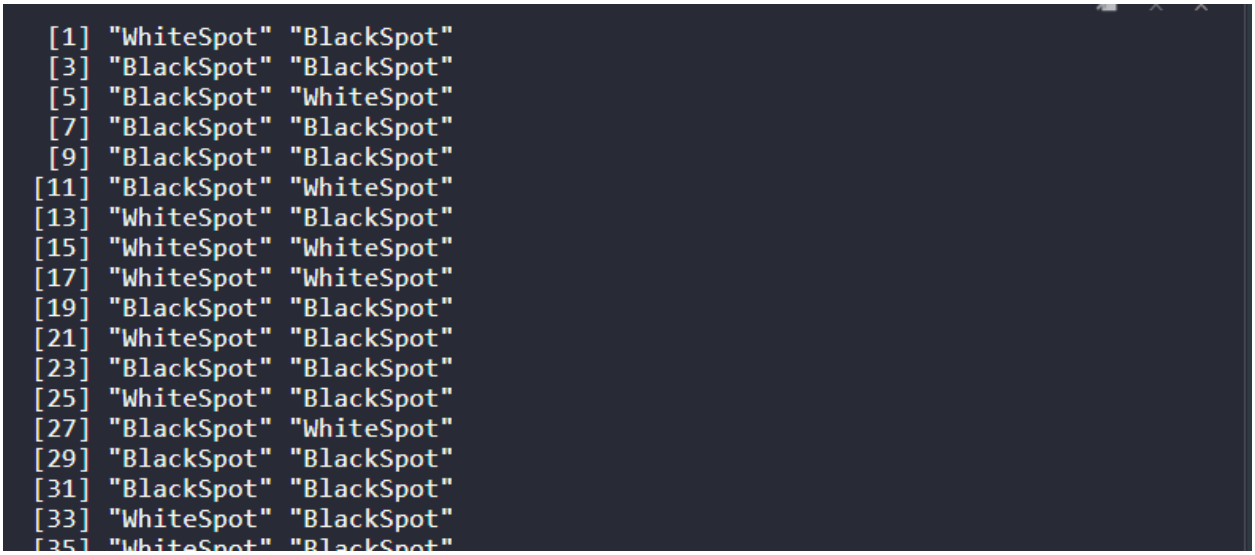
## [847] "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [853] "WhitePlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [859] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [865] "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [871] "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [877] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus"
## [883] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "WhitePlus"
## [889] "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus" "WhitePlus"
## [895] "BlackPlus" "WhitePlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [901] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [907] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [913] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus"
## [919] "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [925] "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [931] "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [937] "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus"
```

```
## [943] "WhitePlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [949] "BlackPlus"
```

```
knitr::include_graphics("/cloud/project/Worksheets/RWorksheet4/Worksheet_4b&4c/Screenshot 2024-10-31 134
```




```
## 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
```

```
noOfVariation <- alexaxlsx %>% count(variation)

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

noOfVariation
```

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

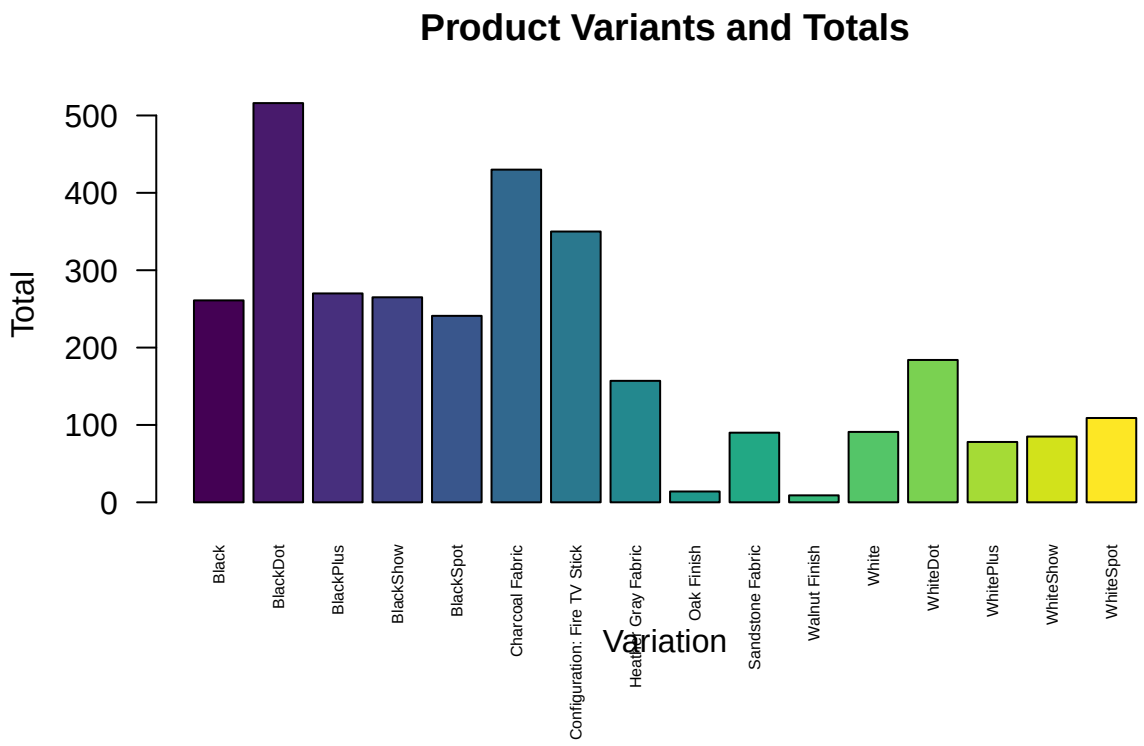
```
## 12 White                          91
## 13 WhiteDot                      184
## 14 WhitePlus                      78
## 15 WhiteShow                      85
## 16 WhiteSpot                     109
```

```
## c.
library("viridis")
```

```
## Loading required package: viridisLite
```

```
par(mar = c(8, 4, 4, 2))

barplot(noOfVariation$n,names.arg = noOfVariation$variation, col = viridis(length(noOfVariation$variati
        main = "Product Variants and Totals", xlab = "Variation", ylab = "Total", las = 2, cex.names = 
```




```
## d.

library(dplyr)

noOfVariation <- alexaxlsx %>% filter(grepl("Black|White", variation)) %>% count(variation)

blackCount <- noOfVariation %>% filter(grepl("Black", variation))
whiteCount <- noOfVariation %>% filter(grepl("White", variation))

par(mfrow = c(1, 2))

barplot(blackCount$n,
        names.arg = blackCount$variation,
        col = rainbow(length(blackCount$n)),
        main = "Black Variants",
        xlab = "Total Numbers",
```

```
        ylab = "Variants", las = 2, cex.names = 0.5,
        ylim = c(0, max(blackCount$n) * 1.2))

barplot(whiteCount$n,
        names.arg = whiteCount$variation,
        col = rainbow(length(whiteCount$n)),
        main = "White Variants",
        xlab = "Total Numbers",
        ylab = "Variants", las = 2, cex.names = 0.5,
        ylim = c(0, max(whiteCount$n) * 1.2))
```