

# RWorksheet\_Vicinte#4b

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```
#1
vectorA <- c(1,2,3,4,5)
for(i in vectorA){
  print(vectorA)
}
```

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

```
abs(vectorA)
```

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

```
#2
vectorB <- c(1,2,3,4,5)

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

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

```
#3
fibonacci_sequence <- function(start){
  a <- 0
  b <- 1

  repeat {
    fib <- a+b
    a <- b
    b <- fib
    if (!is.na(fib) >= 500) {
      break
    }
    if (!is.na(fib) >= start) {
      print(fib)
    }
  }
}
```

```
}
sequencing <- as.integer(readline(prompt = "Enter a number:"))
```

```
## Enter a number:
```

```
if (!is.na(sequencing)<1) {
  print("Please enter a higher number")
} else {
  cat("Fibonacci sequence starting from", sequencing, "up to 500:\n")
  fibonacci_sequence(sequencing)
}
```

```
## [1] "Please enter a higher number"
```

```
#4a
datas <- read.csv("/cloud/project/RWorksheet_Vicinte4b/Household Data.csv")
datas
```

```
##      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
```

```
#4b
male <- subset(datas, Gender == "M")
male
```

```
##      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(datas, Gender == "F")
female
```

```
##      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
```

```
num_male <- nrow(male)
num_female <- nrow(female)
cat("Number of observations for Male:", num_male, "\n")
```

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

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

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

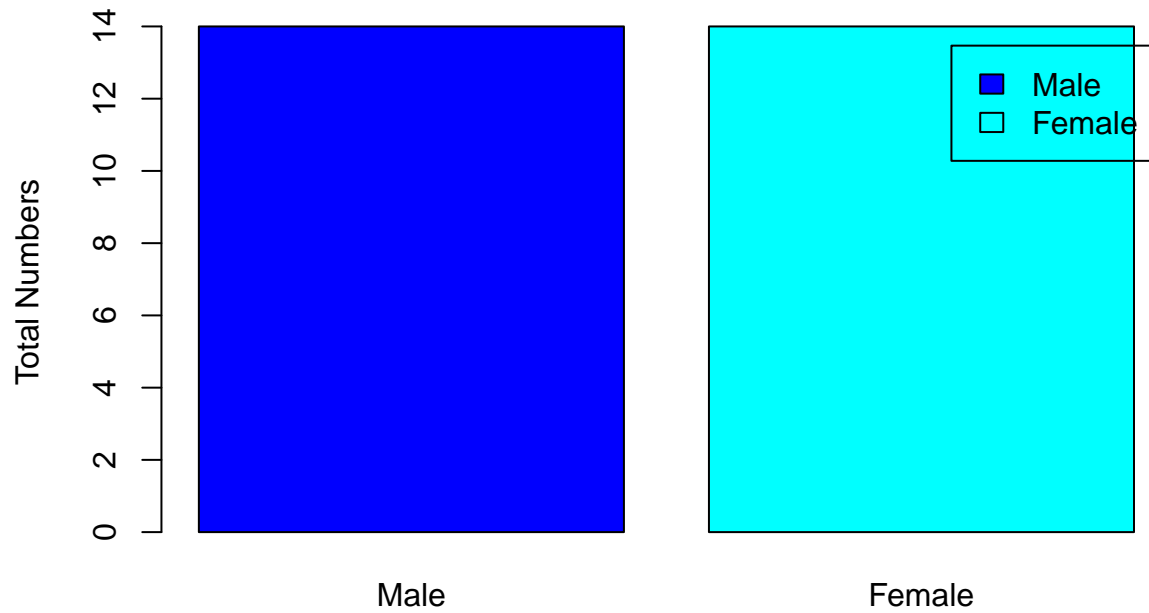
```
#4c
```

```
Plotting <- c(num_male, num_female)
```

```
names(Plotting) <- c("Male", "Female")
```

```
barplot(Plotting, main = "Male and Female", xlab = "Gender", ylab = "Total Numbers", col = c("blue", "c"))
```

## Male and Female



## Gender

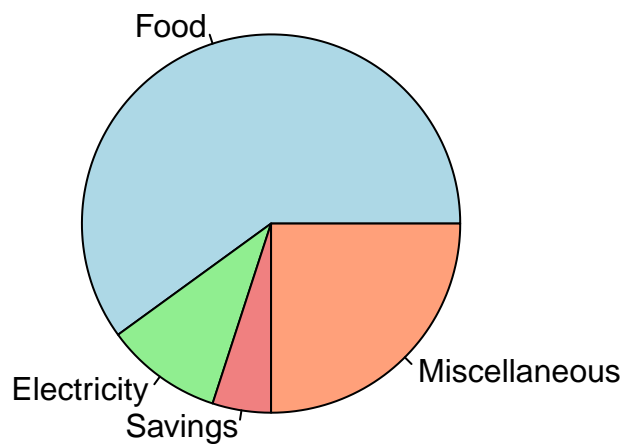
```
#5
bills <- c("Food", "Electricity", "Savings", "Miscellaneous")
values <- c(60, 10, 5, 25)

Bills <- matrix(values, nrow = 1, ncol = length(bills), dimnames = list(NULL, bills))
Bills

##      Food Electricity Savings Miscellaneous
## [1,]   60         10      5             25

Plotters <- pie(values, labels = c("Food", "Electricity", "Savings", "Miscellaneous"), col = c("lightblue", "lightgreen", "lightcoral", "lightblue"))
```

## Expenditures



```
#6a.
data(iris)
str(iris)

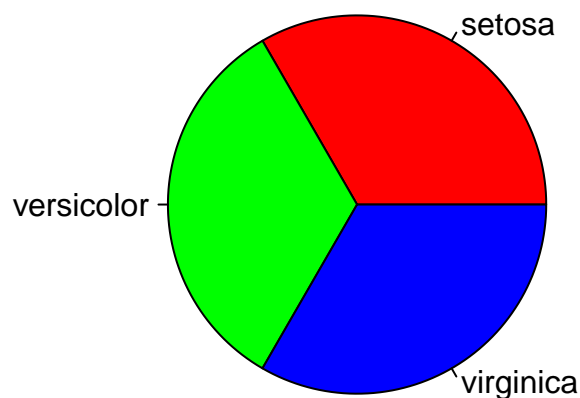
## 'data.frame':   150 obs. of  5 variables:
## $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
## $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
## $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
## $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2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

```
#6b.
means <- colMeans(iris[, 1:4])
print(means)
```

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

```
#6c.
species_count <- table(iris$Species)
pie(species_count, main="Iris Species Distribution", col=c("red", "green", "blue"), labels=names(species_count))
```

## Iris Species Distribution



```
#6d.
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
```

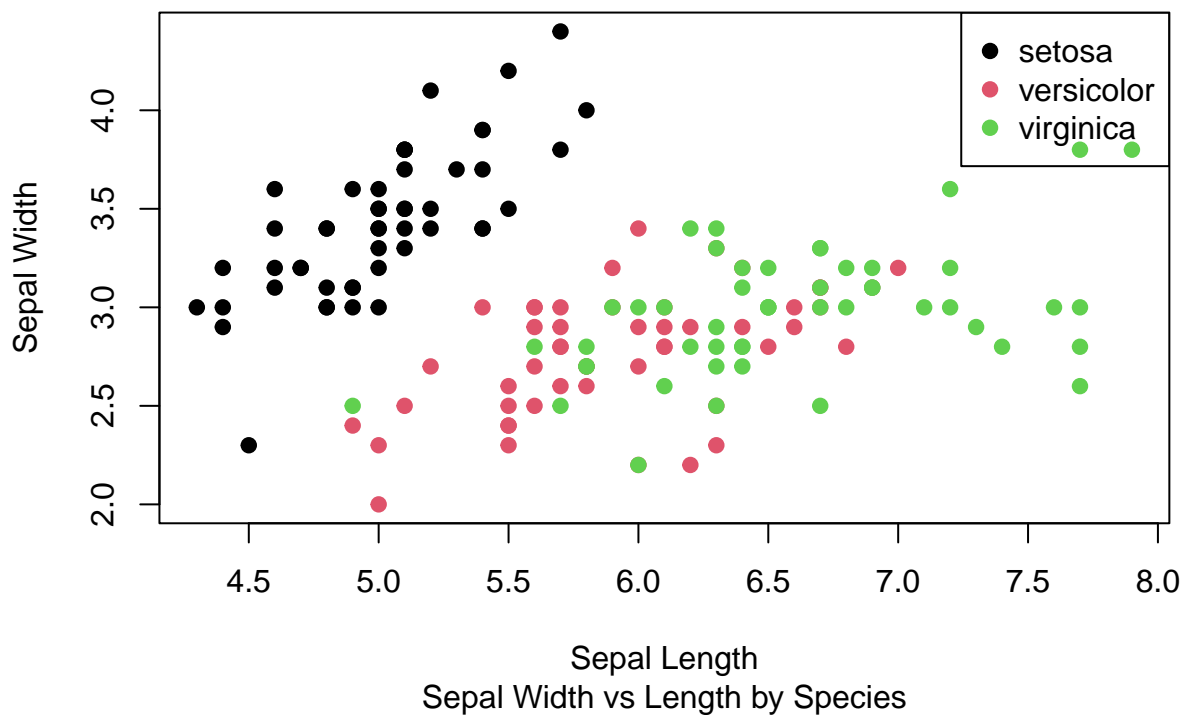
```
tail(virginica, 6)
```

```
##      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
```

```
#6e.
```

```
plot(iris$Sepal.Length, iris$Sepal.Width, col=iris$Species, pch=19,
     main="Iris Dataset", xlab="Sepal Length", ylab="Sepal Width",
     sub="Sepal Width vs Length by Species")
legend("topright", legend=levels(iris$Species), col=1:3, pch=19)
```

**Iris Dataset**



```
#f.
```

*#This plot highlights the differences in sepal dimensions among the three iris species, helping to dist*

```
#7a.
```

```
library("openxlsx")
library("readxl")
alexa <- read_excel("/cloud/project/RWorksheet_Vicinte4b/alexa_file.xlsx")
```

```

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)

print(alexa$variation[1950:2100])

```

```

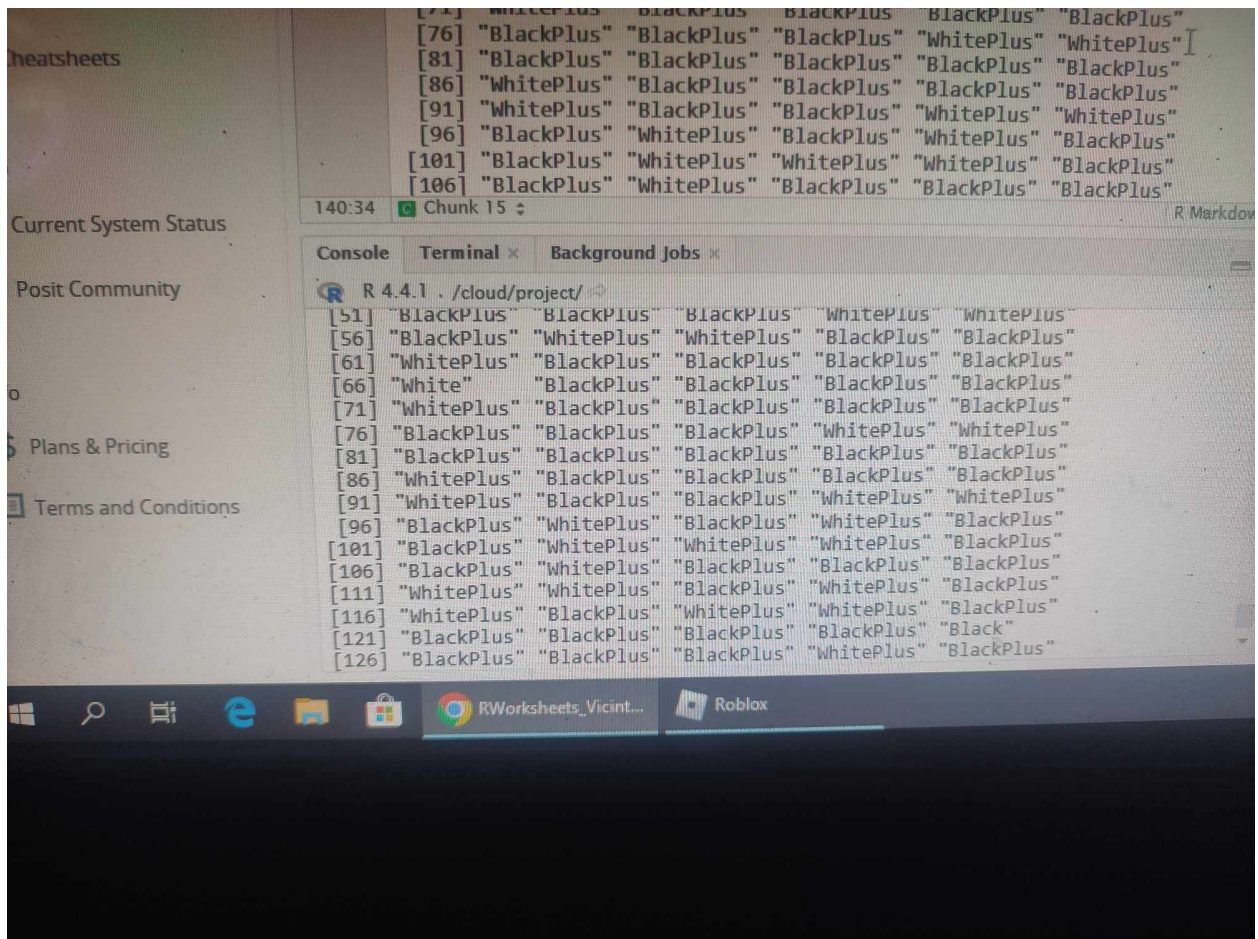
## [1] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [7] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [13] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [19] "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus"
## [25] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus"
## [31] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [37] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus"
## [43] "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "WhitePlus" "BlackPlus"
## [49] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus"
## [55] "WhitePlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [61] "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "White"
## [67] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus"
## [73] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [79] "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [85] "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [91] "WhitePlus" "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus"
## [97] "WhitePlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "WhitePlus"
## [103] "WhitePlus" "WhitePlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus"
## [109] "BlackPlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus" "WhitePlus"
## [115] "BlackPlus" "WhitePlus" "BlackPlus" "WhitePlus" "WhitePlus" "BlackPlus"
## [121] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "Black" "BlackPlus"
## [127] "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [133] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [139] "BlackPlus" "BlackPlus" "BlackPlus" "WhitePlus" "BlackPlus" "BlackPlus"
## [145] "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus" "BlackPlus"
## [151] "BlackPlus"

```

```

knitr::include_graphics("/cloud/project/RWorksheet_Vicinte4b/alexa.jpg")

```



```
#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

variation_counts <- alexa %>%
  count(variation)

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

## # A tibble: 16 x 2
##   variation      n
##   <chr>      <int>
## 1 Black      261
## 2 BlackDot   516
## 3 BlackPlus  270
```

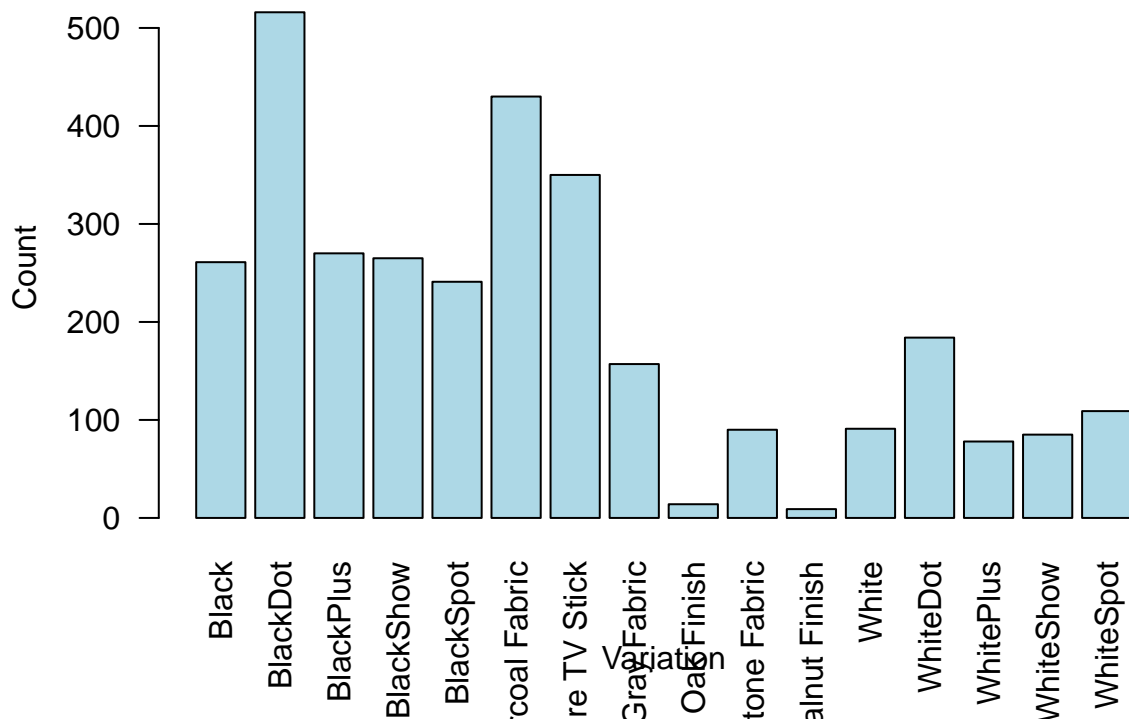


```
## 4 BlackShow 265
## 5 BlackSpot 241
## 6 Charcoal Fabric 430
## 7 Configuration: Fire TV Stick 350
## 8 Heather Gray Fabric 157
## 9 Oak Finish 14
## 10 Sandstone Fabric 90
## 11 Walnut Finish 9
## 12 White 91
## 13 WhiteDot 184
## 14 WhitePlus 78
## 15 WhiteShow 85
## 16 WhiteSpot 109
```

```
#c.
load("variations.RData")

barplot(variation_counts$n, names.arg = variation_counts$variation,
        col = "lightblue", main = "Alexa Variations",
        xlab = "Variation", ylab = "Count", las = 2)
```

### Alexa Variations



```
#d.
black_variants <- variation_counts %>%
  filter(grepl("Black", variation))

white_variants <- variation_counts %>%
  filter(grepl("White", variation))

par(mfrow = c(1, 2)) # Arrange plots side by side
```

```

barplot(black_variants$n, names.arg = black_variants$variation, col = "black",
        main = "Black Variants", xlab = "Variation", ylab = "Count", las = 2)
barplot(white_variants$n, names.arg = white_variants$variation, col = "gray",
        main = "White Variants", xlab = "Variation", ylab = "Count", las = 2)

```

