

RWorksheet_Gallenero#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 contain vectorA = [1,2,3,4,5] and a 5 x 5 zero matrix.

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

for (n in 1:5)
for (g in 1:5){
  matrix_A[n,g]<- abs (vector_A[n]-vector_A[g])
}

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. Print the string "*" using for() function. The output should be the same as shown in Figure

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

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

3. Get an input from the user to print the Fibonacci sequence starting from the 1st input up to 500. Use repeat and break statements. Write the R Scripts and its output

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

## Enter starting number for Fibonacci sequence:

if (is.na(user_input) || user_input < 0) {
  cat("Enter a number: ")
} else {
  current_num <- user_input
  previous_num <- 0

  cat("Fibonacci sequence starting from", user_input, "\n")

  repeat {
```

```

    next_num <- current_num + previous_num
    if (next_num > 500) {
break
    }
    cat(next_num, " ")
    current_num <- previous_num
    previous_num <- next_num
}
}

```

Enter a number:

4.a What is the R script for importing an excel or a csv file? Display the first 6 rows of the dataset? Show your codes and its result.

```

shoe_data <- read.csv("df_shoe.csv")
head(shoe_data)

```

```

##      X ShoeSize 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 Create a subset for gender(female and male). How many observations are there in Male? How about in Female? Write the R scripts and its output.

```

subset_male <- shoe_data[shoe_data$Gender == "M",]
subset_male

```

```

##      X ShoeSize 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

```

```

subset_female <- shoe_data[shoe_data$Gender == "F",]
subset_female

```

```

##      X ShoeSize 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
```

```
Male <- nrow(subset_male)
Male
```

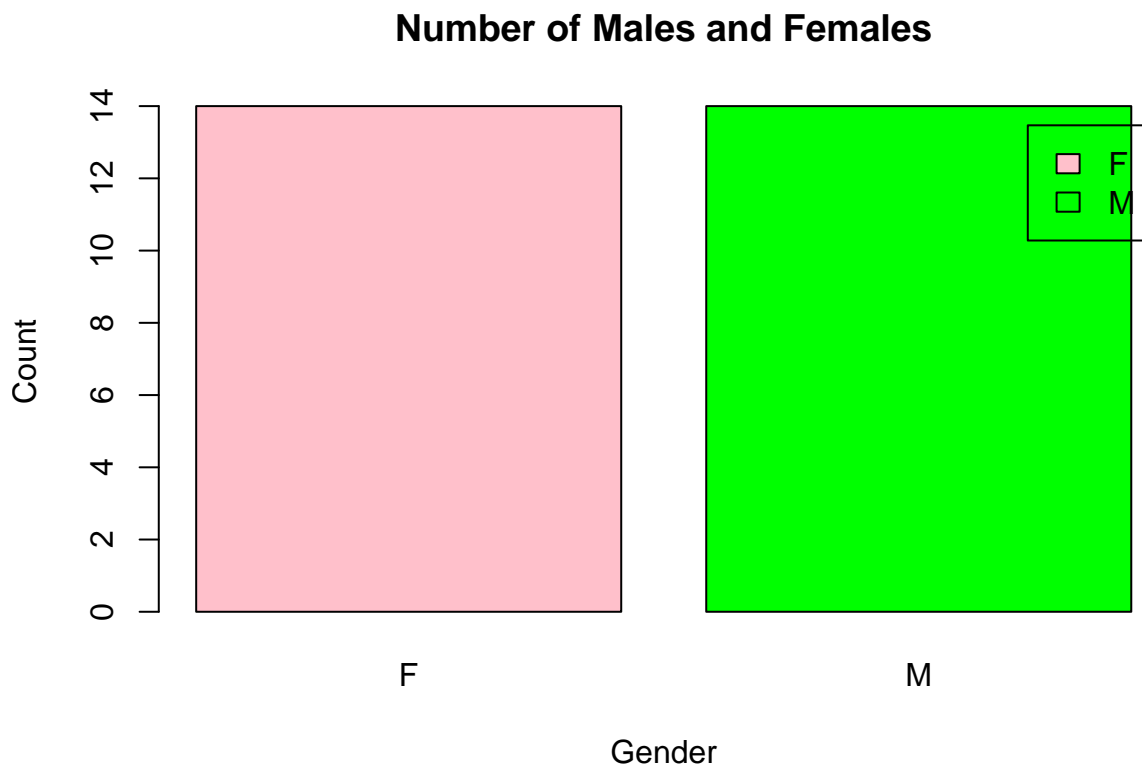
```
## [1] 14
```

```
Female <- nrow(subset_female)
Female
```

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

4.c Create a graph for the number of males and females for Household Data. Use plot(), chart type = barplot. Make sure to place title, legends, and colors. Write the R scripts and its result.

```
Num_MaleFemale <- table(shoe_data$Gender)
barplot(Num_MaleFemale,
  main = "Number of Males and Females",
  xlab = "Gender",
  ylab = "Count",
  col = c("pink", "green"),
  legend.text = rownames(Num_MaleFemale),
  beside = TRUE)
```



5.a Create a piechart that will include labels in percentage. Add some colors and title of the chart. Write the

R scripts and show its output.

```
expenses <- data.frame(
  Categories = c("Food", "Electricity", "Savings", "Miscellaneous"),
  Amount = c(60, 10, 5, 25)
)

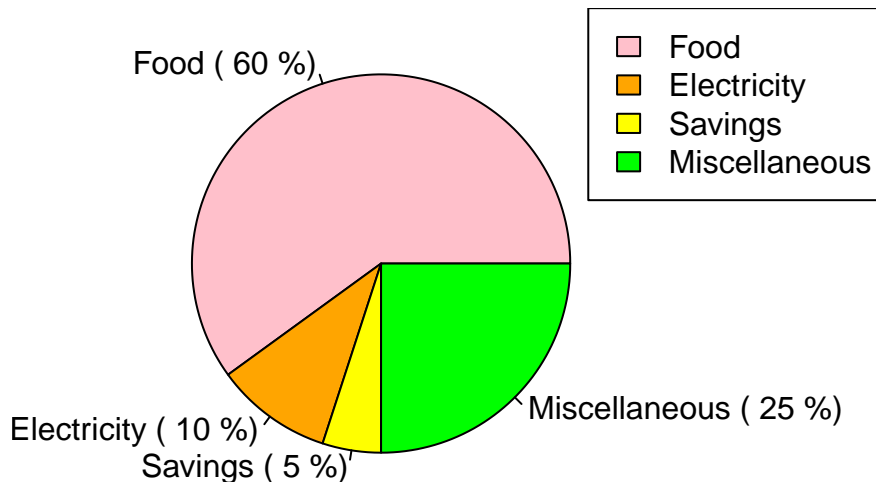
expenses$Percentage <- expenses$Amount / sum(expenses$Amount) * 100

colors <- c("pink", "orange", "yellow", "green")

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

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

Monthly Expenses of Dela Cruz Family



6 Use the iris dataset.

```
data(iris)
```

6a. Check for the structure of the dataset using the `str()` function. Describe what you have seen in the output.

```
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 dataset includes information about iris flowers, including measurements of the length and width #
Additionally, the dataset categorizes each flower into three: setosa, versicolor, and virginica.*

6b Create an R object that will contain the mean of the sepal.length, sepal.width,petal.length,and petal.width.
What is the R script and its result?

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

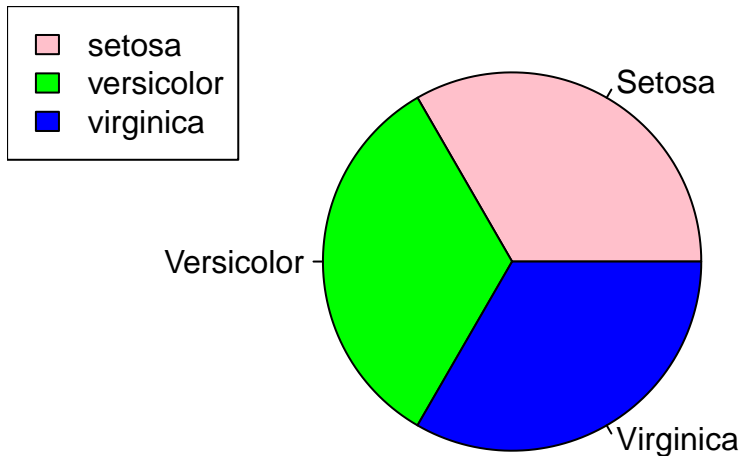
```
## Sepal.Length Sepal.Width Petal.Length Petal.Width
##      5.843333      3.057333      3.758000      1.199333
```

6c Create a pie chart for the Species distribution. Add title, legends, and colors. Write the R script and its result.

```
species <- table(iris$Species)
species_name <- c("Setosa", "Versicolor", "Virginica")

pie(species,
    labels = species_name,
    col = c("pink", "green", "blue"),
    main = "Species Distribution")
legend("topleft", legend = levels(iris$Species), fill = c("pink", "green", "blue"),)
```

Species Distribution



6d. Subset the species into setosa, versicolor, and virginica. Write the R scripts and show the last six (6) rows of each species.

```
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
```

```
setosa_subset <- iris[iris$Species == "setosa",]
setosa_subset
```

```
##      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
```

```
versicolor_subset <- iris[iris$Species == "versicolor",]
versicolor_subset
```

```
##      Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
## 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

```
virginica_subset <- iris[iris$Species == "virginica",]
virginica_subset
```

##	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
## 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
```

```
tail(setosa_subset, 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_subset, 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_subset, 6)
```

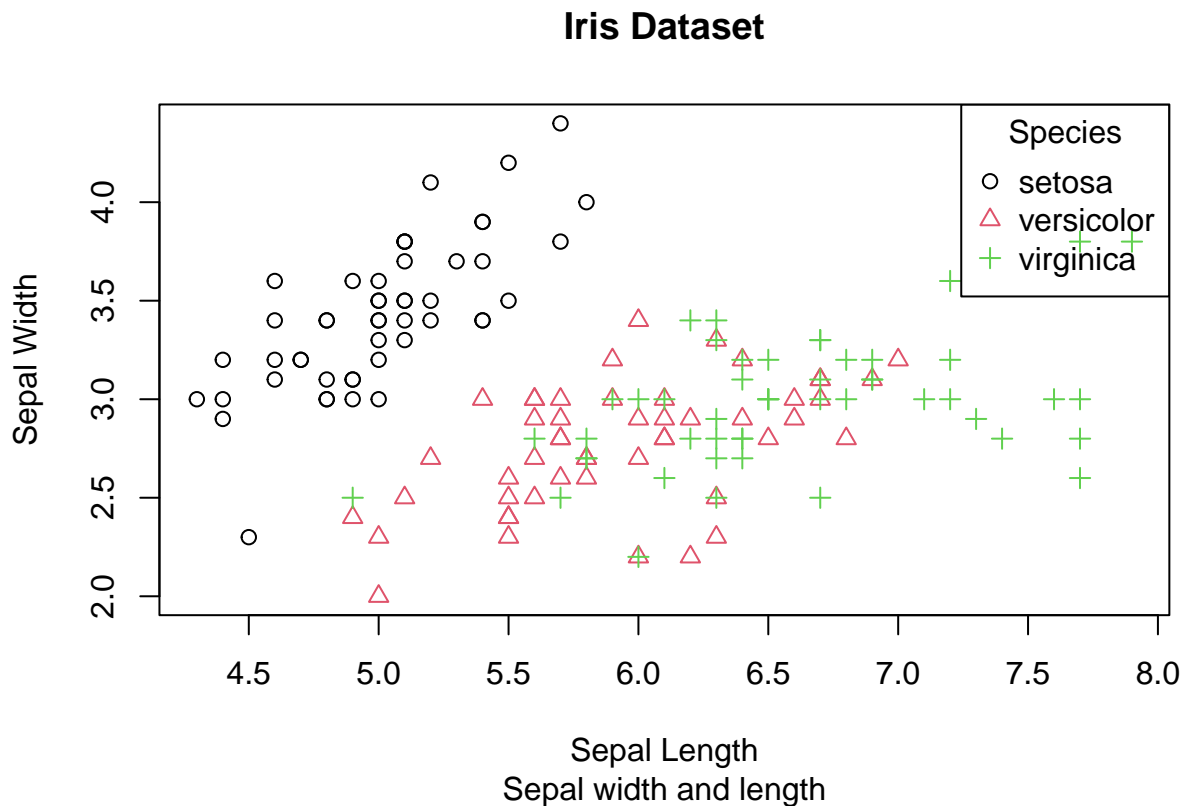
```
##      Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 145      6.7      3.3      5.7      2.5 virginica
## 146      6.7      3.0      5.2      2.3 virginica
## 147      6.3      2.5      5.0      1.9 virginica
## 148      6.5      3.0      5.2      2.0 virginica
```

```
## 149      6.2      3.4      5.4      2.3 virginica
## 150      5.9      3.0      5.1      1.8 virginica
```

6.e Create a scatterplot of the sepal.length and sepal.width using the different species(setosa,versicolor,virginica). Add a title = “Iris Dataset”, subtitle = “Sepal width and length”, labels for the x and y axis, the pch symbol and colors should be based on the species.

```
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),
      pch = 1:3, col = 1:3,
      title = "Species")
```



6.f Interpret the result.

#The scatterplot makes it easier to notice how the length and width of the sepals on various iris flowers are distributed.
#Setosa flowers have broad, short sepals that are gathered in the upper left corner of the plot.
The sepals of versicolor flowers are medium-length and medium-width, and they are found in the middle.
Virginica flowers are grouped on the right side and have longer sepals than wider petals.
Using the length and width of their sepals as a guide, it's simple to distinguish between the three species.

7. Import the alexa-file.xlsx. Check on the variations. Notice that there are extra whitespaces among black variants (Black Dot, Black Plus, Black Show, Black Spot). Also on the white variants (White Dot, White Plus, White Show, White Spot).

```
library(readxl)
alexaFile <- read_excel("alexa_file.xlsx")
alexaFile
```

```
## # A tibble: 3,150 x 5
##   rating date          variation    verified_reviews    feedback
##   <dbl> <dtm>          <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. Rename the white and black variants by using `gsub()` function.

```
alexaFile$variation <- gsub("Black Dot", "BlackDot", alexaFile$variation)
alexaFile$variation <- gsub("Black Plus", "BlackPlus", alexaFile$variation)
alexaFile$variation <- gsub("Black Show", "BlackShow", alexaFile$variation)
alexaFile$variation <- gsub("Black Spot", "BlackSpot", alexaFile$variation)
alexaFile$variation <- gsub("White Dot", "WhiteDot", alexaFile$variation)
alexaFile$variation <- gsub("White Plus", "WhitePlus", alexaFile$variation)
alexaFile$variation <- gsub("White Show", "WhiteShow", alexaFile$variation)
alexaFile$variation <- gsub("White Spot", "WhiteSpot", alexaFile$variation)
alexaFile
```

```
## # A tibble: 3,150 x 5
##   rating date          variation    verified_reviews    feedback
##   <dbl> <dtm>          <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. Get the total number of each variations and save it into another object. Save the object as `variations.RData`.

```
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
```

```
varTotal <- alexaFile %>%
  count(alexaFile$variation)
```

```
varTotal
```

```
## # A tibble: 16 x 2
##   `alexaFile$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(varTotal, file = "variations.RData")
```

7c. From the variations.RData, create a barplot(). Complete the details of the chart which include the title, color, labels of each bar.

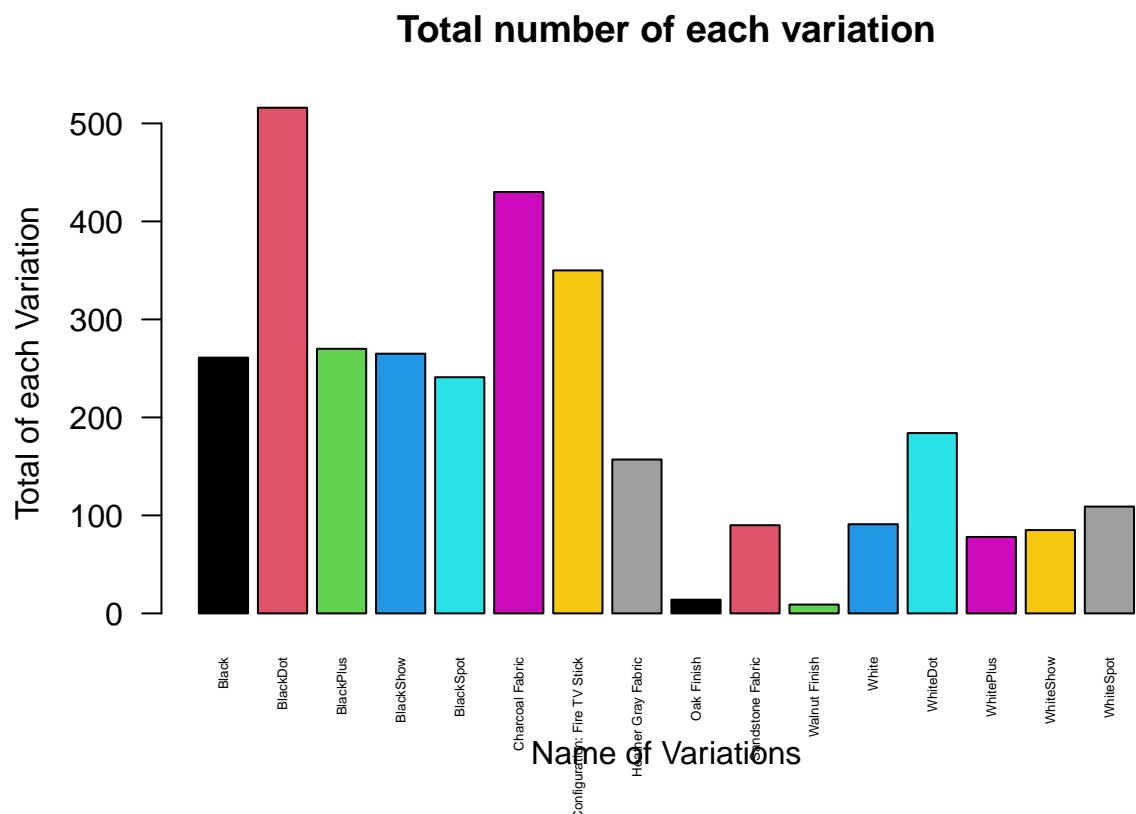
```
load("variations.RData")
varTotal
```

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

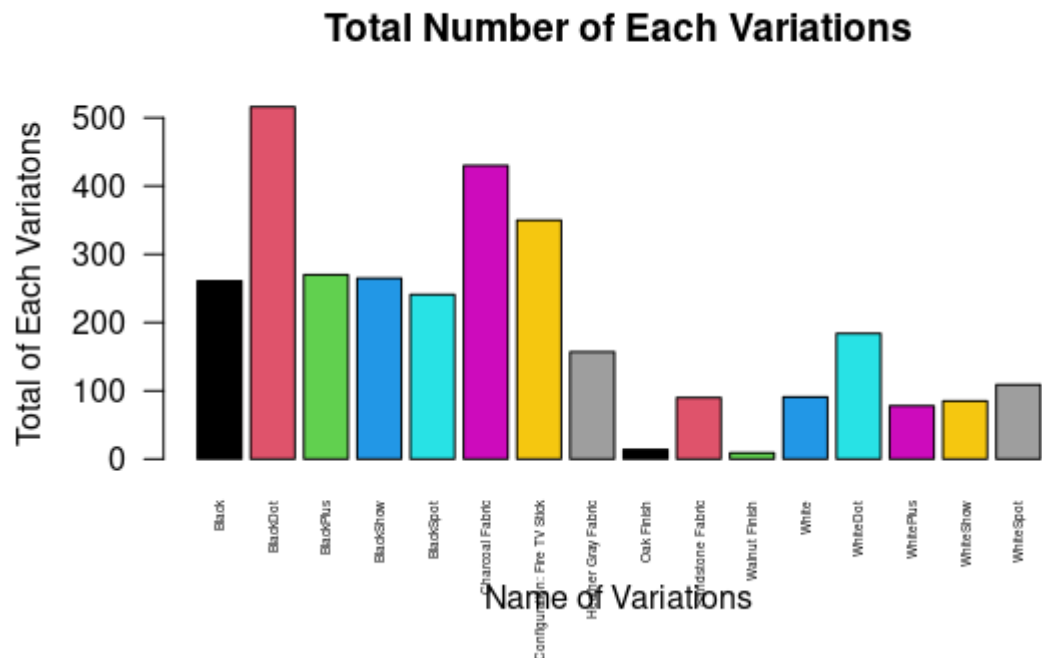
```
## 14 WhitePlus          78
## 15 WhiteShow          85
## 16 WhiteSpot         109
```

```
varNames <- varTotal$`alexFile$variation`

varPlot <- barplot(varTotal$n,
  names.arg = varNames,
  main = "Total number of each variation",
  xlab = "Name of Variations",
  ylab = "Total of each Variation",
  col = 1:16,
  space = 0.2,
  cex.names = 0.4,
  las = 2)
```



```
knitr::include_graphics("/cloud/project/worksheet#4/variations_total.png")
```



7d. Create a `barplot()` for the black and white variations. Plot it in 1 frame, side by side. Complete the details of the chart.

```
blackVar <- varTotal[varTotal$`alexaFile$variation` %in% c("Black", "BlackPlus", "BlackShow", "BlackSpot"), ]
whiteVar <- varTotal[varTotal$`alexaFile$variation` %in% c("White", "WhiteDot", "WhitePlus", "WhiteShow"), ]

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

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

```
black <- barplot(height = blackVar$n,
  names.arg = blackVar$`alexaFile$variation`,
  col = c("black"),
  main = "Black Variations",
  xlab = "Variation",
  ylab = "Count",
  border = "black",
  space = 0.5,
  cex.names = 0.4)
```

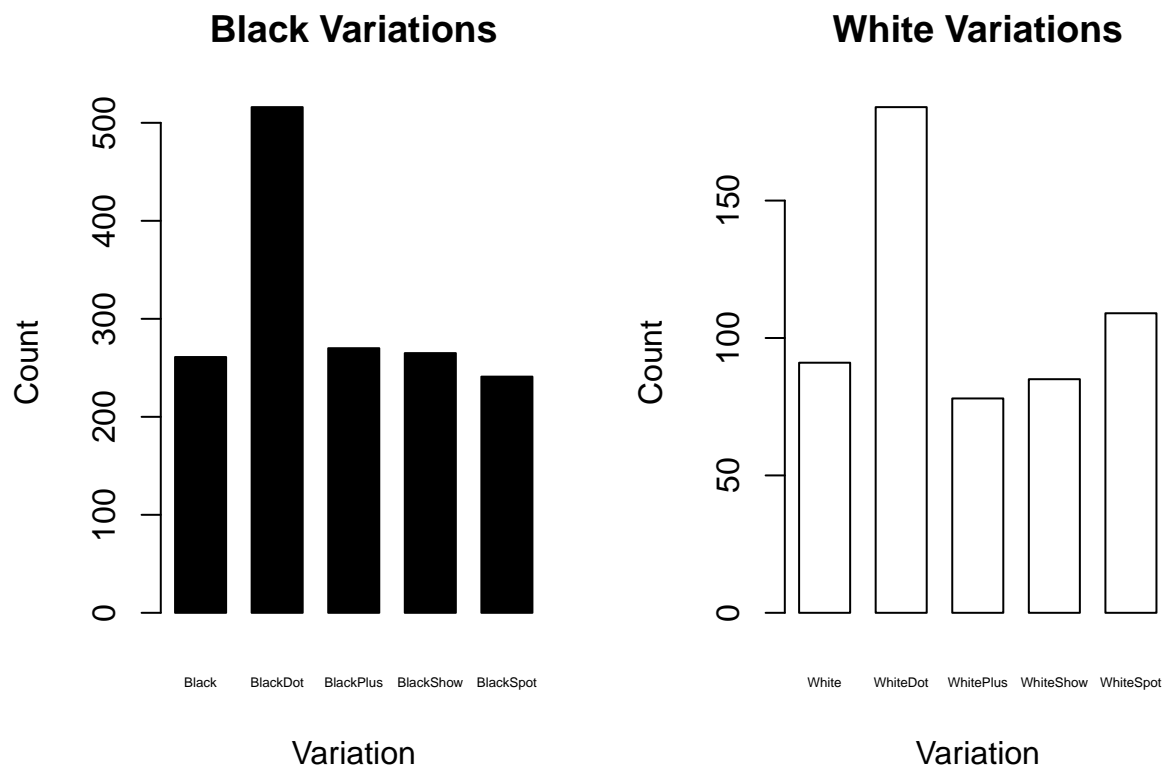
```
white <- barplot(height = whiteVar$n,
  names.arg = whiteVar$`alexaFile$variation`,
  col = c("white"),
```



```

main = "White Variations",
xlab = "Variation",
ylab = "Count",
border = "black",
space = 0.5,
cex.names = 0.4)

```



```

knitr::include_graphics("/cloud/project/worksheet#4/var_blackwhite.png")

```

