RWorksheet_Layson#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

  while (b < 500) {
    fib <- a + b
```

```
    a <- b
    b <- fib
    if (fib >= start) {
      print(fib)
    }
  }
}

sequencing <- as.numeric(readline(prompt = "Enter a Number: "))
```

```
## Enter a Number:
```

```
if (is.na(sequencing) || 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"
```

#4.a.

```
     HOUSE <- read.csv("C:\\Users\\User\\OneDrive\\Desktop\\Rworksheet\\Worksheet_4\\HOUSE.csv", header
```

#b.

```
male <- subset(HOUSE, 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(HOUSE, 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
```

```r
nmale <- nrow(male)
nfemale <- nrow(female)
cat("Number of observations for Male:", nmale, "\n")
```

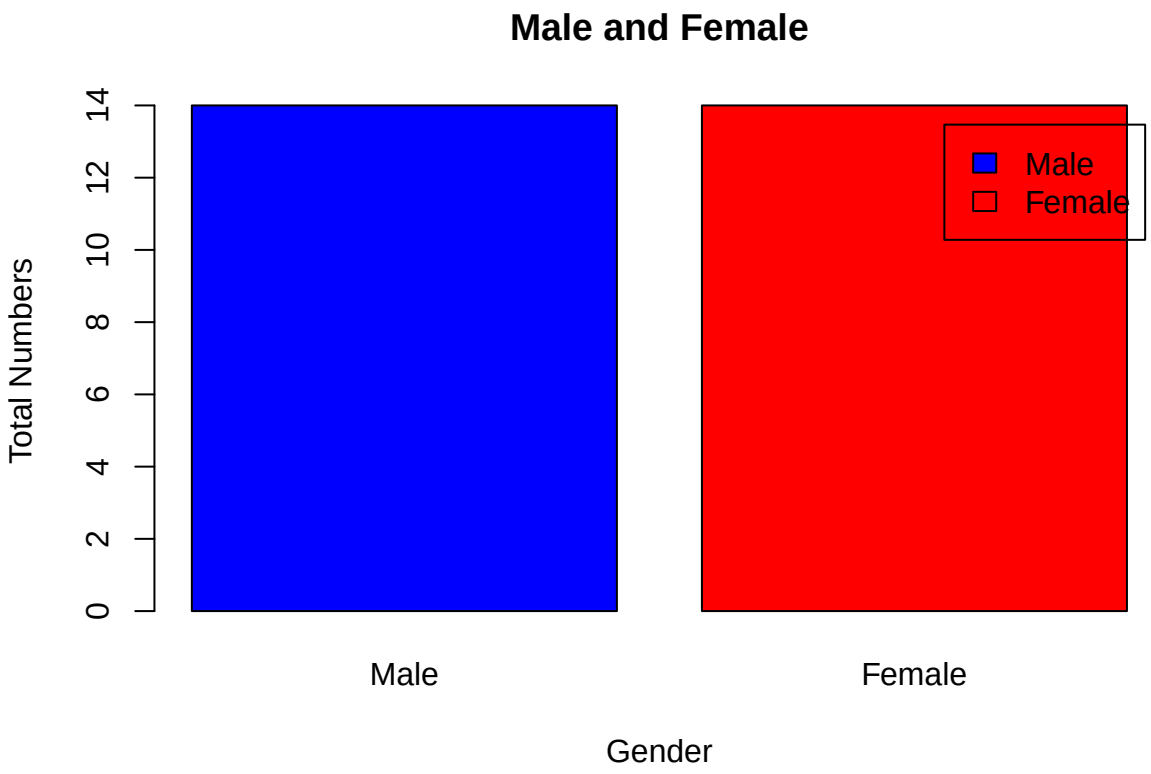
```
## Number of observations for Male: 14
```

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

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

#c.

```r
Plotting <- c(nmale,nfemale)
names(Plotting) <- c("Male", "Female")
barplot(Plotting, main = "Male and Female", xlab = "Gender", ylab = "Total Numbers", col = c("blue", "r
```

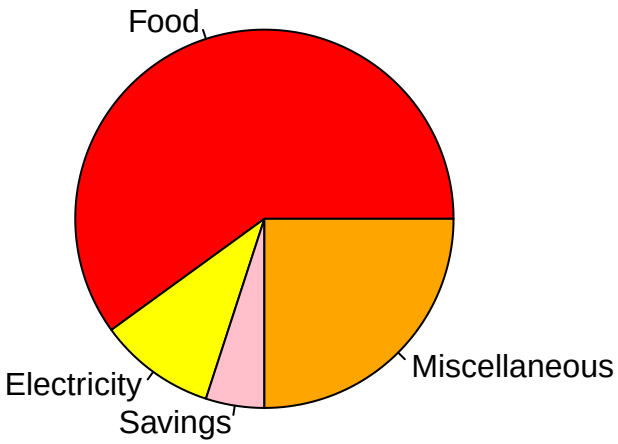


#5.

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

bill_data <- data.frame(bills, values)


pie(bill_data$values, labels = bill_data$bills,
    col = c("red", "yellow", "pink", "orange"),
    main = "Expenditures")
```



#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 ...
```

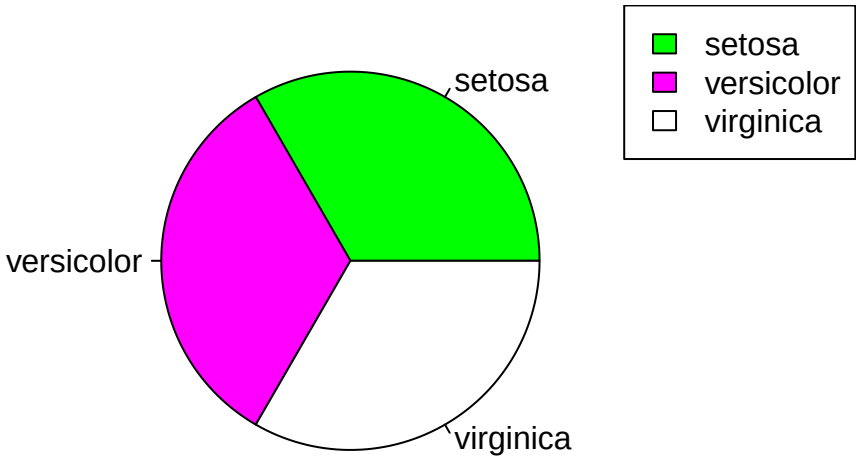
#b.

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

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

#c.

```
species <- table(iris$Species)
colors <- c("green", "magenta","white")
Pie <- pie(species, main = "Species Distribution", col = colors ,labels = names(species))
legend("topright", legend = names(species), fill = colors)
```



#d.

```
setosa <- subset(iris, Species == "setosa")
versicolor <- subset(iris, Species == "versicolor")
virginica <- subset(iris, Species == "virginica")
s<-tail(setosa)
v<- tail(versicolor)
v2<- tail(virginica)
s
```

```
##    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
```

```
v
```

```
##     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
```

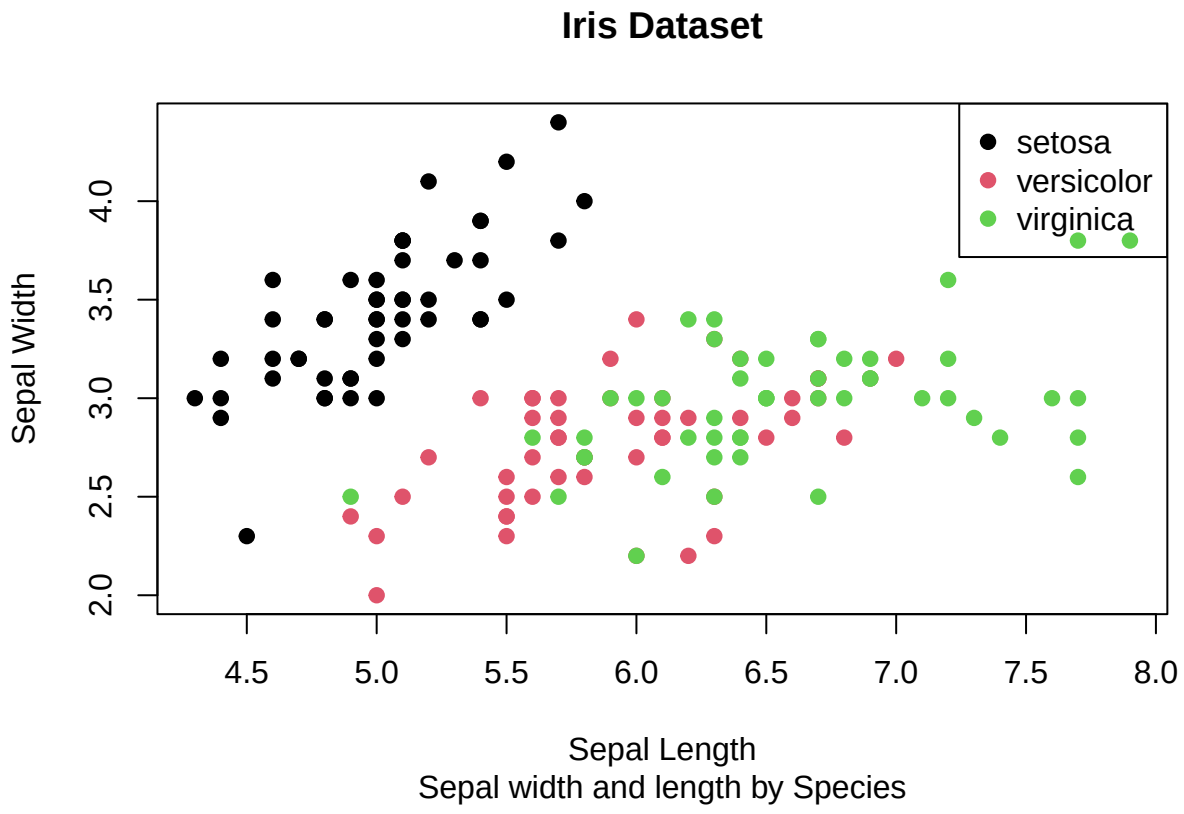
```
v2
```

```
##     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.

```
plot(iris$Sepal.Length, iris$Sepal.Width,
     col = iris$Species,
     pch = 19,
     xlab = "Sepal Length",
     ylab = "Sepal Width",
     main = "Iris Dataset",
     sub = "Sepal width and length by Species"
)

legend("topright", legend = levels(iris$Species),
       col = 1:3, pch = 19)
```



#f.

```
#The relationship between sepal length and width for several iris flower species is displayed in a scat
```

#7.

```
library(readxl)
library(readxl)


alexa_data <- read_excel("C:/Users/User/OneDrive/Desktop/Rworksheet/worksheet_4/alexa_file.xlsx")


alexa_fileVariation <- gsub("Black\\$Dot", "Black Dot", alexa_data$variation)
alexa_fileVariation <- gsub("Black\\$Plus", "Black Plus", alexa_data$variation)
alexa_fileVariation <- gsub("Black\\$Show", "Black Show", alexa_data$variation)
alexa_fileVariation <- gsub("Black\\$Spot", "Black Spot", alexa_data$variation)
alexa_fileVariation <- gsub("White\\$Dot", "White Dot", alexa_data$variation)
alexa_fileVariation <- gsub("White\\$Plus", "White Plus", alexa_data$variation)
alexa_fileVariation <- gsub("White\\$Show", "White Show", alexa_data$variation)
alexa_fileVariation <- gsub("White\\$Spot", "White Spot", alexa_data$variation)

table(alexa_fileVariation)
```

```
## alexa_fileVariation
##                         Black                   Black  Dot
##                           261                           516
##                   Black  Plus                  Black  Show
##                           270                           265
##                   Black  Spot              Charcoal Fabric
##                           241                           430
## Configuration: Fire TV Stick          Heather Gray Fabric
##                           350                           157
##                     Oak Finish             Sandstone Fabric
##                            14                            90
##                 Walnut Finish                         White
##                             9                            91
##                    White  Dot                  White  Plus
##                           184                            78
##                   White  Show                  White  Spot
##                            85                           109
```

#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
```

```
variations_count <- alexa_data %>%
  count(variation, name = "Total")

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

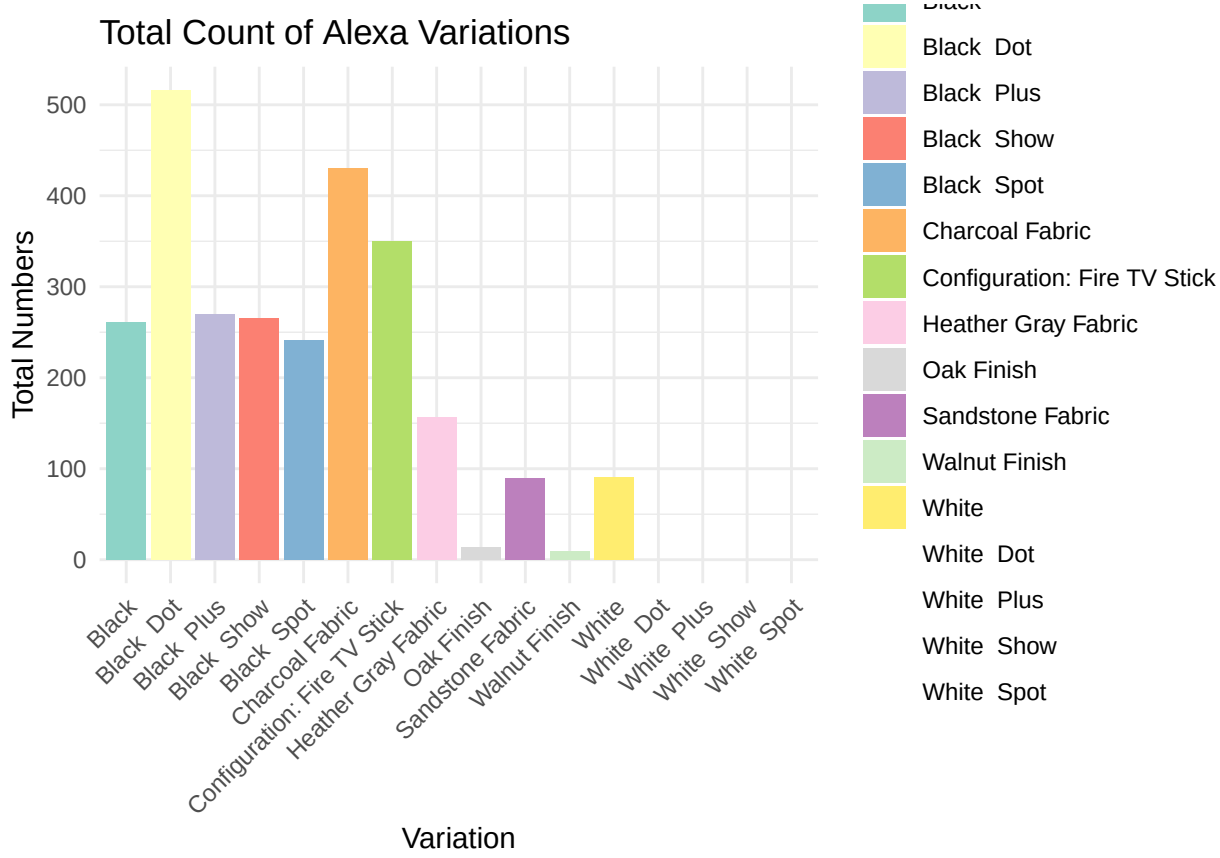
#c.

```
library(ggplot2)

load("variations.RData")


ggplot(variations_count, aes(x = variation, y = Total, fill = variation)) +
  geom_bar(stat = "identity") +
  ggtitle("Total Count of Alexa Variations") +
  xlab("Variation") +
  ylab("Total Numbers") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  scale_fill_brewer(palette = "Set3")
```

```
## Warning in RColorBrewer::brewer.pal(n, pal): n too large, allowed maximum for palette Set3 is 12
## Returning the palette you asked for with that many colors
```



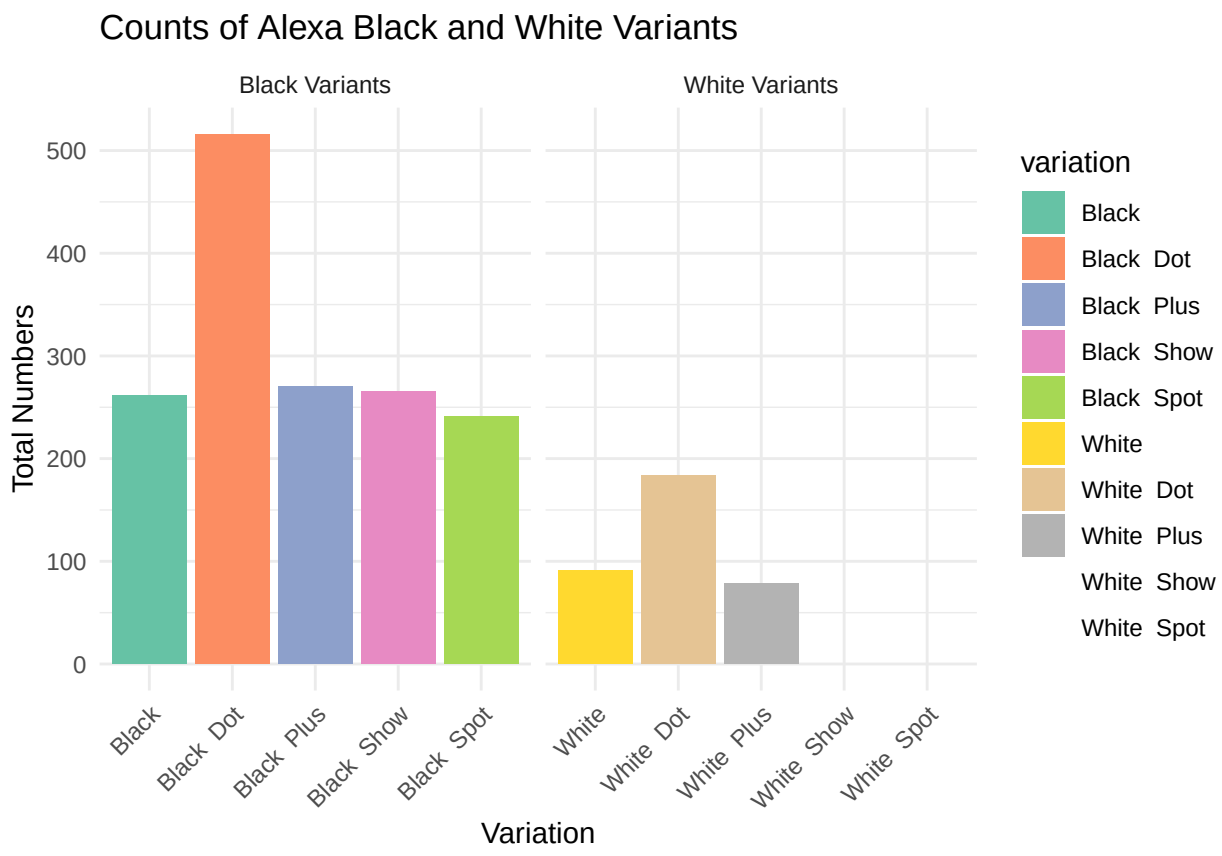
#d.

```
variations_count$Category <- ifelse(grepl("Black", variations_count$variation), "Black Variants",
                                    ifelse(grepl("White", variations_count$variation), "White Variants"

black_white_variants <- variations_count %>% filter(!is.na(Category))


ggplot(black_white_variants, aes(x = variation, y = Total, fill = variation)) +
  geom_bar(stat = "identity") +
  facet_wrap(~ Category, scales = "free_x") +
  ggtitle("Counts of Alexa Black and White Variants") +
  xlab("Variation") +
  ylab("Total Numbers") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  scale_fill_brewer(palette = "Set2")
```

```
## Warning in RColorBrewer::brewer.pal(n, pal): n too large, allowed maximum for palette Set2 is 8
## Returning the palette you asked for with that many colors
```


Counts of Alexa Black and White Variants
Black Variants
White Variants
Total Numbers
500
400
300
200
100
0
Black
Black Dot
Black Plus
Black Show
Black Spot
White
White Dot
White Plus
White Show
White Spot
Variation
variation
Black
Black Dot
Black Plus
Black Show
Black Spot
White
White Dot
White Plus
White Show
White Spot