Untitled

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#1

```
A <- 1:5
mat <- matrix(0, nrow=5, ncol=5)

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

print(mat)
```

```
##      [,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

```
for (i in 1:5) {
  for (j in 1:i) {
    cat("*")
  }
  cat("\n")
}
```

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

#3

```
#3
n <- 5
a <- 0
b <- 1
cat("Fibonacci numbers starting from", n, "up to 500:\n")
```

```
## Fibonacci numbers starting from 5 up to 500:
```

```
repeat {
fib <- a + b
if (fib > 500) break
if (fib >= n) cat(fib, " ")
a <- b
b <- fib
}
```

```
## 5  8  13  21  34  55  89  144  233  377
```

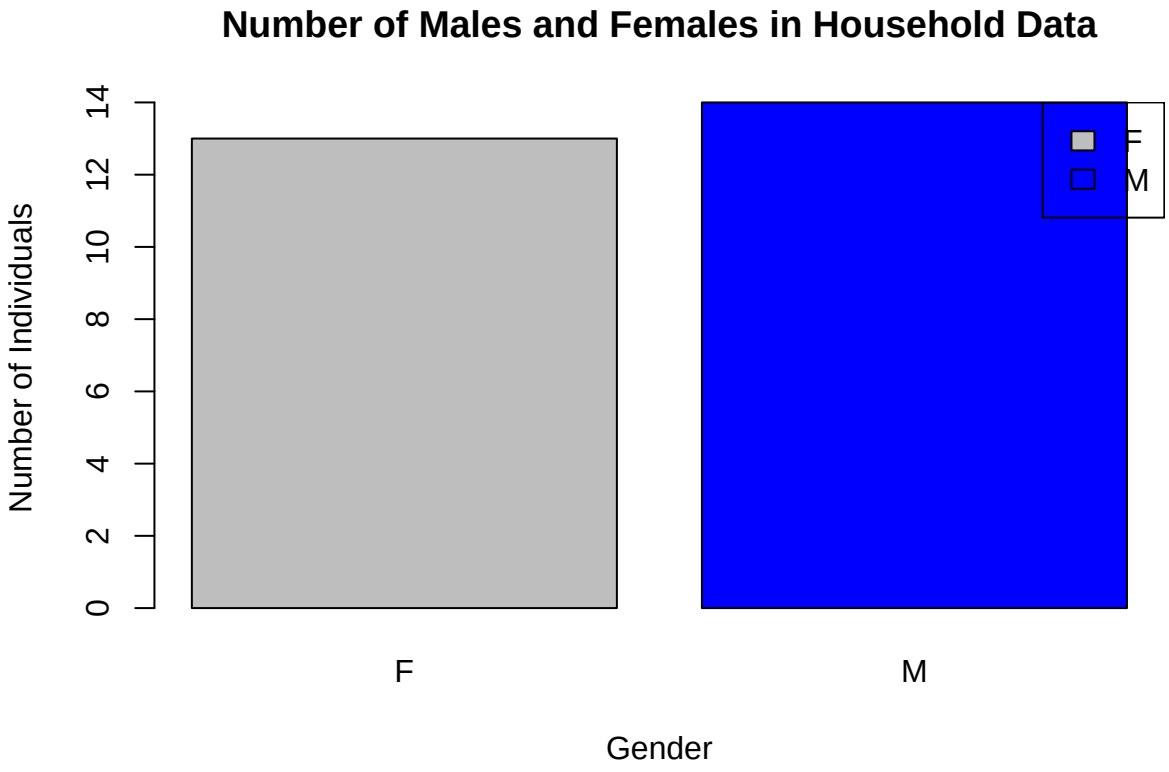
```
cat("\n")
```

#4a

```
fig1 <- matrix(c(0,1,2,3,4,
1,0,1,2,3,
2,1,0,1,2,
3,2,1,0,1,
4,3,2,1,0), nrow=5, byrow=TRUE)
write.csv(fig1, "figure1.csv", row.names=FALSE)
figure1 <- read.csv("figure1.csv", header=FALSE)
print(figure1)
```

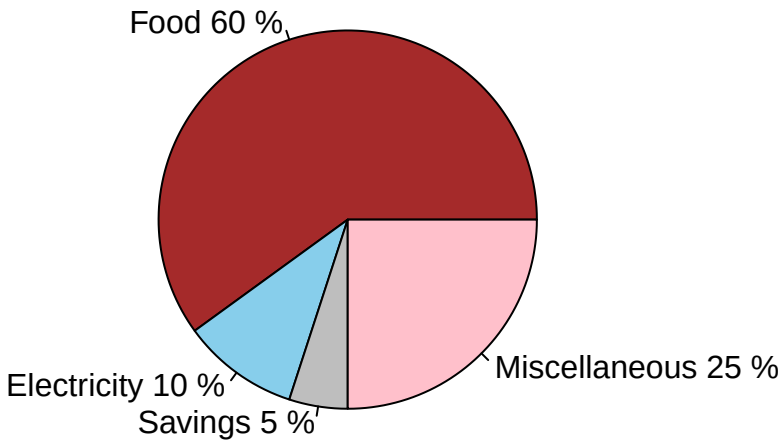
```
##   V1 V2 V3 V4 V5
## 1 V1 V2 V3 V4 V5
## 2  0  1  2  3  4
## 3  1  0  1  2  3
## 4  2  1  0  1  2
## 5  3  2  1  0  1
## 6  4  3  2  1  0
```

```
shoe_size <- c(6.5, 9.0, 8.5, 8.5, 10.5, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 10.5,
13.0, 11.5, 8.5, 5.0, 10.0, 6.5, 7.5, 8.5, 10.5, 10.5, 11.0, 9.0, 13.0)
height <- c(66.0, 68.0, 64.5, 65.0, 70.0, 64.0, 70.0, 71.0, 72.0, 64.0, 74.5, 67.0, 71.0, 71.0,
77.0, 72.0, 59.0, 62.0, 72.0, 66.0, 64.0, 67.0, 73.0, 72.0, 69.0, 69.0, 70.0)
gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M",
"M", "M", "F", "F", "M", "F", "F", "M", "M", "M", "M", "M", "M")

df <- data.frame(Shoe_size = shoe_size, Height = height, Gender = gender)
write.csv(df, "figure3.csv", row.names = FALSE)

gender_count <- table(df$Gender)
barplot(gender_count, col=c("gray","blue"), main="Number of Males and Females in Household Data", xlab=
legend("topright", legend=names(gender_count), fill=c("gray","blue"))
```



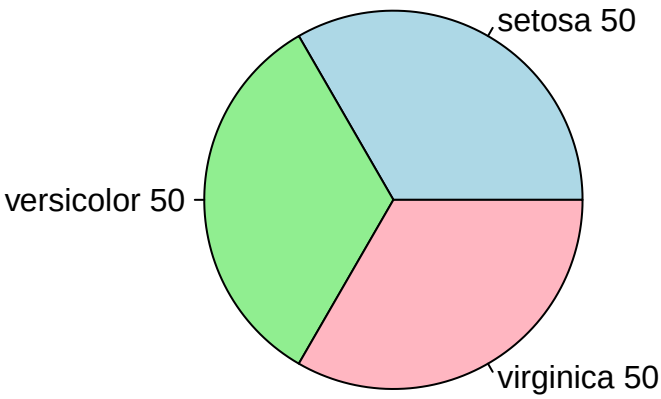
#5a

```
expenses <- c(60, 10, 5, 25)
categories <- c("Food", "Electricity", "Savings", "Miscellaneous")
percent <- round(expenses / sum(expenses) * 100)
labels <- paste(categories, percent, "%")
pie(expenses,
    labels = labels,
    col = c("brown", "skyblue", "gray", "pink"),
    main = "Monthly Income Distribution of Dela Cruz Family")
```

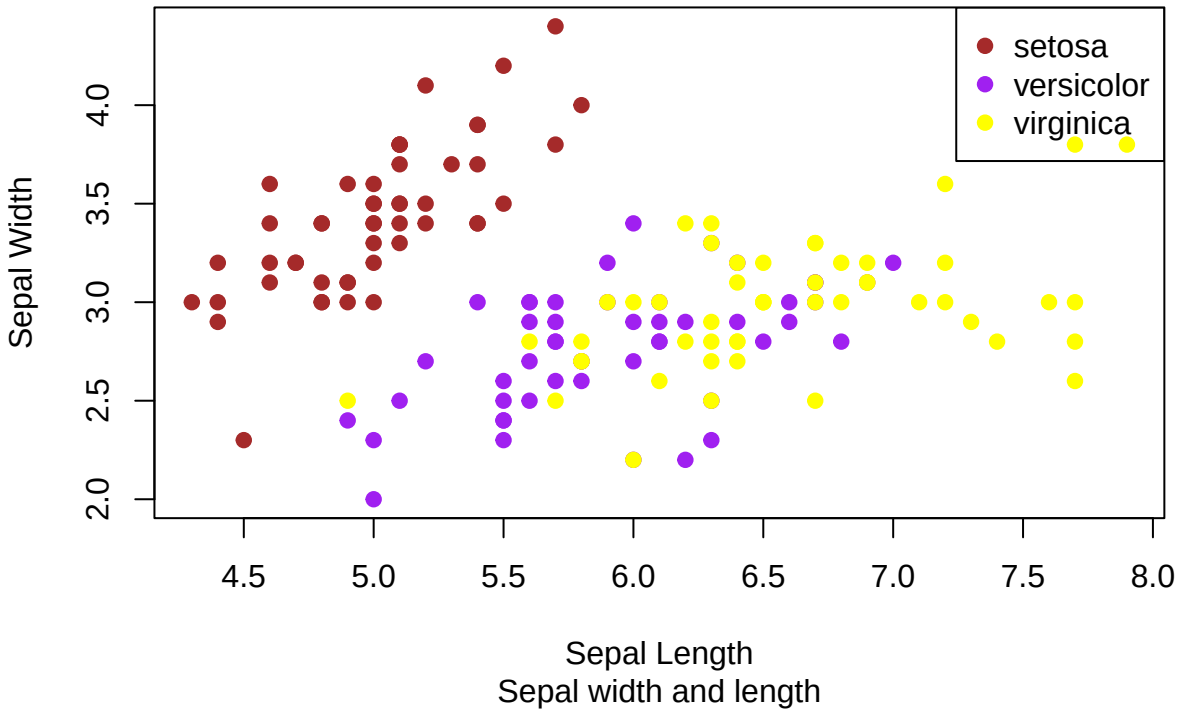


#6

```r
data(iris)
mean_values <- colMeans(iris[, 1:4])

species_count <- table(iris$Species)
pie(species_count, col = c("lightblue", "lightgreen", "lightpink"), main = "Species Distribution in Iris
```




```r
setosa <- subset(iris, Species == "setosa")
versicolor <- subset(iris, Species == "versicolor")
virginica <- subset(iris, Species == "virginica")

colors <- c("brown", "purple", "yellow")
species_colors <- colors[as.numeric(iris$Species)]
plot(iris$Sepal.Length, iris$Sepal.Width, col = species_colors, pch = 19, main = "Iris Dataset", sub =
legend("topright", legend = levels(iris$Species), col = colors, pch = 19)
```




```
#The iris dataset shows an equal number of samples for each species, with Setosa easily distinguishable
```

#7

```
install.packages("readxl")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.5'
## (as 'lib' is unspecified)
```

```
install.packages("gridExtra")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.5'
## (as 'lib' is unspecified)
```

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

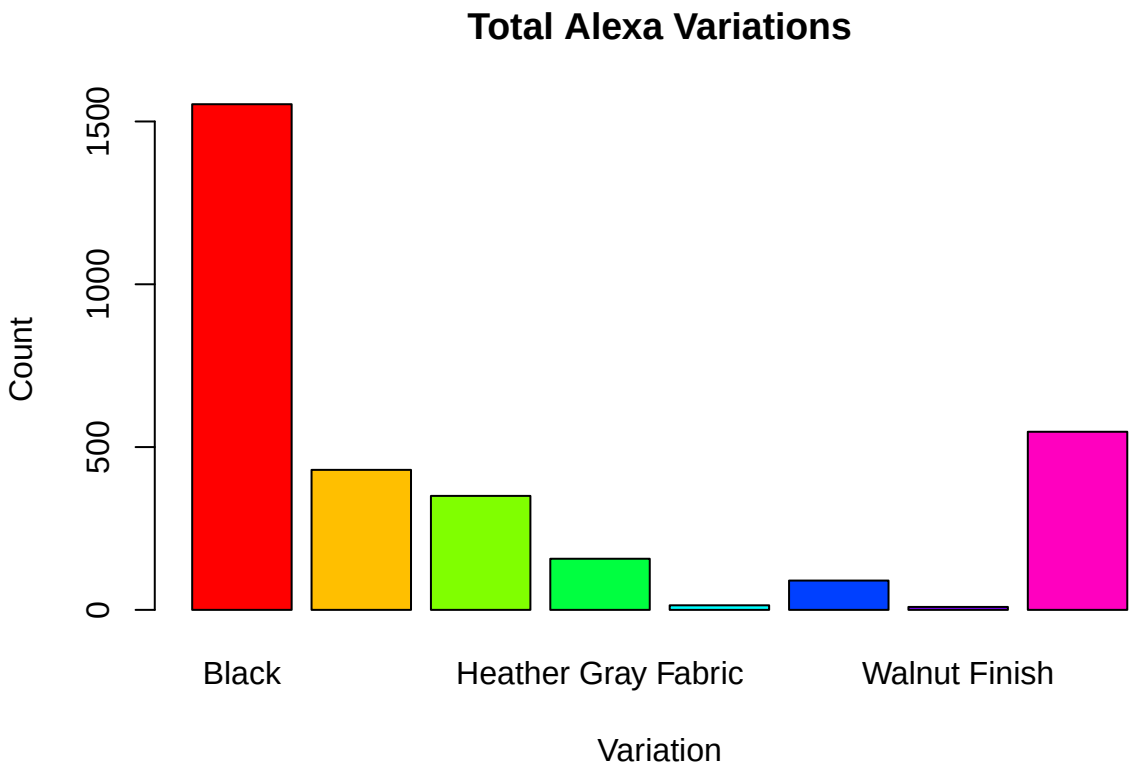
```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(stringr)
library(ggplot2)
library(gridExtra)
```

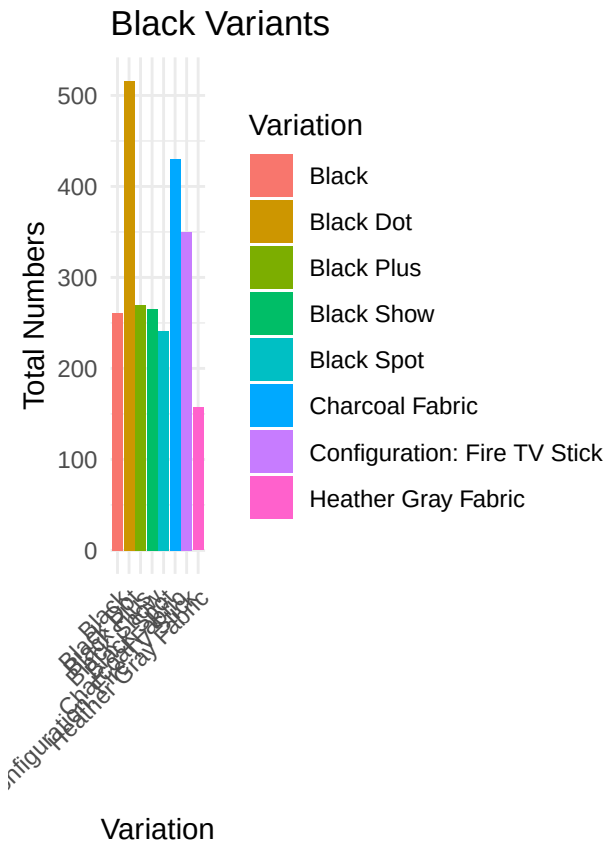
```
##
```

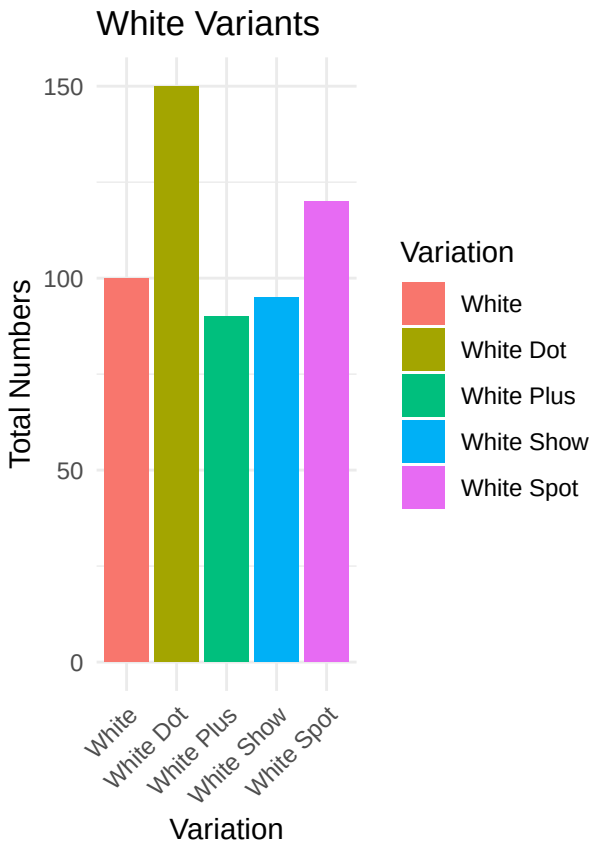
```
## Attaching package: 'gridExtra'

## The following object is masked from 'package:dplyr':
##
##     combine
```

```
library(readxl)

df <- read_excel("alexa_file.xlsx")
df$variation <- str_squish(df$variation)
df$variation <- gsub("^White.*", "White", df$variation)
df$variation <- gsub("^Black.*", "Black", df$variation)

variations <- df %>% count(variation)
v <- variations$n
names(v) <- variations$variation
barplot(v, main="Total Alexa Variations", xlab="Variation", ylab="Count", col=rainbow(length(v)))
```




```
black_variants <- c(261, 270, 265, 241, 516, 430, 350, 157)
black_labels <- c("Black", "Black Plus", "Black Show", "Black Spot", "Black Dot", "Charcoal Fabric", "C
white_variants <- c(100, 150, 90, 95, 120)
white_labels <- c("White", "White Dot", "White Plus", "White Show", "White Spot")

black_data <- data.frame(Variation = black_labels, Total = black_variants)
white_data <- data.frame(Variation = white_labels, Total = white_variants)

plot_black <- ggplot(black_data, aes(x = Variation, y = Total, fill = Variation)) + geom_bar(stat = "id
plot_white <- ggplot(white_data, aes(x = Variation, y = Total, fill = Variation)) + geom_bar(stat = "id

grid.arrange(plot_black, plot_white, ncol = 2)
```


Black Variants
Total Numbers
500
400
300
200
100
0
Variation
Black
Black Dot
Black Plus
Black Show
Black Spot
Charcoal Fabric
Configuration: Fire TV Stick
Heather Gray Fabric
Variation


White Variants
Total Numbers
150
100
50
0
White
White Dot
White Plus
White Show
White Spot
Variation
White
White Dot
White Plus
White Show
White Spot
Variation