RWorksheet_Eusuya#4B

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1

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

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

```
##      [,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

```
n <- 5

for (i in 1:n) {
  row <- ""
  for (j in 1:(i - 1)) {
    row <- paste0(row, "*")
  }
  cat(row, "\n")
}
```

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

3

```
start_num <- as.integer(readline(prompt = "Enter the starting number of the Fibonacci sequence: "))
```

```
## Enter the starting number of the Fibonacci sequence:
if (is.na(start_num) || start_num <= 0) {
  cat("Please enter a positive integer.\n")
} else {
  a <- 0
  b <- 1

  repeat {
    next_num <- a + b

    a <- b
    b <- next_num

    if (next_num < start_num) {
      next
    }

    cat(next_num, " ")

    if (next_num > 500) {
      break
    }
  }
}
```

```
## Please enter a positive integer.
```

4

```
data <- data.frame(
  ShoeSize = 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,

  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,

  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
)
data
```

```
##    ShoeSize 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
```

A

```
head(data)
```

```
##   ShoeSize 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(data, Gender == "M")
female_subset <- subset(data, Gender == "F")
nrow(male_subset)
```

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

```
nrow(female_subset)
```

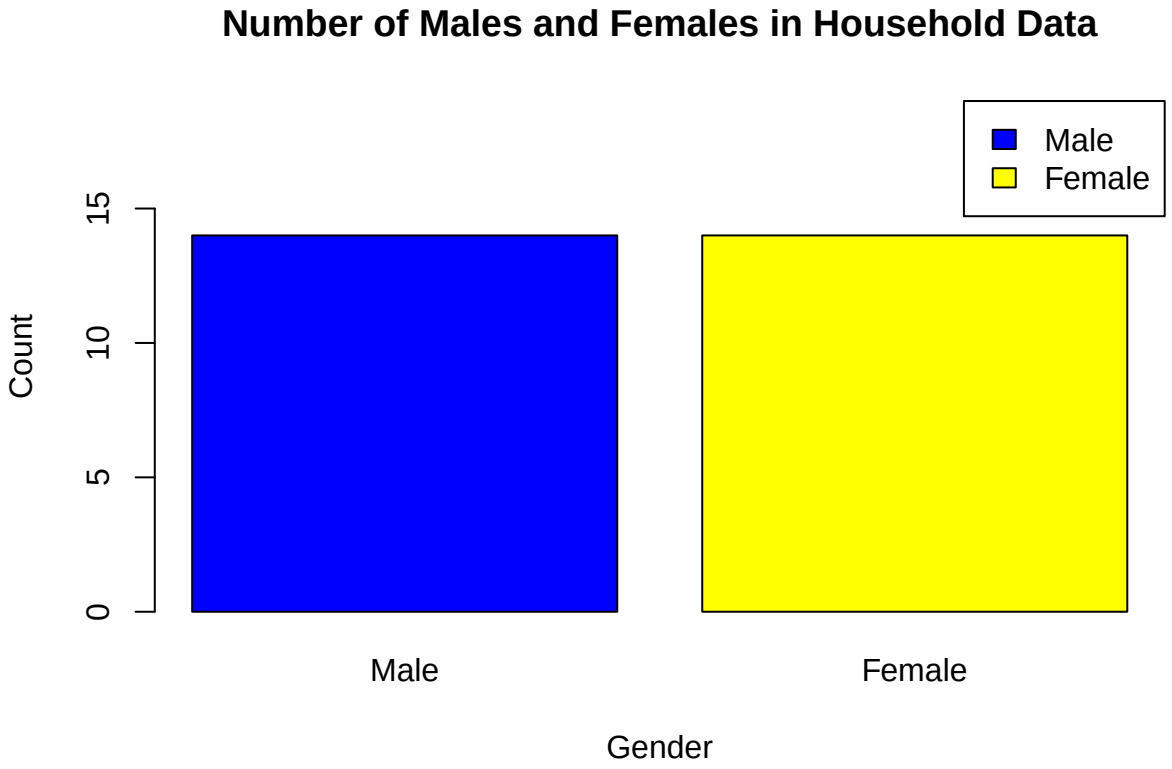
```
## [1] 14
```

```
# There are 14 observations in both male and female.
```

C

```
gender_counts <- table(data$Gender)
barplot(
  gender_counts,
  main = "Number of Males and Females in Household Data",
  xlab = "Gender",
  ylab = "Count",
  col = c("blue", "yellow"),
  names.arg = c("Male", "Female"),
  legend.text = c("Male", "Female"),
```

```
  args.legend = list(x = "topright"),
  ylim = c(0, max(gender_counts) + 5)
)
```

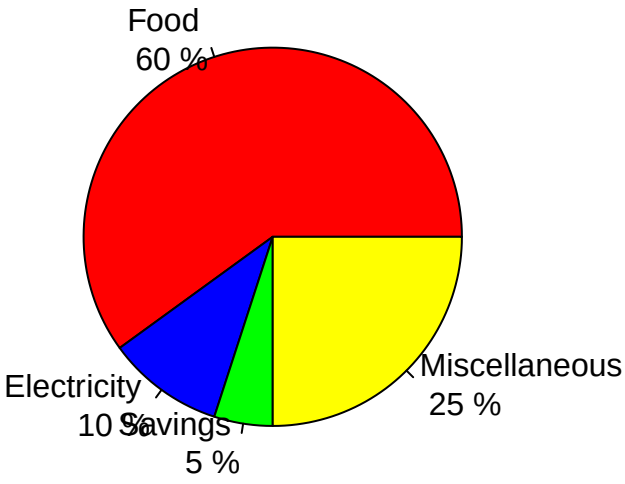


5

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

pie(values,
    labels = paste(categories, "\n", round(values/sum(values)*100, 1), "%"),
    col = c("red", "blue", "green", "yellow"),
    main = "Dela Cruz Family Monthly Expenses:")
```

Dela Cruz Family Monthly Expenses:



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 ...
```

```
# The data contain sepal length and width, petal length and width, and 3 species.
```

B

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

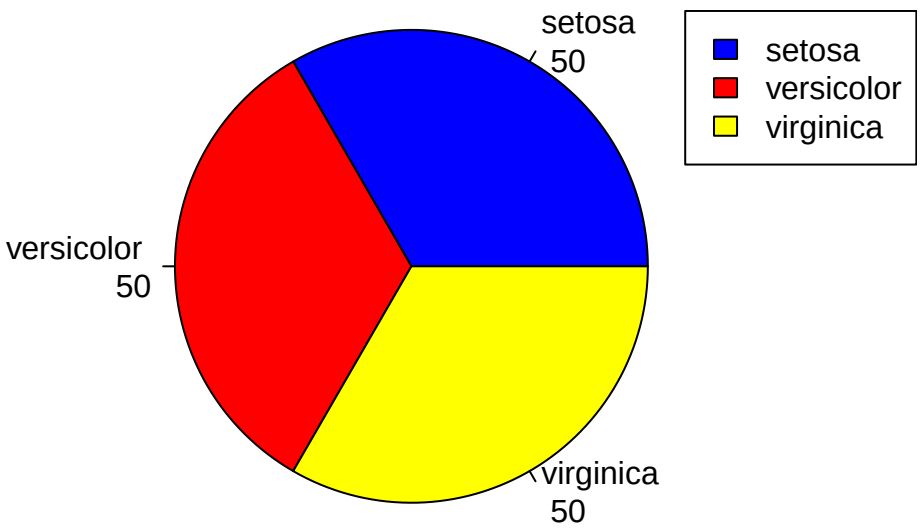
```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     1.199333
```

C

```
species_count <- table(iris$Species)

pie(species_count,
    labels = paste(names(species_count), "\n", species_count),
    col = c("blue", "red", "yellow"),
    main = "Species Distribution in Iris Dataset",
    radius = 1)
```

```
    legend("topright", legend = names(species_count), fill = c("blue", "red", "yellow"))
```



D

```
setosa_data <- subset(iris, Species == "setosa")
versicolor_data <- subset(iris, Species == "versicolor")
virginica_data <- subset(iris, Species == "virginica")

tail(setosa_data)
```

```
##    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_data)
```

```
##     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
```

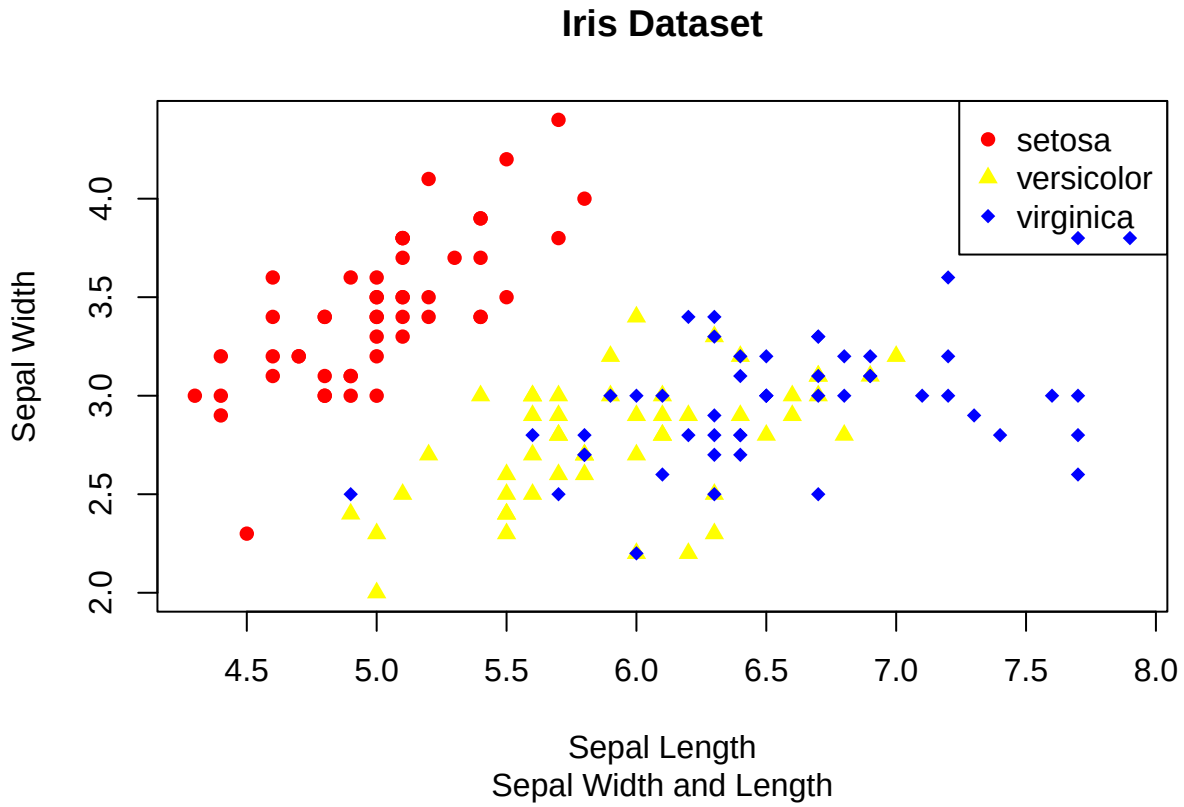
```
tail(virginica_data)
```

```
##     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

```
iris$Species <- as.factor(iris$Species)

plot(iris$Sepal.Length, iris$Sepal.Width,
     col = c("red", "yellow", "blue")[iris$Species],
     pch = c(16, 17, 18)[iris$Species],
     main = "Iris Dataset",
     sub = "Sepal Width and Length",
     xlab = "Sepal Length", ylab = "Sepal Width")
    legend("topright", legend = levels(iris$Species),
       col = c("red", "yellow", "blue"),
       pch = c(16, 17, 18))
```



F

The scatterplot shows the relationship between Sepal.Length and Sepal.Width for the three species of the Iris dataset.Setosa has smaller Sepal.Length and Sepal.Width compared to the other two species.

7

```
alexaData <- readxl::read_excel("/cloud/project/RWorksheet_Eusuya#4B/alexa_file.xlsx")
alexaData
```

```
## # A tibble: 3,150 x 5
##    rating date                variation          verified_reviews      feedback
##     <dbl> <dttm>              <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
```

A

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

alexaData$variation <- gsub("White Dot", "WhiteDot", alexaData$variation)
alexaData$variation <- gsub("White Plus", "WhitePlus", alexaData$variation)
alexaData$variation <- gsub("White Show", "WhiteShow", alexaData$variation)
alexaData$variation <- gsub("White Spot", "WhiteSpot", alexaData$variation)
```

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
```

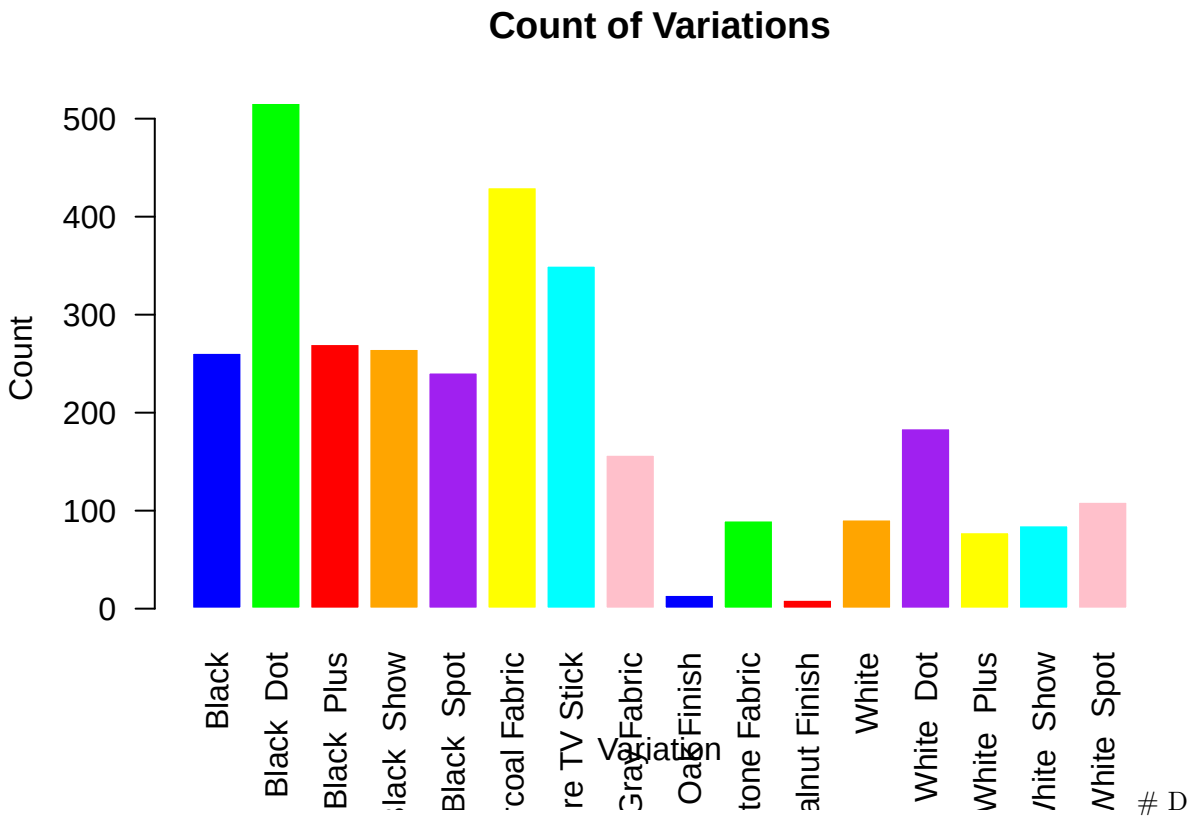
```
variations.RData <- alexaData %>%
                    count(variation)
variations.RData
```

```
## # A tibble: 16 x 2
##    variation                        n
##    <chr>                        <int>
##  1 Black                          261
##  2 Black  Dot                     516
##  3 Black  Plus                    270
##  4 Black  Show                    265
##  5 Black  Spot                    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 White  Dot                    184
## 14 White  Plus                    78
## 15 White  Show                    85
## 16 White  Spot                   109
```

C

```
barplot(variations.RData$n,
        names.arg = variations.RData$variation,
        col = c("blue", "green", "red", "orange", "purple", "yellow", "cyan", "pink"),
        main = "Count of Variations",
        xlab = "Variation",
        ylab = "Count",
        las = 2,
        border = "white")
```



D

```
black_variations <- variations.RData[grepl("Black", variations.RData$variation), ]
white_variations <- variations.RData[grepl("White", variations.RData$variation), ]

par(mfrow = c(1, 2))

barplot(black_variations$n,
        names.arg = black_variations$variation,
        col = "black",
        main = "Black Variations",
        xlab = "Variation",
```

```
        ylab = "Count",
        las = 2,
        border = "white")
barplot(white_variations$n,
        names.arg = white_variations$variation,
        col = "gray",
        main = "White Variations",
        xlab = "Variation",
        ylab = "Count",
        las = 2,
        border = "white")
```