RWorksheet#4b

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```
# 1. 5x5 matrix on vectorA = [1,2,3,4,5] and a 5x5 zero matrix
vectorA <- c(1, 2, 3, 4, 5)
matrix5x5 <- matrix(0, nrow = 5, ncol = 5)
for (i in 1:5) {
  for (j in 1:5) {
    matrix5x5[i, j] <- abs(vectorA[j] - i)
  }
}
matrix5x5
```

```
##      [,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. Printing "*" using a for loop
for (i in 1:5) {
  cat(rep("*", i), "\n")
}
```

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

```
# 3. Fibonacci sequence up to 500 using repeat and break statements
n <- as.integer(readline(prompt = "Enter the starting number for the Fibonacci sequence: "))
```

```
## Enter the starting number for the Fibonacci sequence:
```

```
if (is.na(n) || n < 0) {
  cat("Please enter a valid positive integer.\n")
} else {
  a <- 0
  b <- 1
  repeat {
    if (a >= n) {
```

```
      cat(a, " ")
    }
    temp <- a + b
    a <- b
    b <- temp
    if (a > 500) break
  }
}
```

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

```
# 4. Importing, subsetting, and plotting gender data
library(readxl)

dataset <- read.csv("DATA.csv")

# 4.a
male_subset <- subset(dataset, Gender == "M")
female_subset <- subset(dataset, Gender == "F")

cat("Number of Males:", nrow(male_subset), "\n")
```

```
## Number of Males: 14
```

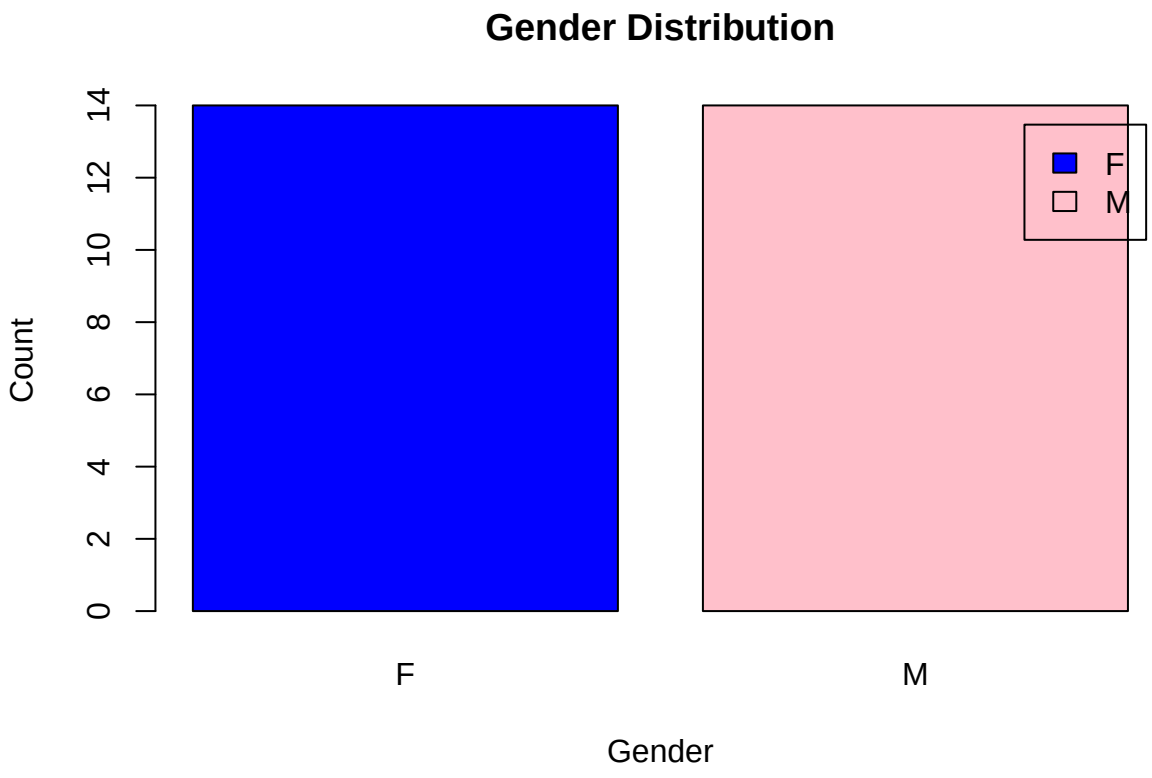
```
cat("Number of Females:", nrow(female_subset), "\n")
```

```
## Number of Females: 14
```

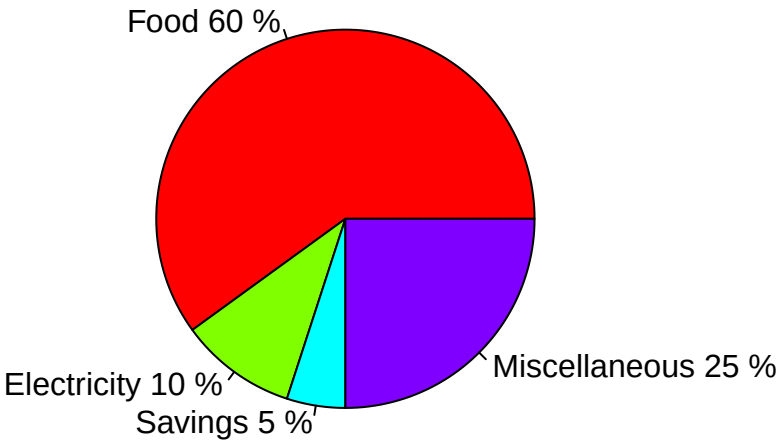
```
# 4.b Plotting the gender data
gender_data <- read.csv("DATA.csv")
str(gender_data)
```

```
## 'data.frame':    28 obs. of  3 variables:
##  $ Shoe.size: num  6.5 9 8.5 8.5 10.5 7 9.5 9 13 7.5 ...
##  $ Height   : num  66 68 64.5 65 70 64 70 71 72 64 ...
##  $ Gender   : chr  "F" "F" "F" "F" ...
```

```
gender_counts <- table(gender_data$Gender)
barplot(gender_counts, main = "Gender Distribution", col = c("blue", "pink"),
        legend = rownames(gender_counts), xlab = "Gender", ylab = "Count")
```




```r
# 5. Pie chart for Dela Cruz family expenses
expenses <- c(60, 10, 5, 25)
labels <- c("Food", "Electricity", "Savings", "Miscellaneous")
pie(expenses, labels = paste(labels, round(expenses / sum(expenses) * 100), "%"),
    col = rainbow(length(expenses)), main = "Dela Cruz Family Monthly Expenses")
```



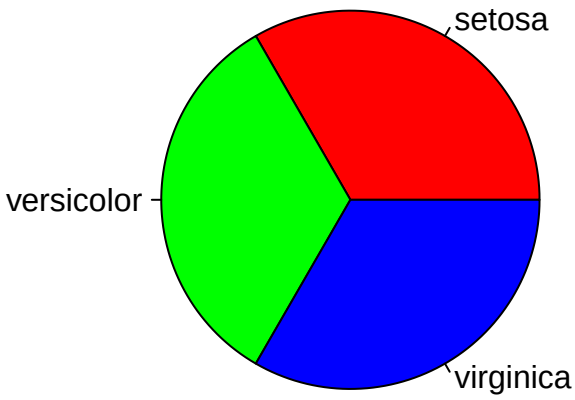

```r
# 6. Using the iris dataset
data(iris)
str(iris)
```

```
## '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 ...
```

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

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

```r
# 6.c Pie chart for species distribution
species_counts <- table(iris$Species)
pie(species_counts, main = "Species Distribution", col = rainbow(length(species_counts)),
    labels = names(species_counts))
```




```r
# 6.d Subsetting the data by species
setosa <- subset(iris, Species == "setosa")
versicolor <- subset(iris, Species == "versicolor")
virginica <- subset(iris, Species == "virginica")

# Display the last six rows of each species
tail(setosa)
```

```
##    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
```

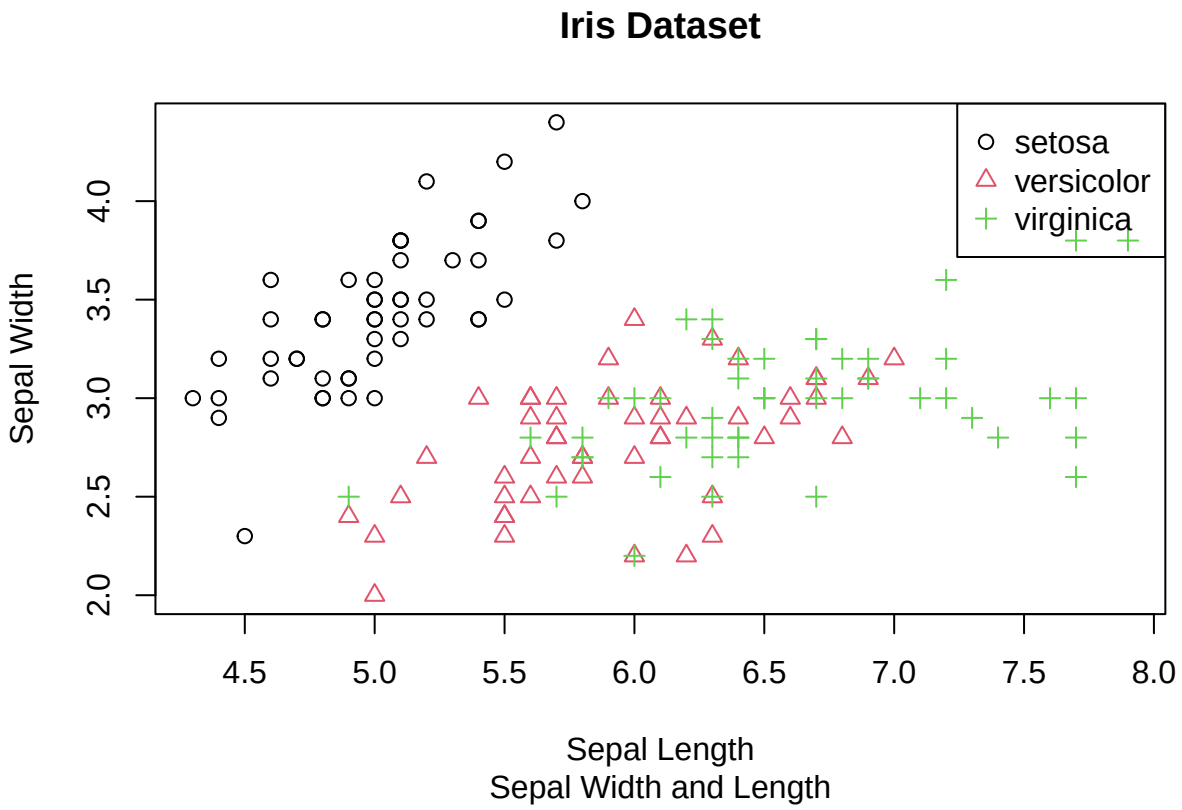
```r
tail(versicolor)
```

```
##     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
```

```r
tail(virginica)
```

```
##     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
```

```r
# 6.e Scatterplot of sepal length vs. sepal width by species
plot(iris$Sepal.Length, iris$Sepal.Width, col = iris$Species,
     pch = as.numeric(iris$Species), main = "Iris Dataset",
     sub = "Sepal Width and Length", xlab = "Sepal Length", ylab = "Sepal Width")
legend("topright", legend = levels(iris$Species), col = 1:3, pch = 1:3)
```




```r
# 6.f
#The scatterplot shows that each species has different sepal sizes. Setosa has short, wide sepals, whil
```

```r
# 7.a Cleaning and renaming variants in the Alexa data
library(readxl)

alexa_data <- read_excel("alexa_file.xlsx")
print(colnames(alexa_data))
```

```
## [1] "rating"           "date"             "variation"        "verified_reviews"
## [5] "feedback"
```

```
str(alexa_data)
```

```
## tibble [3,150 x 5] (S3: tbl_df/tbl/data.frame)
##  $ rating          : num [1:3150] 5 5 4 5 5 5 3 5 5 5 ...
##  $ date            : POSIXct[1:3150], format: "2018-07-31" "2018-07-31" ...
##  $ variation       : chr [1:3150] "Charcoal Fabric" "Charcoal Fabric" "Walnut Finish" "Charcoal Fabri
##  $ verified_reviews: chr [1:3150] "Love my Echo!" "Loved it!" "Sometimes while playing a game, you ca
##  $ feedback        : num [1:3150] 1 1 1 1 1 1 1 1 1 1 ...
```

```
head(alexa_data)
```

```
## # A tibble: 6 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 playi~        1
## 4      5 2018-07-31 00:00:00 Charcoal Fabric     I have had a lot of f~        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 a~        1
```

```
if ("Variant" %in% colnames(alexa_data)) {
  unique_variants <- unique(alexa_data$Variant)
  print(unique_variants)

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

  cleaned_snippet <- head(alexa_data)
  print(cleaned_snippet)
} else {
  warning("Column 'Variant' does not exist in the data frame.")
}
```

```
## Warning: Column 'Variant' does not exist in the data frame.
```