

# RWorksheet\_sayson#4b.Rmd

Adrian T. Sayson

2025-11-24

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

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

```
#3.
a <- 0
b <- 1

cat(a, ", ", sep = "")
```

```
## 0,
```

```
repeat {
  cat(b, ", ", sep = "")
  next_val <- a + b
  a <- b
  b <- next_val

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

```
## 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377,
```

```
fib <- numeric()
a <- 0
b <- 1
while(b <= 500){
  fib <- c(fib, b)
  next_val <- a + b
  a <- b
  b <- next_val
}
cat("Fibonacci numbers up to 500:", paste(fib, collapse = ", "))
```

```
## Fibonacci numbers up to 500: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377
```

```
#4.
shoess <- read.csv("shoe_table.csv")
print(shoess)
```

```
##      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
## 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     10.5  72.0    M
## 25     11.0  69.0    M
## 26      9.0  69.0    M
## 27     13.0  70.0    M
```

```
#a
head(shoess)
```

```
##   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
## 5     10.5   70.0      M
## 6      7.0   64.0      F
```

```
#b
female <- subset(shoess, Gender == "F")
male <- subset(shoess, Gender == "M")
nrow(male)
```

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

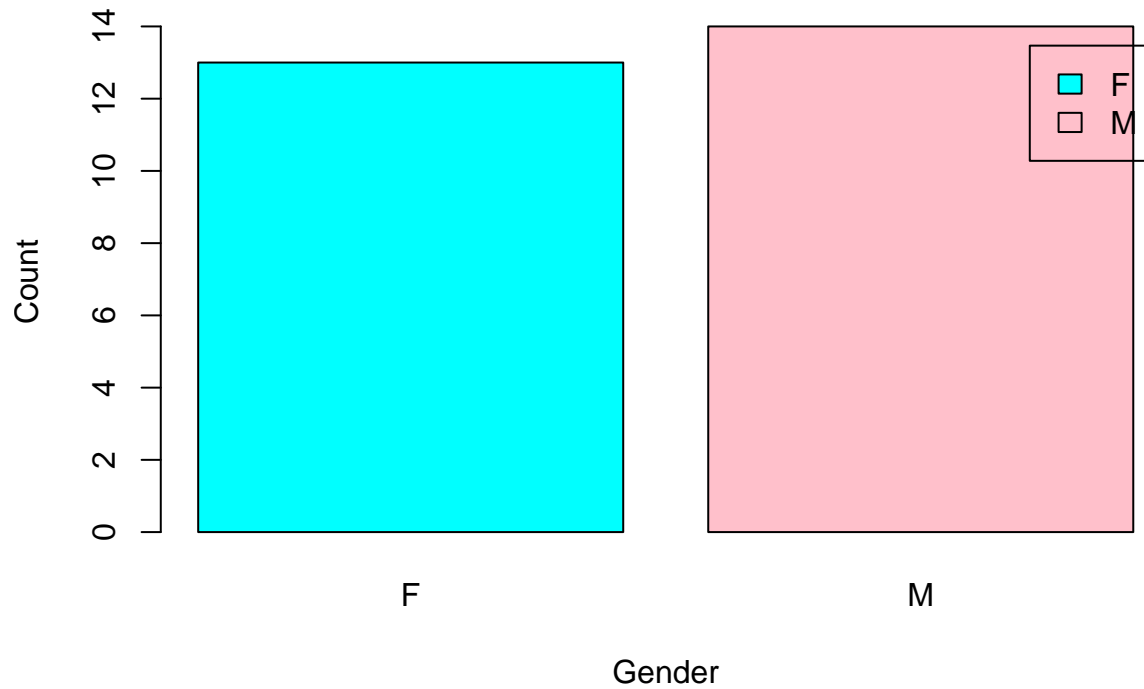
```
nrow(female)
```

```
## [1] 13
```

```
#c
gender_ct <- table(shoess$Gender)

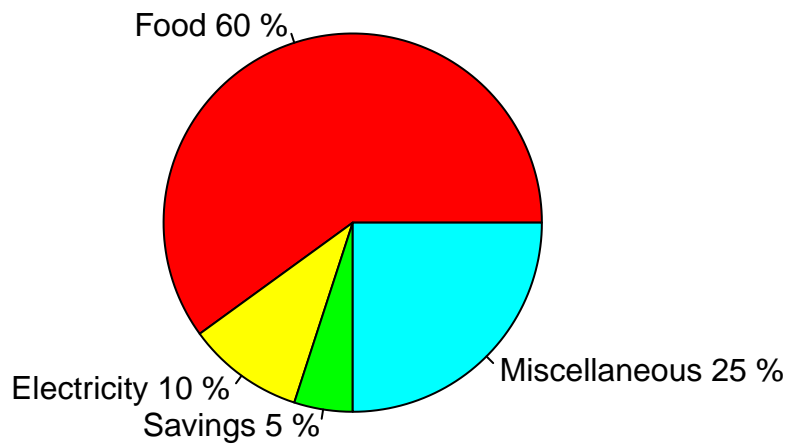
barplot(gender_ct,
        main = "Number of Males and Females",
        xlab = "Gender",
        ylab = "Count",
        col = c("cyan", "pink"),
        legend.text = TRUE)
```

## Number of Males and Females



```
#5
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("red", "yellow", "green", "cyan"),
    main = "Monthly Income Distribution of Dela Cruz Family")
```

## Monthly Income Distribution of Dela Cruz Family



```
#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 ...
```

*#There is 150 rows and 5 columns. The dataset has 3 species of the "Iris" flowers which are then each c*

```
#b
means_iris <- colMeans(iris[, 1:4])

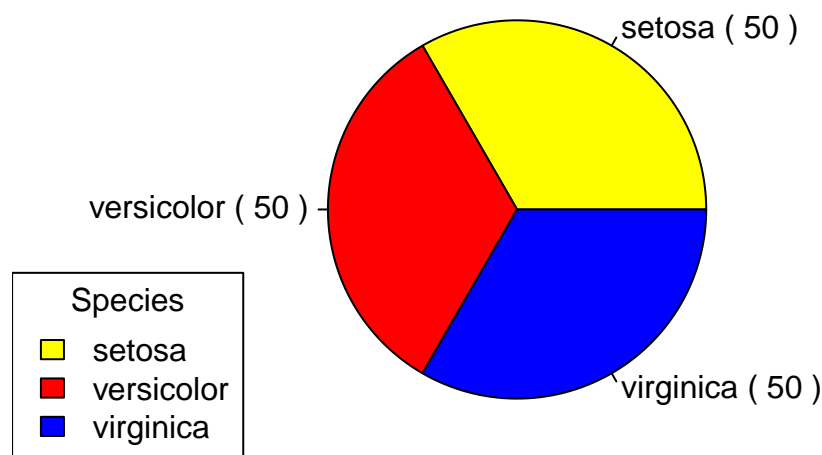
means_iris
```

```
## 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,
    main = "Distribution of Iris Species",
    col = c("yellow", "red", "blue"),
    labels = paste(names(species_count), "(", species_count, ")")
)
legend("bottomleft",
    legend = names(species_count),
    fill = c("yellow", "red", "blue"),
    title = "Species")
```

## Distribution of Iris Species



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

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
```

```
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
```

```
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
```

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

colors <- c("setosa" = "orange",
            "versicolor" = "purple",
            "virginica" = "green")

symbols <- c("setosa" = 16,
             "versicolor" = 17,
             "virginica" = 15)

plot(iris$Sepal.Length, iris$Sepal.Width,
     col = colors[iris$Species],
     pch = symbols[iris$Species],
     main = "Iris Dataset",
     sub = "Sepal Width and Length",
```

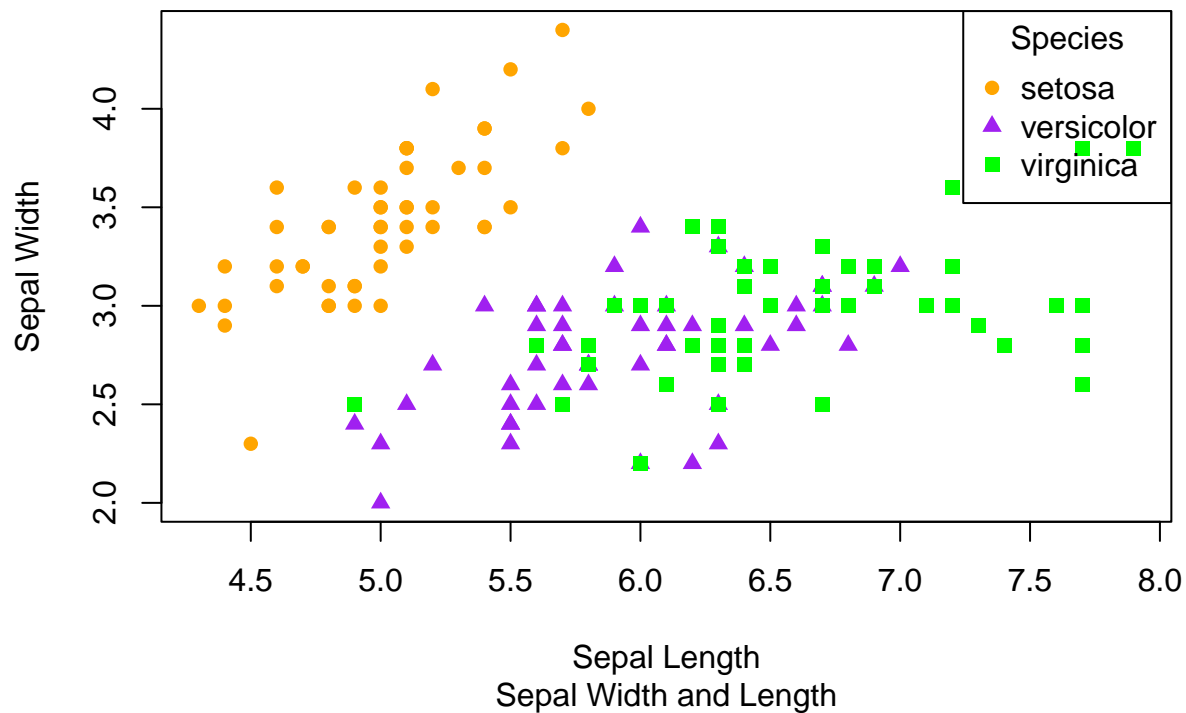
```

xlab = "Sepal Length",
ylab = "Sepal Width")

legend("topright",
      legend = levels(iris$Species),
      col = colors,
      pch = symbols,
      title = "Species")

```

## Iris Dataset



```

#f
#The scatterplot shows that the virginica iris has the overall longest sepal and the setosa iris has th

```

```

#7
library(readxl)

alexa <- read_excel("alexa-file.xlsx")

print(alexa)

```

```

## # A tibble: 5 x 5
##   rating date      variation verified_reviews feedback
##   <dbl> <chr>      <chr>      <chr>          <dbl>
## 1     5 2018-07-30 Black   Dot         Good           1
## 2     5 2018-07-30 Black   Dot         Pretty OK      1
## 3     5 2018-07-30 Black   Dot         Great           1
## 4     5 2018-07-30 White   Dot         Lackluster     1
## 5     5 2018-07-30 White   Plus        NA             1

```

```
#a

alexa$variation <- gsub("\\s+", " ", trimws(alexa$variation))

alexa$variation <- gsub("Black Dot", "Black", alexa$variation)
alexa$variation <- gsub("White Dot", "White", alexa$variation)
alexa$variation <- gsub("White Plus", "White Plus", alexa$variation)

knitr::include_graphics("Iris-PNG-Pic.png")
```



```

#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

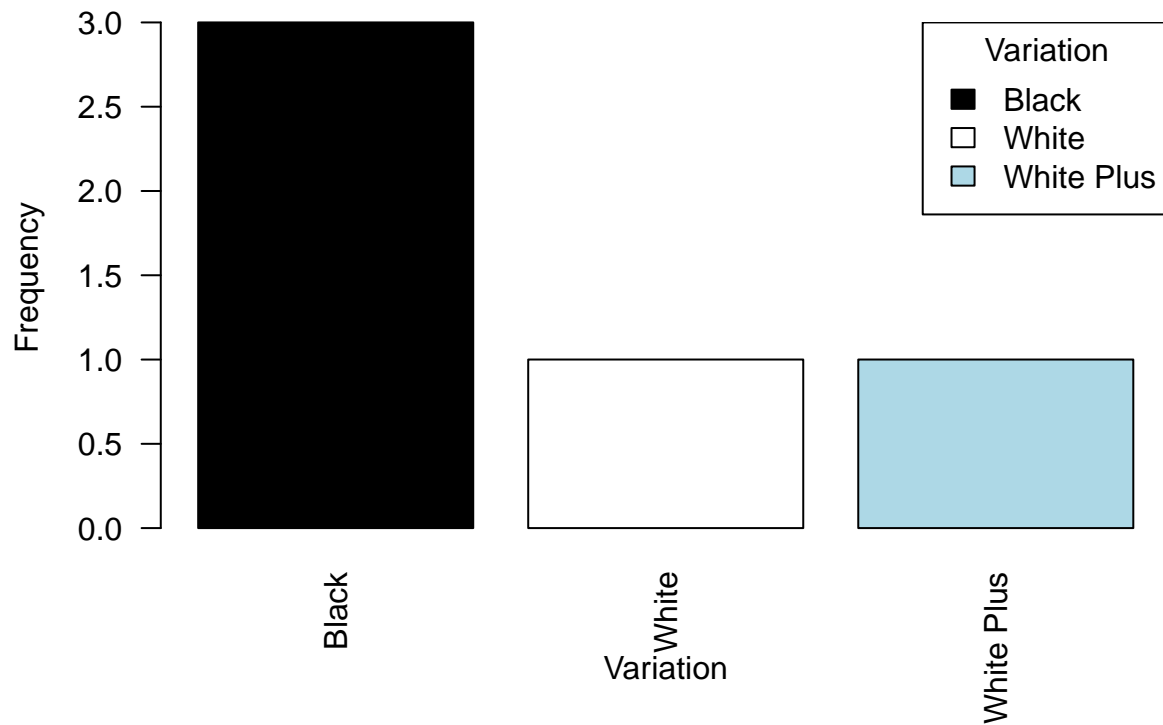
variations <- alexa %>%
count(variation)
save(variations, file = "variations.RData")
variations

## # A tibble: 3 x 2
##   variation      n
##   <chr>      <int>
## 1 Black         3
## 2 White         1
## 3 White Plus    1

#c
colors <- c("Black" = "black", "White" = "white", "White Plus" = "lightblue")
barplot(
  height = variations$n,
  names.arg = variations$variation,
  main = "Count of Alexa Device Variations",
  xlab = "Variation",
  ylab = "Frequency",
  col = colors[variations$variation],
  las = 2
)
legend(
  "topright",
  legend = variations$variation,
  fill = colors[variations$variation],
  title = "Variation"
)

```

## Count of Alexa Device Variations



```
#7

load("variations.RData")

bw <- variations[variations$variation %in% c("Black", "White"), ]

barplot(
  height = bw$n,
  names.arg = bw$variation,
  main = "Comparison of Black and White Variations",
  xlab = "Variation",
  ylab = "Count",
  col = c("black", "white"),
  beside = TRUE
)
legend(
  "topright",
  legend = bw$variation,
  fill = c("black", "white"),
  title = "Variation"
)
```

## Comparison of Black and White Variations

