R Worksheet SALUDO-4b

Your Name

2025-12-23

#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[j] - i)
  }
}

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

```
for (i in 1:5) {
  for (j in 1:i) {
    print("*")
  }
}
```

```
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
## [1] "*"
```

#3

```r
start <- 1   # fixed input value

a <- start
b <- start

repeat {
  cat(a, " ")
  c <- a + b
  a <- b
  b <- c

  if (!is.na(a) && a > 500) {
    break
  }
}
```

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

#4 #a

```r
shoe_data <- read.csv("shoe_sizes.csv")
head(shoe_data)
```

```
##   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

```r
male <- subset(shoe_data, Gender == "Male")
female <- subset(shoe_data, Gender == "Female")

nrow(male)
```

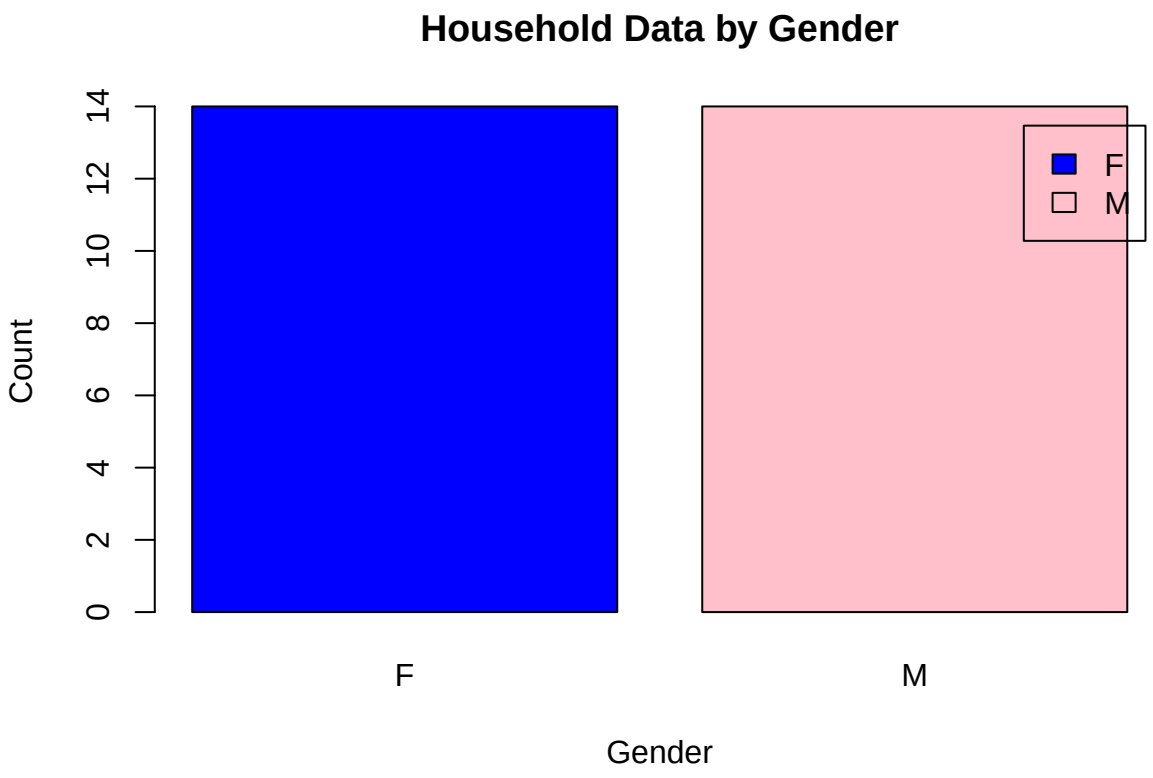
```
## [1] 0
```

```r
nrow(female)
```

```
## [1] 0
```

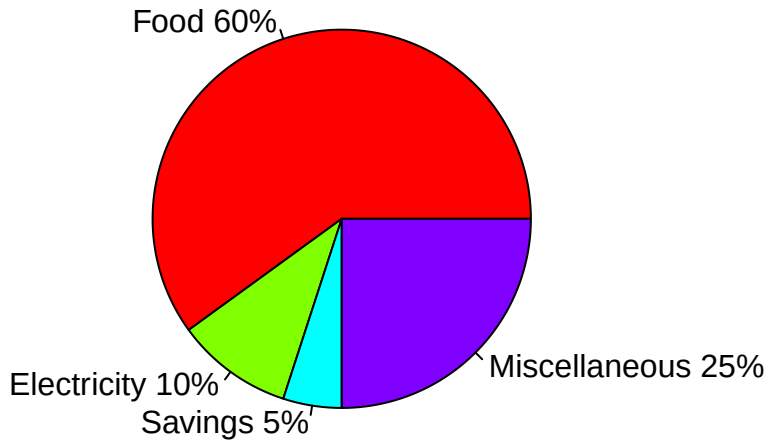
#c

```r
gender_count <- table(shoe_data$Gender)

barplot(
  gender_count,
  col = c("blue", "pink"),
  main = "Household Data by Gender",
  xlab = "Gender",
  ylab = "Count",
  legend = TRUE
)
```



#5

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

pie(
  expenses,
  labels = paste(labels, paste0(expenses, "%")),
  col = rainbow(4),
  main = "Monthly Expenses of Dela Cruz Family"
)
```



#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

```
means <- c(
  mean(iris$Sepal.Length),
  mean(iris$Sepal.Width),
  mean(iris$Petal.Length),
  mean(iris$Petal.Width)
)

means
```

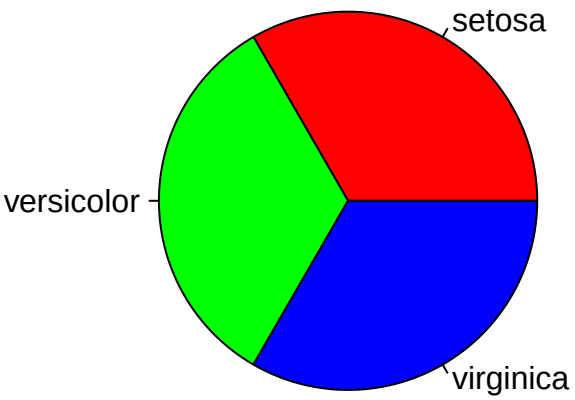
```
## [1] 5.843333 3.057333 3.758000 1.199333
```

#c

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

pie(
  species_count,
  col = c("red", "green", "blue"),
  main = "Species Distribution",
  legend = names(species_count)
)
```

```
## Warning in text.default(1.1 * P$x, 1.1 * P$y, labels[i], xpd = TRUE, adj =
## ifelse(P$x < : "legend" is not a graphical parameter
## Warning in text.default(1.1 * P$x, 1.1 * P$y, labels[i], xpd = TRUE, adj =
## ifelse(P$x < : "legend" is not a graphical parameter
## Warning in text.default(1.1 * P$x, 1.1 * P$y, labels[i], xpd = TRUE, adj =
## ifelse(P$x < : "legend" is not a graphical parameter
```

```
## Warning in title(main = main, ...): "legend" is not a graphical parameter
```



#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)
```

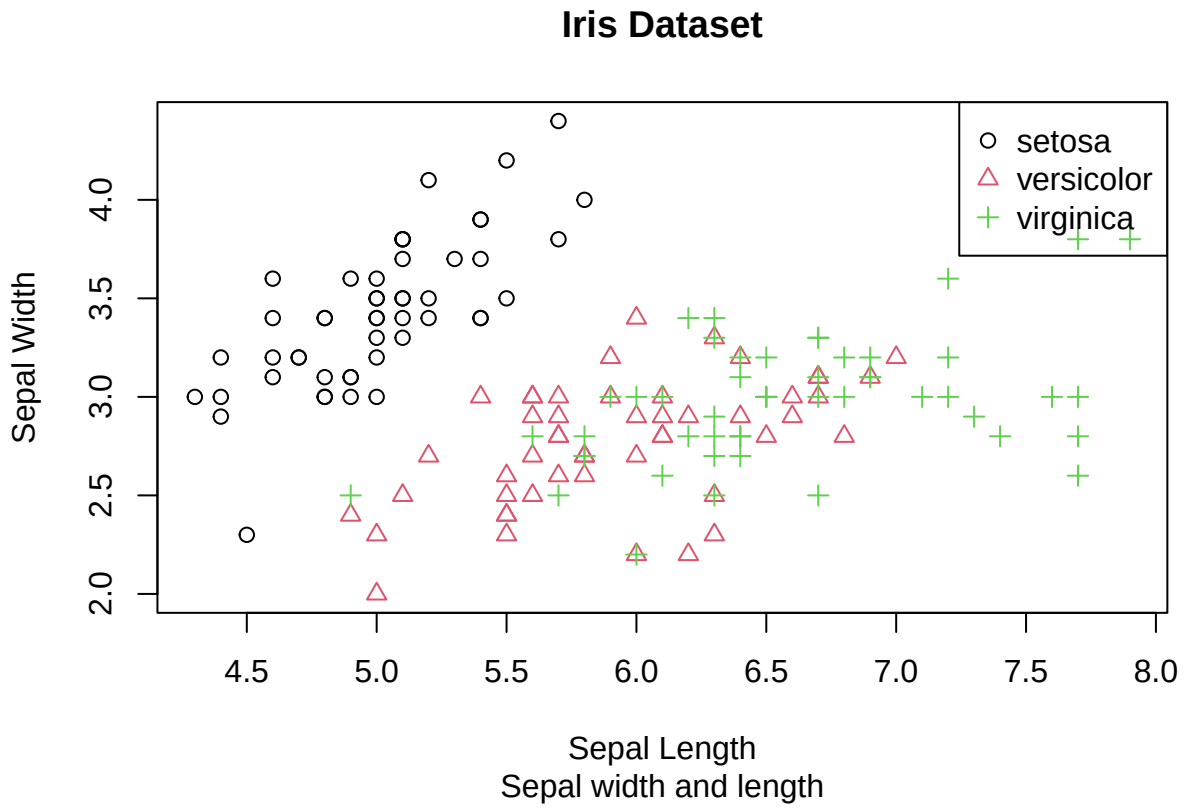
```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 95           5.6         2.7          4.2         1.3 versicolor
## 96           5.7         3.0          4.2         1.2 versicolor
## 97           5.7         2.9          4.2         1.3 versicolor
## 98           6.2         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

```r
iris$Species <- factor(iris$Species)

plot(
  iris$Sepal.Length,
  iris$Sepal.Width,
  col = as.numeric(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
)
```



#7 #a

```r
alexa <- read.csv("shoe_sizes.csv")
head(alexa)
```

```
##   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
```

```
male <- subset(alexa, Gender == "Male")
female <- subset(alexa, Gender == "Female")

cat("Number of males:", nrow(male), "\n")
```

```
## Number of males: 0
```

```
cat("Number of females:", nrow(female), "\n")
```

```
## Number of females: 0
```

#b

```
#7b - Create Variation column and count
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
```

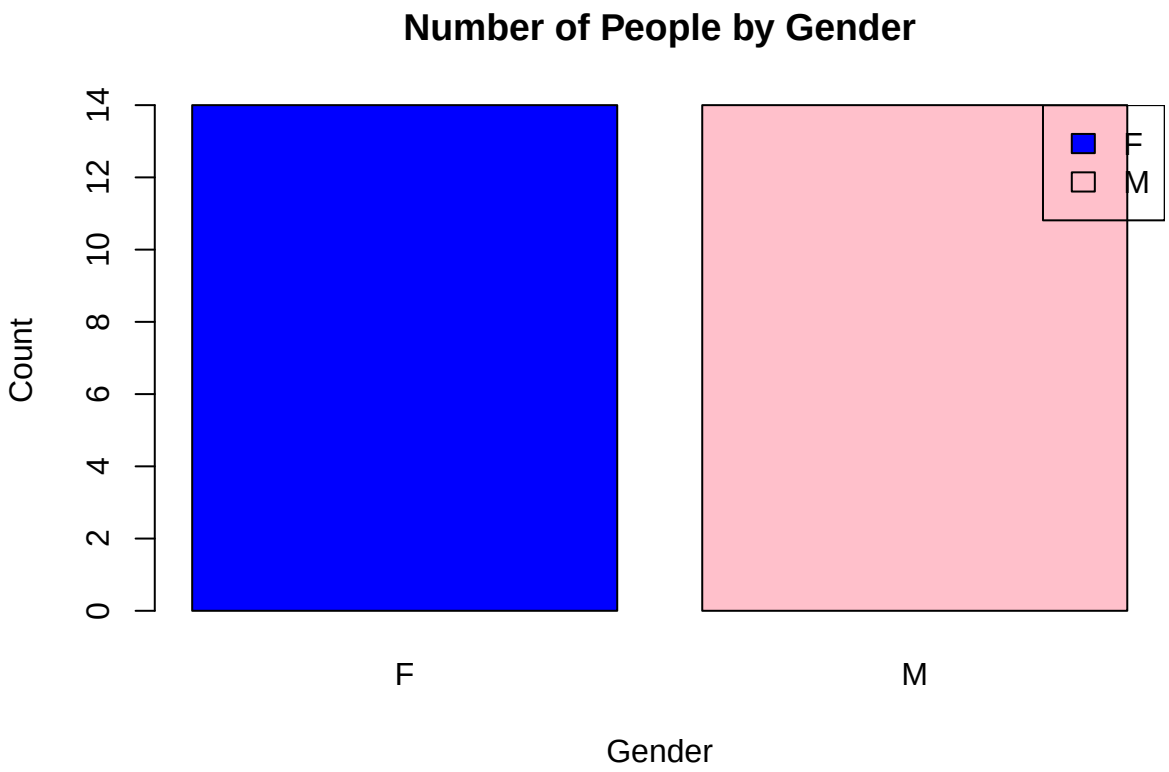
```
# Create a Variation column based on Gender
alexa$Variation <- ifelse(alexa$Gender == "Male", "Black", "White")

# Count the variations
variation_count <- alexa %>%
  count(Variation)

# Save and view
save(variation_count, file = "variations.RData")
variation_count
```

```
##   Variation  n
## 1     White 28
```

#c

```
gender_count <- table(alexa$Gender)

barplot(
  gender_count,
  col = c("blue", "pink"),
  main = "Number of People by Gender",
  xlab = "Gender",
  ylab = "Count"
)

legend(
  "topright",
  legend = names(gender_count),
```

```
  fill = c("blue", "pink")
)
```



#d

```
counts <- tapply(
  variation_count$n,
  variation_count$Variation,
  sum
)

barplot(
  counts,
  col = c("black", "lightgray"),
  main = "Black vs White Variations",
  space = 0.2
)

legend(
  "topright",
  legend = names(counts),
  fill = c("black", "lightgray")
)
```


Black vs White Variations
te
0
5
10
15
20
25
White