

# RWorksheet\_Joven#4a.Rmd

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```
a_shoe_size <- c(6.5, 9, 8.5, 8.5, 10.5, 7, 9.5, 9, 13, 7.5, 10.5, 8.5, 12, 10.5)
a_shoe_size
```

```
## [1] 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
```

```
a_height <- c(66, 68, 64.5, 65, 70, 64, 70, 71, 72, 64, 74.5, 67, 71, 71)
a_height
```

```
## [1] 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
```

```
a_gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M")
a_gender
```

```
## [1] "F" "F" "F" "F" "M" "F" "F" "F" "M" "F" "M" "F" "M" "M"
```

```
houseHold_data <- data.frame(a_shoe_size,a_height,a_gender)
houseHold_data
```

```
##      a_shoe_size a_height a_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
```

```
library(readr)
csv_file <- "HouseHoldData.csv"
write.csv(houseHold_data, file = csv_file)
houseHold_data <- read.csv("HouseHoldData.csv")
houseHold_data
```

```
##      X a_shoe_size a_height a_gender
## 1    1          6.5      66.0        F
## 2    2          9.0      68.0        F
## 3    3          8.5      64.5        F
## 4    4          8.5      65.0        F
## 5    5         10.5      70.0        M
```

```
## 6 6 7.0 64.0 F
## 7 7 9.5 70.0 F
## 8 8 9.0 71.0 F
## 9 9 13.0 72.0 M
## 10 10 7.5 64.0 F
## 11 11 10.5 74.5 M
## 12 12 8.5 67.0 F
## 13 13 12.0 71.0 M
## 14 14 10.5 71.0 M
```

```
df1 <- data.frame(a_shoe_size,a_height,a_gender)
print(df1)
```

```
## a_shoe_size a_height a_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
```

```
b_shoe_size <- c(13, 11.5, 8.5, 5, 5, 10, 6.5, 7.5, 8.5, 10.5, 8.5, 11, 9, 13)
b_height <- c(77, 72, 59, 62, 72, 66, 64, 67, 73, 69, 72, 70, 69, 70)
b_gender <- c("M", "M", "F", "F", "M", "F", "F", "M", "M", "F", "M", "M", "M", "M")
df2 <- data.frame(b_shoe_size,b_height,b_gender)
print(df2)
```

```
## b_shoe_size b_height b_gender
## 1 13.0 77 M
## 2 11.5 72 M
## 3 8.5 59 F
## 4 5.0 62 F
## 5 5.0 72 M
## 6 10.0 66 F
## 7 6.5 64 F
## 8 7.5 67 M
## 9 8.5 73 M
## 10 10.5 69 F
## 11 8.5 72 M
## 12 11.0 70 M
## 13 9.0 69 M
## 14 13.0 70 M
```

```
combined_df <- cbind(df1,df2)
print(combined_df)
```

```
## a_shoe_size a_height a_gender b_shoe_size b_height b_gender
## 1 6.5 66.0 F 13.0 77 M
```

```
## 2      9.0      68.0      F      11.5      72      M
## 3      8.5      64.5      F      8.5      59      F
## 4      8.5      65.0      F      5.0      62      F
## 5     10.5      70.0      M      5.0      72      M
## 6      7.0      64.0      F     10.0      66      F
## 7      9.5      70.0      F      6.5      64      F
## 8      9.0      71.0      F      7.5      67      M
## 9     13.0      72.0      M      8.5      73      M
## 10     7.5      64.0      F     10.5      69      F
## 11     10.5      74.5      M      8.5      72      M
## 12     8.5      67.0      F     11.0      70      M
## 13     12.0      71.0      M      9.0      69      M
## 14     10.5      71.0      M     13.0      70      M
```

```
males_df1 <- subset(df1, a_gender == "M")
females_df1 <- subset(df1, a_gender == "F")
males_df2 <- subset(df2, b_gender == "M")
females_df2 <- subset(df2, b_gender == "F")
print("Males in df1:")
```

```
## [1] "Males in df1:"
```

```
print(males_df1)
```

```
##      a_shoe_size a_height a_gender
## 5           10.5      70.0        M
## 9           13.0      72.0        M
## 11          10.5      74.5        M
## 13          12.0      71.0        M
## 14          10.5      71.0        M
```

```
print("Females in df1:")
```

```
## [1] "Females in df1:"
```

```
print(females_df1)
```

```
##      a_shoe_size a_height a_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
## 6           7.0      64.0        F
## 7           9.5      70.0        F
## 8           9.0      71.0        F
## 10          7.5      64.0        F
## 12          8.5      67.0        F
```

```
print("Males in df2:")
```

```
## [1] "Males in df2:"
```

```
print(males_df2)
```

```
##      b_shoe_size b_height b_gender
## 1           13.0        77        M
## 2           11.5        72        M
## 5            5.0        72        M
```

```
## 8      7.5      67      M
## 9      8.5      73      M
## 11     8.5      72      M
## 12     11.0     70      M
## 13     9.0      69      M
## 14     13.0     70      M
```

```
print("Females in df2:")
```

```
## [1] "Females in df2:"
```

```
print(females_df2)
```

```
##      b_shoe_size b_height b_gender
## 3          8.5      59      F
## 4          5.0      62      F
## 6         10.0      66      F
## 7          6.5      64      F
## 10         10.5      69      F
```

```
mean_shoe_size_df1 <- mean(df1$a_shoe_size)
mean_shoe_size_df1
```

```
## [1] 9.321429
```

```
mean_height_df1 <- mean(df1$a_height)
mean_height_df1
```

```
## [1] 68.42857
```

```
mean_shoe_size_df2 <- mean(df2$b_shoe_size)
mean_shoe_size_df2
```

```
## [1] 9.107143
```

```
mean_height_df2 <- mean(df2$b_height)
mean_height_df2
```

```
## [1] 68.71429
```

```
#2.
```

```
months_vector <-c("March", "April", "January", "November", "January", "September", "October", "September", "November",
                  "February", "May", "August", "July", "December", "August", "August", "September",
                  "November", "February", "April")
```

```
months_vector
```

```
## [1] "March"      "April"      "January"    "November"   "January"    "September"
## [7] "October"    "September"  "November"   "August"     "January"    "November"
## [13] "November"   "February"   "May"        "August"     "July"       "December"
## [19] "August"     "August"     "September"  "November"   "February"   "April"
```

```
#3.
```

```
factor_months_vector <- factor(months_vector)
summary(factor_months_vector)
```

```
##      April      August  December  February   January      July      March      May
##          2          4          1          2          3          1          1          1
## November  October  September
##          5          1          3
```

```

#4.
direction<-c("East","West","North")
direction

## [1] "East" "West" "North"

frequency <-c(1,4,3)
frequency

## [1] 1 4 3

df <- data.frame(Direction = direction, Frequency = frequency)
direction_frequency <- df
new_order_data <- factor(direction_frequency$Direction, levels = c("East", "West", "North"))
print(new_order_data)

## [1] East West North
## Levels: East West North

#5

#6
generate_random_number <- function() {
  return(sample(1:50, 1))
}

user_input <- 20 # Predefined user input

if (user_input < 1 || user_input > 50) {
  print("The number selected is beyond the range of 1 to 50")
} else if (user_input == 20) {
  print("TRUE")
} else {
  print(user_input)
}

## [1] "TRUE"

#7
calculate_bills <- function(price) {
  if (price %% 50 != 0) {
    print("Price must be a multiple of 50.")
    return(NULL)
  }

  bills <- c(1000, 500, 200, 100, 50)
  bill_count <- 0

  for (bill in bills) {
    count <- price %/% bill
    if (count > 0) {
      bill_count <- bill_count + count
      price <- price %% bill
    }
  }

  print(paste("Minimum number of bills needed to purchase:", bill_count))
}

```

```

}

snacks <- c("Juice", "Bread", "Fried Chicken", "Baked Mac", "Carbonara", "Cake", "Lasagna")

# Setting selected_snack to 6 by default (corresponding to "Cake")
selected_snack <- 6
snack_prices <- c(50, 100, 150, 200, 250, 400, 350)

if (selected_snack >= 1 && selected_snack <= length(snacks)) {
  price <- snack_prices[selected_snack]
  calculate_bills(price)
} else {
  print("Invalid selection.")
}

## [1] "Minimum number of bills needed to purchase: 2"

#8

name <- c("Annie", "Thea", "Steve", "Hanna")
name

## [1] "Annie" "Thea" "Steve" "Hanna"

grade1 <-c(85,65,75,95)
grade1

## [1] 85 65 75 95

grade2 <-c(65,75,55,75)
grade2

## [1] 65 75 55 75

grade3 <-c(85,90,80,100)
grade3

## [1] 85 90 80 100

grade4 <-c (100,90,85,90)
grade4

## [1] 100 90 85 90

df <- data.frame(Name = name, Grade1 = grade1, Grade2 = grade2, Grade3 = grade3, Grade4 = grade4)
Name_Grade <- df
print(Name_Grade)

##      Name Grade1 Grade2 Grade3 Grade4
## 1 Annie      85      65      85      100
## 2 Thea       65      75      90      90
## 3 Steve      75      55      80      85
## 4 Hanna      95      75     100      90

#a
#      Name Grade1 Grade2 Grade3 Grade4
#1 Annie      85      65      85      100
#2 Thea       65      75      90      90
#3 Steve      75      55      80      85

```

```

#4 Hanna      95      75      100      90

#b
for (i in 1:nrow(df)) {
  avg <- (df[i, "Grade1"] + df[i, "Grade2"] + df[i, "Grade3"] + df[i, "Grade4"]) / 4
  formatted_output <- paste(df[i, "Name"], "'s average grade this semester is ", sprintf("%.2f", avg),
  print(formatted_output)
}

## [1] "Annie's average grade this semester is 83.75."
## [1] "Thea's average grade this semester is 80.00."
## [1] "Steve's average grade this semester is 73.75."
## [1] "Hanna's average grade this semester is 90.00."

#[1] "Annie's average grade this semester is 83.75."
#[1] "Thea's average grade this semester is 80.00."
#[1] "Steve's average grade this semester is 73.75."
#[1] "Hanna's average grade this semester is 90.00."

#c
avg_grade1 <- sum(grade1) / length(grade1)
avg_grade2 <- sum(grade2) / length(grade2)
avg_grade3 <- sum(grade3) / length(grade3)
avg_grade4 <- sum(grade4) / length(grade4)

lowest_avg <- min(avg_grade1, avg_grade2, avg_grade3, avg_grade4)

if (lowest_avg == avg_grade1) {
  statement <- paste("The 1st test was difficult.")
  print(statement)
} else if (lowest_avg == avg_grade2) {
  statement <- paste("The 2nd test was difficult.")
  print(statement)
} else if (lowest_avg == avg_grade3) {
  statement <- paste("The 3rd test was difficult.")
  print(statement)
} else {
  statement <- paste("The 4th test was difficult.")
  print(statement)
}

## [1] "The 2nd test was difficult."

#[1] "The 2nd test was difficult."

#d
for (i in 1:nrow(df)) {
  highest_grade <- max(df[i, "Grade1"], df[i, "Grade2"], df[i, "Grade3"], df[i, "Grade4"])
  if (highest_grade > 90) {
    statement <- paste(df[i, "Name"], "'s highest grade this semester is", highest_grade, ".")
    print(statement)
  }
}

## [1] "Annie 's highest grade this semester is 100 ."
## [1] "Hanna 's highest grade this semester is 100 ."

```

```
#[1] "Annie 's highest grade this semester is 100 ."  
#[1] "Hanna 's highest grade this semester is 100 ."  
#[1] "Hanna's average grade this semester is 90.0"
```