RWorksheet_Pabriaga#4a

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```r
# 1.
household <- read.table("DataFrame.csv", header = TRUE, sep = ",")
print("Data loaded successfully:")
```

```
## [1] "Data loaded successfully:"
```

```r
print(head(household))
```

```
##   ShoeSize Height Gender  X X.1 X.2
## 1      6.5   66.0      F NA  NA  NA
## 2      9.0   68.0      F NA  NA  NA
## 3      8.5   64.5      F NA  NA  NA
## 4      8.5   65.0      F NA  NA  NA
## 5     10.5   70.0      M NA  NA  NA
## 6      7.0   64.0      F NA  NA  NA
```

```r
str(household)
```

```
## 'data.frame':    28 obs. of  6 variables:
##  $ ShoeSize: 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" ...
##  $ X       : logi  NA NA NA NA NA NA ...
##  $ X.1     : logi  NA NA NA NA NA NA ...
##  $ X.2     : logi  NA NA NA NA NA NA ...
```

```r
# 1.b
male_data <- subset(household, Gender == "M")
female_data <- subset(household, Gender == "F")

male_count <- nrow(male_data)
female_count <- nrow(female_data)

# 1.c
mean_shoe_size <- mean(household$ShoeSize, na.rm = TRUE)
mean_height <- mean(household$Height, na.rm = TRUE)

print(paste("Mean Shoe Size:", mean_shoe_size))
```

```
## [1] "Mean Shoe Size: 9.41071428571429"
```

```r
print(paste("Mean Height:", mean_height))
```

```
## [1] "Mean Height: 68.5714285714286"
```

```
# 1.d
correlation <- cor(household$ShoeSize, household$Height, use = "complete.obs")

print(paste("Correlation between Shoe Size and Height:", correlation))
```

[1] "Correlation between Shoe Size and Height: 0.776608912320131"

```
# 2.

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

factor_months_vector <- factor(months_vector)

print(factor_months_vector)
```

```
##  [1] March     April     January   November  January   September October
##  [8] September November  August    January   November  November  February
## [15] May       August    July      December  August    August    September
## [22] November  February  April
## 11 Levels: April August December February January July March May ... September
```

```
levels(factor_months_vector)
```

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

```
# 3.
factor_months_vector <- factor(months_vector)

summary(months_vector)
```

```
##    Length     Class      Mode
##        24 character character
```

```
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_vector <- c("East", "West", "North")

frequency_vector <- c(1, 4, 3)

factor_data <- factor(direction_vector, levels = c("East", "West", "North"))

print(factor_data)
```

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

```r
new_order_data <- factor(factor_data, levels = c("East", "West", "North"))
print(new_order_data)
```

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

```r
# 5.
data <- read.table("import_march..csv", header = TRUE, sep = ",")
print(data)
```

```
##    Students Strategy.1 Strategy.2 Strategy.3
## 1      Male          8         10          8
## 2                    4          8          6
## 3                    0          6          4
## 4    Female         14          4         15
## 5                   10          2         12
## 6                    6          0          9
```

^

```r
# 6. Full Search
exhaustive_search <- function(chosen_number) {
  if (is.na(chosen_number)) {
    print("Please enter a valid integer.")
  } else if (chosen_number < 1 || chosen_number > 50) {
    print("The number selected is beyond the range of 1 to 50.")
  } else if (chosen_number == 20) {
    print(TRUE)
  } else {
    print(chosen_number)
  }
}
exhaustive_search(20)
```

```
## [1] TRUE
```

```r
# 7. Change
price_input <- as.numeric(readline(prompt = "Enter the price of the snack (divisible by 50): "))
```

```
## Enter the price of the snack (divisible by 50):
```

```r
calculate_minimum_bills <- function(price) {
  if (is.na(price)) {
    cat("Please enter a valid number.\n")
    return()
  }

  if (price %% 50 != 0) {
    cat("Price must be a number divisible by 50.\n")
  } else {
    denominations <- c(1000, 500, 200, 100, 50)

    bill_count <- 0

    for (denom in denominations) {
      if (price >= denom) {
        count <- price %/% denom
```

```r
      bill_count <- bill_count + count
      price <- price - (count * denom)
    }
  }

  if (bill_count > 0) {
    cat("Minimum number of bills needed:", bill_count, "\n")
  } else {
    cat("No bills needed.\n")
  }
}
}

calculate_minimum_bills(price_input)
```

```
## Please enter a valid number.
```

```
## NULL
```

```r
# 8.a
students <- data.frame(
  Name = c("Annie", "Thea", "Steve", "Hanna"),
  Grade1 = c(85, 65, 75, 95),
  Grade2 = c(65, 75, 55, 75),
  Grade3 = c(85, 90, 80, 100),
  Grade4 = c(100, 90, 85, 90)
)
students
```

```
##      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
```

```r
# 8.b
for (i in 1:nrow(students)) {
  avg_score <- (students$Grade1[i] + students$Grade2[i] + students$Grade3[i] + students$Grade4[i]) / 4

  if (avg_score > 90) {
    cat(students$Name[i], "'s average grade this semester is", avg_score, "\n")
  } else {
    cat(students$Name[i], "'s average grade is below 90.\n")
  }
}
```

```
## Annie 's average grade is below 90.
## Thea 's average grade is below 90.
## Steve 's average grade is below 90.
## Hanna 's average grade is below 90.
```

```r
# 8.c
for (test in 2:5) {
  total_score <- 0
  num_students <- nrow(students)

  for (i in 1:num_students) {
```

```r
    total_score <- total_score + students[i, test]
  }

  average_score <- total_score / num_students

  if (average_score < 80) {
    cat("The", test - 1, "test was difficult.\n")
  } else {
    cat("The", test - 1, "test was not difficult.\n")
  }
}
```

```
## The 1 test was not difficult.
## The 2 test was difficult.
## The 3 test was not difficult.
## The 4 test was not difficult.
```

```r
# 8.d
for (i in 1:nrow(students)) {
  highest_score <- 0
  student_name <- students$Name[i]

  for (j in 2:5) {
    if (students[i, j] > highest_score) {
      highest_score <- students[i, j]
    }
  }

  if (highest_score > 90) {
    cat(student_name, "'s highest grade this semester is", highest_score, ".\n")
  }
}
```

```
## Annie 's highest grade this semester is 100 .
## Hanna 's highest grade this semester is 100 .
```