# RWorksheet_Trongoy#4a

George Eduard Trongoy

2024-10-14

1.

```
shoe_data <- data.frame(
  Shoe_Size = c(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),
  Height = c(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),
  Gender = c('F', 'F', 'F', 'F', 'M', 'F', 'F', 'F', 'M', 'F', 'M', 'F', 'M', 'M')
)

extra_data <- data.frame(
  Shoe_Size = c(13.0, 11.5, 8.5, 5.0, 10.0, 6.5, 7.5, 8.5, 10.5, 8.5, 10.5, 11.0, 9.0, 13.0),
  Height = c(77.0, 72.0, 59.0, 62.0, 72.0, 66.0, 64.0, 67.0, 73.0, 69.0, 72.0, 70.0, 69.0, 70.0),
  Gender = c( 'M', 'M','F', 'F', 'M', 'F', 'F', 'M', 'M', 'F', 'M', 'M', 'M', 'M')
)


data <- rbind(shoe_data, extra_data)


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
## 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       8.5   69.0      F
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```
library(xlsx)
write.xlsx(data, "customerdata.xlsx")
```

b.

```
male_data <- subset(data, Gender == 'M')
male_data
```

```
##    Shoe_Size Height 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
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 19      10.0   72.0      M
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```
female_data <- subset(data, Gender == 'F')
female_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
## 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
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 24       8.5   69.0      F
```

c.

```
mean_shoesize <- mean(data$Shoe_Size, na.rm = TRUE)
mean_height <- mean(data$Height, na.rm = TRUE)

mean_shoesize
```

```
## [1] 9.410714
```

```
mean_height
```

```
## [1] 68.57143
```

d. Yes, because taller people tend to have larger shoe sizes.

2.

```
months <- c("March", "April", "January", "November", "January", "September", "October", "September", "N
months
```

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

```
factor_months_vector <- factor(months)
factor_months_vector
```

```
##  [1] March     April     January   November  January   September October   September November  Augus
## [14] February  May       August    July      December  August    August    September November  Febru
## Levels: April August December February January July March May November October September
```

3.

```
summary(months)
```

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

```
summary(factor_months_vector)
```

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

4.

```
Direction <- c("East", "West", "North")
Frequency <- c(1, 4, 3)
directiondata <- data.frame(Direction, Frequency)
directiondata
```

```
##   Direction Frequency
## 1      East         1
## 2      West         4
## 3     North         3
```

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

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

5.

```
data <- read.table("student.csv", header = TRUE, sep = ",", stringsAsFactors = TRUE)
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
```

```
View(data)
```

6.

a.

```
#chosen_number <- as.numeric(readline(prompt = "Select a number from 1 to 50: "))


#if (is.na(chosen_number) || chosen_number < 1 || chosen_number > 50) {
 # cat("The number selected is beyond the range of 1 to 50\n")
#} else if (chosen_number == 20) {
  #cat("TRUE\n")
#} else {
  #cat("The selected number is:", chosen_number, "\n")
#}
```

7.

```
minimum_bills <- function(price) {
  bills <- c(1000, 500, 200, 100, 50)

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

  return(count)
}

repeat {
  price <- as.numeric(readline(prompt = "Enter the price of the snack (divisible by 50): "))

  if (!is.na(price) && price > 0 && price %% 50 == 0) {
    break
  } else {
    cat("Invalid input. Please enter a positive number divisible by 50.\n")
  }
}


cat("Minimum number of bills needed:", minimum_bills(price), "\n")
```

```
## Minimum number of bills needed: 3
```

8.

a.

```
grades <- 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)
)

grades
```

```
##    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.

```
grades$Average <- (grades$Grade1 + grades$Grade2 + grades$Grade3 + grades$Grade4) / 4


for (i in 1:nrow(grades)) {
  if (grades$Average[i] > 90) {
    cat(grades$Name[i], "'s average grade this semester is", round(grades$Average[i], 2), ".\n")
  }
}
```

c.

```
average_test_scores <- c(
  (sum(grades$Grade1) / nrow(grades)),
  (sum(grades$Grade2) / nrow(grades)),
  (sum(grades$Grade3) / nrow(grades)),
  (sum(grades$Grade4) / nrow(grades))
)

for (i in 1:length(average_test_scores)) {
  if (average_test_scores[i] < 80) {
    cat("The", i, "test was difficult.\n")
  }
}
```

```
## The 2 test was difficult.
```

d.

```
for (i in 1:nrow(grades)) {
  highest_score <- grades$Grade1[i]

  if (grades$Grade2[i] > highest_score) {
    highest_score <- grades$Grade2[i]
  }
  if (grades$Grade3[i] > highest_score) {
    highest_score <- grades$Grade3[i]
  }
  if (grades$Grade4[i] > highest_score) {
    highest_score <- grades$Grade4[i]
  }


  if (highest_score > 90) {
```

```
    cat(grades$Name[i], "'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 .
```