RWorksheets_Bagilidad#4a

2023-10-24

```
# 1. The table below shows the data about shoe size and height. Create a data frame.

dataShoes <- 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, 13
                         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
                         Gender = c('F','F','F','F','M','F','F','F','M','F','M','F','M','M', 'M', 'M',
                        )
dataShoes
```

```
##    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
```

```
#a. Describe the data.


#b. Create a subset by males and females with their corresponding shoe size and height.
# What its result? Show the R scripts.


dataShoes_Males <- subset(dataShoes, Gender == 'M')
```

```r
dataShoes_Females <- subset(dataShoes, Gender == 'F')
dataShoes_Males
```

```
##    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
```

```r
dataShoes_Females
```

```
##    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
```

```r
#c.Find the mean of shoe size and height of the respondents. Write the R scripts and its result.

mean_shoe_size <- mean(dataShoes$Shoe_Size)
mean_height <- mean(dataShoes$Height)

# Printing the result
paste("The mean shoe size of the respondents is:", mean_shoe_size)
```

```
## [1] "The mean shoe size of the respondents is: 9.41071428571429"
```

```r
paste("The mean height of the respondents is:", mean_height)
```

```
## [1] "The mean height of the respondents is: 68.5714285714286"
```

```r
#d.Is there a relationship between shoe size and height? Why?

#Shoe size and height have a favorable correlation in terms of their relationship. In other words, some


#2. Construct character vector months to a factor with factor() and assign the result to factor_months_
```

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

```
#3. Then check the summary() of the months_vector and factor_months_vector. | Interpret the results of

summary_months <- summary(months_vector)
summary_factor_months <- summary(factor_months_vector)
summary_months
```

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

```
summary_factor_months
```

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

```
#4.Create a vector and factor for the table below.

direction <- c("East", "West", "North")
frequency <- c(1,4,3)

factor_data <- factor(c(direction,frequency))
factor_data
```

```
## [1] East  West  North 1     4     3
## Levels: 1 3 4 East North West
```

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

```
## [1] East  West  North <NA>  <NA>  <NA>
## Levels: East West North
```

```
#5.

read.table(file = "/cloud/project/RWorksheets#4a/import_march.csv", header = TRUE, sep = ",")
```

```
##   Student 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
reading <- read.csv("import_march.csv")
reading
```

```
##   Student 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.

# Function to check if a number is in a specified range
randomNum <- readline(prompt = "Enter number from 1 to 50: ")
```

```
## Enter number from 1 to 50:
```

```r
#error cannot knit if there is as.numeric
#randomNum <- as.numeric(randomNum)

paste("The number you have chosen is", randomNum)
```

```
## [1] "The number you have chosen is "
```

```r
if (randomNum > 50) {
  paste("The number selected is beyond the range of 1 to 50")
} else if (randomNum == 20) {
  paste("TRUE")
} else {
  paste(randomNum)
}
```

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

```r
#7.
minimumBills <- function(price) {

  min_bills <- price %/% 50
  paste("The minimum no. of bills:", min_bills)
}

minimumBills(900)
```

```
## [1] "The minimum no. of bills: 18"
```

```r
# 8.a

names <- 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)

grade <- data.frame(
  Name = names,
  Grade1 = grade1,
  Grade2 = grade2,
```

```
  Grade3 = grade3,
  Grade4 = grade4
)


# 8.b

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

average_grade <- grade[grade$Average > 90,]
average_grade
```

```
## [1] Name    Grade1  Grade2  Grade3  Grade4  Average
## <0 rows> (or 0-length row.names)
```

```
if (nrow(average_grade) > 0) {
  paste(average_grade$Name, "'s average grade this semester is", average_grade$Average)
} else {
  paste("No students have an average math score over 90.")
}
```

```
## [1] "No students have an average math score over 90."
```

```
# 8.c

first_Test <- sum(grade$Grade1) / nrow(grade)
first_Test
```

```
## [1] 80
```

```
second_Test <- sum(grade$Grade2) / nrow(grade)
second_Test
```

```
## [1] 67.5
```

```
third_Test <- sum(grade$Grade3) / nrow(grade)
third_Test
```

```
## [1] 88.75
```

```
fourth_Test <- sum(grade$Grade4) / nrow(grade)
fourth_Test
```

```
## [1] 91.25
```

```
if (first_Test < 80) {
  paste("The 1st test was difficult.")
} else if(second_Test < 80) {
  paste("The 2nd test was difficult.")
} else if(third_Test < 80) {
  paste("The 3rd test was difficult.")
} else if(fourth_Test < 80) {
  paste("The 4th test was difficult.")
} else {
  paste("No test had an average score less than 80.")
}
```

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

```r
# 8.d
# Annie scores
if (grade[1,2] > grade[1,3] && grade[1,2] > grade[1,4] && grade[1,2] > grade[1,5]) {
  annieHighest <- grade[1,2]
} else if (grade[1,3] > grade[1,4] && grade[1,3] > grade[1,5]) {
  annieHighest <- grade[1,3]
} else if (grade[1,4] > grade[1,5] && grade[1,2] > grade[1,5]) {
  annieHighest <- grade[1,4]
} else {
  annieHighest <- grade[1,5]
}

# Thea scores
if (grade[2,2] > grade[2,3] && grade[2,2] > grade[2,4] && grade[2,2] > grade[2,5]) {
  theaHighest <- grade[2,2]
} else if (grade[2,3] > grade[2,4] && grade[2,3] > grade[2,5]) {
  theaHighest <- grade[2,3]
} else if (grade[2,4] > grade[2,5] && grade[2,2] > grade[2,5]) {
  theaHighest <- grade[2,4]
} else {
  theaHighest <- grade[2,5]
}
# Steve scores
if (grade[3,2] > grade[3,3] && grade[3,2] >grade[3,4] && grade[3,2] > grade[3,5]) {
  steveHighest <- grade[3,2]
} else if (grade[3,3] > grade[3,4] && grade[3,3] >grade[3,5]) {
  steveHighest <- grade[2,3]
} else if (grade[3,4] > grade[3,5] && grade[3,2] > grade[3,5]) {
  steveHighest <- grade[3,4]
} else {
  steveHighest <- grade[3,5]
}

# Hanna scores
if (grade[4,2] > grade[4,3] && grade[4,2] > grade[4,4] && grade[4,2] > grade[4,5]) {
  hannaHighest <- grade[4,2]
} else if (grade[4,3] > grade[4,4] && grade[4,3] > grade[4,5]) {
  hannaHighest <- grade[2,3]
} else if (grade[4,4] > grade[4,5] && grade[4,2] > grade[4,5]) {
  hannaHighest <- grade[4,4]
} else {
  hannaHighest <- grade[4,5]
}

grade$HighestGrades <- c(annieHighest, theaHighest, steveHighest, hannaHighest)

above90 <- grade[grade$HighestGrades > 90,]
above90
```

```
##    Name Grade1 Grade2 Grade3 Grade4 Average HighestGrades
## 1 Annie     85     65     85    100   83.75           100
## 4 Hanna     95     75    100     90   90.00           100
```

```r
if (nrow(above90) > 0) {
  paste(above90$Name, "'s highest grade this semester is", above90$HighestGrade)
} else {
  paste("No students have an average math score over 90.")
}
```

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