RWorksheet_Quebral#4a

Myles Andrei Quebral

2024-10-14

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

```
Shoe_size <- c(6.7,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5)
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")
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)
Height2 <- 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)
Gender2 <- c("M","M","F","F","M","F","F","M","M","F","M","M","M","M")

housedata <- data.frame(Shoe_size,Height,Gender,Shoe.size,Height2,Gender2)
print(housedata)
```

```
##    Shoe_size Height Gender Shoe.size Height2 Gender2
## 1        6.7   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      10.0      72       M
## 6        7.0   64.0      F       6.5      66       F
## 7        9.5   70.0      F       7.5      64       F
## 8        9.0   71.0      F       8.5      67       M
## 9       13.0   72.0      M      10.5      73       M
## 10       7.5   64.0      F       8.5      69       F
## 11      10.5   74.5      M      10.5      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
```

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

```
male_subdata <- subset(housedata , Gender == "M")
male_subdata
```

```
##    Shoe_size Height Gender Shoe.size Height2 Gender2
## 5       10.5   70.0      M      10.0      72       M
## 9       13.0   72.0      M      10.5      73       M
## 11      10.5   74.5      M      10.5      72       M
## 13      12.0   71.0      M       9.0      69       M
## 14      10.5   71.0      M      13.0      70       M
```

```
female_subdata <- subset(housedata , Gender == "F")
female_subdata
```

```
##    Shoe_size Height Gender Shoe.size Height2 Gender2
```

```
## 1        6.7   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
## 6        7.0   64.0      F       6.5      66       F
## 7        9.5   70.0      F       7.5      64       F
## 8        9.0   71.0      F       8.5      67       M
## 10       7.5   64.0      F       8.5      69       F
## 12       8.5   67.0      F      11.0      70       M
```

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

```
mean_shoesize <- mean(housedata$Shoe_size)
mean_shoesize
```

```
## [1] 9.335714
```

```
mean_height <- mean(housedata$Height)
mean_height
```

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

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

#2. Construct character vector months to a factor with factor() and assign the result tofactor_months_vector. Print out factor_months_vector and assert that R prints out the factor levels below the actual values.

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

#Then check the summary() of the months_vector and factor_months_vector. | Inter-pret the results of both vectors. Are they both equally useful in this case?

```
summary(months)
```

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

```
direction <- c("East","West","North")
frequency <- c(1,4,3)
factor_data <- factor(direction, levels = c("East", "West", "North"))
factor_data
```

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

#5. Enter the data below in Excel with file name = import_march.csv

```
setwd("/cloud/project")
import_march <- read.csv("import_march.csv")
import_march
```

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

#a. Import the excel file into the Environment Pane using read.table() function. Write the code.

```
setwd("/cloud/project")
read_table <- read.table("import_march.csv", header = TRUE, sep = ",")
read_table
```

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

#b. View the dataset. Write the R scripts and its result.

```
head(import_march)
```

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

#a. Create an R Program that allows the User to randomly select numbers from 1 to 50. Then display the chosen number. If the number is beyond the range of the selected choice, it will have to display a string "The number selected is beyond the range of 1 to 50". If number 20 is inputted by the User, it will have to display "TRUE", otherwise display the input number.

```
readnum <- readline(prompt="Enter number:")
```

```
## Enter number:
```

```
if (readnum < 50 && !20) {
  print(readnum)
} else if (readnum == 20) {
  print("TRUE")
} else {
```

```
  print("Number is beyond the range of the selected choice")
}
```

```
## [1] "Number is beyond the range of the selected choice"
```

#At ISATU University's traditional cafeteria, snacks can only be purchased with bills. A long-standing rule at the concession stand is that snacks must be purchased with as few coins as possible. There are three types of bills: 50 pesos, 100 pesos, 200 pesos, 500 pesos, 1000 pesos. a. Write a function that prints the minimum number of bills that must be paid, given the price of the snack. #Input: Price of snack (a random number divisible by 50) Output: Minimum number of bills needed to purchase a snack.

```
readprice <- 120
if(readprice<=50){
  print(" 50 peso bills needed to purchase a snack.")
  }else if (readprice <=100 && readprice >= 50){
    print(" 100 peso bills needed to purchase a snack.")
  }else if (readprice <= 200 && readprice >=100){
  print(" 200 peso bills needed to purchase a snack.")
}else if (readprice <= 500 && readprice >= 200){
  print(" 500 peso bills needed to purchase a snack.")
}else if (readprice <= 1000 && readprice >= 500){
  print(" 1000 peso bills needed to purchase a snack.")
  }
```

```
## [1] " 200 peso bills needed to purchase a snack."
```

#8. The following is each student's math score for one semester. Based on this, answer the following questions. # a. Create a dataframe from the above table. Write the R codes and its output.

```
Name <- c("Annie","Thea","Steve","Hanna")
Grade1 <-c(85,65,85,100)
Grade2 <-c(65,75,55,75)
Grade3 <-c(85,90,80,100)
Grade4 <-c(100,90,85,90)
df <- data.frame(Name,Grade1,Grade2,Grade3,Grade4)
df
```

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

#b. Without using the rowMean function, output the average score of students whose average math score over 90 points during the semester. write R code and its output. Example Output: Annie's average grade this semester is 88.75.

```
Annie <- "Annie"
Thea <- "Thea"
Steve <- "Steve"
Hannah <- "Hannah"
readave <- readline(prompt="Select Student ")
```

```
## Select Student
```

```
if(readave == Annie){
  x <-(85+65+85+100)/4
  paste("Annie's average grade this semester is" ,x)
```

```
}else if(readave == Thea){
  y <- (65+75+90+75)/4
  paste("Thea's average grade this semester is" ,y)
}else if(readave == Steve){
  a <- (85+55+80+85)/4
  paste("Steve's average grade this semester is" ,a)
}else if (readave == Hannah){
  b <- (100+75+100+90)/4
  paste("Hannah's average grade this semester is" ,b)
}else{
  print("Check the name spelling")
}
```

```
## [1] "Check the name spelling"
```

#c. Without using the mean function, output as follows for the tests in which the average score was less than 80 out of 4 tests.Example output: The nth test was difficualt.

```
sum_test1 <- sum(df$Grade1)
sum_test2 <- sum(df$Grade2)
sum_test3 <-sum(df$Grade3)
sum_test4 <- sum(df$Grade4)

# Calculate the number of students
num_students <- length(Name)

# Calculate the averages manually
average_test1 <- sum_test1 / num_students
average_test2 <- sum_test2 / num_students
average_test3 <- sum_test3 / num_students
average_test4 <- sum_test4 / num_students

# Check if averages are less than 80 and output the result
if (average_test1 < 80) {
  print("The 1st test was difficult.")
}
if (average_test2 < 80) {
  print("The 2nd test was difficult.")
}
```

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

```
if (average_test3 < 80) {
  print("The 3rd test was difficult.")
}
if (average_test4 < 80) {
  print("The 4th test was difficult.")
}
```

#d. Without using the max function, output as follows for students whose highest score for a semester exceeds 90 points Example Output: Annie's highest grade this semester is 95.

```
hi_grade <- Grade1[1]
if (Grade2[1] > hi_grade) {
  hi_grade <- Grade2[1]
}
```

```r
if (Grade3[1] > hi_grade) {
  hi_grade <- Grade3[1]
}
if (Grade4[1] > hi_grade) {
  hi_grade <- Grade4[1]
}
if (hi_grade >= 90) {
  cat("Annie's highest grade this semester is", hi_grade, "\n")
}
```

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

```r
high_grade <- Grade1[2]
if (Grade2[2] > high_grade) {
  high_grade <- Grade2[2]
}
if (Grade3[2] > high_grade) {
  high_grade <- Grade3[2]
}
if (Grade4[2] > high_grade) {
  high_grade <- Grade4[2]
}
if (high_grade >= 90) {
  cat("Thea's highest grade this semester is", high_grade, "\n")
}
```

```
## Thea's highest grade this semester is 90
```

```r
h_grade <- Grade1[3]
if (Grade2[3] > h_grade) {
  h_grade <- Grade2[3]
}
if (Grade3[3] > h_grade) {
  h_grade <- Grade3[3]
}
if (Grade4[3] > h_grade) {
  h_grade <- Grade4[3]
}
if (h_grade >= 90) {
  cat("Steve's highest grade this semester is", h_grade, "\n")
}

grade_high <- Grade1[4]
if (Grade2[4] > grade_high) {
  grade_high <- Grade2[4]
}
if (Grade3[4] > grade_high) {
  grade_high <- Grade3[4]
}
if (Grade4[4] > grade_high) {
  grade_high <- Grade4[4]
}
if (grade_high >= 90) {
  cat("Hanna's highest grade this semester is", grade_high, "\n")
}
```

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