RWorksheet#4a_Parrenas

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2023-10-25

```
#1 The table below shows the data about shoe size and height. Create a data frame
shoeSizes <- 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 ,13.0 ,11.58

  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 ,77.0 ,

  gender = c('F' ,'F' ,'F' ,'F' ,'M' ,'F' ,'F' ,'F' ,'M' ,'F' ,'M' ,'F' ,'M' ,'M' ,'M' ,'M' ,'F' ,'F' ,
)

file <- "shoeSizes.csv"
file.exists(file)
```

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

```
#a. Describe the data
#The data is about the shoe sizes, the height, and the gender of the household.
  summary(shoeSizes)
```

```
##    shoe_Size          height         gender
##  Min.   : 5.000   Min.   :59.00   Length:28
##  1st Qu.: 8.475   1st Qu.:65.75   Class :character
##  Median : 9.000   Median :69.50   Mode  :character
##  Mean   : 9.410   Mean   :68.57
##  3rd Qu.:10.500   3rd Qu.:71.25
##  Max.   :13.000   Max.   :77.00
```

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

  male_subset <- subset(shoeSizes, gender =="M",select = c(shoe_Size,height))

   female_subset <- subset(shoeSizes, gender =="F",select = c(shoe_Size,height))

   print(male_subset)
```

```
##    shoe_Size height
## 5      10.50   70.0
## 9      13.00   72.0
## 11     10.50   74.5
## 13     12.00   71.0
## 14     10.50   71.0
## 15     13.00   77.0
## 16     11.58   72.0
## 19     10.00   72.0
## 22      8.50   67.0
```

```
## 23     10.50   73.0
## 25     10.50   72.0
## 26     11.00   70.0
## 27      9.00   69.0
## 28     13.00   70.0
```

```
   print(female_subset)
```

```
##    shoe_Size height
## 1        6.5   66.0
## 2        9.0   68.0
## 3        8.5   64.5
## 4        8.5   65.0
## 6        7.0   64.0
## 7        9.5   70.0
## 8        9.0   71.0
## 10       7.5   64.0
## 12       8.5   67.0
## 17       8.4   59.0
## 18       5.0   62.0
## 20       6.5   66.0
## 21       7.5   64.0
## 24       8.5   69.0
```

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

  mean_shoeSize <- mean(shoeSizes$shoe_Size)
  mean_height <- mean(shoeSizes$height)

  cat(mean_shoeSize)
```

```
## 9.41
```

```
  cat(mean_height)
```

```
## 68.57143
```

```
#d. Is there a relationship between shoe size and height? Why?
# yes, because shoe size generally is proportional to height

#Factors

Gender <- c("M","F","F","M")
factor_Gender <- factor(Gender)
factor_Gender
```

```
## [1] M F F M
## Levels: F M
```

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

Months <- 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 <- factor(Months)
factor_Months
```

```
##  [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. | Inter-pret the results of
  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_vector <- c("East","West","North")
frequency_vector <- c(1,4,3)

new_order_data <- factor(direction_vector,levels = c("East","West","North"), c(1,4,3))
print(new_order_data)
```

```
## [1] 1 4 3
## Levels: 1 4 3
```

```
#5 Enter the data below in Excel with file name = import_march.csv
#a. Import the excel file into the Environment Pane using read.table() function. Write the code.
```

```
#Using Conditional Statements (IF-ELSE)
#6 Full Search
#a. Create an R Program that allows the User to randomly select numbers from 1 to 50.Then display the c

 num <- readline(prompt= "Enter number from 1 to 50:")
```

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

```
  paste("Your entered number is ", num)
```

```
## [1] "Your entered number is  "
```

```
  if(num == 20) {
      paste("The number you selected is beyond the range of 1 to 50")
    } else if (num <= 50){
      paste("TRUE")
    } else {
      paste(num)
    }
```

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

```
#7. Change
#a Write a function that prints the minimum number of bills that must be paid, given the price of the s

minimum <- function (price) {
    bill <- price%/% 50
    paste("The  minimum number of bills:", bill)
    }
     snackprice <- 250
     minimum(snackprice)
```

```
## [1] "The  minimum number of bills: 5"
```

```
#8 The following is each student's math score for one semester. Based on this, answer the following que
#a Create a dataframe from the above table. Write the R codes and its output.
math_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)
)
print(math_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 Without using the rowMean function, output the average score of students whose average math score ov
math_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)
     )
     print(math_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
```

```
  top <- math_grades[math_grades$average >= 90,]
  top
```

```
## [1] name   grade1 grade2 grade3 grade4
## <0 rows> (or 0-length row.names)
```

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

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

```
#c Without using the mean function, output as follows for the tests in which the average score was less

test1 <- sum(math_grades$grade1) / nrow(math_grades)
test1
```

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

```
test2 <- sum(math_grades$grade2) / nrow(math_grades)
test2
```

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

```
test3 <- sum(math_grades$grade3) / nrow(math_grades)
test3
```

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

```
test4 <- sum(math_grades$grade4) / nrow(math_grades)
test4
```

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

```
  if (test1 < 80) {
       paste("The 1st test was difficult")
     } else if (test2 < 80) {
       paste("The 2nd test was difficult")
     } else if (test3 < 80) {
       paste("The 3rd test was difficult")
     } else if (test4 < 80) {
       paste("The 4th test was difficult")
     } else { paste("No test had an average grade less than 80")
     }
```

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

```
#d Without using the max function, output as follows for students whose highest score for a semester ex

 # annie scores
if (math_grades[1,2] > math_grades[1,3] && math_grades[1,2] > math_grades[1,4] && math_grades[1,2] > ma
  annie <- math_grades[1,2]
} else if (math_grades[1,3] > math_grades[1,4] && math_grades[1,3] > math_grades[1,5]) {
  annie <- math_grades[1,3]
} else if (math_grades[1,4] > math_grades[1,5] && math_grades[1,2] > math_grades[1,5]) {
  annie <- math_grades[1,4]
} else {
  annie <- math_grades[1,5]
}
# thea scores
if (math_grades[2,2] > math_grades[2,3] && math_grades[2,2] > math_grades[2,4] && math_grades[2,2] > ma
  thea <- math_grades[2,2]
} else if (math_grades[2,3] > math_grades[2,4] && math_grades[2,3] > math_grades[2,5]) {
  thea <- math_grades[2,3]
} else if (math_grades[2,4] > math_grades[2,5] && math_grades[2,2] > math_grades[2,5]) {
  thea <- math_grades[2,4]
} else {
  thea <- math_grades[2,5]
}
# steve scores
if (math_grades[3,2] > math_grades[3,3] && math_grades[3,2] > math_grades[3,4] && math_grades[3,2] > ma
  steve <- math_grades[3,2]
} else if (math_grades[3,3] > math_grades[3,4] && math_grades[3,3] > math_grades[3,5]) {
  steve <- math_grades[3,3]
} else if (math_grades[3,4] > math_grades[3,5] && math_grades[3,2] > math_grades[3,5]) {
  steve <- math_grades[3,4]
```

```
} else {
  steve <- math_grades[3,5]}
# hanna scores
if (math_grades[4,2] > math_grades[4,3] && math_grades[4,2] > math_grades[4,4] && math_grades[4,2] > ma
  hanna <- math_grades[4,2]
} else if (math_grades[4,3] > math_grades[4,4] && math_grades[4,3] > math_grades[4,5]) {
  hanna <- math_grades[4,3]
} else if (math_grades[4,4] > math_grades[4,5] && math_grades[4,2] > math_grades[4,5]) {
  hanna <- math_grades[4,4]
} else {
  hanna <- math_grades[4,5]
}

math_grades$highest <- c(annie, thea, steve, hanna)


above_grade_of90 <- math_grades[math_grades$highest >= 90,]


if (nrow(above_grade_of90) > 0) {
  paste(above_grade_of90$name, "'s highest grade this semester is", above_grade_of90$highest)
} else {
paste("No students have an average math score over 90.")
}
```

```
## [1] "Annie 's highest grade this semester is 100"
## [2] "Thea 's highest grade this semester is 90"
## [3] "Hanna 's highest grade this semester is 100"
```