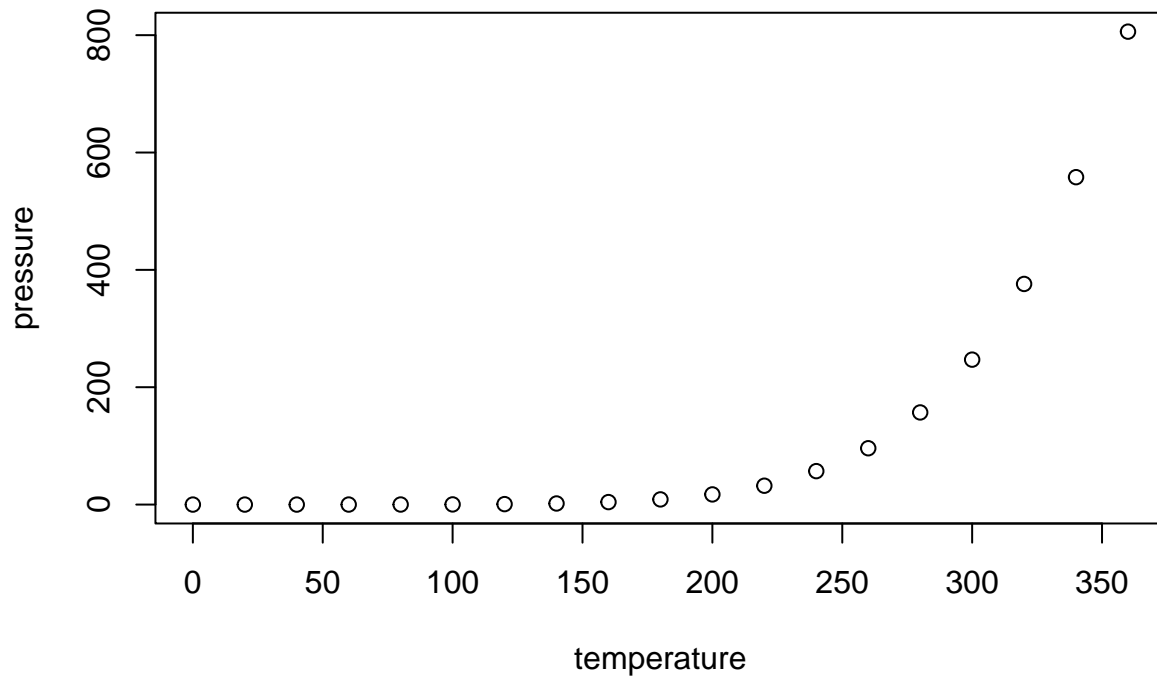


Rworksheet_loredo#4a.Rmd

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#1. The table below shows the data about shoe size and height. Create a 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, 11.5,  
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, 77.0,  
gender <- c("F","F","F","F","M","F","F","F","M","F","M","F","M","M","M","M","F","F","M","F","F","M","")
```

```
# Create a data frame
```

```
data <- data.frame(ShoeSize = shoe_size, Height = height, Gender = gender)
```

#a. Describe the data.

```
summary(data)
```

##	ShoeSize	Height	Gender
##	Min. : 5.000	Min. :59.00	Length:28
##	1st Qu.: 8.500	1st Qu.:65.75	Class :character
##	Median : 9.000	Median :69.50	Mode :character
##	Mean : 9.411	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? Show the R scripts.

```
males <- data[data$Gender == "M", c("Gender", "ShoeSize", "Height")]
females <- data[data$Gender == "F", c("Gender", "ShoeSize", "Height")]
```

```
males
```

```
##      Gender ShoeSize Height
## 5      M      10.5    70.0
## 9      M      13.0    72.0
## 11     M      10.5    74.5
## 13     M      12.0    71.0
## 14     M      10.5    71.0
## 15     M      13.0    77.0
## 16     M      11.5    72.0
## 19     M      10.0    72.0
## 22     M       8.5    67.0
## 23     M      10.5    73.0
## 25     M      10.5    72.0
## 26     M      11.0    70.0
## 27     M       9.0    69.0
## 28     M      13.0    70.0
```

```
females
```

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

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

```
mean_shoe_size <- mean(data$ShoeSize)
mean_height <- mean(data$Height)
```

```
mean_shoe_size
```

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

```
mean_height
```

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

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

#No, Both shoe size and height can change over a person's lifetime.

```
correlation <- cor(data$ShoeSize, data$Height)
correlation
```

```
## [1] 0.7766089
```

#2. Create a character vector of months

```
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_vector <- factor(months)
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 summary

```
# character vector
#for numerical analysis
summary(months)
```

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

```
# the factor
# for categorical analysis
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

```
direction_vector <- c("north", "east", "west")
frequency_vector <- c(1, 4, 3)
factor_data <- factor(direction_vector, levels = c("east", "west", "north"), c(1, 4, 3))
print(factor_data)
```

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

#5. A Import the excel

```
library(readr)
import_march <- read_csv("import_march.csv")
```

```
## Rows: 6 Columns: 4
## -- Column specification -----
## Delimiter: ","
## chr (1): Students
## dbl (3): Strategy 1, Strategy 2, Strategy 3
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

#5. B View the dataset

```
head(import_march)
```

```
## # A tibble: 6 x 4
##   Students `Strategy 1` `Strategy 2` `Strategy 3`
##   <chr>      <dbl>      <dbl>      <dbl>
## 1 Male          8          10          8
## 2 <NA>          4           8           6
## 3 <NA>          0           6           4
## 4 Female       14           4          15
## 5 <NA>         10           2          12
## 6 <NA>          6           0           9
```

#6. Full Search

```
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 == 50) {
  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

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

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

#8A. Create a dataframe

```
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)
mathgrades <- data.frame(name, grade1, grade2, grade3, grade4)
print(mathgrades)
```

```
##   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
```

#8B. the average score of students whose average math score over 90 points during the semester.

```
mathgrades <- 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(mathgrades)
```

```
##   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
```

```
mathgrades$average <- (mathgrades$grade1 + mathgrades$grade2 + mathgrades$grade3 + mathgrades$grade4) / 4
top <- mathgrades[mathgrades$average >= 90,]
top
```

```
##   name grade1 grade2 grade3 grade4 average
## 4 Hanna     95     75    100     90      90
```

```
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] "Hanna 's average grade this semester is 90"
```

#8C. the average score was less than 80 out of 4 tests.

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

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

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

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

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

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

```
test4 <- sum(mathgrades$grade4) / nrow(mathgrades)
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"
```

```
#8D.students whose highest score for a semester exceeds 90 points.
```

```
#annie scores
```

```

if (mathgrades[1,2] > mathgrades[1,3] && mathgrades[1,2] > mathgrades[1,4] && mathgrades[1,2] > mathgrades[1,5]) {
  annie <- mathgrades[1,2]
} else if (mathgrades[1,3] > mathgrades[1,4] && mathgrades[1,3] > mathgrades[1,5]) {
  annie <- mathgrades[1,3]
} else if (mathgrades[1,4] > mathgrades[1,5] && mathgrades[1,2] > mathgrades[1,5]) {
  annie <- mathgrades[1,4]
} else {
  annie <- mathgrades[1,5]
}

```

```
#thea scores
```

```

if (mathgrades[2,2] > mathgrades[2,3] && mathgrades[2,2] > mathgrades[2,4] && mathgrades[2,2] > mathgrades[2,5]) {
  thea <- mathgrades[2,2]
} else if (mathgrades[2,3] > mathgrades[2,4] && mathgrades[2,3] > mathgrades[2,5]) {
  thea <- mathgrades[2,3]
} else if (mathgrades[2,4] > mathgrades[2,5] && mathgrades[2,2] > mathgrades[2,5]) {
  thea <- mathgrades[2,4]
} else {
  thea <- mathgrades[2,5]
}

```

```
#steve scores
```

```

if (mathgrades[3,2] > mathgrades[3,3] && mathgrades[3,2] > mathgrades[3,4] && mathgrades[3,2] > mathgrades[3,5]) {
  steve <- mathgrades[3,2]
} else if (mathgrades[3,3] > mathgrades[3,4] && mathgrades[3,3] > mathgrades[3,5]) {
  steve <- mathgrades[3,3]
} else if (mathgrades[3,4] > mathgrades[3,5] && mathgrades[3,2] > mathgrades[3,5]) {
  steve <- mathgrades[3,4]
} else {
  steve <- mathgrades[3,5]
}

```

```
#hanna scores
```

```

if (mathgrades[4,2] > mathgrades[4,3] && mathgrades[4,2] > mathgrades[4,4] && mathgrades[4,2] > mathgrades[4,5]) {
  hanna <- mathgrades[4,2]
} else if (mathgrades[4,3] > mathgrades[4,4] && mathgrades[4,3] > mathgrades[4,5]) {
  hanna <- mathgrades[4,3]
} else if (mathgrades[4,4] > mathgrades[4,5] && mathgrades[4,2] > mathgrades[4,5]) {
  hanna <- mathgrades[4,4]
} else {

```

```

  hanna <- mathgrades[4,5]
}

mathgrades$highest <- c(annie, thea, steve, hanna)
abovegradeof90 <- mathgrades[mathgrades$highest >= 90,]
if (nrow(abovegradeof90) > 0) {
  paste(abovegradeof90$name, "'s highest grade this semester is", abovegradeof90$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"

```