RWorksheet#4a_Parrenas

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R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

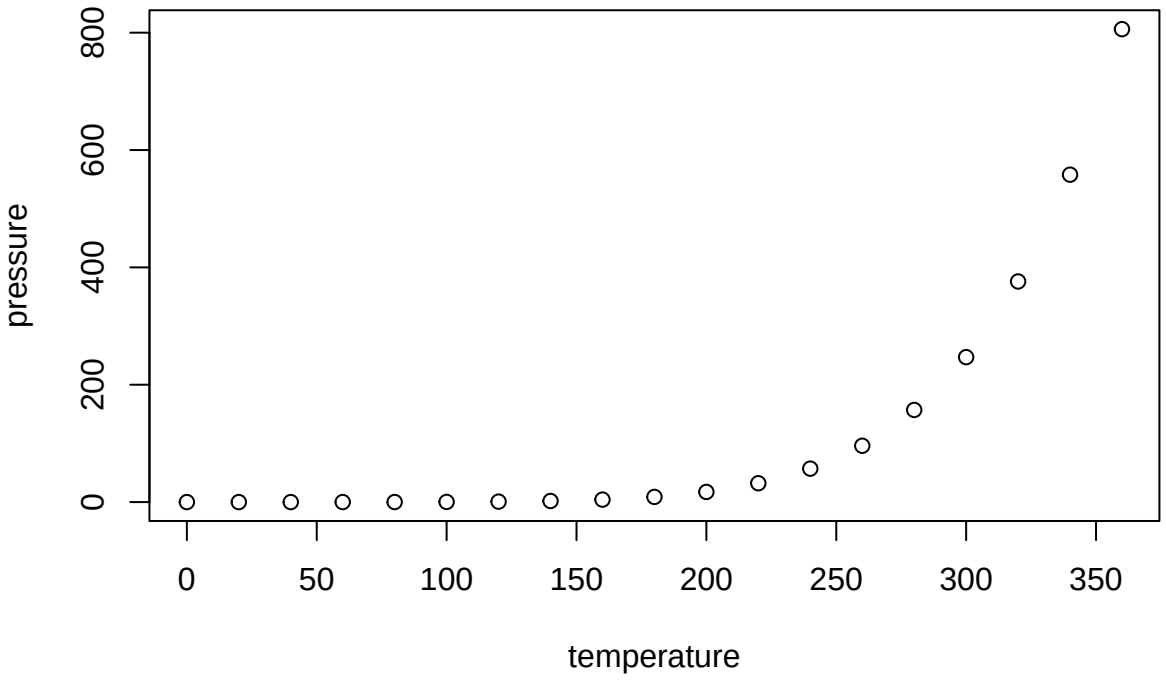
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot. ’’’(r) #code here

#1 The table below shows the data about shoe size and height. Create a data frame shoeSize_height_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 ,13.0 ,11.58 ,8.4 ,5.0 ,10.0 ,6.5 ,7.5 ,8.5 ,10.5 ,8.5 ,10.5 ,11.0 ,9.0 ,13.0),

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 ,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(‘F’ ,‘F’ ,‘F’ ,‘F’ ,‘M’ ,‘F’ ,‘F’ ,‘F’ ,‘M’ ,‘F’ ,‘M’ ,‘F’ ,‘M’ ,‘M’ ,‘M’ ,‘M’ ,‘F’ ,‘F’ ,‘M’ ,‘F’ ,‘F’ ,‘M’ ,‘M’ ,‘F’ ,‘M’ ,‘M’ ,‘M’ ,‘M’))

#a. Describe the data summary(shoeSize_height_data)

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

male_subset <- subset(shoeSize_height_data, gender ==“M”,select = c(shoe_Size,height))

female_subset <- subset(shoeSize_height_data,gender ==“F”,select = c(shoe_Size,height))

print(male_subset) print(female_subset)

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

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

cat(mean_shoeSize) cat(mean_height)

#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

#2 Construct character vector months to a factor with factor() and assign the result to factor_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”,“September”,“Novem
factor_Months <- factor(Months) factor_Months

#3. 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(factor_Months)

#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)

#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. excel_data <- read.csv(“import_march.csv”) excel_data

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

#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 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.

num <- readline(prompt= “Enter number from 1 to 50:”)

paste(“Your entered number is”, 20)

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

minimum <- function (price) { bill <- price%/% 50 paste(“The minimum number of bills:”, bill) } snackprice <- 250 minimum(snackprice) #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. 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)

#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 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)

```
math_grades$average <- (math_grades$grade1 + math+grades$grade2 + math_grades$grade3 + math_grades$grad
```

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

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.”) }

#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.

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

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

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

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

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”) } #d Without using the max function, output as follows for students whose highest score for a semester exceeds 90 points.

annie scores if (math_grades[1,2] > math_grades[1,3] && math_grades[1,2] > math_grades[1,4] && math_grades[1,2] > math_grades[1,5]) { 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] > math_grades[2,5]) { 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] > math_grades[3,5]) { 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] > math_grades[4,5]) { 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.") }

```
```