Rworksheet_Salvador

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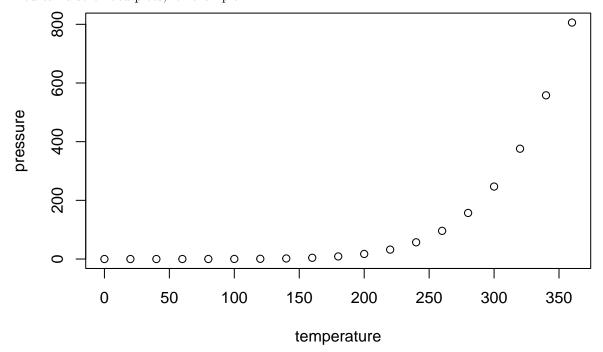
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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.

#1 There is a built-in vector LETTERS contains the uppercase letters of the alphabet #and letters which contains the lowercase letters of the alphabet. UppercaseLetters<- LETTERS [1:26] UppercaseLetters

Lowercaseletters<- letters [1:26] Lowercaseletters

#Based on the above vector LETTERS: #a. You need to produce a vector that contains the first 11 letters. First_11 <- LETTERS [1:11] First_11

#b. Produce a vector that contains the odd numbered letters. odd_Numbers <- LETTERS[c(TRUE, FALSE)] odd_Numbers

#c. Produce a vector that contains the vowels vowel_letters <- letters [c(1, 5, 9, 15, 21)] vowel_letters

#Based on the above vector letters: #d. Produce a vector that contains the last 5 lowercase letters. Lowercaseletters <- letters [22:26] Lowercaseletters

#e. Produce a vector that contains letters between 15 to 24 letters in lowercase. vector_letters <- letters [c(15:24)] vector_letters

#2. Create a vector(not a dataframe) with the average temperatures in April for Tuguegarao City, Manila, Iloilo City, Tacloban, Samal Island, and Davao City. The average #temperatures in Celcius are 42, 39, 34, 34, 30, and 27 degrees.

CityandAveTemp_vector <- c("Tuguegarao City" = 42,"Manila" = 39,"Iloilo City" = 34,"Tacloban" = 34,"Samal Island = 30","Davao City" = 27) city_vector

#a. What is the R code and its result for creating a character vector for the city/town #of Tuguegarao City, Manila, Iloilo City, Tacloban,Samal Island, and Davao City? Name the #object as city. The names should follow the same order as in the instruction. city_vector <- c("Tuguegarao City","Manila","Iloilo City","Tacloban","Samal Island","Davao City") city_vector

#Output #[1] "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" "Samal Island"
#[6] "Davao City"

#b. The average temperatures in Celcius are 42, 39, 34, 34, 30, and 27 degrees. #Name the object as temp. Write the R code and its output. Numbers should also follow #what is in the instruction.

tempCel <- c(42, 39, 34, 34, 30, 27) tempCel

#Output #[1] 42 39 34 34 30 27

#c. Create a dataframe to combine the city and the temp by using 'data.frame(). What #the R code and its result? df <- data.frame(city_vector = city_vector, tempCel = tempCel)

View(df)

#Output # city_vector tempCel #1 Tuguegarao City 42 #2 Manila 39 #3 Iloilo City 34 #4 Tacloban 34 #5 Samal Island 30 #6 Davao City 27

#d. Associate the dataframe you have created in 2.(c) by naming the columns using #the names() function. Change the column names by using names() function as City and #Temperature. What is the R code and its result? names(df) <- c("City", "Temperature")

#Output # City Temperature #1 Tuguegarao City 42 #2 Manila 39 #3 Iloilo City 34 #4 Tacloban 34 #5 Samal Island 30 #6 Davao City 27

#e Print the structure by using str() function. Describe the output. str(df)

#The str() function tells us how many rows and columns are in the dataframe and what kinds of data each column contains

#From the answer in d, what is the content of row 3 and row 4 What is its R code and #its output? rows3_4 <- df[3:4,] rows3_4

#Output #> rows3_4 <- df[3:4,] #> rows3_4 # City Temperature #3 Iloilo City 34 #4 Tacloban 34

#g. From the answer in d, display the city with highest temperature and the city with #the lowest temperature. What is its R code and its output?

hightempcity <- df[df$Temperature == max(df$Temperature),] hightempcity

lowtempcity <-df[df$Temperature == min(df$Temperature),] lowtempcity

#Output #> hightempcity <- df[df$Temperature == max(df$Temperature),] #> hightempcity # City Temperature #1 Tuguegarao City 42 #> #> lowtempcity <-df[df$Temperature == min(df$Temperature),] #> lowtempcity # City Temperature #6 Davao City 27

#USING MATRIX #2. Create a matrix of one to eight and eleven to fourteen with four columns and three rows. #a. What will be the R code for the #2 question and its result?

matr <- matrix(c(1:8,11:14), nrow = 3, ncol = 4) matr

#Result # [,1] [,2] [,3] [,4] #[1,] 1 4 7 12 #[2,] 2 5 8 13 #[3,] 3 6 11 14

#b. Multiply the matrix by two. What is its R code and its result? mulMatr <- matr * 2 mulMatr

#Output # [,1] [,2] [,3] [,4] #[1,] 2 8 14 24 #[2,] 4 10 16 26 #[3,] 6 12 22 28

#c What is the content of row 2? What is its R code? row_2 <- mulMatr[2,] row_2

#d. What will be the R code if you want to display the column 3 and column 4 in row 1 and row 2? What is its output? ColAndRow <- mulMatr[c(1,2),c(3,4)] ColAndRow

#Output # [,1] [,2] #[1,] 14 24 #[2,] 16 26

#e. What if the R code is you want to display only the columns in 2 and 3, row 3? What is its output? ColAndRow <- mulMatr[3, c(2, 3)] ColAndRow

#Output #[1] 12 22

#f. What is the R code is you want to display only the columns 4? What is its output? Col <- mulMatr[,4] Col

#Output #[1] 24 26 28

#g. Name the rows as isa, dalawa, tatlo and columns as uno, dos, tres, quatro for the matrix that was created in b∴ What is its R code and corresponding output? dimnames(mulMatr) <- list(c("isa", "dalawa", "tatlo"), c("uno", "dos", "tres", "quatro")) mulMatr

#Output # uno dos tres quatro #isa 2 8 14 24 #dalawa 4 10 16 26 #tatlo 6 12 22 28

#h. From the original matrix you have created in a, reshape the matrix by assigning a #new dimension with dim(). New dimensions should have 2 columns and 6 rows. What will #be the R code and its output? matr dim(matr) <- c(6,2) matr

#Output # [,1] [,2] #[1,] 1 7 #[2,] 2 8 #[3,] 3 11 #[4,] 4 12 #[5,] 5 13 #[6,] 6 14

#Using Arrays #3. An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1 #3a. Create an array for the above numeric values. Each values will be repeated twice What will be the R code if you are to create a three-dimensional array with 4 columns and 2 rows. What will be its output? num_values <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1) rep_values <- rep(num_values, each = 2)

arr <- array(rep_values, dim = c(2,4,3)) arr

#Output #, , 1

[,1] [,2] [,3] [,4]

#[1,] 1 2 3 6 #[2,] 1 2 3 6

#, , 2

[,1] [,2] [,3] [,4]

#[1,] 7 8 9 0 #[2,] 7 8 9 0

#, , 3

[,1] [,2] [,3] [,4]

#[1,] 3 4 5 1 #[2,] 3 4 5 1

#b. How many dimensions do your array have? #3 Dimensions

#c. Name the rows as lowercase letters and columns as uppercase letters starting from the A. The array names should be "1st-Dimensional Array", "2nd-Dimensional Array", and "3rd-Dimensional Array". What will be the R codes and its output?

dimnames(arr) <- list(letters[1:2], # row names LETTERS[1:4], # col names c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array") # dim names)

arr

#Output #, , 1st-Dimensional Array

A B C D

#a 1 2 3 6 #b 1 2 3 6

#, , 2nd-Dimensional Array

A B C D

#a 7 8 9 0 #b 7 8 9 0

#, , 3rd-Dimensional Array

A B C D

#a 3 4 5 1 #b 3 4 5 1