

RWorksheet_Gallo#3a.Rmd

2023-10-04

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.

```
#code here
```

```
#1
```

```
LETTERS
```

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S"  
## [20] "T" "U" "V" "W" "X" "Y" "Z"
```

```
letters
```

```
## [1] "a" "b" "c" "d" "e" "f" "g" "h" "i" "j" "k" "l" "m" "n" "o" "p" "q" "r" "s"  
## [20] "t" "u" "v" "w" "x" "y" "z"
```

```
#Based on the above vector LETTERS:
```

```
#1a Produce first 11 letters
```

```
Letter11 <- LETTERS[1:11]
```

```
Letter11
```

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K"
```

```
#1b Contains odd numbered letters
```

```
AllLetters <- LETTERS
```

```
LetterOdd <- AllLetters[seq(1, length(AllLetters), by = 2)]
```

```
LetterOdd
```

```
## [1] "A" "C" "E" "G" "I" "K" "M" "O" "Q" "S" "U" "W" "Y"
```

```
#1c Produce Vowels
```

```
LetterVow <- LETTERS[c(1,5,9,15,21)]
```

```
LetterVow
```

```
## [1] "A" "E" "I" "O" "U"
```

```
#Based on the above vector letters:
```

```
#1d Contains letters between 15 to 24
```

```
fifteen23 <- letters[16:23]
```

```
fifteen23
```

```
## [1] "p" "q" "r" "s" "t" "u" "v" "w"
```

```
#1e Last 5 lowercase letters
```

```
letter5 <- letters[22:26]
```

```
letter5
```

```
## [1] "v" "w" "x" "y" "z"
```

```
#2 Create a vector(not a dataframe) with the average temperatures in April for Tuguegarao City, Manila,
```

```
AverageTemperaturesApril = c(42, 39, 34, 34, 30, 27)
```

```
AverageTemperaturesApril
```

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

```
#2a
```

```
CityVec = c("Tuguegarao City","Manila","Iloilo City", "Tacloban","Samal Island","Davao City")
```

```
CityVec
```

```
## [1] "Tuguegarao City" "Manila" "Iloilo City" "Tacloban"
```

```
## [5] "Samal Island" "Davao City"
```

```
#2b
```

```
temp <- c(42, 39, 34, 34, 30, 27)
```

```
temp
```

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

```
#2c
```

```
CityVec <- c("Tuguegarao City","Manila","Iloilo City", "Tacloban","Samal Island","Davao City")
temp <- c(42, 39, 34, 34, 30, 27)
```

```
CityTemp <- data.frame(City = CityVec, Temperature = temp)
CityTemp
```

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

```
#2d. Associate the dataframe you have created in 2.(c) by naming the columns using the names() function.
names(CityTemp) <- c("City", "Temperature")
```

```
#2e. Print the structure by using str() function. Describe the output.
str(CityTemp)
```

```
## 'data.frame':    6 obs. of  2 variables:
## $ City          : chr  "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" ...
## $ Temperature: num  42 39 34 34 30 27
```

```
#the output displays that there are six objects and 2 variables.
```

```
#It also displays that the output of the City are labeled as chr(characters) while the output of the Temperature is num(numbers)
```

```
#2f. From the answer in d, what is the content of row 3 and row 4 What is its R code and its output?
```

```
Rowtwo4 <- CityTemp[3:4, ]
Rowtwo4
```

```
##           City Temperature
## 3 Iloilo City           34
## 4   Tacloban           34
```

```
#2g. From the answer in d, display the city with highest temperature and the city with the lowest temperature
```

```
HTCity <- CityTemp[CityTemp$Temperature == max(CityTemp$Temperature), ]
HTCity
```

```
##           City Temperature
## 1 Tuguegarao City         42
```

```
LTCity <- CityTemp[CityTemp$Temperature == min(CityTemp$Temperature), ]
LTCity
```

```
##           City Temperature
## 6 Davao City             27
```

```
#USING MATRICES
```

```
#3a What will be the R code for the #2 question and its result?
```

```
matrix181114 <- matrix(c(1:8,11:14), ncol = 4, nrow = 3)
matrix181114
```

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

#3b Multiply the matrix by two

```
MatrixMul <- matrix181114 * 2
MatrixMul
```

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

#3c What is the content of row 2?

```
Row2 <- matrix181114[2, ]
Row2
```

```
## [1]  2  5  8 13
```

#3d 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?

```
SubMatrix <- matrix181114[1:2, 3:4]
SubMatrix
```

```
##      [,1] [,2]
## [1,]    7   12
## [2,]    8   13
```

#3e What is the R code if you want to display only the columns in 2 and 3, row 3? What is its output?

```
SubRow <- matrix181114[3, 2:3]
SubRow
```

```
## [1]  6 11
```

#3f What is the R code if you want to display only the columns 4?

```
Col4 <- matrix181114[, 4]
Col4
```

```
## [1] 12 13 14
```

#3g Name the rows as isa, dalawa, tatlo and columns as uno, dos, tres, quatro for the matrix that was created. What is the output?

```
rownames(matrix181114) <- c("isa", "dalawa", "tatlo")
colnames(matrix181114) <- c("uno", "dos", "tres", "quatro")
```

```
matrix181114
```

```
##      uno dos tres quatro
## isa    1  4    7    12
## dalawa 2  5    8    13
## tatlo  3  6   11    14
```

#3h From the original matrix you have created in a, reshape the matrix by assigning a new dimension with 6 rows and 2 columns. What is the output?

```
NewMatrix <- matrix181114
dim(NewMatrix) <- c(6, 2)
```

```
NewMatrix
```

```
##      [,1] [,2]
```

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

```
# USING ARRAYS
```

```
#4. An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1
```

```
AnyArray <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1)
AnyArray
```

```
## [1] 1 2 3 6 7 8 9 0 3 4 5 1
```

```
#4a. Create an array for the above numeric values. Each values will be repeated twice. What will be the
```

```
Arraych <- array(AnyArray, dim = c(2, 4, 3))
Arraych
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,] 1 3 7 9
## [2,] 2 6 8 0
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,] 3 5 1 3
## [2,] 4 1 2 6
##
## , , 3
##
##      [,1] [,2] [,3] [,4]
## [1,] 7 9 3 5
## [2,] 8 0 4 1
```

```
#4b. How many dimensions do your array have?
```

```
dim(Arraych)
```

```
## [1] 2 4 3
```

```
#4c. Name the rows as lowercase letters and columns as uppercase letters starting from the A. The array n
```

```
colnames(Arraych) <- c("A", "B", "C", "D")
Arraych
```

```
## , , 1
##
##      A B C D
## [1,] 1 3 7 9
## [2,] 2 6 8 0
##
## , , 2
```

```
##
##      A B C D
## [1,] 3 5 1 3
## [2,] 4 1 2 6
##
## , , 3
##
##      A B C D
## [1,] 7 9 3 5
## [2,] 8 0 4 1
```

```
rownames(Arraych) <- c("a","b")
Arraych
```

```
## , , 1
##
##      A B C D
## a 1 3 7 9
## b 2 6 8 0
##
## , , 2
##
##      A B C D
## a 3 5 1 3
## b 4 1 2 6
##
## , , 3
##
##      A B C D
## a 7 9 3 5
## b 8 0 4 1
```

```
dimnames(Arraych)[[3]] <- c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")
Arraych
```

```
## , , 1st-Dimensional Array
##
##      A B C D
## a 1 3 7 9
## b 2 6 8 0
##
## , , 2nd-Dimensional Array
##
##      A B C D
## a 3 5 1 3
## b 4 1 2 6
##
## , , 3rd-Dimensional Array
##
##      A B C D
## a 7 9 3 5
## b 8 0 4 1
```