RWorksheet_Caoyonan#3a.Rmd

Leanie G. Caoyonan

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```
#1. There is a built-in vector LETTERS contains the uppercase letters of the alphabet and letters which
#Based on the above vector LETTERS:

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"
```

```
## [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"
```

```
## [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"


#a. You need to produce a vector that contains the first 11 letters.
first11<- LETTERS[1:11]
first11
```

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

```
# Output: "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K"


#b. Produce a vector that contains the odd numbered letters.
odd_letters <- LETTERS[seq(1, 26, 2)]
odd_letters
```

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

```
# Output: "A" "C" "E" "G" "I" "K" "M" "O" "Q" "S" "U" "W" "Y"

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

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

```
# Output: "A" "E" "I" "O" "U"

#d. Produce a vector that contains the last 5 lowercase letters.
last5 <- letters[22:26]
last5
```

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

```
# Output: "v" "w" "x" "y" "z"

#e. Produce a vector that contains letters between 15 to 24 letters in lowercase.
between_letters <- letters[15:24]
between_letters
```

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

```
# Output: "o" "p" "q" "r" "s" "t" "u" "v" "w" "x"



#2. Create a vector(not a dataframe) with the average temperatures in April for Tugue-garao City, Manil

#a. What is the R code and its result for creating a character vector for the city/town of Tuguegarao C

city <- c("Tugue-garao City","Manila","Iloilo City","Tacloban","Samal Island","Davao City")
city
```

```
## [1] "Tugue-garao City" "Manila"           "Iloilo City"      "Tacloban"
## [5] "Samal Island"     "Davao City"
```

```
#b. The average temperatures in Celcius are 42, 39, 34, 34, 30, and 27 degrees.Name the object as temp.
temp <- c(42, 39, 34, 34, 30, 27)
temp
```

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

```
# Output: 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
city_temp <- data.frame(city, temp)
city_temp
```

```
##               city temp
## 1 Tugue-garao 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.
names(city_temp) <- c("City", "Temperature")
city_temp
```

```
##               City Temperature
## 1 Tugue-garao 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(city_temp)
```

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

```
# Output: data.frame':  6 obs. of  2 variables:
# $ city: chr  "Tugue-garao City" "Manila" "Iloilo City" "Tacloban" ...
# $ temp: num  42 39 34 34 30 27

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

```
##          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 temper
city_temp[which.max(city_temp$Temperature), ]
```

```
##               City Temperature
## 1 Tugue-garao City          42
```

```
city_temp[which.min(city_temp$Temperature), ]
```

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

```
#3. Using Matrices
#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?
m <- matrix(c(1:8, 11:14), ncol=4, nrow=3)
m
```

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

```
# Output: 3x4 matrix

#b. Multiply the matrix by two. What is its R code and its result?
m2 <- m * 2
m2
```

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

```
# 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?
m[2, ]
```

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

```r
#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 i
m[1:2, 3:4]
```

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

```r
#Outputs:
#       [,1] [,2]
#[1,]    7   12
#[2,]    8   13


#e. What is the R code is you want to display only the columns in 2 and 3, row 3? What is its output?
m[3, 2:3]
```

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

```r
#Output: 6 11

#f. What is the R code is you want to display only the columns 4? What is its output?
m[ ,4]
```

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

```r
#Output: 12 13 14

#g. Name the rows as isa, dalawa, tatlo and columns as uno, dos, tres, quatrofor the matrix that was cr
rownames(m2) <- c("isa", "dalawa", "tatlo")
colnames(m2) <- c("uno", "dos", "tres", "quatro")
m2
```

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

```r
#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 wit
dim(m) <- c(6,2)
m
```

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

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

```r
#a. Create an array for the above numeric values. Each values will be repeated twice What will be the R
nums <- c(1,2,3,6,7,8,9,0,3,4,5,1)
array1 <- array(rep(nums, 2), dim = c(2,4,3))
array1
```

```
## , , 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
```

```r
#Output:    [,1] [,2] [,3] [,4]
#     [1,]    7    9    3    5
#     [2,]    8    0    4    1

#b. How many dimensions do your array have?
dim(array1)
```

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

```r
#Output:  2 4 3

#c. Name the rows as lowercase letters and columns as uppercase letters starting from the A. The array
rownames(array1) <- c("a", "b")
colnames(array1) <- c("A", "B", "C", "D")
dimnames(array1) <- list(c("a", "b"),
                         c("A", "B", "C", "D"),
                         c("1st-Dimensional Array",
                           "2nd-Dimensional Array",
                           "3rd-Dimensional Array"))
array1
```

```
## , , 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
```

```
#Output:
#  , , 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
```