RWorksheet_Tubat#3a

2023-10-04

```
#1. Based on the above vector LETTERS:.
upperLetter <- LETTERS
lowerLetter <- letters
upperLetter
```

```
##  [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"
```

```
lowerLetter
```

```
##  [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"
```

```
#1a. You need to produce a vector that contains the first 11 letters.
upperLetter[1:11]
```

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

```
#1b. Produce a vector that contains the odd numbered letters
letterLength <- length(upperLetter)
oddLetter <- c(upperLetter[seq(letterLength) %% 2 == 1], rev(upperLetter[seq(letterLength) %% 2 == 0]))
oddLetter
```

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

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

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

```
#1d. Produce a vector that contains the last 5 lowercase letters
lastFive <- tail(lowerLetter,5)
lastFive
```

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

```
#1e. Produce a vector that contains letters between 15 to 24 letters in lowercase.
fifteenToTwentyFour <- lowerLetter[15:24]
fifteenToTwentyFour
```

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

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

```
## [1] "Tuguegarao City" "Manila"          "Iloilo City"     "Tacloban"
## [5] "Samal Island"    "Davao City"
```

```
avgTemp
```

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

```
#2a. 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
city <- c("Tuguegarao City", "Manila", "Iloilo City", "Tacloban", "Samal Island", "Davao City")
city
```

```
## [1] "Tuguegarao City" "Manila"          "Iloilo City"     "Tacloban"
## [5] "Samal Island"    "Davao City"
```

```
# 2b. 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.
avgTemp <- c(42, 39, 34, 34, 30, 27)
avgTemp
```

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

```
#2c.Create a dataframe to combine the city and the temp by using 'data.frame(). What
#the R code and its result
cityTemp = data.frame(city,avgTemp)
cityTemp
```

```
##              city avgTemp
## 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. Change the column names by using names() function as City and
# Temperature. What is the R code and its result?
names(cityTemp) <- c("City", "Temperature")
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
```

```
#2e. Print the structure by using str() function. Describe the output.
#It displayed my dataframe and it describes how many objects and variables are in the dataframe.
#The City and the temperature column are displayed, the temperature object looks normal but the
#city object displays "Factor w/ 6 levels "Davao City","Iloilo City",..: 6 3 2 5 4 1"
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
```

```r
#2f. From the answer in d, what is the content of row 3 and row 4 What is its R code and
# output?
cityTemp[3:4,1:2]
```

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

```r
#2g. From the answer in d, display the city with highest temperature and the city with
#lowest temperature. What is its R code and its
#The city with the highest average temp is Tuguegarao City and
#the city with the lowest average temp is Davao City
  avgTemp <- city

  highestTemp <- max(avgTemp)
  highestTemp
```

```
## [1] "Tuguegarao City"
```

```r
  lowestTemp <- min(avgTemp)
  lowestTemp
```

```
## [1] "Davao City"
```

```r
#2. Create a matrix of one to eight and eleven to fourteen with four columns and three rows
#2a. What will be the R code for the #2 question and its result?
matrixData <- matrix(data = c(seq(1,8),seq(11,14)),3,4)
matrixData
```

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

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

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

```r
#2c. What is the content of row 2? What is its R code?
matrixData[2,1:4]
```

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

```r
#2d.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?
matrixData[1:2,3:4]
```

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

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

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

```
# 2f. What is the R code is you want to display only the columns 4? What is its output?
matrixData[1:3,4]
```

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

```
#2g. 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?
rownames(matrixData) <- c("isa", "dalawa", "tatlo")
colnames(matrixData) <- c("uno", "dos", "tres", "quatro")
matrixData
```

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

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

dim(matrixData) <- c(2,6)
matrixData
```

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

```
# 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

numericValues <- rep(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1),each = 2)
anArray <- array(numericValues)
anArrayResize <- array(numericValues, dim = c(2,4,3))
anArrayResize
```

```
## , , 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
```

```
#3b. How many dimensions do your array have?
#My array has 2 rows and 4 columns and 3 groups
```

```r
dim(anArrayResize)
```

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

```r
# 3c. 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(anArrayResize) <- list(c("a","b"), c("A","B","C","D"), c("1st-Dimensional Array","2nd-Dimensio
anArrayResize
```

```
## , , 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
```