RWorksheet_Caneso#3a

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USING VECTORS

Number 1

```
#[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.
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:
#   a. You need to produce a vector that contains the first 11 letters.
f11 <- LETTERS[1:11]
f11
```

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

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

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

```
#   c. Produce a vector that contains the vowels
vow <- LETTERS[LETTERS %in% c("A", "E", "I", "O", "U")]
vow
```

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

```
#Based on the above vector letters:
#   d. Produce a vector that contains the last 5 lowercase letters.
l5 <- letters[22:26]
l5
```

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

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

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

Number 2

```
#[2.] 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.

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

```
## [1] "Tuguegarao 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. Write the R code and its output. Numbers should also follow
#      what is in the instruction.
temp <- c(42, 39, 34, 34, 30, 27)
temp
```

```
## [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?
cTemp <- data.frame(
  city = city,
  temp = temp
)
cTemp
```

```
##              city temp
## 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(cTemp) <- c("City", "Temperature")
cTemp
```

```
##              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.
# [This outputs the vectors inside the data frame.]
str(cTemp)
```

```
## 'data.frame':    6 obs. of  2 variables:
##  $ City       : chr  "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" ...
##  $ Temperature: 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?
cTemp[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 temperature. What is its R code and its output?
head(cTemp, 1)
```

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

```
tail(cTemp, 1)
```

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

USING MATRICES

Number 2

```
#[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?
mat1 <- matrix(cbind(c(1:8),c(11:14)),3,4)
```

```
## Warning in matrix(cbind(c(1:8), c(11:14)), 3, 4): data length [16] is not a
## sub-multiple or multiple of the number of rows [3]
```

```
mat1
```

```
##      [,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?
mat1 <- mat1 * 2
mat1
```

```
##      [,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?
mat1[2,]
```

```
## [1]  4 10 16 26
```

```
#     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?
mat1[1:2, 3:4]
```

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

```
#     e. What is the R code is you want to display only the columns in 2 and 3, row 3? What
#        is its output?
mat1[3, 2:3]
```

```
## [1] 12 22
```

```
#     f. What is the R code is you want to display only the columns 4? What is its output?
mat1[,4]
```

```
## [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(mat1) <- list(c("isa", "dalawa", "tatlo"), c("uno", "dos", "tres", "quatro"))
mat1
```

```
##        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?
dim(mat1) <- c(6, 2)
mat1
```

```
##      [,1] [,2]
## [1,]    2   14
## [2,]    4   16
## [3,]    6   22
## [4,]    8   24
## [5,]   10   26
## [6,]   12   28
```

USING ARRAYS

Number 3

```
#[3.] An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1
akongArr <- array(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1))
#     a. 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?
akongArr2 <- array(rep(akongArr, each = 2), dim = c(2, 4, 3))
#     b. How many dimensions do your array have?
dim(akongArr2)
```

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

```
#     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(akongArr2) <- list(NULL,NULL,c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensio
akongArr2
```

```
## , , 1st-Dimensional Array
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    2    3    6
## [2,]    1    2    3    6
##
## , , 2nd-Dimensional Array
##
##      [,1] [,2] [,3] [,4]
## [1,]    7    8    9    0
## [2,]    7    8    9    0
##
## , , 3rd-Dimensional Array
##
##      [,1] [,2] [,3] [,4]
## [1,]    3    4    5    1
## [2,]    3    4    5    1
```