RWorksheet_camasa#3a

April Marie

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Using VECTORS

1.

a. You need to produce a vector that contains the first 11 letters.

```
first11_letters <- LETTERS[1:11]
first11_letters
```

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

b. Produce a vector that contains the odd numbered letters.

```
oddNumber_letters <- LETTERS[seq(1, 26, by=2)]
oddNumber_letters
```

```
##  [1] "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"
```

d. Produce a vector that contains the last 5 lowercase letters.

```
last5_lowercase <- letters[22:26]
last5_lowercase
```

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

e. Produce a vector that contains letters between 15 to 24 letters in lowercase.

```
lowercase15_to_24 <- letters[15:24]
lowercase15_to_24
```

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

2.

a. Name the object as city.

```
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. Name the object as temp. Write the R code and its output.

```
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?

```
df_cityTemp <- data.frame(city, temp)
df_cityTemp
```

```
##              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. Change the column names by using names() function as City and Temperature. What is the R code and its result?

```
names(df_cityTemp) <- c("City", "Temperature")
df_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
```

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

```
str(df_cityTemp)
```

```
## '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?

```
df_cityTemp[3:4,]
```

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

g.

```
highestTempCity <- df_cityTemp$City[which.max(df_cityTemp$Temperature)]
lowestTempCity <- df_cityTemp$City[which.min(df_cityTemp$Temperature)]

highestTempCity
```

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

```
lowestTempCity
```

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

2. using MATRICES

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
```

```
##      [,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?

```
multiply <- matr * 2
multiply
```

```
##      [,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?

```
matr[2, ]
```

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

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?

```
matr[1:2, 3:4]
```

```
##      [,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?

```
matr[3, 2:3]
```

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

f. What is the R code is you want to display only the columns 4? What is its output?

```
matr[ ,4]
```

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

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?

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

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

h. New dimensions should have 2 columns and 6 rows. What will be the R code and its output?

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

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

3. using ARRAYS

a. numeric values.

```
array1 <- rep(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1), 2)
numarray <- array(array1, dim = c(2, 4, 3))
numarray
```

```
## , , 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
```

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

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

```
# c.
rownames(numarray) <- c("a", "b")
colnames(numarray) <- c("A", "B", "C", "D")
dimnames(numarray)[[3]] <- c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")

numarray
```

```
## , , 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
```