Worksheet-3a in R

Quennie Tabladillo

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R Markdown

#Using Vectors

```r
#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 <- c("A","B","C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R",
             "S","T", "U", "V", "W", "X", "Y", "Z")
letters <- c("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q", "r",
             "s", "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.

```r
LETTERS <- c("A","B","C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R",
             "S","T", "U", "V", "W", "X", "Y", "Z")
LETTERS [1:11]
```

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

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

```r
LETTERS <- c("A","B","C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R",
             "S","T", "U", "V", "W", "X", "Y", "Z")
odd_LETTERS <- c(LETTERS[1:26 %% 2 !=0])
odd_LETTERS
```

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

#c. Produce a vector that contains the vowels

```r
LETTERS <- c("A","B","C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R",
             "S","T", "U", "V", "W", "X", "Y", "Z")
vowels_LETTERS <- c(LETTERS[c(1,5,9,15,21)])
vowels_LETTERS
```

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

#Based on the above vector letters:

```
#d. Produce a vector that contains the last 5 lowercase letters
letters <- c("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q", "r",
             "s", "t", "u", "v", "w", "x", "y", "z")
letters [22:26]
```

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

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

```
letters <- c("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q", "r",
             "s", "t", "u", "v", "w", "x", "y", "z")
letters [15:24]
```

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

#2. Create a vector 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 #ofTuguegarao 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.

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

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

#c. Associate the temperature temp with the city by using names() function. What is the R code and its result?

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

```
## Tuguegarao City          Manila     Iloilo City        Tacloban     Samal Island
##              42              39              34              34               30
##      Davao City
##              27
```

#d. From the answer in c, what is the content of index 5 and index 6? What is its R code?

```
temp <- c(42,39,34,34,30,27)
temp[5:6]
```

[1] 30 27

#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?

```
x2 <- matrix(data = c(1:8,11:14), nrow = 3, ncol = 4)
x2
```

```
##      [,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?

```
x2*2
```

```
##      [,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?

```
x2[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?

```
x2[c(1,2),c(3,4)]
```

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

```
x2[c(3),c(2,3)]
```

[1]   6 11

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

```
x2[,4]
```

[1] 12 13 14

#g. Name the rows as isa,dalawa,tatlo and column as uno,dos,tres,quatro for the matrix that was created in b. What is its R code and #corresponding output?

```
dimnames(x2) <- list(c("isa","dalawa","tatlo"),c("uno","dos","tres","quatro"))
x2
```

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

#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 amd its output?

```
dim(x2) <- c(6,2)
x2
```

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

#Using Arrays

#3.An Array contains 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?

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

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

```
value <- array(rep(array, 2),dim = c(2,4,3))
value
```

```
## , , 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
```

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#b. How many dimensions do your array have?

```
dim(x2)
```

```
## [1] 6 2
```

#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-Dimentional Array", and "3rd-Dimensional Array". #What will be the R codes and its output?

```
dimnames(value) <- list(letters[1:2], LETTERS[1:4], c("1st-Dimensional Array", "2nd-Dimentional Array",
value
```

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