

#USING VECTORS

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

```
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.

```
odd_LETTERS<- LETTERS[c(TRUE, FALSE)]
```

```
odd_LETTERS
```

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

#c. Produce a vector that contains the vowels

```
vowel_LETTERS<-LETTERS[LETTERS %in%c("A", "E", "I", "O", "U")]
```

```
vowel_LETTERS
```

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

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

```
l5letters<-tail(letters,5)
```

```
l5letters
```

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

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

```
fifteen24_letters<-letters[15:24]
```

```
fifteen24_letters
```

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

#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
tempandcity<- data.frame(
  city=city,
  temp=temp
)
tempandcity
```

```
##           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
names(tempandcity)[c(1:2)]<-c("City", "Temperature")
colnames(tempandcity)
```

```
## [1] "City"      "Temperature"
```

```
tempandcity
```

```
##           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(tempandcity)
```

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

```
#Description: The object is classified as a data.frame. Within this data frame,
#there are 6 recorded observations (rows) and 2 variables(columns).
#Each attribute in the data frame is accompanied by its class and initial values.
```

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

```
max_temp<- max(temp)
min_temp<-min(temp)

city_max_temp<-city[temp==max_temp]
city_max_temp
```

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

```
city_min_temp<-city[temp==min_temp]
city_min_temp
```

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

```
city_max_min_temp<-c(city_max_temp,city_min_temp)
city_max_min_temp
```

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

#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?

```
matrix1<-matrix(c(1:8, 11:14), ncol=4, nrow=3)
matrix1
```

```
##      [,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?

```
matrix2<-matrix1*2
matrix2
```

```
##      [,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?

```
matrix2[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 result?

```
matrix2[c(1,2), c(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?
matrix3<-matrix2[3, c(2:3)]
matrix3
```

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

```
#f. What is the R code is you want to display only the columns 4? What is its output?
matrix2[,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
dimnames(matrix2)<-list(c("isa", "dalawa", "tatlo"), c("uno", "dos", "tres", "quatro"))
matrix2
```

```
##      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 2 columns and 6 rows. What will be the R code and its output?
dim(matrix1)<-c(6,2)
matrix1
```

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

#USING ARRAYS

```
#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?
Array1<-array(c(1,2,3,6,7,8,9,0,3,4,5,1), c(2,4,6))
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
##
## , , 4
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    3    7    9
## [2,]    2    6    8    0
##
## , , 5
##
##      [,1] [,2] [,3] [,4]
## [1,]    3    5    1    3
## [2,]    4    1    2    6
##
## , , 6
##
##      [,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 6
```

#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(Array1)<-list(c("a","b"), c("A","B", "C", "D"), c("1st-Dimensional Array", "2nd-Dimensional Array",
"3rd Dimensional Array", "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
##
## , , 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
```