RWorksheet3a in R

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###1. VECTORS

```
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"
```

```
#a.
LET1 <- c(LETTERS[1:11])

#b.
LET2 <- c(LETTERS[seq(1, 26, 2)])

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

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

```
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"
```

```
#d.
let1 <- c(letters[22:26])

#e.
let2 <- c(letters[16:23])
```

###2. VECTORS

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

#b.
temp <- c(42, 39, 34, 34, 30, 27)

#c.
table1 <- data.frame (
```

```
  city,
  temp
)
table1
```

```
##              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.
table2 <- data.frame (
  City = city,
  Temperature = temp
)
table2
```

```
##              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
str(table1)
```

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

```
str(table2)
```

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

```
#Counted the variables per table and the date inside the object.

#f.
table2[3:4, ]
```

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

```r
#g.
highest_temp <- max(table2$Temperature)
highest_temp_row <- table2[which.max(table2$Temperature), ]
highest_temp_row
```

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

```r
lowest_temp <- min(table2$Temperature)
lowest_temp_row <- table2[which.min(table2$Temperature), ]
lowest_temp_row
```

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

###1. MATRIX

```r
#row = 2
matrix(c(5,6,7,4,3,2,1,2,3,7,8,9), nrow = 2)
```

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

```r
#row = 3 and column = 2
matrix(data = c(3,4,5,6,7,8),nrow=3,ncol=2)
```

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

```r
#creating a diagonal matix where x value will always be 1
diag(1, nrow=6, ncol=5)
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    0    0    0    0
## [2,]    0    1    0    0    0
## [3,]    0    0    1    0    0
## [4,]    0    0    0    1    0
## [5,]    0    0    0    0    1
## [6,]    0    0    0    0    0
```

```r
diag(6)
```

```
##      [,1] [,2] [,3] [,4] [,5] [,6]
## [1,]    1    0    0    0    0    0
## [2,]    0    1    0    0    0    0
## [3,]    0    0    1    0    0    0
## [4,]    0    0    0    1    0    0
## [5,]    0    0    0    0    1    0
## [6,]    0    0    0    0    0    1
```

###2. MATRIX

```
#a.
matrix_data <- matrix(c(1:8,11:14),3,4)
matrix_data
```

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

```
#b.
product_matrix <- matrix_data * 2
product_matrix
```

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

```
#c.
matrix_data[2, ]
```

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

```
#d.
matrix_data[1:2, 3:4]
```

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

```
#e.
matrix_data[3, 2:3]
```

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

```
#f.
matrix_data[ ,4]
```

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

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

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

```r
#h.
dim(matrix_data) <- c(6,2)
matrix_data
```

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

###1. ARRAYS

```r
#1.
#creates a two-dimensional array containing numbers from 1 to 24 that have 3 rows and
array_dta <- array(c(1:24), c(3,4,2))
array_dta
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]   13   16   19   22
## [2,]   14   17   20   23
## [3,]   15   18   21   24
```

```r
#checking for the dimensions

#row, column, dimension
dim(array_dta)
```

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

```r
#checking for the number of elements
length(array_dta)
```

```
## [1] 24
```

```r
vectorA <- c(1:24)

#2.
#creating an array
an_Array <- array(vectorA, dim = c(3,4,2))
an_Array
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]   13   16   19   22
## [2,]   14   17   20   23
## [3,]   15   18   21   24
```

###2. ARRAYS

```
array_data <- array(c(1:3, 6:9, 0, 3:5, 1))

#a.
array_a <- array(array_data, dim = c(2, 4, 3))
array_a
```

```
## , , 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.
#My array have 3 dimensions

#c.
dimnames(array_a)[[3]] <- c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")

rownames(array_a) <- letters[1:2]
colnames(array_a) <- LETTERS[1:4]
array_a
```

```
## , , 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
```