RWorksheets#3a

2023-10-04

```r
uppercase_LETTERS <- LETTERS[1:26]
uppercase_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"
```

```r
lowercase_letters <- letters[1:26]
lowercase_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"
```

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

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

```r
#b. Produce a vector that contains the odd numbered letters.
oddLetters <- uppercase_LETTERS[c(TRUE, FALSE)]
print(oddLetters)
```

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

```r
#c. Produce a vector that contains the vowels
vowel_LETTERS <- LETTERS[c(1,5,9,15,21)]
vowel_LETTERS
```

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

```r
#for vector letters
#d. Produce a vector that contains the last 5 lowercase letters.
lowerLetters <- letters[22:26]
lowerLetters
```

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

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

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

```r
#2. Create a vector(not a dataframe) with the average temperatures in April for Tuguegarao City, Manila

#a.What is the R code and its result for creating a character vector for the city/town of Tuguegarao Ci

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"
```

```
temp <- c(42,39,34,34,40,27)
temp
```

```
## [1] 42 39 34 34 40 27
```

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

```
##              city temp
## 1 Tuguegarao City   42
## 2          Manila   39
## 3     Iloilo City   34
## 4        Tacloban   34
## 5     Samal Island   40
## 6       Davao City   27
```

```
names(AverageTemp) <- c("City", "Temperature" )
AverageTemp
```

```
##              City Temperature
## 1 Tuguegarao City          42
## 2          Manila          39
## 3     Iloilo City          34
## 4        Tacloban          34
## 5     Samal Island          40
## 6       Davao City          27
```

```
str(AverageTemp)
```

```
## 'data.frame':    6 obs. of  2 variables:
##  $ City       : chr  "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" ...
##  $ Temperature: num  42 39 34 34 40 27
```

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

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

```
#g.
```

```
max_temp_city <- AverageTemp[which.max(AverageTemp$Temperature), "City"]
min_temp_city <- AverageTemp[which.min(AverageTemp$Temperature), "City"]

max_temp_city
```

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

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

#2. Create a matrix of one to eight and eleven to fourteen with four columns and three rows.

  #a.

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

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

2*matrix(c(1:8, 11:14), ncol = 4, nrow = 3 )
```

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

matrix(c(1:8, 11:14), ncol = 4, nrow = 3 )[2,]
```

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

matrix(c(1:8, 11:14), ncol = 4, nrow = 3 )[1:2,3:4]
```

```
##      [,1] [,2]
## [1,]    7   12
## [2,]    8   13
#e.
matrix(c(1:8, 11:14), nrow = 3, ncol = 4)[3, 2:3]
```

```
## [1]  6 11
#f.
matrix(c(1:8, 11:14), nrow = 3, ncol = 4)[, 4]
```

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

matrices <- 2* matrix(c(1:8, 11:14), nrow = 3, ncol = 4)
rownames(matrices) <- c("isa", "dalawa", "tatlo")
colnames(matrices) <- c("uno", "dos", "tres", "quatro")
matrices
```

```
##        uno dos tres quatro
## isa      2   8   14     24
```

```
## dalawa    4  10   16      26
## tatlo     6  12   22      28
```

```r
#h.
new_matrices <- matrix(c(1:8, 11:14), nrow = 3, ncol = 4)
dim(new_matrices) <- c(6, 2)
new_matrices
```

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

```r
# Using Arrays

  #3. An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1

 #a.

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

array_value <- array(c(1:3, 6:9,0,3:5,1), c(2,4,3))
array_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
```

```r
#b.

dim(array_value)
```

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

```r
#c.

data_ace <- c(1:3, 6:9, 0, 3:5, 1)
array_value <- array(data_ace, dim = c(2, 4, 3))

dimnames(array_value) <- list(
```

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

array_value
```

```
## , , 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
```