RWorksheet_Esmalla3a

Janessa Marie Esmalla

2023-10-07

```
# 1.There is a built-in vector LETTERS contains the uppercase letters of the alphabet and letters which

# 1a. You need to produce a vector that contains the first 11 letters.
first_11_letters <- LETTERS[1:11]
first_11_letters
```

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

```
# 1b. Produce a vector that contains the odd numbered letters.
odd_numbered_letters <- LETTERS[seq(1, length(LETTERS), by = 2)]
odd_numbered_letters
```

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

```
# 1c. Produce a vector that contains the vowels
vowels <- LETTERS[LETTERS %in% c("A", "E", "I", "O", "U")]
vowels
```

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

```
# Based on the above vector letters:

lower_Alphabet <- letters[1:26]
lower_Alphabet
```

```
##  [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"
```

```
# 1d. Produce a vector that contains the last 5 lowercase letters.
last_five_let <- letters[22:26]
last_five_let
```

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

```
# 1e. Produce a vector that contains letters between 15 to 24 letters in lowercase.
letters_15_to_24 <- letters[15:24]
letters_15_to_24
```

```
##  [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 Tugue-garao City, Mani

# 2a. What is the R code and its result for creating a character vector for the city/town of Tuguegarao
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"
```

```r
# 2b. The average temperatures in Celcius are 42, 39, 34, 34, 30, and 27 degrees.Name the object as tem
temp <- c(42, 39, 34, 34, 30, 27)
temp
```

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

```r
# 2c. Create a dataframe to combine the city and the temp by using 'data.frame(). What the R code and i
data_temp <- data.frame(City = city, Temperature = temp)
data_temp
```

```
##              City Temperature
## 1 Tuguegarao City          42
## 2          Manila          39
## 3     Iloilo City          34
## 4        Tacloban          34
## 5    Samal Island          30
## 6      Davao City          27
```

```r
# 2d. Associate the dataframe you have created in 2.(c) by naming the columns using the names() functio
names(data_temp) <- c("City", "Temperature")
names(data_temp)
```

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

```r
# 2e. Print the structure by using str() function. Describe the output.
str(data_temp)
```

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

```r
# 2f. From the answer in d, what is the content of row 3 and row 4 What is its R code and its output?
row_temp <- data_temp[3:4, ]
row_temp
```

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

```r
# City with the highest temperature
max_temp_city <- data_temp[data_temp$Temperature == max(data_temp$Temperature), "City"]
max_temp_city
```

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

```r
# City with the lowest temperature
min_temp_city <- data_temp[data_temp$Temperature == min(data_temp$Temperature), "City"]
min_temp_city
```

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

```r
# USING MATRIX

# 3a.
mat <- matrix(c(1:8, 11:14), nrow = 3, ncol = 4)
mat
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   12
```

```
## [2,]    2    5    8   13
## [3,]    3    6   11   14
```

```
# 3b.
mat * 2
```

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

```
mat
```

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

```
# 3c.
mat[2, ]
```

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

```
mat
```

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

```
# 3d
mat[1:2, 3:4]
```

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

```
mat
```

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

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

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

```
mat
```

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

```
# 3f.
mat[, 4]
```

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

```
mat
```

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

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

```
# 3g.
rownames(mat) <- c("isa", "dalawa", "tatlo")
rownames(mat)
```

```
## [1] "isa"    "dalawa" "tatlo"
```

```
colnames(mat) <- c("uno", "dos", "tres", "quatro")
colnames(mat)
```

```
## [1] "uno"    "dos"    "tres"   "quatro"
```

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

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

```
# USING ARRAYS

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

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

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

```
## , , 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
```

```
# 4b.
dim(new_array)
```

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

```
# 4c.
colnames(new_array) <- c("A","B","C","D")
new_array
```

```
## , , 1
##
##      A B C D
## [1,] 1 3 7 9
## [2,] 2 6 8 0
##
## , , 2
##
##      A B C D
## [1,] 3 5 1 3
## [2,] 4 1 2 6
##
## , , 3
##
##      A B C D
## [1,] 7 9 3 5
## [2,] 8 0 4 1
```

```
rownames(new_array) <- c("a","b")
new_array
```

```
## , , 1
##
##   A B C D
## a 1 3 7 9
## b 2 6 8 0
##
## , , 2
##
##   A B C D
## a 3 5 1 3
## b 4 1 2 6
##
## , , 3
##
##   A B C D
## a 7 9 3 5
## b 8 0 4 1
```

```
dimnames(new_array)[[3]] <- c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")
new_array
```

```
## , , 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
```