

RWorksheet_Arcena#3a

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1. Using Vectors

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

Based on the above vector `LETTERS`:

##1a. 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"
```

##1b. Produce a vector that contains the odd numbered # letters.

```
LETTERS[seq(1, 26, by = 2)]
```

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

##1c. Produce a vector that contains the vowels

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

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

##Based on the above vector letters:

##1d. Produce a vector that contains the last 5 # lowercase letters.

```
tail(letters, 5)
```

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

##1e. Produce a vector that contains letters between # 15 to 24 letters in lowercase.

```
letters[15:24]
```

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

2. Temperature Data

Create a vector (not a dataframe) with the average temperatures in April for Tuguegarao City, Manila, Iloilo City, Tacloban, Samal Island, and Davao City.

##2a. What is the R code and its result for creating # a character vector for the city/town? Name the object # as city.

```
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"
```

##2b. The average temperatures in Celcius are 42, 39, # 34, 34, 30, and 27 degrees. Name the object as temp.

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

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

##2c. Create a dataframe to combine the city and the # temp by using data.frame().

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

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

##2d. Associate the dataframe by naming the columns # using the names() function as City and Temperature.

```
names(city_temp) <- c("City", "Temperature")  
city_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
```

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

```
str(city_temp)
```

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

##2f. From the answer in d, what is the content of # row 3 and row 4?

```
city_temp[3:4, ]
```

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

##2g. Display the city with highest temperature and # the city with the lowest temperature.

```
# City with highest temperature
city_temp[city_temp$Temperature == max(city_temp$Temperature), ]
```

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

```
# City with lowest temperature
city_temp[city_temp$Temperature == min(city_temp$Temperature), ]
```

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

Using Matrices

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

##2a. What will be the R code for the #2 question # and its result?

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

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

##2b. Multiply the matrix by two. What is its R code # and its result?

```
m * 2
```

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

##2c. What is the content of row 2? What is its R code?

```
m[2, ]
```

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

##2d. What will be the R code if you want to display # the column 3 and column 4 in row 1 and row 2?

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

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

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

```
m[3, 2:3]
```

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

##2f. What is the R code if you want to display only # the columns 4?

```
m[, 4]
```

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

##2g. Name the rows as isa, dalawa, tatlo and columns # as uno, dos, tres, quatro.

```
rownames(m) <- c("isa", "dalawa", "tatlo")
colnames(m) <- c("uno", "dos", "tres", "quatro")
m
```

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

##2h. Reshape the matrix by assigning a new dimension # with dim(). New dimensions should have 2 columns and # 6 rows.

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

```
##      [,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

##3a. Create an array for the above numeric values. # Each value will be repeated twice in a three-dimensional # array with 4 columns and 2 rows.

```
values <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1)
arr <- array(rep(values, 2), dim = c(2, 4, 3))
arr
```

```
## , , 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
```

##3b. How many dimensions do your array have?

```
dim(arr)
```

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

#3c. Name the rows as lowercase letters and columns as uppercase letters starting from A. The array names should be 1st-Dimensional Array, 2nd-Dimensional Array, and 3rd-Dimensional Array.

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

```
## , , 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
```