

RWorksheets_Madayag#3A

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1 Vectors

```
## A
first_11_letters <- LETTERS[1:11]

first_11_letters

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

## B
odd_letters <- LETTERS[seq(1, length(LETTERS), by = 2)]
odd_letters

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

## C
vowels <- LETTERS[c(1, 5, 9, 15, 21)]
vowels

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

## D
last_5_lowercase <- letters[22:26]
last_5_lowercase

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

## E
letters_15_to_24 <- letters[15:24]
letters_15_to_24

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

2

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

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

```
## C
```

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

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

```
## D
```

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

```
##           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(data)
```

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

```
## F
```

```
data[3:4, ]
```

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

```
## G
```

```
highest_temp_city <- data[which.max(data$Temperature), ]
lowest_temp_city  <- data[which.min(data$Temperature), ]
```

```
highest_temp_city
```

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

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

3 Matrices

```
## A
```

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

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

B

```
matrix_multiplied <- matrix_data * 2
matrix_multiplied
```

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

C

```
row_2 <- matrix_data[2, ]
row_2
```

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

D

```
columns_3_4_row_1_2 <- matrix_data[1:2, 3:4]
columns_3_4_row_1_2
```

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

E

```
row_3_columns_2_3 <- matrix_data[3, 2:3]
row_3_columns_2_3
```

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

F

```
column_4 <- matrix_data[, 4]
column_4
```

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

G

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

```
##      uno dos tres quatro
## isa      2  8  14    24
## dalawa   4 10  16    26
## tatlo    6 12  22    28
```

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
```

4 Arrays

```
## A
values <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1)
values_repeated <- rep(values, times = 2)

array_3d <- array(values_repeated, dim = c(2, 4, 3))
array_3d
```

```
## , , 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
## The array has 3 dimensions
```

```
## C
dimnames(array_3d) <- list(
  c("a", "b"),
  c("A", "B", "C", "D"),
  c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")
)
array_3d
```

```
## , , 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
```