

RWorksheet_Hallares#3a

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2025-10-13

Exercise 1: Using Vectors

a. First 11 letters

```
LETTERS[1:11]
```

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

b. Odd-numbered letters

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

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

c. Vowels from LETTERS

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

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

d. Last 5 lowercase letters

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

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

e. Letters 15 to 24 (lowercase)

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

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

Exercise 2: Temperature Vectors

a. Character vector of cities

```
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. Temperature vector

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

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

c. Create dataframe

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

```
##           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. Rename columns

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

```
##           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. Print structure

```
str(weather)
```

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

f. Show row 3 and 4

```
weather[3:4, ]
```

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

g. Highest and lowest temperature

```
weather[which.max(weather$Temperature), ]
```

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

```
weather[which.min(weather$Temperature), ]
```

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

Exercise 3: Matrices

a. Create matrix

```
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
```

b. Multiply matrix by 2

```
m2 <- m * 2
m2
```

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

c. Row 2

```
m2[2, ]
```

```
## [1]  4 10 16 26
```

d. Columns 3 and 4 of rows 1 and 2

```
m2[1:2, 3:4]
```

```
##      [,1] [,2]
## [1,]   14   24
## [2,]   16   26
```

e. Columns 2 and 3 of row 3

```
m2[3, 2:3]
```

```
## [1] 12 22
```

f. Column 4 only

```
m2[, 4]
```

```
## [1] 24 26 28
```

g. Name rows and columns

```
rownames(m2) <- c("isa", "dalawa", "tatlo")
colnames(m2) <- c("uno", "dos", "tres", "quatro")
m2
```

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

h. Reshape original matrix

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

Exercise 4: Arrays

a. Create 3D array (values repeated twice)

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

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

b. Number of dimensions

```
dim(arr)
```

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

c. Name rows, columns, and dimensions

```
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 2 3 6  
## b 1 2 3 6  
##  
## , , 2nd-Dimensional Array  
##  
##   A B C D  
## a 7 8 9 0  
## b 7 8 9 0  
##  
## , , 3rd-Dimensional Array  
##  
##   A B C D  
## a 3 4 5 1  
## b 3 4 5 1
```