RWorksheet_Sison#3A

2024-09-30

```
#USING VECTORS
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"
```

```
#A
LETTERS <-c("A", "B", "C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R", "S
first_eleven_letters <-LETTERS[1:11]
first_eleven_letters
```

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

```
#B.
alphabet <- LETTERS
odd_letters <- alphabet[c(TRUE, FALSE)]
odd_letters
```

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

```
#c.
vowels <- c("A", "E", "I", "O", "U")
vowels
```

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

```
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"
```

```
#D.
small_letters <- c("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q",
last_five <-small_letters[22:26]
last_five
```

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

```
#E.
small_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"
```

```
fifteen_twentyfour <- small_letters [15:24]
fifteen_twentyfour
```

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

```
#2.
avg_temperatures <- c(42, 39, 34, 34, 30, 27)
avg_temperatures
```

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

```
#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.
comb <- data.frame (city = c("Tuguegarao City", "Manila", "Iloilo City", "Tacloban", "Samal Island", "Da
comb
```

```
##              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.
df <- data.frame (City = c("Tuguegarao City", "Manila", "Iloilo City", "Tacloban", "Samal Island", "Dava
Temperature = c(42, 39, 34, 34, 30, 27))
names(df) <- c("City", "Temperature")
print(df)
```

```
##              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(df)
```

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

```
#F.
rows_3_and_4 <- df[3:4,]
rows_3_and_4
```

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

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

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

```
lowest_temp_city
```

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

```
#2. USING MATRICES
matrix(c(5, 6, 7, 4, 3, 2, 1, 2, 3, 7, 8,9), nrow=2)
```

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

```
matrix(data = c(3, 4, 5, 6, 7, 8), 3, 2)
```

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

```
diag(1, nrow =6, ncol =5)
```

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

```
diag (6)
```

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

```
#A.
values <- c(1:8, 11:14)
matrix_4by3 <- matrix (values, nrow = 3, ncol =4)
matrix_4by3
```

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

```
#B.
matrix_multiplied <- matrix_4by3*2
matrix_multiplied
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    2    8   14   24
```

```
## [2,]    4   10   16   26
## [3,]    6   12   22   28
```

```
#C.
row2 <- matrix_4by3 [2, ]
row2
```

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

```
#D.
d_result <- matrix_4by3[1:2, 3:4]
d_result
```

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

```
#E.
e_result <- matrix_4by3[3, 2:3]
e_result
```

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

```
#F.
f_result <- matrix_4by3[, 4]
f_result
```

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

```
#G.
rownames(matrix_multiplied) <- c("isa", "dalawa", "tatlo")
colnames(matrix_multiplied) <- c("uno", "dos", "tres", "kwatro")
matrix_multiplied
```

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

```
#H.
dim(matrix_4by3) <- c(6 , 2)
matrix_4by3
```

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

```
#3. USING ARRAYS
#1
array_dta <- array(c(1:24), c(3,4,2))
array_dta
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
```

```
## [2,]    2    5    8   11
## [3,]    3    6    9   12
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]   13   16   19   22
## [2,]   14   17   20   23
## [3,]   15   18   21   24
```

```
dim(array_dta)
```

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

```
length(array_dta)
```

```
## [1] 24
```

```
#2
vectorA <- c(1:24)

an_Array <- array(vectorA, dim = c(3, 4, 2))
an_Array
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]   13   16   19   22
## [2,]   14   17   20   23
## [3,]   15   18   21   24
```

```
#3A
array_data <- array(c(1, 2, 3, 6, 7, 8 , 9, 0, 3, 4, 5, 1), dim = c(2, 4, 3))
array_data
```

```
## , , 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
dim(array_data)
```

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

```
#3C
dimnames(array_data) <- list(letters[1:2], LETTERS[1:4], c("1st_Dimensional Array", "2nd-Dimensional Ar
array_data
```

```
## , , 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
```