RWorksheet_Saria#3A

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

a. Produce a vector that contains the first 11 letters.

```
first_11 <- LETTERS[1:11]
print(first_11)
```

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

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

```
odd_letters <- LETTERS[seq(1, 26, by=2)]
print(odd_letters)
```

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

c. Produce a vector that contains the vowel letters.

```
vowel_letters <- LETTERS[c(1, 5, 9, 15, 21)]
print(vowel_letters)
```

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

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

```
last_5 <- letters[22:26]
print(last_5)
```

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

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

```
letters_between <- letters[seq(15, 24)]
print(letters_between)
```

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

2. Create a vector(not a dataframe) with the average temperatures in April

a. Character name of cities/towns

```
city <- c("Tuguegarao City", "Manila", "Iloilo City", "Tacloban", "Samal Island", "Davao City")
print(city)
```

```
## [1] "Tuguegarao City" "Manila"          "Iloilo City"     "Tacloban"
## [5] "Samal Island"    "Davao City"
```

b - Average temperatures in Celcius

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

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

c - Create a data frame to combine the city and temp

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

d - Rename the columns using names() function as City and Temperature

```
names(city_temp_df) <- c("City", "Temperature")
print(city_temp_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 - Print structure of dataframe by using str() function.

```
str(city_temp_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 - Display the content of row 3 and row 4

```
print(city_temp_df[3:4,])
```

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

g - Display city with highest and lowest temperature

```
max_temp_city <- city_temp_df$City[which.max(city_temp_df$Temperature)]
min_temp_city <- city_temp_df$City[which.min(city_temp_df$Temperature)]

print(max_temp_city)
```

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

```
print(min_temp_city)
```

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

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

a. Create matrix

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

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

b. Multiply the matrix by two.

```
mult_matrix <- matrix_data * 2
print(mult_matrix)
```

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

c. Content of row 2

```
row_2 <- matrix_data[2,]
print(row_2)
```

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

d. Display output of the columns in 2 and 3, row 3

```
subset_matrix <- matrix_data[2:3, 3:3]
print(subset_matrix)
```

```
## [1]  8 11
```

3. An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1

3a - Create an array for the numeric values

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

```
dim(array_data)
```

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

3c - Name rows, columns, and dimensions

```
dimnames(array_data) <- list(
  letters[1:2], LETTERS[1:4], c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array
print(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
```