# RWorksheet_Bernasol#3A

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## a. First 11 letters

```
first11 <- LETTERS[1:11]
print(first11)
```

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

## b. Odd-numbered letters

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

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

## c. vowels

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

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

## d. Last 5 lowercase letters

```
last5 <- letters[22:26]
print(last5)
```

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

## e. Lowercase letters between 15 to 24

```
midLetters <- letters[15:24]
print(midLetters)
```

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

## a. Create character vector for city names

```
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. Create temperature vector

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

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

## c. Create a dataframe combining city and temp

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

## d. Renaming the columns of the dataframe

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

## e. Printing the structure of the dataframe

```
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
```

## f. Content of row 3 and row 4

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

```
##          City Temperature
## 3 Iloilo City          34
```

```
## 4    Tacloban          34
```

## g. City with the highest and lowest temperature

```
hottest <- city_temp[which.max(city_temp$Temperature), ]
coldest <- city_temp[which.min(city_temp$Temperature), ]
print(hottest)
```

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

```
print(coldest)
```

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

## a. Create a matrix with 4 columns and 3 rows

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

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

## b. Multiply the matrix by 2

```
mat2 <- mat * 2
print(mat2)
```

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

## c. Content of row 2

```
print(mat2[2, ])
```

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

## d. Column 3 and 4 from row 1 and 2

```
print(mat2[1:2, 3:4])
```

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

## e. Columns 2 and 3 from row 3

```
print(mat2[3, 2:3])
```

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

## f. Only column 4

```
print(mat2[, 4])
```

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

## g. Renaming rows and columns

```
rownames(mat2) <- c("isa", "dalawa", "tatlo")
colnames(mat2) <- c("uno", "dos", "tres", "quatro")
print(mat2)
```

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

## h. Reshape the matrix into 2 columns and 6 rows

```
dim(mat) <- c(6, 2)
print(mat)
```

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

## a. Create a 3D array with specified values, 4 columns, 2 rows, and 3 dimensions

```
arr <- array(rep(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1), each = 2), dim = c(2, 4, 3))
print(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. Checking the dimensions of the array

```
print(dim(arr))
```

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

## c. Naming the dimensions of the array

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