

## Data Structures (5)

## Objects (6)

## Data Types (5)

① Vector  
 $x \leftarrow c("A", "B", "C")$   
`print(x)`  
 o/p: [1] "A"  
       [2] "B"  
       [3] "C"

② Matrix: Table like (2D) with row & col.

③ List: Collection of diff Data Types

④ Factors: Represents the categorical data & stores in levels

⑤ Data Frames: 2D-DS  
 col: value of 1 variable  
 row: value set from each column

same -

4x4 "  
 Ex-  $x \leftarrow \text{matrix}(\text{rrow} = 4, \text{ncol} = 4, \text{data} = c(1,2,3,4,5,6,7,8))$

"

"

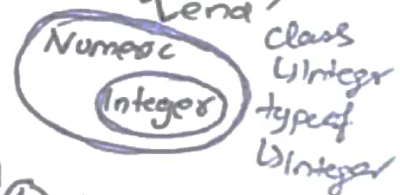
⑥ Array  
 stores data in more than 2D

① Character.  
 stores characters strings  
`char = "Sonal"`  
`print(class(char))` → "character"  
`print(typeof(char))` → "character"

② Numeric  
 (Integer + floats)  
 stored as Double  
 $x = 5.6$

`print(class(x))` → "Numeric"  
`print(typeof(x))` → "double"

③ Integer  
 $x = \text{as.integer}(5)$   
 OR  
 $x = 5L$  (use "L" in the end)



④ Logical

$x = 4$   
 $y = 3$   
 $z = x > y$   
`print(z)` → TRUE  
`print(class(z))` → "logical"  
`print(typeof(z))` → "logical"

⑤ Complex

$x = 5 + 3i$   
`class` → complex  
`typeof` → complex

`class()`

`typeof()`

`class(DataFrame)`

→ Integer

`class(5.6)`  
 → Numeric

`typeof(DataFrame)`

→ List

bcz DF is saved in form of List in memory  
`typeof(5.6)` → double

## Data Frames (characteristics)

- ① Col → Non-Empty
- ② Row → Unique
- ③ Can have numeric, char or Factor type
- ④ Each column shud hv same no. of Data

## Example -

`e_data <- data.frame(employee_id = c(1:5),`

`e_name = c("J", "H", "x42", "T", "D"), sal = c(64.2, 53, 0, 61.2, 31.5, 112.0),`

`join_date = as.Date(c("2013-02-04", "2017-06-21", "2016-03-25"))`

`stringsAsFactors = FALSE)`

`print(e_data)`

`str(e_data)` (∵ structure of R data frame)

Extracting 1st 2 cols

`Output <- e_data[1:2,]`  
`print(Output)` [1:2,]