R - Data Frames

A data frame is a table or a two-dimensional array-like structure in which each column contains values of one variable and each row contains one set of values from each column.

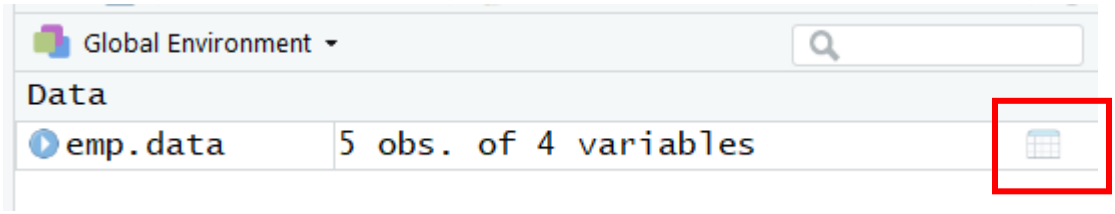
Following are the characteristics of a data frame.

- The column names should be non-empty.
- The row names should be unique.
- The data stored in a data frame can be of numeric, factor or character type.
- Each column should contain same number of data items.

```
# Create the data frame.

emp.data <- data.frame(
   emp_id = c (1:5),
   emp_name = c("Rick","Dan","Michelle","Ryan","Gary"),
   salary = c(623.3,515.2,611.0,729.0,843.25),
   start_date = as.Date(c("2012-01-01", "2013-09-23", "2014-11-15",
"2014-05-11","2015-03-27")),
   stringsAsFactors = FALSE)
# Print the data frame.
print(emp.data)
```

In addition, when you create "emp.data", you should be able to view it as a data frame, or a data structure. When you click on the icon, it opens in a new window, and looks similar to an excel file.



When we execute the above code, it produces the following result –

```
  emp_id    emp_name     salary     start_date
1      1     Rick        623.30     2012-01-01
2      2     Dan         515.20     2013-09-23
3      3     Michelle    611.00     2014-11-15
4      4     Ryan        729.00     2014-05-11
5      5     Gary        843.25     2015-03-27
```

Get the Structure of the Data Frame

The structure of the data frame can be seen by using **str()** function.

```
# Create the data frame.

emp.data <- data.frame(
   emp_id = c (1:5),
   emp_name = c("Rick","Dan","Michelle","Ryan","Gary"),
   salary = c(623.3,515.2,611.0,729.0,843.25),
   start_date = as.Date(c("2012-01-01", "2013-09-23", "2014-11-15",
"2014-05-11", "2015-03-27")),
   stringsAsFactors = FALSE)
# Get the structure of the data frame.
str(emp.data)
```

Get the Structure of the Titanic Data Frame

```
Titanic

# Get the Class of Titanic

class(Titanic)
```

However, it is a table, and not a data frame. Now how do we proceed? Therefore, we need to convert it to a data frame first.

```
# Convert the table to a data frame “t”
t<-as.data.frame(Titanic)
# Now Get the Class of “t” alias Titanic!!
class(Titanic)
```