TMC 204
Statistical Data Analysis with R
Unit 4
Converting Data Objects

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11-04-2020

Testing data object:

You can inspect objects and work out what they are, and you can also test it with explicit commands .

For day to day operations you can use **class()** command to inspect object.

Why conversion is required:

But some operations require your data to be in specific form.

For example the **barplot()** command requires data to be in matrix format before the graph can be produced, therefore it is important to know how to convert an object into another form.

Covert a matrix to data frame :

The matrix and data frame objects are similar because they are both rectangular and two dimensional objects.

To convert Matrix to Dataframe in R, use as.data.frame() function. The syntax of as.data.frame() function is

```
as.data.frame(x, row.names = NULL, optional = FALSE,
        make.names = TRUE, …,
        stringsAsFactors = default.stringsAsFactors())
```

Example

```
> Mat1 = matrix(c(1, 5, 14, 23, 54, 9, 15, 85, 3, 42, 9, 7, 42, 87, 16), ncol=3)
> Mat1
     [,1] [,2] [,3]
[1,]    1    9    9
[2,]    5   15    7
[3,]   14   85   42
[4,]   23    3   87
[5,]   54   42   16
```

```
> DF2 = as.data.frame(Mat1)
> DF2
  V1 V2 V3
1  1  9  9
2  5 15  7
3 14 85 42
4 23  3 87
5 54 42 16
```

```
> DF2 = as.data.frame(t(Mat1))
> DF2
  V1 V2 V3 V4 V5
1  1  5 14 23 54
2  9 15 85  3 42
3  9  7 42 87 16
```

Example to Convert Matrix to Dataframe with row Names

```
> Mat1 = matrix(c(1, 5, 14, 23, 54, 9, 15, 85, 3, 42, 9, 7, 42, 87, 16), ncol=3)
> Mat1
     [,1] [,2] [,3]
[1,]    1    9    9
[2,]    5   15    7
[3,]   14   85   42
[4,]   23    3   87
[5,]   54   42   16
```

```
> DF2 = as.data.frame(t(Mat1), row.names= c('name1', 'name2', 'name3'))
> DF2
      V1 V2 V3 V4 V5
name1  1  5 14 23 54
name2  9 15 85  3 42
name3  9  7 42 87 16
```

Convert Data Frame into Matrix:

Consider that you have your data loaded to an R Dataframe and it is required to do some matrix operations on the data. You can load your dataframe into a matrix and do the matrix operations on it.

To convert Dataframe to Matrix in R language, use data.matrix() method. The syntax of data.matrix() method is

data.matrix(frame, rownames.force = NA)

where frame is the dataframe and rownames.force is logical indicating if the resulting matrix should have character (rather than **NULL**) **rownames**. The default, **NA**, uses **NULL** rownames if the data frame has 'automatic' row.names or for a zero-row data frame.

Example

```
> DF1 = data.frame(c1= c(1, 5, 14, 23, 54), c2= c(9, 15, 85, 3, 42), c3= c(9, 7, 42, 87, 16))
> DF1
  c1 c2 c3
1  1  9  9
2  5 15  7
3 14 85 42
4 23  3 87
5 54 42 16
> Mat1 = data.matrix(DF1)
> Mat1
     c1 c2 c3
[1,]  1  9  9
[2,]  5 15  7
[3,] 14 85 42
[4,] 23  3 87
[5,] 54 42 16
```

Converting data frame to list

You can make list object from a data frame by using as.list() command

```
> DF1 = data.frame(c1= c(1, 5, 14, 23, 54), c2= c(9, 15, 85, 3, 42), c3= c(9, 7, 42, 87, 16))
> DF1
  c1 c2 c3
1  1  9  9
2  5 15  7
3 14 85 42
4 23  3 87
5 54 42 16
```

```
> LIS1=as.list(DF1)
> LIS1
$c1
[1]  1  5 14 23 54

$c2
[1]  9 15 85  3 42

$c3
[1]  9  7 42 87 16
```

Convert a matrix into list:

Sources of lecture : Beginning R , internet sources

If you convert matrix directly into list you will create a mess,which is not easily understand

so you need to convert it first into data frame and then convert to list

```
> LIS2=as.list(as.data.frame(Mat1))
> LIS2
$c1
[1]  1  5 14 23 54

$c2
[1]  9 15 85  3 42

$c3
[1]  9  7 42 87 16
```