Enter Data in Matrix Format

R Programming

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Matrix in R is constructed using `matrix`, `rbind`, or `cbind` function. These functions have the following descriptions:

- `matrix` - used to transform a concatenated data into matrix, of compatible dimensions;
- `rbind` - short for row bind, that binds a concatenated data points of same sizes by row;
- `cbind` - short for column bind, that binds a concatenated data points of same sizes by column.

Example 1. Consider this matrix, $\begin{bmatrix} 3 & 4 & 5 \\ 2 & 1 & 3 \\ 6 & 5 & 4 \end{bmatrix}$. Using the `matrix` function, we can code this as

```
> data.a <- c(3, 4, 5, 2, 1, 3, 6, 5, 4)
> matrix.a <- matrix(data.a, nrow = 3, ncol = 3, byrow = TRUE)
> matrix.a
     [,1] [,2] [,3]
[1,]    3    4    5
[2,]    2    1    3
[3,]    6    5    4
```

So here's what happened above, first the data was concatenated using the `c` function into a `data.a` object. Next, we transformed this into a matrix of compatible dimension, that is 3×3. Below are the description of the arguments:

- `data.a` - the data
- `nrow` - the number of rows
- `ncol` - the number of columns
- `byrow` - the orientation of how data is wrapped into a matrix. If `TRUE`, then it's row-wise, otherwise, column-wise.

Let's try the `rbind` for the same data, this is how you do it

```
> row1 <- c(3, 4, 5)
> row2 <- c(2, 1, 3)
> row3 <- c(6, 5, 4)
```

```
>
> matrix.b <- rbind(row1, row2, row3)
> matrix.b
     [,1] [,2] [,3]
row1    3    4    5
row2    2    1    3
row3    6    5    4
```

Notice the names of the rows are retained in the output? To get rid of this, try

```
> matrix.c <- rbind(c(3, 4, 5), c(2, 1, 3), c(6, 5, 4))
> matrix.c
     [,1] [,2] [,3]
[1,]    3    4    5
[2,]    2    1    3
[3,]    6    5    4
```

What about the `cbind` function?

```
> matrix.d <- cbind(c(3, 2, 6), c(4, 1, 5), c(5, 3, 4))
> matrix.d
     [,1] [,2] [,3]
[1,]    3    4    5
[2,]    2    1    3
[3,]    6    5    4
```

Labels

Mathematics, R, Tutorials