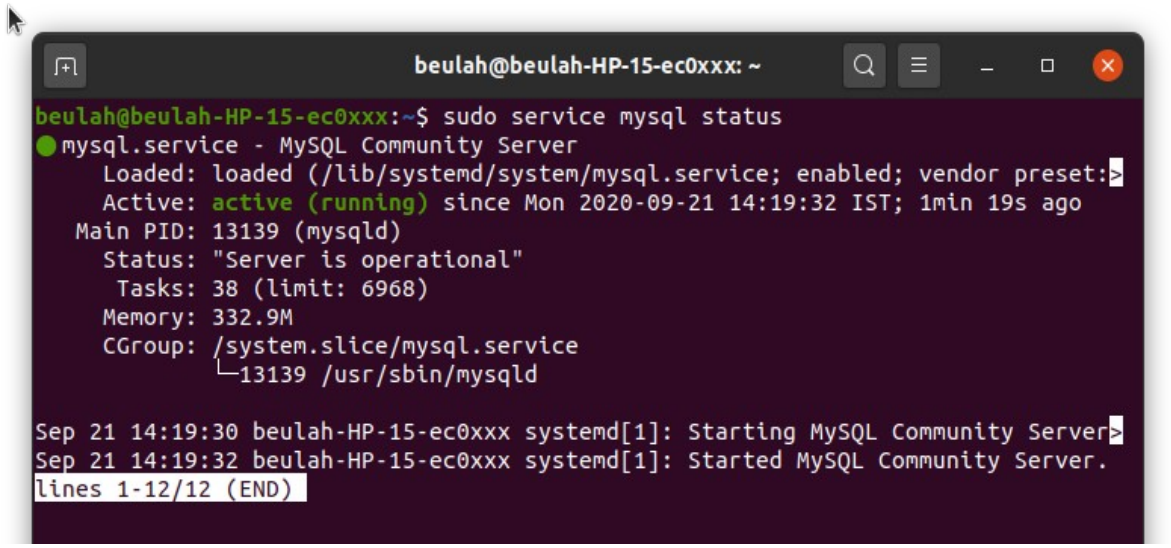
LABWORK – 2

Interaction of R and MySql DB

Since I am using linux, I first have to check whether mySql is installed correctly in my system.



Then in R console, I am installing RmySQL packages. Thefollowing command will do for the same.

```
install.packages("RMySQL")
```

The package has installed succesfully and now I need to create a connection object in R to connect to the database.

```
> mydb = dbConnect(MySQL(), user = 'root', password ='{3598beu!}', dbname =
'MyDataBase', host = 'localhost', Trusted_Connection = "True")
```

Connection has obtained and now the following command used to list the tables available in the database MyDataBase.

```
dbListTables(mydb)
>  [1] "myTable1"          "myTable7"
>  [3] "myTable2"          "myTable8"
>  [5] "myTable3"          "myTable9"
>  [7] "myTable4"          "myTable10"
>  [9] "myTable5"
```

R- LISTS

1. **Creating a list using the list ( ) function**

```
> myList <- list (matrix (c (1, 3, 5, 7), nrow = 2, byrow = TRUE), "beu", c (2, 4, 6, 8, 10), 3.14)
                                    # Creating a list which contains matrix, numbers strings and vectors as its elements
> myList
[[1]]
[,1] [,2]
[1,] 1 3
[2,] 5 7
[[2]]
[1] "beu"
[[3]]
[1] 2 4 6 8 10
[[4]]
[1] 3.14
```

2. **Naming/Alter names of the elements of the list using names function.**

```
> names (myList) <- c ("myNewMatrix", "myNewVector", "myNewString",
"myNewNumber")
> myList
$myNewMatrix
[,1] [,2]
[1,] 1 3
[2,] 5 7
```

3. **Accessing List elements & Manipulating list elements**

```
> myList[[1]]            # This is an element, not a list. It is the 1st element of myList
[,1] [,2]
[1,] 1 3
[2,] 5 7
> myList [["myNumber"]]     # Accessing the element that is named
[1] 3.14 ‘myNumber’
> myList ["myNumber"]                # Accessing a sublist that contains only one $myNumber element whose name is ‘myNumber’
[1] 3.14
> myList [c("myNumber","myString")]       # Selecting sublist extracted from $myNumber myList
[1] 3.14
$myString
[1] "beu"
```

4. Merging list

```
# Creating two lists.
list1 <- list(1,2,3)
list2 <- list("Sun","Mon","Tue")

# Merging the two lists.
merged.list <- c(list1,list2)

# Printing the merged list.
print(merged.list)
```

```
[[1]]
[1] 1

[[2]]
[1] 2

[[3]]
[1] 3

[[4]]
[1] "Sun"

[[5]]
[1] "Mon"

[[6]]
[1] "Tue"
```

5. Converting list to vector

```
> myList
$myMatrix
[,1] [,2]
[1,] 1 3
[2,] 5 7

$myVector
[1] 2 4 6 8 10

> myVector <- unlist (myList)
myMatrix1
1
```

myMatrix2
5

myMatrix3
3

myMatrix4
7

myVector1
2

myVector2
4

myVector3
6

myVector4
8

myVector5
10

R- Matrices

accessing elements

arr[1,3,1] #element in the 1st row 3rd column of matrix 1

[1] 50

arr[2,1,2]#element in the 2nd row 1st column of matrix

[1] 4

newm<-arr[,,1]#create new matrix from array

newm1<-arr[,,2]

newm+newm1

COL1 COL2 COL3

ROW1 4 24 52

ROW2 6 61 4

ROW3 14 21 6

matrix Computation

```
#ADDITION
s.matrix<-matrix1+matrix2
s.matrix
[,1] [,2] [,3]
[1,] 10 12 14
[2,] 16 18 20

[3,] 22 24 26
#MULTIPLICATION
m.matrix<-matrix2*matrix1
m.matrix
[,1] [,2] [,3]
[1,] 9 20 33
[2,] 48 65 84
[3,] 105 128 153
#SUBTRACTION
diff.matrix<-s.matrix-matrix1
diff.matrix
[,1] [,2] [,3]
[1,] 9 10 11
[2,] 12 13 14
[3,] 15 16 17
```

Manipulating array elements

```
v1<-c(1,2,3,4)
v2<-c(11,20,50)
#creating array from vectors
column.names <- c("COL1","COL2","COL3")
row.names <- c("ROW1","ROW2","ROW3")
```

```
matrix.names <- c("First","Second")
arr<-array(c(v1,v2),dim = c(3,3,2),dimnames = list(row.names,column.names,
matrix.names))#this create 3 matrices with 3 rows and 4
arr
First
COL1 COL2 COL3
ROW1 1 4 50
ROW2 2 11 1
ROW3 3 20 2
Second
COL1 COL2 COL3
ROW1 3 20 2
ROW2 4 50 3
ROW3 11 1 4
```