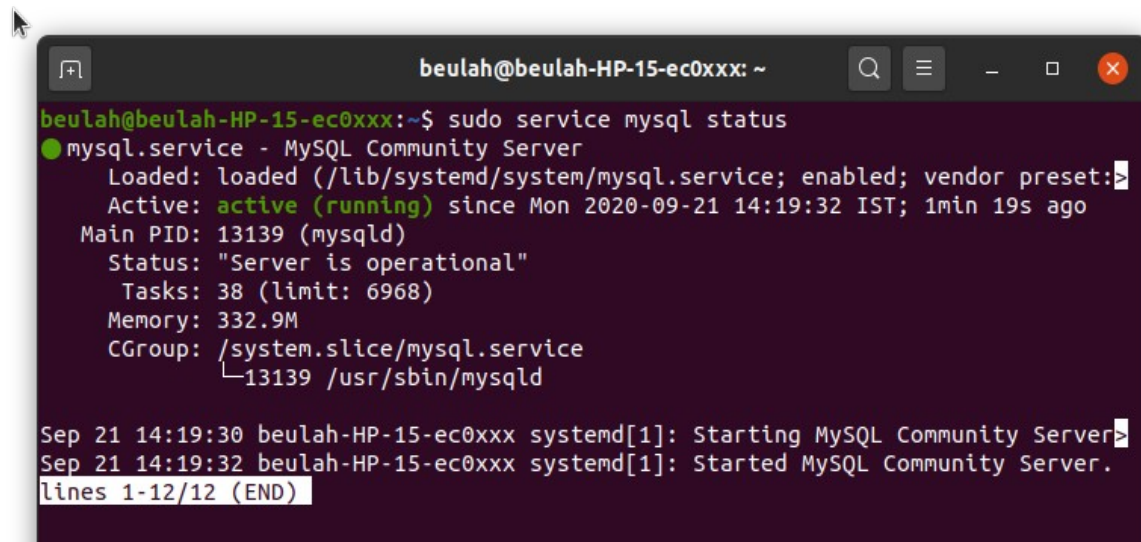


LABWORK – 2

Interaction of R and MySQL DB

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

A terminal window with a dark background and light text. The title bar shows 'beulah@beulah-HP-15-ec0xxx: ~'. The user has entered the command 'sudo service mysql status'. The output shows that the MySQL Community Server is loaded, active (running), and operational. It also shows the main PID, status, tasks, memory, and CGroup. At the bottom, there are two log messages from systemd[1] indicating the server was started. The terminal text is as follows:

```
beulah@beulah-HP-15-ec0xxx:~$ sudo service mysql status
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset:
   Active: active (running) since Mon 2020-09-21 14:19:32 IST; 1min 19s ago
   Main PID: 13139 (mysqld)
   Status: "Server is operational"
   Tasks: 38 (limit: 6968)
   Memory: 332.9M
   CGroup: /system.slice/mysql.service
           └─13139 /usr/sbin/mysqld

Sep 21 14:19:30 beulah-HP-15-ec0xxx systemd[1]: Starting MySQL Community Server
Sep 21 14:19:32 beulah-HP-15-ec0xxx systemd[1]: Started MySQL Community Server.
lines 1-12/12 (END)
```

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

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

The package has installed successfully 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
```