**20.Student Database Program**

**Aim :**

To write a R program to connect RStudio with a MySQL database using the RMySQL package and perform data retrieval and analysis

**Algorithm :**

**Step 1:** Start the process to connect RStudio and load the required database libraries.

**Step 2:** Establish a connection to the MySQL database hosted in XAMPP.

**Step 3:** List all tables available in the connected database.

**Step 4:** Retrieve and display data from the Department, Student, Subject, and Transactions tables..

**Step 5:** Find the highest and lowest marks scored in each subject..

**Step 6:** Calculate the total marks obtained by each student in each subject across all departments.

**Step 7:** Compute the average marks for each subject within every department.

**Step 8:** Calculate the overall average marks for each department.

**Step 9:** Display the results of each analysis.

**Step 10:** Close the database connection

**Step 11:** Stop the process

**PROGRAM:**

library(RMySQL)

library(DBI)

drv <- dbDriver("MySQL")

mysqlconnection = dbConnect(drv,username='root',password='',dbname='test1',host='localhost')

dbListTables(mysqlconnection)

Department <- dbSendQuery(mysqlconnection,"select \* from Department")

data.frame <- fetch(Department)

print(data.frame)

Student <- dbSendQuery(mysqlconnection,"select \* from Student")

data.frame <- fetch(Student)

print(data.frame)

subject <- dbSendQuery(mysqlconnection,"select \* from subject")

data.frame <- fetch(subject)

print(data.frame)

Transactions <- dbSendQuery(mysqlconnection,"select \* from Transactions")

data.frame <- fetch(Transactions)

print(data.frame)

# Highest & Lowest Score for each Subject

ScoreSubject <- dbSendQuery(mysqlconnection,"SELECT S.SubjectName,MAX(T.mark)as HighestScore,

MIN(T.mark)as LowestScore FROM transactions T

inner join subject S on S.SubjectID = T.SubjectID

group by S.SubjectName ")

data.frame <- fetch(ScoreSubject)

print(data.frame)

# Total Secured in each subject by each student in each department

TotalMarkSubject <- dbSendQuery(mysqlconnection,"SELECT S.SubjectName,sum(T.mark)as Mark,STD.StudentName,D.DepartmentName

FROM transactions T

inner join subject S on S.SubjectID = T.SubjectID

inner join student std on std.StudentID = T.StudentID

inner join department d on d.DeptID = T.DeptID

group by S.SubjectName,STD.StudentName,D.DepartmentName

order by D.DepartmentName,S.SubjectName;")

data.frame <- fetch(TotalMarkSubject)

print(data.frame)

# Subject average of each department

SubjectAvg <- dbSendQuery(mysqlconnection,"SELECT AVG(T.mark)as mark,S.SubjectName,D.DepartmentName

FROM transactions T

inner join subject S on S.SubjectID = T.SubjectID

inner join department d on d.DeptID = T.DeptID

group by D.DepartmentName,S.SubjectName

order by D.DepartmentName;")

data.frame <- fetch(SubjectAvg)

print(data.frame)

# average of department

DepartmentAvg <- dbSendQuery(mysqlconnection,"SELECT AVG(T.mark)as mark,D.DepartmentName

FROM transactions T

inner join department d on d.DeptID = T.DeptID

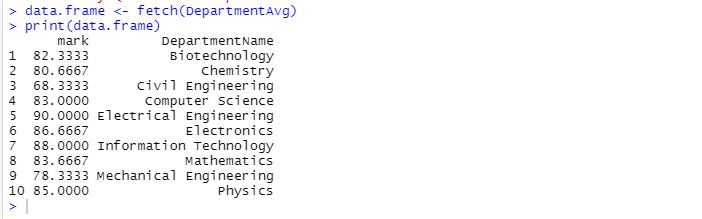
group by D.DepartmentName

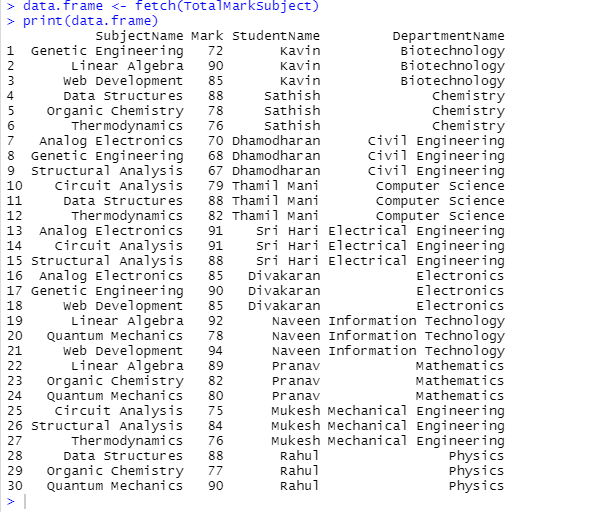
order by D.DepartmentName;")

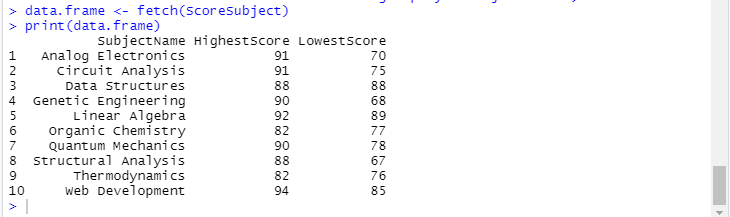
data.frame <- fetch(DepartmentAvg)

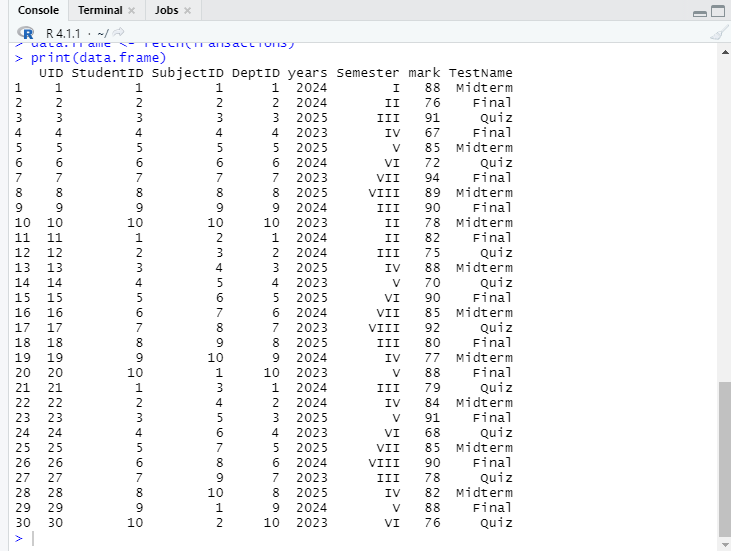
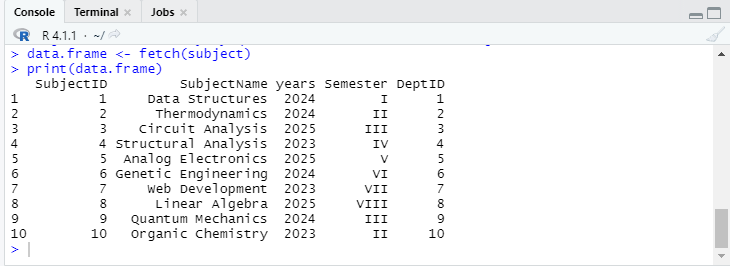
print(data.frame)

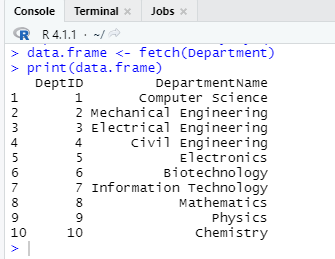
**OUTPUT:**









**RESULT:**

This program has been successfully saved and executed.