COLLEGE OF ENGINEERING VATAKARA
DEPT. OF COMPUTER APPLICATIONS
Course Code & Course Name: 20MCA134 Advanced DBMS Lab
(Lab Experiment Details, 2020 Admission)

S. No.	Experiment Title	Experiment Details	Date of Completion	Database Used	Remarks
1	Experiment with DDL commands in SQL	Create database for the schemas 1 Program (Program_ID, Program_Name, Duration, St_Strength, Program_Type, No_Semesters) 2 Student (First_Name, Last_Name, Reg_no, Program_ID, DOB,Sex, Year_Admission)	22-06-2021	MySQL	Address the Key Concepts and Normalizations. Use appropriate datatypes to the attributes. Add Unique and Not Null Constraints
2.	Experiment with DDL & DML commands in SQL	Perform insertion of records into the database created in the first experiment. Alter the created table and Perform the Insertion, Updation and Deletion operation. Drop the created table and remake it.	03-08-2021	MySQL	Familiarize the DDL and DML Commands
3.	Experiment with DDL & DML commands in SQL	Create database for the schemas 1 Course(Course_ID, Course_Name, Credit, Semester, Internal_Mark, External_Mark Course_Type) 2 Student_Mark(Reg_No, Course_ID, Student_Internal, Student_External) After associating these schemas in to the already created database and perform row insertion, deletion and updation.	10-08-2021	MySQL	Familiarize the DDL and DML Commands in SQL
4,	Experiment that retrieves data from database with simple	Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the		MySQL	Perform simple selection using with comparison operators. Familiarization

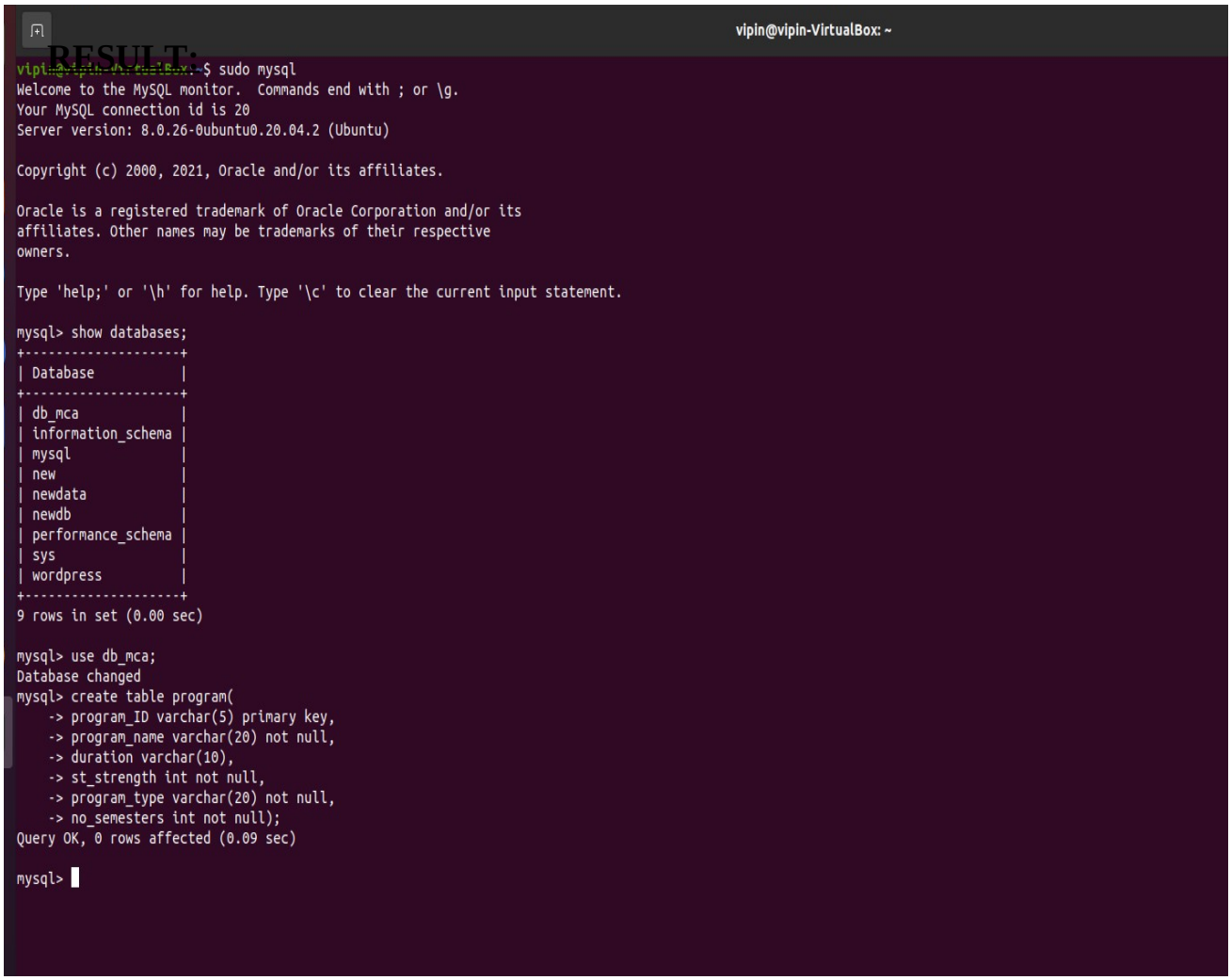
	SQL queries.	**query selections.**			**of keywords such as distinct, all, etc.,**
5,	**Experiment that retrieves data from database by means using nested SQL queries.**	**Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections.**		**MySQL**	**Perform nested query selection using with comparison operators and Logical connectives**
6.	**Experiment that works with string operations in SQL**	**Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections.**		**MySQL**	**Write queries that familiarize all string operations in SQL.**
7.	**Experiment that works with Aggregate functions in SQL**	**Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections.**		**MySQL**	**Write sample queries that familiarize all aggregate functions, group by and having clauses in SQL**
8.	**Experiment that works with set operations in SQL**	**Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections.**		**MySQL**	**Write sample queries that familiarize all set operations in SQL.**
9.	**Experiment that retrieves data from the created views in SQL**	**Define a view on the already created database and perform query selection on it.**		**MySQL**	**Create sample view and write sample queries on it.**
10.	**Experiment that drives the knowledge on the development of sample database system**	**Develop a tiny database system and do necessary adding of data and data retrieval from that.**		**MySQL**	**Create sample database systems such as Department Library system, College canteen system, Hostel system, College store system etc.**

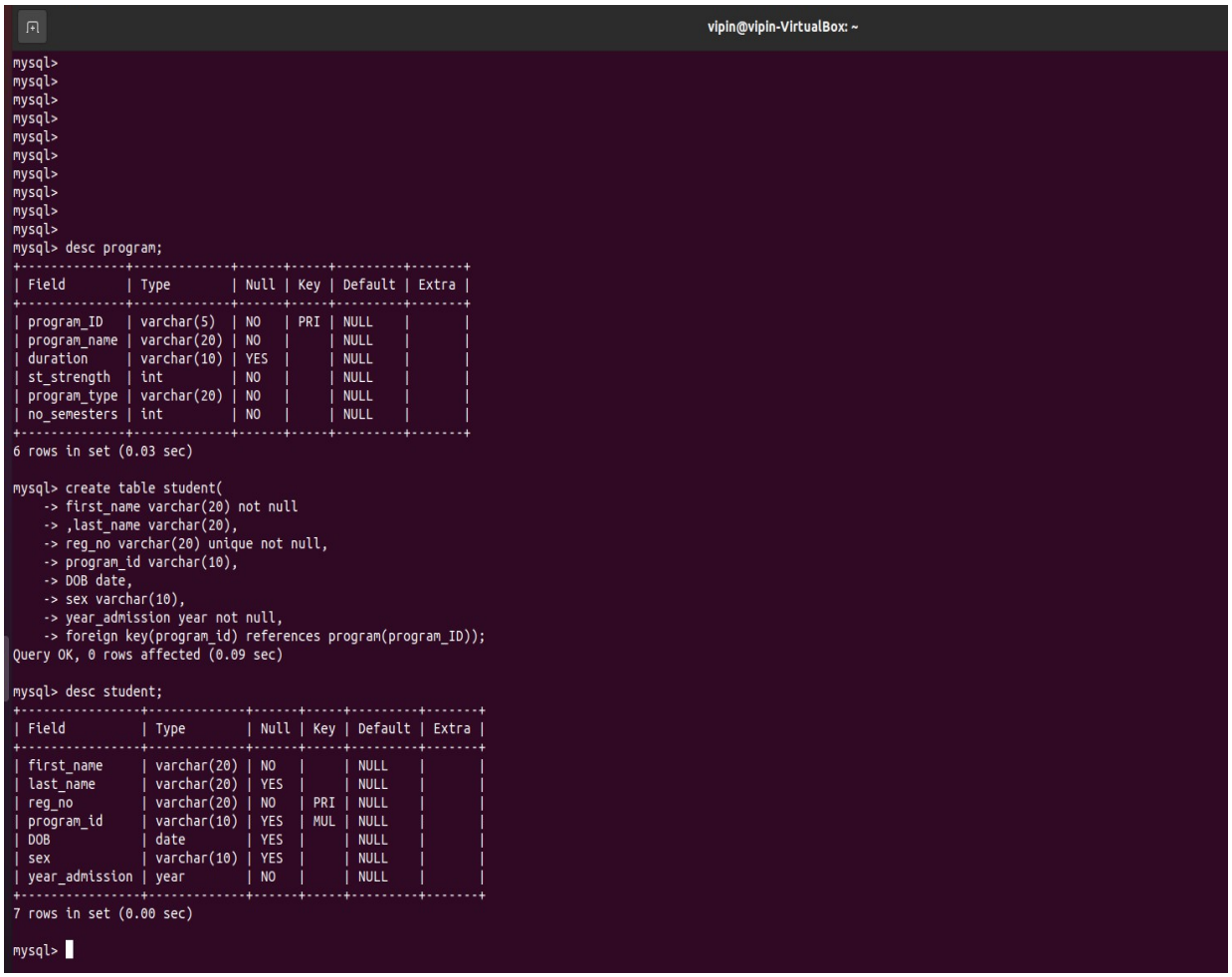
EXPERIMENT NO.1

AIM: Create database for the schemas

- Program (Program_ID, Program_Name, Duration, St_Strength, Program_Type, No_Semesters)
- Student (First_Name, Last_Name, Reg_no, Program_ID, DOB,Sex, Year_Admission)

RESULT:

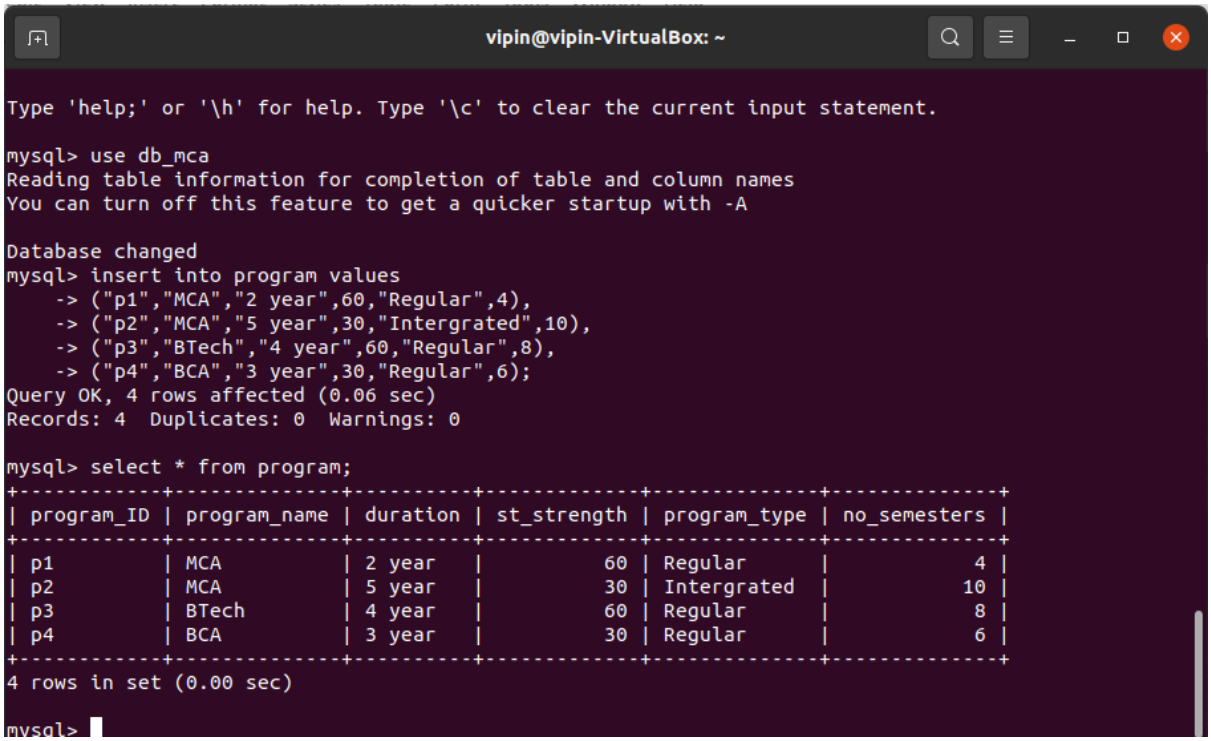


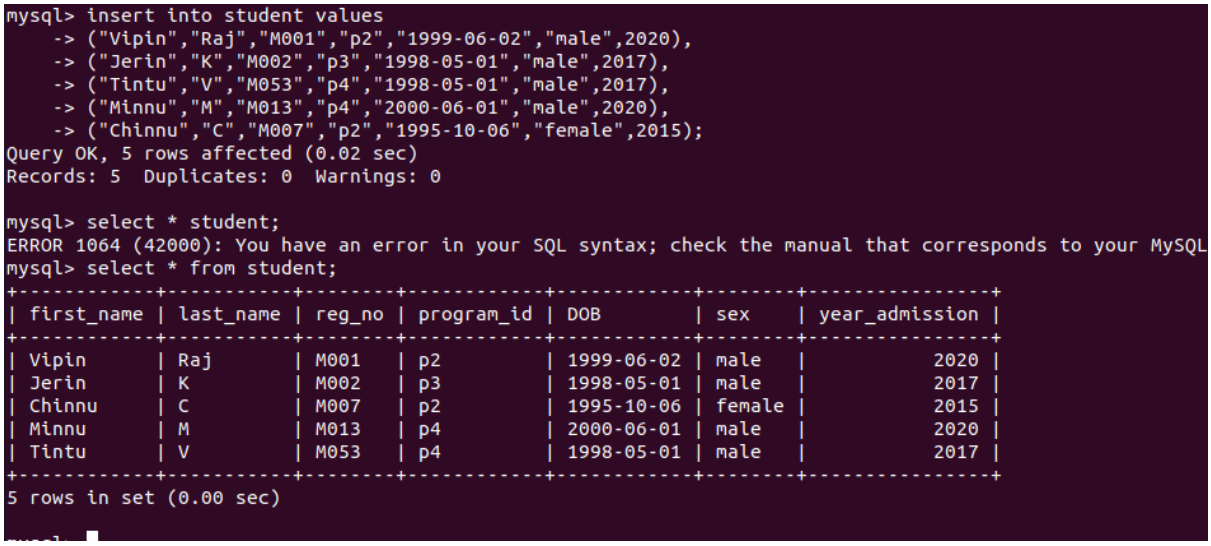

vipin@vipin-VirtualBox: ~
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql> desc program;
+-------------+------------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-------------+------------+------+-----+---------+-------+
program_ID	varchar(5)	NO	PRI	NULL	
program_name	varchar(20)	NO		NULL	
duration	varchar(10)	YES		NULL	
st_strength	int	NO		NULL	
program_type	varchar(20)	NO		NULL	
no_semesters	int	NO		NULL	
+-------------+------------+------+-----+---------+-------+
6 rows in set (0.03 sec)
mysql> create table student(
-> first_name varchar(20) not null
-> ,last_name varchar(20),
-> reg_no varchar(20) unique not null,
-> program_id varchar(10),
-> DOB date,
-> sex varchar(10),
-> year_admission year not null,
-> foreign key(program_id) references program(program_ID));
Query OK, 0 rows affected (0.09 sec)
mysql> desc student;
+---------------+------------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+---------------+------------+------+-----+---------+-------+
first_name	varchar(20)	NO		NULL	
last_name	varchar(20)	YES		NULL	
reg_no	varchar(20)	NO	PRI	NULL	
program_id	varchar(10)	YES	MUL	NULL	
DOB	date	YES		NULL	
sex	varchar(10)	YES		NULL	
year_admission	year	NO		NULL	
+---------------+------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
mysql>

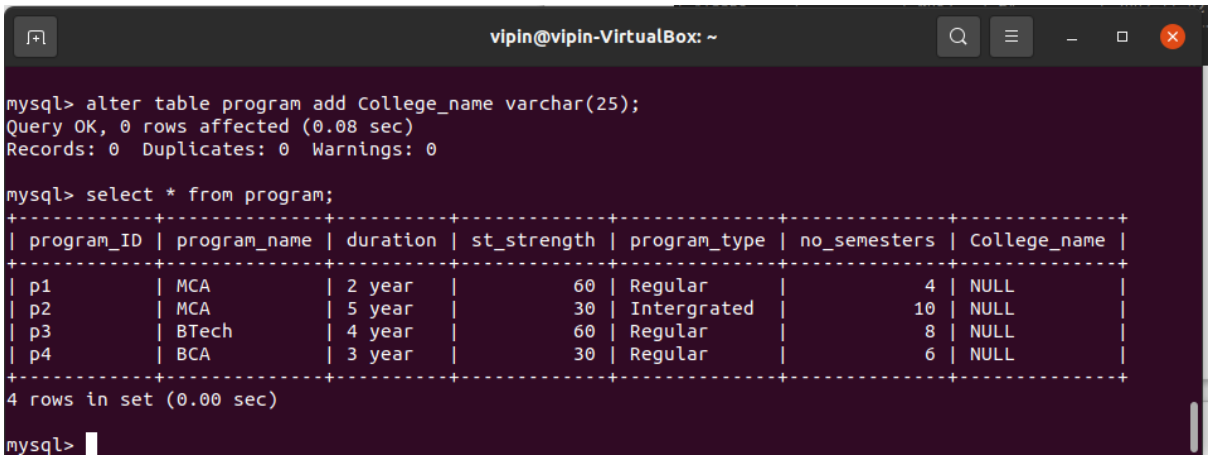
EXPERIMENT NO.2

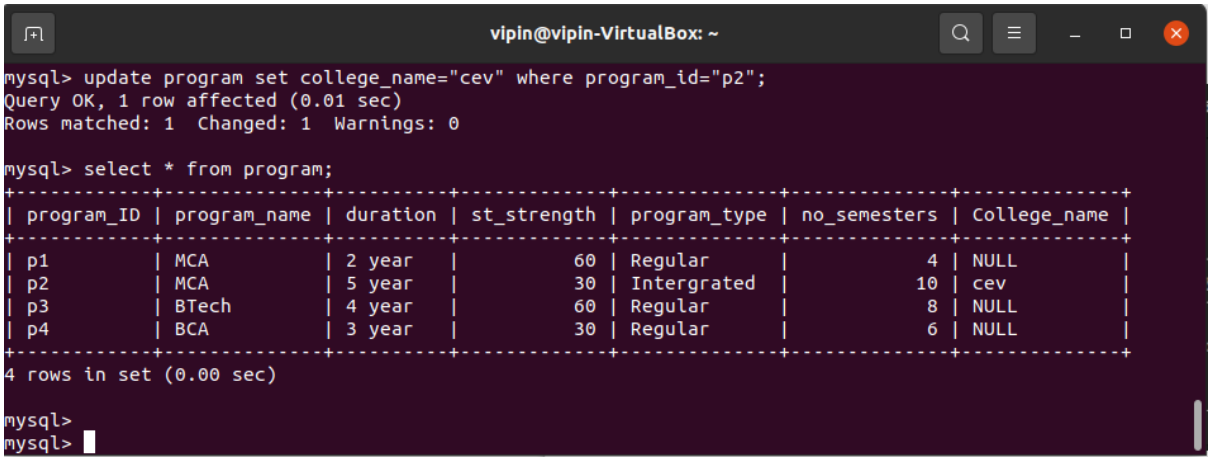
AIM: Perform insertion of records into the database created in the first experiment. Alter the created table and Perform the Insertion, Updation and Deletion operation. Drop the created table and remake it.

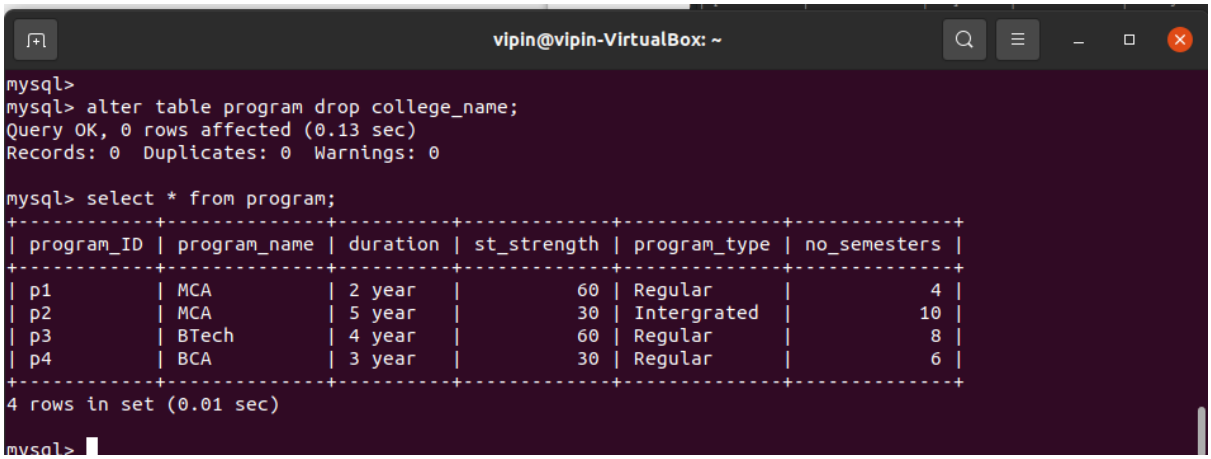
RESULT:






vipin@vipin-VirtualBox: ~
mysql> alter table program add College_name varchar(25);
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> select * from program;
program_ID	program_name	duration	st_strength	program_type	no_semesters	College_name
p1	MCA	2 year	60	Regular	4	NULL
p2	MCA	5 year	30	Intergrated	10	NULL
p3	BTech	4 year	60	Regular	8	NULL
p4	BCA	3 year	30	Regular	6	NULL
4 rows in set (0.00 sec)
mysql>


vipin@vipin-VirtualBox: ~
mysql> update program set college_name="cev" where program_id="p2";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0
mysql> select * from program;
program_ID	program_name	duration	st_strength	program_type	no_semesters	College_name
p1	MCA	2 year	60	Regular	4	NULL
p2	MCA	5 year	30	Intergrated	10	cev
p3	BTech	4 year	60	Regular	8	NULL
p4	BCA	3 year	30	Regular	6	NULL
4 rows in set (0.00 sec)
mysql>
mysql>


vipin@vipin-VirtualBox: ~
mysql>
mysql> alter table program drop college_name;
Query OK, 0 rows affected (0.13 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> select * from program;
program_ID	program_name	duration	st_strength	program_type	no_semesters
p1	MCA	2 year	60	Regular	4
p2	MCA	5 year	30	Intergrated	10
p3	BTech	4 year	60	Regular	8
p4	BCA	3 year	30	Regular	6
4 rows in set (0.01 sec)
mysql>


vipin@vipin-VirtualBox: ~
mysql> drop table student;
Query OK, 0 rows affected (0.06 sec)
mysql> show tables;
+------------------+
| Tables_in_db_mca |
+------------------+
| program |
+------------------+
1 row in set (0.00 sec)
mysql> drop table program;
Query OK, 0 rows affected (0.04 sec)
mysql> show tables;
Empty set (0.00 sec)
mysql>

EXPERIMENT NO.3

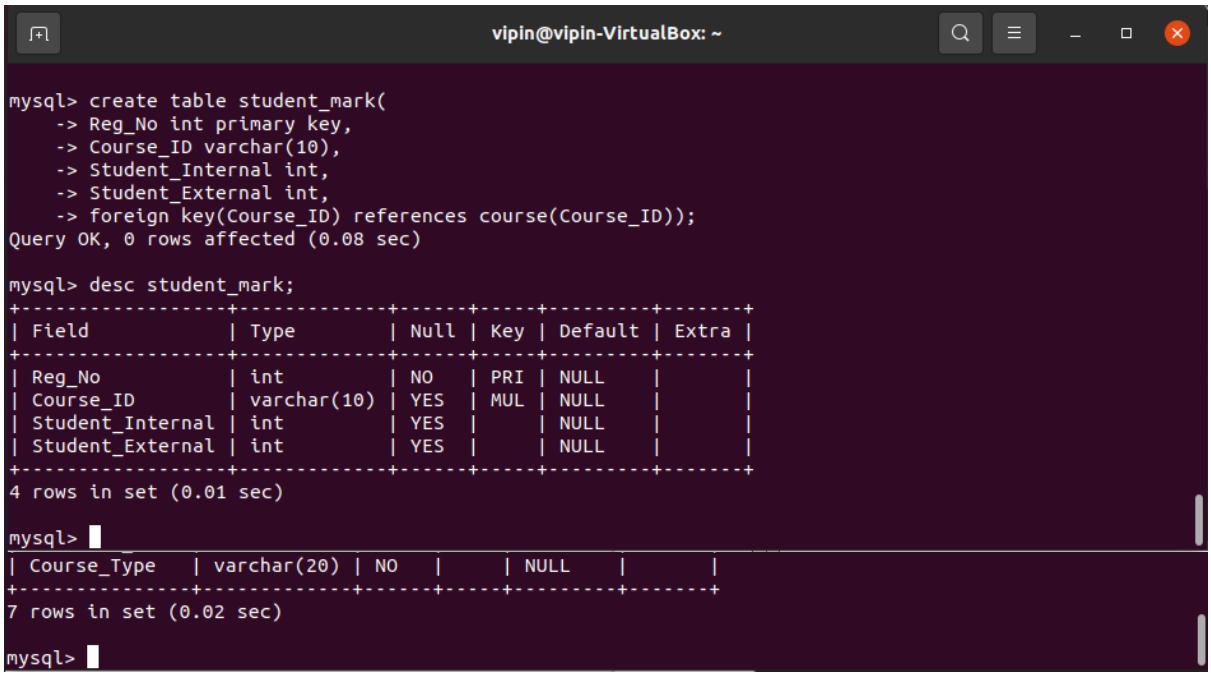
AIM: Create database for the schemas

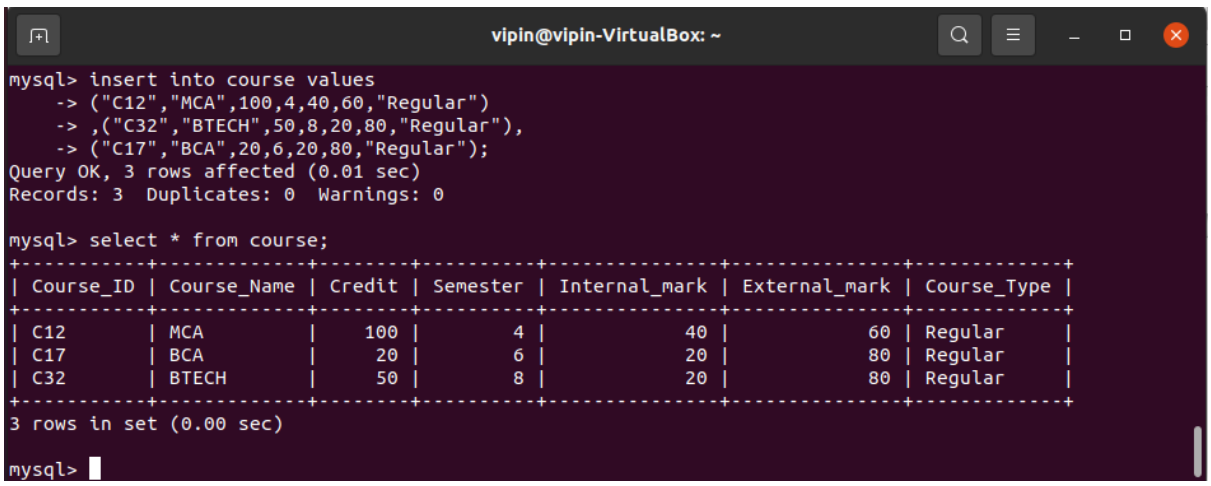
- Course(Course_ID, Course_Name, Credit, Semester, Internal_Mark, External_Mark Course_Type)

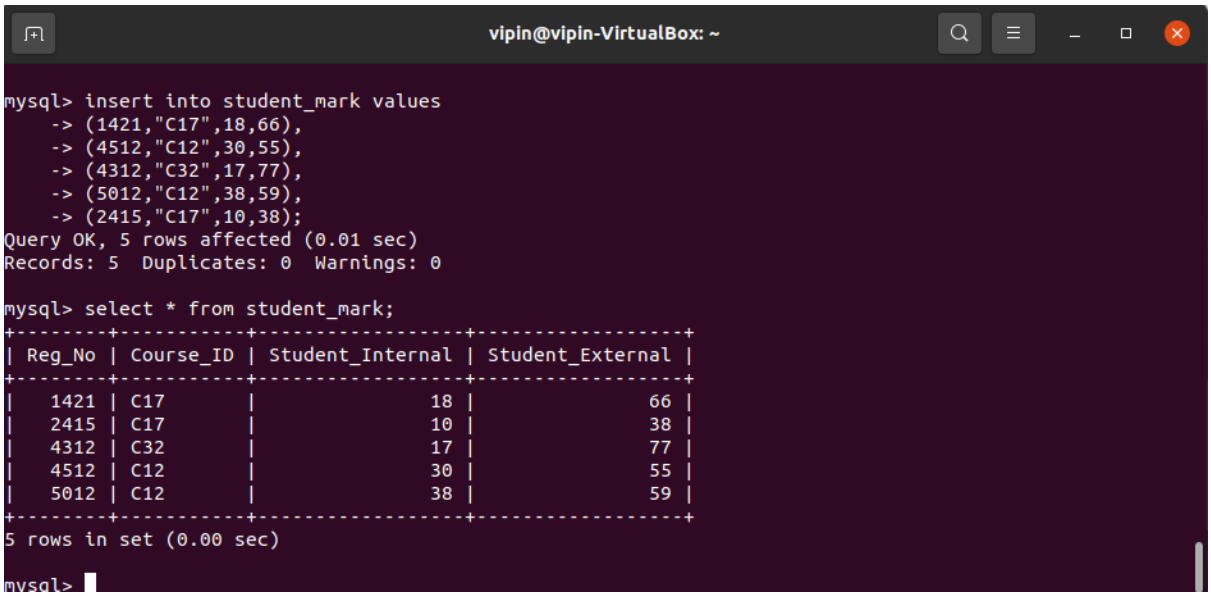
- Student_Mark(Reg_No, Course_ID, Student_Internal, Student_External)

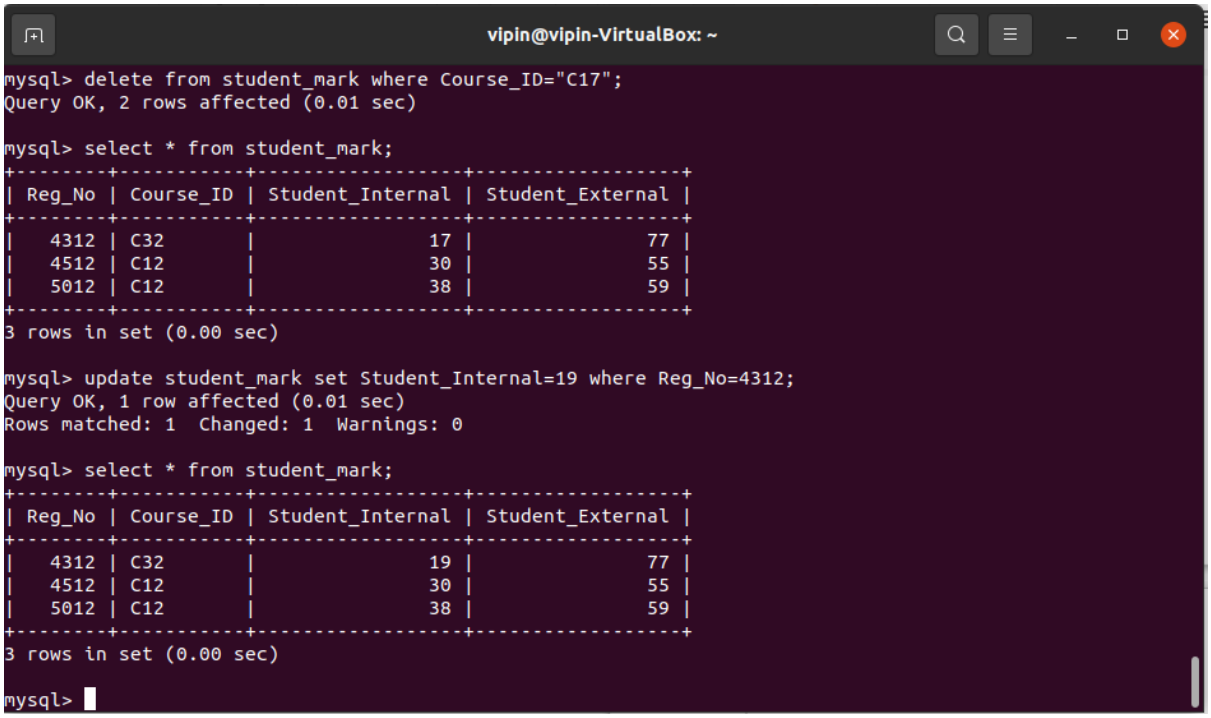
After associating these schemas in to the already created database and perform row insertion, deletion and updation.

RESULT:





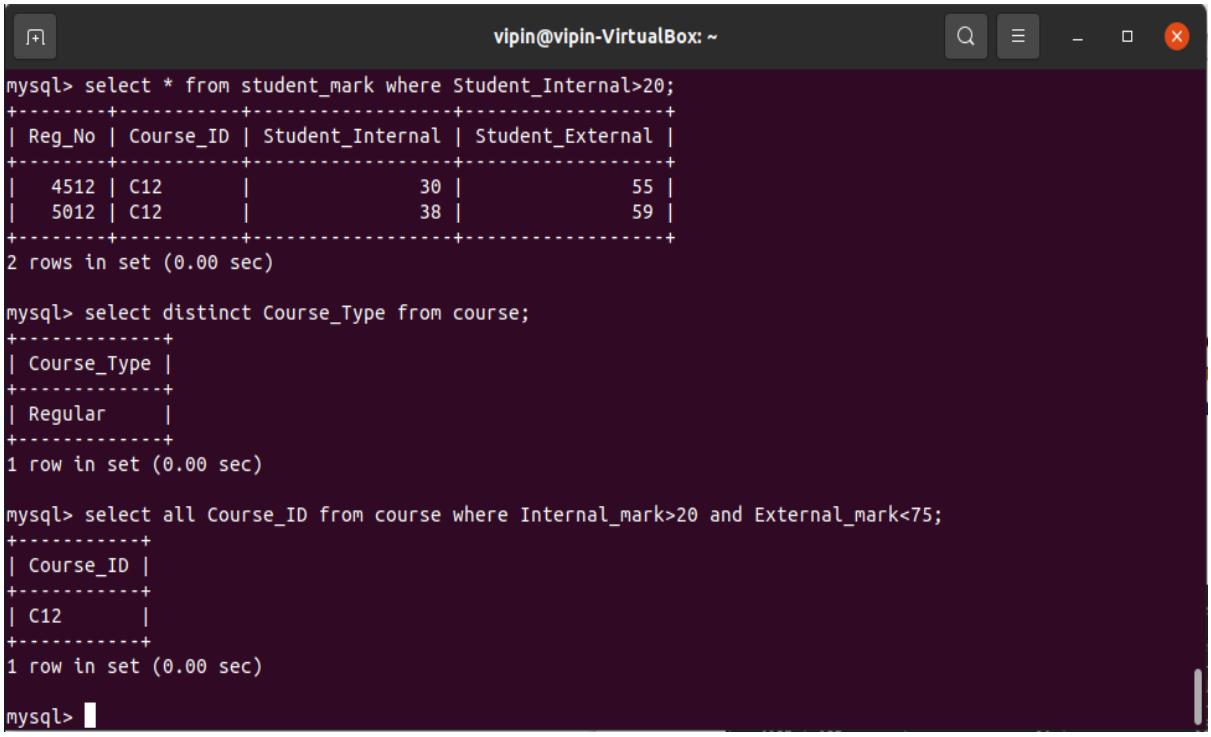

vipin@vipin-VirtualBox: ~
mysql> insert into student_mark values
-> (1421,"C17",18,66),
-> (4512,"C12",30,55),
-> (4312,"C32",17,77),
-> (5012,"C12",38,59),
-> (2415,"C17",10,38);
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
mysql> select * from student_mark;
Reg_No	Course_ID	Student_Internal	Student_External
1421	C17	18	66
2415	C17	10	38
4312	C32	17	77
4512	C12	30	55
5012	C12	38	59
5 rows in set (0.00 sec)
mysql>


vipin@vipin-VirtualBox: ~
mysql> delete from student_mark where Course_ID="C17";
Query OK, 2 rows affected (0.01 sec)
mysql> select * from student_mark;
Reg_No	Course_ID	Student_Internal	Student_External
4312	C32	17	77
4512	C12	30	55
5012	C12	38	59
3 rows in set (0.00 sec)
mysql> update student_mark set Student_Internal=19 where Reg_No=4312;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0
mysql> select * from student_mark;
Reg_No	Course_ID	Student_Internal	Student_External
4312	C32	19	77
4512	C12	30	55
5012	C12	38	59
3 rows in set (0.00 sec)
mysql>

EXPERIMENT NO.4

AIM: Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections. (Perform simple selection using with comparison operators. Familiarization of keywords such as distinct, all, etc.,)

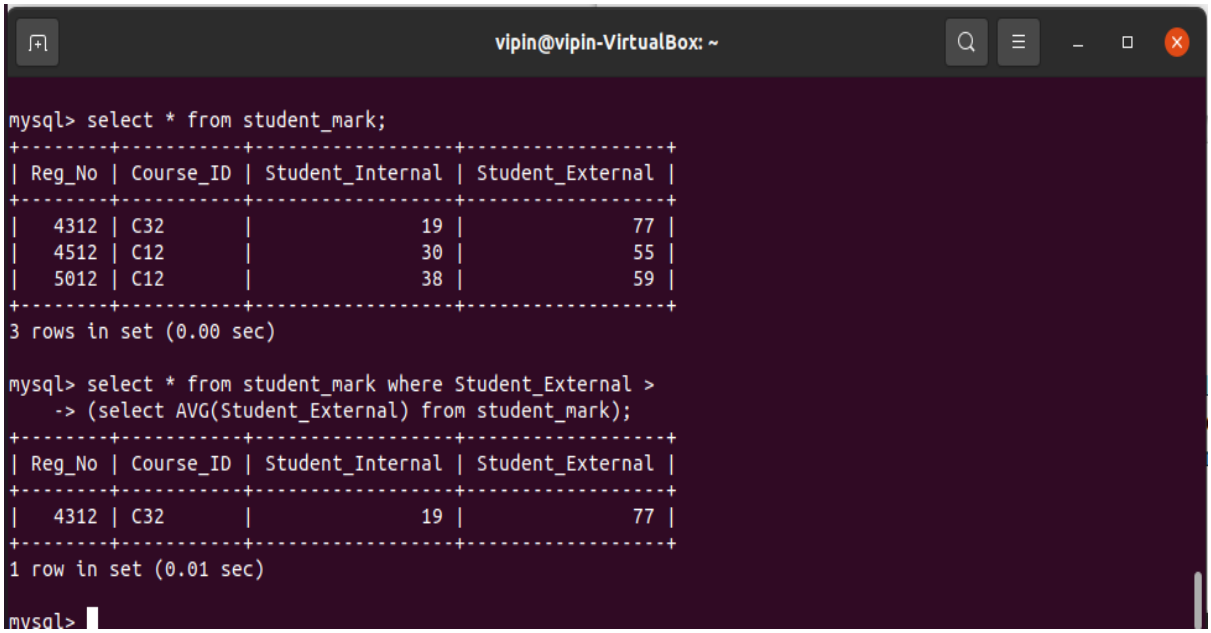
RESULT:

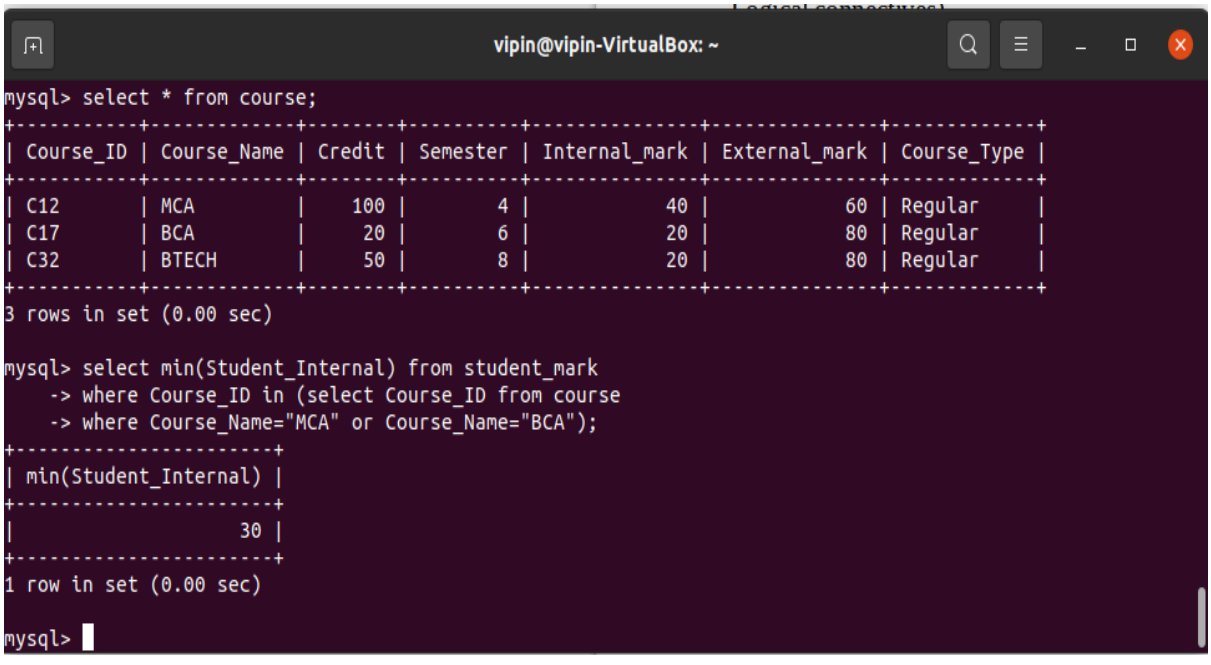


EXPERIMENT NO.5

AIM: Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections. (Perform nested query selection using with comparison operators and Logical connectives)

RESULT:





EXPERIMENT NO.6

AIM: Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections. (Write queries that familiarize all string operations in SQL.)

RESULT:

```
mysql> select*from course;
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| Course_ID | Course_Name | Credit | Semester | Internal_mark | External_mark | Course_Type |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| C12       | MCA         |    100 |        4 |            40 |            60 | Regular     |
| C17       | BCA         |     20 |        6 |            20 |            80 | Regular     |
| C32       | BTECH       |     50 |        8 |            20 |            80 | Regular     |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
3 rows in set (0.00 sec)

mysql> select Course_Name,length(Course_name) as length
    -> from course;
+-------------+--------+
| Course_Name | length |
+-------------+--------+
| MCA         |      3 |
| BCA         |      3 |
| BTECH       |      5 |
+-------------+--------+
3 rows in set (0.00 sec)

mysql> select Course_Name,locate('C',Course_Name) as Location_of_C
    -> from course;
+-------------+---------------+
| Course_Name | Location_of_C |
+-------------+---------------+
| MCA         |             2 |
| BCA         |             2 |
| BTECH       |             4 |
+-------------+---------------+
3 rows in set (0.00 sec)
```

```
mysql> select lower(Course_Name) as Course_Name
    -> from course;
+-------------+
| Course_Name |
+-------------+
| mca         |
| bca         |
| btech       |
+-------------+
3 rows in set (0.01 sec)

mysql> select replace(Course_Name,'BTECH','BTech') as Course_Name
    -> from course;
+-------------+
| Course_Name |
+-------------+
| MCA         |
| BCA         |
| BTech       |
+-------------+
3 rows in set (0.00 sec)

mysql> select Course_Name,reverse(Course_Name) as reverse
    -> from course;
+-------------+---------+
| Course_Name | reverse |
+-------------+---------+
| MCA         | ACM     |
| BCA         | ACB     |
| BTECH       | HCETB   |
+-------------+---------+
3 rows in set (0.00 sec)
```

EXPERIMENT NO.7

AIM: Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections. (Write sample queries that familiarize all aggregate functions, group by and having clauses in SQL)

RESULT:

```
mysql> select*from course;
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| Course_ID | Course_Name | Credit | Semester | Internal_mark | External_mark | Course_Type |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| C12       | MCA         |    100 |        4 |            40 |            60 | Regular     |
| C17       | BCA         |     20 |        6 |            20 |            80 | Regular     |
| C32       | BTECH       |     50 |        8 |            20 |            80 | Regular     |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
3 rows in set (0.00 sec)

mysql> select count(Course_Name) as Courses_Available from course;
+-------------------+
| Courses_Available |
+-------------------+
|                 3 |
+-------------------+
1 row in set (0.00 sec)

mysql> select*from course limit 1;
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| Course_ID | Course_Name | Credit | Semester | Internal_mark | External_mark | Course_Type |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
| C12       | MCA         |    100 |        4 |            40 |            60 | Regular     |
+-----------+-------------+--------+----------+---------------+---------------+-------------+
1 row in set (0.00 sec)
```

```
mysql> select max(External_mark) from course;
+--------------------+
| max(External_mark) |
+--------------------+
|                 80 |
+--------------------+
1 row in set (0.00 sec)

mysql> select min(External_mark) from course;
+--------------------+
| min(External_mark) |
+--------------------+
|                 60 |
+--------------------+
1 row in set (0.00 sec)

mysql> select avg(External_mark) from course;
+--------------------+
| avg(External_mark) |
+--------------------+
|            73.3333 |
+--------------------+
1 row in set (0.00 sec)

mysql> select sum(External_mark) from course;
+--------------------+
| sum(External_mark) |
+--------------------+
|                220 |
+--------------------+
1 row in set (0.00 sec)
```

```
mysql> select Course_ID,count(Course_ID)
    -> from student_mark
    -> group by Course_ID;
+-----------+------------------+
| Course_ID | count(Course_ID) |
+-----------+------------------+
| C12       |                2 |
| C32       |                1 |
+-----------+------------------+
2 rows in set (0.00 sec)

mysql> select Course_ID,count(Course_ID)
    -> from student_mark
    -> group by Course_ID
    -> having count(Course_ID) > 1;
+-----------+------------------+
| Course_ID | count(Course_ID) |
+-----------+------------------+
| C12       |                2 |
+-----------+------------------+
1 row in set (0.00 sec)
```

EXPERIMENT NO.8

AIM: Data retrieval from the already created database/ Create new sample database and necessary adding of data are made then perform the query selections. (Write sample queries that familiarize all set operations in SQL)

RESULT:

```
mysql> select*from sample1;
+----+---------+
| id | name    |
+----+---------+
|  1 | Jazz    |
|  2 | Jemi    |
|  3 | Jackson |
+----+---------+
3 rows in set (0.00 sec)

mysql> select*from sample2;
+----+----------+
| id | name     |
+----+----------+
|  2 | Jemi     |
|  4 | Jennifer |
+----+----------+
2 rows in set (0.00 sec)
```

```
mysql> select * from sample1
    -> union
    -> select * from sample2;
+----+----------+
| id | name     |
+----+----------+
|  1 | Jazz     |
|  2 | Jemi     |
|  3 | Jackson  |
|  4 | Jennifer |
+----+----------+
4 rows in set (0.01 sec)

mysql> select*from sample1
    -> union all
    -> select*from sample2;
+----+----------+
| id | name     |
+----+----------+
|  1 | Jazz     |
|  2 | Jemi     |
|  3 | Jackson  |
|  2 | Jemi     |
|  4 | Jennifer |
+----+----------+
5 rows in set (0.00 sec)
```

EXPERIMENT NO.9

AIM: Define a view on the already created database and perform query selection on it(Create sample view and write sample queries on it)

RESULT:

```
mysql> create view view_Demo as
    -> select * from
    -> sample1 where id<4;
Query OK, 0 rows affected (0.01 sec)

mysql> select*from view_Demo;
+----+---------+
| id | name    |
+----+---------+
|  1 | Jazz    |
|  2 | Jemi    |
|  3 | Jackson |
+----+---------+
3 rows in set (0.01 sec)

mysql> select*from view_Demo
    -> order by name;
+----+---------+
| id | name    |
+----+---------+
|  3 | Jackson |
|  1 | Jazz    |
|  2 | Jemi    |
+----+---------+
3 rows in set (0.00 sec)
```

EXPERIMENT NO.10

AIM: Develop a tiny database system and do necessary adding of data and data retrieval from that (Create sample database systems such as Department Library system, College canteen system, Hostel system, College store system etc.)

RESULT:

Department Library System:

```
mysql> create database Library_Management;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| Library_Management |
| db_mca             |
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| sample             |
| sys                |
| wordpress          |
+--------------------+
9 rows in set (0.00 sec)
```

Tables:

Department

```
mysql> create table department(
    -> department_id int(10) primary key,
    -> hod_name varchar(20) not null,
    -> contact_no int(10) not null)
    -> ;
Query OK, 0 rows affected, 2 warnings (0.03 sec)

mysql> desc department;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| department_id | int         | NO   | PRI | NULL    |       |
| hod_name      | varchar(20) | NO   |     | NULL    |       |
| contact_no    | int         | NO   |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
3 rows in set (0.02 sec)
```

Student:

```
mysql> create table student(
    -> student_id int(10) primary key,
    -> student_name varchar(20),
    -> student_address varchar(100) not null,
    -> registration_date date not null);
Query OK, 0 rows affected, 1 warning (0.03 sec)

mysql> desc student;
+------------------+--------------+------+-----+---------+-------+
| Field            | Type         | Null | Key | Default | Extra |
+------------------+--------------+------+-----+---------+-------+
| student_id       | int          | NO   | PRI | NULL    |       |
| student_name     | varchar(20)  | YES  |     | NULL    |       |
| student_address  | varchar(100) | NO   |     | NULL    |       |
| registration_date| date         | NO   |     | NULL    |       |
+------------------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

book

```
mysql> create table book(
    -> book_id int(20) not null primary key,
    -> book_title varchar(50) not null,
    -> category varchar(20) not null,
    -> rental_price int(10) not null,
    -> status varchar(20),
    -> auther varchar(20) not null,
    -> publisher varchar(20) not null);
Query OK, 0 rows affected, 2 warnings (0.03 sec)

mysql> desc book;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| book_id      | int         | NO   | PRI | NULL    |       |
| book_title   | varchar(50) | NO   |     | NULL    |       |
| category     | varchar(20) | NO   |     | NULL    |       |
| rental_price | int         | NO   |     | NULL    |       |
| status       | varchar(20) | YES  |     | NULL    |       |
| auther       | varchar(20) | NO   |     | NULL    |       |
| publisher    | varchar(20) | NO   |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
7 rows in set (0.01 sec)
```

employee

```
mysql> create table employee(
    -> employee_id int(10) not null primary key,
    -> employee_name varchar(20) not null,
    -> salary int(10) not null,
    -> position varchar(20) not null);
Query OK, 0 rows affected, 2 warnings (0.03 sec)

mysql> desc employee;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| employee_id   | int         | NO   | PRI | NULL    |       |
| employee_name | varchar(20) | NO   |     | NULL    |       |
| salary        | int         | NO   |     | NULL    |       |
| position      | varchar(20) | NO   |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

issue_status

```
mysql> create table issue_status(
    -> issue_id int(10) primary key,
    -> issued_stud int(10) not null,
    -> issued_book_name varchar(50) not null,
    -> issue_date date not null,
    -> id_book int(10) not null,
    -> constraint foreign key(id_book) references book(book_id),
    -> constraint foreign key(issued_stud) references student(student_id));
Query OK, 0 rows affected, 3 warnings (0.04 sec)

mysql> desc issue_status
    -> ;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| issue_id         | int         | NO   | PRI | NULL    |       |
| issued_stud      | int         | NO   | MUL | NULL    |       |
| issued_book_name | varchar(50) | NO   |     | NULL    |       |
| issue_date       | date        | NO   |     | NULL    |       |
| id_book          | int         | NO   | MUL | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

return_status

```
mysql> create table return_status(
    -> return_id int(10) primary key,
    -> return_stud int(10) not null,
    -> returned_book varchar(50) not null,
    -> return_date date not null,
    -> id_book2 int(10) not null,
    -> constraint foreign key(id_book2) references book(book_id),
    -> constraint foreign key(return_stud) references issue_status(issued_stud));
Query OK, 0 rows affected, 3 warnings (0.05 sec)

mysql> desc return_status;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| return_id     | int         | NO   | PRI | NULL    |       |
| return_stud   | int         | NO   | MUL | NULL    |       |
| returned_book | varchar(50) | NO   |     | NULL    |       |
| return_date   | date        | NO   |     | NULL    |       |
| id_book2      | int         | NO   | MUL | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```