



Green University of Bangladesh
Department of Computer Science and Engineering(CSE)
Faculty of Sciences and Engineering
Semester: (Spring, Year:2024), B.Sc. in CSE (Day)

LAB REPORT NO #02
Course Title: Database Lab
Course Code: CSE 210 Section: 221_D9

Experiment Name: Implementation of Integrity Constraints in MySQL

Student Details

| Name | | ID |
|------|---------------|-----------|
| 1. | Jahidul Islam | 221002504 |

Lab Date : 02 – 03 – 2024
Submission Date : 09 – 03 – 2024
Course Teacher's Name : Md. Nazmus Shakib

[For Teachers use only: **Don't Write Anything inside this box**]

| | |
|---------------------------------|-------------------------|
| <u>Lab Report Status</u> | |
| Marks: | Signature: |
| Comments: | Date: |

1. TITLE OF THE LAB EXPERIMENT

Implementation of Integrity Constraints in MySQL

2. OBJECTIVES

After complementing this lab experiment, we will gain practical knowledge and the outcomes of this experiment are

1. Database creation and Insert Data in each table using sql code.
2. Declare Primary Key
3. Assign primary key for each table.
4. Create Composite Key
5. Assign a unique in at least two tables.
6. Implement Unique Constraint
7. Implement Foreign Key Constraint
8. Browse data for each table.

3. PROCEDURE

To successfully complete the outcomes we have done the followings.

1. **Database Design:** first of all, I need to come up with an idea of three tables where I can implement all the outcomes like declaring primary and foreign key, and its constraint. I needed to think of a relation between three tables so that we can build a meaningful database.
2. **Table Creation:** `courselist`, `advisor_list`, `students` three tables.
 - a. `courselist` has one primary key: `course_code`
 - b. `advisor_list` has 2 primary keys

| Field | Type | Null | Key | Default | Extra |
|---------------------------|--------------------------|------|-----|---------|-------|
| <code>faculty_name</code> | <code>varchar(15)</code> | NO | PRI | NULL | |
| <code>faculty_id</code> | <code>int(11)</code> | NO | PRI | NULL | |
| <code>email</code> | <code>varchar(15)</code> | NO | | NULL | |

Figure 1: DESCRIBE `advisor_list`;

- c. `students` table has 1 primary key, 1 MUL key and 1 unique key which is also foreign key.

| Field | Type | Null | Key | Default | Extra |
|--------------|-------------|------|-----|---------|-------|
| id | int(11) | NO | PRI | NULL | |
| NAME | varchar(15) | NO | | NULL | |
| department | varchar(5) | NO | | NULL | |
| course_code | int(11) | NO | UNI | NULL | |
| faculty_name | varchar(15) | NO | MUL | NULL | |
| phone | int(11) | YES | | NULL | |

Firgur 2: DESCRIBE students;

4. IMPLEMENTATION

Here's I have included all the code we need to obtain all the outcomes of this experiment.

Codes:

```
CREATE DATABASE exp3_lab_rpt2 ;
use exp3_lab_rpt2;
```

1. Table: courselist ,

a. Table creation:

```
CREATE TABLE courselist(course_code int NOT NULL, course_name varchar(30)
NOT NULL, batch int NOT NULL, PRIMARY KEY(course_code),
UNIQUE(course_code));
```

b. INSERTion in the table.

```
INSERT INTO courselist (course_code, course_name, batch) VALUES
(307, 'Data Communication', 221),
(308, 'Data Communication Lab', 221),
(209, 'Database System', 221),
(210, 'Database System Lab', 221),
(205, 'Electrical Drives and Instrumentation', 221),
(309, 'Operating System', 221),
(310, 'Operating System lab', 221),
(313, 'Software Engineering', 221);
```

2. Table : students

c. Table creation:

```
CREATE TABLE students(
```

```

id INT NOT NULL,
NAME VARCHAR(15) NOT NULL,
department VARCHAR(5) NOT NULL,
course_code INT NOT NULL,
faculty_name varchar(15) NOT NULL,
phone INT,
PRIMARY KEY(id),
UNIQUE(course_code),
FOREIGN KEY(faculty_name) REFERENCES advisor_list(faculty_name),
FOREIGN KEY(course_code) REFERENCES courselist(course_code)
);

```

d. INSERT in the table.

To insert data in this table we need to first input data in the courselist and advisor_list as students table has a foreign key relationship with these two table.

Server: 127.0.0.1 » Database: exp3_lab_rpt2 » Table: students

Browse Structure SQL Search Insert Export Import Priv

| Column | Type | Function | Null | Value |
|--------------|-------------|----------|-------------------------------------|-------|
| id | int(11) | | | |
| NAME | varchar(15) | | | |
| department | varchar(5) | | | |
| course_code | int(11) | | | |
| faculty_name | varchar(15) | | | |
| phone | int(11) | | <input checked="" type="checkbox"/> | |

☒ Ignore

| Column | Type | Function | Null | V |
|------------|-------------|----------|------|---|
| id | int(11) | | | |
| NAME | varchar(15) | | | |
| department | varchar(5) | | | |

Database System - 209
Database System Lab - 210
Data Communication - 307
Data Communication Lab - 308
Electrical Drives and Instrume - 205
Operating System - 309
Operating System lab - 310
Software Engineering - 313

205 - Electrical Drives and Instrume
209 - Database System
210 - Database System Lab
307 - Data Communication
308 - Data Communication Lab
309 - Operating System
310 - Operating System lab
313 - Software Engineering

Figure 3: student table has a foregin key reference from courelist table (column:course_code).

Server: 127.0.0.1 » Database: exp3_lab_rpt2 » Table: students

Browse Structure SQL Search Insert Export Import Privileges

| Column | Type | Function | Null | Value |
|--------------|-------------|----------|-------------------------------------|-------|
| id | int(11) | | | |
| NAME | varchar(15) | | | |
| department | varchar(5) | | | |
| course_code | int(11) | | | |
| faculty_name | varchar(15) | | | |
| phone | int(11) | | <input checked="" type="checkbox"/> | |

☒ Ignore

Column Type Function Null Value

MR. MD. JAHIDUL - MR. MD. JAHIDUL
 MR. MD. ROBIUL - MR. MD. ROBIUL
 MR HUMAYAN KABI - MR HUMAYAN KABI
MS. BABE SULTAN - MS. BABE SULTAN
 MS. FARHANA AKT - MS. FARHANA AKT
 MS. JAKIA SULTA - MS. JAKIA SULTA
 MS. ROKEYA KHAT - MS. ROKEYA KHAT
 MS. SAMIHA ISLA - MS. SAMIHA ISLA
 MS. UMME HABIBA - MS. UMME HABIBA
 Sharmin Sultana - Sharmin Sultana

Figure 4: student table has a foreign key reference from advisor_list table(faculty_name).

3. Table: advisor_list:

e. Table creation:

```
CREATE TABLE advisor_list(faculty_name varchar(15) NOT NULL, faculty_id int NOT NULL, email varchar(15) NOT NULL, PRIMARY KEY(faculty_name(15), faculty_id ));
```

f. INSERT in the table.

```
INSERT INTO advisor_list (faculty_name, faculty_id, email) VALUES
('MR. MD. JAHIDUL ISLAM', 100, 'jahid@cse.green.edu.bd'),
('MS. JAKIA SULTANA', 101, 'jakia@cse.green.edu.bd'),
('MS. FARHANA AKTER SUNNY', 102, 'farhana@cse.green.edu.bd'),
('Sharmin Sultana', 103, 'sharmin@cse.green.edu.bd'),
('MR. HUMAYAN KABIR RANA', 104, 'humayan@cse.green.edu.bd'),
('Monirul', 105, 'monirul@cse.green.edu.bd'),
('MR. JARGIS AHMED', 106, 'jargis@cse.green.edu.bd'),
('MS. SAMIHA ISLAM TANNI', 107, 'samiha@cse.green.edu.bd'),
('MR. MD. ROBIUL ISLAM', 109, 'robiul@cse.green.edu.bd'),
('MS. BABE SULTANA', 111, 'babe@cse.green.edu.bd'),
('MS. UMME HABIBA', 113, 'umme@cse.green.edu.bd'),
('MS. ROKEYA KHATUN', 115, 'rokeya@cse.green.edu.bd');
```

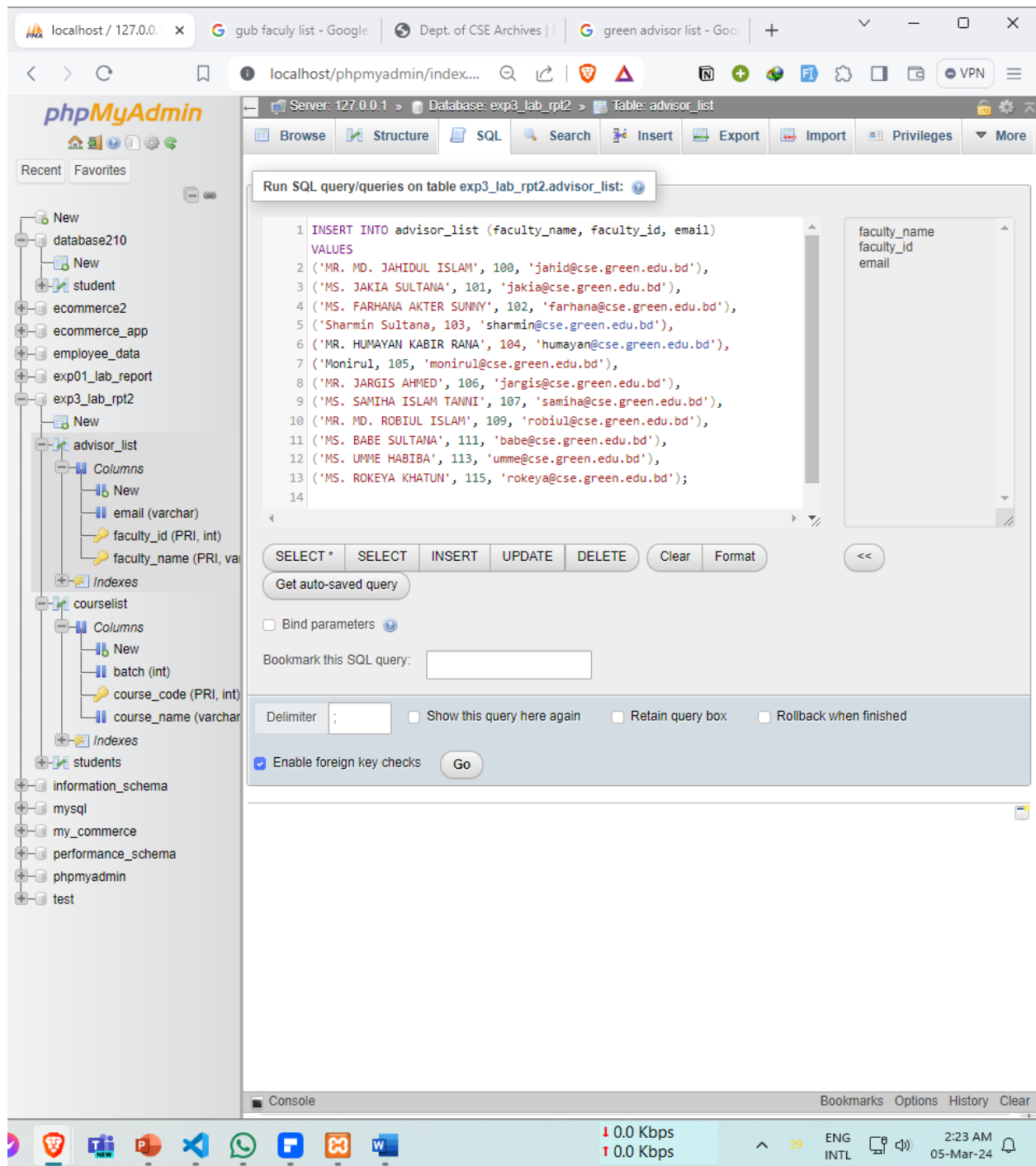


Figure 5: inseting data in advisor_list table.

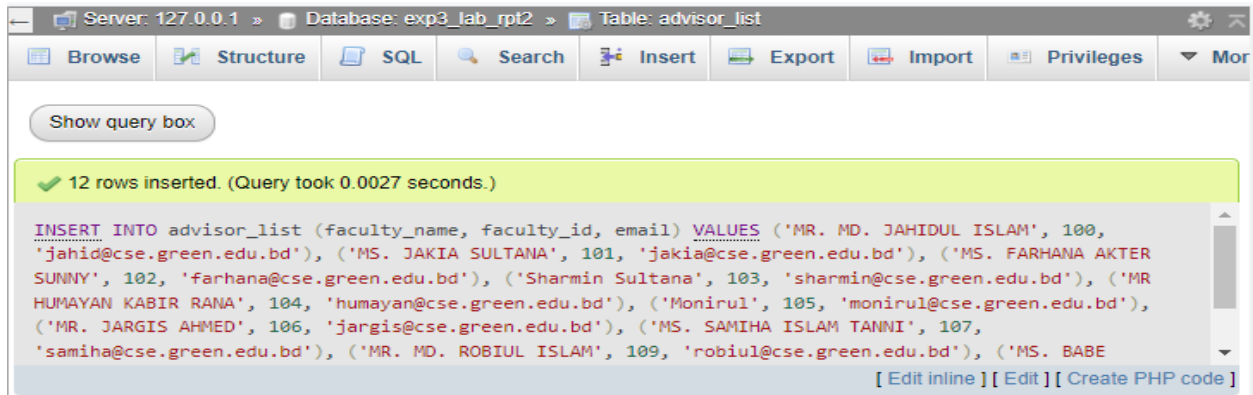


Figure 6: insetion successful in advisor_list table.

5. OUTPUT

We can see the data of our earlier created database using the following command.

SELECT * FROM

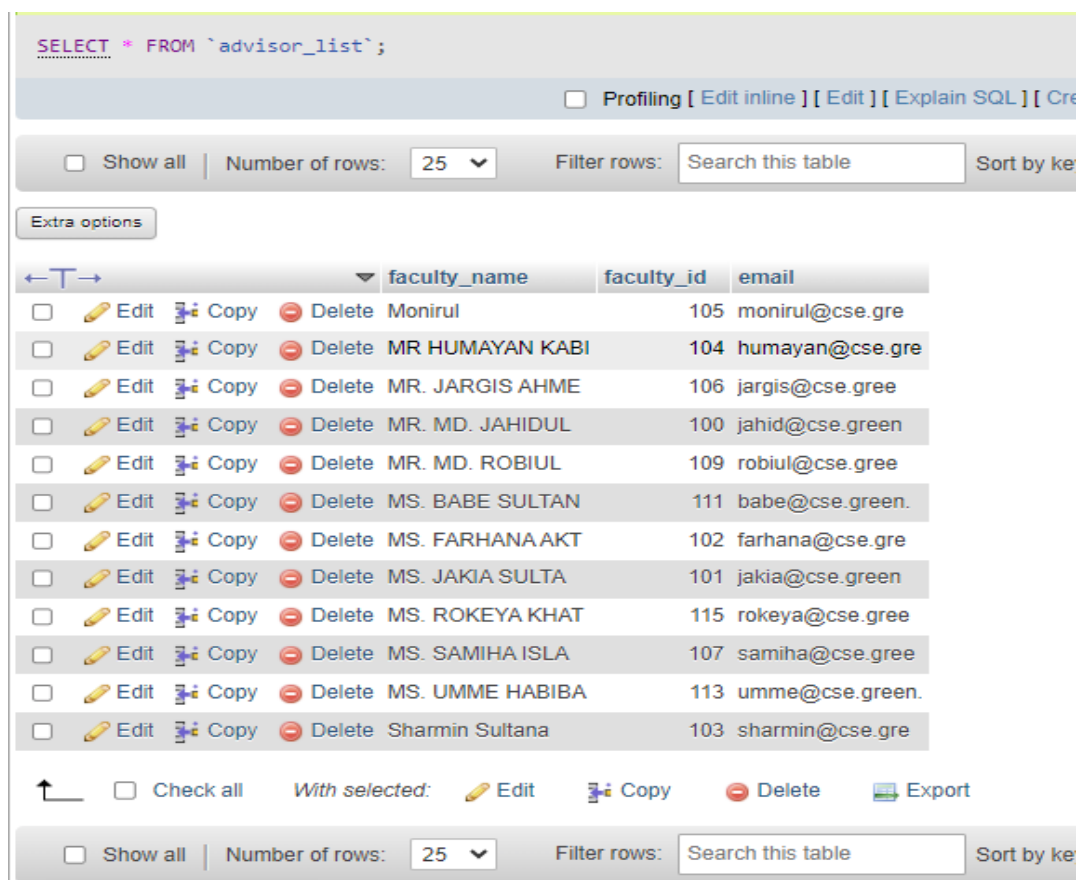


Figure 7: advisor_list table.

✓ Showing rows 0 - 7 (8 total, Query took 0.0002 seconds.)

```
SELECT * FROM `courselist`
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create](#)]

☒ Show all | Number of rows: All ▼ | Filter rows: | Sort by key:

Extra options

| | | | course_code | course_name | batch |
|--------------------------|------|------|-------------|------------------------------------|-------|
| <input type="checkbox"/> | Edit | Copy | Delete | 205 Electrical Drives and Instrume | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 209 Database System | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 210 Database System Lab | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 307 Data Communication | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 308 Data Communication Lab | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 309 Operating System | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 310 Operating System lab | 221 |
| <input type="checkbox"/> | Edit | Copy | Delete | 313 Software Engineering | 221 |

☐ Check all
 With selected:
 Edit
 Copy
 Delete
 Export

☒ Show all | Number of rows: All ▼ | Filter rows: | Sort by key:

Figure 8: courselist table.

Server: 127.0.0.1 > Database: exp3_lab_rpl2 > Table: students

Showing rows 0 - 16 (17 total, Query took 0.0001 seconds.)

`SELECT * FROM `students`;`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Extra options

| | id | NAME | department | course_code | faculty_name | phone |
|---|-----------|-----------------|------------|-------------|-----------------|------------|
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002000 | Chinmoy Chakma | CSE | 316 | MR. MD. JAHIDUL | 1712345678 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002001 | Mehedi Hasan | EEE | 317 | MS. JAKIA SULTA | 1812345678 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002002 | Jahidul Islam | CSE | 318 | MS. FARHANA AKT | 1912345678 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002003 | Shuvo Halder | EEE | 319 | Sharmin Sultana | 1612345678 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002004 | Md. Mahmudul Ha | CSE | 320 | MR HUMAYAN KABI | 1512345678 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002005 | Md. Ismail Miah | EEE | 321 | Monirul | 1712345679 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002006 | Samiul Islam | CSE | 322 | MR. JARGIS AHME | 1812345679 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002007 | Ashiful Haque S | EEE | 323 | MS. SAMIHA ISLA | 1912345679 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002008 | Md. Ibne Jayed | CSE | 324 | MR. MD. ROBIUL | 1612345679 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002009 | Ashik Arman Zik | EEE | 325 | MS. BABE SULTAN | 1512345679 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002010 | B. M. Zim | CSE | 326 | MS. UMME HABIBA | 1712345680 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002011 | Most. Sadia Afr | EEE | 327 | MS. ROKEYA KHAT | 1812345680 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002012 | Md. Shawon Ahme | CSE | 328 | MR. MD. JAHIDUL | 1912345680 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002013 | Md. Mahfuz Sark | EEE | 329 | MS. JAKIA SULTA | 1612345680 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002014 | Nazmul Alam Abi | CSE | 330 | MS. FARHANA AKT | 1512345680 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002015 | Hasibul Hassan | EEE | 331 | Sharmin Sultana | 1712345681 |
| <input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete | 221002016 | Rim Islam Alif | CSE | 332 | MR HUMAYAN KABI | 1812345681 |

Console | Bookmarks | Options | History | Clear

Figure 9: student table. By `SELECT * FROM `students`;`

6. ANALYSIS AND DISCUSSION:

I reflected on how integrity constraints maintained data accuracy. Explored relationships between tables, noting their role in data retrieval. Despite challenges, I found the implementation efficient, with scope for future enhancements.

7. SUMMARY:

The lab experiment is successfully completed on creating and inserting data in the database with three tables: "courselist," "advisor_list," and "students."

The data insertion has reference integrity by referencing existing course codes and faculty names from the respective tables. Overall, the lab aimed to demonstrate the implementation of integrity constraints and foreign key relationships in MySQL databases.