Department of Information and Communication Technology Faculty of Technology

University of Ruhuna

Database Management Systems Practicum(ICT 1222)

Assignment 02 – Mini Project Group 14

Submitted to: Mr.P.H.P. Nuwan Laksiri

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1. Introduction

A system for faculty of technology, level II semester I. we are tasked with developing a comprehensive system that caters to the unique requirements of various user roles within the faculty. The system encompasses the administration, faculty members, technical officers, and most importantly, the students, all of whom have distinct privileges and responsibilities in managing academic records.

The system is designed to accommodate the different phases of the Database Development Life Cycle (DDLC), ensuring that data requirements are meticulously defined, relationships are well-established, and the product serves as a reliable and efficient tool for academic management. Key documents including the Data Requirement Document, Entity-Relationship (ER) diagrams, and Relational Mapping diagrams are generated to guide the development process and present a clear blueprint for the final system.

A significant portion of the system is dedicated to attendance management, considering the nuances of a 15-week semester with both theory and practical sessions. This includes recording attendance, accounting for medical leaves, and offering a variety of ways to view and analyse attendance data, whether for an entire batch or individual students.

Another crucial aspect is the management of exam marks, which must adhere to specific assessment criteria defined by each course unit. The system ensures that Continuous Assessment (CA) marks are tracked, eligibility for the final exam is determined, and that students can view their marks and eligibility status easily.

Furthermore, the system incorporates mechanisms for grading students according to faculty regulations, offering comprehensive insights into marks, grades, Semester Grade Point Averages (SGPA), and Cumulative Grade Point Averages (CGPA). Special provisions are made for students who have medical certificates for various assessments.

In addition, the system maintains student records, including proper, repeat, and suspended statuses, which have implications on how their results are displayed and graded.

Ultimately, the system we are tasked with building will revolutionize how the Faculty of Technology manages its academic operations. It is a powerful tool that ensures efficiency, accuracy, and accessibility for faculty, staff, and students alike. By implementing this system, the faculty is well-equipped to navigate the complexities of academic management and provide students with a transparent and organized academic experience.

2. Solution

The Faculty of Technology, Level II, Semester I, is embarking on the development of a comprehensive academic management system tailored to the unique needs of various user roles within the institution. This system represents a significant step toward modernizing and streamlining academic operations, ensuring efficiency, accuracy, and accessibility for faculty, staff, and students alike.

2.1 Purpose:

The primary purpose of this academic management system is to address the challenges and intricacies of managing academic records within a dynamic educational environment. It serves as a reliable and efficient tool for academic management, catering to the distinct privileges and responsibilities of different user roles, including administration, faculty members, technical officers, and students.

2.2 Scope:

- User Roles and Responsibilities: It caters to the specific needs of each user role. Administrators have the authority to manage the system and generate reports, faculty members can input and access academic data, technical officers handle system maintenance, and students can view their academic records.

- Database Development Life Cycle (DDLC): The system has undergone rigorous development phases, ensuring that data requirements are well-defined, relationships are established, and a clear blueprint exists for the final product. Key documents such as Data Requirement Documents and Entity-Relationship (ER) diagrams guide the development process.

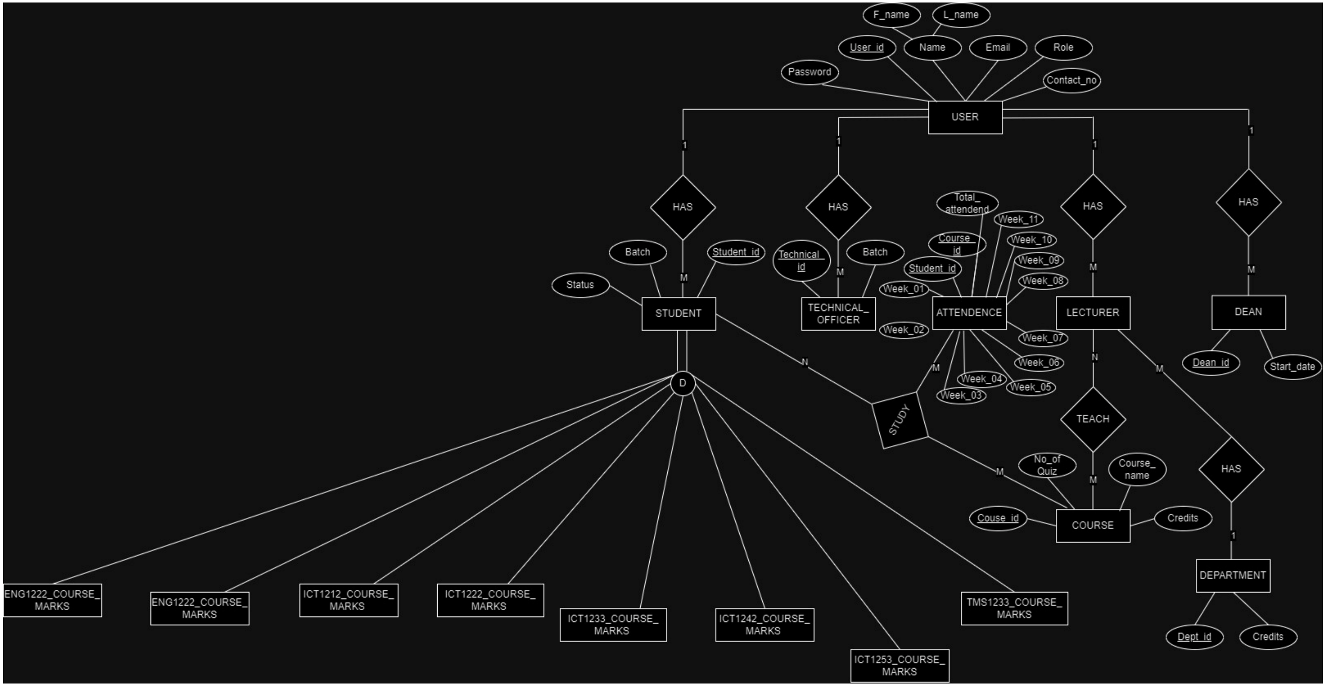
- Attendance Management: The system provides comprehensive attendance management, accounting for a 15-week semester that includes both theory and practical sessions. It records attendance, manages medical leaves, and offers various ways to view and analyse attendance data.

- Exam Marks Management: The system tracks Continuous Assessment (CA) marks, determines eligibility for the final exam, and allows students to easily view their marks and eligibility status.

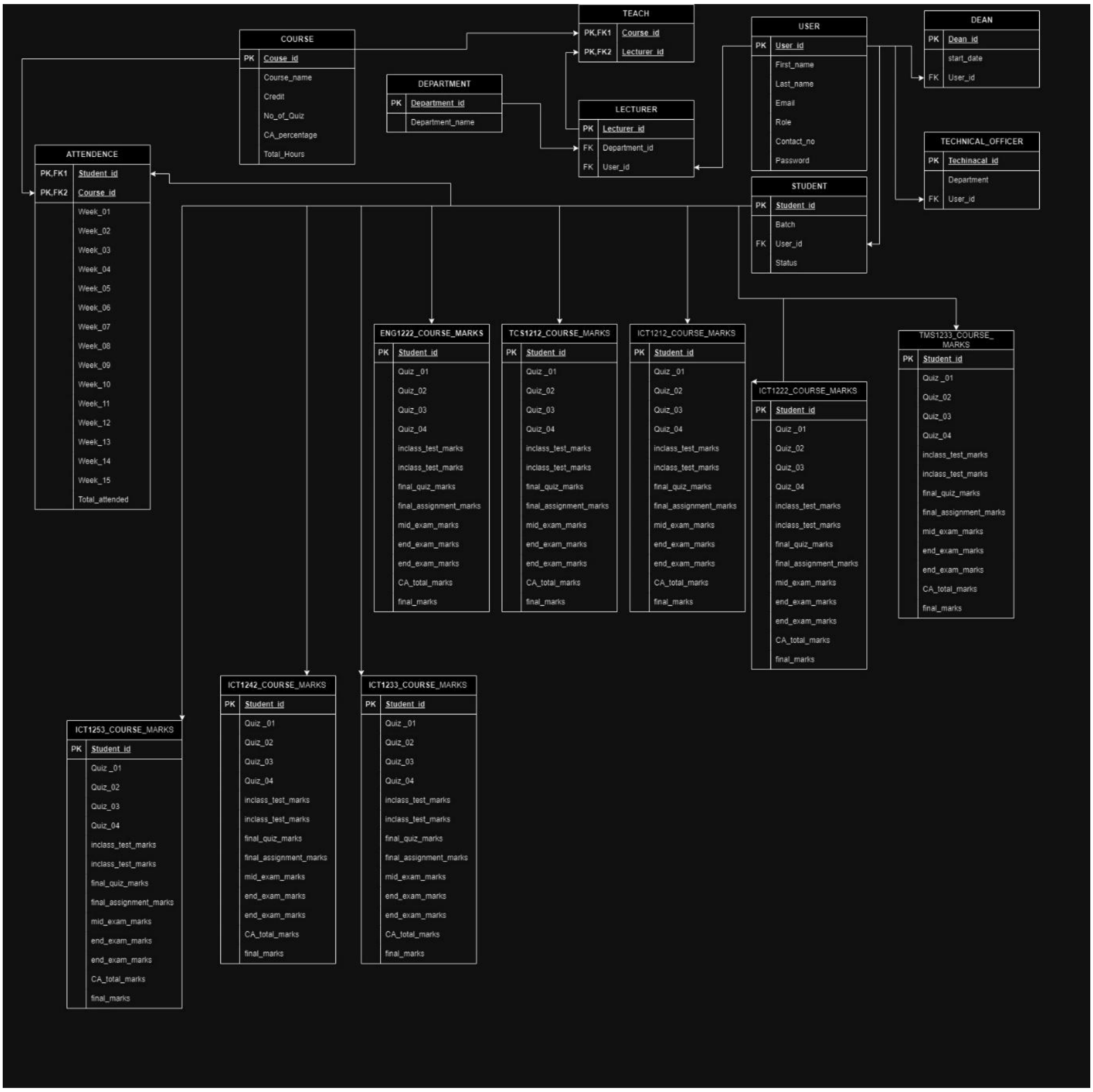
- Student Grading: The system adheres to faculty regulations for grading students and offers insights into marks, grades, Semester Grade Point Averages (SGPA), and Cumulative Grade Point Averages (CGPA). Special provisions are made for students with medical certificates.

- Student Records Management: The system maintains student records, including different statuses such as proper, repeat, and suspended, which influence how their results are displayed and graded.

3. Proposed ER/EER diagram

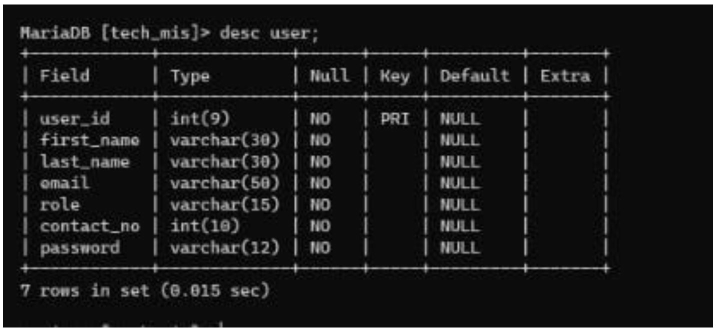


4. Proposed Relational mapping diagram.



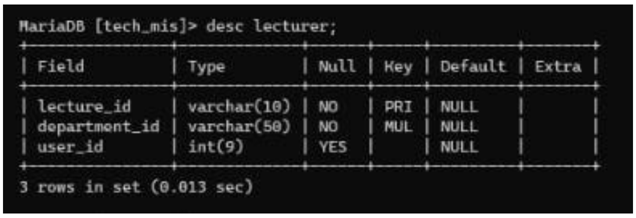
5. Table structure

5.1. User



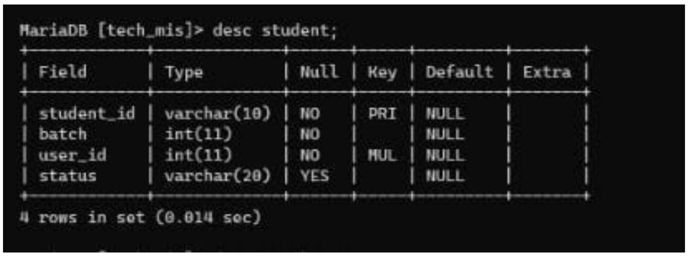
```
MariaDB [tech_mis]> desc user;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| user_id    | int(9)      | NO   | PRI | NULL    |       |
| first_name | varchar(30) | NO   |     | NULL    |       |
| last_name  | varchar(30) | NO   |     | NULL    |       |
| email      | varchar(50) | NO   |     | NULL    |       |
| role       | varchar(15) | NO   |     | NULL    |       |
| contact_no | int(10)     | NO   |     | NULL    |       |
| password   | varchar(12) | NO   |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
7 rows in set (0.015 sec)
```

5.2. Lecture



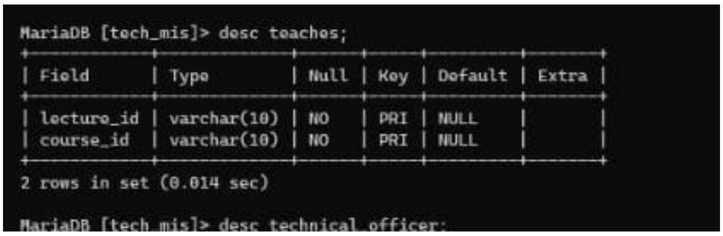
```
MariaDB [tech_mis]> desc lecturer;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| lecture_id    | varchar(10) | NO   | PRI | NULL    |       |
| department_id | varchar(50) | NO   | MUL | NULL    |       |
| user_id       | int(9)      | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
3 rows in set (0.013 sec)
```

5.3. Student



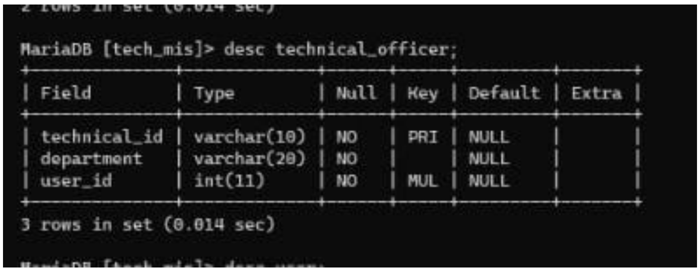
```
MariaDB [tech_mis]> desc student;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| student_id | varchar(10) | NO   | PRI | NULL    |       |
| batch      | int(11)     | NO   |     | NULL    |       |
| user_id    | int(11)     | NO   | MUL | NULL    |       |
| status     | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
4 rows in set (0.014 sec)
```

5.4. Teaches



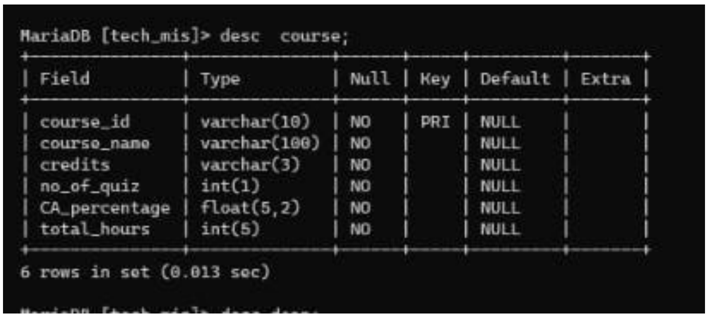
```
MariaDB [tech_mis]> desc teaches;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| lecture_id | varchar(10) | NO   | PRI | NULL    |       |
| course_id  | varchar(10) | NO   | PRI | NULL    |       |
+------------+-------------+------+-----+---------+-------+
2 rows in set (0.014 sec)

MariaDB [tech_mis]> desc technical_officer;
```

5.5. Technical Officer



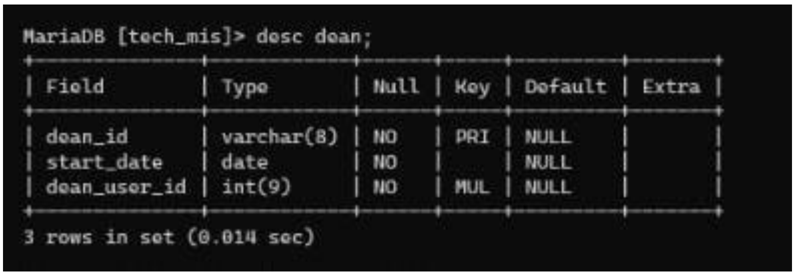
```
2 rows in set (0.014 sec)

MariaDB [tech_mis]> desc technical_officer;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| technical_id | varchar(10) | NO   | PRI | NULL    |       |
| department   | varchar(20) | NO   |     | NULL    |       |
| user_id      | int(11)     | NO   | MUL | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
3 rows in set (0.014 sec)

MariaDB [tech_mis]> desc user;
```

5.6. Course



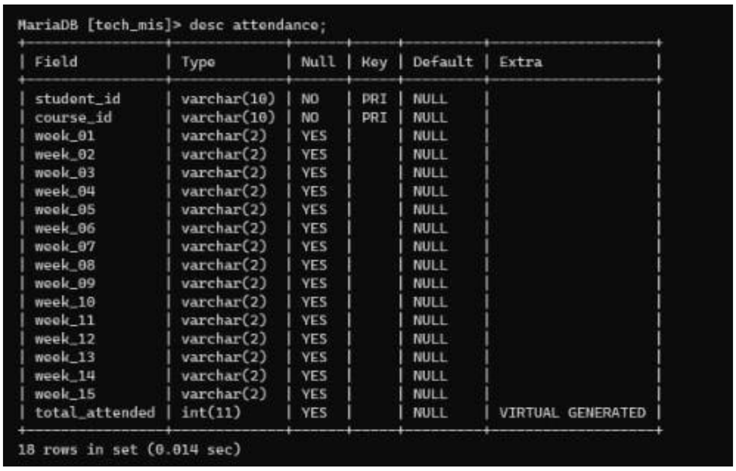
```
MariaDB [tech_mis]> desc  course;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| course_id     | varchar(10)  | NO   | PRI | NULL    |       |
| course_name   | varchar(100) | NO   |     | NULL    |       |
| credits       | varchar(3)   | NO   |     | NULL    |       |
| no_of_quiz    | int(1)       | NO   |     | NULL    |       |
| CA_percentage | float(5,2)   | NO   |     | NULL    |       |
| total_hours   | int(5)       | NO   |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
6 rows in set (0.013 sec)

MariaDB [tech_mis]> desc dept;
```

5.7. Dean



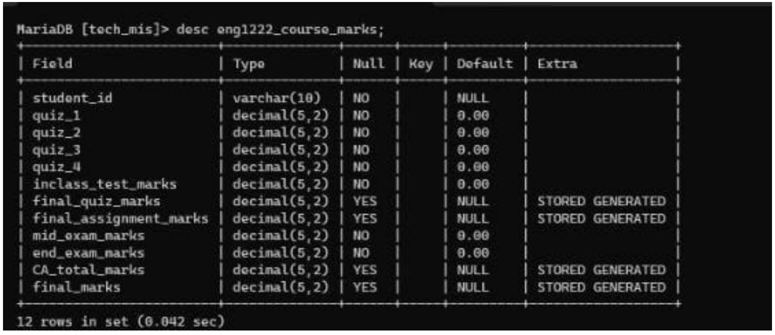
```
MariaDB [tech_mis]> desc dean;
+--------------+------------+------+-----+---------+-------+
| Field        | Type       | Null | Key | Default | Extra |
+--------------+------------+------+-----+---------+-------+
| dean_id      | varchar(8) | NO   | PRI | NULL    |       |
| start_date   | date       | NO   |     | NULL    |       |
| dean_user_id | int(9)     | NO   | MUL | NULL    |       |
+--------------+------------+------+-----+---------+-------+
3 rows in set (0.014 sec)
```

5.8. Attendance



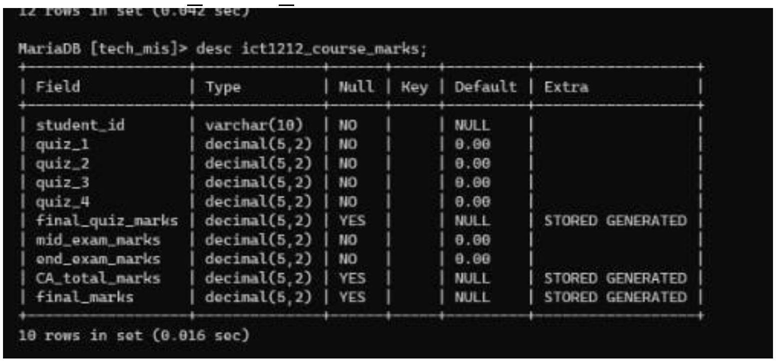
```
MariaDB [tech_mis]> desc attendance;
+----------------+-------------+------+-----+---------+-------------------+
| Field          | Type        | Null | Key | Default | Extra             |
+----------------+-------------+------+-----+---------+-------------------+
| student_id     | varchar(10) | NO   | PRI | NULL    |                   |
| course_id      | varchar(10) | NO   | PRI | NULL    |                   |
| week_01        | varchar(2)  | YES  |     | NULL    |                   |
| week_02        | varchar(2)  | YES  |     | NULL    |                   |
| week_03        | varchar(2)  | YES  |     | NULL    |                   |
| week_04        | varchar(2)  | YES  |     | NULL    |                   |
| week_05        | varchar(2)  | YES  |     | NULL    |                   |
| week_06        | varchar(2)  | YES  |     | NULL    |                   |
| week_07        | varchar(2)  | YES  |     | NULL    |                   |
| week_08        | varchar(2)  | YES  |     | NULL    |                   |
| week_09        | varchar(2)  | YES  |     | NULL    |                   |
| week_10        | varchar(2)  | YES  |     | NULL    |                   |
| week_11        | varchar(2)  | YES  |     | NULL    |                   |
| week_12        | varchar(2)  | YES  |     | NULL    |                   |
| week_13        | varchar(2)  | YES  |     | NULL    |                   |
| week_14        | varchar(2)  | YES  |     | NULL    |                   |
| week_15        | varchar(2)  | YES  |     | NULL    |                   |
| total_attended | int(11)     | YES  |     | NULL    | VIRTUAL GENERATED |
+----------------+-------------+------+-----+---------+-------------------+
18 rows in set (0.014 sec)
```

5.9. eng1222_course_marks



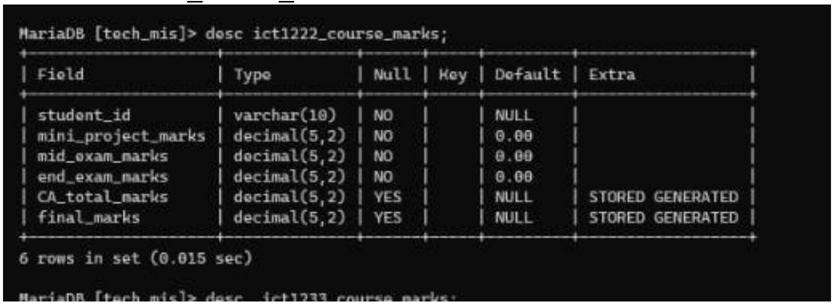
```
MariaDB [tech_mis]> desc eng1222_course_marks;
+-------------------------+--------------+------+-----+---------+------------------+
| Field                   | Type         | Null | Key | Default | Extra            |
+-------------------------+--------------+------+-----+---------+------------------+
| student_id              | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4                  | decimal(5,2) | NO   |     | 0.00    |                  |
| inclass_test_marks      | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks        | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_assignment_marks  | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| mid_exam_marks          | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks          | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks          | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks             | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+-------------------------+--------------+------+-----+---------+------------------+
12 rows in set (0.042 sec)
```

5.10. ict1212_course_marks



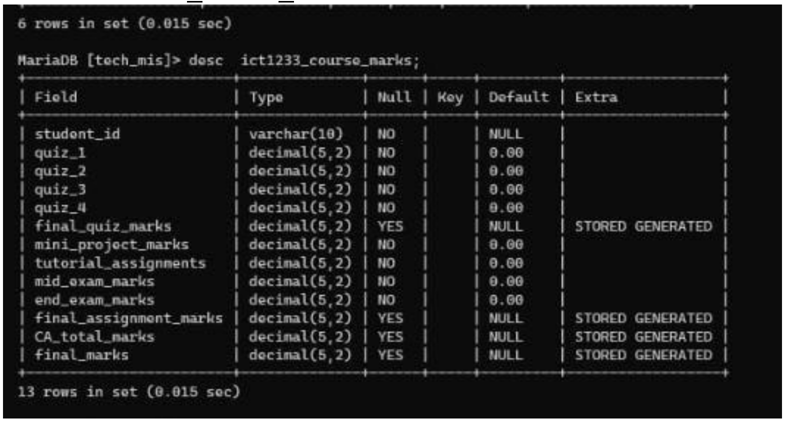
```
12 rows in set (0.042 sec)

MariaDB [tech_mis]> desc ict1212_course_marks;
+------------------+--------------+------+-----+---------+------------------+
| Field            | Type         | Null | Key | Default | Extra            |
+------------------+--------------+------+-----+---------+------------------+
| student_id       | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4           | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| mid_exam_marks   | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks   | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks   | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks      | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+------------------+--------------+------+-----+---------+------------------+
10 rows in set (0.016 sec)
```

5.11. ict1222_course_marks



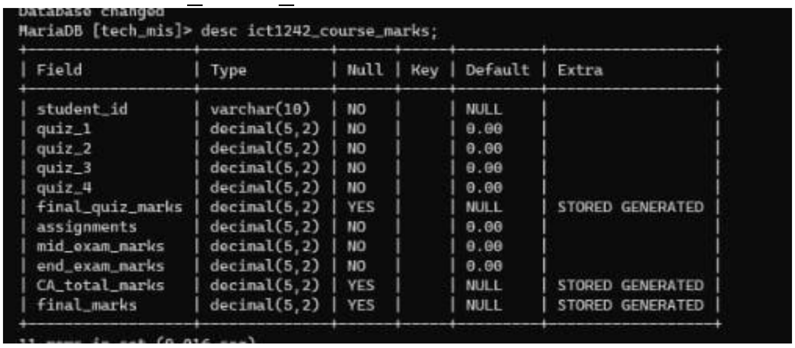
```
MariaDB [tech_mis]> desc ict1222_course_marks;
+--------------------+--------------+------+-----+---------+------------------+
| Field              | Type         | Null | Key | Default | Extra            |
+--------------------+--------------+------+-----+---------+------------------+
| student_id         | varchar(10)  | NO   |     | NULL    |                  |
| mini_project_marks | decimal(5,2) | NO   |     | 0.00    |                  |
| mid_exam_marks     | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks     | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks     | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks        | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+--------------------+--------------+------+-----+---------+------------------+
6 rows in set (0.015 sec)

MariaDB [tech_mis]> desc  ict1233_course_marks;
```

5.12. ict1233_course_marks



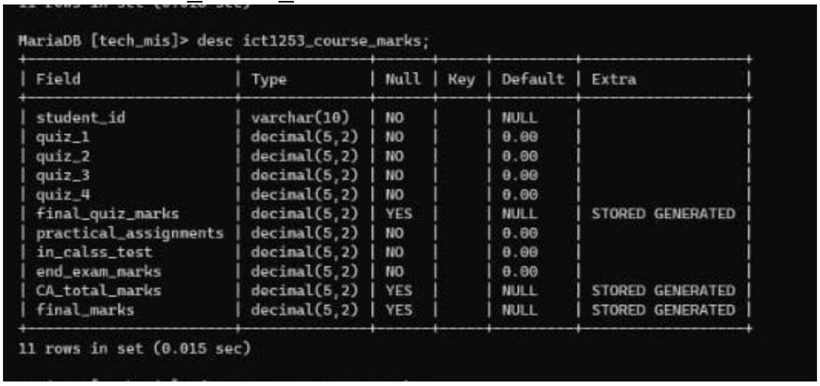
```
6 rows in set (0.015 sec)

MariaDB [tech_mis]> desc  ict1233_course_marks;
+-------------------------+--------------+------+-----+---------+------------------+
| Field                   | Type         | Null | Key | Default | Extra            |
+-------------------------+--------------+------+-----+---------+------------------+
| student_id              | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3                  | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4                  | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks        | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| mini_project_marks      | decimal(5,2) | NO   |     | 0.00    |                  |
| tutorial_assignments    | decimal(5,2) | NO   |     | 0.00    |                  |
| mid_exam_marks          | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks          | decimal(5,2) | NO   |     | 0.00    |                  |
| final_assignment_marks  | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| CA_total_marks          | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks             | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+-------------------------+--------------+------+-----+---------+------------------+
13 rows in set (0.015 sec)
```

5.13. ict1242_course_marks



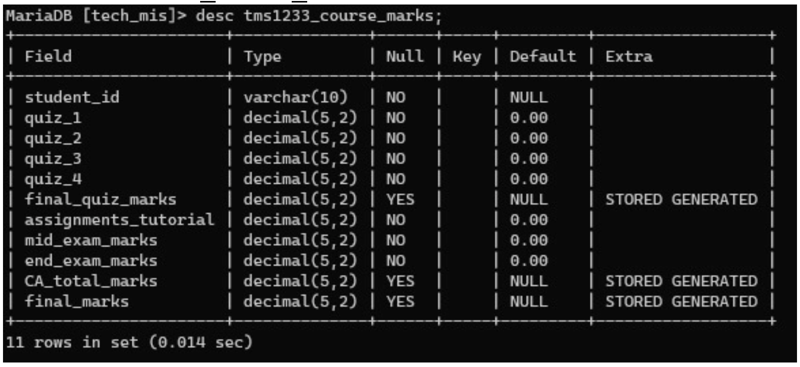
```
Database changed
MariaDB [tech_mis]> desc ict1242_course_marks;
+------------------+--------------+------+-----+---------+------------------+
| Field            | Type         | Null | Key | Default | Extra            |
+------------------+--------------+------+-----+---------+------------------+
| student_id       | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4           | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| assignments      | decimal(5,2) | NO   |     | 0.00    |                  |
| mid_exam_marks   | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks   | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks   | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks      | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+------------------+--------------+------+-----+---------+------------------+
11 rows in set (0.016 sec)
```

5.14. ict1253_course_marks



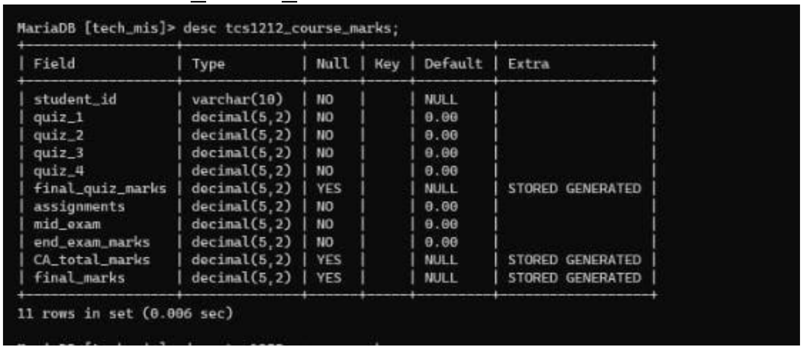
```
11 rows in set (0.016 sec)

MariaDB [tech_mis]> desc ict1253_course_marks;
+-----------------------+--------------+------+-----+---------+------------------+
| Field                 | Type         | Null | Key | Default | Extra            |
+-----------------------+--------------+------+-----+---------+------------------+
| student_id            | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1                | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2                | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3                | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4                | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks      | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| practical_assignments | decimal(5,2) | NO   |     | 0.00    |                  |
| in_calss_test         | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks        | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks        | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks           | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+-----------------------+--------------+------+-----+---------+------------------+
11 rows in set (0.015 sec)
```

5.15. tms1233_course_marks



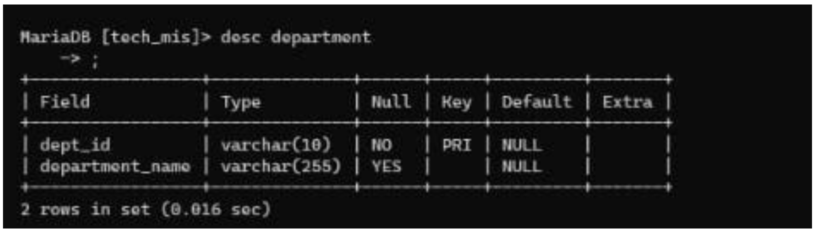
```
MariaDB [tech_mis]> desc tms1233_course_marks;
+---------------------+--------------+------+-----+---------+------------------+
| Field               | Type         | Null | Key | Default | Extra            |
+---------------------+--------------+------+-----+---------+------------------+
| student_id          | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1              | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2              | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3              | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4              | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks    | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| assignments_tutorial | decimal(5,2) | NO   |     | 0.00    |                  |
| mid_exam_marks      | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks      | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks      | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks         | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+---------------------+--------------+------+-----+---------+------------------+
11 rows in set (0.014 sec)
```

5.16. tcs1212_course_marks



```
MariaDB [tech_mis]> desc tcs1212_course_marks;
+------------------+--------------+------+-----+---------+------------------+
| Field            | Type         | Null | Key | Default | Extra            |
+------------------+--------------+------+-----+---------+------------------+
| student_id       | varchar(10)  | NO   |     | NULL    |                  |
| quiz_1           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_2           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_3           | decimal(5,2) | NO   |     | 0.00    |                  |
| quiz_4           | decimal(5,2) | NO   |     | 0.00    |                  |
| final_quiz_marks | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| assignments      | decimal(5,2) | NO   |     | 0.00    |                  |
| mid_exam         | decimal(5,2) | NO   |     | 0.00    |                  |
| end_exam_marks   | decimal(5,2) | NO   |     | 0.00    |                  |
| CA_total_marks   | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
| final_marks      | decimal(5,2) | YES  |     | NULL    | STORED GENERATED |
+------------------+--------------+------+-----+---------+------------------+
11 rows in set (0.006 sec)
```

5.17. Department



```
MariaDB [tech_mis]> desc department
    -> ;
+-----------------+--------------+------+-----+---------+-------+
| Field           | Type         | Null | Key | Default | Extra |
+-----------------+--------------+------+-----+---------+-------+
| dept_id         | varchar(10)  | NO   | PRI | NULL    |       |
| department_name | varchar(255) | YES  |     | NULL    |       |
+-----------------+--------------+------+-----+---------+-------+
2 rows in set (0.016 sec)
```

6. Architecture of your solution

First module is admin which hold the key for all privileges. The admin has absolute right to all the users which are Dean, Lecture, Demonstrator, Technical officer, and Student.

Second module is handled by user which can be a technical officer or Lecture. This user has rights making daily attendance, updating, editing, insert data, and generating reports to the students.

Third is handled by a user is the student. Students has less privileges to access of the system. The student can view only his/her records by providing Student_id. Student will be able to see the percentage of his/her attendance. And final results of examination.

7. Tools and technologies

a. XAMP
b. MySQL
c. DRAWIO

8. Security measures to protect your DB.

1. MD5 algorithm for user passwords

Example:

```
        INSERT INTO user (user_id, first_name, last_name, email, role, contact_no,
password)
VALUES
  (0001, 'Abel', 'Tesfaye', 'abeltes@gmail.com', 'Dean', 0718032400, MD5('abel123'));
```

2. Our database project we create 06 users. We have provided a separate password for all users. So, without user’s password. Users are offered privileges so they can only access the offers in tables.
   - Admin - With All privileges with Grant
   - Dean - With All privileges without Grant
   - Lecturer – Some views has access without Grant and user creation
   - Technical Officer - Read, write and update permissions for attendance related tables/views
   - Student - Read permission for final attendance and final marks/Grades views and attendance eligibility.

9. DB Accounts/Users

1. Admin
2. Student
3. Lecturer
4. Technical officer
5. Dean

10. Stored procedures

1. To get the result individually

This procedure will give the individual results of students when they enter their specific student id.

```
CREATE PROCEDURE GetStudentResult(IN studentID VARCHAR(10))
  BEGIN
  SELECT * FROM students_final_grades WHERE student_id = studentID;
```

2. To get the exam eligibility accordingly course or of a single student

This Procedure will give the eligibility of single student if the enter the student id and also this same procedure will give the whole eligibility of all the students of a single course when they enter the course code.

```
CREATE PROCEDURE getExamEligibility(IN input VARCHAR(255))
      BEGIN

        IF input LIKE 'TG%' THEN
          SELECT * FROM final_exam_eligibility WHERE student_id = input;
```

```
    ELSE
        SELECT * FROM final_exam_eligibility WHERE course_id = input;
    END IF;
END;
//
```

3. To get the total marks of ALL students according to course code

This procedure will give the whole marks view of a specific course to lectures.

```
CREATE PROCEDURE GetCourseMarks(IN course_code VARCHAR(10))
BEGIN
    SET course_code = UPPER(course_code);  -- Convert the input to uppercase for case
insensitivity
    IF course_code IN ('ENG1222', 'ICT1212', 'ICT1233', 'ICT1222', 'ICT1242', 'TCS1212',
'TMS1233', 'ICT1253') THEN
        SELECT
            Student_ID,
            CASE
                WHEN course_code = 'ENG1222' THEN ENG1222_Final_Marks
                WHEN course_code = 'ICT1212' THEN ICT1212_Final_Marks
                WHEN course_code = 'ICT1233' THEN ICT1233_Final_Marks
                WHEN course_code = 'ICT1222' THEN ICT1222_Final_Marks
                WHEN course_code = 'ICT1242' THEN ICT1242_Final_Marks
                WHEN course_code = 'TCS1212' THEN TCS1212_Final_Marks
                WHEN course_code = 'TMS1233' THEN TMS1233_Final_Marks
                WHEN course_code = 'ICT1253' THEN ICT1253_Final_Marks
            END AS Course_Marks
        FROM
            all_final_marks;
    ELSE
        SELECT 'Invalid Course Code' AS Course_Marks;
    END IF;
END //
```

11. Views

1) all_ca_eligibility
2) ca_total_marks
3) all_courses_grades
4) all_final_marks
5) all_grades_points
6) attendance_status
7) details_of_students
8) final_exam_eligibility
9) proper_students_final_results
10) repeat_students
11) repeaters_results
12) student_details
13) student_gpa
14) students_final_grades

12. Problems faced during the development of the solution.

1. Memory management was a big problem we faced.
2. User id was used as a separate id from student lecture and technical officer identities later when we develop the database, we realize it would be better if we have used all the student lecture officer Identities as user id.
3. Made a mistake in designing ER and we had to drop the whole database at once and had to design again and create it.
4. As we went for a editing and creating database again we had to face a big deal with foreign key constraint.
5. Our final database was created unknowingly on MySQL 8.0 Command Line Client and later when we had to export the database, we had a big struggle and as we had all our codes back upped we used the XAMP shell to create it and we exported it.

13. Foresight Plan

1. This System is designed for a Semester 2 level 1 of faculty of technology university of Ruhuna but in future we are looking forward to improving it to manage all the students at university of Ruhuna.
2. In some Case system looks little complicated and have data redundancy in future we are looking forward to making it simple and reduce data redundancy

14. Individual contribution

1) **ASHFA NISTHAR**
Tables: User, attendance and dean
Attendance status view was created and a view to get the student GPA and student final grades were created.
Created the procedure to view the give the eligibility of single student if the enter the student id and this same procedure will give the whole eligibility of all the students of a single course when they enter the course code.

2) **UMESHA HEWAGE**
Tables: Technical officer and half of course tables
All ca total marks and all CA eligibility views were created and final marks view and final exam eligibility were also created,
Procedure to get the total marks of ALL students according to course code.

3) **SAJEEYA ROSHAN**
Tables: Student lecture
Proper student final marks result, repeat student, repeaters results were created.
And created a procedure that will give the individual results of students when they enter their specific student id.

4) **SHUKRY**
Tables: Department and other half of course tables
All course grades, all grade points, details of student, student detail’s view was created.

Procedure to get the total marks of ALL students according to course code was created together with umesha.

15. References

1. https://stackoverflow.com/
2. https://www.w3schools.com/sql/
3. Chat GPT