CASE STUDY ON

STUDENT DATABASE MANAGEMENT SYSTEM

BY MINAL FEGADE

- **Description**

The Student Database Management System (SDMS) case study focuses on developing a robust and efficient system for managing student-related information within an educational institution. This project aims to address various aspects of student data management, including enrollment,course registration, grades tracking, student demographics, and administrative tasks.

• ER DIAGRAM FOR STUDENT DATABASE MANAGEMENT SYSTEM
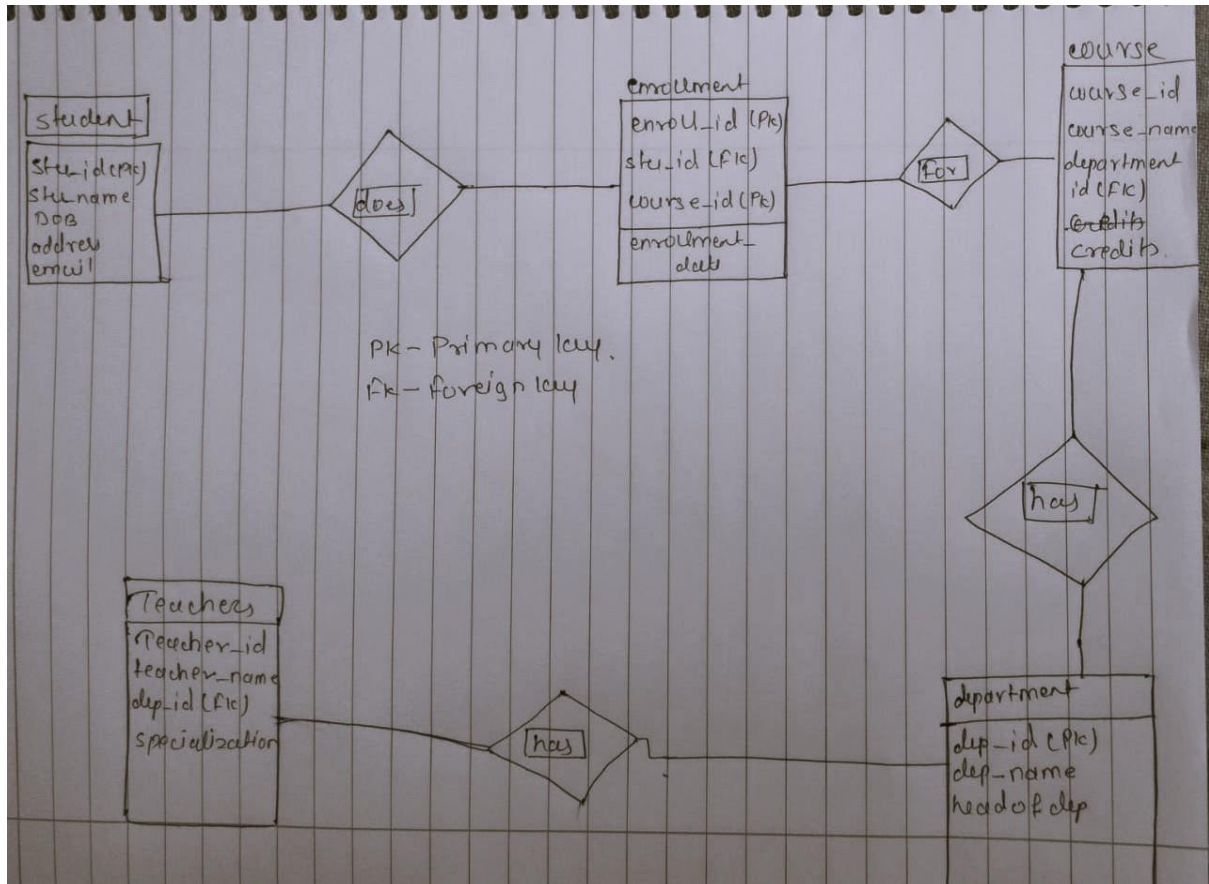
- **TABLE DESCRIPTION**

1.Student

```
MariaDB [MS]> desc student1;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| student_id    | int(11)      | NO   | PRI | NULL    |       |
| student_name  | varchar(50)  | YES  |     | NULL    |       |
| dob           | date         | YES  |     | NULL    |       |
| address       | varchar(100) | YES  |     | NULL    |       |
| email         | varchar(100) | YES  |     | NULL    |       |
| department_id | int(11)      | YES  | MUL | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
```

2.Enrollment

```
MariaDB [MS]> desc enrollment;
+------------+---------+------+-----+---------+-------+
| Field      | Type    | Null | Key | Default | Extra |
+------------+---------+------+-----+---------+-------+
| en_id      | int(11) | NO   | PRI | NULL    |       |
| student_id | int(11) | YES  |     | NULL    |       |
| course_id  | int(11) | YES  | MUL | NULL    |       |
| en_date    | date    | YES  |     | NULL    |       |
+------------+---------+------+-----+---------+-------+
4 rows in set (0.028 sec)
```

3.Courses

```
MariaDB [MS]> desc course;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| course_id     | int(11)     | NO   | PRI | NULL    |       |
| course_name   | varchar(40) | YES  |     | NULL    |       |
| department_id | int(11)     | YES  | MUL | NULL    |       |
| credit        | int(11)     | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
4 rows in set (0.037 sec)
```

4. Department

```
MariaDB [MS]> desc department;
+-------------------+--------------+------+-----+---------+-------+
| Field             | Type         | Null | Key | Default | Extra |
+-------------------+--------------+------+-----+---------+-------+
| department_id     | int(11)      | NO   | PRI | NULL    |       |
| department_name   | varchar(50)  | YES  |     | NULL    |       |
| head_of_department| varchar(100) | YES  |     | NULL    |       |
+-------------------+--------------+------+-----+---------+-------+
3 rows in set (0.030 sec)
```

5. Teachers

```
MariaDB [MS]> desc teacher;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| t_id          | int(11)      | NO   | PRI | NULL    |       |
| t_name        | varchar(100) | YES  |     | NULL    |       |
| department_id | int(11)      | YES  | MUL | NULL    |       |
| specilization | varchar(50)  | YES  |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
```

✧ Commands

- ## Create database
  Create database MS;

- ## Select database
  Use MS;

1.student

MariaDB [MS]> create table student1(student_id int primary key,student_name varchar(50), dob date, address varchar(100), email varchar(100), department_id int, foreign key (department_id) references department(department_id));

2.Enrollment

MariaDB [MS]> create table enrollment(en_id int primary key, student_id int, course_id int, en_date date,foreign key (course_id) references course(course_id));

3.Courses

MariaDB [MS]> create table course(course_id int primary key, course_name varchar(40),department_id int,credit int, foreign key (department_id) references department(department_id));

4.Department

MariaDB [MS]> CREATE TABLE department (department_id INT PRIMARY KEY,

department_name VARCHAR(50), head_of_department VARCHAR(100)) ;

5.Teachers

MariaDB [MS]> create table teacher(t_id int primary key, t_name varchar(100),department_id int, specilization varchar(50), foreign key (department_id) references department(department_id));

✧ Insert values

1.Department

MariaDB [test]> insert into department values (1,'computer science','dr. smith');

Query OK, 1 row affected (0.476 sec)

MariaDB [test]> insert into department values (2,'physics','prof.jadhav');

Query OK, 1 row affected (0.094 sec)

MariaDB [test]> insert into department values (3,'maths','dr. balaji hogade');

Query OK, 1 row affected (0.050 sec)

MariaDB [test]> insert into department values (4,'biology','dr. kanchan hogade');

Query OK, 1 row affected (0.062 sec)

MariaDB [test]> insert into department values (5,'chemistry','dr.amit deshmukh');

Query OK, 1 row affected (0.055 sec)

2. Student1

MariaDB [test]> insert into students values(1,'minalfegade','2000-08-22','thane',1);

Query OK, 1 row affected (0.060 sec)

MariaDB [test]> insert into students values(2,'shwetali patil','2000-04-22','nerul',2);

Query OK, 1 row affected (0.065 sec)

MariaDB [test]> insert into students values(3,'rohit salunkhe','2000-01-12','ghansoli',3);

Query OK, 1 row affected (0.045 sec)

MariaDB [test]> insert into students values(4,'shub arekar','1999-01-12','kurla',4);

Query OK, 1 row affected (0.043 sec)

MariaDB [test]> insert into students values(5,'manoj ghadi','1998-01-22','kurla',5);

Query OK, 1 row affected (0.049 sec)

3. Teachers

MariaDB [test]> insert into teachers values(1,'neha yadav',1,'data science');

Query OK, 1 row affected (0.130 sec)

MariaDB [test]> insert into teachers values(2,'priya yadav',2,'quantum phy');

Query OK, 1 row affected (0.063 sec)

MariaDB [test]> insert into teachers values(3,'robert jhonson',3,'algebra');

Query OK, 1 row affected (0.055 sec)

MariaDB [test]> insert into teachers values(4,'robert',4,'genetics');

Query OK, 1 row affected (0.057 sec)

MariaDB [test]> insert into teachers values(5,'prachi kamble',5,'physics');

Query OK, 1 row affected (0.051 sec)

4. Courses

MariaDB [test]> insert into course values(1,'machine learning',1,3);

Query OK, 1 row affected (0.049 sec)

MariaDB [test]> insert into course values(2,'quantum mechanics',2,4);

Query OK, 1 row affected (0.055 sec)

MariaDB [test]> insert into course values(3,'calculus i',3,3);

Query OK, 1 row affected (0.063 sec)

MariaDB [test]> insert into course values(4,'genetics fundamental',4,3);

Query OK, 1 row affected (0.108 sec)

MariaDB [test]> insert into course values(5,'organic chemistry',5,2);

Query OK, 1 row affected (0.061 sec)

5. Enrollment

MariaDB [test]> insert into enrollments values (1,1,1,'2022-01-10');

Query OK, 1 row affected (0.046 sec)

MariaDB [test]> insert into enrollments values (2,2,2,'2022-01-15');

Query OK, 1 row affected (0.070 sec)

MariaDB [test]> insert into enrollments values (3,3,3,'2022-01-19');

Query OK, 1 row affected (0.039 sec)

MariaDB [test]> insert into enrollments values (4,4,4,'2022-01-22');

Query OK, 1 row affected (0.053 sec)

MariaDB [test]> insert into enrollments values (5,5,5,'2022-01-30');

Query OK, 1 row affected (0.024 sec)

SUB QUERIES

1) TO GET STUDENT INFORMATION WITH COURSE NAME AND WNROLLMENT DATE

```
MariaDB [test]> select students.studentid,students.studentname,enrollments.enrollmentid,course.coursename,enrollments.enrollmentdate
from students join enrollments on students.studentid = enrollments.studentid join course on enrollments.courseid = course.courseid;
+-----------+----------------+--------------+---------------------+----------------+
| studentid | studentname    | enrollmentid | coursename          | enrollmentdate |
+-----------+----------------+--------------+---------------------+----------------+
|         1 | minalfegade    |            1 | machine learning    | 2022-01-10     |
|         2 | shwetali patil |            2 | quantum mechanics   | 2022-01-15     |
|         3 | rohit salunkhe |            3 | calculus i          | 2022-01-19     |
|         4 | shub arekar    |            4 | genetics fundamental| 2022-01-22     |
|         5 | manoj ghadi    |            5 | organic chemistry   | 2022-01-30     |
+-----------+----------------+--------------+---------------------+----------------+
5 rows in set (0.001 sec)
```

2) TO GET STUDENT WITH SPECIFIC DEPARTMENT

```
MariaDB [test]> select students.studentname,department.departmentname from students join department on students.departmentid =
department.departmentid;
+----------------+------------------+
| studentname    | departmentname   |
+----------------+------------------+
| minalfegade    | computer science |
| shwetali patil | physics          |
| rohit salunkhe | maths            |
| shub arekar    | biology          |
| manoj ghadi    | chemistry        |
+----------------+------------------+
5 rows in set (0.001 sec)
```

3) TO GET STUDENT WITH HIGHEST CREDIT

```
MariaDB [test]> select coursename, credit from course where credit >3;
+-------------------+--------+
| coursename        | credit |
+-------------------+--------+
| quantum mechanics |      4 |
+-------------------+--------+
1 row in set (0.001 sec)
```

4) TO GET ENROLLMENTS AND COURSE IN SINGLE TABLE

```
MariaDB [test]> select * from  enrollments inner join course on enrollments.enrollmentid = course.courseid;
+--------------+-----------+----------+----------------+----------+--------------------+--------------+--------+
| enrollmentid | studentid | courseid | enrollmentdate | courseid | coursename         | departmentid | credit |
+--------------+-----------+----------+----------------+----------+--------------------+--------------+--------+
|            1 |         1 |        1 | 2022-01-10     |        1 | machine learning   |            1 |      3 |
|            2 |         2 |        2 | 2022-01-15     |        2 | quantum mechanics  |            2 |      4 |
|            3 |         3 |        3 | 2022-01-19     |        3 | calculus i         |            3 |      3 |
|            4 |         4 |        4 | 2022-01-22     |        4 | genetics fundamental |          4 |      3 |
|            5 |         5 |        5 | 2022-01-30     |        5 | organic chemistry  |            5 |      2 |
+--------------+-----------+----------+----------------+----------+--------------------+--------------+--------+
```