

ASSIGNMENT 2

STUDENT INFORMATION SYSTEM (SIS)

AKILESH K

1)

```
mysql> create database sisdb;  
Query OK, 1 row affected (0.02 sec)  
  
mysql> use sisdb;  
Database changed
```

2)

```
mysql> CREATE TABLE students(  
-> studentid INT,  
-> firstname varchar(25),  
-> lastname varchar(25),  
-> date date,  
-> email text,  
-> phone text,  
-> PRIMARY KEY (studentid)  
-> ) ;  
Query OK, 0 rows affected (0.05 sec)
```

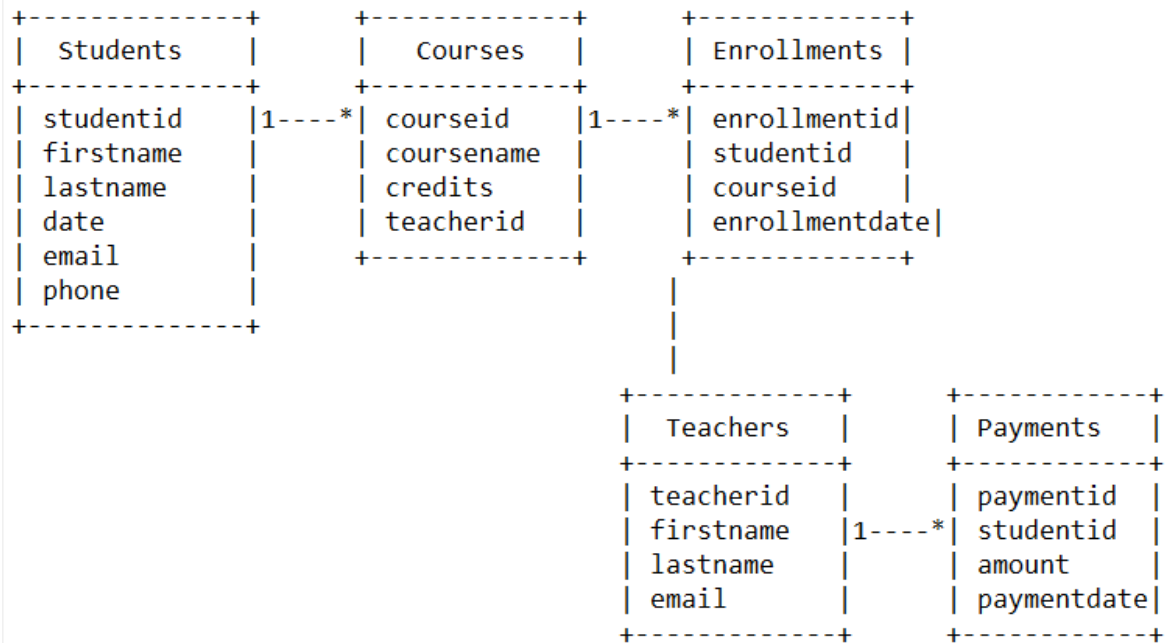
```
mysql> CREATE TABLE teachers(  
-> teacherid INT,  
-> firstname VARCHAR(30),  
-> lastname VARCHAR(30),  
-> email TEXT,  
-> PRIMARY KEY (teacherid)  
-> );  
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> CREATE TABLE courses (  
-> courseid INT,  
-> coursename VARCHAR(30),  
-> credits INT,  
-> teacherid INT,  
-> PRIMARY KEY (courseid),  
-> FOREIGN KEY (teacherid) REFERENCES teachers(teacherid)  
->  
-> );  
Query OK, 0 rows affected (0.08 sec)
```

```
mysql> CREATE TABLE enrollments (  
-> enrollmentid INT,  
-> studentid INT,  
-> courseid INT,  
-> enrollmentdate DATE,  
-> PRIMARY KEY (enrollmentid),  
-> FOREIGN KEY (courseid) REFERENCES courses(courseid),  
-> FOREIGN KEY (studentid) REFERENCES students(studentid)  
-> );  
Query OK, 0 rows affected (0.10 sec)
```

```
mysql> CREATE TABLE payments (  
-> paymentid INT,  
-> studentid INT,  
-> amount DOUBLE,  
-> paymentdate DATE,  
-> PRIMARY KEY (paymentid),  
-> FOREIGN KEY (studentid) REFERENCES students(studentid)  
->  
-> );  
Query OK, 0 rows affected (0.08 sec)
```

3)



```
mysql> show tables;
+-----+
| Tables_in_sisdb |
+-----+
| courses          |
| enrollments      |
| payments         |
| students         |
| teachers         |
+-----+
5 rows in set (0.00 sec)
```

4)

```
mysql> desc enrollments;
+-----+-----+-----+-----+-----+-----+
| Field          | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| enrollmentid   | int  | NO   | PRI | NULL    |       |
| studentid      | int  | YES  | MUL | NULL    |       |
| courseid       | int  | YES  | MUL | NULL    |       |
| enrollmentdate | date | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

```
mysql> INSERT INTO students(studentid,firstname,lastname,date,email,phone)
-> VALUES
-> ("8","Slade","Boone","1999-03-28","slade@aol.couk","1-377-644-1576"),
-> ("3","Macy","Travis","1990-01-29","macy@outlook.com","(157) 375-9678"),
-> ("1","Gretchen","Bird","1995-04-22","bird@icloud.com","(552) 253-2923"),
-> ("7","Jamal","Walls","1989-11-16","jamal@yahoo.ca","1-344-653-4977"),
-> ("5","Jael","Mcfarland","1987-06-08","jael@aol.couk","(403) 558-6094");
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO teachers (teacherid, firstname, lastname, email)
-> VALUES
-> ("367","Owen","Shan","owen@google.org"),
-> ("642","Hermione","Jindal","hermione7644@aol.org"),
-> ("846","Kevin","Chandra","kevin@aol.net"),
-> ("537","Allistair","Anand","allistair9178@aol.couk"),
-> ("242","Zahir","Narayan","zahir@icloud.org");
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO courses (courseid, coursename, credits, teacherid)
-> VALUES ("32", "english", "3", "367"),
-> ("62", "iot", "4", "642"),
-> ("82", "french", "2", "846"),
-> ("57", "maths", "4", "537"),
-> ("88", "chemistry", "3", "242");
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO enrollments (enrollmentid, studentid, courseid, enrollmentdate)
-> VALUES ("3131", "8", "32", "2023-09-21"),
-> ("4727", "3", "62", "2023-08-08"),
-> ("7821", "1", "82", "2023-10-12"),
-> ("5372", "7", "57", "2023-11-03"),
-> ("8362", "5", "88", "2023-09-16") ;
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> INSERT INTO payments (paymentid, studentid, amount, paymentdate)
-> VALUES ("4342", "8", "5000", "2023-10-23"),
-> ("7362", "3", "5500", "2023-10-23"),
-> ("5831", "1", "4000", "2023-10-23"),
-> ("3567", "7", "3000", "2023-10-23"),
-> ("9373", "5", "3500", "2023-10-23") ;
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

Task 2

1)

```
mysql> INSERT INTO students (studentid,firstname, lastname, date, email, phone)
-> VALUES (96,'John', 'Doe', '1995-08-15', 'john.doe@example.com', '1234567890');
Query OK, 1 row affected (0.04 sec)

mysql>
```

2)

```
mysql> INSERT INTO enrollments (enrollmentid,studentid, courseid, enrollmentdate)
-> VALUES (42,96, 101, '2023-01-01');
```

3)

```
mysql> UPDATE teachers
-> SET email = 'new_email@example.com'
-> WHERE teacherid = 242;
Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

4)

```
mysql> DELETE FROM enrollments
-> WHERE studentid = 1 AND courseid = 101;
Query OK, 0 rows affected (0.01 sec)
```

5)

```
mysql> UPDATE courses
-> SET teacherid = 1
-> WHERE courseid = 101;
Query OK, 0 rows affected (0.02 sec)
Rows matched: 0 Changed: 0 Warnings: 0
```

6)

```
mysql> DELETE FROM students
-> WHERE studentid = 7;
```

7)

```
mysql> UPDATE payments
-> SET amount = 500.00
-> WHERE paymentid = 1;
Query OK, 0 rows affected (0.02 sec)
Rows matched: 0 Changed: 0 Warnings: 0
```

Task 3

1)

```
mysql> SELECT s.studentid,s.firstname,s.lastname,SUM(p.amount) AS total_payments FROM students s JOIN payments p ON
s.studentid = p.studentid WHERE s.studentid = 3;
+-----+-----+-----+-----+
| studentid | firstname | lastname | total_payments |
+-----+-----+-----+-----+
|          3 | Macy      | Travis   |          5500 |
+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

2)

```
mysql> SELECT c.courseid,c.coursename,COUNT(e.studentid) FROM courses c LEFT JOIN enrollments e ON c.courseid =
e.courseid
-> GROUP BY c.courseid, c.coursename;
+-----+-----+-----+
| courseid | coursename | COUNT(e.studentid) |
+-----+-----+-----+
|        32 | english    |          1 |
|        57 | maths      |          1 |
|        62 | iot        |          1 |
|        82 | french     |          1 |
|        88 | chemistry  |          1 |
+-----+-----+-----+
5 rows in set (0.02 sec)
```

3)

```
mysql> SELECT s.firstname,s.lastname FROM students s LEFT JOIN enrollments e ON s.studentid = e.studentid
WHERE e.studentid IS NULL;
Empty set (0.00 sec)

mysql>
```

4)

```
mysql> SELECT s.firstname,s.lastname,c.coursename FROM students s JOIN enrollments e ON s.studentid = e.studentid
JOIN courses c ON e.courseid = c.courseid;
+-----+-----+-----+
| firstname | lastname | coursename |
+-----+-----+-----+
| Gretchen  | Bird     | french     |
| Macy      | Travis   | iot        |
| Jael      | Mcfarland | chemistry   |
| Jamal     | Walls    | maths      |
| Slade     | Boone    | english    |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

5)

```
mysql> SELECT t.firstname , t.lastname , c.coursename FROM teachers t JOIN courses c ON t.teacherid = c.teacherid;
+-----+-----+-----+
| firstname | lastname | coursename |
+-----+-----+-----+
| Zahir     | Narayan  | chemistry   |
| Owen      | Shan     | english     |
| Allistair | Anand    | maths       |
| Hermione  | Jindal   | iot         |
| Kevin     | Chandra  | french      |
+-----+-----+-----+
5 rows in set (0.01 sec)
```

6)

```
mysql> SELECT s.firstname, s.lastname,e.enrollmentdate FROM students s JOIN enrollments e ON s.studentid =
e.studentid JOIN courses c ON e.courseid = c.courseid WHERE c.coursename = 'english';
+-----+-----+-----+
| firstname | lastname | enrollmentdate |
+-----+-----+-----+
| Slade     | Boone    | 2023-09-21     |
+-----+-----+-----+
1 row in set (0.00 sec)
```

7)

```
mysql> SELECT s.firstname,s.lastname FROM students s LEFT JOIN payments p ON s.studentid = p.studentid
WHERE p.paymentid IS NULL;
Empty set (0.00 sec)

mysql>
```

8)

```
mysql> SELECT c.courseid,c.coursename FROM courses c LEFT JOIN enrollments e ON c.courseid = e.courseid
WHERE e.enrollmentid IS NULL;
Empty set (0.00 sec)

mysql>
```

9)

```
mysql> SELECT e1.studentid,s.firstname,s.lastname,COUNT(e1.courseid) FROM enrollments e1 JOIN students
s ON e1.studentid = s.studentid GROUP BY e1.studentid, s.firstname, s.lastname HAVING COUNT(e1.courseid
) > 1;
Empty set (0.01 sec)

mysql>
```

10)

```
mysql> SELECT t.teacherid,t.firstname, t.lastname FROM teachers t LEFT JOIN courses c ON t.teacherid =
c.teacherid WHERE c.courseid IS NULL;
Empty set (0.00 sec)

mysql>
```

Task 4

1)

```
mysql> SELECT AVG(num_students) AS average_students_per_course FROM (SELECT c.courseid, COUNT(e.student
id) AS num_students FROM courses c LEFT JOIN enrollments e ON c.courseid = e.courseid GROUP BY c.course
id) AS course_students_counts;
+-----+
| average_students_per_course |
+-----+
| 1.0000 |
+-----+
1 row in set (0.01 sec)
```

2)

```
mysql> SELECT s.studentid,s.firstname,s.lastname,p.amount FROM students s JOIN payments p ON s.studentid
= p.studentid WHERE p.amount = (SELECT MAX(amount) FROM payments);
+-----+-----+-----+-----+
| studentid | firstname | lastname | amount |
+-----+-----+-----+-----+
| 3 | Macy | Travis | 5500 |
+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

3)


```
mysql> SELECT c.courseid, c.coursename, enrollment_count FROM courses c
-> JOIN (SELECT courseid,COUNT(studentid) AS enrollment_count
-> FROM enrollments GROUP BY courseid HAVING
-> COUNT(studentid) = (SELECT MAX(enrollment_count) FROM (SELECT courseid, COUNT(studentid) AS
enrollment_count FROM enrollments GROUP BY courseid) AS course_enrollments)) AS max_enrollments
-> ON c.courseid = max_enrollments.courseid;
```

courseid	coursename	enrollment_count
32	english	1
57	maths	1
62	iot	1
82	french	1
88	chemistry	1

5 rows in set (0.00 sec)

4)

```
mysql> SELECT t.teacherid,t.firstname ,t.lastname,SUM(p.amount) FROM teachers t
-> LEFT JOIN courses c ON t.teacherid = c.teacherid LEFT JOIN enrollments e ON c.courseid = e.c
ourseid LEFT JOIN payments p ON e.studentid = p.studentid
-> GROUP BY t.teacherid, t.firstname, t.lastname;
```

teacherid	firstname	lastname	SUM(p.amount)
242	Zahir	Narayan	3500
367	Owen	Shan	5000
537	Allistair	Anand	3000
642	Hermione	Jindal	5500
846	Kevin	Chandra	4000

5 rows in set (0.00 sec)

5)

```
mysql> SELECT s.studentid,s.firstname,s.lastname FROM students s
-> WHERE (SELECT COUNT(DISTINCT courseid) FROM courses) = (SELECT COUNT(DISTINCT courseid)
FROM enrollments e WHERE s.studentid = e.studentid);
Empty set (0.02 sec)
```

6)

```
mysql> SELECT t.teacherid,t.firstname,t.lastname FROM teachers t WHERE NOT EXISTS (SELECT 1 FROM
courses c WHERE c.teacherid = t.teacherid);
Empty set (0.01 sec)
```

7)

```
mysql> SELECT AVG(age) AS average_age FROM (SELECT studentid, TIMESTAMPDIFF(YEAR, date, CURDATE(
)) AS age FROM students) AS student_ages;
```

average_age
31.0000

1 row in set (0.01 sec)

8)

```
mysql> SELECT courseid,coursename FROM courses WHERE courseid NOT IN (SELECT DISTINCT courseid
FROM enrollments);
Empty set (0.01 sec)

mysql>
```

9)

```
mysql> SELECT e.studentid,s.firstname,s.lastname,e.courseid,c.coursename,SUM(p.amount) FROM en
rollments e
-> JOIN students s ON e.studentid = s.studentid JOIN courses c ON e.courseid = c.courseid
LEFT JOIN payments p ON e.studentid = p.studentid
-> GROUP BY e.studentid, s.firstname, s.lastname, e.courseid, c.coursename;
+-----+-----+-----+-----+-----+-----+
| studentid | firstname | lastname | courseid | coursename | SUM(p.amount) |
+-----+-----+-----+-----+-----+-----+
| 8 | Slade | Boone | 32 | english | 5000 |
| 3 | Macy | Travis | 62 | iot | 5500 |
| 7 | Jamal | Walls | 57 | maths | 3000 |
| 1 | Gretchen | Bird | 82 | french | 4000 |
| 5 | Jael | Mcfarland | 88 | chemistry | 3500 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)

mysql>
```

10)

```
mysql> SELECT studentid,firstname,lastname FROM students WHERE studentid IN (SELECT studentid
FROM payments GROUP BY studentid HAVING COUNT(*) > 1);
Empty set (0.01 sec)

mysql>
```

11)

```
mysql> SELECT s.studentid,s.firstname,s.lastname, SUM(p.amount) FROM students s LEFT JOIN payments
p ON s.studentid = p.studentid GROUP BY s.studentid, s.firstname, s.lastname;
+-----+-----+-----+-----+
| studentid | firstname | lastname | SUM(p.amount) |
+-----+-----+-----+-----+
| 1 | Gretchen | Bird | 4000 |
| 3 | Macy | Travis | 5500 |
| 5 | Jael | Mcfarland | 3500 |
| 7 | Jamal | Walls | 3000 |
| 8 | Slade | Boone | 5000 |
+-----+-----+-----+-----+
5 rows in set (0.01 sec)
```

12)

```
mysql> SELECT c.coursename,COUNT(e.studentid) AS enrolled_students_count FROM courses c LEFT JOIN
enrollments e ON c.courseid = e.courseid GROUP BY c.coursename;
```

coursename	enrolled_students_count
english	1
maths	1
iot	1
french	1
chemistry	1

```
5 rows in set (0.00 sec)
```

13)

```
mysql> SELECT s.studentid,s.firstname,s.lastname,AVG(p.amount) FROM students s JOIN payments p ON
s.studentid = p.studentid GROUP BY s.studentid, s.firstname, s.lastname;
```

studentid	firstname	lastname	AVG(p.amount)
1	Gretchen	Bird	4000
3	Macy	Travis	5500
5	Jael	Mcfarland	3500
7	Jamal	Walls	3000
8	Slade	Boone	5000

```
5 rows in set (0.00 sec)
```