Assignment No 2

Problem Statement:

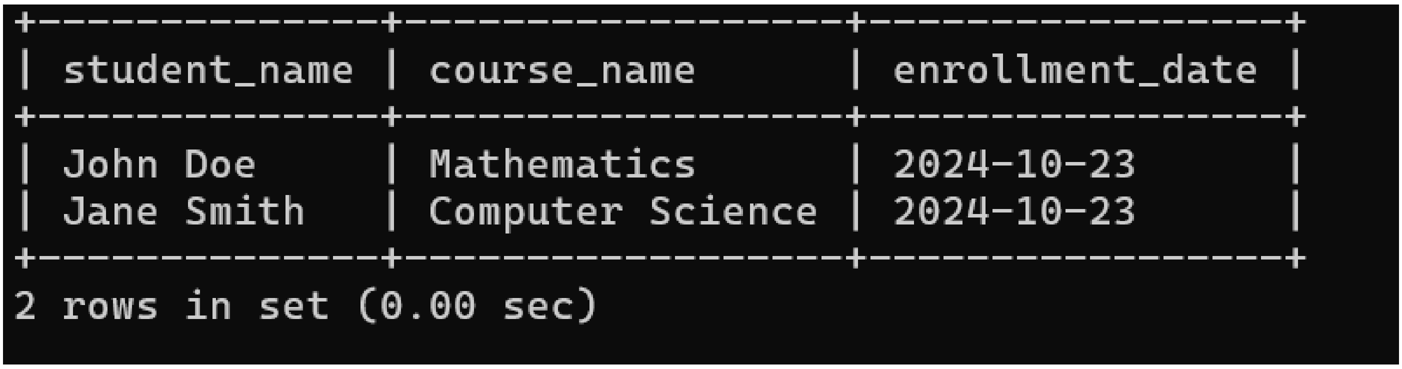
Design and Develop SQL DDL statement which demonstrate the use of SQL objectives such as Table , view, index, sequence , synonym , different Constraints etc.

Input:

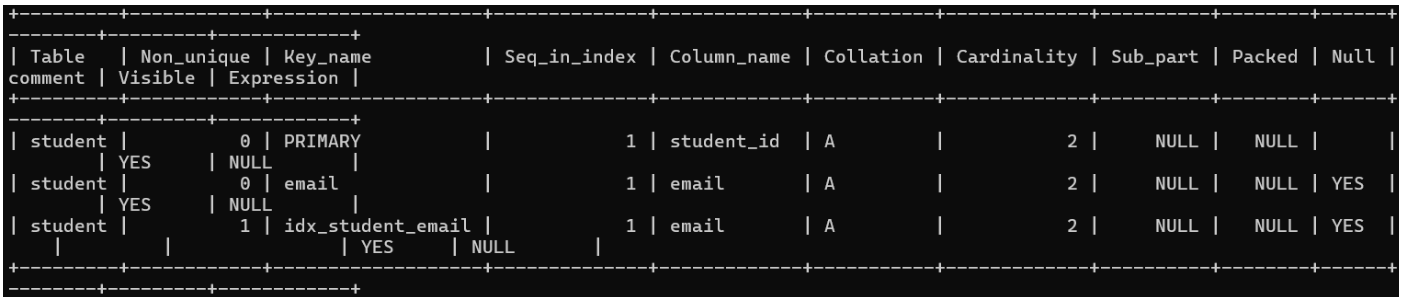
```
-- 1. Create 'student' table
CREATE TABLE student (
   student_id INT AUTO_INCREMENT PRIMARY KEY,            -- Auto-increment primary key
   student_name VARCHAR(50) NOT NULL,                    -- NOT NULL constraint
   email VARCHAR(100) UNIQUE,                             -- UNIQUE constraint on email
   admission_date DATE                                     -- Simple date column without default
);

-- 2. Create 'course' table
CREATE TABLE course (
   course_id INT AUTO_INCREMENT PRIMARY KEY,              -- Auto-increment primary key
   course_name VARCHAR(100) NOT NULL,                    -- NOT NULL constraint
   credits INT NOT NULL                                  -- Credits must be provided
);

-- 3. Create 'student_course' table for Many-to-Many Relationship
CREATE TABLE student_course (
   student_id INT,                                       -- Foreign key to 'student'
   course_id INT,                                         -- Foreign key to 'course'
   enrollment_date DATE,                                  -- Enrollment date column
   PRIMARY KEY (student_id, course_id),                  -- Composite primary key
   CONSTRAINT fk_student FOREIGN KEY (student_id) REFERENCES student(student_id)
      ON DELETE CASCADE,                                   -- Cascade delete on student removal
   CONSTRAINT fk_course FOREIGN KEY (course_id) REFERENCES course(course_id)
      ON DELETE CASCADE
);

-- 4. Create an index on 'student' for the 'email' column
CREATE INDEX idx_student_email ON student(email);

-- 5. Create a view to show enrolled students
CREATE VIEW enrolled_students AS
SELECT s.student_name, c.course_name, sc.enrollment_date
FROM student s
JOIN student_course sc ON s.student_id = sc.student_id
JOIN course c ON sc.course_id = c.course_id;

-- 6. Insert sample data into 'student'
INSERT INTO student (student_name, email, admission_date) VALUES
('John Doe', 'john@example.com', '2023-01-15'),
('Jane Smith', 'jane@example.com', '2023-02-20');

-- 7. Insert sample data into 'course'
INSERT INTO course (course_name, credits) VALUES
```

```
('Mathematics', 4),
('Computer Science', 3);

-- 8. Enroll students into courses
INSERT INTO student_course (student_id, course_id, enrollment_date) VALUES
(1, 1, '2024-10-23'),  -- John in Mathematics
(2, 2, '2024-10-23');  -- Jane in Computer Science

-- 9. Query the view to display enrolled students
SELECT * FROM enrolled_students;

-- 10. Verify the created index
SHOW INDEX FROM student;

-- 11. List all tables in the database
SHOW TABLES;

-- 12. Describe the 'student' table
DESCRIBE student;
```

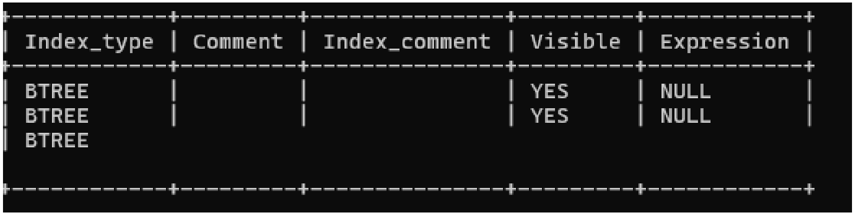
Output:



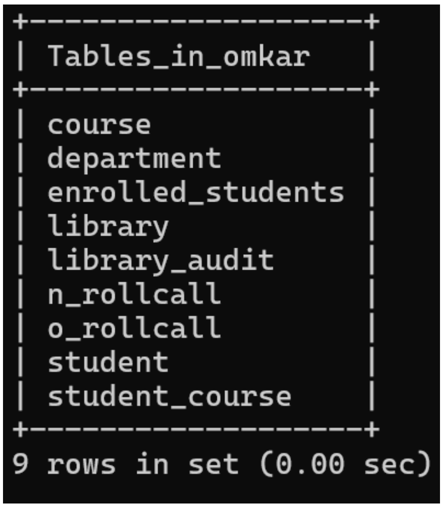
```
+--------------+------------------+-----------------+
| student_name | course_name      | enrollment_date |
+--------------+------------------+-----------------+
| John Doe     | Mathematics      | 2024-10-23      |
| Jane Smith   | Computer Science | 2024-10-23      |
+--------------+------------------+-----------------+
2 rows in set (0.00 sec)
```



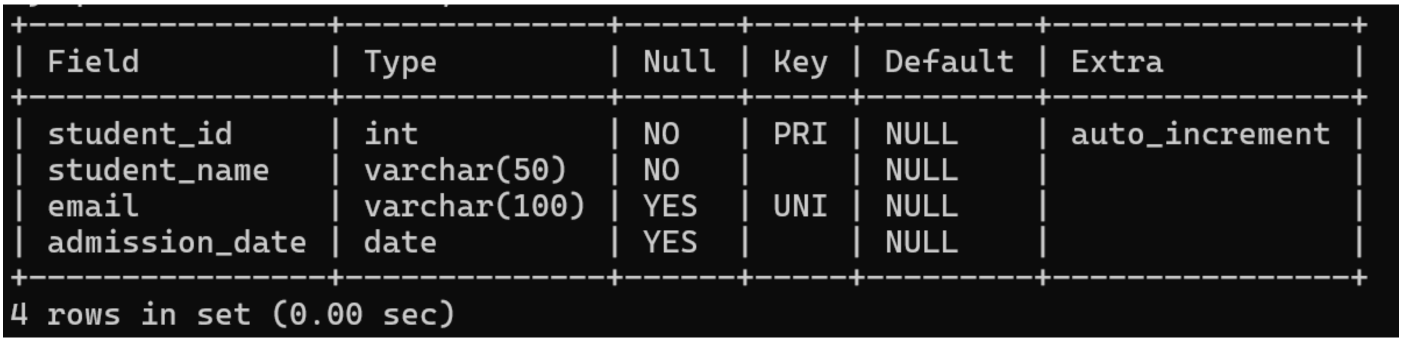
```
+---------+------------+------------------+--------------+-------------+-----------+-------------+----------+--------+------+
--------+---------+------------+
| Table   | Non_unique | Key_name         | Seq_in_index | Column_name | Collation | Cardinality | Sub_part | Packed | Null |
comment | Visible | Expression |
+---------+------------+------------------+--------------+-------------+-----------+-------------+----------+--------+------+
--------+---------+------------+
| student |          0 | PRIMARY          |            1 | student_id  | A         |           2 |     NULL |   NULL |      |
        | YES     | NULL       |
| student |          0 | email            |            1 | email       | A         |           2 |     NULL |   NULL | YES  |
        | YES     | NULL       |
| student |          1 | idx_student_email |            1 | email       | A         |           2 |     NULL |   NULL | YES  |
    |         |                | YES     | NULL       |
+---------+------------+------------------+--------------+-------------+-----------+-------------+----------+--------+------+
--------+---------+------------+
```



```
+------------+---------+---------------+---------+------------+
| Index_type | Comment | Index_comment | Visible | Expression |
+------------+---------+---------------+---------+------------+
| BTREE      |         |               | YES     | NULL       |
| BTREE      |         |               | YES     | NULL       |
| BTREE

+------------+---------+---------------+---------+------------+
```



```
+-------------------+
| Tables_in_omkar   |
+-------------------+
| course            |
| department        |
| enrolled_students |
| library           |
| library_audit     |
| n_rollcall        |
| o_rollcall        |
| student           |
| student_course    |
+-------------------+
9 rows in set (0.00 sec)
```



```
+----------------+--------------+------+-----+---------+----------------+
| Field          | Type         | Null | Key | Default | Extra          |
+----------------+--------------+------+-----+---------+----------------+
| student_id     | int          | NO   | PRI | NULL    | auto_increment |
| student_name   | varchar(50)  | NO   |     | NULL    |                |
| email          | varchar(100) | YES  | UNI | NULL    |                |
| admission_date | date         | YES  |     | NULL    |                |
+----------------+--------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```