STUDENT DATABASE MANAGEMENT

Creating a database to manage student records is a great way to practice relational database design and SQL queries. Below is a structured approach to designing the database, including table definitions and sample SQL queries.

Database Design

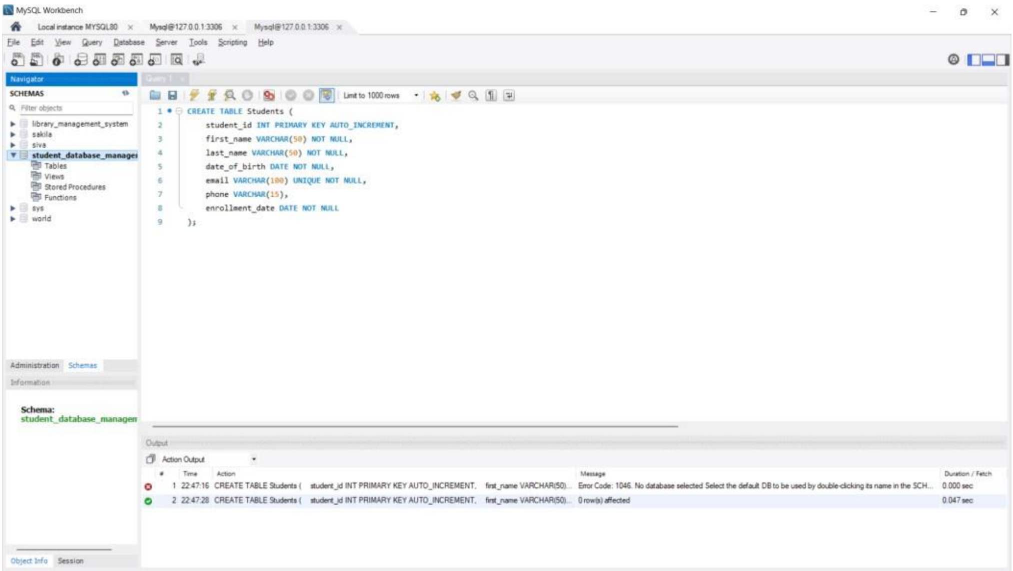
1. Tables Overview :

We'll create three main tables:

- **Students:** To store personal details of the students.
- **Courses:** To store information about the courses offered.
- **Enrollments:** To manage the relationship between students and courses, including grades.

2. Table Definitions

Students Table :



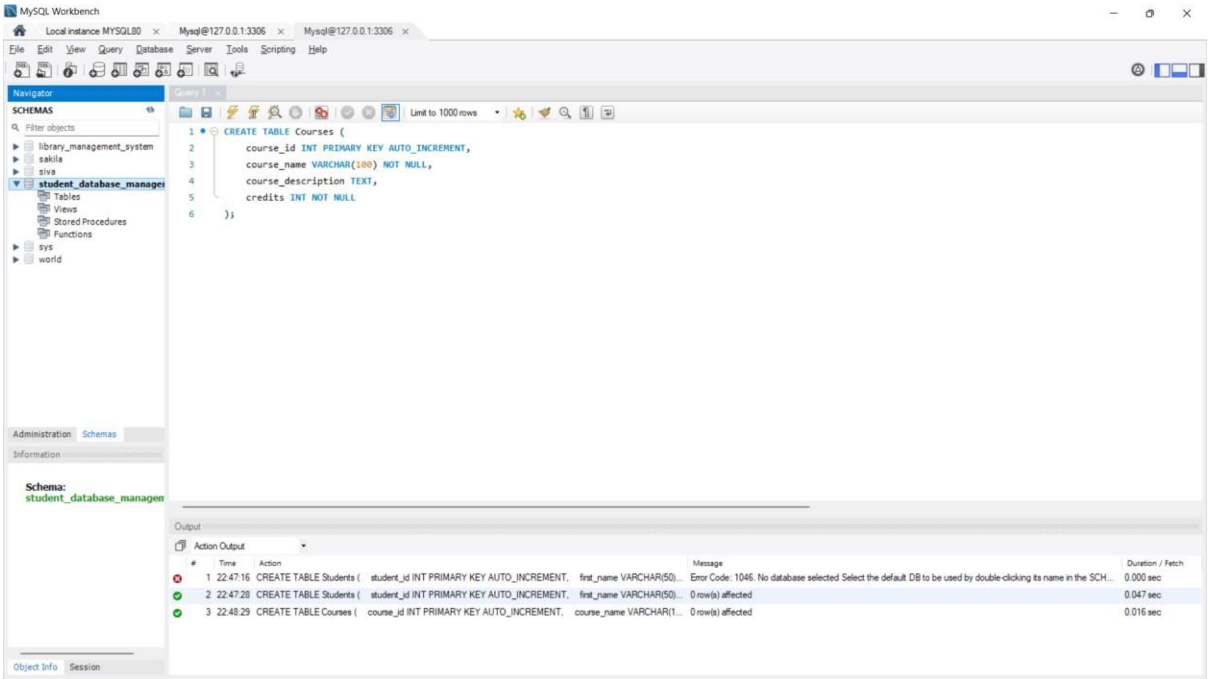
```
CREATE TABLE Students (
    student_id INT PRIMARY KEY AUTO_INCREMENT,
    first_name VARCHAR(50) NOT NULL,
    last_name VARCHAR(50) NOT NULL,
    date_of_birth DATE NOT NULL,
    email VARCHAR(100) UNIQUE NOT NULL,
    phone VARCHAR(15),
    enrollment_date DATE NOT NULL
);
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
1	22:47:16	CREATE TABLE Students (student_id INT PRIMARY KEY AUTO_INCREMENT, first_name VARCHAR(50)...	Error Code: 1046. No database selected Select the default DB to be used by double-clicking its name in the SCH...	0.000 sec
2	22:47:28	CREATE TABLE Students (student_id INT PRIMARY KEY AUTO_INCREMENT, first_name VARCHAR(50)...	0 row(s) affected	0.047 sec

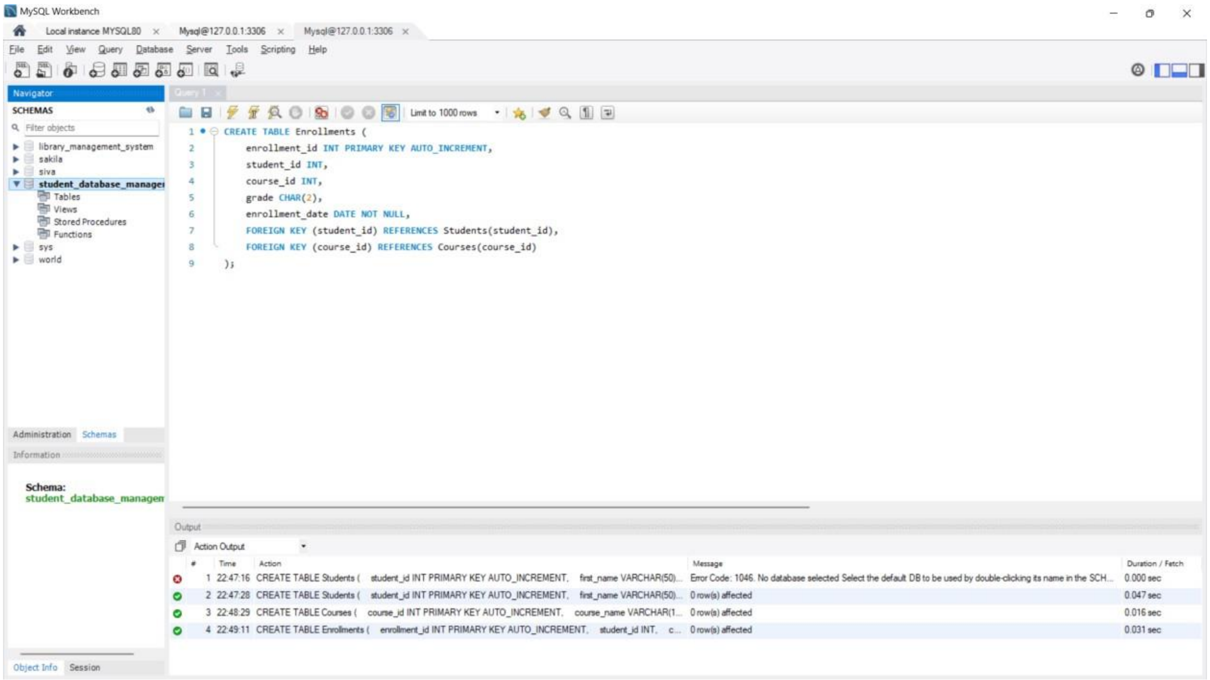
Courses Table :



```
CREATE TABLE Courses (
    course_id INT PRIMARY KEY AUTO_INCREMENT,
    course_name VARCHAR(100) NOT NULL,
    course_description TEXT,
    credits INT NOT NULL
);
```

```
#  Time      Action                                                                               Message                                                                                          Duration / Fetch
1  22:47:16  CREATE TABLE Students (   student_id INT PRIMARY KEY AUTO_INCREMENT,   first_name VARCHAR(50)...  Error Code: 1046. No database selected Select the default DB to be used by double-clicking its name in the SCH...  0.000 sec
2  22:47:28  CREATE TABLE Students (   student_id INT PRIMARY KEY AUTO_INCREMENT,   first_name VARCHAR(50)...  0 row(s) affected                                                                                0.047 sec
3  22:48:29  CREATE TABLE Courses (   course_id INT PRIMARY KEY AUTO_INCREMENT,   course_name VARCHAR(1...     0 row(s) affected                                                                                0.016 sec
```

Enrollments Table :



```
CREATE TABLE Enrollments (
    enrollment_id INT PRIMARY KEY AUTO_INCREMENT,
    student_id INT,
    course_id INT,
    grade CHAR(2),
    enrollment_date DATE NOT NULL,
    FOREIGN KEY (student_id) REFERENCES Students(student_id),
    FOREIGN KEY (course_id) REFERENCES Courses(course_id)
);
```

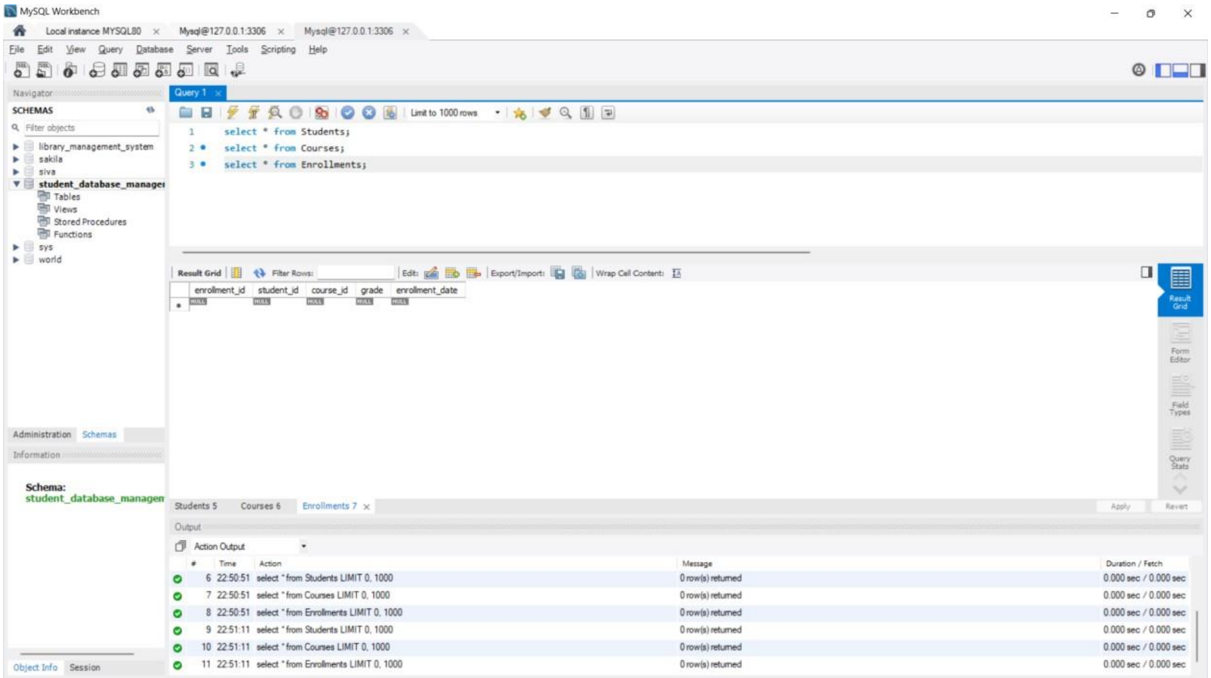
```
#  Time      Action                                                                               Message                                                                                          Duration / Fetch
1  22:47:16  CREATE TABLE Students (   student_id INT PRIMARY KEY AUTO_INCREMENT,   first_name VARCHAR(50)...  Error Code: 1046. No database selected Select the default DB to be used by double-clicking its name in the SCH...  0.000 sec
2  22:47:28  CREATE TABLE Students (   student_id INT PRIMARY KEY AUTO_INCREMENT,   first_name VARCHAR(50)...  0 row(s) affected                                                                                0.047 sec
3  22:48:29  CREATE TABLE Courses (   course_id INT PRIMARY KEY AUTO_INCREMENT,   course_name VARCHAR(1...     0 row(s) affected                                                                                0.016 sec
4  22:49:11  CREATE TABLE Enrollments (   enrollment_id INT PRIMARY KEY AUTO_INCREMENT,   student_id INT,   c...  0 row(s) affected                                                                           0.031 sec
```

To view the Table :

select * from Students;

select * from Courses;

select * from Enrollments;



```sql
select * from Students;
select * from Courses;
select * from Enrollments;
```

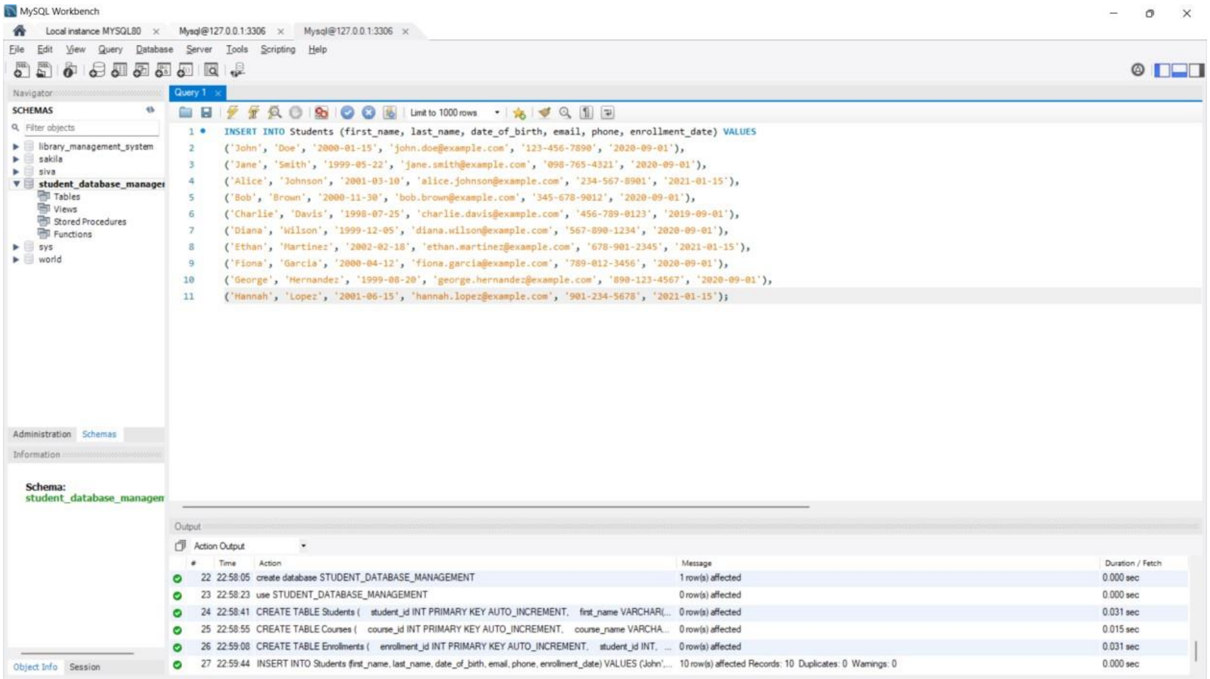
enrollment_id	student_id	course_id	grade	enrollment_date
NULL	NULL	NULL	NULL	NULL

Students 5 | Courses 6 | Enrollments 7

```
Action Output
 #   Time      Action                                       Message              Duration / Fetch
 6   22:50:51  select * from Students LIMIT 0, 1000         0 row(s) returned    0.000 sec / 0.000 sec
 7   22:50:51  select * from Courses LIMIT 0, 1000          0 row(s) returned    0.000 sec / 0.000 sec
 8   22:50:51  select * from Enrollments LIMIT 0, 1000      0 row(s) returned    0.000 sec / 0.000 sec
 9   22:51:11  select * from Students LIMIT 0, 1000         0 row(s) returned    0.000 sec / 0.000 sec
10   22:51:11  select * from Courses LIMIT 0, 1000          0 row(s) returned    0.000 sec / 0.000 sec
11   22:51:11  select * from Enrollments LIMIT 0, 1000      0 row(s) returned    0.000 sec / 0.000 sec
```

Data Insertion :

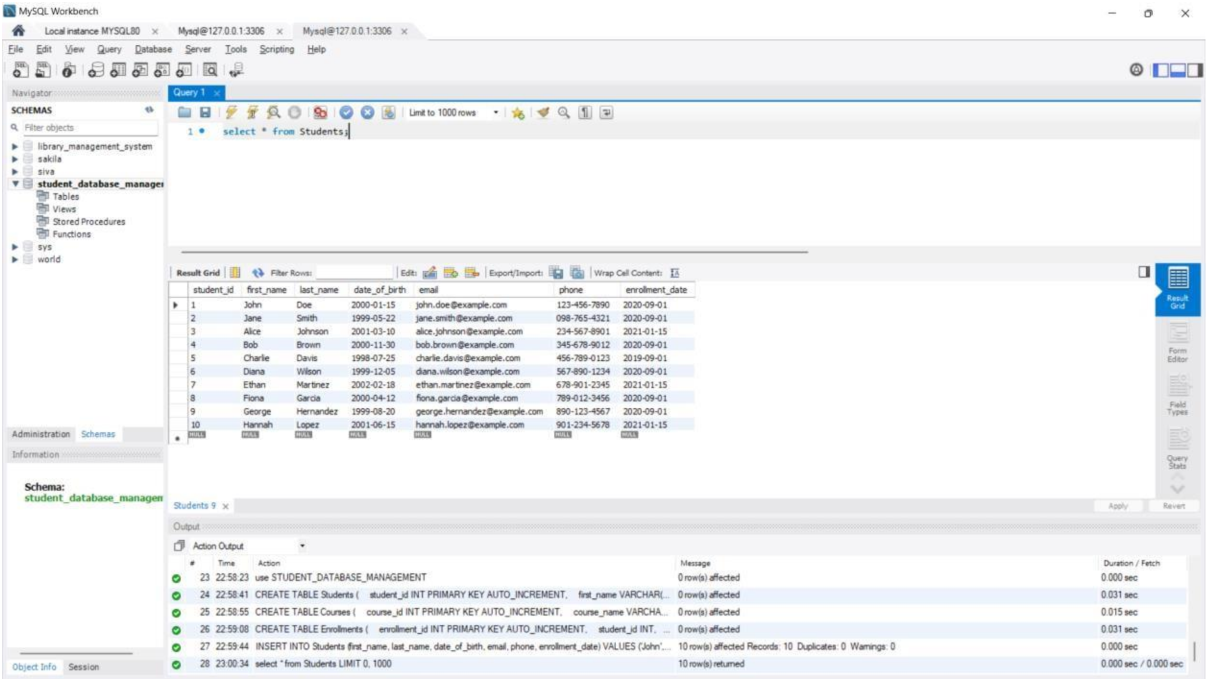
Inserting Sample Data :



```sql
INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES
('John', 'Doe', '2000-01-15', 'john.doe@example.com', '123-456-7890', '2020-09-01'),
('Jane', 'Smith', '1999-05-22', 'jane.smith@example.com', '098-765-4321', '2020-09-01'),
('Alice', 'Johnson', '2001-03-10', 'alice.johnson@example.com', '234-567-8901', '2021-01-15'),
('Bob', 'Brown', '2000-11-30', 'bob.brown@example.com', '345-678-9012', '2020-09-01'),
('Charlie', 'Davis', '1998-07-25', 'charlie.davis@example.com', '456-789-0123', '2019-09-01'),
('Diana', 'Wilson', '1999-12-05', 'diana.wilson@example.com', '567-890-1234', '2020-09-01'),
('Ethan', 'Martinez', '2002-02-18', 'ethan.martinez@example.com', '678-901-2345', '2021-01-15'),
('Fiona', 'Garcia', '2000-04-12', 'fiona.garcia@example.com', '789-012-3456', '2020-09-01'),
('George', 'Hernandez', '1999-08-20', 'george.hernandez@example.com', '890-123-4567', '2020-09-01'),
('Hannah', 'Lopez', '2001-06-15', 'hannah.lopez@example.com', '901-234-5678', '2021-01-15');
```

```
Action Output
 #   Time      Action                                                                                          Message                                                    Duration / Fetch
22   22:58:05  create database STUDENT_DATABASE_MANAGEMENT                                                      1 row(s) affected                                          0.000 sec
23   22:58:23  use STUDENT_DATABASE_MANAGEMENT                                                                  0 row(s) affected                                          0.000 sec
24   22:58:41  CREATE TABLE Students (    student_id INT PRIMARY KEY AUTO_INCREMENT,    first_name VARCHAR(...    0 row(s) affected                                          0.031 sec
25   22:58:55  CREATE TABLE Courses (    course_id INT PRIMARY KEY AUTO_INCREMENT,    course_name VARCHA...       0 row(s) affected                                          0.015 sec
26   22:59:08  CREATE TABLE Enrollments (    enrollment_id INT PRIMARY KEY AUTO_INCREMENT,    student_id INT,  ...  0 row(s) affected                                          0.031 sec
27   22:59:44  INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES ('John',...  10 row(s) affected Records: 10  Duplicates: 0  Warnings: 0  0.000 sec
```

- ✓ **Students Table has been created.**

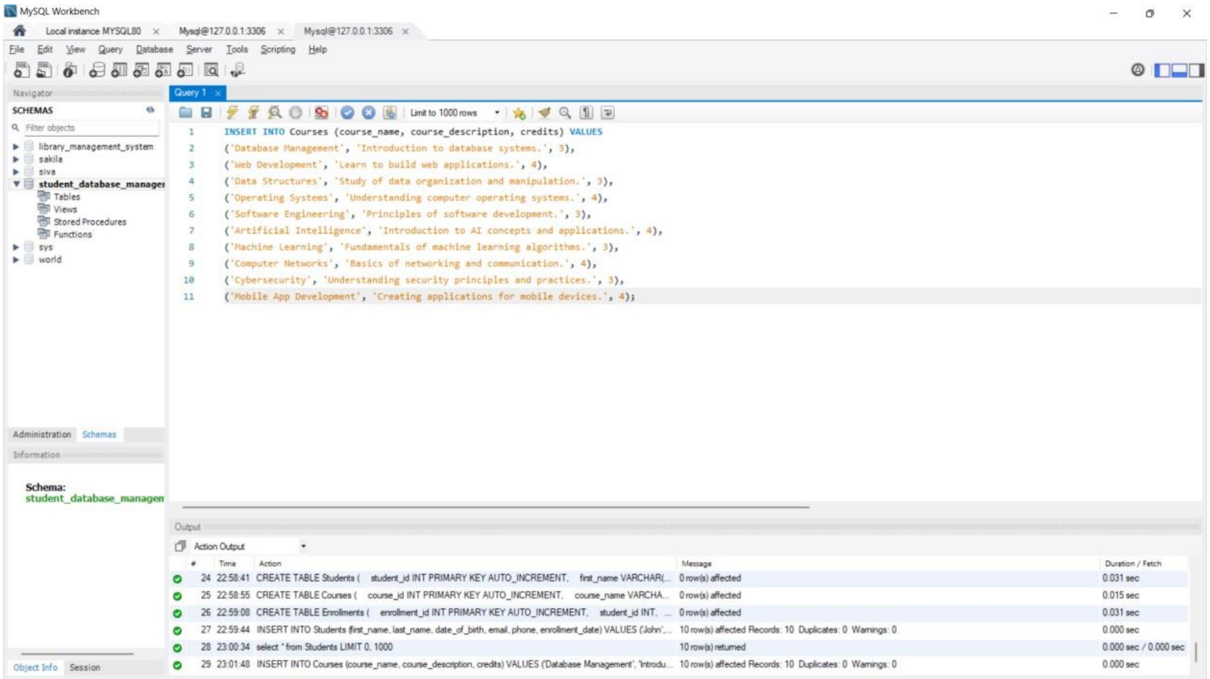


```
select * from Students;
```

student_id	first_name	last_name	date_of_birth	email	phone	enrollment_date
1	John	Doe	2000-01-15	john.doe@example.com	123-456-7890	2020-09-01
2	Jane	Smith	1999-05-22	jane.smith@example.com	098-765-4321	2020-09-01
3	Alice	Johnson	2001-03-10	alice.johnson@example.com	234-567-8901	2021-01-15
4	Bob	Brown	2000-11-30	bob.brown@example.com	345-678-9012	2020-09-01
5	Charlie	Davis	1998-07-25	charlie.davis@example.com	456-789-0123	2019-09-01
6	Diana	Wilson	1999-12-05	diana.wilson@example.com	567-890-1234	2020-09-01
7	Ethan	Martinez	2002-02-18	ethan.martinez@example.com	678-901-2345	2021-01-15
8	Fiona	Garcia	2000-04-12	fiona.garcia@example.com	789-012-3456	2020-09-01
9	George	Hernandez	1999-08-20	george.hernandez@example.com	890-123-4567	2020-09-01
10	Hannah	Lopez	2001-06-15	hannah.lopez@example.com	901-234-5678	2021-01-15
NULL	NULL	NULL	NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
23	22:58:23	use STUDENT_DATABASE_MANAGEMENT	0 row(s) affected	0.000 sec
24	22:58:41	CREATE TABLE Students (student_id INT PRIMARY KEY AUTO_INCREMENT, first_name VARCHAR(...	0 row(s) affected	0.031 sec
25	22:58:55	CREATE TABLE Courses (course_id INT PRIMARY KEY AUTO_INCREMENT, course_name VARCHA...	0 row(s) affected	0.015 sec
26	22:59:08	CREATE TABLE Enrollments (enrollment_id INT PRIMARY KEY AUTO_INCREMENT, student_id INT, ...	0 row(s) affected	0.031 sec
27	22:59:44	INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES ('John',...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
28	23:00:34	select * from Students LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec

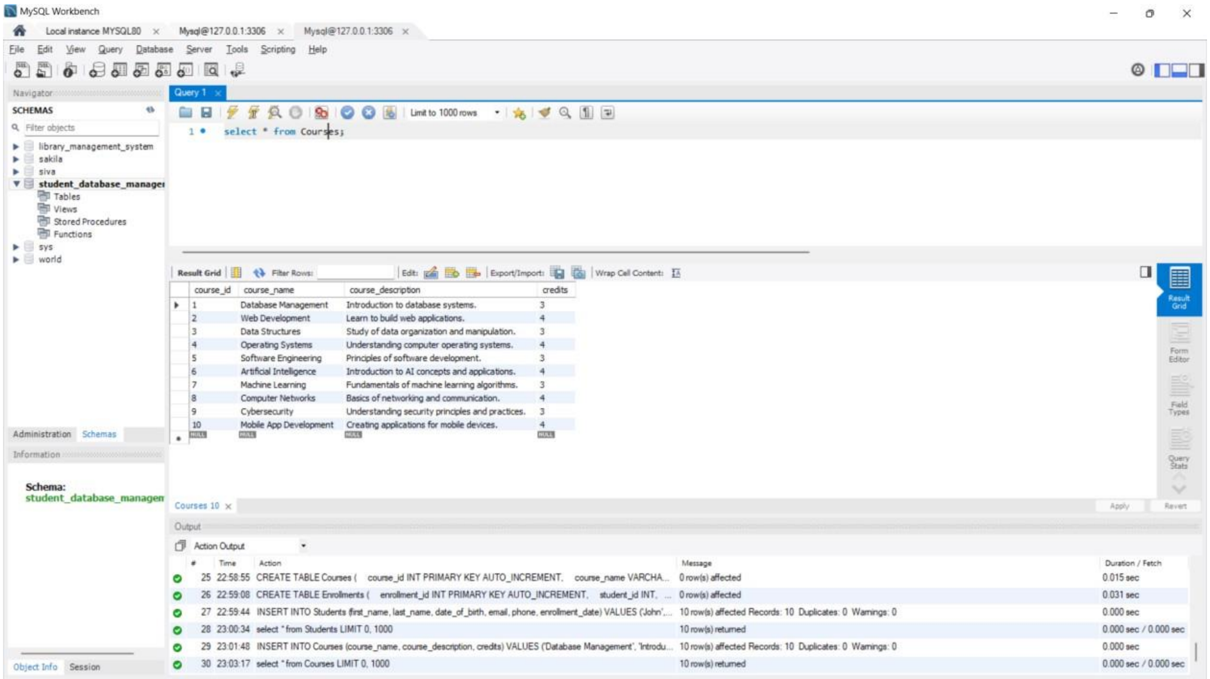
Inserting Sample Courses:



```
INSERT INTO Courses (course_name, course_description, credits) VALUES
('Database Management', 'Introduction to database systems.', 3),
('Web Development', 'Learn to build web applications.', 4),
('Data Structures', 'Study of data organization and manipulation.', 3),
('Operating Systems', 'Understanding computer operating systems.', 4),
('Software Engineering', 'Principles of software development.', 3),
('Artificial Intelligence', 'Introduction to AI concepts and applications.', 4),
('Machine Learning', 'Fundamentals of machine learning algorithms.', 3),
('Computer Networks', 'Basics of networking and communication.', 4),
('Cybersecurity', 'Understanding security principles and practices.', 3),
('Mobile App Development', 'Creating applications for mobile devices.', 4);
```

#	Time	Action	Message	Duration / Fetch
24	22:58:41	CREATE TABLE Students (student_id INT PRIMARY KEY AUTO_INCREMENT, first_name VARCHAR(...	0 row(s) affected	0.031 sec
25	22:58:55	CREATE TABLE Courses (course_id INT PRIMARY KEY AUTO_INCREMENT, course_name VARCHA...	0 row(s) affected	0.015 sec
26	22:59:08	CREATE TABLE Enrollments (enrollment_id INT PRIMARY KEY AUTO_INCREMENT, student_id INT, ...	0 row(s) affected	0.031 sec
27	22:59:44	INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES ('John',...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
28	23:00:34	select * from Students LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
29	23:01:48	INSERT INTO Courses (course_name, course_description, credits) VALUES ('Database Management', 'Introdu...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec

- ✓ **Courses Table has been created:**

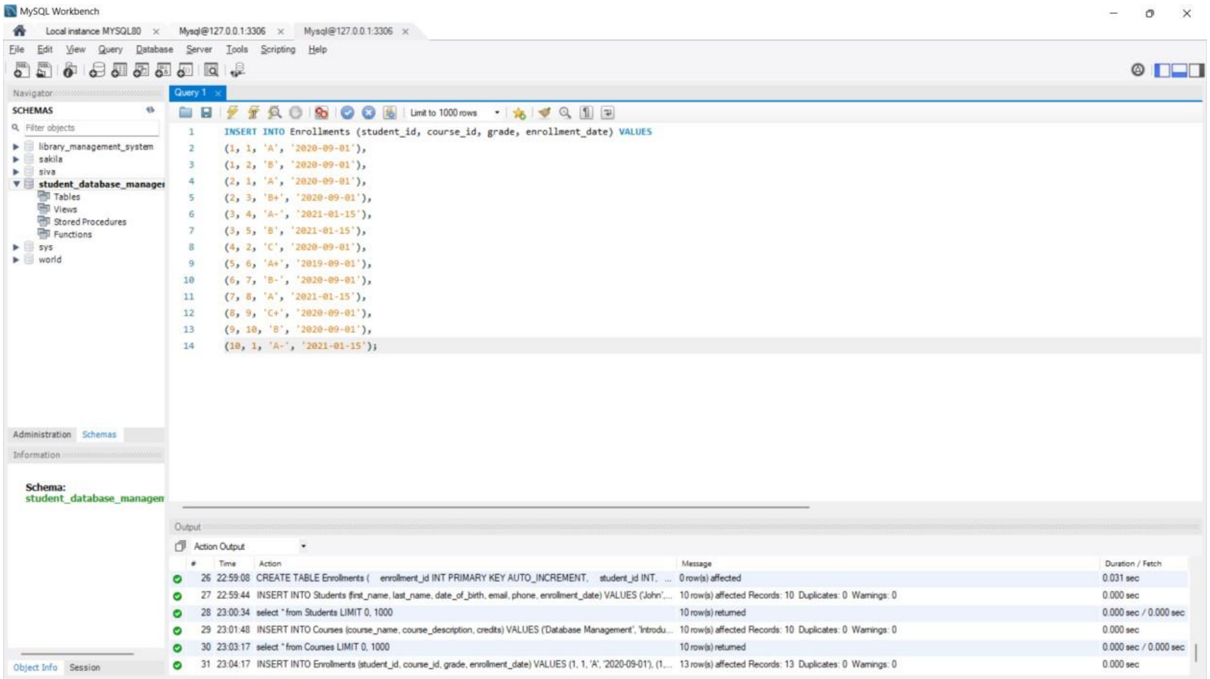


```sql
select * from Courses;
```

course_id	course_name	course_description	credits
1	Database Management	Introduction to database systems.	3
2	Web Development	Learn to build web applications.	4
3	Data Structures	Study of data organization and manipulation.	3
4	Operating Systems	Understanding computer operating systems.	4
5	Software Engineering	Principles of software development.	3
6	Artificial Intelligence	Introduction to AI concepts and applications.	4
7	Machine Learning	Fundamentals of machine learning algorithms.	3
8	Computer Networks	Basics of networking and communication.	4
9	Cybersecurity	Understanding security principles and practices.	3
10	Mobile App Development	Creating applications for mobile devices.	4
NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
25	22:58:55	CREATE TABLE Courses (course_id INT PRIMARY KEY AUTO_INCREMENT, course_name VARCHA...	0 row(s) affected	0.015 sec
26	22:59:08	CREATE TABLE Enrollments (enrollment_id INT PRIMARY KEY AUTO_INCREMENT, student_id INT, ...	0 row(s) affected	0.031 sec
27	22:59:44	INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES ('John',...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
28	23:00:34	select * from Students LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
29	23:01:48	INSERT INTO Courses (course_name, course_description, credits) VALUES ('Database Management', 'Introdu...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
30	23:03:17	select * from Courses LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec

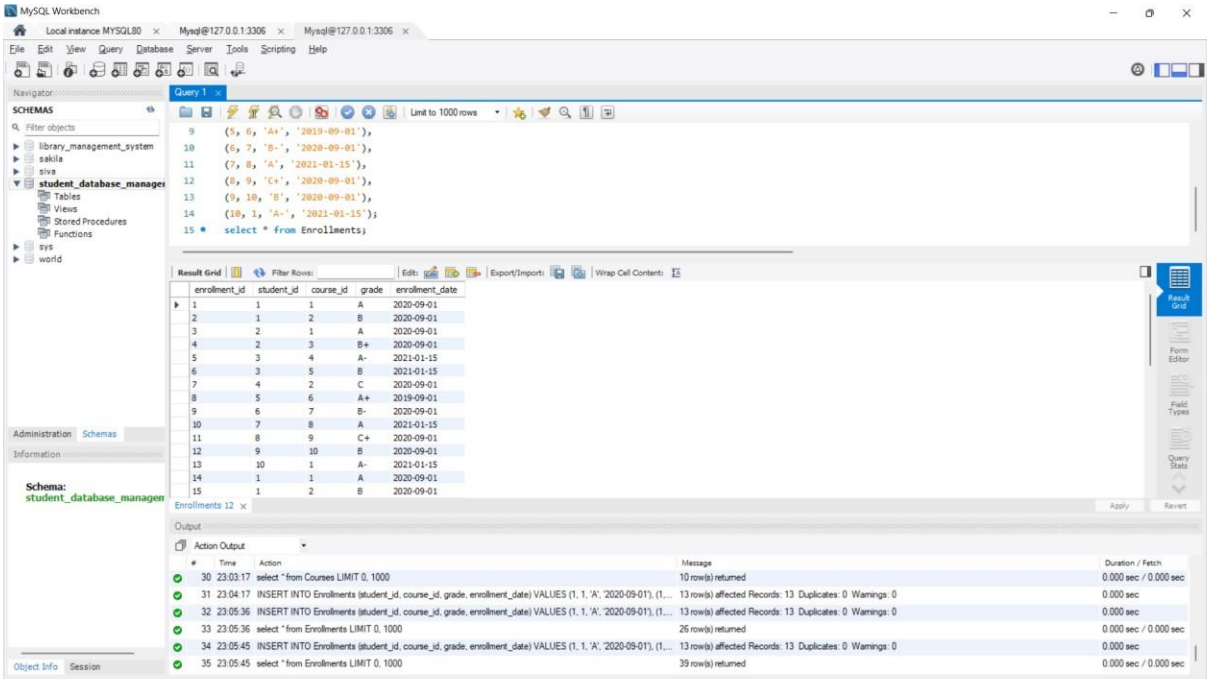
Inserting Sample Enrollments :



```sql
INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES
(1, 1, 'A', '2020-09-01'),
(1, 2, 'B', '2020-09-01'),
(2, 1, 'A', '2020-09-01'),
(2, 3, 'B+', '2020-09-01'),
(3, 4, 'A-', '2021-01-15'),
(3, 5, 'B', '2021-01-15'),
(4, 2, 'C', '2020-09-01'),
(5, 6, 'A+', '2019-09-01'),
(6, 7, 'B-', '2020-09-01'),
(7, 8, 'A', '2021-01-15'),
(8, 9, 'C+', '2020-09-01'),
(9, 10, 'B', '2020-09-01'),
(10, 1, 'A-', '2021-01-15');
```

#	Time	Action	Message	Duration / Fetch
26	22:59:08	CREATE TABLE Enrollments (enrollment_id INT PRIMARY KEY AUTO_INCREMENT, student_id INT, ...	0 row(s) affected	0.031 sec
27	22:59:44	INSERT INTO Students (first_name, last_name, date_of_birth, email, phone, enrollment_date) VALUES ('John',...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
28	23:00:34	select * from Students LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
29	23:01:48	INSERT INTO Courses (course_name, course_description, credits) VALUES ('Database Management', 'Introdu...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
30	23:03:17	select * from Courses LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
31	23:04:17	INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...	13 row(s) affected Records: 13 Duplicates: 0 Warnings: 0	0.000 sec

- ✓ **Enrollments Table has been created .**



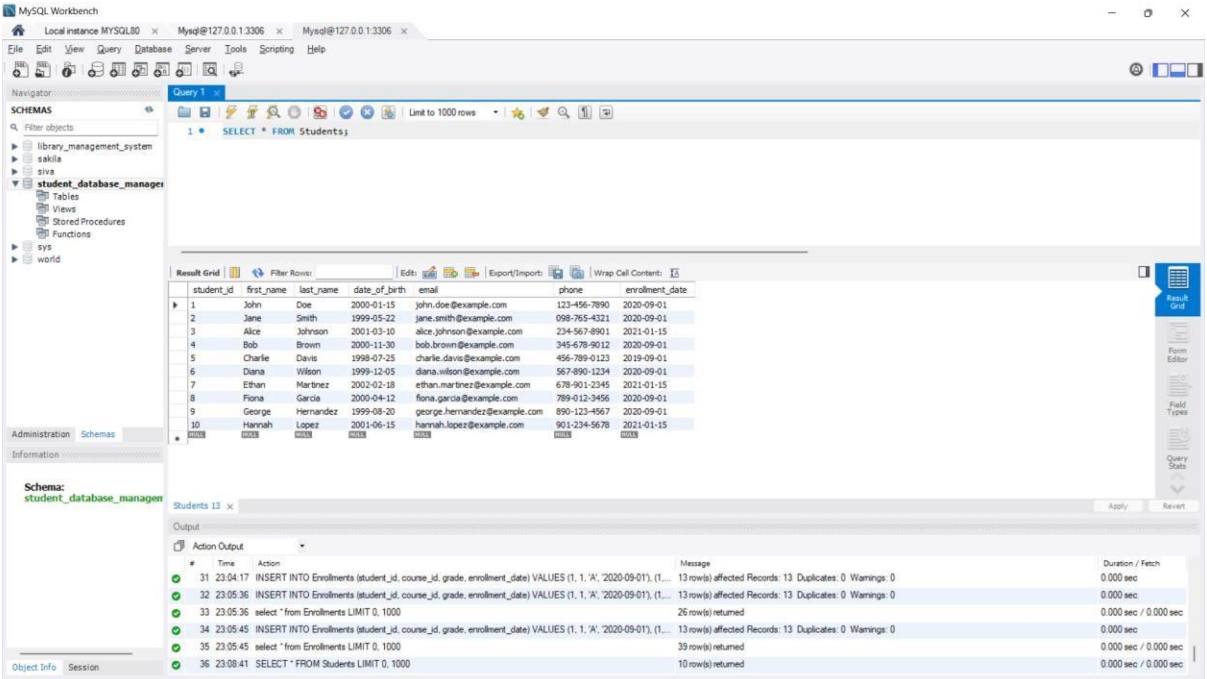
```
(5, 6, 'A+', '2019-09-01'),
(6, 7, 'B-', '2020-09-01'),
(7, 8, 'A', '2021-01-15'),
(8, 9, 'C+', '2020-09-01'),
(9, 10, 'B', '2020-09-01'),
(10, 1, 'A-', '2021-01-15');
select * from Enrollments;
```

enrollment_id	student_id	course_id	grade	enrollment_date
1	1	1	A	2020-09-01
2	1	2	B	2020-09-01
3	2	1	A	2020-09-01
4	2	3	B+	2020-09-01
5	3	4	A-	2021-01-15
6	3	5	B	2021-01-15
7	4	2	C	2020-09-01
8	5	6	A+	2019-09-01
9	6	7	B-	2020-09-01
10	7	8	A	2021-01-15
11	8	9	C+	2020-09-01
12	9	10	B	2020-09-01
13	10	1	A-	2021-01-15
14	1	1	A	2020-09-01
15	1	2	B	2020-09-01

```
#   Time      Action                                                                                      Message                                                      Duration / Fetch
30  23:03:17  select * from Courses LIMIT 0, 1000                                                         10 row(s) returned                                           0.000 sec / 0.000 sec
31  23:04:17  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
32  23:05:36  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
33  23:05:36  select * from Enrollments LIMIT 0, 1000                                                     26 row(s) returned                                           0.000 sec / 0.000 sec
34  23:05:45  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
35  23:05:45  select * from Enrollments LIMIT 0, 1000                                                     39 row(s) returned                                           0.000 sec / 0.000 sec
```

SQL Queries

Retrieve All Students :

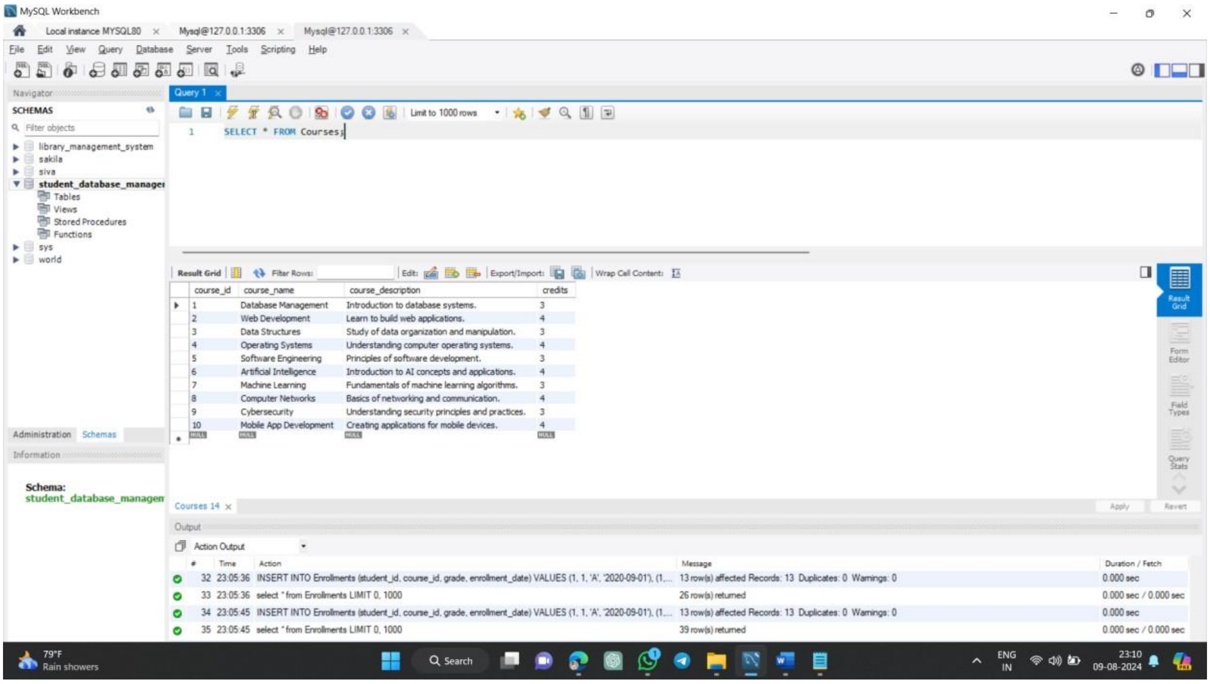


```
SELECT * FROM Students;
```

student_id	first_name	last_name	date_of_birth	email	phone	enrollment_date
1	John	Doe	2000-01-15	john.doe@example.com	123-456-7890	2020-09-01
2	Jane	Smith	1999-05-22	jane.smith@example.com	098-765-4321	2020-09-01
3	Alice	Johnson	2001-03-10	alice.johnson@example.com	234-567-8901	2021-01-15
4	Bob	Brown	2000-11-30	bob.brown@example.com	345-678-9012	2020-09-01
5	Charlie	Davis	1998-07-25	charlie.davis@example.com	456-789-0123	2019-09-01
6	Diana	Wilson	1999-12-05	diana.wilson@example.com	567-890-1234	2020-09-01
7	Ethan	Martinez	2002-02-18	ethan.martinez@example.com	678-901-2345	2021-01-15
8	Fiona	Garcia	2000-04-12	fiona.garcia@example.com	789-012-3456	2020-09-01
9	George	Hernandez	1999-08-20	george.hernandez@example.com	890-123-4567	2020-09-01
10	Hannah	Lopez	2001-06-15	hannah.lopez@example.com	901-234-5678	2021-01-15
NULL	NULL	NULL	NULL	NULL	NULL	NULL

```
#   Time      Action                                                                                      Message                                                      Duration / Fetch
31  23:04:17  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
32  23:05:36  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
33  23:05:36  select * from Enrollments LIMIT 0, 1000                                                     26 row(s) returned                                           0.000 sec / 0.000 sec
34  23:05:45  INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...  13 row(s) affected Records: 13  Duplicates: 0  Warnings: 0  0.000 sec
35  23:05:45  select * from Enrollments LIMIT 0, 1000                                                     39 row(s) returned                                           0.000 sec / 0.000 sec
36  23:08:41  SELECT * FROM Students LIMIT 0, 1000                                                        10 row(s) returned                                           0.000 sec / 0.000 sec
```

Retrieve All Courses :



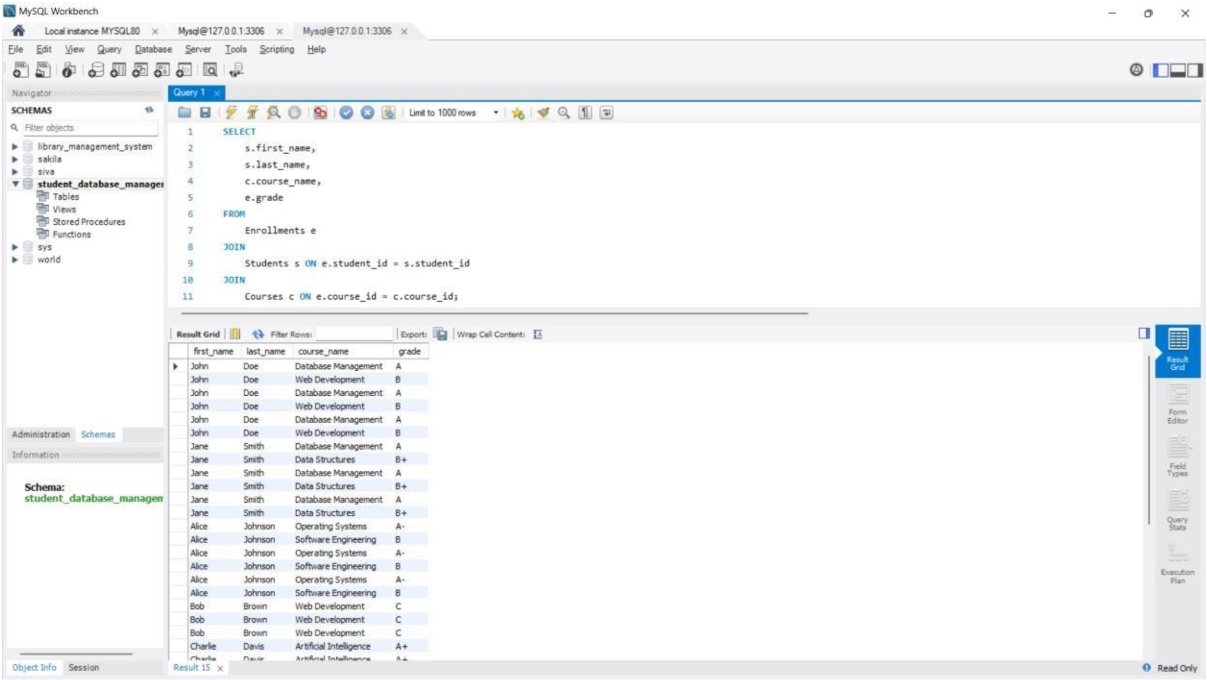
Schema: student_database_managem

```sql
SELECT * FROM Courses;
```

course_id	course_name	course_description	credits
1	Database Management	Introduction to database systems.	3
2	Web Development	Learn to build web applications.	4
3	Data Structures	Study of data organization and manipulation.	3
4	Operating Systems	Understanding computer operating systems.	4
5	Software Engineering	Principles of software development.	3
6	Artificial Intelligence	Introduction to AI concepts and applications.	4
7	Machine Learning	Fundamentals of machine learning algorithms.	3
8	Computer Networks	Basics of networking and communication.	4
9	Cybersecurity	Understanding security principles and practices.	3
10	Mobile App Development	Creating applications for mobile devices.	4
NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
32	23:05:36	INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...	13 row(s) affected Records: 13 Duplicates: 0 Warnings: 0	0.000 sec
33	23:05:36	select * from Enrollments LIMIT 0, 1000	26 row(s) returned	0.000 sec / 0.000 sec
34	23:05:45	INSERT INTO Enrollments (student_id, course_id, grade, enrollment_date) VALUES (1, 1, 'A', '2020-09-01'), (1,...	13 row(s) affected Records: 13 Duplicates: 0 Warnings: 0	0.000 sec
35	23:05:45	select * from Enrollments LIMIT 0, 1000	39 row(s) returned	0.000 sec / 0.000 sec

Retrieve Enrollments with Student and Course Details :

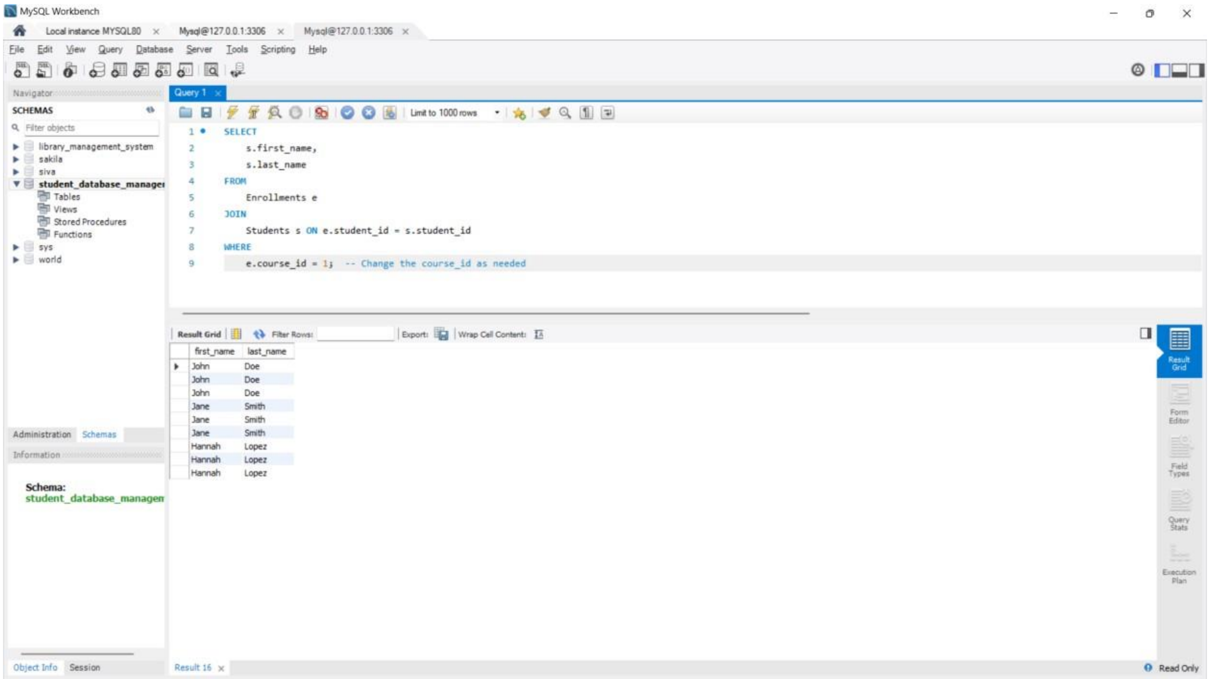


Schema: student_database_managem

```sql
SELECT
    s.first_name,
    s.last_name,
    c.course_name,
    e.grade
FROM
    Enrollments e
JOIN
    Students s ON e.student_id = s.student_id
JOIN
    Courses c ON e.course_id = c.course_id;
```

first_name	last_name	course_name	grade
John	Doe	Database Management	A
John	Doe	Web Development	B
John	Doe	Database Management	A
John	Doe	Web Development	B
John	Doe	Database Management	A
John	Doe	Web Development	B
Jane	Smith	Database Management	A
Jane	Smith	Data Structures	B+
Jane	Smith	Database Management	A
Jane	Smith	Data Structures	B+
Jane	Smith	Database Management	A
Jane	Smith	Data Structures	B+
Alice	Johnson	Operating Systems	A-
Alice	Johnson	Software Engineering	B
Alice	Johnson	Operating Systems	A-
Alice	Johnson	Software Engineering	B
Alice	Johnson	Operating Systems	A-
Alice	Johnson	Software Engineering	B
Bob	Brown	Web Development	C
Bob	Brown	Web Development	C
Bob	Brown	Web Development	C
Charlie	Davis	Artificial Intelligence	A+
Charlie	Davis	Artificial Intelligence	A+

Find Students Enrolled in a Specific Course :

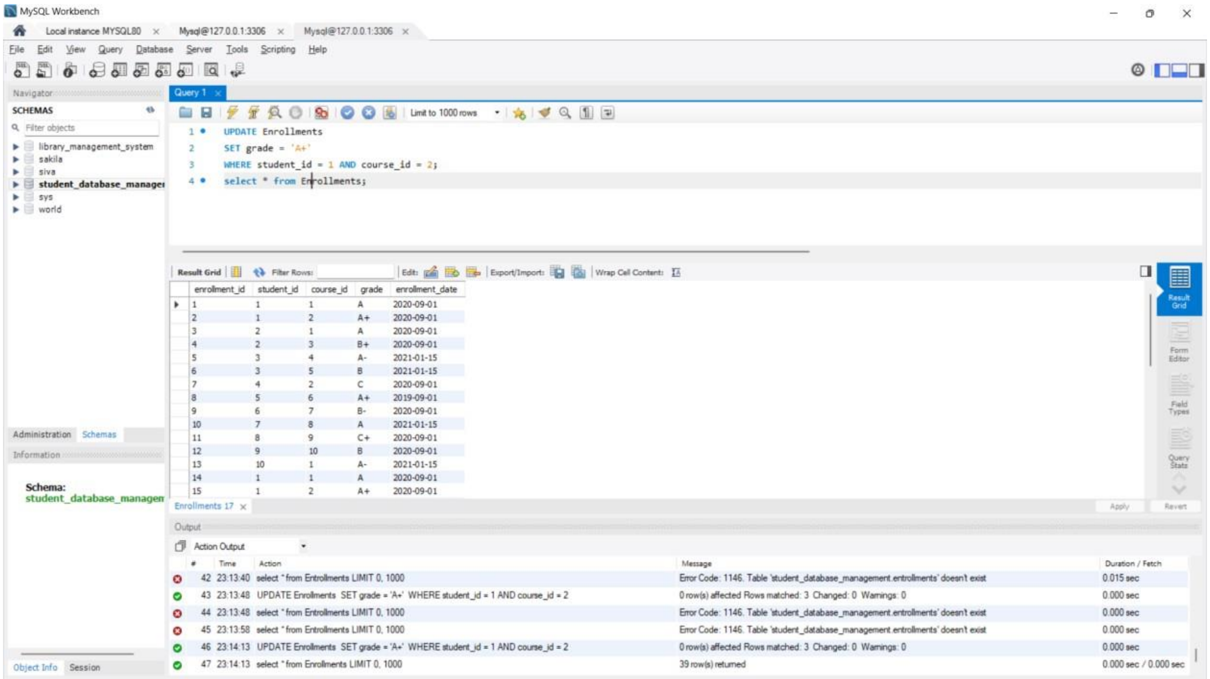


```
SELECT
    s.first_name,
    s.last_name
FROM
    Enrollments e
JOIN
    Students s ON e.student_id = s.student_id
WHERE
    e.course_id = 1;  -- Change the course_id as needed
```

first_name	last_name
John	Doe
John	Doe
John	Doe
Jane	Smith
Jane	Smith
Jane	Smith
Hannah	Lopez
Hannah	Lopez
Hannah	Lopez

Schema:
student_database_managem

Update a Student's Grade :



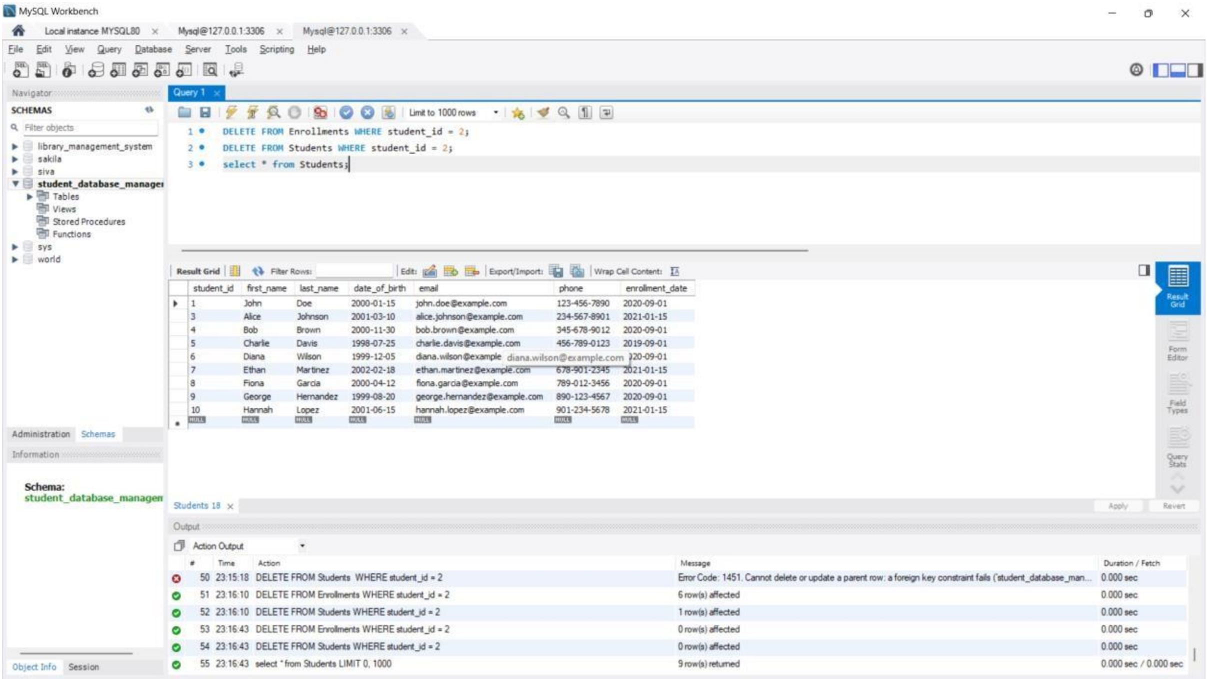
```
UPDATE Enrollments
SET grade = 'A+'
WHERE student_id = 1 AND course_id = 2;
select * from Enrollments;
```

enrollment_id	student_id	course_id	grade	enrollment_date
1	1	1	A	2020-09-01
2	1	2	A+	2020-09-01
3	2	1	A	2020-09-01
4	2	3	B+	2020-09-01
5	3	4	A-	2021-01-15
6	3	5	B	2021-01-15
7	4	2	C	2020-09-01
8	5	6	A+	2019-09-01
9	6	7	B-	2020-09-01
10	7	8	A	2021-01-15
11	8	9	C+	2020-09-01
12	9	10	B	2020-09-01
13	10	1	A-	2021-01-15
14	1	1	A	2020-09-01
15	1	2	A+	2020-09-01

Schema:
student_database_managem

```
#   Time      Action                                                            Message                                                                       Duration / Fetch
42  23:13:40  select * from Entrollments LIMIT 0, 1000                          Error Code: 1146. Table 'student_database_management.entrollments' doesn't exist  0.015 sec
43  23:13:48  UPDATE Enrollments  SET grade = 'A+'  WHERE student_id = 1 AND course_id = 2   0 row(s) affected Rows matched: 3  Changed: 0  Warnings: 0       0.000 sec
44  23:13:48  select * from Entrollments LIMIT 0, 1000                          Error Code: 1146. Table 'student_database_management.entrollments' doesn't exist  0.000 sec
45  23:13:58  select * from Entrollments LIMIT 0, 1000                          Error Code: 1146. Table 'student_database_management.entrollments' doesn't exist  0.000 sec
46  23:14:13  UPDATE Enrollments  SET grade = 'A+'  WHERE student_id = 1 AND course_id = 2   0 row(s) affected Rows matched: 3  Changed: 0  Warnings: 0       0.000 sec
47  23:14:13  select * from Enrollments LIMIT 0, 1000                           39 row(s) returned                                                            0.000 sec / 0.000 sec
```

Delete a Student Record :



```sql
DELETE FROM Enrollments WHERE student_id = 2;
DELETE FROM Students WHERE student_id = 2;
select * from Students;
```

student_id	first_name	last_name	date_of_birth	email	phone	enrollment_date
1	John	Doe	2000-01-15	john.doe@example.com	123-456-7890	2020-09-01
3	Alice	Johnson	2001-03-10	alice.johnson@example.com	234-567-8901	2021-01-15
4	Bob	Brown	2000-11-30	bob.brown@example.com	345-678-9012	2020-09-01
5	Charlie	Davis	1998-07-25	charlie.davis@example.com	456-789-0123	2019-09-01
6	Diana	Wilson	1999-12-05	diana.wilson@example diana.wilson@example.com		20-09-01
7	Ethan	Martinez	2002-02-18	ethan.martinez@example.com	678-901-2345	2021-01-15
8	Fiona	Garcia	2000-04-12	fiona.garcia@example.com	789-012-3456	2020-09-01
9	George	Hernandez	1999-08-20	george.hernandez@example.com	890-123-4567	2020-09-01
10	Hannah	Lopez	2001-06-15	hannah.lopez@example.com	901-234-5678	2021-01-15
NULL	NULL	NULL	NULL	NULL	NULL	NULL

```
#   Time      Action                                          Message                                                                                   Duration / Fetch
50  23:15:18  DELETE FROM Students  WHERE student_id = 2      Error Code: 1451. Cannot delete or update a parent row: a foreign key constraint fails ('student_database_man...  0.000 sec
51  23:16:10  DELETE FROM Enrollments WHERE student_id = 2    6 row(s) affected                                                                         0.000 sec
52  23:16:10  DELETE FROM Students WHERE student_id = 2       1 row(s) affected                                                                         0.000 sec
53  23:16:43  DELETE FROM Enrollments WHERE student_id = 2    0 row(s) affected                                                                         0.000 sec
54  23:16:43  DELETE FROM Students WHERE student_id = 2       0 row(s) affected                                                                         0.000 sec
55  23:16:43  select * from Students LIMIT 0, 1000            9 row(s) returned                                                                         0.000 sec / 0.000 sec
```

Conclusion :

Student Database Management System (SDBMS) is essential for educational institutions to efficiently manage student records and streamline administrative processes. It centralizes data, improves accuracy, and enhances communication among students, faculty, and staff.