Lesson 05 Demo 04

Using Select Statement with Various Clauses

Objective: To demonstrate the versatility of the SELECT statement in MySQL by utilizing various clauses for refined data retrieval

Tools required: MySQL

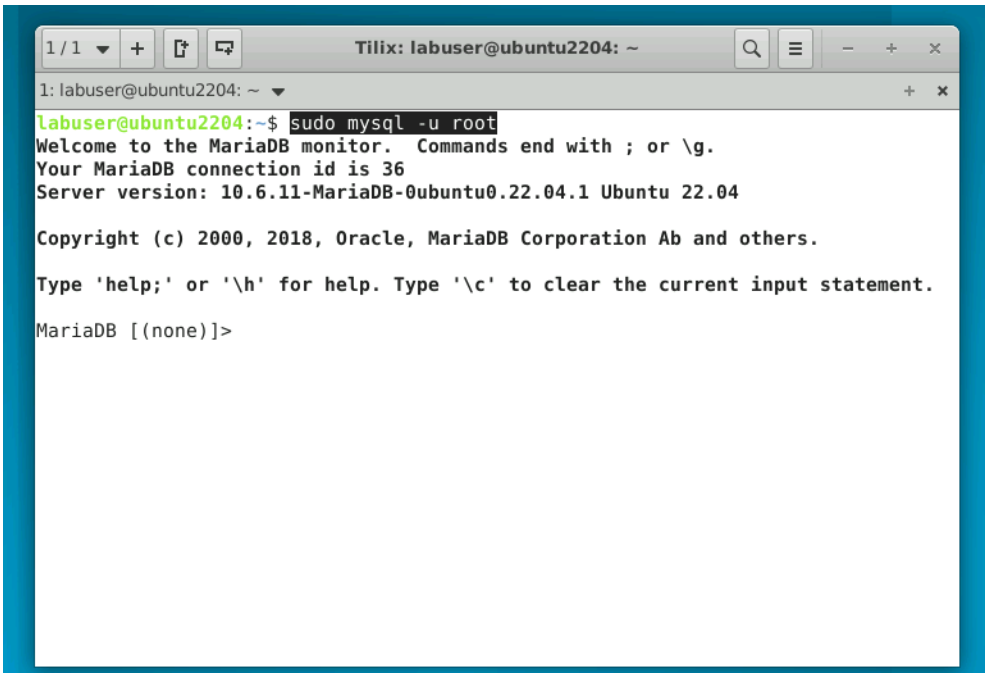
Prerequisites: None

Steps to be followed:

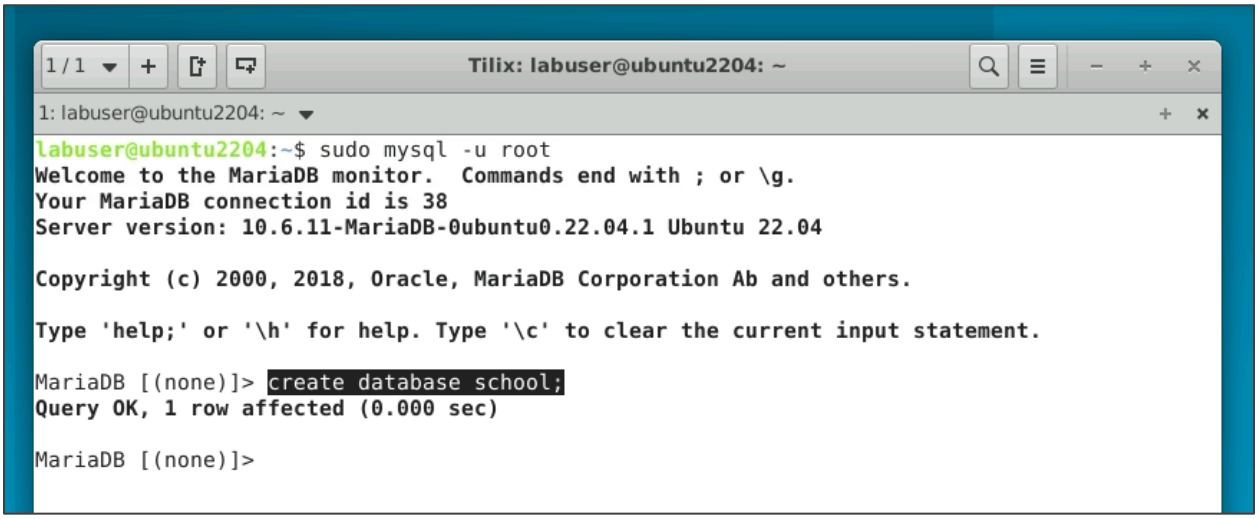
1. Set up a database and table
2. Apply Select with various clauses

Step 1: Set up a database and table

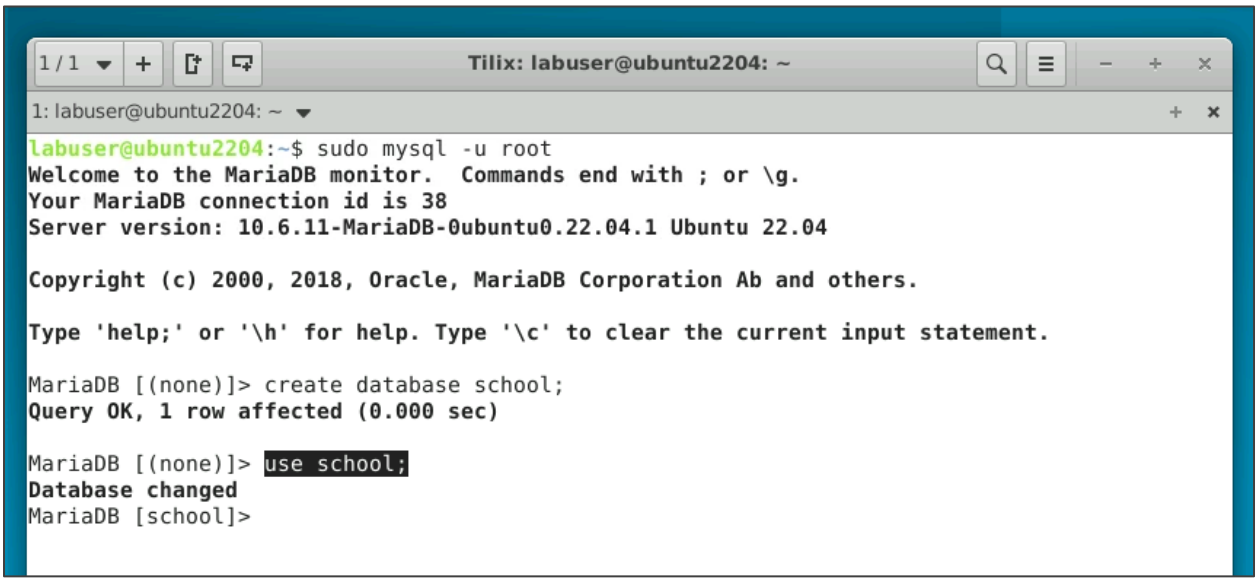
1.1 Open a terminal window and access MySQL as a root user:
sudo mysql -u root



1.2 Create a new database named **school**:
create database school;

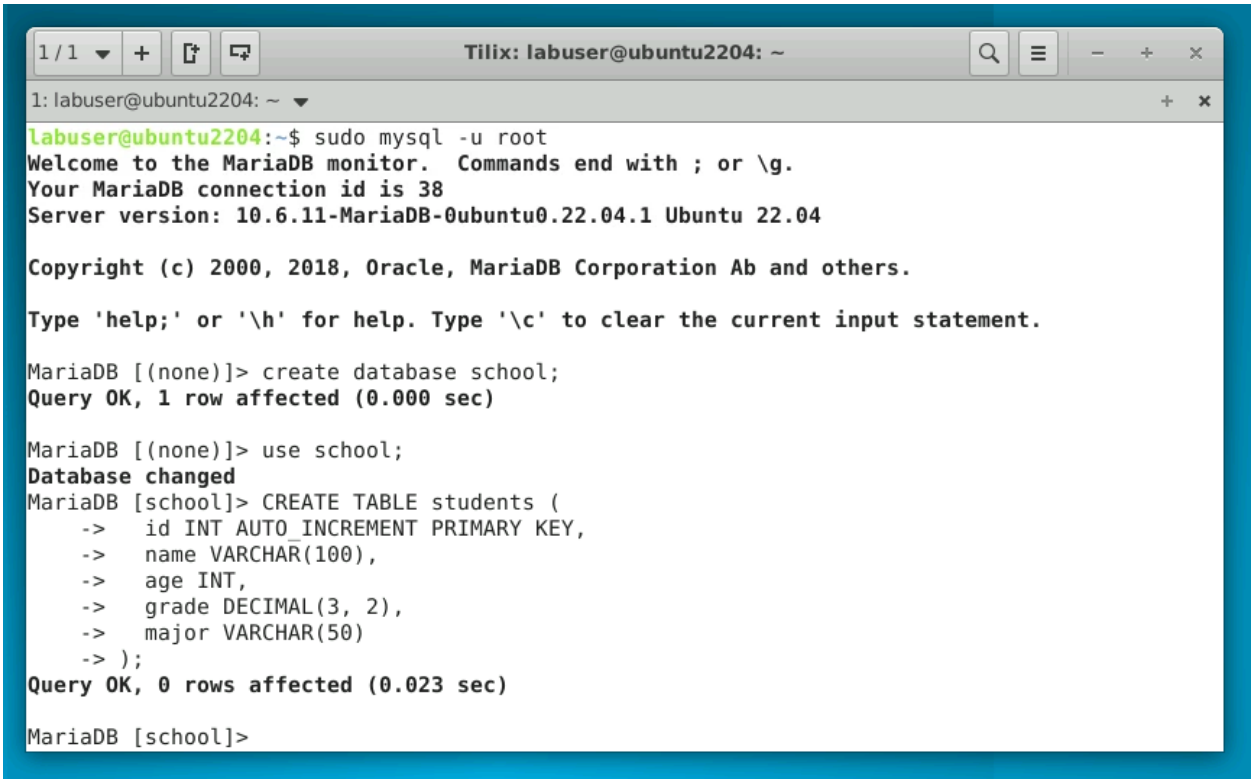


1.3 Select the **school** database:
use school;



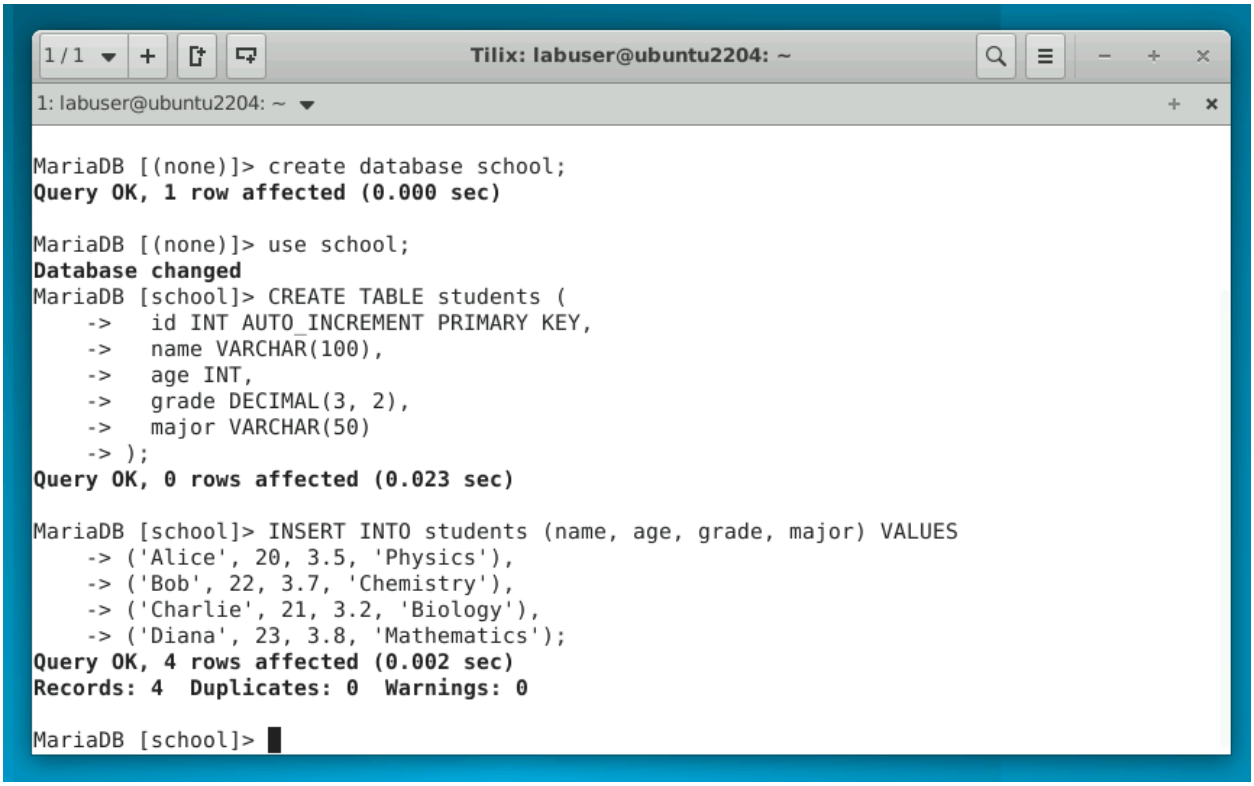
1.4 Create a **students** table with relevant fields:

```
CREATE TABLE students (
  id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(100),
  age INT,
  grade DECIMAL(3, 2),
  major VARCHAR(50)
);
```



1.5 Insert data into **students** table:

```
INSERT INTO students (name, age, grade, major) VALUES
('Alice', 20, 3.5, 'Physics'),
('Bob', 22, 3.7, 'Chemistry'),
('Charlie', 21, 3.2, 'Biology'),
('Diana', 23, 3.8, 'Mathematics');
```



Step 2: Apply Select with various clauses

2.1 Retrieve all records from the **students** table:
SELECT * FROM students;

```
MariaDB [school]> SELECT * FROM students;
+----+---------+------+-------+-------------+
| id | name    | age  | grade | major       |
+----+---------+------+-------+-------------+
|  1 | Alice   |   20 |  3.50 | Physics     |
|  2 | Bob     |   22 |  3.70 | Chemistry   |
|  3 | Charlie |   21 |  3.20 | Biology     |
|  4 | Diana   |   23 |  3.80 | Mathematics |
+----+---------+------+-------+-------------+
4 rows in set (0.000 sec)

MariaDB [school]>
```

2.2 Find students who are majoring in **Physics**:
SELECT * FROM students WHERE major = 'Physics';

```
MariaDB [school]> SELECT * FROM students WHERE major = 'Physics';
+----+-------+------+-------+---------+
| id | name  | age  | grade | major   |
+----+-------+------+-------+---------+
|  1 | Alice |   20 |  3.50 | Physics |
+----+-------+------+-------+---------+
1 row in set (0.000 sec)

MariaDB [school]>
```

2.3 Order students by their grades in descending order:
SELECT * FROM students ORDER BY grade DESC;

```
MariaDB [school]> SELECT * FROM students ORDER BY grade DESC;
+----+---------+------+-------+-------------+
| id | name    | age  | grade | major       |
+----+---------+------+-------+-------------+
|  4 | Diana   |   23 |  3.80 | Mathematics |
|  2 | Bob     |   22 |  3.70 | Chemistry   |
|  1 | Alice   |   20 |  3.50 | Physics     |
|  3 | Charlie |   21 |  3.20 | Biology     |
+----+---------+------+-------+-------------+
4 rows in set (0.000 sec)

MariaDB [school]>
```

2.4 Retrieve only the first two records:

SELECT * FROM students LIMIT 2;

```
MariaDB [school]> SELECT * FROM students LIMIT 2;
+----+-------+------+-------+-----------+
| id | name  | age  | grade | major     |
+----+-------+------+-------+-----------+
|  1 | Alice |   20 |  3.50 | Physics   |
|  2 | Bob   |   22 |  3.70 | Chemistry |
+----+-------+------+-------+-----------+
2 rows in set (0.000 sec)

MariaDB [school]>
```

2.5 List the distinct majors available:

SELECT DISTINCT major FROM students;

```
MariaDB [school]> SELECT DISTINCT major FROM students;
+-------------+
| major       |
+-------------+
| Physics     |
| Chemistry   |
| Biology     |
| Mathematics |
+-------------+
4 rows in set (0.000 sec)

MariaDB [school]>
```

2.6 Group the students by their majors and count them:

SELECT major, COUNT(*) FROM students GROUP BY major;

```
MariaDB [school]> SELECT major, COUNT(*) FROM students GROUP BY major;
+-------------+----------+
| major       | COUNT(*) |
+-------------+----------+
| Biology     |        1 |
| Chemistry   |        1 |
| Mathematics |        1 |
| Physics     |        1 |
+-------------+----------+
4 rows in set (0.000 sec)

MariaDB [school]>
```

By following these steps, you have successfully utilized the Select statement in MySQL with various clauses to filter, sort, limit, and aggregate data.