

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

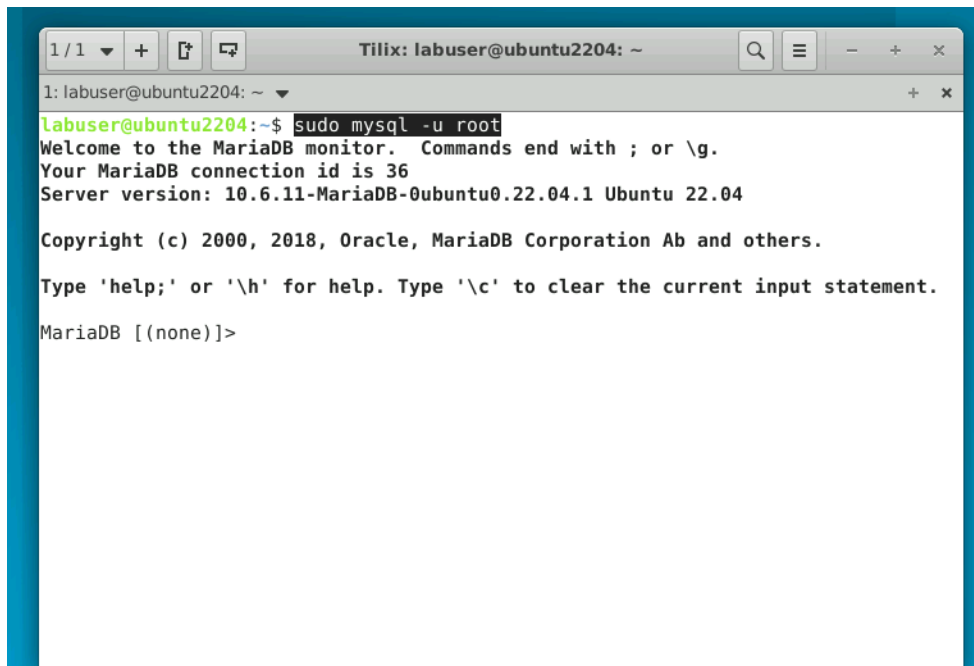
Steps to be followed:

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



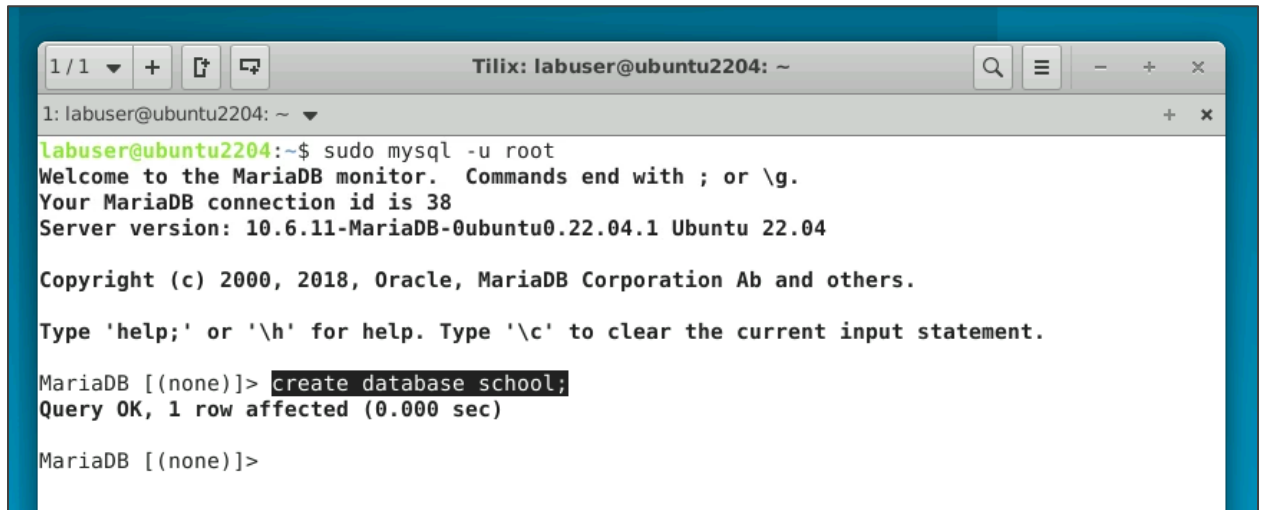
```
1 / 1 + [ ] [ ] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 36
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

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



A terminal window titled 'Tilix: labuser@ubuntu2204: ~' showing the execution of a MySQL command. The user 'labuser' runs 'sudo mysql -u root'. The terminal displays the MariaDB monitor interface with the following text: 'Welcome to the MariaDB monitor. Commands end with ; or \g. Your MariaDB connection id is 38 Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04 Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others. Type \'help;\' or \'\\h\' for help. Type \'\\c\' to clear the current input statement.' The user enters 'create database school;' and the terminal responds with 'Query OK, 1 row affected (0.000 sec)'. The prompt then changes to 'MariaDB [(none)]>'.

```
1/1 ▼ + [ ] [ ] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~ ▼
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 38
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

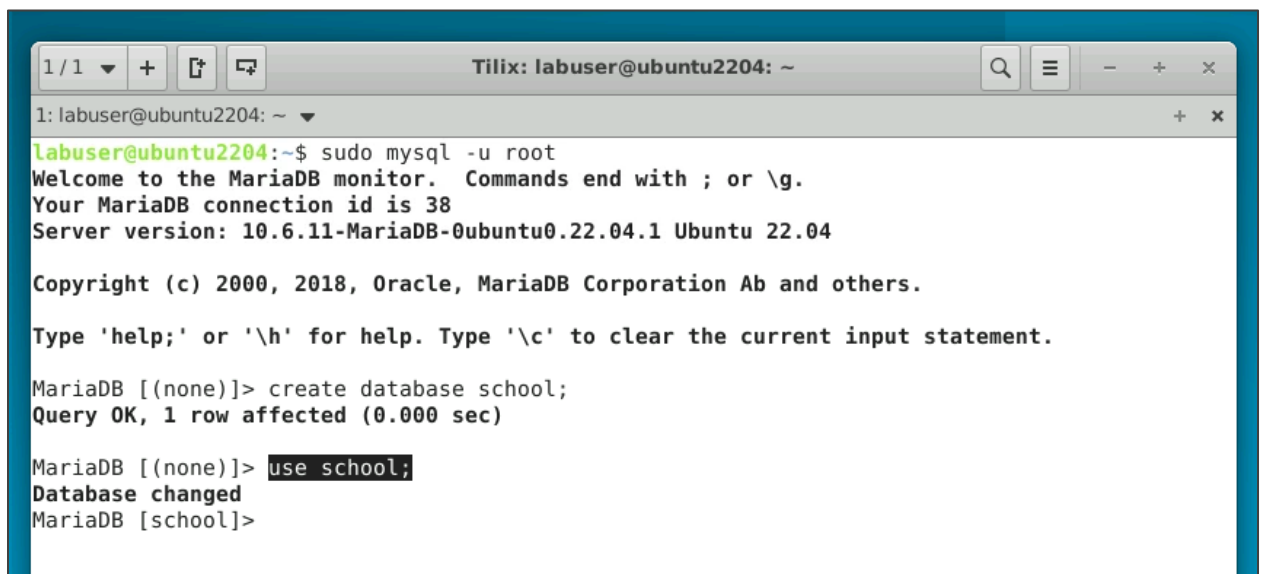
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\\h' for help. Type '\\c' to clear the current input statement.

MariaDB [(none)]> create database school;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]>
```

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



A terminal window titled 'Tilix: labuser@ubuntu2204: ~' showing the execution of a MySQL command. The user 'labuser' runs 'sudo mysql -u root'. The terminal displays the MariaDB monitor interface with the following text: 'Welcome to the MariaDB monitor. Commands end with ; or \g. Your MariaDB connection id is 38 Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04 Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others. Type \'help;\' or \'\\h\' for help. Type \'\\c\' to clear the current input statement.' The user enters 'create database school;' and the terminal responds with 'Query OK, 1 row affected (0.000 sec)'. The user then enters 'use school;' and the terminal responds with 'Database changed'. The prompt then changes to 'MariaDB [school]>'.

```
1/1 ▼ + [ ] [ ] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~ ▼
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 38
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

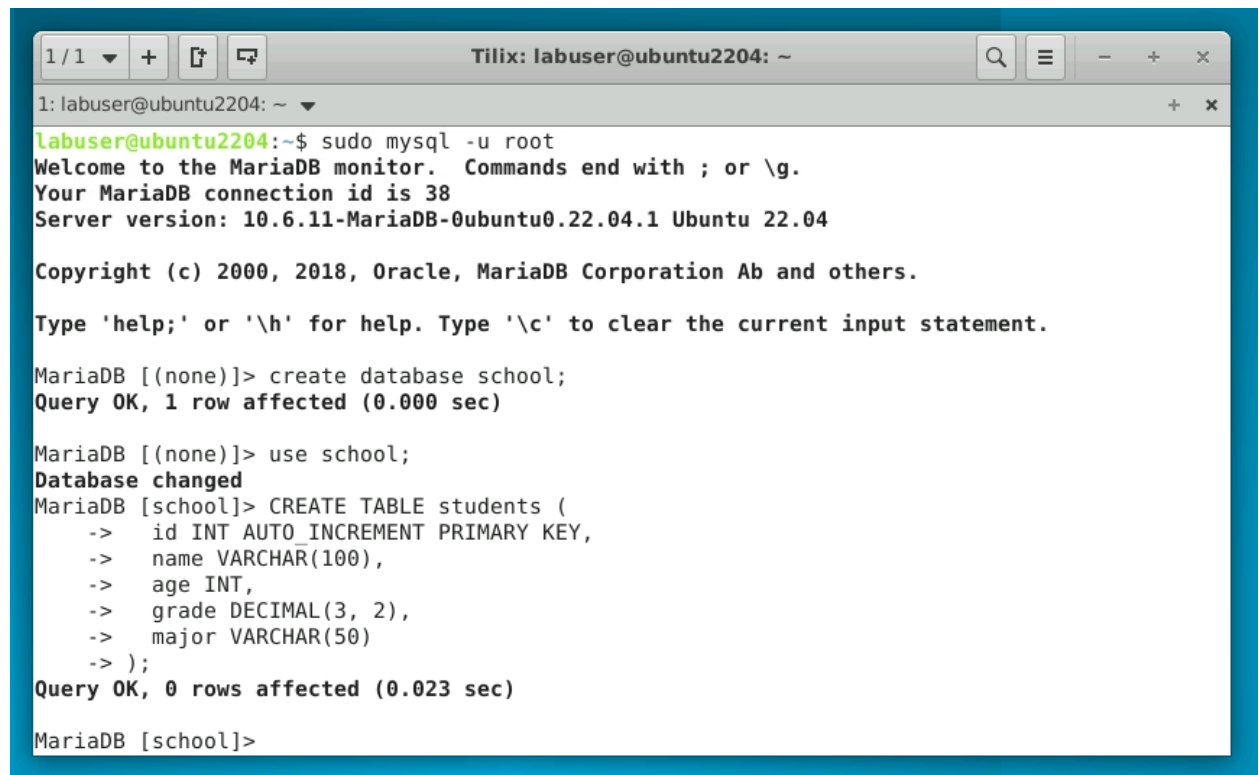
Type 'help;' or '\\h' for help. Type '\\c' to clear the current input statement.

MariaDB [(none)]> create database school;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> use school;
Database changed
MariaDB [school]>
```

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

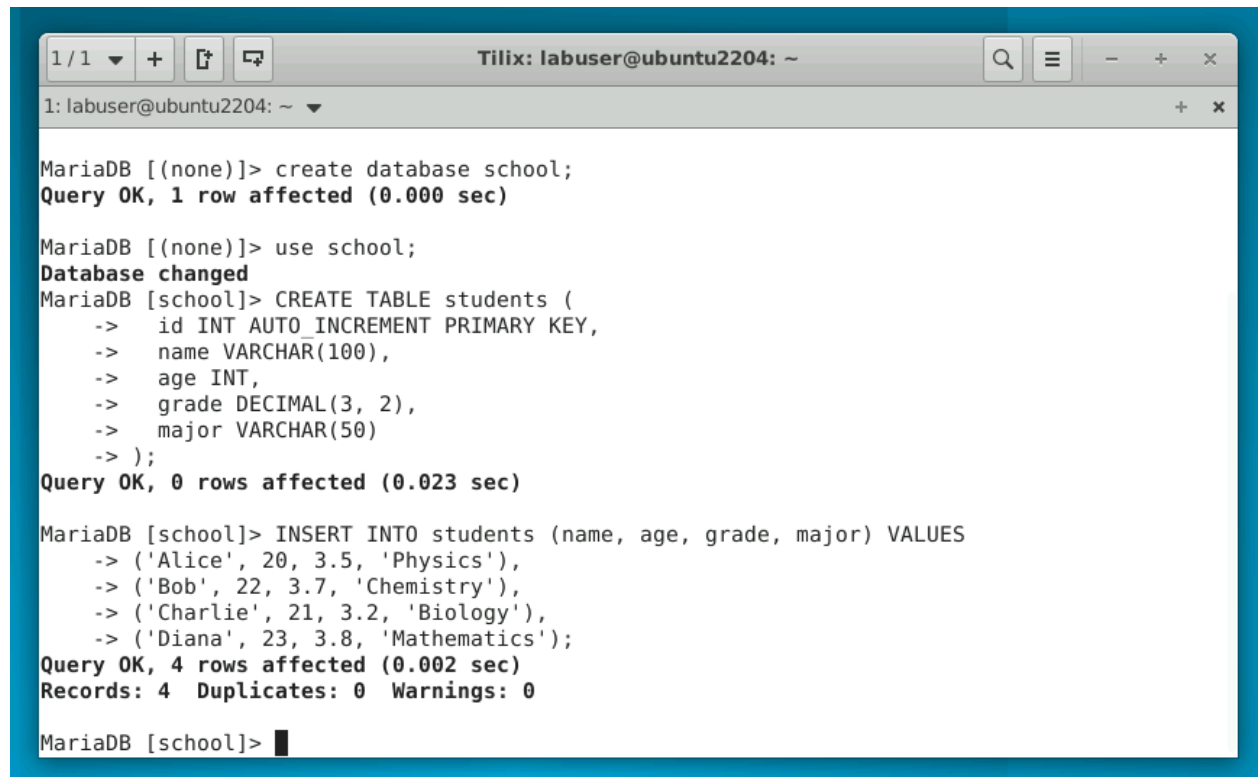
```
CREATE TABLE students (  
  id INT AUTO_INCREMENT PRIMARY KEY,  
  name VARCHAR(100),  
  age INT,  
  grade DECIMAL(3, 2),  
  major VARCHAR(50)  
);
```



```
Tilix: labuser@ubuntu2204: ~  
1: labuser@ubuntu2204: ~  
labuser@ubuntu2204:~$ sudo mysql -u root  
Welcome to the MariaDB monitor.  Commands end with ; or \g.  
Your MariaDB connection id is 38  
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> create database school;  
Query OK, 1 row affected (0.000 sec)  
  
MariaDB [(none)]> use school;  
Database changed  
MariaDB [school]> CREATE TABLE students (  
-> id INT AUTO_INCREMENT PRIMARY KEY,  
-> name VARCHAR(100),  
-> age INT,  
-> grade DECIMAL(3, 2),  
-> major VARCHAR(50)  
-> );  
Query OK, 0 rows affected (0.023 sec)  
  
MariaDB [school]>
```

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');
```



```
1 / 1 + [ ] [ ] Tilix: labuser@ubuntu2204: ~ [ ] [ ] [ ] [ ]  
1: labuser@ubuntu2204: ~ + x  
  
MariaDB [(none)]> create database school;  
Query OK, 1 row affected (0.000 sec)  
  
MariaDB [(none)]> use school;  
Database changed  
MariaDB [school]> CREATE TABLE students (  
-> id INT AUTO INCREMENT PRIMARY KEY,  
-> name VARCHAR(100),  
-> age INT,  
-> grade DECIMAL(3, 2),  
-> major VARCHAR(50)  
-> );  
Query OK, 0 rows affected (0.023 sec)  
  
MariaDB [school]> 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');  
Query OK, 4 rows affected (0.002 sec)  
Records: 4 Duplicates: 0 Warnings: 0  
  
MariaDB [school]> █
```

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.