

SQL practice topics:

1. Create, modify and delete tables/ databases
2. Add data to the tables
3. Display tables according to conditions

1. Create, modify and delete tables/ databases

Creating Database (School)

- create database school;
- use school;

```
ubuntu@box:~$ sudo mariadb
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 32
Server version: 10.11.13-MariaDB-0ubuntu0.24.04.1 Ubuntu 24.04

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)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| security |
| sys |
+-----+
5 rows in set (0.000 sec)

MariaDB [(none)]> create database school;
Query OK, 1 row affected (0.001 sec)

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

Create tables (student and teacher)

- create table student(studentid INT PRIMARY KEY AUTO_INCREMENT, firstname VARCHAR(50), lastname VARCHAR(50), birthdate DATE);
- create table teacher (teacherid INT PRIMARY KEY AUTO_INCREMENT, firstname VARCHAR(50), lastname VARCHAR(50), hiredate DATE);

```

MariaDB [school]> show tables;
+-----+
| Tables_in_school |
+-----+
| student          |
+-----+
1 row in set (0.000 sec)

MariaDB [school]> create table teacher(
-> teacherid INT PRIMARY KEY AUTO_INCREMENT,
-> firstname VARCHAR(50),
-> lastname VARCHAR(50),
-> hiredate DATE
-> );
Query OK, 0 rows affected (0.010 sec)

MariaDB [school]> show tables;
+-----+
| Tables_in_school |
+-----+
| student          |
| teacher          |
+-----+
2 rows in set (0.000 sec)

MariaDB [school]>

```

Insert data into tables

Student table:

Insert into student

Values (1, 'Sophil', 'Sthapit', '2003-12-13');

```

MariaDB [school]> desc student;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+-----+-----+
| studentid  | int(11)   | NO   | PRI | NULL    | auto_increment |
| firstname  | varchar(50) | YES  |     | NULL    |              |
| lastname   | varchar(50) | YES  |     | NULL    |              |
| birthdate  | date      | YES  |     | NULL    |              |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.001 sec)

MariaDB [school]> insert into student
-> values ( 1, 'Sophil', 'Sthapit', '2003-12-13');
Query OK, 1 row affected (0.004 sec)

MariaDB [school]> select * from student;
+-----+-----+-----+-----+
| studentid | firstname | lastname | birthdate |
+-----+-----+-----+-----+
| 1         | Sophil   | Sthapit  | 2003-12-13 |
+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [school]> |

```

Teacher table:

insert into teacher

values (1, 'Philip', 'Sthapit', '2020-01-15');

```
MariaDB [school]> desc teacher
-> ;
```

Field	Type	Null	Key	Default	Extra
teacherid	int(11)	NO	PRI	NULL	auto_increment
firstname	varchar(50)	YES		NULL	
lastname	varchar(50)	YES		NULL	
hiredate	date	YES		NULL	

```
4 rows in set (0.001 sec)

MariaDB [school]> insert into teacher
-> values (001, 'Philip', 'Sthapit', '2020-01-15');
Query OK, 1 row affected (0.001 sec)

MariaDB [school]> select * from teacher;
```

teacherid	firstname	lastname	hiredate
1	Philip	Sthapit	2020-01-15

```
1 row in set (0.000 sec)

MariaDB [school]>
```

Adding data into tables

```

MariaDB [school]> select * from student;
+-----+-----+-----+-----+
| studentid | firstname | lastname | birthdate |
+-----+-----+-----+-----+
|          1 | Sophil   | Sthapit  | 2003-12-13 |
+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [school]> insert into student
-> values(
-> 2, 'Raju', 'Shrestha', '2004-03-16',
-> );
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near ')' at line 4
MariaDB [school]> insert into student values( 2, 'Raju', 'Shrestha', '2004-03-16', );
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near ')' at line 1
MariaDB [school]> insert into student values( 2, 'Raju', 'Shrestha', '2004-03-16' );
Query OK, 1 row affected (0.002 sec)

MariaDB [school]> select * from student;
+-----+-----+-----+-----+
| studentid | firstname | lastname | birthdate |
+-----+-----+-----+-----+
|          1 | Sophil   | Sthapit  | 2003-12-13 |
|          2 | Raju     | Shrestha | 2004-03-16 |
+-----+-----+-----+-----+
2 rows in set (0.000 sec)

```

Add another student inside student table.

Adding multiple values in table: (teacher)

```

MariaDB [school]> insert into teacher
-> values
-> (2, 'Suvarnima', 'Shakya', '2024-10-25'),
-> (3, 'Somuel', 'Shrestha', '2022-07-03');
Query OK, 2 rows affected (0.002 sec)
Records: 2  Duplicates: 0  Warnings: 0

MariaDB [school]> select * from teacher;
+-----+-----+-----+-----+
| teacherid | firstname | lastname | hiredate |
+-----+-----+-----+-----+
|          1 | Philip   | Sthapit  | 2020-01-15 |
|          2 | Suvarnima | Shakya   | 2024-10-25 |
|          3 | Somuel    | Shrestha | 2022-07-03 |
+-----+-----+-----+-----+
3 rows in set (0.000 sec)

MariaDB [school]>

```

CONDITIONS

```
MariaDB [school]> select * from student;
```

studentid	firstname	lastname	birthdate
1	Sophil	Sthapit	2003-12-13
2	Raju	Shrestha	2004-03-16

```
2 rows in set (0.001 sec)
```



```
MariaDB [school]> select * from student where firstname = 'Sophil';
```

studentid	firstname	lastname	birthdate
1	Sophil	Sthapit	2003-12-13

```
1 row in set (0.001 sec)
```



```
MariaDB [school]> select studentid from student where lastname like 'S%';
```

studentid
1
2

```
2 rows in set (0.000 sec)
```



```
MariaDB [school]>
```

ADDING FOREIGN KEY INTO TABLE (teacher)

```

MariaDB [school]> select * from teacher;
+-----+-----+-----+-----+
| teacherid | firstname | lastname | hiredate |
+-----+-----+-----+-----+
| 1 | Philip | Sthapit | 2020-01-15 |
| 2 | Suvarnima | Shakya | 2024-10-25 |
| 3 | Somuel | Shrestha | 2022-07-03 |
+-----+-----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [school]> alter table add column studentid int;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server versi
on for the right syntax to use near 'add column studentid int' at line 1
MariaDB [school]> alter table teacher add column studentid int;
Query OK, 0 rows affected (0.019 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [school]> select * from teacher;
+-----+-----+-----+-----+-----+
| teacherid | firstname | lastname | hiredate | studentid |
+-----+-----+-----+-----+-----+
| 1 | Philip | Sthapit | 2020-01-15 | NULL |
| 2 | Suvarnima | Shakya | 2024-10-25 | NULL |
| 3 | Somuel | Shrestha | 2022-07-03 | NULL |
+-----+-----+-----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [school]> |

```

Now adding Foreign key constraint

Alter table teacher add constraint fk_teacher_student foreign key (studentid) references student(studentid);

```

MariaDB [school]> alter table teacher
-> add constraint fk_teacher_student
-> foreign key (studentid) references student(studentid);
Query OK, 3 rows affected (0.017 sec)
Records: 3 Duplicates: 0 Warnings: 0

MariaDB [school]> select * from teacher;
+-----+-----+-----+-----+-----+
| teacherid | firstname | lastname | hiredate | studentid |
+-----+-----+-----+-----+-----+
| 1 | Philip | Sthapit | 2020-01-15 | NULL |
| 2 | Suvarnima | Shakya | 2024-10-25 | NULL |
| 3 | Somuel | Shrestha | 2022-07-03 | NULL |
+-----+-----+-----+-----+-----+
3 rows in set (0.000 sec)

MariaDB [school]> |


```

Updating rows

```
MariaDB [school]> select * from teacher;
```

teacherid	firstname	lastname	hiredate	studentid
1	Philip	Sthapit	2020-01-15	NULL
2	Suvarnima	Shakya	2024-10-25	NULL
3	Somuel	Shrestha	2022-07-03	NULL

3 rows in set (0.001 sec)



Command: update teacher set studentid=1 where teacherid=1;

```
MariaDB [school]> select * from teacher;
```

teacherid	firstname	lastname	hiredate	studentid
1	Philip	Sthapit	2020-01-15	NULL
2	Suvarnima	Shakya	2024-10-25	NULL
3	Somuel	Shrestha	2022-07-03	NULL

3 rows in set (0.001 sec)

```
MariaDB [school]> select s.firstname, t.firstname from student s inner join teacher t on s.studentid = t.studentid;
```

Empty set (0.001 sec)

```
MariaDB [school]> update teacher set studentid=1 where teacherid=1;
```

Query OK, 1 row affected (0.007 sec)
Rows matched: 1 Changed: 1 Warnings: 0

```
MariaDB [school]> update teacher set studentid=2 where teacherid=2;
```

Query OK, 1 row affected (0.002 sec)
Rows matched: 1 Changed: 1 Warnings: 0

```
MariaDB [school]> select * from teacher;
```

teacherid	firstname	lastname	hiredate	studentid
1	Philip	Sthapit	2020-01-15	1
2	Suvarnima	Shakya	2024-10-25	2
3	Somuel	Shrestha	2022-07-03	NULL

3 rows in set (0.001 sec)

```
MariaDB [school]>
```

JOIN

It combines rows from two or more tables based on a related column

Types of JOIN

1. Inner Join – It displays only rows where there is a match in both tables

```
select s.firstname, t.firstname as teacher_fname from student s inner join teacher t on  
s.studentid = t.studentid;
```

```
MariaDB [school]> select s.firstname, t.firstname as teacher_fname from student s inner join teacher t on s.studentid = t.studentid;
```

firstname	teacher_fname
Sophil	Philip
Raju	Suvarnima

```
2 rows in set (0.001 sec)

MariaDB [school]> |
```

2. Left Join – it returns all rows from the left table and the matching rows from the right table

```
MariaDB [school]> select t.firstname, s.firstname as student_name from teacher t left join student s on t.studentid = s.studentid;
```

firstname	student_name
Philip	Sophil
Suvarnima	Raju
Somuel	NULL

```
3 rows in set (0.004 sec)

MariaDB [school]>
```

3. Right Join – it returns all rows from the right table and the matching rows from the left table.

```
MariaDB [school]> select t.firstname, s.firstname as student_name from teacher t right join student s on t.studentid = s.studentid;
```

firstname	student_name
Philip	Sophil
Suvarnima	Raju

```
2 rows in set (0.001 sec)

MariaDB [school]> |
```

4. Full Outer Join – mariadb does not have full outer join, but we can use it through UNION

```
MariaDB [school]> select t.firstname, s.firstname as sname from teacher t left join student s on t.studentid = s.studentid
-> union
-> select t.firstname, s.firstname as sname from teacher t right join student s on t.studentid = s.studentid;
```

firstname	sname
Philip	Sophil
Suvarnima	Raju
Somuel	NULL

```
3 rows in set (0.003 sec)

MariaDB [school]> |
```

5. Cross Join – returns every possible combination


```
MariaDB [school]> select t.firstname, s.firstname as Student_name from teacher t cross join student s;
```

firstname	Student_name
Philip	Sophil
Philip	Raju
Suvarnima	Sophil
Suvarnima	Raju
Somuel	Sophil
Somuel	Raju

```
6 rows in set (0.001 sec)
```

```
MariaDB [school]> |
```