ASSIGNMENT-1

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Aim: study of DDL and DML operations on database tables using SQL

Tool: MariaDB

Steps to login in maria db monitor in windows

- 1. Navigate to Mysql workbench in command prompt
- 2. Enter Command: mysql -u root -p
- 3. Enter password:

INDEX:

- 1)What is SQL,DDL,DML,DCL,TCL,DQL
- 2)Operations under database
- 3)Timestamps
- 4)Sequence

<u>Programming Language:</u> Structured Query Language(SQL)

Theory

1)SQL: SQI is a query language to talk to databases.it is used by RDBMS models to maintain databases Following are operations available in SQL

- **1)DDL:** Data definition Language Command operations are Create, Drop, Alter, AND ,Truncate.They are used to define databases and tables
- **2)DML:** Data Manipulation Language Commands.It is used to manipulate data or data from databases .Commands are Insert,Update,Delete
- **3)DCL:**Data Control Language Command.Commands are Grant and Revoke
- **4)TCL:**Transaction Control Language Commands.It includes Commit,Rollback,Save Point
- **5)DQL:** Data Query Language Commands.It includes Select.it is used to retrieve data from database

2. Operations Under Database

- 1. Create Database: create database database name;
- 2. Getting List of all Databases: show databases;
- 3. Select Database: select database();
- 4. Use Database: use database name;
- Drop Database: drop database database_name;
- 6. Create Table: create table table_name(column datatype,column datatype);
- 7. Show tables: show tables:
- **8. Show columns:** show columns from table name;
- **9. Describe Table:** use to fetch the scheme of way describe table name;
- 10. Show create table table_name;
- 11. Insert Into Table:

```
Insert into table_name values(record1),(record2); OR
```

Insert into

table_name(colm1,colm2,colm3)values(record1),(record2);

- **12.Inserting NULL values table:** insert into student values(7,NULL);
- **13.Select queries(with or without *):** '*' indicates all data from table Select * from table_name;

Select column_name from table_name;

- **14.Selecting records with NULL values:** select * from student where age is NULL;
- **15. Alter:** it is used to change schema of the table. It performs the following operations:
 - ADD a column: alter table table_name add column_name datatype;
 - Drop column: alter table table_name drop table;
 - Rename Column: alter table table_name chane old_column_name column_new datatype;
 - Modify Column: alter table table_name modify column_name new datatype;(only changes datatype of column)
 - **16.Update:** modify data from existing data update table_name Set column_name=new value
- **17.DELETE:** delete records from table delete from table_name where
 - 18.Rename Table: Rename Table old_table_name,new table_name;
 - 19:Truncate:truncate table_name;
 - 20:SELECT now(); current time
 - 21: SELECT user(): user name

22: SELECT curtime(): current time

23: SELECT MONTHNAME()

24:DATE_FORMAT(date,format[,locale])

%a-short weekday

%D- Day with english suffix th,nd,st)

%H Hour with 2 digits 0-23

%i minute with two digits

%r TIME in 12 hour format

25: TIMESTAMPS: combination of date and time together

26:USE OF SEQUENCES IN SQL:

Sequences in sql are database objects that generate a sequence of unique integer values. They are frequently used in databases because many applications require that each row in a table must contain unique values and sequences provide an easy way to generate them

syntax:

Create sequence sequence_name START WITH initial value INCREMENT BY increment_value MINVALUE minimum_value MAXVALUE maximum_value CYCLE | NO CYCLE

Eg: insert into table_name col1 values(sequence_name.nextval);
Create sequence seq1
Start with 10
Min value 10
Maxvalue 100
Nocycle;

Create sequence seq2 Start with 100 Increment by -1 Minvaue 1 Maxvalue 100 cycle;

OUTPUT:

```
Enter password: ********
Welcome to the MariaDB monitor. Commands end with ;
or \q.
```

```
Your MariaDB connection id is 3
Server version: 11.4.0-MariaDB mariadb.org binary
distribution
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)] > mysql -u
   -> clear
   -> \c
MariaDB [(none)] > mysql -u
   -> \c
MariaDB [(none)] > create database first database;
Query OK, 1 row affected (0.018 sec)
MariaDB [(none)]> show databases;
+----+
| Database
+----+
| first database
| information schema |
| mysql
| performance schema |
+----+
5 rows in set (0.036 \text{ sec})
MariaDB [(none)]> select database();
+----+
| database() |
+----+
NULL
+----+
1 row in set (0.005 sec)
MariaDB [(none)]> use first database;
Database changed
MariaDB [first database] > drop database
first database;
Query OK, 0 rows affected (0.044 sec)
```

```
MariaDB [(none)] > create database first database;
Query OK, 1 row affected (0.002 sec)
MariaDB [(none)] > create table student(s id
int, s name char(30));
ERROR 1046 (3D000): No database selected
MariaDB [(none)]> use first database;
Database changed
MariaDB [first database] > create table student(s id
int, s name char(30));
Query OK, 0 rows affected (0.022 sec)
MariaDB [first database]> show tables;
+----+
| Tables in first database |
+----+
| student
+----+
1 row in set (0.001 sec)
MariaDB [first database]> describe student;
+----+
| Field | Type | Null | Key | Default | Extra |
+----+
| s name | char(30) | YES | NULL
+----+
2 rows in set (0.032 \text{ sec})
MariaDB [first database] > create table employee (eid
int,address varchar(30));
Query OK, 0 rows affected (0.014 sec)
MariaDB [first database] > describe employee;
+----+----+----
| Field | Type | Null | Key | Default |
Extra |
| address | varchar(30) | YES | NULL |
```

```
+----+----+----
--+
2 rows in set (0.022 \text{ sec})
MariaDB [first database] > show columns from employee;
+----+----+-----
                | Null | Key | Default |
| Field | Type
Extra |
+----+---+
                     | | NULL
I eid
    | address | varchar(30) | YES | NULL
+----+----+
2 rows in set (0.032 \text{ sec})
MariaDB [first database] > show create table employee;
+----
----+
| Table | Create Table
----+
| employee | CREATE TABLE `employee` (
 `eid` int(11) DEFAULT NULL,
 `address` varchar(30) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
COLLATE=utf8mb4 general ci |
+----
____+
1 row in set (0.001 sec)
MariaDB [first database] > insert into employee values
(1, "Veeransh");
Query OK, 1 row affected (0.064 sec)
```

```
MariaDB [first database] > show columns from employee
  -> \c
MariaDB [first database] > show columns from employee;
| Field | Type | Null | Key | Default |
Extra |
+----+---+----+
| address | varchar(30) | YES | NULL |
2 rows in set (0.018 sec)
MariaDB [first database] > select * from employee;
+----+
| eid | address |
+----+
  1 | Veeransh |
+----+
1 row in set (0.001 sec)
MariaDB [first database] > insert into employee
values(2,NULL);
Query OK, 1 row affected (0.004 sec)
MariaDB [first database]> select * from employee;
+----+
| eid | address |
+----+
  1 | Veeransh |
   2 | NULL |
+----+
2 rows in set (0.001 sec)
MariaDB [first database] > select eid from employee;
+----+
| eid |
+----+
1 1
```

```
1 2 1
+----+
2 rows in set (0.001 sec)
MariaDB [first database]> select eid
   -> from employee
   -> where eid=2;
+----+
| eid |
+----+
1 2 1
+----+
1 row in set (0.011 sec)
MariaDB [first database] > select * from student
ERROR: Usage: \C charset name | charset charset name
ERROR: Usage: \C charset name | charset charset name
MariaDB [first database] > alter table employee add
s age int;
Query OK, 0 rows affected (0.024 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [first database] > select * from employee;
+----+
| eid | address | s age |
+----+
  1 | Veeransh | NULL |
    2 | NULL | NULL |
+----+
2 rows in set (0.003 \text{ sec})
MariaDB [first database] > alter table employee drop
s age;
Query OK, 0 rows affected (0.018 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [first database] > select * from employee;
+----+
| eid | address |
+----+
| 1 | Veeransh |
```

```
| 2 | NULL |
+----+
2 rows in set (0.003 sec)
MariaDB [first database] > alter table student modify
address int;
ERROR 1054 (42S22): Unknown column 'address' in
'student'
MariaDB [first database] > alter table employee modify
address int;
ERROR 1292 (22007): Truncated incorrect INTEGER
value: 'Veeransh'
MariaDB [first database]> desc employee;
+----+----+-----
--+
| Field | Type | Null | Key | Default |
Extra |
+----+----+----
| address | varchar(30) | YES | NULL
+----+---+
2 rows in set (0.038 sec)
MariaDB [first database] > alter table employee eid
id no int;
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 'id no int' at line 1
MariaDB [first database] > alter table employee change
eid id no int;
Query OK, 0 rows affected (0.015 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [first database]> desc employee;
| Field | Type | Null | Key | Default |
Extra |
```

```
+----+----+-----
--+
| address | varchar(30) | YES |
                              | NULL
+----+---+
2 rows in set (0.036 sec)
MariaDB [first database] > update employee set
id no=16 where id no=1;
Query OK, 1 row affected (0.007 sec)
Rows matched: 1 Changed: 1 Warnings: 0
MariaDB [first database]> select * from employee;
+----+
| id no | address |
+----+
   16 | Veeransh |
    2 | NULL |
+----+
2 rows in set (0.001 sec)
MariaDB [first database] > delete from employee where
id no=16;
Query OK, 1 row affected (0.002 sec)
MariaDB [first database]> select * from employee;
+----+
| id no | address |
+----+
| 2 | NULL
+----+
1 row in set (0.001 sec)
MariaDB [first database] > rename table employee
new employee;
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 'new employee' at line 1
MariaDB [first database] > rename table employee to
new employee;
```

```
Query OK, 0 rows affected (0.016 sec)
MariaDB [first database] > select* from employee;
ERROR 1146 (42S02): Table 'first database.employee'
doesn't exist
MariaDB [first database] > truncate new employee;
Query OK, 0 rows affected (0.013 sec)
MariaDB [first database] > show new employee;
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 'new employee' at line 1
MariaDB [first database]>
viti@viti-OptiPlex-3050-AIO:~$ sudo mysql
Welcome to the MariaDB monitor. Commands end with; or \g.
Your MariaDB connection id is 46
Server version: 10.3.38-MariaDB-0ubuntu0.20.04.1 Ubuntu 20.04
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 student;
Query OK, 1 row affected (0.001 sec)
MariaDB [(none)]> show databases;
+----+
l Database
+----+
| information schema |
l mysal
| performance_schema |
| student |
+----+
4 rows in set (0.001 sec)
MariaDB [(none)]> use student;
Database changed
MariaDB [student] > create table employee(id int,address
varchar(30),age int);
Query OK, 0 rows affected (0.199 sec)
```

```
MariaDB [student] > show tables;
+----+
| Tables in student |
+----+
| employee |
+----+
1 row in set (0.001 sec)
MariaDB [student]> insert into employee values(1,"Veeransh",19);
Query OK, 1 row affected (0.040 sec)
MariaDB [student] > show columns from employee;
+----+
| Field | Type | Null | Key | Default | Extra |
+----+
| id | int(11) | YES | | NULL |
address | varchar(30) | YES | NULL |
| age | int(11) | YES | | NULL |
+----+
3 rows in set (0.016 sec)
MariaDB [student] > describe table;
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 'table' at line 1
MariaDB [student] > describe employee:
+----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| id | int(11) | YES | | NULL | | address | varchar(30) | YES | | NULL |
| age | int(11) | YES | | NULL | +-----+
3 rows in set (0.001 sec)
MariaDB [student] > select now();
| 2024-01-25 09:09:19 |
+----+
1 row in set (0.000 sec)
MariaDB [student] > select user();
```

```
user()
| root@localhost |
+----+
1 row in set (0.000 sec)
MariaDB [student] > curdate;
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 'curdate' at line 1
MariaDB [student] > curdate();
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 'curdate()' at line 1
MariaDB [student] > select curdate();
+----+
| curdate() |
+----+
I 2024-01-25 I
+----+
1 row in set (0.000 sec)
MariaDB [student] > select curtime();
+----+
| curtime() |
+----+
| 09:11:44 |
+----+
1 row in set (0.000 sec)
MariaDB [student] > create table people(name VARCHAR(100),birthdate
DATE, birthtime TIME, birthdt DATETIME);
Query OK, 0 rows affected (0.175 sec)
MariaDB [student] > describe people;
+----+
          | Type | Null | Key | Default | Extra |
+----+
| name | varchar(100) | YES | NULL
```

| NULL | NULL

| birthdate | date | YES | | NULL

| birthtime | time | YES | | birthdt | datetime | YES |

```
+----+
4 rows in set (0.002 sec)
```

MariaDB [student]> insert into peoplevalues('Veeransh,',2004-06-07','9:00:00','2004-06-07 9:00:00');

'> Ctrl-C -- exit!

Aborted

vjti@vjti-OptiPlex-3050-AIO:~\$ insert into people

values('Veeransh','2004-07-07','9:00:00','2004-07-07 9:00:00);

bash: syntax error near unexpected token '('

viti@viti-OptiPlex-3050-AIO:~\$ INSERT INTO people

VALUES('Veeransh','2004-06-07','9:45:10','2004-06-07 9:45:10');

bash: syntax error near unexpected token `('

vjti@vjti-OptiPlex-3050-AIO:~\$ sudo mysql

[sudo] password for viti:

Welcome to the MariaDB monitor. Commands end with; or \g.

Your MariaDB connection id is 47

Server version: 10.3.38-MariaDB-0ubuntu0.20.04.1 Ubuntu 20.04

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)]> use student;

Reading table information for completion of table and column names You can turn off this feature to get a quicker startup with -A

Database changed

MariaDB [student]> insert into people values('Veeransh','2004-07-07','9:00:00','2004-07-07 9:00:00');

Query OK, 1 row affected (0.087 sec)

MariaDB [student]> Ctrl-C -- exit!

Aborted

vjti@vjti-OptiPlex-3050-AIO:~\$ sudo mysql

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MariaDB connection id is 48

Server version: 10.3.38-MariaDB-0ubuntu0.20.04.1 Ubuntu 20.04

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)]> use student;

Reading table information for completion of table and column names You can turn off this feature to get a quicker startup with -A

Database changed

MariaDB [student]> insert into people values('abc','2000-09-10','10:00:00','2000-09-10 10:00:00'); Query OK, 1 row affected (0.043 sec)

MariaDB [student] > SELECT birthdate

DAY(birthdate), DAYOFWEEK(birthdate), DAYOFYEAR(birthdate) FROM people;

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

'(birthdate),DAYOFWEEK(birthdate),DAYOFYEAR(birthdate) FROM people' at line 1

MariaDB [student] > SELECT DAY(birthdate) FROM people;

```
+-----+

| DAY(birthdate) |

+-----+

| 7 |

| 10 |

+-----+

2 rows in set (0.001 sec)
```

MariaDB [student]> SELECT DAYOFWEEK(birthdate) FROM people;

+-----+
| DAYOFWEEK(birthdate) |
+-----+
| 4 |
| 1 |
+-----+
2 rows in set (0.001 sec)

MariaDB [student] > SELECT DAYOFYEAR(birthdate)FROM people;

+-----+ | DAYOFYEAR(birthdate) | +-----+ | 189 | | 254 | +-----+ 2 rows in set (0.001 sec)

```
MariaDB [student] > SELECT
birthdate, MONTHNAME (birthdate), YEAR (birthdate) FROM people:
+----+
| birthdate | MONTHNAME(birthdate) | YEAR(birthdate) |
2 rows in set (0.001 sec)
MariaDB [student] > SELECT
birthtime, HOUR(birthtime), MINUTE(birthtime) FROM people;
+----+
| birthtime | HOUR(birthtime) | MINUTE(birthtime) |
+----+
| 09:00:00 | 9 | 0 |
| 10:00:00 | 10 |
+-----+
2 rows in set (0.000 sec)
MariaDB [student] > SELECT
birthdt, MONTH(birthdt), DAY(birthdt), HOUR(birthdt), MINUTE(birthdt)
FROM people;
+-----+
| birthdt | MONTH(birthdt) | DAY(birthdt) | HOUR(birthdt) |
MINUTE(birthdt) |
+-----+
0
                                              0 |
2 rows in set (0.000 sec)
MariaDB [student] > select DATEDIFF(CURDATE(),birthdate) from
| DATEDIFF(CURDATE(),birthdate) |
    7141 |
8537 |
2 rows in set (0.000 sec)
```

people: ERROR 1305 (42000): FUNCTION student.CURRDATE does not exist MariaDB [student] > select DATEDIFF(CURDATE(), birthdt) from people; +----+ | DATEDIFF(CURDATE(),birthdt) | 7141 | 8537 | 2 rows in set (0.000 sec) MariaDB [student] > select DATE ADD(CURDATE(), INTERVAL 1 YEAR) from people; +----+ | DATE ADD(CURDATE(), INTERVAL 1 YEAR) | | 2025-01-25 2025-01-25 +----+ 2 rows in set (0.000 sec) MariaDB [student] > select DATE ADD(birthdate, INTERVAL 1 YEAR) from people; +----+ | DATE_ADD(birthdate,INTERVAL 1 YEAR) | +----+ | 2005-07-07 2 rows in set (0.001 sec) MariaDB [student] > select DATE ADD(CURDATE(), INTERVAL 1 MONTH) from people; | DATE ADD(CURDATE(),INTERVAL 1 MONTH) | | 2024-02-25 | 2024-02-25 +----+ 2 rows in set (0.001 sec)

MariaDB [student] > select DATEDIFF(CURRDATE(), birthdt) from

```
MariaDB [student] > select DATE SUB(CURDATE(), INTERVAL 1
MONTH) from people;
| DATE_SUB(CURDATE(),INTERVAL 1 MONTH) |
  _____+
-----+
| 2023-12-25
| 2023-12-25
+----+
2 rows in set (0.000 sec)
MariaDB [student]> --DATE FORMAT(date,format[,locale])
MariaDB [student]> -- %a-short weekday
MariaDB [student] > --%D- Day with english suffix th,nd,st)
MariaDB [student]> --%H Hour with 2 digits 0-23
MariaDB [student]> --%i minute with two digits
MariaDB [student]> --%r TIME in 12 hour format
MariaDB [student] > Ctrl-C -- exit!
Aborted
viti@viti-OptiPlex-3050-AIO:~$ ^C
viti@viti-OptiPlex-3050-AIO:~$ sudo my sql
[sudo] password for viti:
sudo: mv: command not found
viti@viti-OptiPlex-3050-AIO:~$ sudo my sql
sudo: my: command not found
viti@viti-OptiPlex-3050-AIO:~$ sudo mysql
Welcome to the MariaDB monitor. Commands end with; or \q.
Your MariaDB connection id is 49
Server version: 10.3.38-MariaDB-0ubuntu0.20.04.1 Ubuntu 20.04
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)]> use student;
Reading table information for completion of table and column names
You can turn off this feature to get a guicker startup with -A
Database changed
MariaDB [student] > select birthdate, DATE FORMAT (birthdate, '%a %b
%D')from people:
| birthdate | DATE FORMAT(birthdate, '%a %b %D') |
+----+
| 2004-07-07 | Wed Jul 7th
```

```
2 rows in set (0.001 sec)
MariaDB [student] > select birthdt, DATE FORMAT(birthdt, '%H:%i')from
people:
+-----+
1 2004-07-07 09:00:00 | 09:00
| 2000-09-10 10:00:00 | 10:00
+-----+
2 rows in set (0.001 sec)
MariaDB [student] > select birthdt DATE FORMAT(birthdt, 'BORN
ON:%r')from people;
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 '(birthdt, 'BORN ON: %r') from people' at line 1
MariaDB [student] > select birthdt, DATE FORMAT(birthdt, 'BORN
ON:%r') from people:
| 2004-07-07 09:00:00 | BORN ON:09:00:00 AM
| 2000-09-10 10:00:00 | BORN ON:10:00:00 AM
+----+
2 rows in set (0.000 sec)
MariaDB [student] > create table captions(text
VARCHAR(150), created at TIMESTAMP default
CURRENT TIMESTAMP);
Query OK, 0 rows affected (0.189 sec)
MariaDB [student] > insert into captions(text) values("i hate you");
Query OK, 1 row affected (0.064 sec)
MariaDB [student] > create table captions2(text
VARCHAR(150), created at TIMESTAMP default
CURRENT TIMESTAMP, updated at TIMESTAMP ON UPDATE
CURRENT TIMESTAMP);
Query OK, 0 rows affected (0.193 sec)
```

MariaDB [student]> insert into captions2(text)values("i hate you");

Query OK, 1 row affected (0.030 sec)

```
MariaDB [student]> select * from captions2;
           | created_at | updated_at
| i hate you | 2024-01-25 10:11:29 | 0000-00-00 00:00:00 |
1 row in set (0.001 sec)
MariaDB [student] > update captions2 set text='i miss you';
Query OK, 1 row affected (0.040 sec)
Rows matched: 1 Changed: 1 Warnings: 0
MariaDB [student] > select*from captions2;
         created at updated at
| i miss you | 2024-01-25 10:11:29 | 2024-01-25 10:12:44 |
+----+
1 row in set (0.000 sec)
SCREENSHOT
vjti@vjti-OptiPlex-3050-AIO:~$ sudo mysql
Welcome to the MariaDB monitor. Commands end with ; or \g. Your MariaDB connection id is 46
Server version: 10.3.38-MariaDB-Oubuntu0.20.04.1 Ubuntu 20.04
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 student;
Query OK, 1 row affected (0.001 sec)
MariaDB [(none)]> show databases:
I Database
| information_schema |
l mvsal
| performance_schema
student
4 rows in set (0.001 sec)
MariaDB [(none)]> use student;
Database changed
MariaDB [student] > create table employee(id int,address varchar(30),age int);
Query OK, 0 rows affected (0.199 sec)
MariaDB [student]> show tables;
| Tables_in_student |
| employee
1 row in set (0.001 sec)
```