DBMS LAB 1

SUBMISSION DATE: 28th Jan 23

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AIM: Study of DDL and DML operations on database Tables using SQL

PROGRAMMING LANGUAGE: Structured Query Language (SQL) - MariaDB

THEORY:

Q1: What is SQL?

Ans: SQL stands for Structured Query Language and is used for managing and storing data in the relational database management system

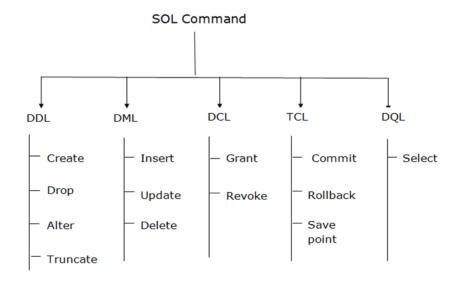
Q2: What are DDL and DML Commands?

Ans: DDL is Data Definition Language which is used to define data structures.

For example: create table, alter table.

DML is Data Manipulation Language which is used to manipulate data itself.

For example: UPDATE, INSERT, MERGE etc.



OPERATIONS TO BE EXECUTED:

- 1. create database akash db;
- 2. show databases;
- 3. use akash db;
- drop akash_db;
- 5. select database();
- 6. create table student details(student id int,student name varchar(50), student marks int);
- 7. describe student details;
- 8. show create table student details;
- 9. show columns from student details;
- 10. insert into student details values(1, "Akash", 20);
- 11. insert into student details values(2, "Yatharth",10),(3,"Vivek",15);
- 12. select * from student details;
- 13. select student id from student details;
- 14. select * from student details where student id = 2;
- 15. insert into student details(student id,student name) values (4,"Manav");
- 16. select * from student details where student marks is NULL;
- 17. insert into student details values(5, "Dev\"Quotes\"",14);
- 18. insert into student_details values(6, "Preet\\Quotes\\",15);
- 19. insert into student_details values(6, "Preet'Quotes",16); (Allowed as dissimilar quotes)
- 20. insert into student details values(7, "Mohit", NULL);
- 21. alter table student details add student address varchar(100);
- 22. alter table student details drop student address;
- 23. alter table student details modify student id varchar(50);
- 24. desc student details;
- 25. alter table student details change student name s name varchar(50);
- 26. update student details set s name = "Akash Kumar" where s name = "Akash";
- 27. update student details set student marks = 18 where student marks is null;
- 28. delete from student details where student marks = 15;
- 29. truncate table student details;
- 30. rename table student details to s details;
- 31. drop table s details;
- 32. select now();
- 33. select user():
- 34. select curdate();
- 35. select curtime();
- 36. create table people(name VARCHAR(100),birthdate DATE, birthtime TIME, birthdt DATETIME):
- 37. insert into people values("Akash","2004-03-07","11:00:00","2004-03-07 11:00:00");
- 38. insert into people values("Dev", CURDATE(), CURTIME(), NOW());

- 39. select birthdate, DAY(birthdate), DAYOFWEEK(birthdate), DAYOFYEAR(birthdate) from people;
- 40. select birthdate, MONTHNAME (birthdate), YEAR (birthdate) from people;
- 41. select birthtime, HOUR(birthtime), MINUTE(birthtime) from people;
- 42. select birthdt, MONTH(birthdt), DAY(birthdt), HOUR(birthdt), MINUTE(birthdt) from people;
- 43. select DATEDIFF(CURDATE(),birthdate) from people;
- 44. select DATEDIFF(CURDATE(),birthdt) from people;
- 45. select DATE ADD(CURDATE(),INTERVAL 1 YEAR);
- 46. select DATE ADD(birthdate,INTERVAL 1 YEAR) from people;
- 47. select DATE ADD(CURDATE(),INTERVAL 12 YEAR);
- 48. select DATE SUB(CURDATE(),INTERVAL 1 MONTH);
- 49. select birthdate, DATE FORMAT(birthdate, "%a, %b, %D") from people;
- 50. select birthdt, DATE FORMAT(birthdt,"%H:%i") from people;
- 51. select birthdt, DATE FORMAT(birthdt, "BORN ON:%r") from people;
- 52. create table captions(text VARCHAR(150),created_at TIMESTAMP default CURRENT TIMESTAMP);
- 53. insert into captions (text) values ("text1");
- 54. create table captions2 (text varchar(100),created_at TIMESTAMP default CURRENT_TIMESTAMP,updated_at TIMESTAMP ON UPDATE CURRENT_TIMESTAMP);
- 55. insert into captions2 (text) values (text2);
- 56. update captions2 set text = "text3";

CODE:

Enter password: ****

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

Your MariaDB connection id is 3

Server version: 10.6.11-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)]> create database akash db
  ->;
Query OK, 1 row affected (0.026 sec)
MariaDB [(none)]> show databases;
+----+
Database
+----+
akash db
            | information schema |
mysql
performance schema
sys
+----+
5 rows in set (0.005 sec)
MariaDB [(none)] > use akash db;
Database changed
MariaDB [akash db]> select akash db;
ERROR 1054 (42S22): Unknown column 'akash db' in 'field list'
MariaDB [akash db]> drop akash db;
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 'akash db' at line 1
MariaDB [akash db]> drop database akash db;
Query OK, 0 rows affected (0.427 sec)
MariaDB [(none)] > select database();
+----+
| database() |
```

```
+----+
NULL
+----+
1 row in set (0.001 sec)
MariaDB [(none)]> create database akash db;
Query OK, 1 row affected (0.002 sec)
MariaDB [(none)]> use akash db;
Database changed
MariaDB [akash db]> create table student details(student_id int,student_name varchar(50),
student marks int);
Query OK, 0 rows affected (0.868 sec)
MariaDB [akash db]> describe student details;
+----+
     | Type | Null | Key | Default | Extra |
Field
+----+
student id | int(11) | YES | NULL |
student name | varchar(50) | YES | | NULL |
student marks | int(11) | YES | NULL |
+----+
3 rows in set (1.345 sec)
MariaDB [akash db]> show create table student details;
    Table
                                                          Create
                                                                   Table
```

```
| student details | CREATE TABLE 'student details' (
'student id' int(11) DEFAULT NULL,
 'student name' varchar(50) DEFAULT NULL,
 `student_marks` int(11) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1 swedish ci |
1 row in set (0.110 sec)
MariaDB [akash db]> show columns from student details;
+----+
Field
      | Type | Null | Key | Default | Extra |
+----+
student id | int(11) | YES | NULL |
student name | varchar(50) | YES | | NULL |
student marks | int(11) | YES | NULL |
+----+
3 rows in set (0.053 \text{ sec})
MariaDB [akash db] insert into student details values(1, "Akash", 20);
Query OK, 1 row affected (1.564 sec)
MariaDB [akash db] insert into student details values(2, "Yatharth", 10, (3, "Vivek", 15);
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 [akash db] insert into student details values(2, "Yatharth",10),(3,"Vivek",15);
```

```
MariaDB [akash db]> show columns from student details;
+----+
      | Type | Null | Key | Default | Extra |
| Field
+----+
student id | int(11) | YES | NULL |
student name | varchar(50) | YES | NULL |
student marks | int(11) | YES | NULL |
+----+
3 rows in set (1.680 sec)
MariaDB [akash db]> select * from student details;
+----+
| student_id | student_name | student_marks |
+----+
    1 | Akash
           20 |
   2 | Yatharth | 10 |
    3 | Vivek
          15 |
+----+
3 rows in set (0.001 sec)
MariaDB [akash db]> select student id from student details;
+----+
student id
+----+
    1 |
```

Query OK, 2 rows affected (0.350 sec)

Records: 2 Duplicates: 0 Warnings: 0

```
2 |
    3 |
+----+
3 rows in set (0.000 sec)
MariaDB [akash db] > select student id, student marks from student details;
+----+
student id student marks
+----+
   1 | 20 |
    2 | 10 |
    3 | 15 |
+----+
3 rows in set (0.000 \text{ sec})
MariaDB [akash_db]> select * from student_details where student_id = 2;
+----+
| student id | student name | student marks |
+----+
    2 | Yatharth | 10 |
+----+
1 row in set (0.343 sec)
MariaDB [akash db] insert into student details(student id, student name) values (4, "Manav");
Query OK, 1 row affected (0.211 sec)
MariaDB [akash db] > select * from student details where student marks is NULL;
+----+
```

```
| student id | student name | student marks |
+----+
     4 | Manav | NULL |
+----+
1 row in set (0.053 sec)
MariaDB [akash db]> insert into student details values(5, "Dev\"Quotes"\",14);
ERROR: Unknown command '\"'.
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 '\",14)' at line 1
MariaDB [akash db] insert into student details values(5, "Dev/"Quotes"/",14);
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 'Quotes"/",14)' at
line 1
MariaDB [akash db]> insert into student details values(5, "Dev\"Quotes\"",14);
Query OK, 1 row affected (0.058 sec)
MariaDB [akash db] insert into student details values(6, "Preet\\Quotes\\",15);
Query OK, 1 row affected (0.039 sec)
MariaDB [akash db] insert into student details values(6, "Preet'Quotes", 16);
Query OK, 1 row affected (0.107 sec)
MariaDB [akash db]> select * from student details;
+----+
| student id | student name | student marks |
+----+
     1 | Akash |
                        20 |
     2 | Yatharth | 10 |
```

```
3 | Vivek
                         15 |
     4 | Manav
                         NULL |
      5 | Dev"Quotes" |
                             14 |
      6 | Preet\Quotes\ |
                            15 |
      6 | Preet'Quotes' |
                            16 |
+----+
7 rows in set (0.001 \text{ sec})
MariaDB [akash db] insert into student details values(7, "Mohit", NULL);
Query OK, 1 row affected (0.099 sec)
MariaDB [akash db]> alter table student details add student address;
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 [akash db] > alter table student details add student address varchar(100);
Query OK, 0 rows affected (0.636 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [akash db]> alter table student details drop student address;
Query OK, 0 rows affected (0.507 sec)
Records: 0 Duplicates: 0 Warnings: 0
MariaDB [akash db] > alter table student details modify student id varchar(50);
Query OK, 8 rows affected (0.835 sec)
Records: 8 Duplicates: 0 Warnings: 0
MariaDB [akash db]> describe student details;
+----+
| Field
       | Type | Null | Key | Default | Extra |
```

+	+
student	z_id varchar(50) YES NULL
student	name varchar(50) YES NULL
student	z_marks int(11) YES NULL
+	+
3 rows i	n set (0.084 sec)
	B [akash_db]> desc student_details;
	+
Field	Type Null Key Default Extra
	+++++
student	z_id varchar(50) YES NULL
student	z_name varchar(50) YES NULL
student	_marks int(11) YES NULL
+	+
3 rows i	n set (0.018 sec)
MariaD1	B [akash_db]> alter table student_details student_name s_name varchar(50);
	1064 (42000): You have an error in your SQL syntax; check the manual that onds to your MariaDB server version for the right syntax to use near 's_name varchar(50)
MariaD	B [akash_db]> alter table student_details change student_name s_name varchar(50);
Query C	OK, 0 rows affected (0.339 sec)
Records	: 0 Duplicates: 0 Warnings: 0
MariaD1	B [akash_db]> desc student_details;
+	+
Field	Type Null Key Default Extra
+	+

MariaDB [akash_db]> updatestudnet_details set s_name = "Akash Kumar" where s_name = "Akash";

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 'updatestudnet_details set s_name = "Akash Kumar" where s_name = "Akash" at line 1

MariaDB [akash_db]> update student_details set s_name = "Akash Kumar" where s_name = "Akash";

Query OK, 1 row affected (0.214 sec)

Rows matched: 1 Changed: 1 Warnings: 0

```
MariaDB [akash_db]> select * from student_details; +-----+
```

```
| student_id | s_name | student marks |
+----+
| 1
     | Akash Kumar |
                      20 |
| 2
     | Yatharth |
                   10 |
| 3
     | Vivek |
                    15 |
| 4
     | Manav |
                   NULL |
| 5
     Dev"Quotes"
                      14 |
| 6
     | Preet\Quotes\ |
                     15 |
| 6
     | Preet'Quotes' |
                     16 |
     | Mohit |
| 7
                  NULL |
+----+
```

8 rows in set (0.001 sec)

MariaDB [akash db] > update student details set student age =18 where student age is null;

ERROR 1054 (42S22): Unknown column 'student age' in 'where clause'

MariaDB [akash_db]> update student_details set student_marks =18 where student_marks is null;

Query OK, 2 rows affected (0.061 sec)

Rows matched: 2 Changed: 2 Warnings: 0

MariaDB [akash db]> select * from student detials;

ERROR 1146 (42S02): Table 'akash db.student detials' doesn't exist

MariaDB [akash db]> select * from student details;

+----+

| student_id | s_name | student_marks |

+----+

| 1 | Akash Kumar | 20 |

| 2 | Yatharth | 10 |

| 3 | Vivek | 15 |

| 4 | Manav | 18 |

| 5 | Dev"Quotes" | 14 |

| 6 | Preet'Quotes' | 16 |

| 7 | Mohit | 18 |

+-----+

8 rows in set (0.001 sec)

MariaDB [akash db]> delete from student details where student marks = 15;

Query OK, 2 rows affected (0.166 sec)

MariaDB [akash db]> select * from student details;

```
+-----+
student id s name student marks
+----+
| 1
     | Akash Kumar |
                       20 |
    | Yatharth | 10 |
| 2
| 4
  | Manav | 18 |
| 5 | Dev"Quotes" |
                   14 |
| 6 | Preet'Quotes' | 16 |
| 7
    | Mohit | 18 |
+----+
6 rows in set (0.000 sec)
MariaDB [akash db]> truncate table student details;
Query OK, 0 rows affected (0.259 sec)
MariaDB [akash_db]> rename table student_details to s_details;
Query OK, 0 rows affected (0.262 sec)
MariaDB [akash_db]> select * from s_details;
```

MariaDB [akash_db]> drop table s_details;

Query OK, 0 rows affected (0.354 sec)

Empty set (0.002 sec)

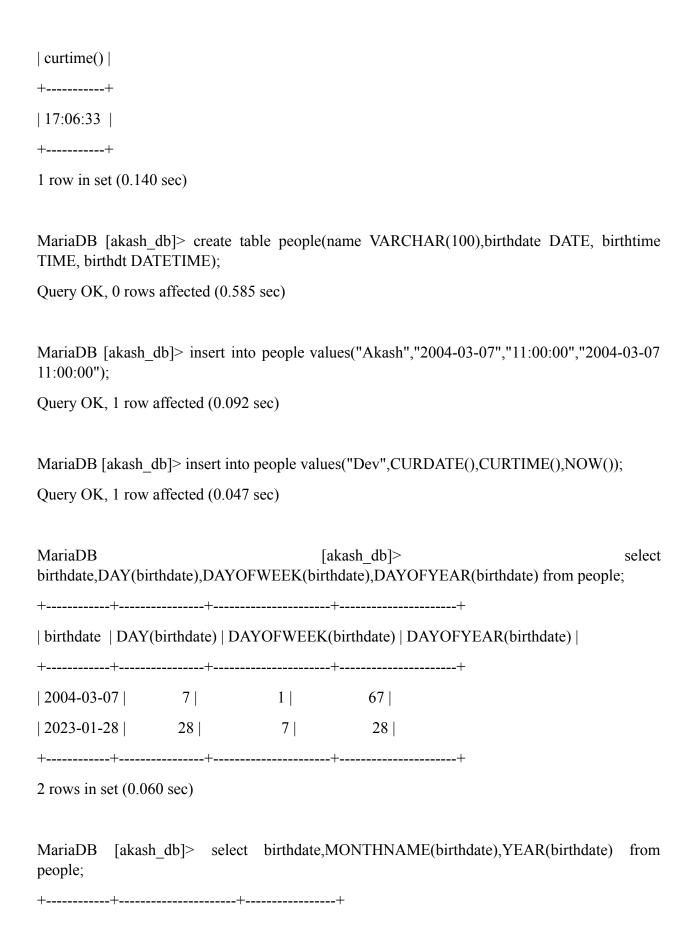
MariaDB [akash_db]> show tables from database akash_db;

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 'database akash_db' at line 1

MariaDB [akash_db]> show tables;

```
Empty set (0.001 sec)
```

```
MariaDB [akash_db]> select now();
+----+
now()
+----+
| 2023-01-28 17:06:06 |
+----+
1 row in set (0.065 sec)
MariaDB [akash db] > select user();
+----+
user()
+----+
| root@localhost |
+----+
1 row in set (0.001 sec)
MariaDB [akash db]> select curdate();
+----+
curdate()
+----+
| 2023-01-28 |
+----+
1 row in set (0.030 sec)
MariaDB [akash db]> select curtime();
+----+
```



```
| birthdate | MONTHNAME(birthdate) | YEAR(birthdate) |
+----+
| 2004-03-07 | March
                      2004
| 2023-01-28 | January |
                      2023 |
+----+
2 rows in set (0.014 \text{ sec})
MariaDB [akash db] > select birthtime, HOUR(birthtime), MINUTE(birthtime) from people;
+----+
| birthtime | HOUR(birthtime) | MINUTE(birthtime) |
+----+
| 11:00:00 | 11 | 0 |
| 17:09:07 | 17 | 9 |
+----+
2 rows in set (0.000 sec)
        [akash db]>
MariaDB
                  select
                        birthdt, MONTH(birthdt), DAY(birthdt), HOUR(birthdt),
MINUTE(birthdt) from people;
| MONTH(birthdt) | DAY(birthdt) | HOUR(birthdt) | MINUTE(birthdt) |
birthdt
+-----+
| 2004-03-07 11:00:00 | 3 | 7 | 11 |
                                     0 |
| 2023-01-28 17:09:07 | 1 | 28 | 17 | 9 |
+-----+
2 rows in set (0.001 sec)
MariaDB [akash db] > select DATEDIFF(CURDATE(), birthdate) from people;
+----+
| DATEDIFF(CURDATE(),birthdate) |
```

+	+
6901	
0	
2 rows in set (0.045 sec)	+
	ect DATEDIFF(CURDATE(),birthdt) from people;
+ DATEDIFF(CURDATE(),birthdt)
+ 6901	+
0	
2 rows in set (0.001 sec)	+
	ect DATE_ADD(CURDATE(),INTERVAL 1 YEAR);
-	E(),INTERVAL 1 YEAR)
+ 2024-01-28	
1 row in set (0.034 sec)	+
MariaDB [akash_db]> sel	ect DATE_ADD(birthdate,INTERVAL 1 YEAR) from people
+ DATE_ADD(birthdate,II	
+	
2005-03-07	

```
2024-01-28
+----+
2 rows in set (0.000 sec)
MariaDB [akash db] > select DATE ADD(CURDATE(),INTERVAL 12 YEAR);
+----+
| DATE ADD(CURDATE(),INTERVAL 12 YEAR) |
+----+
| 2035-01-28
1 row in set (0.000 sec)
MariaDB [akash db] > select DATE SUB(CURDATE(),INTERVAL 1 MONTH);
+----+
| DATE SUB(CURDATE(),INTERVAL 1 MONTH) |
| 2022-12-28
+----+
1 row in set (0.000 sec)
MariaDB [akash db]> select birthdate, DATE FORMAT(birthdate, "%a, %b, %D") from people;
| birthdate | DATE FORMAT(birthdate, "%a, %b, %D") |
+----+
| 2004-03-07 | Sun, Mar, 7th
| 2023-01-28 | Sat,Jan,28th
+----+
2 rows in set (0.001 sec)
```

```
MariaDB [akash db] > select birthdt, DATE FORMAT(birthdt, "%H:%i") from people;
+----+
| birthdt | DATE FORMAT(birthdt,"%H:%i") |
+-----+
| 2004-03-07 11:00:00 | 11:00
| 2023-01-28 17:09:07 | 17:09
+----+
2 rows in set (0.001 sec)
MariaDB [akash db] > select birthdt, DATE FORMAT(birthdt, "BORN ON:%r") from people;
+----+
| birthdt | DATE FORMAT(birthdt,"BORN ON:%r") |
+-----+
| 2004-03-07 11:00:00 | BORN ON:11:00:00 AM
| 2023-01-28 17:09:07 | BORN ON:05:09:07 PM
+-----+
2 rows in set (0.001 sec)
MariaDB [akash db]> create table captions(text VARCHAR(150), created at TIMESTAMP
default CURRENT TIMESTAMP);
Query OK, 0 rows affected (0.335 sec)
MariaDB [akash db]> desc captions;
+-----+
| Field | Type | Null | Key | Default | Extra |
+----+
text | varchar(150) | YES | NULL |
| created_at | timestamp | NO | | current timestamp() |
```

```
+----+
2 rows in set (0.032 sec)
MariaDB [akash db]> insert into captions (text) values ("text1");
Query OK, 1 row affected (0.039 sec)
MariaDB [akash db] > create table captions2 (text varchar(100), created at TIMESTAMP default
CURRENT TIMESTAMP, updated at TIMESTAMP ON UPDATE CURRENT TIMESTAMP);
Query OK, 0 rows affected (0.303 sec)
MariaDB [akash db] insert into captions2 (text) values (text2);
ERROR 1054 (42S22): Unknown column 'text2' in 'field list'
MariaDB [akash db]> insert into captions2 (text) values (text2);
ERROR 1054 (42S22): Unknown column 'text2' in 'field list'
MariaDB [akash db] insert into captions2 (text) values ("text2");
Query OK, 1 row affected (0.104 sec)
MariaDB [akash db]> slect * from captions2;
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 'slect * from
captions2' at line 1
MariaDB [akash db] > select * from captions2;
+----+
text | created_at | updated_at |
+----+
| text2 | 2023-01-28 17:19:31 | 0000-00-00 00:00:00 |
+----+
1 row in set (0.001 sec)
```

```
MariaDB [akash_db]> update captions2 set text = "text3";

Query OK, 1 row affected (0.046 sec)

Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [akash_db]> select * from captions2;

+-----+

| text | created_at | updated_at |

+-----+

| text3 | 2023-01-28 17:19:31 | 2023-01-28 17:20:00 |

+-----+

1 row in set (0.000 sec)

MariaDB [akash_db]> Bye

Ctrl-C -- exit!
```

C:\Program Files\MariaDB 10.6\bin>

SCREENSHOTS:

```
☑ MySQL Client (MariaDB 10.6 (x64))
nter password: ****
elcome to the MariaDB monitor. Commands end with ; or \g.
our MariaDB connection id is 3
erver version: 10.6.11-MariaDB mariadb.org binary distribution
opyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
ariaDB [(none)]> create database akash_db
uery OK, 1 row affected (0.026 sec)
ariaDB [(none)]> show databases;
Database
akash_db
information_schema
 mysql
performance_schema
 rows in set (0.005 sec)
 ariaDB [(none)]> use akash_db;
aniaDB [(none)]> use akash_db;
atabase changed
aniaDB [akash_db]> select akash_db;
ariaDB [akash_db]> select akash_db;
ariaDB [akash_db]> select akash_db;
ariaDB [akash_db]> select akash_db;
ariaDB [akash_db]> drop database akash_db;
 riaDB [(none)]> select database();
database()
row in set (0.001 sec)
birthdate | DATE_FORMAT(birthdate,"%a,%b,%D")
2004-03-07 | Sun,Mar,7th
2023-01-28 | Sat,Jan,28th
 rows in set (0.001 sec)
birthdt | DATE_FORMAT(birthdt,"%H:%i") |
rows in set (0.001 sec)
ariaDB [akash_db]> select birthdt, DATE_FORMAT(birthdt,"BORN ON:%r") from people;
birthdt | DATE_FORMAT(birthdt,"BORN ON:%r") |
 2004-03-07 11:00:00 | BORN ON:11:00:00 AM
2023-01-28 17:09:07 | BORN ON:05:09:07 PM
ariaDB [akash_db]> create table captions(text VARCHAR(150),created_at TIMESTAMP default CURRENT_TIMESTAMP);
uery OK, 0 rows affected (0.335 sec)
ariaDB [akash_db]> desc captions;
                                                                                            | Extra |
text | varchar(150) | YES
created_at | timestamp | NO
                                                           NULL current_timestamp()
```

CONCLUSION:

Thus we learnt how to set up MariaDB and perform various DDL and DML commands. We created database and tables inside it having various column with different datatypes. We learnt how to insert values to these columns and manipulate the data. We also learnt about timestamps and functions relating to it.