Name: Pradip Bochare
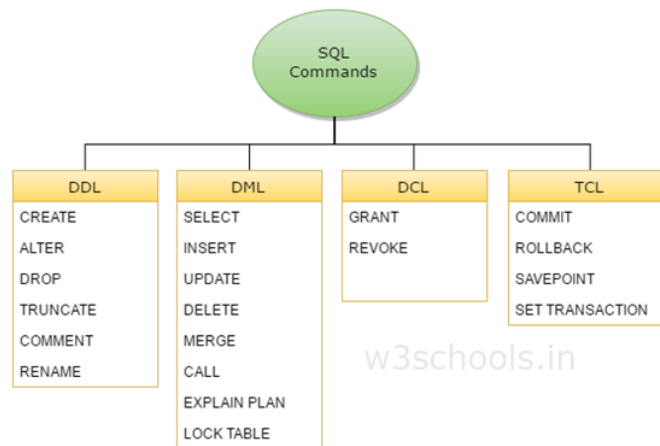
Statement: MySQL and Hands on Practical

MySQL:

o   MySQL is the world's most popular open-source database software, with over 100 million copies of its software downloaded or distributed throughout its history.

o   MySQL is RDBMS which runs a server, providing multi-user access to a number of databases.

o   With its superior speed, reliability, and ease of use, MySQL has become the preferred choice for IT in all sectors or domains.

Features of MySQL:

o   MySQL is written in C and C++ and its SQL parser is written in yacc (**Yet Another Compiler Compiler).**

o   MySQL uses only just under 1 MB of RAM on your laptop while Oracle 9i installation uses 128 MB

o   MySQL is great for database enabled websites while Oracle is made for enterprises.

o   MySQL is portable.

o   MySQL default port number is 3306.

SQL Language statements:

o   Data Definition Language (DDL) for defining the database structure and controlling access to the data.

o   Data Manipulation Language (DML) for retrieving and updating data.

o   Data Control Language (DCL) concerns with rights, permissions and other controls of the database system.

SQL data types:

- Numeric data types
  - TINYINT, SMALLINT, MEDIUMINT,
  - INT, BIGINT
  - FLOAT (display_length, decimals)
  - DOUBLE (display_length, decimals)
  - DECIMAL (display_length, decimals)
- Date and time types
  - DATE
    - format is YYYY-MM-DD
  - DATETIME
    - format YYYY-MM-DD HH:MM:SS
  - TIMESTAMP
    - format YYYYMMDDHHMMSS
  - TIME
    - format HH:MM:SS
  - YEAR
    - default length is 4
- String types
  - CHAR
    - fixed length string, e.g., CHAR (20)
  - VARCHAR
    - variable length string, e.g., VARCHAR (20)
  - BLOB, TINYBLOB, MEDIUMBLOB, LONGBLOB
    - same as TEXT, TINYTEXT ...
  - ENUM
    - list of items from which value is selected

SQL commands SHOW, USE:

o SHOW

- o Display databases or tables in current database;

- o show databases;

- o show tables;

o USE

- o Specify which database to use

- o use bookstore;

CREATE Command:

CREATE TABLE   table_name

(

    Column_name1 column_type1,

    Column_name2 column_type2,

    …..

    Column_nameN column_typeN,

    PRIMARY KEY (column_name1)

) ;

DROP & INSERT Commands:

o To delete databases and tables use the DROP command

o Examples

  DROP DATABASE db_name;

  DROP TABLE table_name;

o Inserting rows into a table using INSERT command
  INSERT INTO table_name
    (col_1, col_2, ..., col_N)
  VALUES
    (val_1, val_2, ..., val_N);

⊕ SELECT Command:

o Simplest form: select all columns
  SELECT * FROM table_name;
o Select specified columns
  SELECT column_list FROM table_name;
o Conditional selection of rows
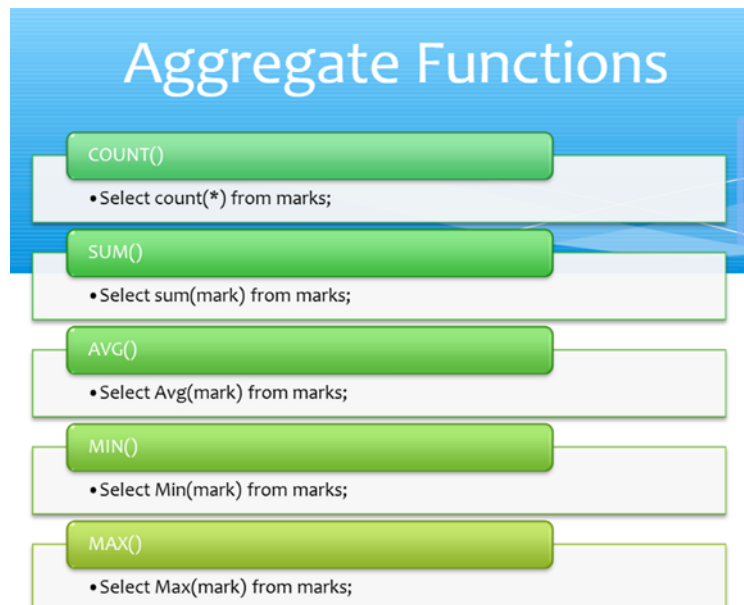 SELECT column_list FROM table_name WHERE condition;

⊕ UPDATE Command:

UPDATE table_name

SET col_1 = 'new_value1',

..., col_n = 'new_value2'

WHERE condition;

⊞ Hands on Practical:

- Creating database and use it

```
mysql> create database petadoption;
Query OK, 1 row affected (0.01 sec)

mysql> use petadoption;
Database changed
mysql> ^C
```

- Creating tables

```
mysql> CREATE TABLE Animals (
    ->     id INT PRIMARY KEY,
    ->     name VARCHAR(50) NOT NULL,
    ->     breed VARCHAR(50),
    ->     color VARCHAR(30),
    ->     gender VARCHAR(10),
    ->     status INT
    -> );
Query OK, 0 rows affected (0.05 sec)

mysql> desc Animals;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| id     | int         | NO   | PRI | NULL    |       |
| name   | varchar(50) | NO   |     | NULL    |       |
| breed  | varchar(50) | YES  |     | NULL    |       |
| color  | varchar(30) | YES  |     | NULL    |       |
| gender | varchar(10) | YES  |     | NULL    |       |
| status | int         | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE Adoptions (
    ->      adoption_id INT PRIMARY KEY,
    ->      animal_id INT,
    ->      name VARCHAR(50) NOT NULL,
    ->      contact VARCHAR(100),
    ->      adoption_date TIMESTAMP
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> desc Adoptions;
+---------------+--------------+------+-----+---------+-------+
| Field         | Type         | Null | Key | Default | Extra |
+---------------+--------------+------+-----+---------+-------+
| adoption_id   | int          | NO   | PRI | NULL    |       |
| animal_id     | int          | YES  |     | NULL    |       |
| name          | varchar(50)  | NO   |     | NULL    |       |
| contact       | varchar(100) | YES  |     | NULL    |       |
| adoption_date | timestamp    | YES  |     | NULL    |       |
+---------------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

- Inserting values in table

```
mysql> INSERT INTO Animals (id, name, breed, color, gender, status)
    -> VALUES
    ->      (1, 'Fluffy', 'Persian', 'White', 'Female', 1),
    ->      (2, 'Buddy', 'Labrador Retriever', 'Golden', 'Male', 1),
    ->      (3, 'Whiskers', 'Siamese', 'Brown', 'Male', 1),
    ->      (4, 'Mittens', 'Ragdoll', 'Gray', 'Female', 1),
    ->      (5, 'Rocky', 'German Shepherd', 'Black and Tan', 'Male', 1);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from Animals;
+----+----------+--------------------+---------------+--------+--------+
| id | name     | breed              | color         | gender | status |
+----+----------+--------------------+---------------+--------+--------+
|  1 | Fluffy   | Persian            | White         | Female |      1 |
|  2 | Buddy    | Labrador Retriever | Golden        | Male   |      1 |
|  3 | Whiskers | Siamese            | Brown         | Male   |      1 |
|  4 | Mittens  | Ragdoll            | Gray          | Female |      1 |
|  5 | Rocky    | German Shepherd    | Black and Tan | Male   |      1 |
+----+----------+--------------------+---------------+--------+--------+
5 rows in set (0.00 sec)
```

```
mysql> INSERT INTO Adoptions (adoption_id, animal_id, name, contact, adoption_date)
    -> VALUES
    ->     (1, 1, 'John Smith', 'john@example.com', '2024-01-19 12:00:00'),
    ->     (2, 3, 'Alice Johnson', 'alice@example.com', '2024-01-20 14:30:00'),
    ->     (3, 2, 'Michael Davis', 'michael@example.com', '2024-01-21 10:45:00'),
    ->     (4, 5, 'Emily Williams', 'emily@example.com', '2024-01-22 09:15:00'),
    ->     (5, 4, 'David Brown', 'david@example.com', '2024-01-23 16:00:00');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> select * from Adoptions;
+-------------+-----------+----------------+---------------------+---------------------+
| adoption_id | animal_id | name           | contact             | adoption_date       |
+-------------+-----------+----------------+---------------------+---------------------+
|           1 |         1 | John Smith     | john@example.com    | 2024-01-19 12:00:00 |
|           2 |         3 | Alice Johnson  | alice@example.com   | 2024-01-20 14:30:00 |
|           3 |         2 | Michael Davis  | michael@example.com | 2024-01-21 10:45:00 |
|           4 |         5 | Emily Williams | emily@example.com   | 2024-01-22 09:15:00 |
|           5 |         4 | David Brown    | david@example.com   | 2024-01-23 16:00:00 |
+-------------+-----------+----------------+---------------------+---------------------+
5 rows in set (0.00 sec)
```

- Updating information

```
mysql> UPDATE Animals
    -> SET name = 'Snowball II', breed = 'Domestic Shorthair', color = 'Black', gender = 'Male', status = 2
    -> WHERE id = 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM Animals WHERE id = 1;
+----+-------------+--------------------+-------+--------+--------+
| id | name        | breed              | color | gender | status |
+----+-------------+--------------------+-------+--------+--------+
|  1 | Snowball II | Domestic Shorthair | Black | Male   |      2 |
+----+-------------+--------------------+-------+--------+--------+
1 row in set (0.00 sec)
```

- Deleting information

```
mysql> DELETE FROM Animals WHERE id = 1;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM Animals;
+----+----------+--------------------+---------------+--------+--------+
| id | name     | breed              | color         | gender | status |
+----+----------+--------------------+---------------+--------+--------+
|  2 | Buddy    | Labrador Retriever | Golden        | Male   |      1 |
|  3 | Whiskers | Siamese            | Brown         | Male   |      1 |
|  4 | Mittens  | Ragdoll            | Gray          | Female |      1 |
|  5 | Rocky    | German Shepherd    | Black and Tan | Male   |      1 |
+----+----------+--------------------+---------------+--------+--------+
4 rows in set (0.00 sec)
```

- Alter table and adding information

```
mysql> ALTER TABLE Animals
    -> ADD COLUMN age INT;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> UPDATE Animals
    -> SET age = 3
    -> WHERE id = 2;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM Animals;
+----+----------+--------------------+---------------+--------+--------+------+
| id | name     | breed              | color         | gender | status | age  |
+----+----------+--------------------+---------------+--------+--------+------+
|  2 | Buddy    | Labrador Retriever | Golden        | Male   |      1 |    3 |
|  3 | Whiskers | Siamese            | Brown         | Male   |      1 | NULL |
|  4 | Mittens  | Ragdoll            | Gray          | Female |      1 | NULL |
|  5 | Rocky    | German Shepherd    | Black and Tan | Male   |      1 | NULL |
+----+----------+--------------------+---------------+--------+--------+------+
4 rows in set (0.00 sec)
```

- Distinct ,Where Query

```
mysql> select distinct gender
    -> from Animals;
+--------+
| gender |
+--------+
| Male   |
| Female |
+--------+
2 rows in set (0.00 sec)
```

```
mysql> select name,breed
    -> from Animals
    -> where gender='Male'
    -> ;
+----------+--------------------+
| name     | breed              |
+----------+--------------------+
| Buddy    | Labrador Retriever |
| Whiskers | Siamese            |
| Rocky    | German Shepherd     |
+----------+--------------------+
3 rows in set (0.00 sec)
```