Structured Query Language

MYSQL

open-source relational database management system (RDBMS)

Teddy

ASK = QUERY

IMPORTANT

CREATE
SELECT
UPDATE
DELETE

SELECT - extracts data from a database
UPDATE - updates data in a database
DELETE - deletes data from a database
INSERT INTO - inserts new data into a database
CREATE DATABASE - creates a new database
ALTER DATABASE - modifies a database
CREATE TABLE - creates a new table
ALTER TABLE - modifies a table
DROP TABLE - deletes a table
CREATE INDEX - creates an index (search key)
DROP INDEX - deletes an index

SHOW/USE

DATABASE
TABLE

show all databases;

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| frongfree$chulaclass |
| frongfree$default    |
| information_schema   |
| performance_schema   |
+--------------------+
4 rows in set (0.04 sec)
```

SHOW/USE

DATABASE TABLE

use specific database

```
mysql> use frongfree$chulaclass;
Database changed
```

Show table in database

```
mysql> show tables;
+--------------------------------+
| Tables_in_frongfree$chulaclass |
+--------------------------------+
| DEPARTMENT                     |
| DEPENDENT                      |
| DEPT_LOCATIONS                 |
| EMPLOYEE                       |
| PROJECT                        |
| WORKS_ON                       |
+--------------------------------+
6 rows in set (0.00 sec)
```

SELECT

SYNTAX

SELECT * FROM EMPLOYEE;

column

table

SELECT

TABLE

```
mysql> SELECT * FROM EMPLOYEE;
+-----------+-------+---------+-----------+------------+----------
| Fname     | Minit | Lname   | Ssn       | Bdate      | Address
+-----------+-------+---------+-----------+------------+----------
| John      | B     | Smith   | 123456789 | 1965-01-09 | 731 Fond
| Franklin  | T     | Wong    | 333445555 | 1965-12-08 | 638 Voss
| Joyce     | A     | English | 453453453 | 1972-07-31 | 5631 Ric
| Ramesh    | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire
| James     | E     | Borg    | 888665555 | 1937-11-10 | 450 Ston
| Jennifer  | S     | Wallace | 987654321 | 1941-06-20 | 291 Berr
| Ahmad     | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dall
| Alicia    | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Cas
+-----------+-------+---------+-----------+------------+----------
8 rows in set (0.02 sec)
```

SYNTAX

```
SELECT Fname, Bdate from EMPLOYEE;
```

```
mysql> SELECT Fname, Bdate from EMPLOYEE;
+----------+------------+
| Fname    | Bdate      |
+----------+------------+
| John     | 1965-01-09 |
| Franklin | 1965-12-08 |
| Joyce    | 1972-07-31 |
| Ramesh   | 1962-09-15 |
| James    | 1937-11-10 |
| Jennifer | 1941-06-20 |
| Ahmad    | 1969-03-29 |
| Alicia   | 1968-01-19 |
+----------+------------+
8 rows in set (0.00 sec)
```

SELECT WITH CONDITION

SYNTAX

CONDITION

```
SELECT * FROM EMPLOYEE WHERE Fname = "John";
```

column   table

```
mysql> SELECT * FROM EMPLOYEE WHERE Fname = "John";
+--------+--------+--------+-----------+------------+-------------------
| Fname  | Minit  | Lname  | Ssn       | Bdate      | Address
+--------+--------+--------+-----------+------------+-------------------
| John   | B      | Smith  | 123456789 | 1965-01-09 | 731 Fondren, Houston TX
+--------+--------+--------+-----------+------------+-------------------
1 row in set (0.00 sec)
```

CONDITION

The following operators can be used in the WHERE clause:

Operator	Description
=	Equal
>	Greater than
<	Less than
>=	Greater than or equal
<=	Less than or equal
<>	Not equal. **Note:** In some versions of SQL this operator may be written as !=
BETWEEN	Between a certain range
LIKE	Search for a pattern
IN	To specify multiple possible values for a column

```
mysql> SELECT Fname, Sex, Salary from EMPLOYEE WHERE Salary < 40000;
+--------+-----+--------+
| Fname  | Sex | Salary |
+--------+-----+--------+
| John   | M   |  30000 |
| Joyce  | F   |  25000 |
| Ramesh | M   |  38000 |
| Ahmad  | M   |  25000 |
| Alicia | F   |  25000 |
+--------+-----+--------+
5 rows in set (0.00 sec)
```

CONDITION

BETWEEN | LIKE | IN

BETWEEN A AND B

```
mysql> select * from EMPLOYEE where Salary between 30000 and 40000;
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address                  | Sex | Salary |
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+
| John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston TX  | M   | 30000  |
| Franklin | T     | Wong    | 333445555 | 1965-12-08 | 638 Voss, Houston TX     | M   | 40000  |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak, Humble TX  | M   | 38000  |
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+
3 rows in set (0.00 sec)
```

LIKE '%..'

```
EMPLOYEE where Fname LIKE 'j%';
+---------+-----------+------------+-------------------------+-----+--------+
| Lname   | Ssn       | Bdate      | Address                 | Sex | Salary |
+---------+-----------+------------+-------------------------+-----+--------+
| Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston TX | M   |  30000 |
| English | 453453453 | 1972-07-31 | 5631 Rice, Houston TX   | F   |  25000 |
| Borg    | 888665555 | 1937-11-10 | 450 Stone, Houston TX   | M   |  55000 |
| Wallace | 987654321 | 1941-06-20 | 291 Berry, Bellaire TX  | F   |  43000 |
+---------+-----------+------------+-------------------------+-----+--------+
sec)
```

```
mysql> select * from EMPLOYEE where Address LIKE '%H%';
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+-----
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address                  | Sex | Salary | Su
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+-----
| John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston TX  | M   |  30000 | 33
| Franklin | T     | Wong    | 333445555 | 1965-12-08 | 638 Voss, Houston TX     | M   |  40000 | 88
| Joyce    | A     | English | 453453453 | 1972-07-31 | 5631 Rice, Houston TX    | F   |  25000 | 33
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak, Humble TX  | M   |  38000 | 33
| James    | E     | Borg    | 888665555 | 1937-11-10 | 450 Stone, Houston TX    | M   |  55000 | NU
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas, Houston TX   | M   |  25000 | 98
+----------+-------+---------+-----------+------------+--------------------------+-----+--------+-----
```

IN (' ..' , '..')

```
mysql> select * from EMPLOYEE where Dno in ('4','5');
+----------+-------+---------+-----------+------------+----------------------+-----+--------+-----------+-----+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address              | Sex | Salary | Super_ssn | Dno |
+----------+-------+---------+-----------+------------+----------------------+-----+--------+-----------+-----+
| Jennifer | S     | Wallace | 987654321 | 1941-06-20 | 291 Berry, Bellaire TX | F   | 43000  | 888665555 | 4   |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas, Houston TX | M   | 25000  | 987654321 | 4   |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle, Spring TX | F   | 25000  | 987654321 | 4   |
| John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston TX | M  | 30000  | 333445555 | 5   |
| Franklin | T     | Wong    | 333445555 | 1965-12-08 | 638 Voss, Houston TX   | M   | 40000  | 888665555 | 5   |
| Joyce    | A     | English | 453453453 | 1972-07-31 | 5631 Rice, Houston TX  | F   | 25000  | 333445555 | 5   |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak, Humble TX | M  | 38000  | 333445555 | 5   |
+----------+-------+---------+-----------+------------+----------------------+-----+--------+-----------+-----+
```

SELECT WITH LIMIT

```
mysql> SELECT * FROM EMPLOYEE;
+----------+-------+---------+-----------+------------+-------------------------+-----+--------+-----------+-----+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address                 | Sex | Salary | Super_ssn | Dno |
+----------+-------+---------+-----------+------------+-------------------------+-----+--------+-----------+-----+
| John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston TX | M   |  30000 | 333445555 |   5 |
| Franklin | T     | Wong    | 333445555 | 1965-12-08 | 638 Voss, Houston TX    | M   |  40000 | 888665555 |   5 |
| Joyce    | A     | English | 453453453 | 1972-07-31 | 5631 Rice, Houston TX   | F   |  25000 | 333445555 |   5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak, Humble TX | M   |  38000 | 333445555 |   5 |
| James    | E     | Borg    | 888665555 | 1937-11-10 | 450 Stone, Houston TX   | M   |  55000 | NULL      |   1 |
| Jennifer | S     | Wallace | 987654321 | 1941-06-20 | 291 Berry, Bellaire TX  | F   |  43000 | 888665555 |   4 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas, Houston TX  | M   |  25000 | 987654321 |   4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle, Spring TX  | F   |  25000 | 987654321 |   4 |
+----------+-------+---------+-----------+------------+-------------------------+-----+--------+-----------+-----+
8 rows in set (0.02 sec)
```

SELECT * FROM EMPLOYEE LIMIT 2;

```
mysql> select * from EMPLOYEE limit 2;
+----------+-------+-------+-----------+------------+-------------------------+-----+--------+-----------+-----+
| Fname    | Minit | Lname | Ssn       | Bdate      | Address                 | Sex | Salary | Super_ssn | Dno |
+----------+-------+-------+-----------+------------+-------------------------+-----+--------+-----------+-----+
| John     | B     | Smith | 123456789 | 1965-01-09 | 731 Fondren, Houston TX | M   |  30000 | 333445555 |   5 |
| Franklin | T     | Wong  | 333445555 | 1965-12-08 | 638 Voss, Houston TX    | M   |  40000 | 888665555 |   5 |
+----------+-------+-------+-----------+------------+-------------------------+-----+--------+-----------+-----+
2 rows in set (0.00 sec)
```

COUNT | AVG | SUM

SELECT AVG(X) AS 'NAME'

```
mysql> select sum(Salary) as Sum_S from EMPLOYEE;
+--------+
| Sum_S  |
+--------+
| 281000 |
+--------+
1 row in set (0.00 sec)
```

```
mysql> select avg(Salary) AS average from EMPLOYEE;
+------------+
| average    |
+------------+
| 35125.0000 |
+------------+
1 row in set (0.01 sec)
```

```
mysql> SELECT COUNT(Fname) AS No_P from EMPLOYEE;
+------+
| No_P |
+------+
|    8 |
+------+
1 row in set (0.02 sec)
```

SELECT MULTIPLE TABLE

WORK WITH RELATIONAL DATABASE

NEED TO KNOW THE RELATIONSHIP BETWEEN TABLE BEFORE SELECT!!!

CREATE

```
CREATE TABLE table_name (
 column1 datatype,
 column2 datatype,
 column3 datatype,
 ....
);
```

```
mysql> CREATE TABLE Persons (
    ->        PersonID int,
    ->        LastName varchar(255),
    ->        FirstName varchar(255),
    ->        Address varchar(255),
    ->        City varchar(255)
    -> );
Query OK, 0 rows affected (0.06 sec)

mysql> show tables;
+---------------------------+
| Tables_in_frongfree$chulaclass |
+---------------------------+
| DEPARTMENT                |
| DEPENDENT                 |
| DEPT_LOCATIONS            |
| EMPLOYEE                  |
| PROJECT                   |
| Persons                   |
| WORKS_ON                  |
+---------------------------+
```

INSERT INTO

```sql
INSERT INTO table_name
VALUES (value1, value2, value3, ...);
```

```sql
INSERT INTO table_name (column1,
column2, column3, ...)
VALUES (value1, value2, value3, ...);
```

```
mysql> desc Persons;
+-----------+--------------+------+-----+---------+-------+
| Field     | Type         | Null | Key | Default | Extra |
+-----------+--------------+------+-----+---------+-------+
| PersonID  | int          | YES  |     | NULL    |       |
| LastName  | varchar(255) | YES  |     | NULL    |       |
| FirstName | varchar(255) | YES  |     | NULL    |       |
| Address   | varchar(255) | YES  |     | NULL    |       |
| City      | varchar(255) | YES  |     | NULL    |       |
+-----------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> insert into Persons (PersonID,LastName,FirstName,Address,Cit
    -> value (1,'chanyalikit','kitichai','597/80','Bangkok');
Query OK, 1 row affected (0.00 sec)

mysql> select * from Persons;
+----------+-------------+-----------+---------+---------+
| PersonID | LastName    | FirstName | Address | City    |
+----------+-------------+-----------+---------+---------+
|        1 | chanyalikit | kitichai  | 597/80  | Bangkok |
+----------+-------------+-----------+---------+---------+
1 row in set (0.00 sec)
```

```
mysql> select * from Persons;
+----------+-------------+-----------+---------+----------+
| PersonID | LastName    | FirstName | Address | City     |
+----------+-------------+-----------+---------+----------+
|        1 | chanyalikit | kitichai  | 597/80  | Ayuthaya |
+----------+-------------+-----------+---------+----------+
1 row in set (0.00 sec)

mysql> insert into Persons (PersonID, LastName,FirstName,Address,City)
    -> value (2,'chin','Kitty', 1111, 'Bangkok');
Query OK, 1 row affected (0.01 sec)

mysql> select * from Persons;
+----------+-------------+-----------+---------+----------+
| PersonID | LastName    | FirstName | Address | City     |
+----------+-------------+-----------+---------+----------+
|        1 | chanyalikit | kitichai  | 597/80  | Ayuthaya |
|        2 | chin        | Kitty     | 1111    | Bangkok  |
+----------+-------------+-----------+---------+----------+
2 rows in set (0.00 sec)
```

UPDATE

```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition;
```

```
mysql> Select * from Persons;
+----------+--------------+-----------+----------+-----------+
| PersonID | LastName     | FirstName | Address  | City      |
+----------+--------------+-----------+----------+-----------+
|        1 | chanyalikit  | kitichai  | 597/80   | Ayuthaya  |
|        2 | chin         | Kitty     | 1111     | Bangkok   |
+----------+--------------+-----------+----------+-----------+
2 rows in set (0.00 sec)

mysql> update Persons set City = 'Ayuthaya'where PersonID = 2;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Persons;
+----------+--------------+-----------+----------+-----------+
| PersonID | LastName     | FirstName | Address  | City      |
+----------+--------------+-----------+----------+-----------+
|        1 | chanyalikit  | kitichai  | 597/80   | Ayuthaya  |
|        2 | chin         | Kitty     | 1111     | Ayuthaya  |
+----------+--------------+-----------+----------+-----------+
2 rows in set (0.00 sec)
```

DELETE

DELETE FROM table_name WHERE condition;

---

if do not mention about condition ,Mysql will delect all records.

```
mysql> select * from Persons;
+----------+-------------+-----------+---------+----------+
| PersonID | LastName    | FirstName | Address | City     |
+----------+-------------+-----------+---------+----------+
|        1 | chanyalikit | kitichai  | 597/80  | Ayuthaya |
|        2 | chin        | Kitty     | 1111    | Ayuthaya |
+----------+-------------+-----------+---------+----------+
2 rows in set (0.00 sec)

mysql> delete from Persons where PersonID=2;
Query OK, 1 row affected (0.01 sec)

mysql> select * from Persons;
+----------+-------------+-----------+---------+----------+
| PersonID | LastName    | FirstName | Address | City     |
+----------+-------------+-----------+---------+----------+
|        1 | chanyalikit | kitichai  | 597/80  | Ayuthaya |
+----------+-------------+-----------+---------+----------+
1 row in set (0.00 sec)
```

DROP
Table | Database

DROP
Table

DROP TABLE table_name;

DROP
database

DROP DATABASE databasename;

```
mysql> show tables;
+----------------------------+
| Tables_in_frongfree$chulaclass |
+----------------------------+
| DEPARTMENT                 |
| DEPENDENT                  |
| DEPT_LOCATIONS             |
| EMPLOYEE                   |
| PROJECT                    |
| Persons                    |
| WORKS_ON                   |
+----------------------------+
7 rows in set (0.00 sec)

mysql> drop table Persons;
Query OK, 0 rows affected (0.02 sec)

mysql> show tables;
+----------------------------+
| Tables_in_frongfree$chulaclass |
+----------------------------+
| DEPARTMENT                 |
| DEPENDENT                  |
| DEPT_LOCATIONS             |
| EMPLOYEE                   |
| PROJECT                    |
| WORKS_ON                   |
+----------------------------+
6 rows in set (0.01 sec)
```