

# Structured Query Language (SQL)

SQL is a language which is used to interact with relational database management systems.

MySQL is a relational database management system in which we can write SQL code, queries to create databases and database tables.

Database is a collection of information and that information can be stored in different ways.

Database management system is a special software program that helps users to create and maintain a database.

Database management can perform four operations named in shortcut as C.R.U.D (create Read or retrieve update delete).

## \* Two Types of Databases

### Relational databases (SQL)

data is stored in tables. each table stores information about a specific topic and tables are linked together by common fields.

### Non-Relational (no SQL)

data is not stored in tables. instead this type of database uses hierarchical structure to store data.

## Database queries

Queries are the request made to DBMS for specific information.

## Tables & Keys

in table there will be rows and columns.

- Column represents a single attribute
- row represents an entry
- primary key is an attribute which uniquely defines the row in the database.
- primary key can be anything it can be a number (or) string but it has to uniquely identify the specific row.
- surrogate key is a type of primary key that has no mapping to anything in real world.
- natural key is a key that has a mapping to the real world.
- foreign key is just a primary key of another table.

\* structured query language (SQL)  
it is a hybrid language which means mixture of 4 languages (different) into one known as SQL.

its four types are

- i) Data query language :- used to query the database for information
- ii) Data definition language :- used for defining database schemas
- iii) Data control language :- used for controlling access to the data in database
- iv) Data Manipulation language :- used for inserting, updating and deleting data from database

The above four languages DQL, DDL, DCL and DML are four types of operations performed by SQL

\* Datatypes

INT -- whole numbers  
VARCHAR -- string of length (-)



DECIMAL(M,N) -- M - no. of digits N - no. of digits after decimal point

BLOB - stores binary data

DATE - YYYY-MM-DD

TIME STAMP - YYYY-MM-DD.HH:MM:SS

- \* we use CREATE TABLE keyword to create table and to get information about that table we use DESCRIBE keyword.
- \* To delete table we use drop table keyword with all high letters.

\* we can modify the table by using ALTER keyword.

\* To insert data into table we use INSERT INTO Name of table VALUES(); Syntax

\* To get all the information from the table we use SELECT \* FROM Table Name Syntax

\* NOT NULL is a keyword used for column such that values in that column can't be null

\* UNIQUE is a keyword used for column such that for each row in that table shouldn't have same value

\* we can update and delete information from the table by using the keywords UPDATE AND DELETE. steps to be followed

1) SELECT \* FROM student → (table created by me)

2) UPDATE student  
SET major = 'undecided';  
where major = 'sai123';

3) DELETE FROM student  
WHERE student-id = 8;

## QUERIES

- \* **SELECT** keyword is very special keyword. it's going to tell the relational database management system that we want to get some information from it.
- \* we use asterisk keyword (\*) symbol to grab all the information.
- \* **FROM** keyword is used to get information from specific table.
- \* we can replace asterisk with column name to get information about that particular column.

## SQL functions

- \* **COUNT( )** → This function counts no. of employees in employee table.

Syntax:- **SELECT COUNT(emp-id)**  
**FROM employee**

basically it counts how many entries in the database table actually have values. it doesn't count if table having null.

- \* **AVG( )** & **sum( )** functions are also used to average and the sum the values in data table.

## Wild cards

- \* for example in a table called client there are two names ending with LLC to get those two names we use the below syntax

**SELECT \* FROM client**

**WHERE client-name LIKE '%LLC'**

↓  
% (any no. of characters before LLC)



## UNION

it is an operator used to combine the result-set of two or more select statements

\* every select statement within union must have the same number of columns

\* columns must have similar data types.

\* columns in every statement must be in same order

Syntax:-

SELECT	client-name
FROM	client
UNION	
SELECT	supplier-name
FROM	branch-supplier;

## JOINS

JOIN operator is used to combine rows from two (or) more tables based on related column between them.

four types of JOINS

- 1) INNER JOIN:- returns records that have matching values in both tables
- 2) LEFT JOIN:- returns all records from the left table and matched records from right table
- 3) RIGHT JOIN:- returns all records from the right table .....
- 4) FULL JOIN:- combination of both Right and left JOIN

## NESTED Queries

a query is written inside a query. The result of inner query is used in execution of outer query.

## ON DELETE CASCADE AND ON DELETE SET NULL

\* if we define the foreign key as ON DELETE CASCADE, when we delete a master record, all the corresponding child records will get deleted