<https://www.tutorialspoint.com/sql/sql-drop-table.html>

**Types of SQL Databases:**

Relational databases are used to store and manage the data objects that are related to one another (structured way) (using tables). A system used to manage these relational databases is known as Relational Database Management System (RDBMS).

There are many popular RDBMS available:

MySQL MS SQL Server ORACLE MS ACCESS PostgreSQL SQLite

CREATE DATABASE / SCHEMA database\_name;

CREATE DATABASE sampled >> USE database\_name;

USE sampleDB;

DROP DATABASE database\_name; DROP DATABASE sampleDB;

CREATE TABLE CUSTOMERS (

ID INT NOT NULL, NAME VARCHAR (20) NOT NULL,

AGE INT NOT NULL, ADDRESS CHAR (25) ,

SALARY DECIMAL (18, 2), PRIMARY KEY (ID)

);

**for** description table or table info >> DESC CUSTOMERS;

To insert data

INSERT INTO CUSTOMERS VALUES

(1, 'Ramesh', 32, 'Ahmedabad', 2000.00 ),

(2, 'Khilan', 25, 'Delhi', 1500),

(3, 'kaushik', 23, 'Kota', 2000),

(4, 'Chaitali', 25, 'Mumbai', 6500),

(5, 'Hardik', 27, 'Bhopal', 8500),

(6, 'Komal', 22, 'Hyderabad', 4500),

(7, 'Muffy', 24, 'Indore', 10000);

Update data in table:

UPDATE CUSTOMERS SET ADDRESS = 'Pune' WHERE ID = 6;

Change table name column name with datatype

ALTER TABLE table\_name

{ADD|DROP|MODIFY} column\_name {data\_type};

All records delete but table structure as it is

TRUNCATE TABLE CUSTOMERS;

Changes table column\_name, modify and drop

ALTER TABLE CUSTOMERS

ADD|DROP|MODIFY

Add

city varchar(10);

change table name:

ALTER TABLE table\_name RENAME TO new\_table\_name;

SQL types of operators:

Arithmetic operators Comparison operators

Logical operators Operators used to negate conditions

Arithmetic operators

SQL Arithmetic Operators are used to perform mathematical operations on the numerical values.

+,-,/,\*, and

% modules 5%2=1

ALL:- TRUE if all of a set of comparisons are TRUE.

AND :- TRUE if all the conditions separated by AND are TRUE.

ANY: TRUE if all of a set of comparisons are TRUE.

BETWEEN: TRUE if the operand lies within the range of comparisons.

EXISTS: TRUE if the subquery returns one or more records

IN: TRUE if the operand is equal to one of a list of expressions.

LIKE: TRUE if the operand matches a pattern specially with wildcard.

NOT: Reverses the value of any other Boolean operator.

OR: TRUE if any of the conditions separated by OR is TRUE

IS NULL: TRUE if the expression value is NULL.

SOME: TRUE if some of a set of comparisons are TRUE.

UNIQUE: The UNIQUE operator searches every row of a specified table for uniqueness (no duplicates).

What is SQL Expression?

An SQL expression is a combination of one or more values, operators and SQL functions that are all evaluated to a value. These SQL EXPRESSION(s) are like formulae and they are written in query language.

Expressions are used in WHERE clause of an SQL query.

* Boolean Expressions
* Numeric Expressions
* Date and time Expressions

Boolean Expressions that check for equality of two values using SQL comparison operators. Here, equality of these values is a condition.

Boolean Expressions can also contain one value paired with an SQL logical operator. In this case, the logic specified acts like a condition.

select count(\*) from customers;

select count(\*)+1 as total\_members from customers;

select sum(id) as total from customers;

SELECT CURRENT\_TIMESTAMP;

In sql can we connect one schema to another schema

Yes, in SQL, it's possible to communicate or reference objects (tables, views, procedures, etc.) from one schema to another schema within the same database or even across databases, depending on the database management system (DBMS) we're using.

Here are some common ways to reference objects between schemas:

Within the Same Database:

Using Fully Qualified Names:

Objects can be referenced using their fully qualified names, including the schema name.

For example:

sql

Copy code

SELECT \* FROM schema\_name.table\_name;

Changing the Default Schema:

Some databases allow changing the **default** schema **for** a user's session. This way, when an object name is used without a schema qualifier, the database system uses the default schema.

Syntax may vary across different database systems. For instance:

PostgreSQL: SET search\_path TO schema\_name;

SQL Server: ALTER USER username SET DEFAULT\_SCHEMA = schema\_name;

Across Different Databases:

Using Linked Servers (in some DBMS like SQL Server):

Linked Servers allow querying and modifying data from another database or instance within the same query.

Example in SQL Server:

sql

Copy code

SELECT \* FROM linked\_server\_name.schema\_name.table\_name;

Using Database Links (in Oracle):

Oracle Database Links enable communication between two databases.

Example in Oracle:

sql

Copy code

SELECT \* FROM schema\_name.table\_name@database\_link\_name;

When referencing objects between schemas or databases, ensure proper permissions and access rights are granted to the user executing these operations. The syntax and methods can vary between different database systems, so refer to the specific documentation **for** your database management system **for** detailed instructions and specific functionalities.

RENAME DATABASE OldDatabaseName TO NewDatabaseName;

ALTER TABLE BUYERS RENAME TO CUSTOMERS;

TRUNCATE a table completely in one go instead of deleting table records one by one

The SQL **TRUNCATE TABLE** command is used to empty a table.

And table structure as it is.

TRUNCATE TABLE table\_name;

DROP TABLE command to delete a table but it will remove the complete table structure from the database

|  |  |
| --- | --- |
| **DELETE** | **TRUNCATE** |
| The DELETE command in SQL removes one or more rows from a table based on the conditions specified in a WHERE Clause. | SQL's TRUNCATE command is used to remove all of the rows from a table, regardless of whether or not any conditions are met. |
| It is a DML(Data Manipulation Language) command. | It is a DDL(Data Definition Language) command. |
| There is a need to make a manual COMMIT after making changes to the DELETE command, for the modifications to be committed. | When you use the TRUNCATE command, the modifications made to the table are committed automatically. |
| It deletes rows one at a time and applies same criteria to each deletion. | It removes all of the information in one go. |
| The WHERE clause serves as the condition in this case. | The WHERE Clause is not available. |
| All rows are locked after deletion. | TRUNCATE utilizes a table lock, which locks the pages so they cannot be deleted. |
| It makes a record of each and every transaction in the log file. | The only activity recorded is the deallocation of the pages on which the data is stored. |
| It consumes a greater amount of transaction space compared to TRUNCATE command. | It takes comparatively less amount of transaction space. |
| If there is an identity column, the table identity is not reset to the value it had when the table was created. | It returns the table identity to a value it was given as a seed. |
| It requires authorization to delete. | It requires table alter permission. |
| When it comes to large databases, it is much slower. | It is much faster. |
| DROP | TRUNCATE |
| The DROP command in SQL removes an entire table from a database including its definition, indexes, constraints, data etc. | The TRUNCATE command is used to remove all of the rows from a table, regardless of whether or not any conditions are met and resets the table definition. |
| It is a DDL(Data Definition Language) command. | It is also a DDL(Data Definition Language) command. |
| The table space is completely freed from the memory. | The table still exists in the memory. |
| All the integrity constraints are removed. | The integrity constraints still exist in the table. |
| Requires ALTER and CONTROL permissions on the table schema and table respectively, to be able to perform this command. | Only requires the ALTER permissions to truncate the table. |
| DROP command is much slower than TRUNCATE but faster than DELETE. | TRUNCATE command is faster than both DROP and DELETE commands. |

SQL **Cloning Operation** allows to create the exact copy of an existing table along with its definition. There are three types of cloning

* Simple Cloning
* Shallow Cloning
* Deep Cloning

Simple cloning operation creates a new replica table from the existing table and copies all the records in newly created table.

CREATE TABLE new\_table SELECT \* FROM original\_table;

Shallow cloning operation creates a new replica table from the existing table but does not copy any data records into newly created table, so only new but empty table is created.

CREATE TABLE NEW\_TABLE LIKE ORIGINAL\_TABLE;

Deep cloning operation is a combination of simple cloning and shallow cloning. It not only copies the structure of the existing table but also its data into the newly created table.

CREATE TABLE NEW\_TABLE LIKE ORIGINAL\_TABLE;

INSERT INTO NEW\_TABLE SELECT \* FROM ORIGINAL\_TABLE;

Temporary tables are pretty much what their name describes: they are the tables which are created in a database to store temporary data. We can perform SQL operations similar to the operations on permanent tables like CREATE, UPDATE, DELETE, INSERT, JOIN, etc. But these tables will be automatically deleted once the current client session is terminated.

CREATE TEMPORARY TABLE CUSTOMERS (

ID INT NOT NULL,

NAME VARCHAR (20) NOT NULL,

AGE INT NOT NULL,

PRIMARY KEY(ID) );

Though all the temporary tables are deleted by MySQL when your database connection gets terminated

DROP TEMPORARY TABLE CUSTOMERS;

The SQL **ALTER TABLE** command is a part of Data Definition Language (DDL) and modifies the structure of a table. The ALTER TABLE command can add or delete columns, create or destroy indexes, change the type of existing columns, or rename columns or the table itself.

add a new column to a table:

ALTER TABLE TABLE\_NAME ADD COLUMN\_NAME datatypes;

Drop column:

ALTER TABLE TABLE\_NAME DROP COLUMN COLUMN\_NAME;

ADD PRIMARY KEY:

ALTER TABLE TABLE\_NAME

ADD CONSTRAINT constraint\_name

PRIMARY KEY(COLUMN1, COLUMN2…);

DROP PRIMARY KEY:

ALTER TABLE TABLE\_NAME DROP PRIMARY\_KEY;

ADD CONSTRAINTS KEY:

ALTER TABLE table\_name

ADD CONSTRAINT constraint\_name

UNIQUE (COLUMN1, COLUMN2…);

DROP CONSTRAINTS KEY:

ALTER TABLE table\_name DROP CONSTRAINT constraint\_name;

RENAME COLUMN NAME:

ALTER TABLE table\_name RENAME COLUMN column\_name TO new\_column\_name;

MODIFY DATATYPES

ALTER TABLE table\_name MODIFY COLUMN column\_name DATATYPE;

The SQL **DROP TABLE** statement is a Data Definition Language (DDL) command that is used to remove a table's definition, and its data, indexes, triggers, constraints and permission specifications (if any).

once a table is DROP then all the information available in that table will also be lost forever.

To drop a table in a database, one must require ALTER permission on the said table and CONTROL permissions on the table schema.

Even though it is a data definition language command, it is different from TRUNCATE TABLE statement as the DROP statement completely frees the table from the memory.

DROP TABLE causes an implicit commit, except when used with the TEMPORARY keyword.

IF EXISTS CLAUSE

DROP TABLE IF EXISTS TABLE\_NAME;

The **SQL DELETE** is a command of Data Manipulation Language (DML), so it does not delete or modify the table structure but it delete only the data contained within the table.

The **SQL DELETE TABLE** statement is used to delete the existing records from a table in a database.

DELETE FROM table\_name WHERE condition;

We can use the **SQL DELETE TABLE** statement without a WHERE clause to delete all records in a table in SQL. This statement will remove all the rows from the specified table, effectively resetting the table to its original state

DELETE FROM table\_name;

SQL Constraints are the rules applied to a data columns or the complete table to limit the type of data that can go into a table. When you try to perform any INSERT, UPDATE, or DELETE operation on the table, RDBMS will check whether that data violates any existing constraints and if there is any violation between the defined constraint and the data action, it aborts the operation and returns an error.

SQL CREATE Constraints means create a table.

Not null Constraints

CREATE TABLE table\_name(

Column1 datatype constraint (NOT NULL),

Column2 datatype constraint,

Column3 datatype constraint,

Column4 datatype constraint,

PRIMARY KEY (Column1)

);

Unique key constraints define unique key

Column1 datatype constraint UNIQUE KEY,

Default value constraint key

Column2 datatype DEFAULT ‘NOT AVAILABLE’,

PRIMARY Key constraint

When applied to a column, PRIMARY Key constraint ensure that a column accepts only UNIQUE value and there can be a single PRIMARY Key on a table but multiple columns can constitute a PRIMARY Key.

FOREIGN Key constraint maps with a column in another table and uniquely identifies a row/record in that table.

CREATE TABLE ORDERS(

ID INT NOT NULL, DATE DATETIME,

CUSTOMER\_ID INT FOREIGN KEUY REFERENCES CUSTOMER(ID),

AMOUNT DECIMAL,

PRIMARY KEY(ID)

);

When applied to a column, CHECK Value constraint works like a validation and it is used to check the validity of the data entered into the particular column of the table. table and uniquely identifies a row/record in that table.

CREATE TABLE CUSTOMERS (

ID INT NOT NULL,

NAME VARCHAR (20) NOT NULL,

AGE INT NOT NULL CHECK(AGE>=18),

ADDRESS CHAR (25),

SALARY DECIMAL (18,2),

PRIMARY KEY(ID)

);

INDEX constraints:

The INDEX constraints are created to speed up the data retrieval from the database. An Index can be created by using a single or group of columns in a table. A table can have a single PRIMARY Key but can have multiple INDEXES. An Index can be Unique or Non-Unique based on requirements.

CREATE INDEX idx AGE ON CUSTOMERS (AGE);///?

DROPPING SQL CONSTRAINTS

ALTER TABLE CUSTOMERS DROP CONSTRAINT PRIMARY KEY;

The SQL **SELECT** Statement is used to fetch the data from a database table which returns this data in the form of a table.

If we want to fetch all / retrieve all fields then query of SELECT statement with an **Asterisk (\*)** instead of the column names.

Update query

UPDATE CUSTOMERS SET ADDRESS=’PUNE’ WHERE ID=6;

SUPPOSE YOU HAVE TO USED THIS QUERY THEN IT IS AFFECTED ALL ROWS

UPDATE CUSTOMERS SET AGE=AGE+5, SALARY=SALARY+3000;

MEANS PREVIOUS AGE IS 22 THEN ADD 5 MEANS NEW AGE IS 27.

DELETE MULTIPLE ROWS

DELETE FROM CUSTOMERS WHERE AGE>25;

Delete a rows based on conditions

DELETE FROM CUSTOMERS;

If we are using this query then delete all records from existing table (truncate it)

DELETE CUSTOMERS, ORDERS FROM CUSTOMERS C

INNER JOIN ORDERS O ON O.CUSTOMER\_ID =C.ID

WHERE C.SALARY >2000;

Following SQL query deletes the records of the customers (from the tables CUSTOMERS and ORDERS) who earn more than 2000 and have placed orders

SORTING RESULTS:

The SQL **ORDER BY** clause is used to sort the data in ascending or descending order, based on one or more columns. By default, some databases sort the query results in an ascending order.

In addition to that, ORDER BY clause can also sort the data in a database table in a preferred order. This case may not sort the records of a table in any standard order (like alphabetical or lexicographical), but, they could be sorted based on any external condition. For instance, in an ORDERS table containing the list of orders made by various customers of an organization, the details of orders placed can be sorted based on the dates on which those orders are made. This need not be alphabetically sorted, instead, it is based on "first come first serve".

SELECT \* FROM CUSTOMERS ORDER BY NAME;

BY DECENDING ORDER

SELECT \* FROM CUSTOMERS ORDER BY NAME DESC;

To fetch the rows with their own preferred order:

SELECT \* FROM CUSTOMERS ORDER BY (CASE ADDRESS

WHEN ‘DELHI’ THEN 1,

WHEN ‘BHOPAL’ THEN 2,

WHEN ‘KOTA’ THEN 3,

WHEN ‘NASHIK’ THEN 4,

WHEN ‘MUMBAI’ THEN 5,

ELSE 100 END) ASC,ADDRESS DESC;

SQL VIEWS:

CREARE VIEWS:

To create a view in a database, you can use the SQL CREATE

CREATE VIEW CUSTOMERS\_VIEW AS SELECT \* FROM CUSTOMERS;

THEN CHECK SELECT \* FROM CUSTOMERS\_VIEW;

ALL FIELED TAKE IN CUSTOMERS\_VIEW TABLE FROM CUSTOMERS

IF WE WANT SPECIFIC FILED IN NEW TABLES THEN

CREATE VIEW SPECIFIC\_VIEW AS SELECT NAME, AGE FROM CUSTOMERS WHERE AGE>=25 WITH CHECK OPTION;

THEN CHECK SELECT \* FROM SPECIFIC\_VIEW; ITS SHOW ONLY NAME & AGE

UPDATE VIEWS:

A view is a database object that can contain rows (all or selected) from an existing table. It can be created from one or many tables which depends on the provided SQL query to create a view.

UPDATE CUSTOMERS\_VIEW SET NAME=’ABC’,AGE=25 WHERE ID=3;

UPDATE CUSTOMERS\_VIEW SET AGE=25+6;

THIS QUERY AFFECTED ON ALL ROWS;

DROP VIEWS:

SQL allows you to drop an exiting view and delete records from a view in a database. SQL uses DROP statement to delete all the records from the view along with its definition and using the DELETE statement, only the records are deleted while the view definition of the view remains unchanged.

DROP VIEW CUSOMERS\_VIEW;

DROP TABLE\_NAME;

DROP COLUMN:

ALTER TABLE table\_name

DROP COLUMN column\_name;

RENAME VIEWS:

TO CHANGE TABLE NAME

RENAME TABLE OLD\_NAME TO NEW\_NAME;

TO CHANGE COLUMN NAME

ALTER TABLE table\_name RENAME COLUMN old\_column\_name TO new\_column\_name;

SQL OPERATION AND CLAUSES:

WHERE CLAUSE:

The SQL **WHERE** clause is used to filter the results obtained by the DML statements such as SELECT, UPDATE and DELETE etc. We can retrieve the data from a single table or multiple tables(after join operation) using the WHERE clause.

We can specify a condition using the [comparison or logical operators](https://www.tutorialspoint.com/sql/sql-operators.htm) such as, >, <, =, **LIKE, NOT**, etc.

WHERE CLAUSE WITH IN OPERATOR:

SELECT \* from CUSTOMERS

WHERE NAME IN ('Khilan', 'Hardik', 'Muffy');

WHERE CLAUSE WITH NOT IN OPERATOR:

SELECT \* FROM CUSTOMERS WHERE AGE NOT IN(25,23,22);

WHERE WE CAN USED WITH LIKE, AND, OR OPERATORS.

TOP CLAUSE;

SELECT TOP 4 FROM CUSTOMERS; // THIS IS SQL SERVER QUERY

SELECT TOP 4 FROM CUSTOMERS ORDER BY SALARY DESC;

SELECT TOP 40 PERCENT FROM CUSTOMERS ORDER BY SALARY DESC;

SELECT TOP 4 \* FROM CUSTOMERS WHERE SALARY >4000;

DISTINCT CLAUSE:

The SQL **DISTINCT** keyword is used in conjunction with the SELECT statement to fetch unique records from a table.

SELECT DISTINCT ID, NAME FROM CUSTOMERS;

SHOW ONLY ID AND NAME

SELECT SALARY FROM CUSTOMERS ORDER BY SALARY;

SHOW ONLY SALARY IN ASCENDING ORDER.

SELECT COUNT (DISTINCT AGE) as UniqueAge FROM CUSTOMERS;

SHOW unique age result to count age and remove duplicate.

ORDER BY CLAUSE:

The SQL **ORDER BY** clause is used to sort the data in either ascending or descending order, based on one or more columns. This clause can sort data by a single column or by multiple columns. Sorting by multiple columns can be helpful when you need to sort data hierarchically, such as sorting by state, city, and then by the person's name.

ORDER BY is used with the SQL SELECT statement and is usually specified after the WHERE, HAVING, and GROUP BY clauses.

ORDER BY CLAUSE WITH ASC/DESC:

SELECT \* FROM CUSTOMERS ORDER BY NAME ASC/DESC

ORDER BY CLAUSE WITH MULTIPLE COLUMNS:

SELECT \* FROM CUSTOMERS ORDER BY AGE ASC, SALARY DESC;

IN THIS CASE 1ST ORDER BY AGE IF AGE IS DUPLICATE/SAME THEN DESCENDING ORDER BASED ON SALARY.

ORDER BY WITH WHERE CLAUSE:

SELECT \* FROM CUSTOMERS WHERE AGE=25 ORDER BY NAME DESC;

ORDER BY LIMIT CLAUSE:

SELECT SALARY FROM CUSTOMERS ORDER BY NAME LIMIT 4;

ITS SHOWING SALARY COLUMN 4 ROWS.

GROUP BY CLAUSE:

The SQL **GROUP BY** clause is used in conjunction with the SELECT statement to arrange identical data into groups. This clause follows the WHERE clause in a SELECT statement and precedes the ORDER BY and HAVING clauses (if they exist).

The main purpose of grouping the records of a table based on particular columns is to perform calculations on these groups. Therefore, The GROUP BY clause is typically used with aggregate functions such as SUM(), COUNT(), AVG(), MAX(), or MIN() etc.

GROUP BY CLAUSE WITH AGGREGATE FUNCTIONS

The SQL **GROUP BY** clause is used in conjunction with the SELECT statement to arrange identical data into groups. This clause follows the WHERE clause in a SELECT statement and precedes the ORDER BY and HAVING clauses (if they exist).

The main purpose of grouping the records of a table based on particular columns is to perform calculations on these groups. Therefore, The GROUP BY clause is typically used with aggregate functions such as SUM(), COUNT(), AVG(), MAX(), or MIN() etc.

SELECT AGE, COUNT(NAME) FROM CUSTOMERS GROUP BY AGE;

WE CAN COUNT(NAME) NAME AS \* OR ‘ANY\_NAME’

SELECT ADDRESS ,AGE, COUNT('TOTAL') FROM CUSTOMERS GROUP BY AGE;

SELECT ADDRESS,AGE, COUNT(\*) AS TOTAL FROM CUSTOMERS GROUP BY AGE;

GROUP BY WITH ORDER BY:

SELECT AGE, MIN(SALARY) AS MIN\_SALARY FROM CUSTOMERS GROUP BY AGE ORDER BY MIN\_SALARY DESC;

GROUP BY WITH HAVING CLAUSE:

SELECT ADDRESS, AGE,MIN(SALARY) AS MIN\_SUM FROM CUSTOMERS;

HAVING CLAUSE:

AND & OR:

BOOLEAN (BIT) OPERATOR:

LIKE OPERATOR:

IN OPERATOR:

ANY, ALL OPERATOR:

EXISTS OPERATOR:

CASE;

NOT OPERATOR:

NOT EQUAL:

IS NULL;

IS NOT NULL;

NOT NULL;

BETWEEN OPERATOR:

UNION OPERATOR:

UNION VS UNION ALL:

INTERSECT OPERATOR:

EXCEPT OPERATOR:

ALIASES:

SQL JOINS:

USING JOINS:

INNER JOINS:

LEFT JOINS:

RIGHT JOINS:

CROSS JOINS:

FULL JOINS:

SELF JOINS:

DELETE JOINS:

UPDATE JOINS:

LEFT VS RIGHT JOINS:

UNION VS JOIN;

SQL KEYS:

UNIQUE KEY:

PRIMARY KEY:

FOREIGN KEY:

COMPOSITE KEY:

ALTERNATE KEY:

SQL INDEXES:

CREATE INDEXES:

DROP INDEXES:

SHOW INDEXES:

UNIQUE INDEXES:

CLUSTRED INDEXES:

NON- CLUSTRED INDEXES:

ADVANCED SQL:

WILDCARDS:

COMMENTS:

INJECTION:

HOSTING:

MIN AND MAX:

NULL FUNCTIONS:

CHECK CONSTRAINTS:

DEFAULT CONSTRAINTS:

STORED PROCUDERS:

NULL VALUES:

TRANSACTIONS:

SUB QUERIES:

HANDLING DUPLICATES:

USING SEQUENCES:

AUTO INCREMENT:

DATE & TIME:

CURSORS:

COMMMON TABLE EXPRESSIONS:

GROP BY VS ORDER BY:

IN VS EXISTS:

DATABASE TUNNING:

SQL FUNCTION REFERENCES:

DATE FUNCTIONS:

STRING FUNCTIONS:

AGGREGATE FUNCTIONS:

NUMERIC FUNCTIONS:

TEXT & IMAGE FUNCTIONS:

STATICAL FUNCTIONS:

LOGICAL FUNCTIONS:

CURSOR FUNCTIONS:

JSON FUNCTIONS:

CONVERSATION FUNCTIONS:

DATATYPES FUNCTIONS:

SQL USEFUL RESOURCES: