Page No.
Date : 4 / 4 / 21

SQL Commands.

SQL commands are the instructions of it is used to communicate with db. It is also used to perform specific tasks, functions, and queries of data.

SQL can perform various tasks like create a table, add data to tables, drop the tables, modify the table & set permissions to users.

1. Data Definition Language

DDL changes the structure of the table like create a table, deleting a table, altering a table etc.
Here are some commands that comes under DDL.

1) CREATE
2) ALTER
3) DROP
4) TRUNCATE

1) CREATE

Create is used to create a new table in the db.

syntax :- CREATE TABLE TableName (
column1 datatype,
column2 datatype,
----
columnN datatype);

eg :- CREATE TABLE Emp
(EmployeeID int,
EmployeeName varchar (255),
EmergencyContactName varchar (255),
PhoneNumber int,
Address varchar (255),

City varchar (255),
Country varchar (255));

2) ALTER

This command is used to delete, modify, add the constraints or columns in an existing table.

The alter table statement, is used to add, delete, modify columns in an existing table.

The ALTER TABLE Statement with ADD | DROP COLUMN.

You can use the ALTER TABLE statement with ~~add~~ ADD | DROP column command according to your need. If you wish to add a column, then you will use the ADD command, and if you wish to delete a column, then you'll use the DROP COLUMN command.

Syntax :- Alter Table TableName
ADD ColumnName Datatype ;

Alter Table TableName
DROP COLUMN ColumnName ;

eg :- ADD Column BloodGroup ;

ALTER TABLE Emp
ADD BloodGroup varchar (255);

DROP Column BloodGroup ; Emp

ALTER TABLE ~~Employee into~~
DROP COLUMN BloodGroup ;

not sql command is predefined ~~SET~~ set linesige 200
set pagesize 50

Alter Table Emp ADD Blood group varchar (20);

Assignment.

1) Add ~~values into~~ Blood group column in existing table, and City, MobNo.
Also insert data into 3 columns.

2) Delete Blood group column.
Alter Table Emp
Drop column Blood group;

Delete	Truncate	Drop.
1) Delete comes under DML	Truncate, comes under DDL	Drop comes under DDL
2) It is used to delete (removes) one or more rows. (record)	Truncate removes all the rows from a table.	Removes the table from the database
3) Delete is slower than Truncate	Truncate is faster than delete	
4) It is possible to Rollback	We cannot rollback once we truncate (we can't restore the records by using rollback	The drop is a statement used to drop an existing table or db.
	Truncate table table name;	~~The drop table~~ is DROP TABLE TableName;

Alter Table statement with ALTER / MODIFY COLUMN

This statement is used to change the datatype of an existing column in a table.

Syntax :- ALTER TABLE TableName
ALTER ~~COLUMN~~ ColumnName Datatype;

eg :- Add a column DOB & change the datatype of Date

ALTER TABLE Emp
ADD DOB year;

ALTER TABLE Emp
ALTER DOB date;

3) DROP

This statement is used to drop an existing table. When you use this statement, complete informatn present in the table will be lost.

syntax :- DROP TABLE TableName;

eg :- DROP TABLE Emp;

4) TRUNCATE

This command is used to delete the informatn present in the table but does not delete the table. So, once you use this command, your informatn will be lost, but not the table.

syntax :- TRUNCATE TABLE TableName;
TRUNCATE TABLE;

B. Data Manipulation language.

DML commands are used to modify the database.
It is responsible for all form of changes in the db.

The command of DML is not auto-committed that means it can't permanently save all the changes in the db.
They can be rollback.

1) INSERT
2) UPDATE
3) DELETE

1) INSERT INTO

This statement is used to insert new records into the table.

Syntax :- INSERT INTO TableName (Col1, Col2, Col3, --- ColN)
VALUES (value1, value2, ---- valueN);

eg :- INSERT INTO Emp (EmployeeID, Employeename, ---)
VALUES (*06, ---);

2) UPDATE

This command is used to update or modify the records already present in table.

Syntax :- UPDATE TableName
SET Column1 = Value1, Column2 = Value2, --
WHERE Condition;

eg :- UPDATE tmp
SET empname = 'Aahana', City = 'Ahmedabad'
WHERE empno = 1;

UPDATE tmp SET SAL = 5000 WHERE tmpno = 7902 ;

UPDATE tmp SET JOB = 'Manager' WHERE tmpno = 7934 ;

3) DELETE

This statement is used to delete the existing records (one or more rows) in a table.

syntax :- DELETE FROM TableName WHERE condition ;

eg :- DELETE FROM Emp
WHERE Empname = 'Chris' ;

C. Data Control language.

DCL commands are used to grant and take back authority from any database user. Data Control language Statements are used to grant privileges on tables , views , sequences , Synonyms, procedures to other users or roles.

Grant
Revoke

1) GRANT

It is used to give user access privileges to a database. This command is used to provide access or privileges on the database and its objects to the users.
You can grant users various privileges to tables.
These permissions can be any combination of SELECT , INSERT, UPDATE, DELETE , REFERENCES , ALTER , or ALL

Privileges of two types. :-

1) System Privileges
2) Object Privileges

Object Privileges

Object privileges means privileges on objects such as tables, views, synonyms, procedure. These are granted by owner of the object.

Object Privileges are :-

ALTER	Change the table definition with the ALTER TABLE statement.
DELETE	Removes rows from the table with the DELETE statement. Note :- You must grant the SELECT privilege on the table along with the DELETE privilege.
INDEX	Create an index on the table with the CREATE INDEX statement.
INSERT	Add new rows to the table with the ~~insert~~ INSERT Statement.
REFERENCES	Create a constraint that refers to the table. You can not grant this privilege to a role.
SELECT	Query the table with the SELECT statement.
UPDATE	Change data in the table with the UPDATE statement. Note :- you must grant the SELECT privilege on the table along with the UPDATE.

2)

1)

2)

3)

eg :- GRANT CONNECT TO Scott;
GRANT CREATE SESSION TO Scott;

CREATE SESSION - allows an account to connect to a database

GRANT SELECT, INSERT, UPDATE, DELETE ON Emp TO Scott;
GRANT ALL ON Emp TO Chris;

2) REVOKE

use to revoke privileges already granted to other users.

REVOKE ALL ON Emp FROM Chris;

1) for example to revoke select, update, insert privileges you have granted to chris then give the following statement.

revoke select, update, insert on emp from Chris;

2) To revoke select statement on Emp granted to public give the following command.

revoke select on Emp from public;

3) To revoke update privileges on ename column and insert privilege on empno and ename columns give the following revoke statement.

revoke update, insert on emp from Anil;

Transaction Control language.

TCL commands can only use with DML commands like INSERT, DELETE and UPDATE only.

These operations are automatically committed in the database that's why they can not be used while creating tables or dropping them.

1) COMMIT
2) ROLLBACK
3) SAVEPOINT

1) COMMIT

This command is used to save the transaction into the database.

COMMIT command is used to permanently save the transaction into the database.

When we use any DML command like INSERT, UPDATE or DELETE, the changes made by these commands are not permanent, until the current session is closed, the changes made by these commands can be undone back.

To avoid that we use the COMMIT command to mark the changes as permanent.

Syntax :- COMMIT;

2) ROLLBACK

This command is used to restore the database to the last committed state.

This command restores the database to last committed state. It is also used with SAVEPOINT command to jump to savepoint in an ongoing transaction.

If we have used the UPDATE command to make some changes into the database, and realise that those changes were not required, then we can use the ROLLBACK command to rollback those changes, if they were not committed using the COMMIT command.

Syntax :- ROLLBACK TO savepoint_name;

3) SAVEPOINT

SAVEPOINT command is used to temporarily save a transaction so that you can rollback to that point whenever required.

Following is savepoint command's syntax.

Syntax :- SAVEPOINT savepoint_name;

In short, using this command we can name the diff^n states of our data in any table and then rollback to that state using the ROLLBACK command wherever required.

Using Savepoint and Rollback

Following is table class

id	name
1	Abhi
2	Adam
3	Alex

Lets use some SQL queries on the above table & see the results.

```
INSERT INTO class VALUES (5, 'Rahul');
COMMIT;

UPDATE class SET name = 'Abhijit'
WHERE id = 5;
SAVEPOINT A;

INSERT INTO CLASS (ID, NAME) VALUES (6, 'CHRIS');
SAVEPOINT B;

insert into class (id, name) values (7, 'Bravo');
savepoint C;

select * from class;
```

id	name
1	Abhi
2	Adam
4	Alaa
5	Abhijit
6	Chris
7	Bravo

```
Rollback TO savepoint C;
select * from class;
```

not commit

```
Delete from class where id = 8;
Rollback;

delete from class where id = 8;
select * from class;
commit;
```

Page No.
Date: 10/4/21

```
select * from class
drop table class
rollback ;

select * from class.;
```

SQL Operators

An operator is reserved word or character used in an sql statements to perform operations such as comparison and arithmetic operations.

SQL Operators are used to specify condith in an sql statement and to serve as conjuctions (and, for, not, and) for multiple conditions in a statement.

i) Arithmetic Operators (+, -, *, /)

Precedence of Operators -
Every arithmetic operator has been given precedence.

ii) Multiplication & Division take priority over addition & substraction.

iii) If there are no. of operators having the same precedence then the execution control is from left to right.

iii) Braces / Parenthesis are used to force priorities, the execuh which means whatever operator whithin bracket executed just and then operator outside.