Structured Query Language (SQL) is a non procedural language that is used to create, manipulate and process the databases(relations).

Characteristics of SQL

1. It is very easy to learn and use.
2. Large volume of databases can be handled quite easily.
3. It **is non procedural language**. It means that we do not need to specify the procedures to accomplish a task but just to give a command to perform the activity.
4. SQL can be linked to most of other high level languages that makes it first choice for the database programmers.

Processing Capabilities of SQL The following are the processing capabilities of SQL

1. **Data Definition Language (DDL**)- DDL contains commands that are used to create the tables, databases, indexes, views, sequences and synonyms etc.
e.g: create table, create view, create index, alter table ,drop table , drop index etc.
2. **Data Manipulation Language (DML)** –DML contains command that can be used to manipulate the data base objects and to query the databases for information retrieval.
e.g Select, Insert, Delete, Update etc.
3. **Data Control Language**(**DCL)**: This language is used for controlling the access to the data. Various commands like GRANT, REVOKE etc are available in DCL.
4. **Transaction Control Language (TCL)** –TCL include commands to control the transactions in a data base system. The commonly used commands in TCL are COMMIT, ROLLBACK etc.

Data types of SQL- Following are the most common data types of SQL.

1) NUMBER / INTEGER 2) CHAR 3) VARCHAR 4) DATE 5) DECIMAL

SQL COMMANDS

DDL- Create, Alter, Drop

Create - Creating a Database-To create a database in RDBMS, create command is used.
Syntax: create database database-name; e.g. : create database Test;

CREATE TABLE Command: Create table command is used to create a table in SQL.
Syntax :
CREATE TABLE tablename(column_name data_type(size), column_name2 data_type(size)….);
e.g. create table student (rollno integer(2), name char(20), dob date);

DDL-Alter command is used for alteration of table structures. Various uses of alter command,

- to add a column to existing table
- to rename any existing column
- to change datatype of any column or to modify its size.
- alter is also used to drop a column.

To Add Column to existing Table-Using alter command to add a column to an existing table.
Syntax:-alter table table-name add(column-name datatype);
e.g:-alter table Student add(address char);

To Add Multiple Column to existing Table-can even add multiple columns to an existing table.
Syntax,
alter table table-name **add**(column-name1 datatype1, column-name2 datatype2, ……..);
e.g.:-alter table Student add(father-name varchar(60), mother-name varchar(60), dob date);

To Modify an existing Column-alter command is used to modify data type of an existing column
Syntax:-alter table table-name modify column-name datatype;
e.g.:- alter table Student modify address varchar(30);

To Rename a column-Using alter command you can rename an existing column.
Syntax:-alter table table-name change old-column-name new_ column-name;
e.g:-alter table Student change address Location;

To Drop a Column- alter command is also used to drop columns also.
Syntax:-alter table table-name drop(column-name)
e.g.alter table Student drop column (address);

DDL - Drop command-This command **permanently removes a table** from database.
Syntax:-drop table table-name **e.g**. :-drop table Student;

To drop a database,- drop database Test;

DML Commands

SELECT - Used for making queries
INSERT - Used for adding new row or record into table
UPDATE- used for modification in existing data in a table
DELETE – used for deletion of records.

To insert records into specific columns Syntax: insert into table_name(column_name1, column_name2…)values (value1,value2….); e.g. INSERT INTO student (rollno,name) VALUES(101,'Rohan');	**insert records in all the columns** insert into table_name values(value1,value2……); e.g.INSERT INTO student VALUES(101,'Rohan','XI',400,'Jammu');
UPDATE table-name set column-name = value where condition; e.g. UPDATE Student set s_name='Abhi',age=17 where s_id=103;	(i) **to Delete all Records from a Table** DELETE from table-name; E.g. DELETE from Student; (ii) **to Delete a particular Record from a Table** e.g. DELETE from Student where s_id=103;

Constraints: Constraints are the conditions that can be enforced on the attributes of a relation. The constraints come in play whenever we try to insert, delete or update a record in a relation. They are **used to ensure integrity of a relation**, hence named as integrity constraints.

1. NOT NULL 2. UNIQUE 3. PRIMARY KEY

i. **Not Null constraint** : It ensures that the column cannot contain a NULL value.
ii. **Unique constraint** : A candidate key is a combination of one or more columns, the value of which uniquely identifies each row of a table.
iii. **Primary Key** : It ensures two things :
(i) Unique identification of each row in the table.
(ii) No column that is part of the Primary Key constraint can contain a NULL value.
