Relational Database Management System

What is a Database?

- A *database* is a set of data stored in a computer. This data is usually structured in a way that makes the data easily accessible.

What is a Relational Database?

- A *relational database* is a type of database. It uses a structure that allows us to identify and access data *in relation* to another piece of data in the database. Often, data in a relational database is organized into tables.

Tables: Rows and Columns

- Tables can have hundreds, thousands, sometimes even millions of rows of data. These rows are often called *records*.

- Tables can also have many *columns* of data. Columns are labelled with a descriptive name (say, age for example) and have a specific *data type*.

- For example, In the table below, there are three columns (name, age, and country). The name and country columns store string data types, whereas age stores integer data types.

Name	Age	Country
Salman	18	Pakistan
Ikrama	19	Canada
Ahsan	21	Qatar
Ali	20	Saudi Arabia

What is a Relational Database Management System (RDBMS)?

- A relational database management system (RDBMS) is a program that allows you to create, update, and administer a relational database.

Popular Relational Database Management Systems

- ✓ MySQL
- ✓ PostgreSQL
- ✓ Oracle DB
- ✓ SQL Server
- ✓ SQLite

- Most relational database management systems use the SQL language (database language) to access the database .

Structured Query Language(SQL)

- Structured Query Language(SQL) as we all know is the database language by the use of which we can perform certain operations on the existing database and also we can use this language to create a database. SQL uses certain commands like Create, Drop, Insert etc. to carry out the required tasks.

- These SQL commands are mainly categorized into four categories as:

✓DDL – Data Definition Language
✓DQL – Data Query Language
✓DML – Data Manipulation Language
✓DCL – Data Control Language

1-DDL – Data Definition Language

DDL is used for specifying the database schema

1. **CREATE** – is used to create the database or its objects (like table, index, function, views, store procedure and triggers).
2. **DROP** – is used to delete objects from the database.
3. **ALTER**-is used to alter the structure of the database.
4. **TRUNCATE**–is used to remove all records from a table, including all spaces allocated for the records are removed.
5. **COMMENT** –is used to add comments to the data dictionary.
6. **RENAME** –is used to rename an object existing in the database.

2-DML(Data Manipulation Language)

- The SQL commands that deals with the manipulation of data present in the database belong to DML

1. **INSERT** – is used to insert data into a table.
2. **UPDATE** – is used to update existing data within a table.
3. **DELETE** – is used to delete records from a database table.

3-DQL (Data Query Language)

- **SELECT** – is used to retrieve data from the a database.

4-DCL(Data Control Language)

Mainly deals with the rights, permissions and other controls of the database system.

1. **GRANT**-gives user's access privileges to database.
2. **REVOKE**-withdraw user's access privileges given by using the GRANT command.

“In practical data definition language, data manipulation language, DQL (Data Query Language) and data control languages are not separate language; rather they are the parts of a single database language such as SQL.”

Types of SQL Commands