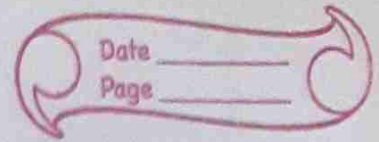


# \* SQL \*



Database: all how the data is stored, and accessed electronically.

The data is arranged in a proper structure which is easy to manage, update.

Database Management Systems:

a software that allows users to access & manage the database, allows users to define, create, maintain the datasets.

→ It acts as an Interface b/w users & the database.

Types of databases: Generally we store the in different formats & we access them NoSQL, Cloud, Distributed, databases etc. (MySQL)

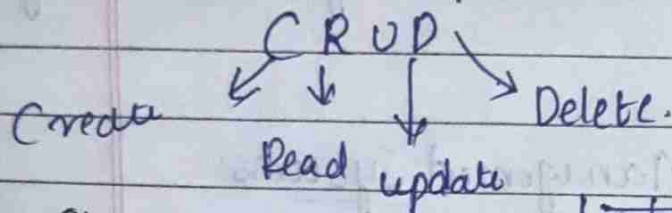
Relational database → data stored in tables.

Non relational database → stored in some other format rather than  
↓  
(MongoDB) storing in tables format.

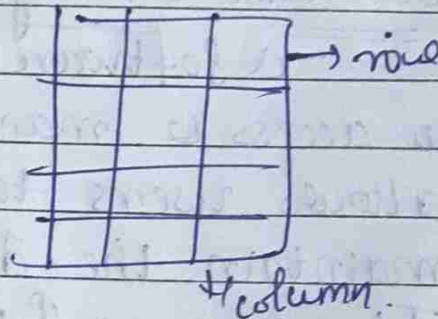
Relational databases are created using SQL programming language.

SQL → Structured Query Language.

→ 4 Roots (or) pillars



Structure of table



SQL Commands:

- DDL (Data Definition Language)
- DQL (Data Query Language)
- DML (Data Manipulation Language)
- DCL (Data Control Language)
- TCL (Transaction Control Language)

DDL (create, drop, alter, truncate, rename)

DQL (select)

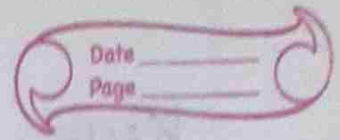
DML (insert, update, delete, lock)

DCL (grant, revoke)

TCL (Begin, transaction, commit, rollback, save)



→ Notes: Sql is not Case Sensitive.



### SQL datatypes:

→ We use various datatypes to store the data according to specific format

→ Most used:

• INT, CHAR, VARCHAR, STRING, BOOL, etc. ....

### Creating Database:

→ Query:

```
create database "db name";
```

### Deleting DB:

→ Query:

```
Drop database "db name";
```

### Use DB:

→ Query:

```
use db name;
```

### → Creating table:

```
create table "tablename" (col1 datatype,  
col2 datatype, ....);
```

→ autoincrement → increment itself

→ Not Null → Not empty, simply blank.

→

## Keys:

Date \_\_\_\_\_

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- Primary keys: a Unique Identifier of each record (table) of a database.
- Foreign keys: it refers to primary key of another table.
- Primary keys must not be null.  
foreign keys can be multiple & null to.

## Inserting the data to tables:

- Single Value:  
`insert into table_name (col1, col2, ...) values (v1, v2, ...);`
- Multiple Value:  
`insert into table_name (col1, col2, ...), values (v1, v2), (v3, v4), ...;`



Select: it is used to retrieve the data from the records.

- (specific column selection)  
→ select col<sub>1</sub>, col<sub>2</sub> from table name;  
→ select \* from table name;  
(\* indicates all the data in the table.

### Constraints:

Specify rules for data in a table

\* Not Null: → Columns can't be null.

col-name datatype not null.

\* Primary key, Unique key

\* Unique key: Ensures the values are unique from rest of record

Eg: Username varchar(255) Unique;

\* Default: provides a default value for a column, where no value is specified.

\* Check: ensures that all values are satisfied are not.

\* Where: filter the records from the database  
filter data from records.

select col1, col2 from tablename  
where condition;

→ Operators:

→ Arithmetic (+, -, \*, /)

→ Comparison (=, !=, <=)

→ Logical (and, or, not)

→ Bitwise (&, ||)

Order by: Set in Ascending / Descending  
Order.

→ Limit.

Aggregate functions:

→ count

→ max

→ min

→ sum

→ avg



→ alter table: adding the columns to existing records.

Syntax: alter table table name  
add columnname datatype const;

alter table tablename modify  
columnname datatype const;  
→ (existing column)

alter table tablename drop column  
column\_name (drop column)  
→

Drop table:

→ drop table table name;  
removes table from a database.

Rename table:

→ rename table table name to  
new-table-name;

→ Changing the table names

Truncate table: deletes the data of a particular table rather than deleting the whole table from database.

## Joins:

Combining the data from multiple tables and generate a fresh table.

- Inner Join → Same columns from 2 tables
- Full Join → all columns from both tables.
- Left Join → data which are common to right table with left table & whole left table.
- Right Join: whole right table & common to left table.
- Cross Join: every Entity mapped to all entities of 2 table.
- rarely used.

## → Self Join:

Union: Combine the columns of select combinations.