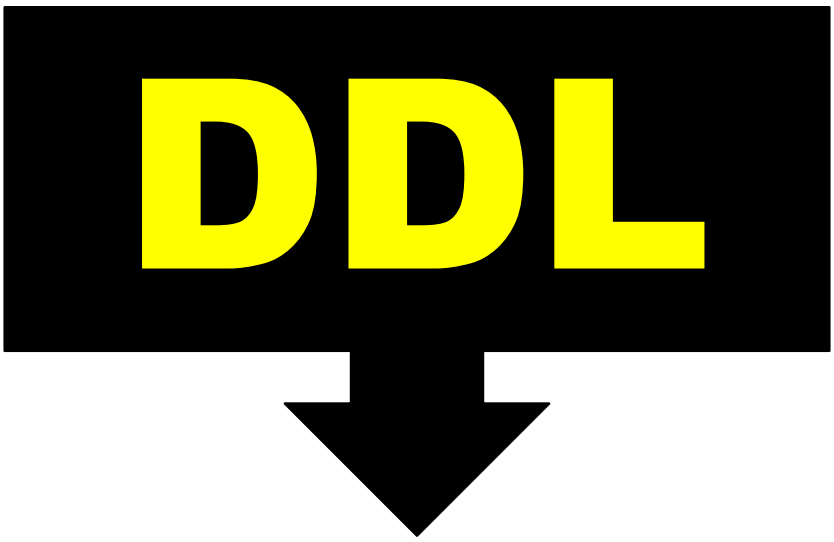
Commands

in

SQL



Data Definition Language (DDL)

- ✓ **DDL is a component of SQL which is used to create & modify the structure of Db-Objects in a Database.**
- ✓ **It is also called Data Description Language.**

Data Definition Language (DDL)

- ✓ **CREATE** (make a new DB or new Table)
- ✓ **DROP** (to delete a Table or a Database Object)
- ✓ **ALTER**
- ✓ **RENAME**
- ✓ **TRUNCATE**

CREATE Command

Syntax for Creating a Database

Mandatory

CREATE DATABASE dbname;

Syntax for Creating a Table

CREATE TABLE table_name (
Column1_name data_type(size),
Column2_name data_type(size),
.....);

Data Type → What type of data we need to store in the particular field.

Data Size → It defines the total length of a data object in a field.

Data Types

✓ Type of data/value an object can hold or process is known as it's Data Type.

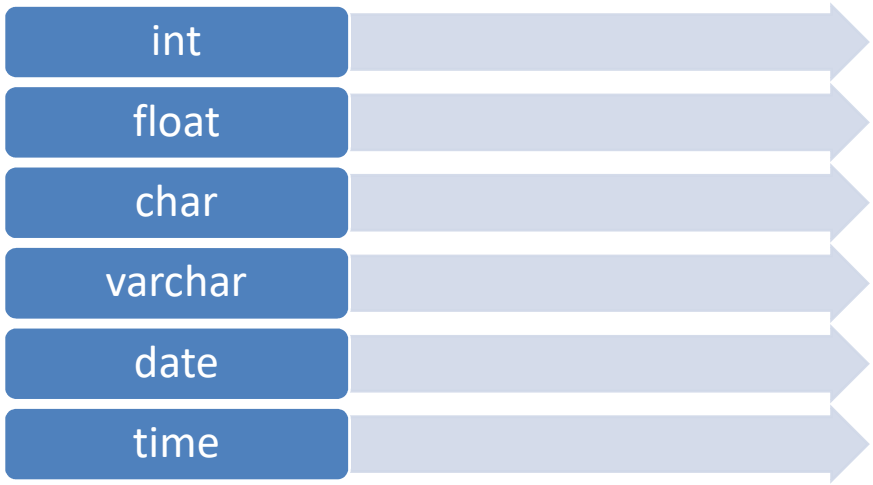
Size of a Data Type

- ✓ Size of a data type is the maximum value which an object can hold.
- ✓ Size determines the amount of data an object (or field) can hold.

SQL Data Type

- ✓ Exact Numeric Data Type:
  - (i) BIT → Binary Digit (0 or 1)
  - (ii) TINYINT → Can store value between 0 to 255
  - (iii) SMALLINT → Can store values between -32768 to +32768
  - (iv) INT → Can store values between -?? to +??
  - (v) BIGINT → Can store values between -?? to +??
  - (vi) DECIMAL → Can store values between -?? to +??

Most Common Data Types



Examples/Demo

- MySql> CREATE DATABASE feb2022
- MySql> USE feb2022
- MySql> CREATE TABLE students(enrolment_no varchar(6), faculty_no varchar(??), first_name varchar(20), last_name varchar(10), phone int(10), email_id varchar(??));

DROP Command

- ✓The **DROP command** can be used to drop *named schema elements, such as tables,* domains, types, or constraints.
- ✓DROP TABLE command is meant to be used for removing the table definition
- ✓ **DROP TABLE command** not only deletes all the records in the table if successful, but also removes the *table definition from the catalog*

DROP vs. DELETE Command

- ✓If it is desired to delete only the records but to leave the table definition for future use, then the **DELETE command** should be used instead of **DROP command**.

Syntax for DROP Command

Syntax for Droping a Table

DROP TABLE table_name;

Syntax for Droping a Database

DROP DATABASE dbname;

ALTER Command

✓ The **ALTER command** can be used to amend (modify) the structure of a Table or that of a database.

- ❖ Add new columns to a table
- ❖ Rename a columns in a table
- ❖ Delete a column in a table
- ❖ Change the data type or size of a column

Syntax for ALTER Command

Syntax for adding a new column in a Table:

ALTER TABLE table_name
ADD new_col_name data_type(size)
AFTER col_name;

Syntax for renaming a column in a Table:

ALTER TABLE table_name
CHANGE old_name new_name data_type(size);

Syntax for ALTER Command

Syntax for deleting a column from a Table:

ALTER TABLE table_name
DROP col_name;

RENAME Command

- ✓The **RENAME command** can be used to change the name of a **table** in a database.

- ✓Syntax for RENAME command is:

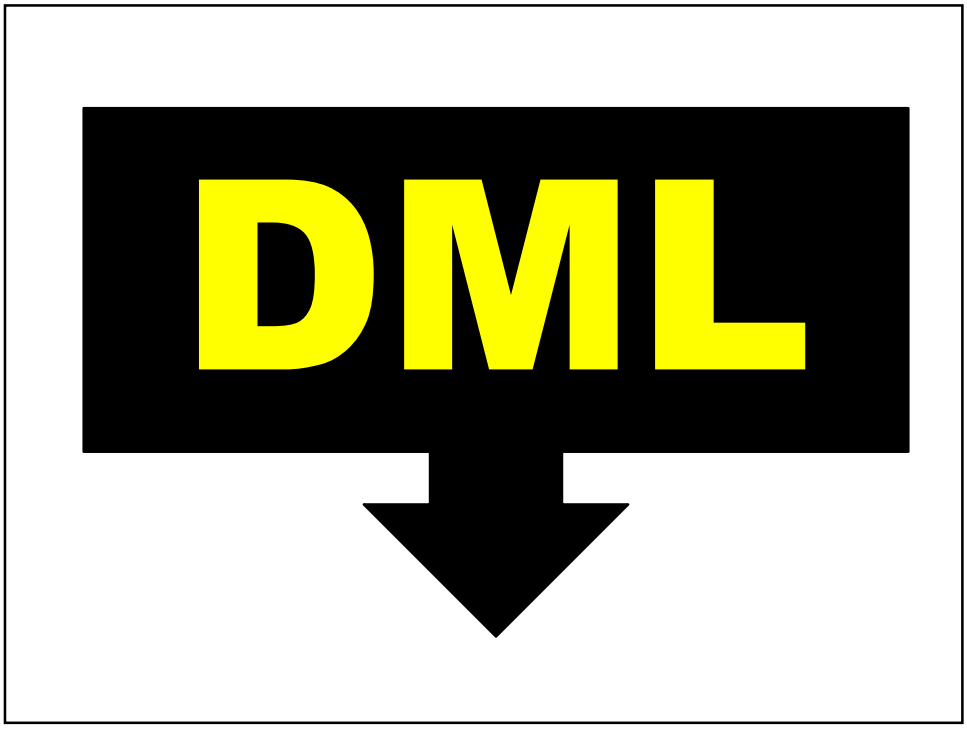
```
RENAME TABLE old_table_name
TO new_table_name;
```

TRUNCATE Command

- ✓The **TRUNCATE command** can be used to delete all the data in a **table** without affecting table structure.

- ✓Syntax for RENAME command is:

```
TRUNCATE TABLE table_name;
```



Data Manipulation Language (DML)

- ✓ Select
- ✓ Insert
- ✓ Update
- ✓ Delete

SELECT Command

- ✓ The **SELECT command** can be used to select a set of data (or information) from a table.
- ✓ One can retrieve information or view a set of information using SELECT command.
- ✓ **SELECT command** is used to query information from a table ➔ **DQL** (**D**ata **Q**uery **L**anguage)

Syntax of SELECT Command

- ✓ Syntax of **SELECT command** depends upon the requirement.
- ✓ SELECT command is used with different conditions and CLAUSES.
- ✓ Basic Syntax of SELECT command to view all the information stored in an existing table is:

  Mysql> **SELECT * FROM table_name;**

  (This command shall display all the records present in a non-empty table)

INSERT Command

- ✓ The **INSERT command** can be used to add new records (or rows) into an existing table.
- ✓ There are two methods of using this command.

Syntax of INSERT Commands

- ✓ Syntax-1 of **INSERT command**
- ✓ INSERT INTO table_name (column1_name, column2_name, ….,columnZ_name) VALUES (value1, value2,….,valueZ);

/ ** In this syntax, we need to specify names of all columns but the order of specifying columns does not matter **/

Syntax of INSERT Commands

✓ Syntax-2 of **INSERT command**

✓ INSERT INTO table_name VALUES (value1, value2,….,valueZ);

- ❑ In this syntax values are automatically added to the columns in the table
- ❑ Order of the columns in the table matters.
- ❑ We also need to remember the order of the table.

UPDATE Command

✓ The **UPDATE command** can be used to modify the existing data in a table.

Syntax:

```
UPDATE table_name SET
Column_name1 = value1, column_name2 = value2,
    …….
WHERE condition;
```

/** please note in UPDATE command **WHERE CLAUSE** is **extremely important**, otherwise over-updates are likely **/

Syntax of UPDATE Command

✓Syntax-1 of **UPDATE command**

/ ** In this syntax, we need to specify names of all columns but the order of specifying columns does not matter **/

DELETE Command

✓The **DELETE command** can be used to delete a record or a data in a table.

✓Syntax:

DELETE FROM table_name WHERE condition;

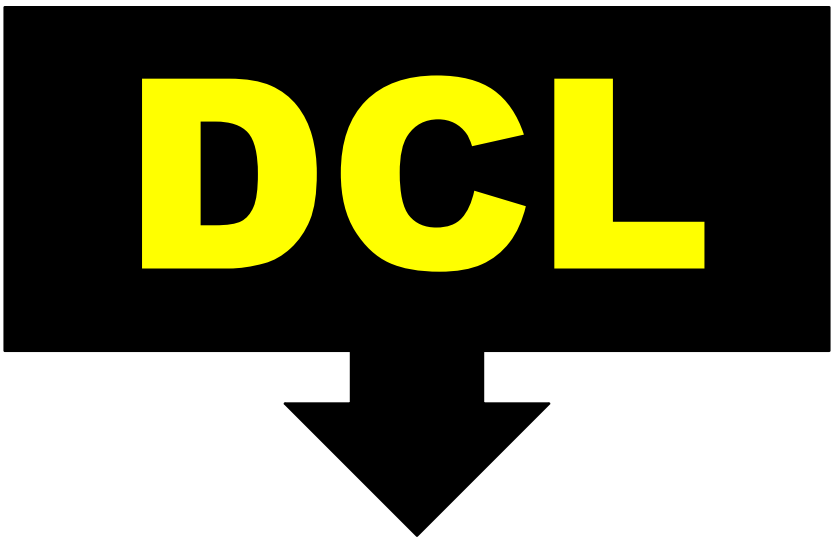
/** please note in DELETE command also **WHERE CLAUSE** is **extremely important**, otherwise each & every record shall get deleted and can't be recovered subsequently **/

Syntax of DELETE Commands

✓Syntax-1 of **DELETE command**

✓INSERT INTO table_name (column1_name, column2_name, ….,columnZ_name) VALUES (value1, value2,….,valueZ);

/ ** In this syntax, we need to specify names of all columns but the order of specifying columns does not matter **/



What is DCL?

- A Data Control Language(DCL) is a programming language that is used to control user access to data stored in a Database.
- DCL is a component of SQL which is related to the security issues of a database.

Data Control Language (DCL)

- ✓ **Grant**
- ✓ **Revoke**

GRANT/REVOKE Command

- ✓The **GRANT command** is used to allow a user to access a database.
- ✓The **REVOKE command** is used to deny a user from accessing a database.

DB-Operations

System Operations

- All the database system operations like:
  - Creating a Database
  - Creating a Table, etc.

Object Operations

- All the database table operations, such as:
  - Viewing a Table
  - Altering a Table, etc.

With the help of DCL, we can select which user(s) can perform **system operations** & which user(s) can perform **Object Operations**

DCL Examples

(i) To allow an user to create a table in a database

GRANT CREATE ANY TABLE TO username;

(ii) To prevent an user from creating a table in a database

REVOKE CREATE ANY TABLE TO username;

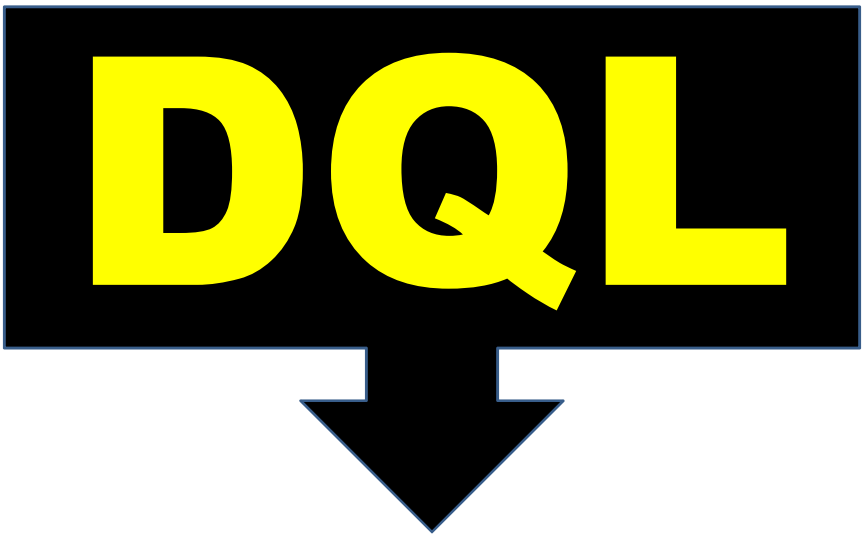
DCL Examples

(iii) To allow an user to drop a table in a database

GRANT DROP ANY TABLE TO username;

(iv) To prevent an user from droping any table in a database

REVOKE DROP ANY TABLE TO username;



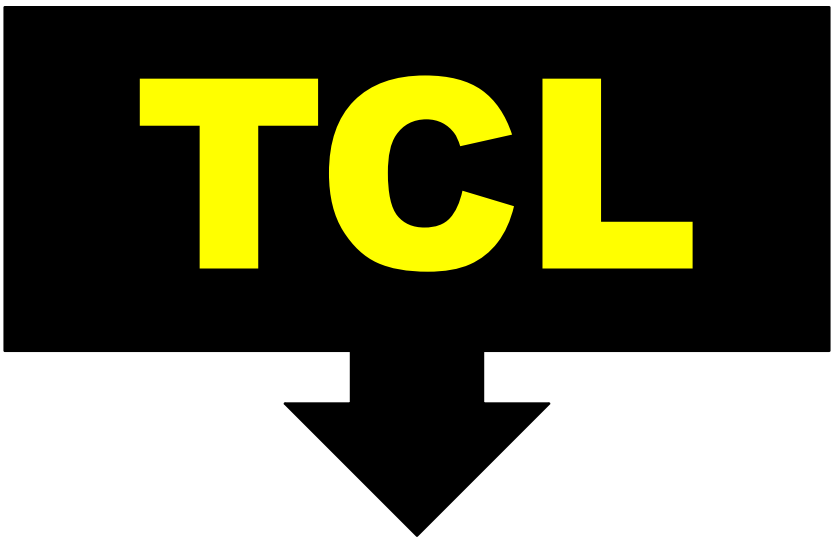
Data Query Language

- Queries can be understood as the commands which interacts with database tables to work around with data.
- Some of the commonly used MySQL queries, operators, and functions are as follows :

Sr.#	Query	Output
1	SHOW DATABASES;	Displays information of all the existing databases in the server.
2	USE db_name;	Sets the db_name as the current database in the MySQL server.
3	SELECT DATABASE();	Displays the current database name which is set.
4	DESCRIBE table_name;	Describes the columns of the *table_name* with respect to Field, Type, Null, Key, Default, Extra.

Data Query Language

Sr.#	Query	Output
5	SHOW TABLES;	Shows all the tables in the selected database.
6	SELECT NOW();	Shows the current date and time on MySQL Server.
7	SELECT CURDATE();	Shows the current date only (without time) on MySQL Server.
8	SELECT 5+7, CURDATE();	Example of Select Statement without any table. Students to check the output & discuss.
9	/* Some text shall be typed across multiple lines. */	Multi-Line Comment's Syntax
10	# Some text shall be typed in a single line.	Single-Line Comment's Syntax
11	-- Some text in-line, at RHS of SQL statements.	In-line Comment's Syntax



Transaction Control Language (TCL)

- ✓Commit
- ✓Roll back
- ✓Save point

Constraints

- ✓Primary Key
- ✓Foreign Key
- ✓Check
- ✓Unique
- ✓Default
- ✓Not NULL