Assignment 1

Database Schema - It is a skeleton structure that represents the logical view of the entire database. It defines how data is organized and how the relations among them are associated. It formulates all the constraints that are to be applied on the data.

DDL and DML -

DDL (Data Definition language) - It is used to create the database schema and can also be used to define some constraints. It basically defines the columns (Attributes) of the table. DDL does not have any further classification. Basic commands present in DDL are create, drop, rename, alter, etc. DDL does not use Where clause in its statements.

DML (Data Manipulation language) - It is used to add, retrieve or update the data. It adds/ updates the rows of the table (called as tuples). It is classified into Procedural and Non Procedural Data Manipulation language. Basic DML commands are - update, insert, merge, etc. DML uses Where clause in its statements whenever required.

MySQL Data Types - MySQL uses many different data types broken into 3 categories -

1. Numeric Data Types –

– INT(size), TINYINT(size), SMALLINT(size), BIGINT(size), MEDIUMINT(size)

You can specify width upto	Type	Length in bytes	Minimum value (Signed)	Maximum value (Signed)	Minimum value (unsigned)	Maximum value (unsigned)
4 digits	TINYINT	1	-128	127	0	255
5 digits	SMALLINT	2	-32768	32767	0	65535
9 digits	MEDIUMINT	3	-8388608	8388607	0	16777215
11 digits	INT	4	-2147483648	2147483647	0	4294967295
20 digits	BIGINT	8	-9223372036854775808	9223372036854775807	0	18446744073709551615

Float and Double types represent the approximate numeric types. MySQL uses 4 bytes for single precision and 8 bytes for double precision values.

FLOAT(M,D) – A floating point number that cannot be unsigned. You can define the display length M and the no. of decimals D. This is not required and will default to 10,2 where 2 is the number of decimals and 10 is the total no. of digits including the decimals. Decimal precision can go upto 24 places for a float.

DOUBLE(M,D) – A double precision floating point number that cannot be unsigned. You can define the display length M and the number of decimals (D). This is not required & it will default to 16,4 where 4 is the number of decimals. Decimal precision can go upto 53 places for DOUBLE. REAL is a synonym for DOUBLE.

DECIMAL(M,D) – An unpacked floating point number that cannot be unsigned. In unpacked decimals, each decimal corresponds to a byte. Defining the display length M and the number of decimals D is required.
NUMERIC is synonym for DECIMAL.

String Datatypes

CHAR(M) – A fixed length string between 1 and 255 characters in length. It is right padded with spaces to the specified length when stored. Defining a length is not required but the default is 1.

VARCHAR(M) – A variable length string between 1 and 255 characters in length. For eg- VARCHAR(25). You must define a length when creating a VARCHAR field.

BLOB/TEXT – A field with a maximum length of 65535 characters. BLOBs are "Binary Large Objects" and are used to store large amounts of binary data

such as images or other types of files. Fields defined as texts also hold large amounts of data. The difference between the 2 is that sorts & comparisons on the stored data are case sensitive on BLOBS and not case sensitive in TEXT fields. You do not specify a length with BLOB/TEXT.

TINYBLOB/TINYTEXT - A blob/text column with a maximum length of 255 characters. You do not specify a length with tinyblob or tinytext.

MEDIUMBLOB/MEDIUMTEXT - A blob/text column with maximum length of ~~4294967295 characters~~. 16777215 characters. You do not specify a length with MEDIUMBLOB/MEDIUMTEXT.

LONGBLOB/LONGTEXT - A BLOB/TEXT column with maximum length of 4294967295 characters. You do not specify a length with LONGBLOB or LONGTEXT.

ENUM - An enumeration or a list. While defining an enum you are creating a list of items from which the value must be selected or it can be NULL. For eg - if you wanted your field to contain "A" or "B" or "C" you could define your enum as ENUM('A', 'B', 'C') and only those values or NULL could ever populate that field.

Create table command with the following integrity constraints - PRIMARY KEY, UNIQUE, NOT NULL, DEFAULT, AUTO INCREMENT Feature,

The create table command is used to create a new table in the database. MySQL constraints are used to define rules or to restrict what values can be stored in tables columns. Purpose of inducing constraints is to maintain integrity of database.

1. Primary Key - A primary key is a field that can uniquely identify ~~the~~ each row in a table. This constraint enforces the table to accept unique data which is not null for a specific column. A primary key can be simple or composite (multiple columns). A table can have only 1 primary key.

2. Unique - The unique constraint in MySQL does not allow to insert a duplicate value in a column. The unique constraint maintains the uniqueness of a column in a table. More than one unique column can be used in a table.

3. NOT NULL - In MySQL, NOT NULL constraint allows to specify that a table cannot contain any NULL value. MySQL NOT NULL can be used to create and alter a table.

4. DEFAULT - In MySQL, each column must contain a value (at least a NULL value). While inserting data into a

table, if no value gets supplied to a column then the column gets the value set as DEFAULT.

Auto Increment Feature - It allows a unique number to be generated automatically when a new record is inserted into the table.

ALTER table command - The ALTER TABLE is used to add, delete or modify columns in an existing table. It is also used to add & drop various constraints on an existing table. eg-

```
ALTER TABLE Customers
ADD Email VARCHAR(50);
```

```
ALTER TABLE Customers
DROP Column Email;
```

DROP table command - This command is used to remove the table from the database.

eg- DROP table Student;