2. DDL queries
Instructor: Bidur Devkota
13th Sept 2020

Data Definition Language (DDL)
- includes SQL commands that define the database schema. i.e. about "metadata".
- DDL works to add / alter / delete the logical structures that contain the data
- DDL allows to access / maintain the data (databases, tables, keys, views...).
- E.g. CREATE, ALTER and DROP statements.

Data types:
MySQL supports SQL data types in several categories: numeric types, date and time types, string (character and byte) types, spatial types,etc. More details are available in the MySQL documentation.
https://dev.mysql.com/doc/refman/5.7/en/data-types.html

MySQL DATA TYPES

DATE TYPE	SPEC	DATA TYPE	SPEC
CHAR	String (0 - 255)	INT	Integer (-2147483648 to 214748-3647)
VARCHAR	String (0 - 255)	BIGINT	Integer (-9223372036854775808 to 9223372036854775807)
TINYTEXT	String (0 - 255)	FLOAT	Decimal (precise to 23 digits)
TEXT	String (0 - 65535)	DOUBLE	Decimal (24 to 53 digits)
BLOB	String (0 - 65535)	DECIMAL	"DOUBLE" stored as string
MEDIUMTEXT	String (0 - 16777215)	DATE	YYYY-MM-DD
MEDIUMBLOB	String (0 - 16777215)	DATETIME	YYYY-MM-DD HH:MM:SS
LONGTEXT	String (0 - 4294967295)	TIMESTAMP	YYYYMMDDHHMMSS
LONGBLOB	String (0 - 4294967295)	TIME	HH:MM:SS
TINYINT	Integer (-128 to 127)	ENUM	One of preset options
SMALLINT	Integer (-32768 to 32767)	SET	Selection of preset options
MEDIUMINT	Integer (-8388608 to 8388607)	BOOLEAN	TINYINT(1)

1. Create Database

Syntax:
```
CREATE DATABASE <DatabaseName>
```

Example:

```
CREATE DATABASE infomax;
```

```
mysql> create database infomax;
Query OK, 1 row affected (0.00 sec)
```

```
USE infomax;
```

2. Create Table
Syntax:
```
CREATE TABLE <TableName> (
   <Column1> <DataType>,
   <Column2> <DataType>,
   .
   .
   .
   <ColumnN> <DataType>,
   )
```

Example:

```
CREATE TABLE students (
   roll INT,
   name VARCHAR(50),
   phone INT,
   sem VARCHAR(20)
   );
```

3. ALTER Table

To modify the tables to add, rename, edit or delete a column .

3.1 ADD Column
Syntax:
```
ALTER TABLE <TableName> ADD <ColumnName> <DataType>

ALTER TABLE students ADD department VARCHAR(20);

desc students;
```

```
mysql> desc students;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| roll       | int(11)     | YES  |     | NULL    |       |
| name       | varchar(50) | YES  |     | NULL    |       |
| phone      | int(11)     | YES  |     | NULL    |       |
| sem        | varchar(20) | YES  |     | NULL    |       |
| department | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

3.2. **Modify column name and datatype**
  Syntax:
  ALTER TABLE <TableName> CHANGE <OldColumnName>
    <NewColumnName> <NewDataType>

  ALTER TABLE students CHANGE sem semester INT;

  Modify Datatype only
  Syntax:
  ALTER TABLE <TableName> MODIFY <ColumnName> <NewDataType>

  ALTER TABLE students MODIFY semester VARCHAR(20);

  3.3 Rename table

  Syntax:

  ALTER TABLE <TableName> RENAME TO <NewTableName>

  ALTER TABLE students RENAME TO infomax_students;

```
mysql> show tables
    -> ;
+----------------+
| Tables_in_test |
+----------------+
| contacts       |
| students       |
+----------------+
2 rows in set (0.00 sec)

mysql> ALTER TABLE students RENAME TO  infomax_students;
Query OK, 0 rows affected (0.11 sec)

mysql> show tables
    -> ;
+------------------+
| Tables_in_test   |
+------------------+
| contacts         |
| infomax_students |
+------------------+
2 rows in set (0.00 sec)
```

3.4 Delete column

Syntax:

```
ALTER TABLE <TableName> DROP COLUMN <ColumnName>;

ALTER TABLE students DROP COLUMN phone;
```

```
mysql> describe students;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| roll       | int(11)     | YES  |     | NULL    |       |
| name       | varchar(50) | YES  |     | NULL    |       |
| phone      | int(11)     | YES  |     | NULL    |       |
| semester   | varchar(20) | YES  |     | NULL    |       |
| department | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> ALTER TABLE students DROP COLUMN phone;
Query OK, 0 rows affected (0.57 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> describe students;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| roll       | int(11)     | YES  |     | NULL    |       |
| name       | varchar(50) | YES  |     | NULL    |       |
| semester   | varchar(20) | YES  |     | NULL    |       |
| department | varchar(20) | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

4. Delete table

Syntax:

```
DROP TABLE <TableName>

DROP TABLE students;
```

```
mysql> show tables;
+-------------------+
| Tables_in_infomax |
+-------------------+
| students          |
+-------------------+
1 row in set (0.01 sec)

mysql> DROP TABLE students;
Query OK, 0 rows affected (0.18 sec)

mysql> show tables;
Empty set (0.00 sec)
```

5. Delete Database

Syntax:
```
DROP DATABASE <DatabaseName>

DROP DATABASE infomax;
```

Task:

1. Complete the above examples.
Instead of the table name **student** create new table with name `your-name_roll`.
For e.g. if your name is Ram and your roll number is **100** then you have to create table named `ram-100`.

Submission:
1. Title: 2. DDL Queries.
2. Theory: Explain about the related queries(syntax, Descriptions)
3. Observations: **Queries** you run and their **screenshot**.
4. Conclusion

Note:
1. Submit a file with name **<2_DDL_Queries_ROLL_NAME.pdf>**
 For example student '**Ram**' with roll number '**100**' should send a file named:
        2_DDL_Queries_100_Ram.pdf
2. Copying will be marked ZERO.
3. Send as email attachment to bidur.devkota@infomaxcollege.edu.np
4. Email Subject: **2. DDL Queries**