Components of a Database

User - Users are the one who really uses the database. Users can be administrator, developer or the end users.

Data or Database - As we discussed already, data is one of the important factor of database. A very huge amount of data will be stored in the database and it forms the main source for all other components to interact with each other.

There are two types of data.

1. User data. It contains the data which is responsible for the database, i.e.; based on the requirement, the data will be stored in the various tables of the database in the form of rows and columns.

2. Metadata. It is known as 'data about data', i.e.; it stores the information like how many tables, their names, how many columns and their names, primary keys, foreign keys etc. basically these metadata will have information about each tables and their constraints in the database.

DBMS - This is the software helps the user to interact with the database. It allows the users to insert, delete, update or retrieve the data. All these operations are handled by query languages like MySQL, Oracle etc.

Database Application - It the application program which helps the users to interact with the database by means of query languages. Database application will not have any idea about the underlying DBMS.

DBMS Statements

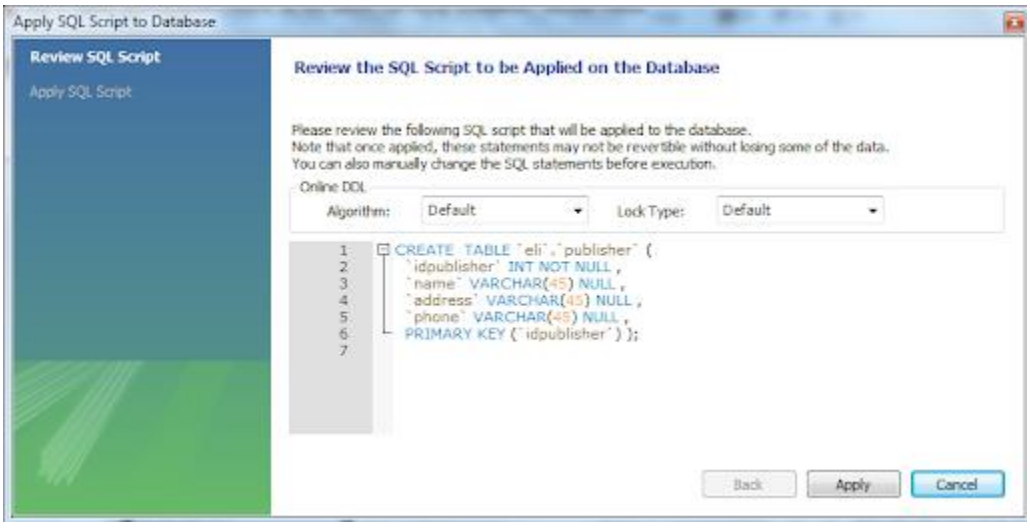
Data Definition Language

- CREATE – used to create objects in database
- ALTER – alter the pattern of database
- DROP – helps in detecting objects
- RENAME – useful in renaming an object

CREATE statement or command is used to create a new database. In structured query language the create command creates an object in a relational database management system.

The commonly used create command is as follows

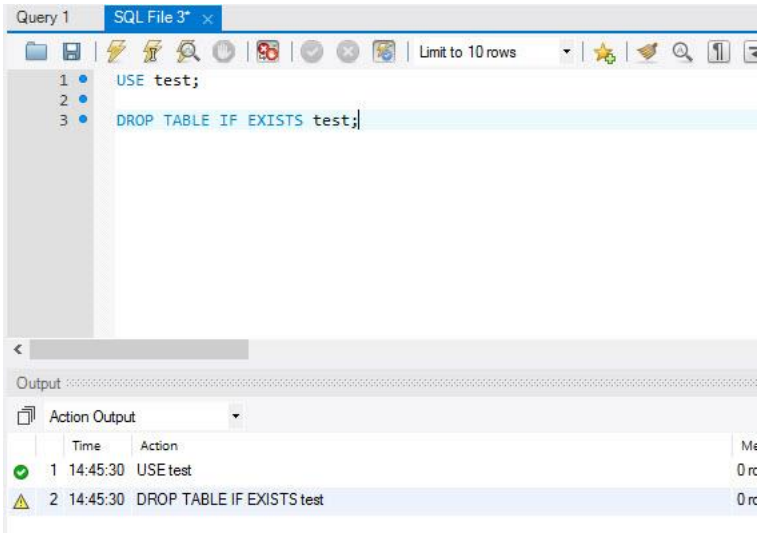
CREATE TABLE [name of table] ([definitions of column]) [parameters of table]



DROP statement destroys or deletes database or table. In structured query language, it also deletes an object from relational database management system.

Typically used DROP statement is;

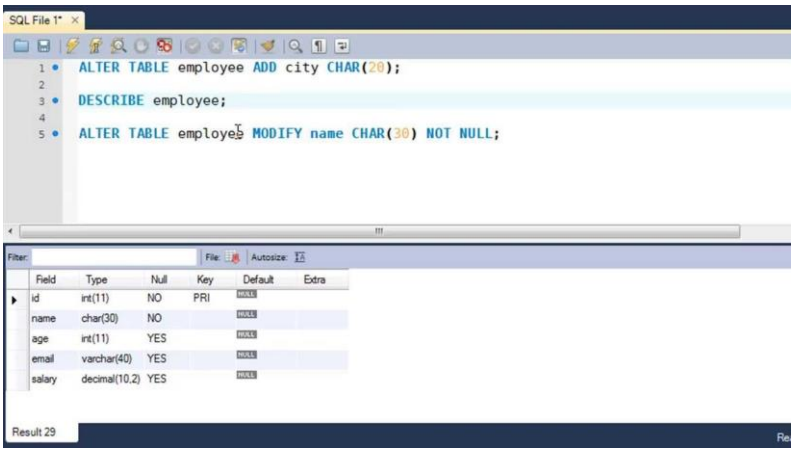
DROP type of object name of object



ALTER statement enhance the object of database. In structured query language it modifies the properties of database object.

The ALTER statement is:

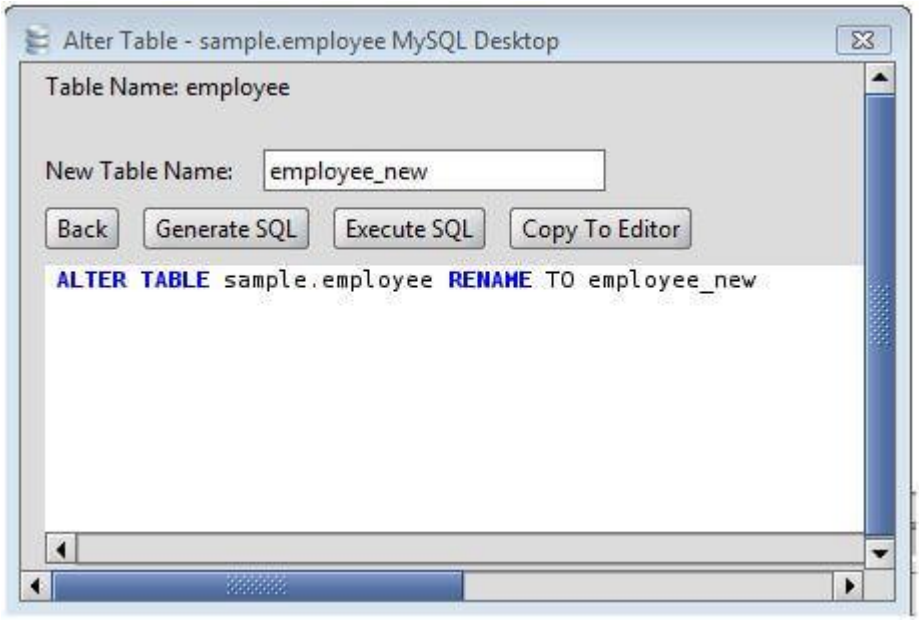
ALTER type of object name of object



RENAME statement is used to rename a database.

It's statement is as follows:

RENAME TABLE old name of table to new name of table.



Data Manipulation Language

It has statements which are used to manage the data within the pattern of objects. Some of the samples of the statements are as follows:

- SELECT – useful in holding data from a database
- INSERT – helps in inserting data in to a table
- UPDATE – used in updating the data
- DELETE – do the function of deleting the records
- MERGE – this do the UPSERT operation i.e. insert or update operation

The **SELECT** statement allows you to read data from one or more tables. To write a SELECT statement in MySQL, you follow this syntax:

```
SELECT column_name FROM table_name;
```

The **INSERT INTO** statement is used to add new records to a MySQL table:

```
INSERT INTO table_name (column1, column2, column3,...)
VALUES (value1, value2, value3,...)
```

The **UPDATE** statement is used to update existing records in a table:

```
UPDATE table_name
SET column1=value, column2=value2,...
WHERE some_column=some_value
```

Notice the WHERE clause in the UPDATE syntax: The WHERE clause specifies which record or records that should be updated. If you omit the WHERE clause, all records will be updated!

The **DELETE** statement is used to delete records from a table:

```
DELETE FROM table_name
WHERE some_column = some_value
```

Notice the WHERE clause in the DELETE syntax: The WHERE clause specifies which record or records that should be deleted. If you omit the WHERE clause, all records will be deleted!

These syntax elements are similar to the syntax elements used in computer programming language.

Transaction Control Language

It has commands which are used to manage the transactions or the conduct of a database.

Some examples of it are:

 COMMIT – use to save work

 SAVE POINT – helps in identifying a point in the transaction, can be rolled back to the identified point

 ROLL BACK – has the feature of restoring the database to the genuine point, since from the last COMMIT

 SET TRANSACTION – have parameter of changing settings like isolation level and roll back point

COMMIT command permanently save the transaction in to database.

It's syntax is: Commit;

ROLL BACK command uses the save point command to jump to save point in transaction.

It' s syntax is: rollback to name-save point;

SAVE POINT command is used to save a transaction temporarily.

It's syntax is: Save point name-save point;

HANDS-ON APPLICATION USING:
https://www.mysqltutorial.org/tryit/