# Create TABLE(s)  and Temp Table(s)

# What is Table ?

- **Tables** are database objects that contain all the data in a database. .
- In **tables**, data is logically organized in a row-and-column format.
- Each row represents a unique record.
- Each column represents a field in the record.
- With up to 4096 columns in each table.
- The internal representation of a MySQL table has a maximum row size limit of 65,535 bytes.

# CREATE TABLE Statement

- Specify the schema to which the new table belongs.
- Specify the name of the new table.
- Each table should have a primary key which consists of one or more columns. Typically, you list the primary key columns first and then other columns.
- Each column has an associated data type specified after its name in the statement.
  - Numeric Datatypes
  - Text data type
  - Date and Time data types
- A column may have one or more column constraints such as NOT NULL and UNIQUE.
- A table may have some constraints specified in the table constraints section such as FOREIGN KEY, PRIMARY KEY, UNIQUE and CHECK.

# CREATE TABLE Statement (Data Types)

| Data type Name | Normal Range | Unsigned Range |
|---|---|---|
| TINYINT() | -128 to 127 UNSIGNED. | 0 to 255 |
| SMALLINT() | -32768 to 32767 | 0 to 65535 |
| MEDIUMINT() | -8388608 to 8388607 UNSIGNED. | 0 to 16777215 |
| INT( ) | -2147483648 to 2147483647 | 0 to 4294967295 |
| BIGINT( ) | -9223372036854775808 to 9223372036854775807 | 0 to 18446744073709551615 |

| Data type name | Type | Range |
|---|---|---|
| CHAR( ) | fixed string | 255 characters |
| VARCHAR( ) | Variable string | 255 characters |
| TINYTEXT | string | 255 characters |
| TEXT | string | 65535 characters |
| MEDIUMTEXT | string | 16777215 characters |
| LONGTEXT | string | 4294967295 characters |

| Data type Name | Format |
|---|---|
| DATE | YYYY-MM-DD |
| DATETIME | YYYY-MM-DD HH:MM:SS |
| TIMESTAMP | YYYYMMDDHHMMSS |
| TIME | HH:MM:SS |

# CREATE TABLE Statement

- You can use any of the following table constraints.
  - **NOT NULL:** Ensures that the value of the column must not be null
  - **CHECK:** Before inserting data in the table, it evaluates the condition specified in the CHECK constraint. If the condition fails, then the insert statement fails
  - **DEFAULT:** Default values of the column. If you do not specify the value of the column in the insert statement, the query inserts the value specified in the DEFAULT constraint
- Once columns are defined, you can create primary key and foreign keys using the following keywords
  - **PRIMARY KEY:** It's a unique index and must be defined as NOT NULL. A table can have only one primary key. The PRIMARY KEY is placed first in the create table statement
  - **FOREIGN KEY:** MySQL supports the foreign keys. A table can have more than one foreign key that references the primary key of different tables

# CREATE TABLE

***CREATE TABLE 'schemaname'.'tablename'***

***(column_1 datatype (length) NOT NULL | DEFAULT | UNIQUE,  ...,***

***Primary key,***

***Foreign key ) ENGINE=storage_engine;***

# CREATE table example

```
CREATE TABLE `employees`.`tblemployee` (
  `Employee_ID` INT NOT NULL AUTO_INCREMENT,
  `Employee_Name` VARCHAR(45) NOT NULL,
  `Employee_Department_ID` INT NOT NULL,
  `Employee_Grade_ID` INT NOT NULL DEFAULT A,
  `Employee_Salary` INT NOT NULL,
  PRIMARY KEY (`Employee_ID`),
  INDEX `FK_Department_ID_idx` (`Employee_Department_ID` ASC) VISIBLE,
  CONSTRAINT `FK_Department_ID`
    FOREIGN KEY (`Employee_Department_ID`)
    REFERENCES ` employees`.`department` (`Department_ID`)
    ON DELETE RESTRICT
    ON UPDATE CASCADE);
```

# What is Temporary (temp) Table

- In MySQL, a temporary table is a special type of table that allows you to store a temporary result set, which you can reuse several times in a single session.
- A temporary table is very handy when it is impossible or expensive to query data that requires a single SELECT statement with the JOIN clauses. In this case, you can use a temporary table to store the immediate result and use another query to process it.
- A MySQL temporary table has the following specialized features:
- A temporary table is created by using CREATE TEMPORARY TABLE statement. Notice that the keyword TEMPORARY is added between the CREATE and TABLE keywords.
- MySQL removes the temporary table automatically when the session ends or the connection is terminated. Of course, you can use the  DROP TABLE statement to remove a temporary table explicitly when you are no longer use it.
- A temporary table is only available and accessible to the client that creates it. Different clients can create temporary tables with the same name without causing errors because only the client that creates the temporary table can see it. However, in the same session, two temporary tables cannot share the same name.

# Create Temporary (temp) Table

- *CREATE TEMPORARY TABLE table_name (column_1_definition, column_2_definition, ..., table_constraints);*
- *CREATE TEMPORARY TABLE temp_table_name SELECT * FROM original_table LIMIT 0;*
- *CREATE TEMPORARY TABLE credits (customerNumber INT PRIMARY KEY,creditLimit DEC(10,2));*
- *DROP TEMPORARY TABLE top_customers;*