

**ITC 250/CPET 499 Web Systems**  
**Oct. 26, 2017**  
**Managing MySQL Database**  
**Part 2 of 3**

**MySQL Topics of Discussion**

- A) SQL Statement Syntax**
- B) SQL Statement Examples**
- C) phpMyAdmin Password**
- D) MySQL Root Password**
- E) Grant User Access to Tables**
- F) Planning Your Database Tables**

**A) SQL Statement Syntax (Current version 5.7, 10/25/2017)**

- 1. Data Definition Statements, <https://dev.mysql.com/doc/refman/5.7/en/sql-syntax-data-definition.html>**
  - ALTER: DATABASE, EVENT, FUNCTION, INSTANCE, LOGFILE GROUP, SERVER, TABLE, TABLE SPACE
  - CREATE: DATABASE, EVENT, FUNCTION, INDEX, LOGFILE GROUP, PROCEDURE, SERVER, TABLE, TABLE SPACE, VIEW
  - DROP: DATABASE, EVENT, FUNCTION, INSTANCE, LOGFILE GROUP, SERVER, TABLE, TABLE SPACE
  - RENAME TABLE
  - TRUNCATE TABLE
- 2. Data Manipulation Statements, <https://dev.mysql.com/doc/refman/5.7/en/sql-syntax-data-manipulation.html>**
  - CALL, DELETE, DO HANDLER, INSERT, LOAD DATA INFILE, LOAD XML, REPLACE
  - SELECT, SUBQUERY, UPDATE
- 3. Transactional and Locking Statements, <https://dev.mysql.com/doc/refman/5.7/en/sql-syntax-transactions.html>**
  - START TRANSACTION, COMMIT, ROLLBACK
  - SAVEPOINT, ROLLBACK TO SAVEPOINT, RELEASE SAVEPOINTS
  - LOCK TABLES, UNLOCK TABLES
  - SET TRANSACTION
- 4. Replication Statements**
  - Controlling Masters
  - Controlling Slave Servers
  - Controlling Group Replication
- 5. Prepared SQL Statements**
  - PREPARE, EXECUTE, DEALLOCATE PREPARE
- 6. Compound Statement**
  - Begin ... End
  - Statement Label
  - Declare
  - Variables in Stored Programs
  - Flow Control Statements

- Cursors
- Condition Handling

## 7. Database Administration Statements

- Account Management:
  - ALTER USER
  - CREATE USER
  - DROP USER
  - GRANT
  - RENAME USER
  - REVOKE
  - SET PASSWORD
- Table Maintenance:
- Plugin and User-Defined Function
- SET
- SHOW
- Other Administration Statements
  - FLUSH, RESET, SHUTDOWN
  - BINLOG, CACHE INDEX, KILL, LOAD INDEX INTO CACHE

## 8. Utility Statements

- DESCRIBE
- EXPLAIN
- HELP
- USE

## B) Examples of MySQL Statements/Commands

### Run the mysql Tool on XAMPP Server

- Start your XAMPP Console
- Click on Shell

```
Administrator@LIN-PC c:\xampp
# cd mysql
Administrator@LIN-PC c:\xampp\mysql
# dir
Volume in drive C has no label.
Volume Serial Number is CA27-2D0F

Directory of c:\xampp\mysql

10/25/2016  10:45 AM    <DIR>          .
10/25/2016  10:45 AM    <DIR>          ..
10/25/2016  10:45 AM    <DIR>          backup
10/25/2016  10:46 AM    <DIR>          bin
07/13/2016  09:10 PM             17,987 COPYING
07/13/2016  09:10 PM             26,545 COPYING.LESSER
07/13/2016  09:10 PM             86,259 COPYING.thirdparty
07/13/2016  09:10 PM              1,980 CREDITS
10/30/2016  11:33 PM    <DIR>          data
07/13/2016  09:10 PM             8,245 EXCEPTIONS-CLIENT
```

```

07/18/2016 05:50 AM          5,057 my-huge.ini
07/18/2016 05:50 AM        20,906 my-innodb-heavy-4G.ini
07/18/2016 05:50 AM          5,044 my-large.ini
07/18/2016 05:50 AM          5,055 my-medium.ini
07/18/2016 05:50 AM          2,921 my-small.ini
07/13/2016 09:10 PM          2,105 README
03/30/2013 08:29 AM          1,105 resetroot.bat
10/25/2016 10:45 AM    <DIR>          share
07/18/2016 05:50 AM          3,574 wsrep.ini
          13 File(s)          186,783 bytes
          6 Dir(s)   295,222,722,560 bytes free

```

```

Administrator@LIN-PC c:\xampp\mysql
#

```

### Root Password is Not Configured

```

Administrator@LIN-PC c:\xampp\mysql
# mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 6
Server version: 10.1.16-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2016, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input
statement.

MariaDB [(none)]>

```

### Set/Reset Root Password as 'secret'

```

Administrator@LIN-PC c:\xampp\mysql\bin
# mysqladmin -u root password secret
# cd ..
# mysql -u root -p
Enter Passwords: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 6
Server version: 10.1.16-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2016, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input
statement.

MariaDB [(none)]>

```

### SQL Query Statements

- **USE**
- **SHOW**

- **SELECT/FROM**
- **CREATE**
- **DESCRIBE**
- **DROP**
- **INSERT INTO**
- **databases, TABLE, VALUES**

```
MariaDB [(none)]> show databases;
```

```
+-----+
| Database |
+-----+
| art      |
| bookcrm-comprehensive |
| information_schema |
| mysql    |
| performance_schema |
| phpmyadmin |
| test     |
| testdb   |
| travels  |
+-----+
9 rows in set (0.01 sec)
```

#### SQL Query

- **use mysql;**
- **show tables;**

```
MariaDB [mysql]> use mysql;
```

```
Database changed
```

```
MariaDB [mysql]> show tables;
```

```
+-----+
| Tables_in_mysql |
+-----+
| column_stats    |
| columns_priv    |
| db               |
| event           |
| func            |
| general_log      |
| gtid_slave_pos   |
| help_category    |
| help_keyword     |
| help_relation    |
| help_topic       |
| host             |
| index_stats      |
| innodb_index_stats |
| innodb_table_stats |
| ndb_binlog_index |
| plugin           |
| proc            |
```

```

| procs_priv          |
| proxies_priv        |
| roles_mapping        |
| servers              |
| slave_master_info    |
| slave_relay_log_info |
| slave_worker_info    |
| slow_log             |
| table_stats          |
| tables_priv          |
| time_zone            |
| time_zone_leap_second |
| time_zone_name       |
| time_zone_transition |
| time_zone_transition_type |
| user                |
+-----+
34 rows in set (0.02 sec)

```

```

MariaDB [mysql]> select Host, User, Password from user;
+-----+-----+-----+
| Host      | User  | Password |
+-----+-----+-----+
| localhost | root  |          |
| 127.0.0.1 | root  |          |
| ::1       | root  |          |
| localhost |       |          |
| localhost | pma   |          |
+-----+-----+-----+
5 rows in set (0.01 sec)

```

**Example: Use mysql database, create a userdb2 table**

```

MariaDB [(none)]> use mysql;
Database changed
MariaDB [mysql]> CREATE TABLE userdb2(
    -> userID int,
    -> firstName varchar(20),
    -> lastName varchar(30),
    -> emailAddr varchar(50),
    -> facebookURL varchar(100),
    -> twitterHandle varchar(20)
    -> );
Query OK, 0 rows affected (0.01 sec)

```

**SHOW all tables within the mysql database**

MariaDB [mysql]> **SHOW tables;**

```
+-----+
| Tables_in_mysql |
+-----+
| column_stats    |
| columns_priv    |
| db              |
| event           |
| func            |
| general_log     |
| gtid_slave_pos  |
| help_category   |
| help_keyword    |
| help_relation   |
| help_topic      |
| host            |
| index_stats     |
| innodb_index_stats |
| innodb_table_stats |
| ndb_binlog_index |
| plugin          |
| proc            |
| procs_priv      |
| proxies_priv    |
| roles_mapping   |
| servers         |
| slave_master_info |
| slave_relay_log_info |
| slave_worker_info |
| slow_log        |
| table_stats     |
| tables_priv     |
| time_zone       |
| time_zone_leap_second |
| time_zone_name  |
| time_zone_transition |
| time_zone_transition_type |
| user            |
| userdb          |
| userdb2         |
+-----+
```

36 rows in set (0.01 sec)

MariaDB [mysql]> DESCRIBE userdb2;

Field	Type	Null	Key	Default	Extra
userID	int(11)	YES		NULL	
firstName	varchar(20)	YES		NULL	
lastName	varchar(30)	YES		NULL	

emailAddr	varchar(50)	YES		NULL		
facebookURL	varchar(100)	YES		NULL		
twitterHandle	varchar(20)	YES		NULL		
+-----+-----+-----+-----+-----+-----+						
6 rows in set (0.01 sec)						

### Insert one Row of Data Into "userdb2" database, then exit MySQL

```

MariaDB [mysql]> INSERT INTO userdb2
  -> VALUES (1, "Paul", "Lin", "pihailin631@gmail.com",
  -> "https://www.facebook.com/paul.lin.3110567",
  -> "@pihailin631");
Query OK, 1 row affected (0.00 sec)

MariaDB [mysql]> SELECT * FROM userdb2;
+-----+-----+-----+-----+-----+-----+
| userID | firstName | lastName | emailAddr | facebookURL | twitterHandle |
+-----+-----+-----+-----+-----+-----+
| 1      | Paul      | Lin      | pihailin631@gmail.com | https://www.facebook.com/paul.lin.3110567 | @pihailin631 |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

MariaDB [mysql]> SELECT firstName, lastName, twitterHandle FROM
userdb2;
+-----+-----+-----+
| firstName | lastName | twitterHandle |
+-----+-----+-----+
| Paul      | Lin      | @pihailin631 |
+-----+-----+-----+
1 row in set (0.00 sec)

MariaDB [mysql]> select facebookURL from userdb2 where firstName
='Paul';
+-----+
| facebookURL |
+-----+
| https://www.facebook.com/paul.lin.3110567 |
+-----+
1 row in set (0.00 sec)

MariaDB [mysql]>exit
Bye

```

```
Administrator@LIN-PC c:\xampp\mysql
```

The created “userdb” table definition is saved with an .frm extension, which can be located in the following location :

```
Administrator@LIN-PC c:\xampp\mysql
# cd data
Administrator@LIN-PC c:\xampp\mysql\data
# cd mysql
Administrator@LIN-PC c:\xampp\mysql\data\mysql
Directory of c:\xampp\mysql\data\mysql
# dir
10/31/2016  03:03 PM      <DIR>          .
10/31/2016  03:03 PM      <DIR>          ..
...
10/26/2017  01:08 PM                802 userdb2.frm
10/26/2017  01:18 PM            98,304 userdb2.ibd
               100 File(s)        1,763,746 bytes
               2 Dir(s)  294,783,545,344 bytes free
```

Userdb2.ibd data file contains InnoDB table and its indexes.

#### References

- 11.1 MySQL .frm File Format, <https://dev.mysql.com/doc/internals/en/frm-file-format.html>
- 15.1 Introduction to InnoDB (General Purpose Storage Engine), <http://dev.mysql.com/doc/refman/5.7/en/innodb-introduction.html>
- 15.7.4 InnoDB File-Per-Table Tablespace, <http://dev.mysql.com/doc/refman/5.7/en/innodb-multiple-tablespaces.html>