MySQL Users

- To access a MySQL server you need to connect using a user
- MySQL users are stored in the **user** table of the **mysql** database
- The user table contains the following login details of the users:
  a) Usernames
  b) Passwords
  c) Account privileges
  d) Host information for a MySQL account
  e) Other details

Command Prompt - mysql -u root

```
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         |
```

Command Prompt - mysql -u root

```
| 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 (0.00 sec)

MariaDB [mysql]>
```

Command Prompt - mysql -u root

```
MariaDB [mysql]> desc user;
+------------------------+---------------------------------+------+-----+----------+-------+
| Field                  | Type                            | Null | Key | Default  | Extra |
+------------------------+---------------------------------+------+-----+----------+-------+
| Host                   | char(60)                        | NO   | PRI |          |       |
| User                   | char(80)                        | NO   | PRI |          |       |
| Password               | char(41)                        | NO   |     |          |       |
| Select_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Insert_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Update_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Delete_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Create_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Drop_priv              | enum('N','Y')                   | NO   |     | N        |       |
| Reload_priv            | enum('N','Y')                   | NO   |     | N        |       |
| Shutdown_priv          | enum('N','Y')                   | NO   |     | N        |       |
| Process_priv           | enum('N','Y')                   | NO   |     | N        |       |
| File_priv              | enum('N','Y')                   | NO   |     | N        |       |
| Grant_priv             | enum('N','Y')                   | NO   |     | N        |       |
| References_priv        | enum('N','Y')                   | NO   |     | N        |       |
| Index_priv             | enum('N','Y')                   | NO   |     | N        |       |
| Alter_priv             | enum('N','Y')                   | NO   |     | N        |       |
| Show_db_priv           | enum('N','Y')                   | NO   |     | N        |       |
| Super_priv             | enum('N','Y')                   | NO   |     | N        |       |
| Create_tmp_table_priv  | enum('N','Y')                   | NO   |     | N        |       |
| Lock_tables_priv       | enum('N','Y')                   | NO   |     | N        |       |
| Execute_priv           | enum('N','Y')                   | NO   |     | N        |       |
| Repl_slave_priv        | enum('N','Y')                   | NO   |     | N        |       |
| Repl_client_priv       | enum('N','Y')                   | NO   |     | N        |       |
```

Command Prompt - mysql -u root

```
46 rows in set (0.19 sec)

MariaDB [mysql]> select * from user;
+-----------+-----------+-------------------------------------------+-------------+-------------+-------------+
---+-------------+-----------+-------------+-------------+-------------+-----------+-----------+-------------
-------+-------------+-------------+-------------+-----------+---------------------+-----------------+-------------+-----
---+-----------------+-----------------+---------------+--------------------+--------------------+----------
----------+-------------+-----------------------+---------+-----------+-------------+-------------+-------
-----------+-----------------+---------------------+--------+---------------------+-----------------+------
-------+--------------------+
| Host      | User      | Password                                  | Select_priv | Insert_priv | Update_priv |
iv | Create_priv | Drop_priv | Reload_priv | Shutdown_priv | Process_priv | File_priv | Grant_priv | References_p
ex_priv | Alter_priv | Show_db_priv | Super_priv | Create_tmp_table_priv | Lock_tables_priv | Execute_priv | Repl
iv | Repl_client_priv | Create_view_priv | Show_view_priv | Create_routine_priv | Alter_routine_priv | Create_use
Event_priv | Trigger_priv | Create_tablespace_priv | ssl_type | ssl_cipher | x509_issuer | x509_subject | max_que
max_updates | max_connections | max_user_connections | plugin | authentication_string | password_expired | is_rol
lt_role | max_statement_time |
+-----------+-----------+-------------------------------------------+-------------+-------------+-------------+
---+-------------+-----------+-------------+-------------+-------------+-----------+-----------+-------------
-------+-------------+-------------+-------------+-----------+---------------------+-----------------+-------------+-----
---+-----------------+-----------------+---------------+--------------------+--------------------+----------
----------+-------------+-----------------------+---------+-----------+-------------+-------------+-------
-----------+-----------------+---------------------+--------+---------------------+-----------------+------
-------+--------------------+
| localhost | root      |                                           | Y           | Y           | Y           |
   | Y           | Y           | Y           | Y           | Y           | Y           | Y           | Y
        | Y           | Y           | Y           | Y           | Y                     | Y               | Y
   | Y               | Y               | Y             | Y                  | Y                  | Y
Y           | Y           | Y                     |             |             |               |             |
```

Command Prompt - mysql -u root

```
18 rows in set (0.10 sec)

MariaDB [mysql]> select user, host, password
    -> from user;
+-----------+-----------+-------------------------------------------+
| user      | host      | password                                  |
+-----------+-----------+-------------------------------------------+
| root      | localhost |                                           |
| root      | 127.0.0.1 |                                           |
| root      | ::1       |                                           |
|           | localhost |                                           |
| pma       | localhost |                                           |
| admin     | %         | *01A6717B58FF5C7EAFFF6CB7C96F7428EA65FE4C |
| admin2    | localhost | *D2C4629EE52F1F2143C7C28F45E48566A9D6C83E |
| user1     | localhost | *F20B90D5A0CED3757C51AE04CD4700AB9879E467 |
| dbAdmin   | localhost | *3F69BB56B4011497F0AED607CFD485E712B8FF9C |
| user3     | localhost | *4570676E59FAC04669A75B74C31338296F688A44 |
| user11    | localhost | *078A8F1D5EC637860148F3344B69D3420B76A213 |
| user12    | localhost | *F52C6E8BE24808F7C4870D970A20EDCFCEA830A4 |
| user13    | localhost | *8EBDAC9C81898B16C200FF909F71D8544FC8F5FA |
| admin1    | %         | *3E9FE035CA2C81DF1B9ADA55051FF927AC213346 |
| admin1    | localhost | *3E9FE035CA2C81DF1B9ADA55051FF927AC213346 |
| superadmin| localhost | *514FC2971F3E94BB16F25C396219DFDF01D02443 |
| userACSC  | localhost | *54C5905F39B9916E75D313108164C46D92E19D8E |
| admin     | localhost | *01A6717B58FF5C7EAFFF6CB7C96F7428EA65FE4C |
+-----------+-----------+-------------------------------------------+
18 rows in set (0.00 sec)

MariaDB [mysql]>
```

Command Prompt - mysql -u root

```
MariaDB [mysql]> select user from mysql.user;
+------------+
| user       |
+------------+
| admin      |
| admin1     |
| root       |
| root       |
|            |
| admin      |
| admin1     |
| admin2     |
| dbAdmin    |
| pma        |
| root       |
| superadmin |
| user1      |
| user11     |
| user12     |
| user13     |
| user3      |
| userACSC   |
+------------+
18 rows in set (0.00 sec)

MariaDB [mysql]>
```

Command Prompt - mysql -u root

```
MariaDB [mysql]> select user();
+----------------+
| user()         |
+----------------+
| root@localhost |
+----------------+
1 row in set (0.00 sec)

MariaDB [mysql]>
```

MySQL Users

- When the installation of a MySQL Server completes there is a ROOT user account only.
- By default the ROOT user doesn't have any password.
- But because the ROOT user account has all the privileges for the MySQL server, it is highly recommended to add a ROOT password immediately when the installation finishes.

MySQL Users

- Because of security reasons it is not recommended to use your MySQL server's ROOT account for common tasks.

- To make your MySQL server more secure you can use your ROOT account and create another MySQL USER for your web applications.

Creating a MySQL User

- To create a new user establish a connection to the server via a root account or an administration account with the appropriate privileges (Login to Mysql using root or another administrative account).
- Then use the following command

CREATE USER ‘username’@‘machine name’ IDENTIFIED BY 'password‘;

E.g.

CREATE USER ‘admin’@‘localhost’ IDENTIFIED BY ‘adminadmin';

GRANT (add) privileges to a newly created user

- At this point the new user has no permissions to do anything with the databases.
- In fact, if admin even tries to login (with the password, adminadmin), they will not be able to reach the MySQL shell.
- Users must have rights on databases and database objects to carry out any function on them.
- **E.g. for a user to create tables, view records in tables, update etc they must have the specific rights to do so.**
- Rights are also called privileges and are assigned using the Grant command

GRANT (add) privileges to a newly created user

- Provide the user with access to the information they will need by using the **Grant** command.

  GRANT type of privilege ON database.databasecomponent To ‘user’@’machine name’;

- Example:

GRANT ALL PRIVILEGES ON *.* TO ‘admin'@'localhost';

- The asterisks in this command refer to the database and table (respectively) that they can access—this specific command allows to the user to read, edit, execute and perform all tasks across all the databases and tables.

GRANT all privileges to a user

GRANT ALL PRIVILEGES ON dbChuka.*
TO ‘admin'@'localhost';

Reloading Privileges

- Once you have finalized the permissions that you want to set up for your new users, always be sure to reload all the privileges.
- Command used to do this is:

  Flush privileges;

Login as created user

- Logout as root by typing **quit** at the MySQL prompt
- Login as created user by typing the following command:
  - **Mysql –u admin –p**

  (press enter key after typing above)
  - **Type password when prompted to do so**

Permissions that users can be granted

- There are different permissions that users can be granted including the following:
  a) **ALL PRIVILEGES-** All privileges allows a MySQL user all access to a designated database (or if no database is selected, across the system)
  b) **CREATE-** allows users to create new tables or databases
  c) **DROP-** allows to delete tables or databases
  d) **DELETE-** allows to delete rows from tables

Permissions that users can be granted

e) **INSERT-** allows to insert rows into tables

f) **SELECT-** allows to use the Select command to read through databases

g) **UPDATE-** allows to update table rows

h) **GRANT OPTION-** allows users to grant or remove other users' privileges

Granting permissions to selected users

GRANT [type of permission] ON [database name].[table name] TO ‘[username]’@’localhost’;

Each time you update or change a permission be sure to use the Flush Privileges command.

GRANT UPDATE, SELECT ON [database name].[table name] TO ‘[username]’@‘localhost’;

Revoking Permissions

- Revoking permissions is used to take away privileges from a user
- To revoke a permission use the following command:

REVOKE [type of permission] ON [database name].[table name] FROM ‘[username]’@‘localhost’;

Deleting a user

- Completely deleting a user by using the drop command

DROP USER ‘username’@‘localhost’;

Exercise

1. Login to Mysql using user root
2. Create a database named dbCU using Mysql
3. Create a user1 with password user1pass and give the user view rights over the database
4. Create user2 with password user2pass and give this user update rights over the database
5. Create user3 with password user3pass and give this user privileges views, delete and update over the database
6. Create user dbCUAdmin with password admin123 and give this user all privileges over the database
7. Log out as root and login using user dbCUAdmin created above

Exercise

8. Change to database dbCU
9. Within the dbCU database create a table to capture vital details of students at Chuka University
10. Fill this table with 10 records
11. Logout user dbCU and login as user user1
12. Practice operations on the table to see what user1 is allowed or not allowed to do
13. Repeat steps 11 and 12 for each user