

## 8. USER RIGHTS MANAGEMENT

**Goal:** learn basics of user accounts and privileges using the MySQL database.

### 8.1. Create new user accounts

The MySQL database management system is a multi-user environment, so different accounts with different privileges can be created to access the supply database tables.

The supply manager's account can be provided with privileges to view the supplier, supplier\_org, supplier\_person and contract tables, add new records, delete and update existing records in the data tables.

Database administrator can be given wider rights (privileges to create tables, editing and deleting existing tables, creating and editing user accounts, etc.).

For a warehouse employee it is enough just to view the contract and supplied tables, as well as add new records, delete and update already existing records in the supplied table.

Consider creating accounts for different database users.

```
CREATE USER 'admin'@'localhost' IDENTIFIED BY 'admin123';  
CREATE USER 'manager'@'localhost' IDENTIFIED BY 'manager123';  
CREATE USER 'storekeeper'@'localhost' IDENTIFIED BY 'storekeeper123';
```

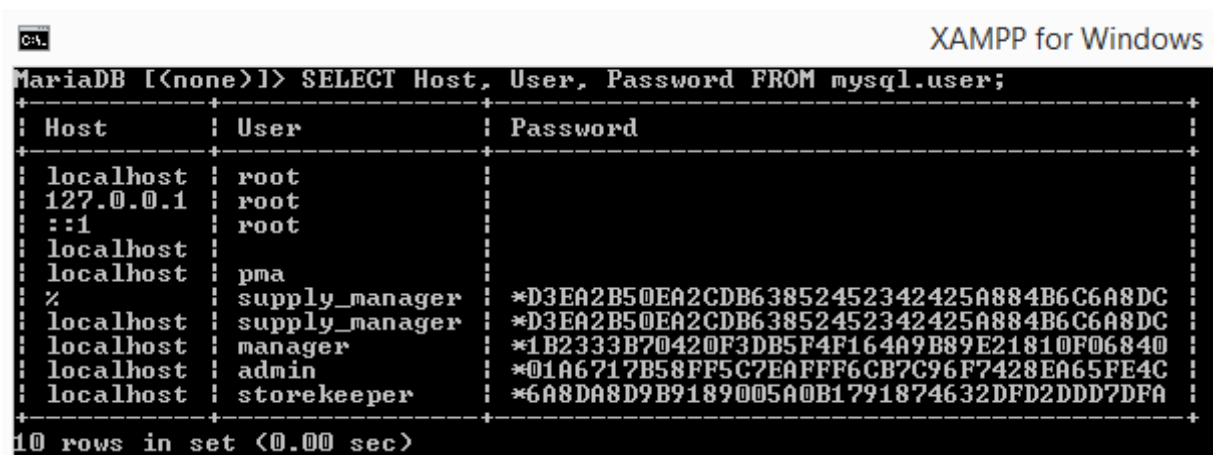
These statements allow to create accounts for the following users:

- 1) administrator with the password «admin123»;
- 2) supply manager with the password «manager123»;
- 3) warehouse employee with the password «storekeeper123».

The DROP USER statement is used to delete an account. The change of user name in the account is performed with the operator RENAME USER %old\_name% TO %new\_name%.

Since all user accounts are stored in the mysql system user's table, you can check the creation of the accounts by using the following query (see Figure 8.1):

```
SELECT Host, User, Password FROM mysql.user;
```



XAMPP for Windows

MariaDB [(none)]> SELECT Host, User, Password FROM mysql.user;

| Host      | User           | Password                                  |
|-----------|----------------|---|
| localhost | root           |   |
| 127.0.0.1 | root           |   |
| :::1      | root           |   |
| localhost | pma            |   |
| localhost | supply_manager | *D3EA2B50EA2CDB63852452342425A884B6C6A8DC |
| %         | supply_manager | *D3EA2B50EA2CDB63852452342425A884B6C6A8DC |
| localhost | manager        | *1B2333B70420F3DB5F4F164A9B89E21810F06840 |
| localhost | admin          | *01A6717B58FF5C7EAF6CB7C96F7428EA65FE4C   |
| localhost | storekeeper    | *6A8DA8D9B9189005A0B1791874632DFD2DDD7DFA |

10 rows in set (0.00 sec)

Figure 8.1

## 8.2. Assign privileges for created accounts

The above operators allow you to create, delete, and edit accounts, but they do not allow you to change user privileges – to tell the MySQL DBMS, which user is only allowed to read information or to read and edit, and who are given the rights to change the structure of the database and create accounts.

It is required to assign privileges for the created accounts.

```

GRANT ALL ON supply.* TO 'admin'@'localhost';

GRANT SELECT, INSERT, UPDATE, DELETE ON supply.supplier TO 'manager'@'localhost';
GRANT SELECT, INSERT, UPDATE, DELETE ON supply.supplier_org TO 'manager'@'localhost';
GRANT SELECT, INSERT, UPDATE, DELETE ON supply.supplier_person TO 'manager'@'localhost';
GRANT SELECT, INSERT, UPDATE, DELETE ON supply.contract TO 'manager'@'localhost';
GRANT SELECT ON supply.supplied TO 'manager'@'localhost';
GRANT EXECUTE ON supply.* TO 'manager'@'localhost';

GRANT SELECT, INSERT, UPDATE, DELETE ON supply.supplied TO 'storekeeper'@'localhost';
GRANT SELECT ON supply.contract TO 'storekeeper'@'localhost';
GRANT EXECUTE ON supply.* TO 'storekeeper'@'localhost';

```

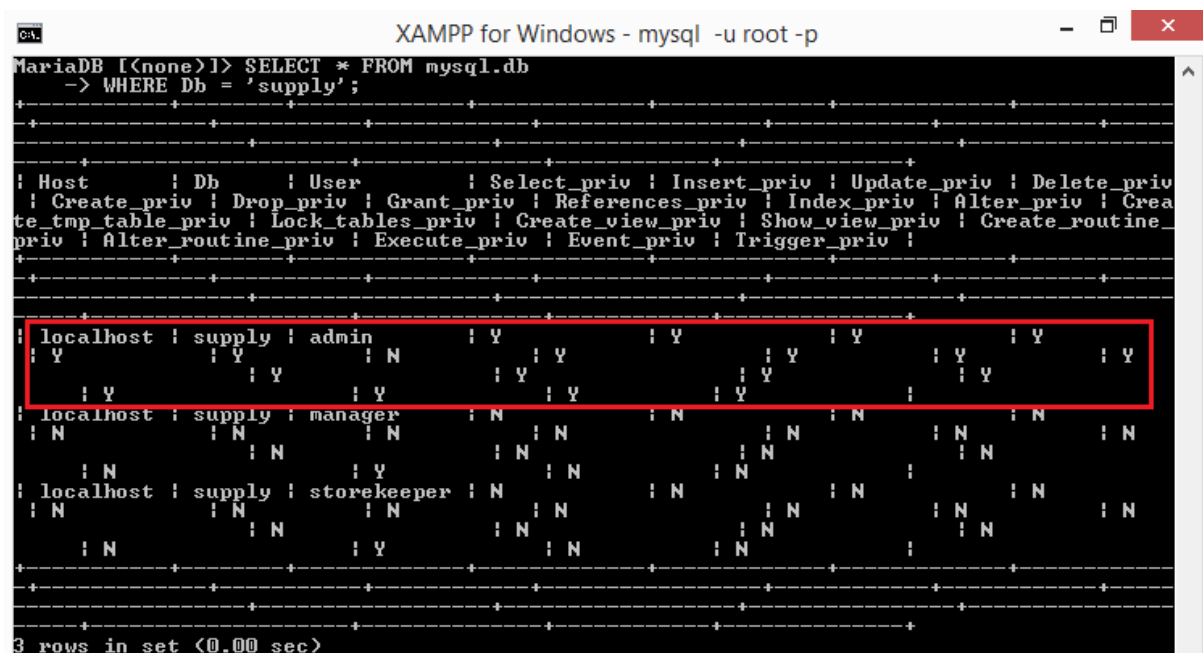
The REVOKE operator is used to deprive the user of certain privileges. This operator does not delete accounts, but only cancels the previously granted privileges. Therefore, for the final removal of the account, you must use the operator DROP USER.

Check the privileges of the admin account granted with all rights at the supply database level using the following query (Figure 8.2).

```

SELECT * FROM mysql.db
WHERE Db = 'supply';

```



XAMPP for Windows - mysql -u root -p

MariaDB [(none)]> SELECT \* FROM mysql.db  
-> WHERE Db = 'supply';

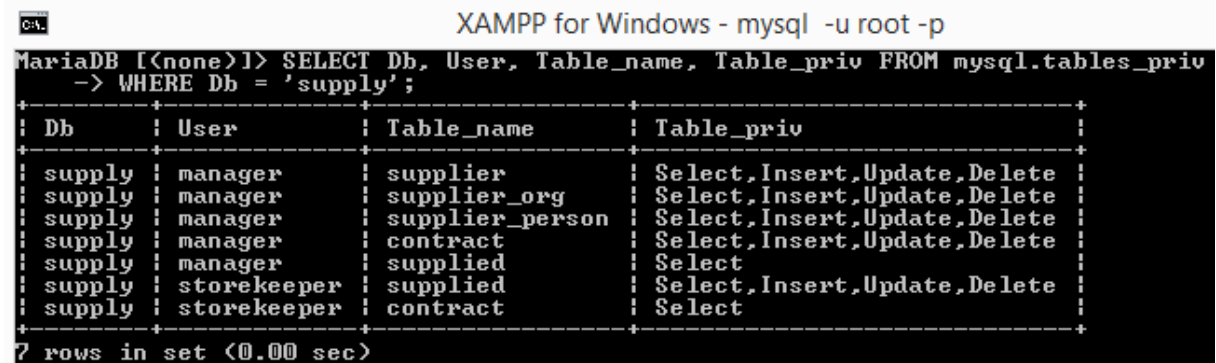
| Host      | Db     | User        | Select_priv | Insert_priv | Update_priv | Delete_priv | Create_priv | Drop_priv | Grant_priv | References_priv | Index_priv | Alter_priv | Create_tmp_table_priv | Lock_tables_priv | Create_view_priv | Show_view_priv | Create_routine_priv | Alter_routine_priv | Execute_priv | Event_priv | Trigger_priv |
|-----------|--------|-------------|-------------|-------------|-------------|-------------|-------------|-----------|------------|-----------------|------------|------------|-----------------------|------------------|------------------|----------------|---------------------|--------------------|--------------|------------|--------------|
| localhost | supply | admin       | Y           | Y           | Y           | Y           | Y           | Y         | Y          | Y               | Y          | Y          | Y                     | Y                | Y                | Y              | Y                   | Y                  | Y            | Y          | Y            |
| localhost | supply | manager     | N           | N           | N           | N           | N           | N         | N          | N               | N          | N          | N                     | N                | N                | N              | N                   | N                  | N            | N          | N            |
| localhost | supply | storekeeper | N           | N           | N           | N           | N           | N         | N          | N               | N          | N          | N                     | N                | N                | N              | N                   | N                  | N            | N          | N            |

3 rows in set (0.00 sec)

Figure 8.2

Similarly, you can check the privileges of the manager and storekeeper accounts, for which certain restrictions were encountered with the supply database tables (Figure 8.3).

```
SELECT Db, User, Table_name, Table_priv FROM mysql.tables_priv
WHERE Db = 'supply';
```



| Db     | User        | Table_name      | Table_priv                  |
|--------|-------------|-----------------|-----------------------------|
| supply | manager     | supplier        | Select,Insert,Update,Delete |
| supply | manager     | supplier_org    | Select,Insert,Update,Delete |
| supply | manager     | supplier_person | Select,Insert,Update,Delete |
| supply | manager     | contract        | Select,Insert,Update,Delete |
| supply | manager     | supplied        | Select                      |
| supply | storekeeper | supplied        | Select,Insert,Update,Delete |
| supply | storekeeper | contract        | Select                      |

7 rows in set (0.00 sec)

Figure 8.3

In addition, certain users must also have privileges that allow them to use the views contained in the supply database. For example, the manager user should be given permissions to view the contract\_supplier and supplier\_info views, whereas only the contract\_supplier view for the user storekeeper should be available.

### 8.3. Questions

1. What is the structure of a user account in the MySQL DBMS?
2. Which components a user account is contains of?
3. What is the purpose of each component of a user account?
4. How to view all user accounts?
5. What command is used to create a user account?
6. What command is used to delete a user account?
7. How to change a name of a user?

8. What statement is used to define certain privileges for a certain user account?
9. What operator is used to cancel given privileges?
10. Which privileges might be defined for a user account?
11. What levels of privileges do you know?
12. How to check the global privileges, database privileges, and table privileges?