SQL 1

Contents

1 Run Mysql database

The first step is to learn how to run a mysql database on your workstation. To not spend too much time on the configuration, we will use docker to run your mysql instance.

1.1 Verify whether your laptop setup

Let's check whether we have correctly configured Docker, open your terminal and run the following command:

```
# on macOS you do not use sudo to run docker
# commands
sudo docker ps

# you should see:
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
```

1.2 Run your instance

To start your mysql instance with Docker, run the following command:

```
sudo docker run --name wsb-mysql \
   -e MYSQL_ROOT_PASSWORD=nomoresecret \
   -p 3306:3306 \
   -d mysql:8

# check whether you see your database running
sudo docker ps
```

Notice:

- to stop the Mysql database in Docker: `docker stop wsb-mysql`
- to start your Mysql database in Docker: `docker start wsb-mysql`.

1.3 Mysql CLI

You need to install the command line interface mysql package first:

```
sudo apt-get update
sudo apt install -y mysql-client
```

To open the connection to your database:

```
# your password is: nomoresecret
mysql -u root -h 127.0.0.1 -p
```

In the mysql console, please execute the following command: `show databases;`:

```
mysql> show databases;

+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.00 sec)
```

1.4 Mysql Workbench

We can also use a grafical interface to work with Mysql. There are many available tools, today we will use mysql-workbench[1]:

```
sudo apt update
sudo snap install mysql-workbench-community
snap connect mysql-workbench-community:password-manager-service
```

You can run the workbench from your terminal:

[1] You might use sequelpro.com as well

```
# if we cannot see fonts:
export LANG=en_US
mysql-workbench-community &
```

In the graphical interface select: *Local Instance 3306* (user *root*). To verify that everyhing works, please run the following commands:

```
-- 1
show databases;
-- 2
use mysql;
-- 3
show tables;
-- 4
select * from user;
```

Note down what users we have in the system.

Notice: You should not work as a database user **root**, you should always create a dedicated admin user for yourself.

2 Recap

2.1 Data Types

- Characters: CHAR(20), VARCHAR(50), TEXT
- Numbers: INT, BIGINT, SMALLINT, FLOAT
- Logical: BOOL
- Others: MONEY, DATETIME...

2.2 Tables, views, and relations

- relation or table (defined by a schema)
- rows
- each column (has a type)
- key keys

3 Create your database

Let's build our own database.

1. Open the workbench and create your database with a prefix: `wsb`.

```
-- 1: do not forget to change the name
create database wsbnatalia

-- 2:
show databases;

-- 3:
use wsbnatalia
```

2. Create your first table (in the schemas, choose your database as the default target for your commands):

```
CREATE TABLE Products (
  ProductID CHAR(20),
  ProductName VARCHAR(50),
  Price  float,
  Category VARCHAR(50),
  SuplierName VARCHAR(50),
  PRIMARY KEY (ProductID))
```

3. Let's add one product:

```
INSERT INTO Products(ProductID, ProductName, Price,
    Category, SuplierName) VALUES (
    '123',
    'Milk',
    5.9,
    'Dairy Products',
    'Mlekovita'
)
```

3. Let's add one product:

```
select * from Product;
```

4. Please create new table - `Suppliers` and add two rows with the following attributes:

- SupplierID (key)
- SupplierName
- ContactName
- Country

4 Ecommerce database

To work with a larger database, we will use the database behind w3schools SQL tutorial (w3schools.com/sql).

1. Download *w3schools.sql* z *https://github.com/wojciech11/w3schools-databasel* (open the file in browser and choose `Raw`):

```
# long URL
wget https://raw.githubuse..
ls

w3schools.sql
```

2. Let's load the database through CLI:

```
# your password is: nomoresecret
$  mysql -u root -h 127.0.0.1 -p

mysql>
mysql> source w3schools.sql;

# let's see whether the DB is there
mysql> use w3schools;
mysql> show tables;

mysql> SELECT customerName, city FROM customers;
```

3. Go back to /mysql-workbench| and choose w3schools DB as your default target for your queries.

```
-- let's explore
show tables;

-- go through all the tables
-- and display the top 5
select * from products limit 5

-- check schema:
describe table products
```

3. Choose `Database` → `Reverse Engineer` to run a wizard, so we can learn more about the imported database.

5 Exercises

5.1 SFW Queries

1. `select`;
2. `select` and `where`;
3. `select`, `where`, and `like`;

4. `select` and `distinct`;
5. `select`, `where`, and `order by`;
6. `select`, `where`, and `count(*)`;
7. `update`

5.2 Multiple tables

- Supplier, productName
- ProductName, SupplierName, CategoryName
- OrderID, CustomerName, OrderDate

Notes: