Juniorprogrammierer.de

Java 18: Mysql

2024/25 – Sascha Stojanovic

What is a database?

- A Database (db) helps you organize and store information so that you can easily access, update, and manage it.
- Imagine keeping track of your book collection. Each book would have details like title, author, and year of publication. In a database, you can store all this information in a structured way. The database allows you to quickly find books by a particular author, add new books, or update details about existing ones.
- Our coding provides currently information only during runtime. When program stops all information is gone. We want to safe our data, therefore we need database

What is a SQL?

SQL (Structured Query Language):

- Language used to communicate with databases
- Allows you to perform tasks such as querying data, updating records, inserting new entries, and deleting data from a database

MySQL:

- Most popular relational database management system
- Uses SQL-language
- MySQL is most times referred as an interface to interact with db

MySQL Server:

- Component of MySQL that runs a database system

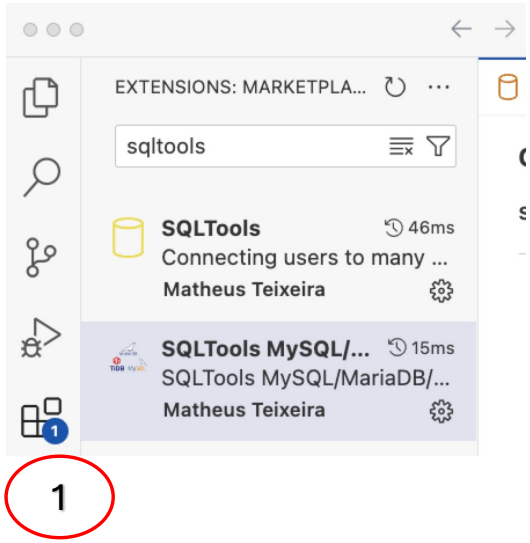
What are we exactly doing today

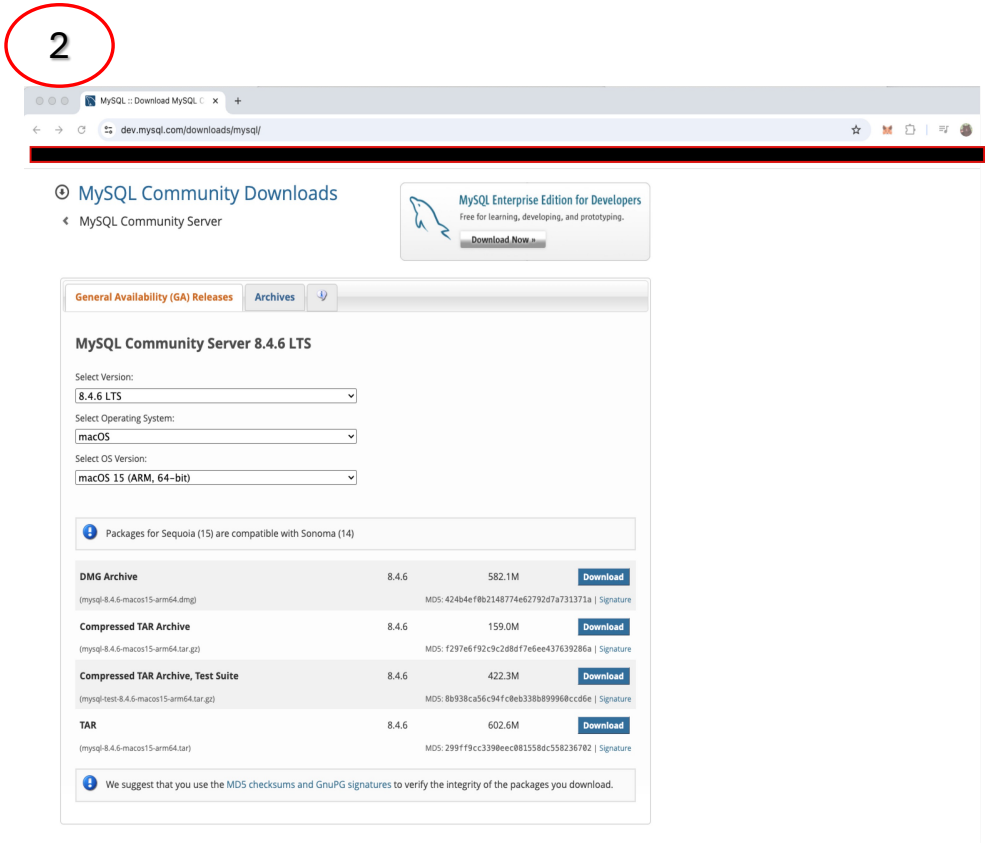
Our goal: Connect vscode to a local mysql database and execute some SQL-Cmds

- Download a SQL-Extension to vscode
- Install MySQL-Server local
- Make “mysql --version” on terminal work
- Initialize db
- Create first db on MySQL-server
- Connect vscode to that

Download a SQL-Extension to vscode & Install MySQL-Server local

- Source: https://www.youtube.com/watch?v=OHY2VfxvcOs

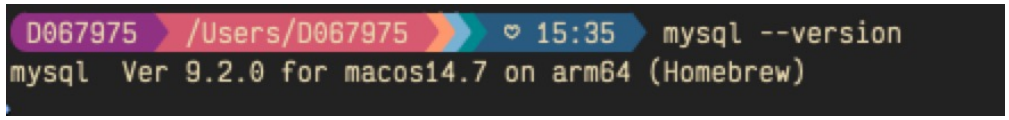


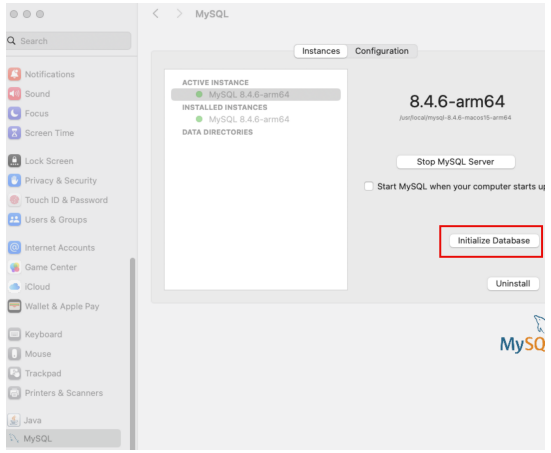


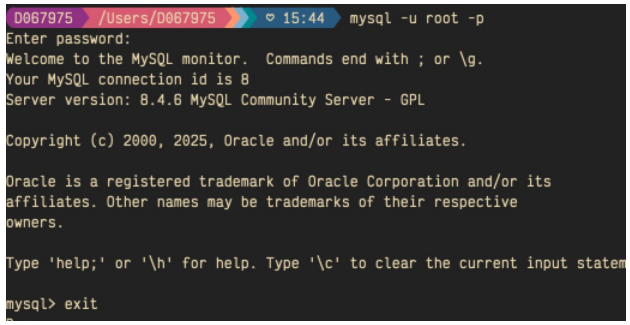
Make “mysql --version” on terminal work & initialize a db

If mysql cmd not available

- Open .zshrc
- Use spotlight search and look for usr/local (or check configuration tab)
  - Go to mysql/bin
  - Copy path
  - Add it
- Next initalise db and restart sql server and set usr pw







Create first db on MySQL-server & Connect my_database db to vscode

1

```
D067975  /Users/D067975  ♡ 15:46  mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.4.6 MySQL Community Server - GPL

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owners.

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

mysql> CREATE DATABASE my_database;
Query OK, 1 row affected (0.01 sec)

mysql> SHOW DATABASES
    -> exit
exit
^C
mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| my_database        |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)

mysql>
```
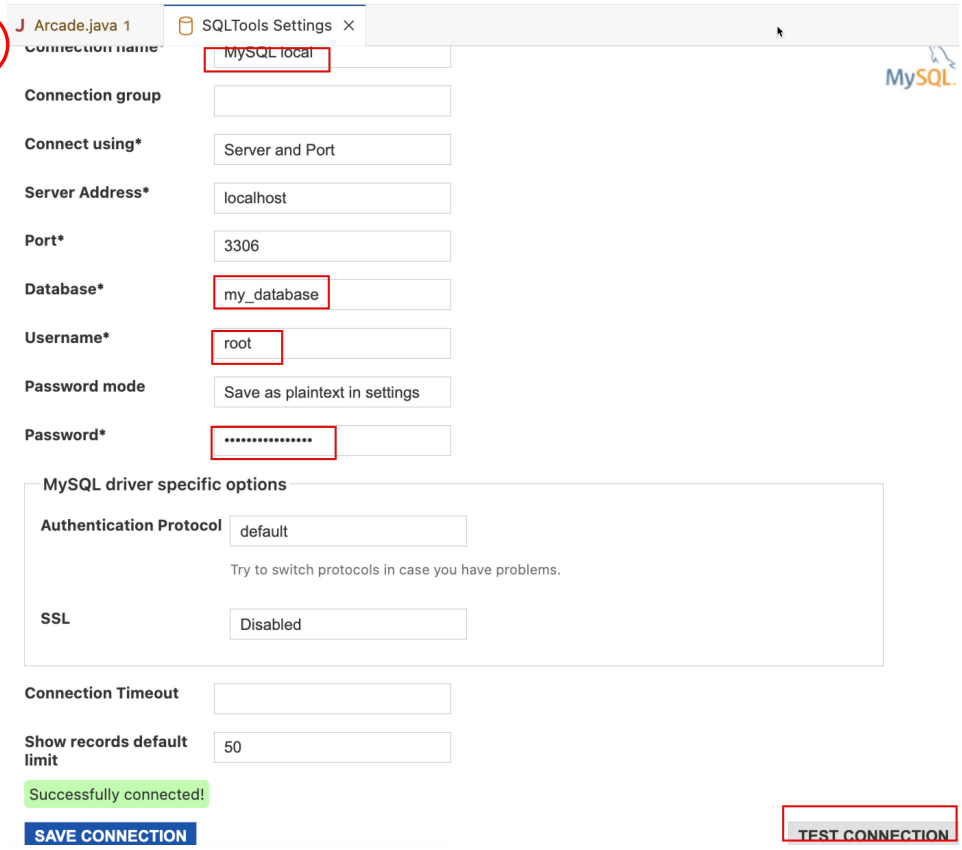
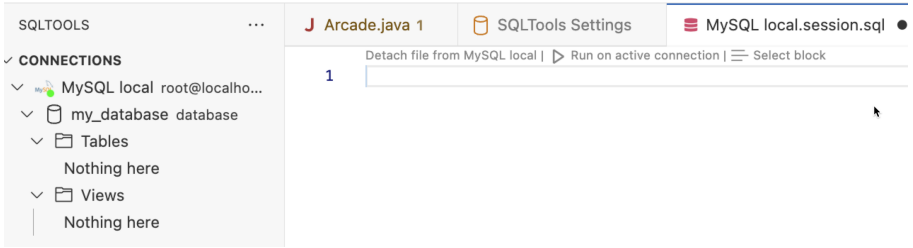
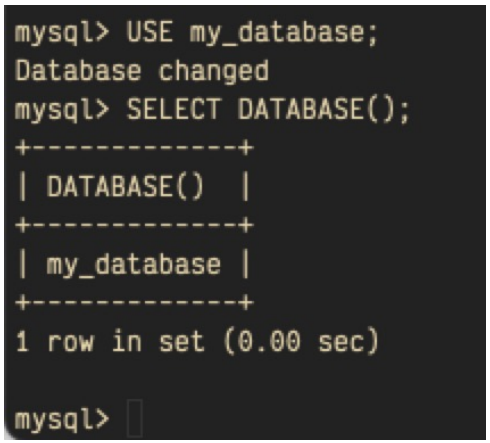

2



Connection to db in vscode and iterminal

- On the right you see vscode and iterminal, on both we are now logged into our “my_database”-Database
- Some Commands we did so far
  - Create database xxx; => Create a database
  - SHOW DATABASES; => See all database
  - USE my_database; => Switch to a db you created
  - SELECT DATABASE(); => See on which db you are currently





DDL (Data Definition Language) cmds

Commands define and modify the structure of database objects

Command	Example
CREATE: Used to create new database objects like tables, indexes, or schemas	CREATE TABLE Students (ID INT, Name VARCHAR(100));
ALTER: Used to modify existing database objects, such as adding a column to a table or changing its data type.	ALTER TABLE Students ADD COLUMN Age INT;
DROP: Used to remove database objects, such as tables or indexes.	DROP TABLE Students;

DML (Data Manipulation Language) cmds

Commands manipulate the actual data within those objects, allowing you to add, modify, and remove data records.

Command	Example
SELECT: Used to query and retrieve data from one or more tables.	SELECT * FROM Students WHERE Age > 18;
INSERT: Used to add new records into a table.	INSERT INTO Students (ID, Name, Age) VALUES (1, 'Alice', 20);
UPDATE: Used to modify existing records in a table.	UPDATE Students SET Age = 21 WHERE Name = 'Alice';
DELETE: Used to remove records from a table.	DELETE FROM Students WHERE Age < 18;

Exercise

- Create a table “User” and ”Product” into your Database. Use ones Vscode and ones iterminal

```
CREATE TABLE User ( UserID INT AUTO_INCREMENT PRIMARY KEY, UserName VARCHAR(50) NOT NULL );
&
CREATE TABLE Product ( ProductID INT AUTO_INCREMENT PRIMARY KEY, ProductName VARCHAR(100) NOT NULL );
```

- Now add on both Tables a column
- Now delete both Tables

Exercise II

- Create again the table “User” (you can choose one way of doing it), this time also have a column for age

```
INSERT INTO User (UserName, Age) VALUES ('Alice', 30);
INSERT INTO User (UserName, Age) VALUES ('Bob', 25);
INSERT INTO User (UserName, Age) VALUES ('Charlie', 35);
INSERT INTO User (UserName, Age) VALUES ('Dave', 40);
INSERT INTO User (UserName, Age) VALUES ('Eve', 28);
```