Short Tutorial about

Java Database Connectivity (JDBC)

from

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List of abbreviations

Begriff	Erklärung
MySQL	My Structered Query Language
JDBC	Java Database Connectivity

table 1: list of abbreviations

1 Java Database Connectivity (JDBC)

JDBC is a database interface and is implemented for Java-platforms. The main task is the connection between the database and the IDE Java Eclipse. JDBC executes database models from different manufacturer. The figure 1 shows how the implemented program and the database connection works.

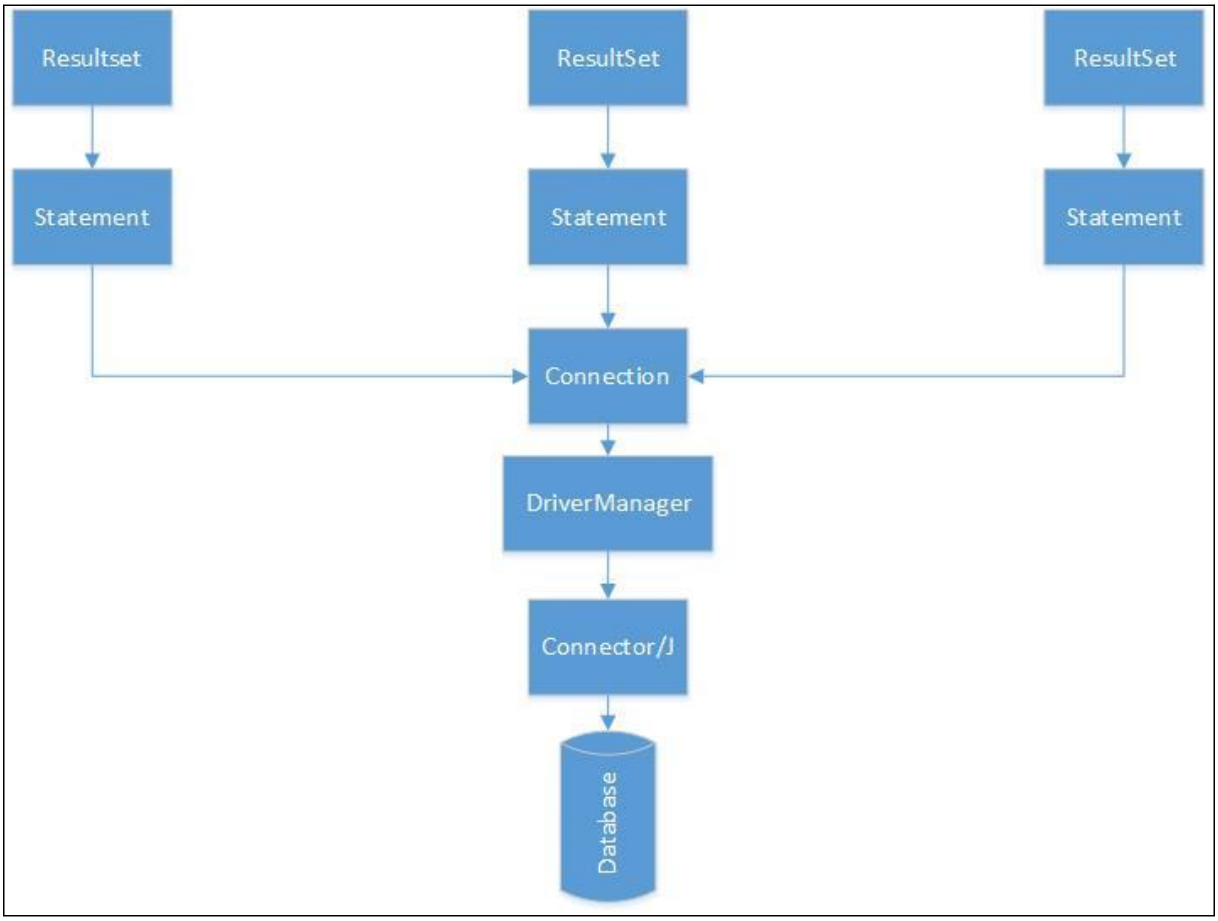


figure 1: overview connection

2 approach

2.1 Download MySQL 5.6.17

Download the zip-archive MySQL 5.6.17 for Windows (32- or 64-bit-version).

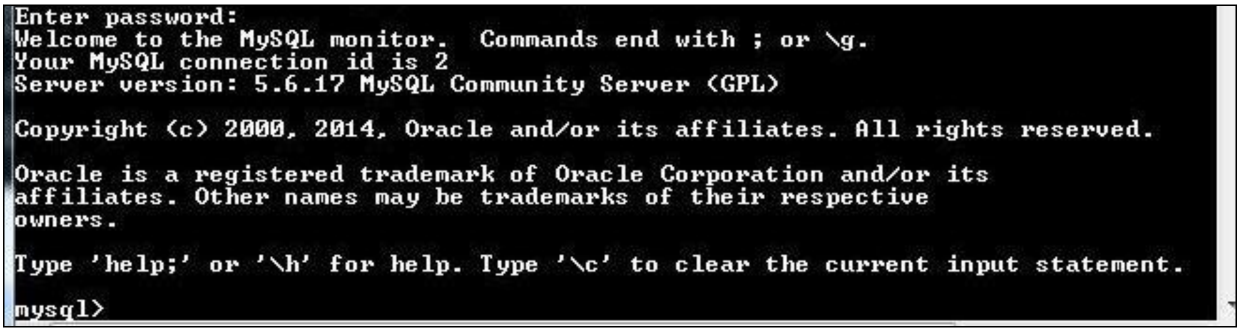
Download-Link: http://dev.mysql.com/downloads/mysql/ erhältlich.

2.2 Installation MySQL 5.6.17

- Unzip the archive
- Start the mysqld.exe to start the sql-services in the background
- Start the mysql.exe or use the command line interface and type the commands: *„cd <path>/mysql/bin“ and „mysql –install“*

2.3 Create database connection with MySQL

- Navigate with the cd command to the bin folder of mysql 5.6.17
- Login as admin/root to the command line interface *„mysql -u root -p “*
- Enter password with a blank (figure 2)



```
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.6.17 MySQL Community Server (GPL)

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owners.

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

mysql>
```
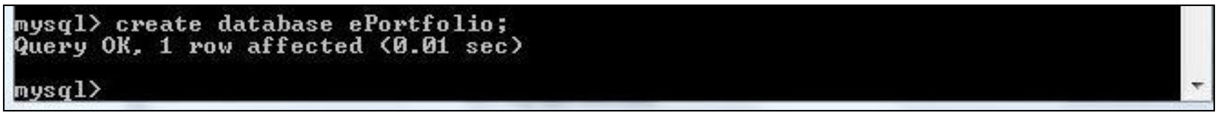

figure 2: Login SQL-Server

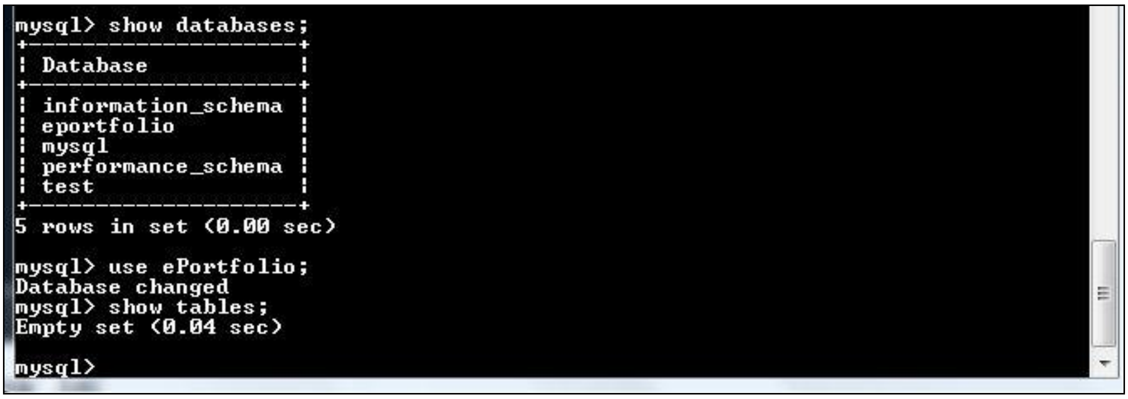
- Now it is possible to enter SQL-commands to the command line interface.
- To create a database use: *„create database databaseName“* (figure 3)



```
mysql> create database ePortfolio;
Query OK, 1 row affected (0.01 sec)

mysql>
```

figure 3: create Database

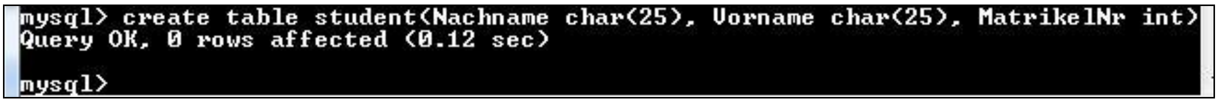
- Use *„show databases“* to display all existing databases.
- After entering the *„use ePortfolio“* command, only sql-commands for the database named ePortfolio are expected.
- The *„show tables“* command displays all tables of the database. (figure 4)



```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| eportfolio         |
| mysql              |
| performance_schema |
| test               |
+--------------------+
5 rows in set (0.00 sec)

mysql> use ePortfolio;
Database changed
mysql> show tables;
Empty set (0.04 sec)

mysql>
```

figure 4: show databases and use database

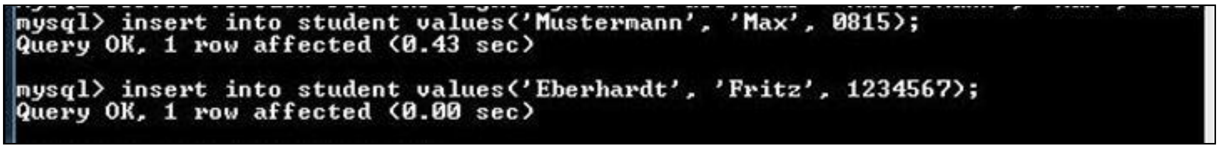
- Now you have to create tables and the columns of the table (figure 5)



```
mysql> create table student(Nachname char(25), Vorname char(25), MatrikelNr int)
Query OK, 0 rows affected (0.12 sec)

mysql>
```

figure 5: create table

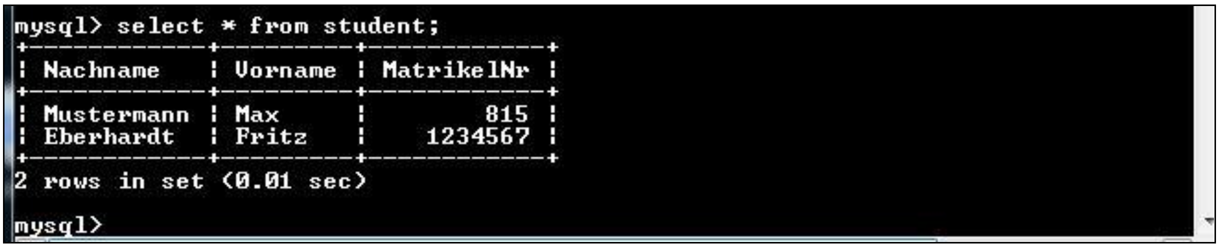
- To fill the tables you have to use the command in figure 6.



```
mysql> insert into student values('Mustermann', 'Max', 0815);
Query OK, 1 row affected (0.43 sec)

mysql> insert into student values('Eberhardt', 'Fritz', 1234567);
Query OK, 1 row affected (0.00 sec)
```

figure 6: insert into table

- To test the database use a simple sql-query shown in figure 7.

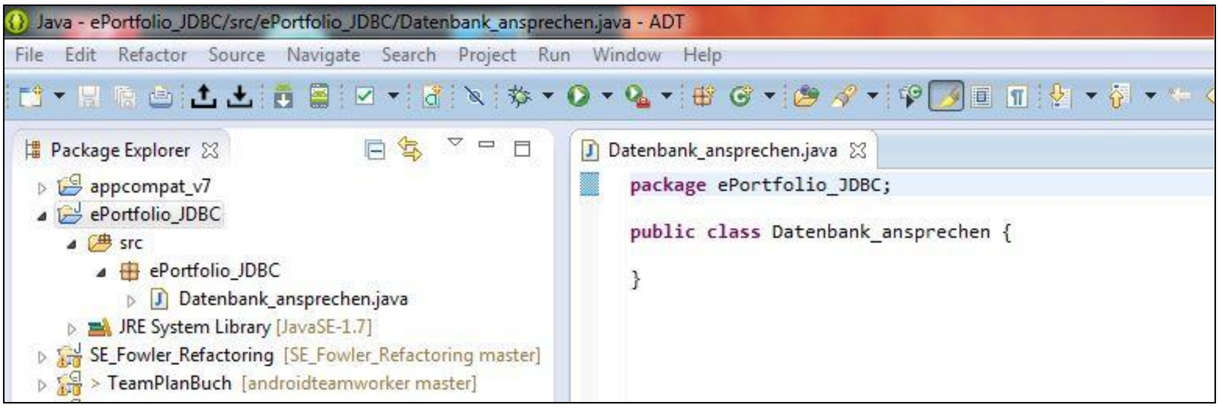


```
mysql> select * from student;
+------------+---------+------------+
| Nachname   | Vorname | MatrikelNr |
+------------+---------+------------+
| Mustermann | Max     |        815 |
| Eberhardt  | Fritz   |    1234567 |
+------------+---------+------------+
2 rows in set (0.01 sec)

mysql>
```

figure 7: Select query

2.4 Database connection with java eclipse

- Create a new java project or use an old project (figure 8).



Java - ePortfolio_JDBC/src/ePortfolio_JDBC/Datenbank_ansprechen.java - ADT
File Edit Refactor Source Navigate Search Project Run Window Help
Package Explorer
appcompat_v7
ePortfolio_JDBC
src
ePortfolio_JDBC
Datenbank_ansprechen.java
JRE System Library [JavaSE-1.7]
SE_Fowler_Refactoring [SE_Fowler_Refactoring master]
> TeamPlanBuch [androidteamworker master]
Datenbank_ansprechen.java

```
package ePortfolio_JDBC;

public class Datenbank_ansprechen {

}
```

figure 8: Projekt und Klasse anlegen

2.4.1 Download MySQL Connector/J

Download the java driver for the database connection.

Download Connector/J: http://dev.mysql.com/downloads/connector/j/

2.4.2 Datenbank-Treiber der Klassenbibliothek hinzufügen

- Import the driver to the class library of your project.
- Right click on the class
- Navigate to the configure build path (figure 9)

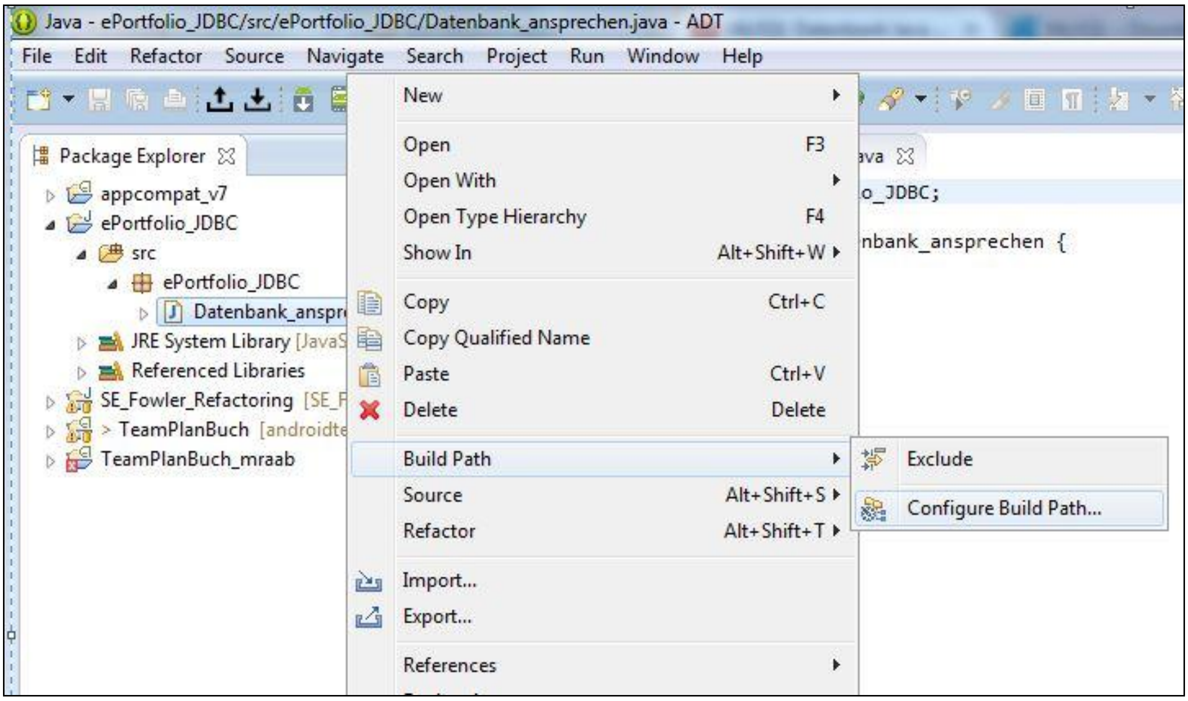
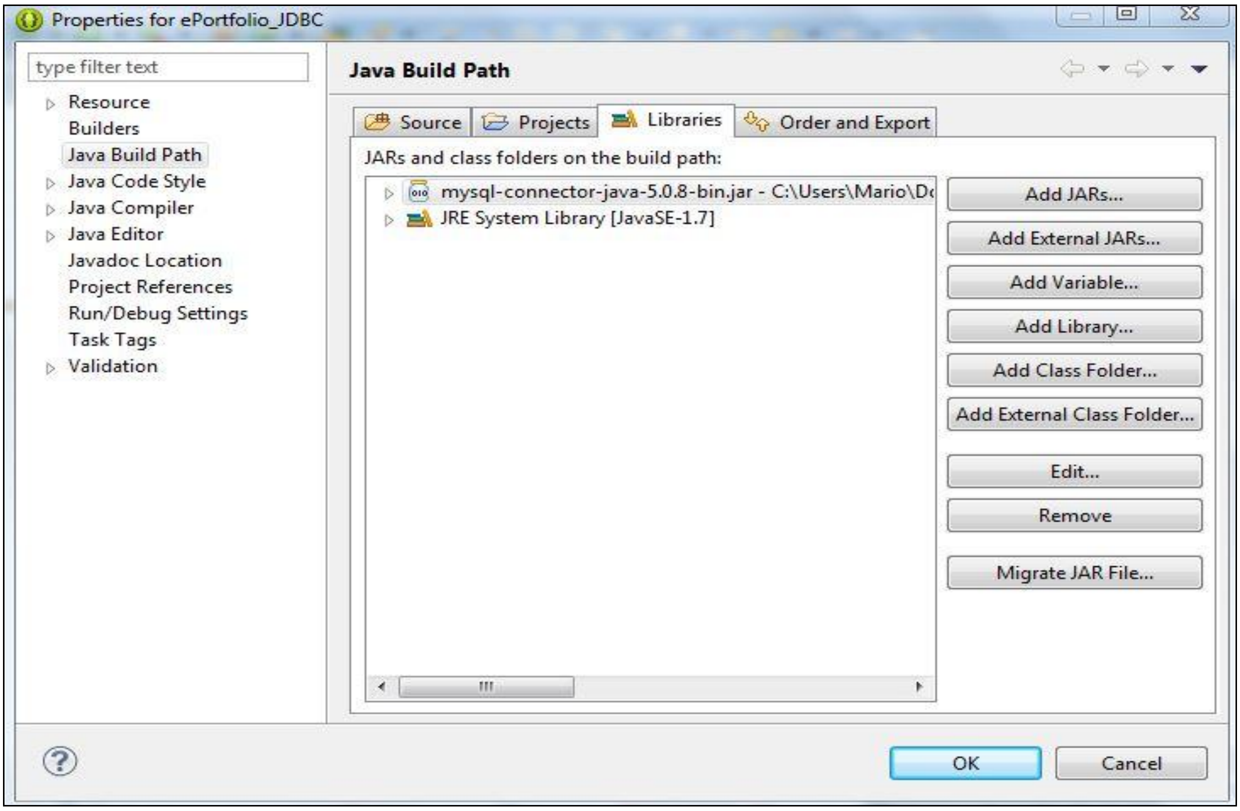


figure 9: Build Path

- Navigate in the task bar to „Java Build Path - Libraries“
- With “Add External JARs…“ you have to specify the path to the mysql-connector-java-bin.jar file. (figure 10)



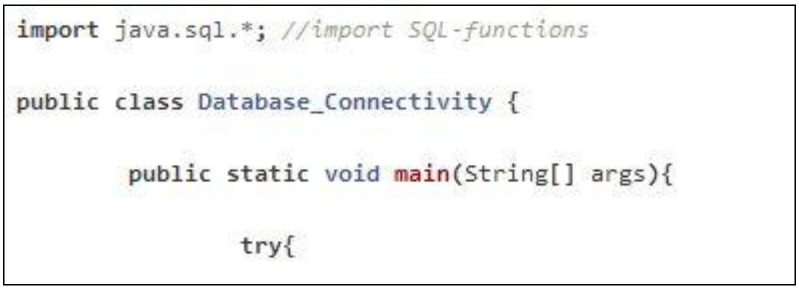
JARs and class folders on the build path:

- mysql-connector-java-5.0.8-bin.jar - C:\Users\Mario\D
- JRE System Library [JavaSE-1.7]

figure 10: Add External JARs…

2.5 Example of a simple sql-query (syntax)

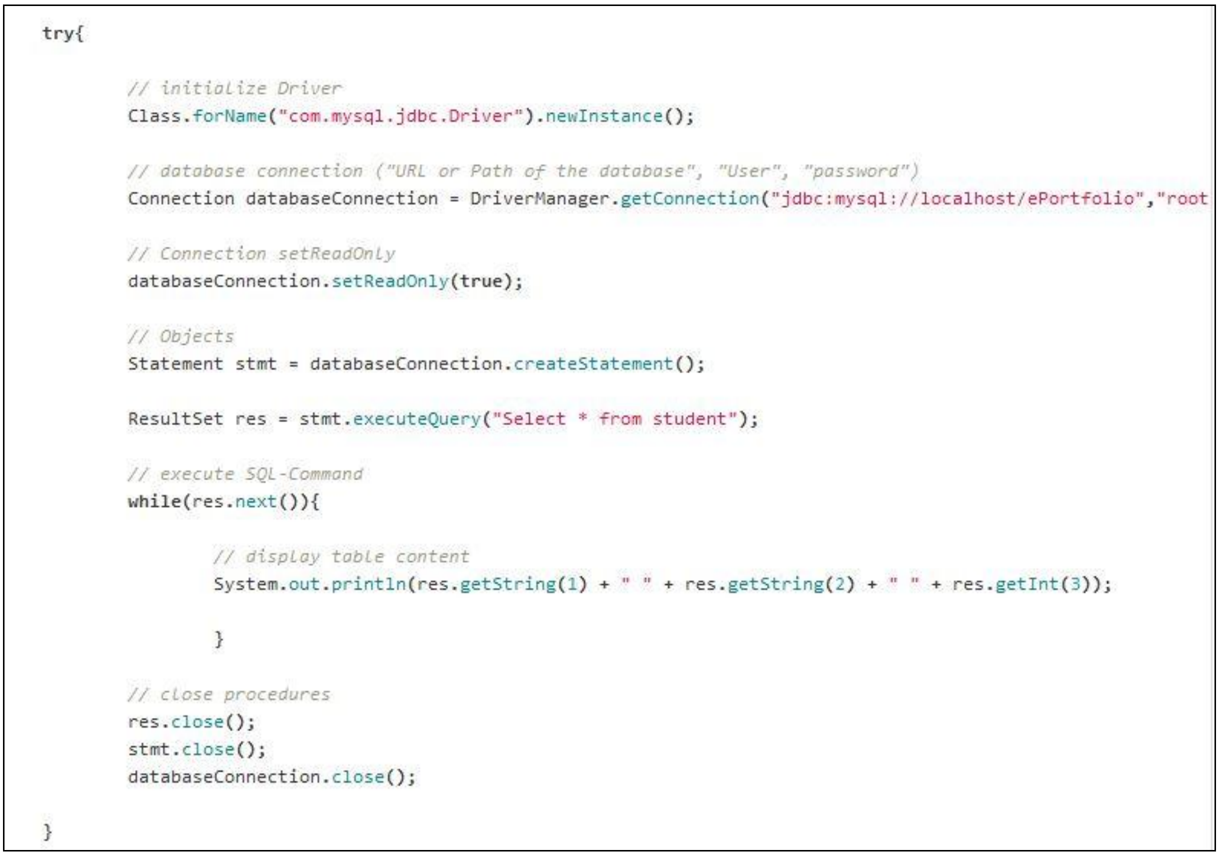
- Import the java-package „java.sql.*“, with this package you are able to use all sql-functions. (figure 11)



```
import java.sql.*; //import SQL-functions

public class Database_Connectivity {

        public static void main(String[] args){

                try{
```

figure 11: import java-package (sql-functions)

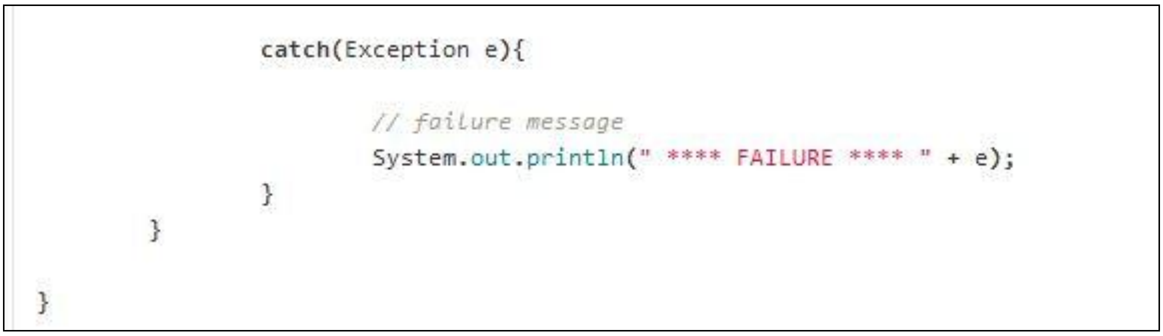
- Class.*forName*(”com.mysql.jdbc.Driver“).newInstance(); initializes the jdbc-driver.
- The database connection needs parameter („path“, “user“, “password“).
- The while-loop executes the select query. (figure 12)



```
try{

        // initialize Driver
        Class.forName("com.mysql.jdbc.Driver").newInstance();

        // database connection ("URL or Path of the database", "User", "password")
        Connection databaseConnection = DriverManager.getConnection("jdbc:mysql://localhost/ePortfolio","root

        // Connection setReadOnly
        databaseConnection.setReadOnly(true);

        // Objects
        Statement stmt = databaseConnection.createStatement();

        ResultSet res = stmt.executeQuery("Select * from student");

        // execute SQL-Command
        while(res.next()){

                // display table content
                System.out.println(res.getString(1) + " " + res.getString(2) + " " + res.getInt(3));

                }

        // close procedures
        res.close();
        stmt.close();
        databaseConnection.close();

}
```

figure 12: try

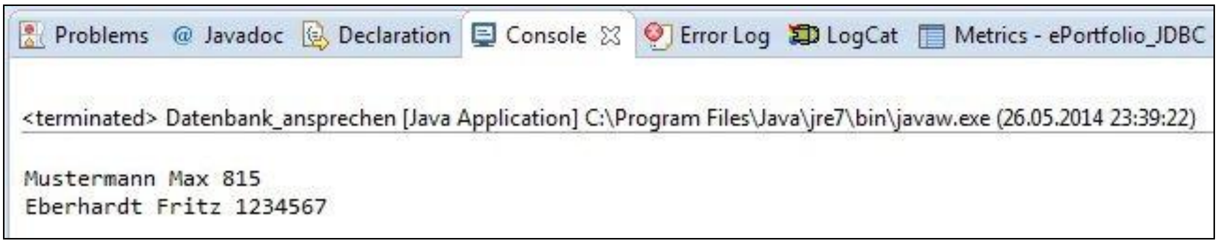
- Catch is executed if a failure occurs (figure 13)



```
                catch(Exception e){

                        // failure message
                        System.out.println(" **** FAILURE **** " + e);
                }
        }

}
```

figure 13: catch

- Output is shown in figure



```
<terminated> Datenbank_ansprechen [Java Application] C:\Program Files\Java\jre7\bin\javaw.exe (26.05.2014 23:39:22)

Mustermann Max 815
Eberhardt Fritz 1234567
```

figure 14: output

3 Forum

Link to Git Repository

- https://github.com/mraab89/Tutorial_Java_Database_Connectivity_JDBC

Link to forum stackoverflow

- http://stackoverflow.com/questions/17426052/error-2003-hy000-cant-connect-to-mysql-server-on-localhost-10061