MySQL and Java JDBC - Tutorial

Table of Contents

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MySQL and Java JDBC. This tutorial describes how to use Java JDBC to connect to MySQL and perform SQL queries, database inserts and deletes.

1. Connection to database with Java

The interface for accessing relational databases from Java is *Java Database Connectivity (JDBC)*. Via JDBC you create a

results.

JDBC provides an interface which allows you to perform SQL operations independently of the instance of the used database. To use JDBC, you require the database specific implementation of the JDBC driver.

2. Introduction to MySQL

To learn to install and use MySQL please see MySQL - Tutorial (http://www.vogella.com/tutorials/MySQL/article.html) .

The following description will assume that you have successfully installed MySQL and know how to access MySQL via the command line.

3. MySQL JDBC driver

To connect to MySQL from Java, you have to use the JDBC driver from MySQL. The MySQL JDBC driver is called *MySQL Connector/J*. You find the latest MySQL JDBC driver under the following URL: http://dev.mysql.com/downloads/connector/j.

4. Exercise: create example database

In this exercise you create a new database, a new user and an example table. For this connect to the MySQL server via the `mysql` command line client.

Create a new database called *feedback* and start using it with the following command.

```
create database feedback;
use feedback;
```

Create a user with the following command.

```
CREATE USER sqluser IDENTIFIED BY
'sqluserpw';

grant usage on *.* to
sqluser@localhost identified by
'sqluserpw';
grant all privileges on feedback.* to
sqluser@localhost;
```

Now create a sample database table with example content via the following SQL statement.

```
        id INT NOT NULL
AUTO_INCREMENT,
        MYUSER VARCHAR(30) NOT NULL,
        EMAIL VARCHAR(30),
        WEBPAGE VARCHAR(100) NOT NULL,
        DATUM DATE NOT NULL,
        SUMMARY VARCHAR(40) NOT NULL,
        COMMENTS VARCHAR(400) NOT
NULL,
        PRIMARY KEY (ID)
    );

INSERT INTO comments values (default,
'lars',
'myemail@gmail.com','http://www.vogell
a.com', '2009-09-14 10:33:11',
'Summary','My first comment' );
```


5. Java JDBC

Create a Java project and a package called *de.vogella.mysql.first*.

Create a `lib` folder and copy the JDBC driver into this folder. Add the JDBC driver to your classpath. See Adding jars to the classpath (http://www.vogella.com/tutorials/Eclipse/article.html#classpath) for details.

Create the following class to connect to the MySQL database and perform queries, inserts and deletes. It also prints the metadata (table name, column names) of a query result.

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.Date;

public class MySQLAccess {
    private Connection connect = null;
    private Statement statement =
null;
    private PreparedStatement
preparedStatement = null;
    private ResultSet resultSet =
null;

    public void readDataBase() throws
Exception {
        try {
            // This will load the
MySQL driver, each DB has its own
driver

Class.forName("com.mysql.jdbc.Driver")
;
            // Setup the connection
with the DB
            connect = DriverManager

.getConnection("jdbc:mysql://localhost
/feedback?"
                                    +
"user=sqluser&password=sqluserpw");

            // Statements allow to
issue SQL queries to the database
            statement =
connect.createStatement();
            // Result set get the
result of the SQL query
```

```
                .executeQuery("select * from
feedback.comments");
                writeResultSet(resultSet);

                // PreparedStatements can
use variables and are more efficient
                preparedStatement =
connect

.prepareStatement("insert into
feedback.comments values (default, ?,
?, ?, ? , ?, ?)");
                // "myuser, webpage,
datum, summary, COMMENTS from
feedback.comments");
                // Parameters start with 1

preparedStatement.setString(1,
"Test");

preparedStatement.setString(2,
"TestEmail");

preparedStatement.setString(3,
"TestWebpage");

preparedStatement.setDate(4, new
java.sql.Date(2009, 12, 11));

preparedStatement.setString(5,
"TestSummary");

preparedStatement.setString(6,
"TestComment");

preparedStatement.executeUpdate();

                preparedStatement =
connect

.prepareStatement("SELECT myuser,
webpage, datum, summary, COMMENTS from
```

```
            preparedStatement.executeQuery();
            writeResultSet(resultSet);

            // Remove again the insert
            comment
            preparedStatement =
            connect
            .prepareStatement("delete
            from feedback.comments where myuser= ?
            ; ");

            preparedStatement.setString(1,
            "Test");

            preparedStatement.executeUpdate();

            resultSet = statement
            .executeQuery("select *
            from feedback.comments");
            writeMetaData(resultSet);

        } catch (Exception e) {
            throw e;
        } finally {
            close();
        }

    }

    private void
    writeMetaData(ResultSet resultSet)
    throws SQLException {
        //  Now get some metadata from
        the database
        // Result set get the result
        of the SQL query

        System.out.println("The
        columns in the table are: ");

        System.out.println("Table: " +
        resultSet.getMetaData().getTableName(1
```

```
resultSet.getMetaData().getColumnCount
(); i++){
                System.out.println("Column
" + i
resultSet.getMetaData().getColumnName(
i));
        }
    }

    private void
writeResultSet(ResultSet resultSet)
throws SQLException {
        // ResultSet is initially
before the first data set
        while (resultSet.next()) {
            // It is possible to get
the columns via name
            // also possible to get
the columns via the column number
            // which starts at 1
            // e.g.
resultSet.getSTring(2);
            String user =
resultSet.getString("myuser");
            String website =
resultSet.getString("webpage");
            String summary =
resultSet.getString("summary");
            Date date =
resultSet.getDate("datum");
            String comment =
resultSet.getString("comments");
            System.out.println("User:
" + user);

System.out.println("Website: " +
website);

System.out.println("summary: " +
summary);
            System.out.println("Date:
" + date);
```

```
            comment);
        }
    }

    // You need to close the resultSet
    private void close() {
        try {
            if (resultSet != null) {
                resultSet.close();
            }

            if (statement != null) {
                statement.close();
            }

            if (connect != null) {
                connect.close();
            }
        } catch (Exception e) {

        }
    }

}
```

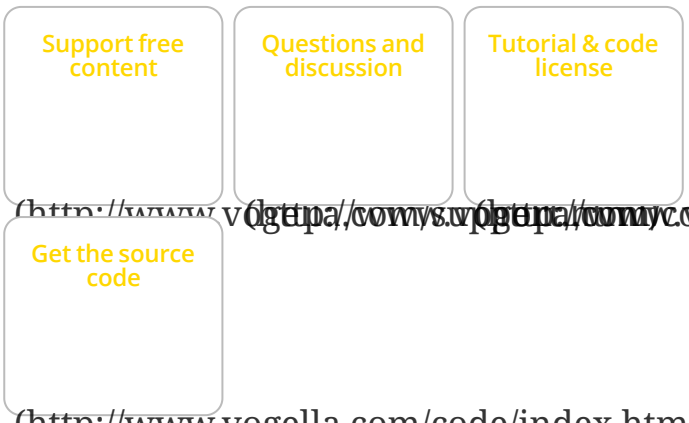
Create the following main program to test your class.

```
import de.vogella.mysql.first.MySQLAccess;

public class Main {
    public static void main(String[] args) throws Exception {
        MySQLAccess dao = new MySQLAccess();
        dao.readDataBase();
    }

}
```

6. About this website



(http://www.vogella.com/code/index.html)

7. Links and Literature

MySQL homepage (http://www.mysql.com)

Download link for MySQL (http://dev.mysql.com/downloads/)

7.1. vogella GmbH training and consulting support

(http://www.vogell a.com/training/)

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