CS1555 Recitation 10

Objective: JDBC PostgreSQL Guide – Database Programming

Part 1: Link to the local PostgreSQL server using JDBC [IDE]

1. Download the java demo code from the recitation webpage.
2. Run the r11_db.sql. This will create a new schema for this recitation.
3. In the each .java:
    a. Change both the database username and password (line 13) your credentials.
    b. Change the database URL if necessary (line 10) to: jdbc:postgresql://localhost:5432/
4. Download the JDBC driver at:
    https://jdbc.postgresql.org/download/postgresql-42.2.18.jre7.jar (Java 7)
    https://jdbc.postgresql.org/download/postgresql-42.2.18.jar (Java 8)
5. Add the library to the project and run the examples

Example 1: Connect to database using JDBC

Compile and run *JavaDemo.java*. This example connects to the local database and retrieves the tuples. Try to get the **class** number for the **students** table.

Example 2: Programming with cursors and extract the data type using JDBC

Compile and run *JavaDemoCursor.java*. This example connects to the local database and retrieves the tuples using a cursor. What is TYPE_SCROLL_INSENSITIVE and CONCUR_READ_ONLY?

Example 3: Handling exceptions using JDBC

Compile and run JavaDemoException.java. This example connects to the local database but fails to find the table. Check what values we can get from SQLException.

Example 4: Avoiding SQL injection using JDBC

Compile and run *JavaDemoInjection.java*. Try to gain access using SQL injection (e.g., login). Change the **password** variable, which represents the input password.
Compile and run JavaDemoWOInjection.java. Try to do the same here. What do you observe?

Example 5: Transactions using JDBC

Compile and run *JavaDemoTransaction.java*. This example connects to the local database and inserts two students using two insertion statements as one transaction.

Example 6: Function calling using JDBC

Compile and run *JavaDemoFunctionCalling.java*. This example connects to the local database and inserts demonstrates how to call functions and get the returned values.

Part 2: Link to the local PostgreSQL server using JDBC [Command Line]

1. Download the java demo code from the recitation webpage.
2. In the JavaDemo.java:
    c. Change both the database username and password (line 13) your credentials.
    d. Change the database URL if necessary (line 10) to: jdbc:postgresql://localhost:5432/
3. Download the JDBC driver at:
    https://jdbc.postgresql.org/download/postgresql-42.2.18.jre7.jar (Java 7)
    https://jdbc.postgresql.org/download/postgresql-42.2.18.jar (Java 8)
4. Put all files into one folder
5. Compile the code using (for example):
    ```
    javac -cp postgresql-42.2.18.jre7.jar JavaDemo.java (Java 7)
    javac -cp postgresql-42.2.18.jar JavaDemo.java (Java 8)
    ```
    For Windows:
    ```
    javac -cp "postgresql-42.2.18.jre7.jar:." JavaDemo.java
    javac -cp "postgresql-42.2.18.jar;." JavaDemo.java
    ```

6. Run the code using (for example):
    ```
    java -cp postgresql-42.2.18.jre7.jar:. JavaDemo (Java 7)
    java -cp postgresql-42.2.18.jar:. JavaDemo (Java 8)
    ```
    For Windows:
    ```
    java -cp "postgresql-42.2.18.jre7.jar;." JavaDemo
    java -cp "postgresql-42.2.18.jar;." JavaDemo
    ```