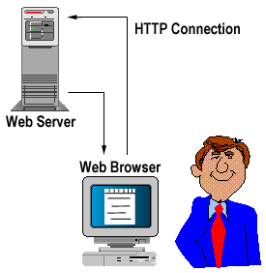
CENG 443 - Intr. to Object Oriented Programming Languages and Systems



Fall 2015 - Homework 3

RMI and JDBC based Web Server Utilities

Selim Temizer

Feedback : Between January 18th and January 21st, 2016
Due date : January 22nd, 2016 (Submission through COW by 23:55)

Part One – Building an RMI Server that uses JDBC, and testing it (90 points)

We have basically covered how a web server works internally, and we have seen a high quality sample web server implementation that I named as ***Temizer Web Server*** during the lectures this week. The full source code and a sample root directory for this server are available in the code bundle attached to the homework specification.

As we mentioned in the lecture, the server makes use of 4 data tables to store some information, and these tables are currently in the form of Java data structures (3 maps and 1 list). There is also a small API that consists of 6 methods that are related with these data tables.

We would like to put these data tables into an actual MySQL database, and implement the 6 methods as part of an RMI object, such that other people (other web servers) can also make use of these tables and the related small API.

For this purpose, you will need to install MySQL on your machine, create a logical database named ***ceng443***, and put the Java data tables in this database. The full database schema is also provided to you as an SQL file in the bundle. Use the username ***root*** and password ***root*** for your MySQL database (we will use these values when grading).

Then, you will need to implement the parts marked with ellipses ("…") inside the following two files: ***ServerUtilitiesImplementation.java*** and ***ServerUtilitiesTester.java***

The tester is similar to the testers that we will use when grading your homework assignments. Once you successfully implement the two files and run them together (one as the RMI Server and the other as the RMI Client) you should get an output that looks like the attached output example.

IMPORTANT: Since we don't have much time left in this semester, you will not be required to modify the Temizer Web Server to work with the RMI Server. The tester will be enough for practicing with how an RMI Client would use the RMI Server that you built.

Part Two – Design Analysis (10 points)

If you were asked to modify the Temizer Web Server code to use the RMI Server, which part(s) of the Temizer Web Server source code would create problems? List exact source code line numbers, and explain why and how those parts would be problematic during the modification.

What to submit? (Use ***only ASCII characters*** when naming all of your files and folders)

1. Design Analysis report and any other optional documentation (in a directory named "***Docs***").
2. Your source code (in a single directory named "***Source***"). Just put the java files that you filled in (no need to include the other files, we will copy them over as necessary). Do NOT use packages. Do NOT submit binary code or IDE created project files. Just submit your ".java" files. I should be able to compile and run your code simply by typing the following (in different terminals) :

```
C:\...\Source>  javac  *.java
C:\...\Source>  rmiregistry.exe
C:\...\Source>  java ServerUtilitiesImplementation
C:\...\Source>  java ServerUtilitiesTester
```

Zip the 2 items above together, give the name <ID>_<FullName>.zip to your zip file (tar also works, but I prefer Windows zip format if possible), and submit it through COW. For example:

e1234567_SelimTemizer.zip

There are a number of design decisions and opportunities for visual improvements and creative extensions that are deliberately left open-ended in this homework specification. There will be bonuses awarded for all types of extra effort. Late submissions will NOT be accepted, therefore, try to have at least a working baseline system by the deadline. Good luck.