ELEC-E8113 Information systems in industry

Homework 4. Max 3 points.

Deadline is 5.12.2022 (last lecture). Send a screenshot and the modified source file to ilkka.seilonen@aalto.fi.

The purpose of this assignment is to familiarize yourself a little with the basic techniques of OPC UA. You are supposed to implement small parts of a simple OPC UA client application. The assignment requires some familiarity with Java programming and using an IDE.

It is assumed in these instructions that you can use your own computer to do this assignment. If you have issues with the software tools, please, contact the teacher.

You need to download and install several of the same software tools and libraries than in OPC UA teamwork. Check the OPC UA teamwork document about these.

- Java version 8 (newer ones might be fine as well)

- Eclipse IDE for Java Developers, version 2019 or later. http://www.eclipse.org.

- Prosys OPC UA Java SDK 4.9.0. Available from a company Prosys OPC based on request. https://www.prosysopc.com/products/opc-ua-java-sdk/ (mention Aalto University and ELEC-E8113 course in your request, ask for SDK version 4.9.0)

- DemoServer. A zip-file is available at Mycourses / Assignments / Teamworks / OPC UA.

Step 1. Download SimpleClient.zip from the homework website. It contains a project that you should open with Eclipse: File -> New -> Java Project and uncheck the Use default location checkbox. Modify the project properties (Project -> Properties -> Java Build Path) to match your installation. Check the paths also in SimpleClient.bat and DemoServer.bat.

Step 2. Open the source file SimpleClient.java in Eclipse (in folder src\fi\aalto\client). Parts of the source has been removed and you should write them. Look for a string "TODO" in the source. You should implement the following simple operations of the UA client: connect to server, find a node, find children of a node, write a value of a variable, read a couple of variable values, subscribe to and unsubscribe from a variable and disconnect from the server. Comments in the source file should help you. Otherwise you need to use the Javadoc documentation from Prosys provided with the SDK.

Step 3. Test your application. First run "DemoServer.bat -s" (note option -s) and then SimpleClient.bat both from Command Prompts (see below). You could also run your application from Eclipse by selecting a project and giving a command Run As -> Java Application. You should see something similar than in the figure below.

Send your SimpleClient.java file and a screenshot of the output to the teacher.

```
C:\Users\Seilonen\Workspace\SimpleClient>SimpleClient.bat
* Prosys OPC UA SDK for Java v4.3.0-1075
* (c) Prosys OPC Ltd. <http://www.prosysopc.com>

* Running in EVALUATION mode
* Connections will close after 119 minutes

Connected to opc.tcp://localhost:52500/DemoServer
Name of RootFolder is Root
Children of Root are:
1. Types
2. Objects
3. Views
New value should be 1.25
Value is 1.25
Time is 09/26/20 05:51:57.0260000 GMT
Start subscription
1. Value is 105.88773
2. Value is 98.525665
3. Value is 88.10417
4. Value is 75.45085
5. Value is 61.570538
6. Value is 47.565506
7. Value is 34.547928
8. Value is 23.551569
9. Value is 15.449674
10. Value is 10.885637
End subscription
Disconnected from opc.tcp://localhost:52500/DemoServer

C:\Users\Seilonen\Workspace\SimpleClient>
```