



## Assignment #2: Eval Concurrent Server

### **Motivation**

Performing basic calculations is not a big deal for any computer. In this assignment we are going to create a server to perform calculations for a set of clients. The server will accept queries from clients in the form of a single text line. Server will perform the calculation and the result will be sent back to the client.

A multi-thread server is required as several clients can be connected at the same time.

### **Implementation details**

As part of what you are provided to solve this assignment is a way to obtain the evaluation of a string to a number. File **Eval.java** (on next page) performs the desired calculation over the first command-line parameter.

Example: String in the form of “1+3\*2-25/5” has to be evaluated to “2”.

We are going to use multiple telnet windows to act as clients connecting to port 8888 on the localhost.

Once a client connects, it is allowed to send one-line arithmetic expressions till it provides **an empty line**, after which the **server closes the connection**. Each line transmitted by the client will be responded with the result of the arithmetic expression or the word ERROR if the expression triggered an exception. Only 0..9,+,-,/,\*,( and ) symbols are allowed.

### **Code and Submission Guidelines**

- Your program's main class has to be **EvalServer**.
- Server listens on port 8080.
- Please submit you work as a single ZIP file with your UPVNET name as the filename. Do not forget to include all the source code.
- Please include your name as a comment in source code files.
- Remember each assignment **is your personal work only**, you are not allowed to share your code with other students. Failure to honor this will cause all the involved parties to fail.
- Submit your assignment as an email with the ZIP file attached.
- Please send your assignment to the account **misan AT disca.upv DOT es**
- Subject line has to be **Assignment#2**

### **Due Date**

This assignment is due by **12:00am Dec 20<sup>th</sup>, 2010**.

Please note that early submissions can benefit of a fail warning. After you fix the reported problem, you are entitled to resubmit. This benefit ends five days before the deadline.



## Sample code

The sample program below shows how to use the Javascript embedding feature of Java 6 so you can get a (Javascript) arithmetic expression evaluated. This work is done by `calc()` function.

The code created will be `"i=expression"` and evaluated by `engine.eval()` call. The value of `"i"` is later requested to the Javascript interpreter by `engine.get()`;

You can use this same idea for your server, but remember your server has to be able to handle several clients simultaneously.

```
import javax.script.*;

class Eval {
    static ScriptEngineManager manager = new ScriptEngineManager();
    static ScriptEngine engine= manager.getEngineByName("js");

    public static void main(String args[]) {
        System.out.println(calc(args[0]));
    }
    public static String calc(String line) {
        try {
            engine.eval("i="+line); // calculate expression
            return(engine.get("i").toString());
        }
        catch(ScriptException se) {return("ERROR"); }
    }
}
```