

Homework 09: Client / Server Calculator

CS 412

For this homework, your task is to implement **two** socket programs: 1) a server and 2) a GUI client. The client GUI must read input (i.e., simple arithmetic expressions) from the user, send it to the server, then display the server's response. The server will serve one client at a time and respond with the result of each arithmetic operation.

Server:

- Serves localhost, port 5000
- Responds to one client at a time
- Reads lines of input from the client (until "EOF")
- Processes one line at a time
 - Line format: "**x op y**"
 - x: double
 - op: arithmetic operator (+, -, *, /, ^, or %)
 - y: double
- Responds with result of operation
- If client disconnects:
 - Continues to serve other client(s)
- Must write status to console
- Must handle ill-formed requests gracefully

Client:

- GUI
 - Two text fields:
 - Input: user input
 - Output: server response
 - One button:
 - "COMPUTE"
- On button press:
 - Sends input text to server
 - Receives result from server
 - Writes result to output text field
- Must exit fully when user closes GUI
- Must write status to console

HINTS:

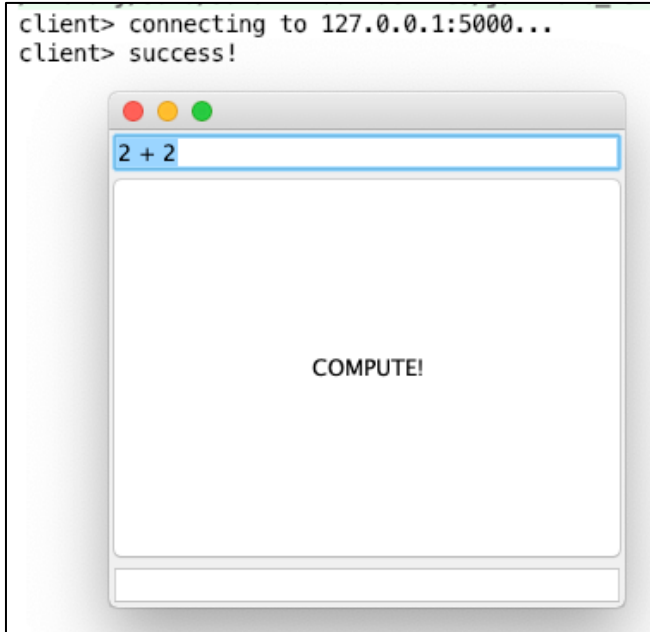
- `ServerSocket` & `Socket`
- `.split(..)` & `.trim()`
- `BufferedReader` & `PrintWriter`
- `.readLine()` & `.println(..)` & `.flush()`
- `.setDefaultCloseOperation(WindowConstants.EXIT_ON_CLOSE);`

EXAMPLE:

- Start Server first:

- `server> waiting for client to connect..`

- Start Client



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- Server's response:

- `server> connected to client Socket[addr=/127.0.0.1,port=59893,localport=5000]
server> waiting for client to send data..`

- Enter a formula, click COMPUTE!



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- Server's reaction:

- ```
server> received: 2 + 2
server> sent response: 4.0
server> waiting for client to send data..
```

- Client continues to send arithmetic requests.. Server continues to response

- Client closes GUI:

- Server's response: (waits for next client)

- ```
server> waiting for client to connect..
```

MORE EXAMPLES:

- Assumes Server is up and running

