Socket Programming Project

IK1203
Peter Sjödin

Socket Programming Project

- Learn about
  - Socket programming in Java
  - TCP client and server
  - HTTP server
  - Concurrent servers

Project Organization

- A series of tasks
  - A task typically involves implementing a client or server in Java
  - Tasks build upon each other
- Four to five tasks
- About a week to complete each task
- Submit solution in Canvas

Submitting Solutions

- Upload a ZIP archive with your source code
- We use tools to evaluate your solutions
  - Therefore, you solution must be submitted exactly according to the instruction
  - Otherwise it can’t be graded

Supervision

- Supervision classes scheduled together with the labs
- Sign up for supervision slots in Canvas
- Discuss, ask questions, get technical help, …

Task 1: TCPAsk

- A client that contacts a TCP server (of any kind), and prints out whatever the server returns

```
$ java TCPAsk time.nist.gov 13
time.nist.gov:13 says:

58128 18-01-10 23:18:34 00 0 0  40.2 UTC(NIST) *
```

- You get the source code to TCPAsk
- But most of the work is done by the class TCPClient
- Your job is to implement TCPClient

Task 2: HTTPEcho Server

- A server that returns whatever it receives from the client, as an HTTP response.
- For instance, connect to it from your web browser, and you should see something like this:

```
GET / HTTP/1.1
Host: localhost:8888
Upgrade-Insecure-Requests: 1
Accept:
text/html,application/xhtml+xml,application/xml;q=
0.9,*/*;q=0.8User-Agent: Mozilla/5.0 (Macintosh;
Intel Mac OS X 10_13_2) AppleWebKit/604.4.7
(KHTML, like Gecko) Version/11.0.2 Safari/604.4.7
Accept-Language: en-us
Accept-Encoding: gzip, deflate
Connection: keep-alive
```

Task 3: HTTPAsk Server

- An HTTP server that uses your TCPClient class from Task 1
  - Specify hostname and port as “query” data to HTTPAsk server
- Server returns response from server, as an HTTP response

```
GET /ask?hostname=time.nist.gov&port=13 HTTP/1.1
```

Task 4: Multi-threaded HTTPAsk Server

- A concurrent server, that can handle many clients at the same time.
  - The HTTPAsk server in Task 3 only needs to deal with one client at a time.

Further Tasks

- More later…

General Instruction

- There are probably many Java libraries that could do the work for you
- See the instructions and examples for what libraries you may use
- If you want to use anything else, you need permission
  - Ask on the forum (and expect “no” for an answer)
  - You are here to learn!
- You may collaborate, but each students submits his/her own solution
- We will check for duplicates/plagiarism