CNT 5106 Computer Network Fundamentals

Project 3 Team Project

Handout 3/30, Due 4/20

Internet Chatting

1. **Description**

Each team allows one or two students. Write a chat program, which will create two threads: a main thread (also used as the reading thread) and a writing thread. When the program starts, the main thread executes the following:

First, it creates a new thread – let's call it the writing thread. Refer to the server code of project 2 for how to create a new thread with new Handler(…).start(). This thread will take a port number from the keyboard and then connects to that port number. After the connection (socket) is successfully established, it goes into a loop of reading a message from the keyboard and writing the message to the connection (socket). If the message is "transfer filename", after the message is written, the file is transmitted through the connection.

Next, it creates a ServerSocket, prints out the port number used, and listens on the socket for new connection (i.e. the accept method). When a new connection from another user arrives, the connection Socket is established. The main thread will become the so-called reading thread by listening to the connection socket. (Here, it resembles the server code of project 1, instead of project 2). This thread will attempt to read messages from the connection socket and print the messages on the screen. If the message is "transfer filename", it reads the file and stores locally.

The demo will happen in the following sequence:

1. Run the program for the first user and let's call it Alice. The main thread prints out a port number, say, X.
2. Run the program for the second user and let's call it Bob. The main thread prints out a port number, say, Y, which must be different from X.
3. On Alice's console window, type Y. Alice's writing thread will connect to port Y of Bob, establishing a connection for Alice to write to Bob.
4. On Bob's console window, type X. Bob's writing thread will connect to port X of Alice, establishing a connection for Bob to write to Alice.

5. Write a couple of lines on Alice's console window. They should show up on Bob's window.
6. Write a couple of lines on Bob's console window. They should show up on Alice's window.
7. Transfer a file from Alice to Bob.

2. Programming Environment

Programming language: Java, C, C++, C#, Python
Operating System: Windows, Mac OS or Linux
Programming Tool: Eclipse, IntelliJ, Jcreator, Kawa, Netbeans, … whatever you like.

To use Eclipse, please go through the following list:

1. Download JDK from: https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html

2. Download Eclipse from: http://www.eclipse.org/downloads/

3. Here is a link for eclipse tutorial: http://eclipsetutorial.sourceforge.net/totalbeginner.html

4. Here is a tutorial for socket programming in Java: http://java.sun.com/docs/books/tutorial/networking/sockets/

3. Code Submission

If you use Java, you will need to submit the following files: chat.java, chat.class, README.txt in a zipped directory, e.g., project3.rar.

If you use C/C++/C# or Python please put all source files and executables in a zipped directory. Submit the project through Canvas:

1) Go to https://lss.at.ufl.edu/
2) Click "Login to e-Learning"
3) Login with your gator link username/password
4) Go in CNT 5106
5) Click "Assignments" and submit your project

This is a team project. Students must submit their code via Canvas by the deadline. We will run an automatic tool to catch submissions with identical or similar code. There will be no late submissions.