CSCI 233 Computer Networks

Department of Computer Science, School of Science and Technology

Nazarbayev University

Homework 2

Due: March 28, 2018 23:55

Submit your work to Moodle. We may ask you to come for live grading.

In this homework you will develop a simple chat system (server+client) in Java. Server should always be on and wait for clients to connect. All the communication between clients goes through the server only.

- When client connects to the server it should send: `server hello <username>` and receive back: `hi <username>`. Usernames are reserved (i.e. must be unique) during joining, so the server should handle conflicts appropriately.
- Server offers several pre-existing groups for clients to join. After connection was established, client can request the list of available groups: `server groupslist`. Server replies with group names and members of each group who are currently online: `<groupname1>: <username1>, <username2> | <groupname2>: <username3>, <username4>`.
- Client can join one of the groups if it has not already: `server join <groupname>`
- Client can request the list of members of the group it has joined: `server members`
- After joining a group, client can send either a public (`toall <message>`) or a private message (`<receiver> <message>`). Public message should be received only by the group members. Private message can be sent only to a group member. If the receiver has disconnected before receiving the message, the server should notify the sender.
- Messages arrive to the clients in the following format: `<sender>: <message>`.
- Client can leave a group: `server leave <groupname>`
- Client can disconnect from the server: `server exit`

Server should respond to each client message with either success or error message. Consider different cases when errors may occur, for example, when client sends an out of order message

(asking for the list of groups before establishing the connection, or trying to join more than one group, etc. Joining a group without requesting the list of groups is fine, as well as sending a message without querying the members), or when client issues wrong commands (joining non-existent groups, sending messages to non-existent clients, etc.) and so on.