

COMP 713

Distributed and Mobile System

Deadline: March 31, 2017

The purpose of this paired assignment is to develop a client/server chat system where clients can connect to the server and use it to send each other messages using TCP and suitable multi-threading. UDP is also incorporated and used periodically to update clients on who is currently in the chatroom. This assignment should be demonstrated and work on at least four computers.

The system should include the following components:

Documentation and Demonstration: a brief document describing the project, its components and features, details of the client/server protocol and user documentation as well as a demonstration of the system. (5 marks)

Server: It maintains a collection of clients that are currently connected (each with a unique name) and passes messages from one client to another using TCP. It should also provide a UDP DatagramSocket which periodically is used for updating clients on the status of the chat server (*i.e.* can be used for updating each client with a list of currently connected clients). Clients and associated sockets should be held in a suitable data structure. (20 marks)

Client Interface: A GUI used to connect to the server and holds a list of other currently connected clients obtained via UDP. It should enable a client to send a text to another chosen client or broadcast to all via the server and display the messages received from other clients using TCP. Ideally the list should be updated on the GUI periodically by receiving UDP datagrams from the server. The GUI should notify when a user has connected and disconnected. (20 marks)

Messaging: Design suitable classes for encapsulating client-server protocol data for messaging in the system. For example use an abstract Message class which has a DisconnectMessage subclass used to notify the server when a client wishes to exit, a BroadcastMessage used to send all clients in the chatroom a message from a user, a MessageTo used to send a single user a private message, and include any other subclasses of Message that may be useful in the system. (5 marks)