

# COMP713 Distributed and Mobile Systems

## Assignment One

Due: Friday 30 March 2018

The purpose of this 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 used to periodically update clients on who is currently in the chatroom. This assignment should be demonstrated and work on at least four computers. This 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** which 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 is used periodically 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 for connecting 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. The list should be updated on the GUI periodically by receiving UDP datagrams from the server. The GUI should generate a notification 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 for notifying 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)**

You may work in pairs. Please make sure that one member submits the completed assignment to Blackboard by the due date. You must clearly indicate

in the comments who are in the team. Otherwise it will be assumed that the person submitting is working alone.