

Algorithm Design and Analysis

Assignment One

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.

The system should include the following components:

Project Design and Documentation which is a **document** describing the software project, its **components** and any **additional features**, details of the **client/server protocol**, **user documentation**, and includes an accurate and clear **UML diagram**. **(10 marks)**

Server which maintains **a list of clients** that are currently connected (each with a **unique name**) and **passes messages** from one client to another. It should provide some mechanism for **notifying clients when** the **server** will be **terminating connections** or **when a client disconnects**. **(15 marks)**

Client Interface which is a GUI used to connect to the server and obtain a list of other currently connected clients. It should enable a client to **send a text message** to another chosen client via the server and display the messages received from other clients. Ideally the list should be updated on the GUI whenever a new client connects to or disconnects from the server. **(15 marks)**

One Other Feature such as **sending and receiving images**, utilising **UDP** for some communication, **hidden connections via a password** whose presence is only known to the other hidden clients, or when the server starts having it send e-mails to a list of addresses notifying them of the IP address and port of the server. **(10 marks)**

Optional