Project Report

server.py

Communication Class: This class has 2 function first is init the other one is learn. In nit function I create a file and write the value 1. In learn function to check whether the client chose UTC or UDP option by reading the value in the file that I just created. If the state variable is UTC, I call UTC class if the state variable is UDP I call the UDP class. Based on which class I called the according server will be formed.

TCP Class: TCP class has five function. In init I created 3 variables to keep the clients, the message and socket. In listening server that I created the socket for the tcp communication. By creating IP and PORT and binding them together set the socket options to re-use the port without any interruption. Finally, the socket listens new possible client connections. In new thread socket accepts the new connections and saves them as clients and append clients to the client list to store the connections and create a thread and assign this thread to receive function to receive new messages without occupying the main process. In receive messages function using the assigned client with buffer function tries to receive messages, decode messages and broadcast them to all clients. In broadcast function, function sends messaged to all clients accept the one who sent the them. That’s how our clients communicate. They sent messages to server and server distributes them.

UDP Class: UDP class has 4 functions. In init I created 2 variables one for storing the clients and one for storing the message. In listening server that I created a udp communication socket, bind it using the IP and PORT and set the socket options to re-use the port. In receive function, function receives the sent messages and if the addresses of the messages aren’t in the client list function appends it. In broadcast function the function distributes the messages to all clients accept the one who sent them.

client.py

GUI: GUI class has 14 functions. In initUI function we have the original user interface. Labels, entries, radio buttons and a button. One entry is to get the destination IP the other one is to get the users name. when the user fills the necessary values and presses the connect button the interface changes and new elements come up. In the screen function first, function gets the entered values IP, name and the PROTOCOL. After the function renews the interface. Now on the screen there are text boxes, buttons and a scrollbar. Below text box is to insert new messages, the upper one is to display the text. One button is for sending the new message the other one is to open a new sound window. Then according to the PROTOCOL function either initializes tcp socket or udp socket. Listen message function creates a thread to receive messages. Receive message function receives sent messages using a buffer then decode the message. Inside the if conditions function tries to determine the message content and behaves accordingly. If the message is music link function plays music otherwise it inserts sent messages to the upper text file after the communications ends it closes the socket. Send chat function takes 2 parameters 1 is the data the other one is validation about the if the data is music or not if it is not music function tries to get the data again and inserts the messages to display and sends encoded messages to server to be distributed to other clients. Update pro function is to update the state value of server to inform it about the PROTOCOL. Music function is to create the music options interface and creates buttons to send the music link to be played from other clients. Play sound function checks the remaining seconds for clients to be able to send another music. Because every client can only send 1 file for 30 seconds. Function also creates a new thread to check this timing, inserts the music number to the displayer and calls the music thread. The music thread function creates a new thread to play the sent music to not occupy the main process. Play function actually plays the sent music and sound time function counts the remaining seconds for clients.

Muhammed Fatih Akbulut – Emin Kağan Kadıoğlu