LUMEN, Steven O. 2015-02521
MENDOZA, Pio Lauren T. 2015-04074

Machine Problem 1: Chatroom

For the first Machine Problem in EEE 13, we were tasked to create a chatroom be filled with four people with an added function of whispering, or sending a private message to a specific person, to one another.

The first hurdle was how to distribute the workload for this Machine Problem. We settled with splitting the Machine Problem into Server and Client for one of us then Functions (which are the error checking for the messages, user name of the people in the chatroom, and parsing of the messages and time) and the Documentation for the other.

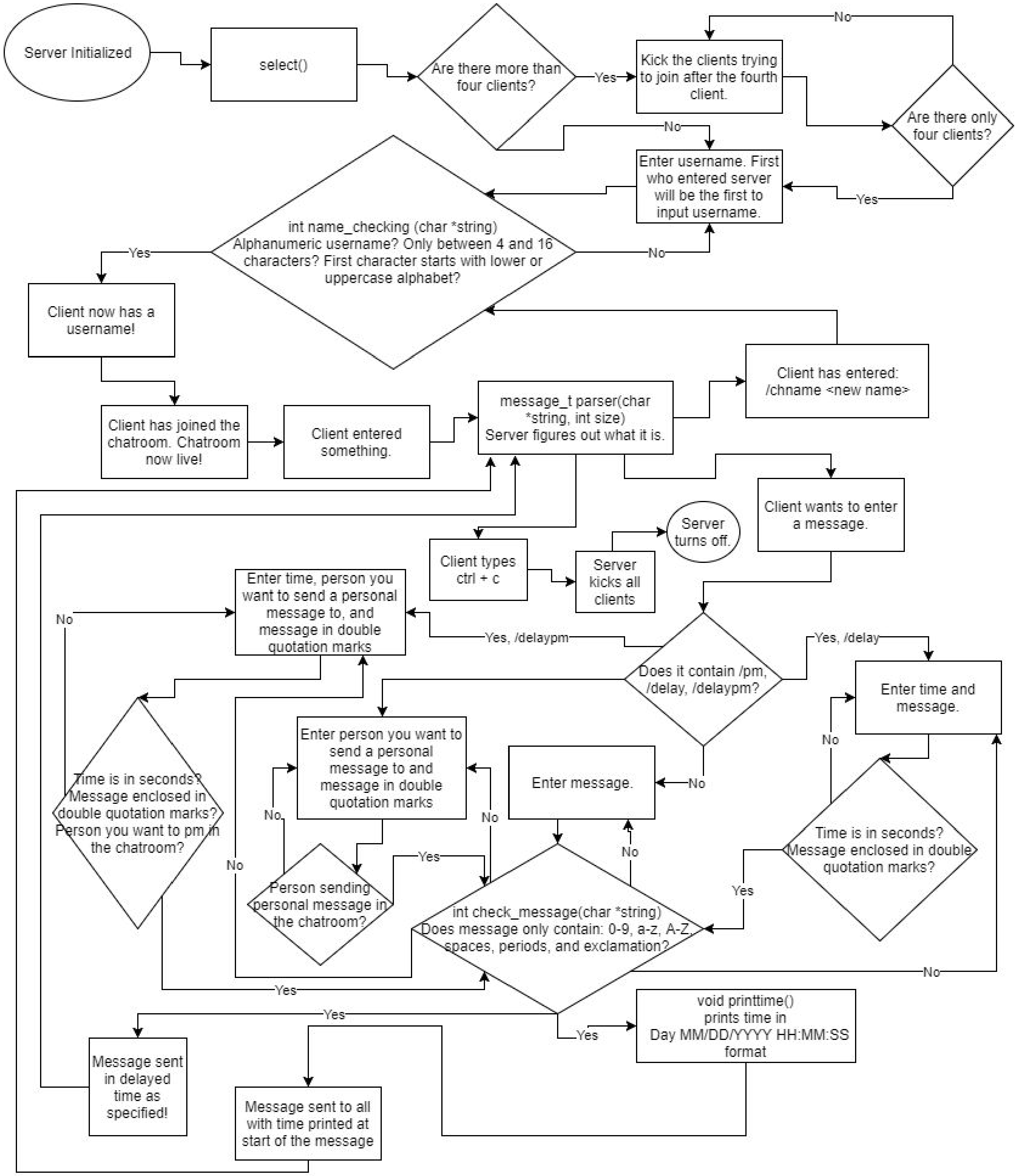
Functions went fine. It required parsing then determining whether the given user name and message was within the allowed guidelines. Some additional libraries were used like *time.h* in order to get the real time needed for the messages.

Implementing the *select()* system call was a problem which was not easily solved but this problem arose from lack of understanding what it does in the first place. We decided to use some resources from the Internet, and after a couple of readings and YouTube videos, we knew how to properly use *select().*

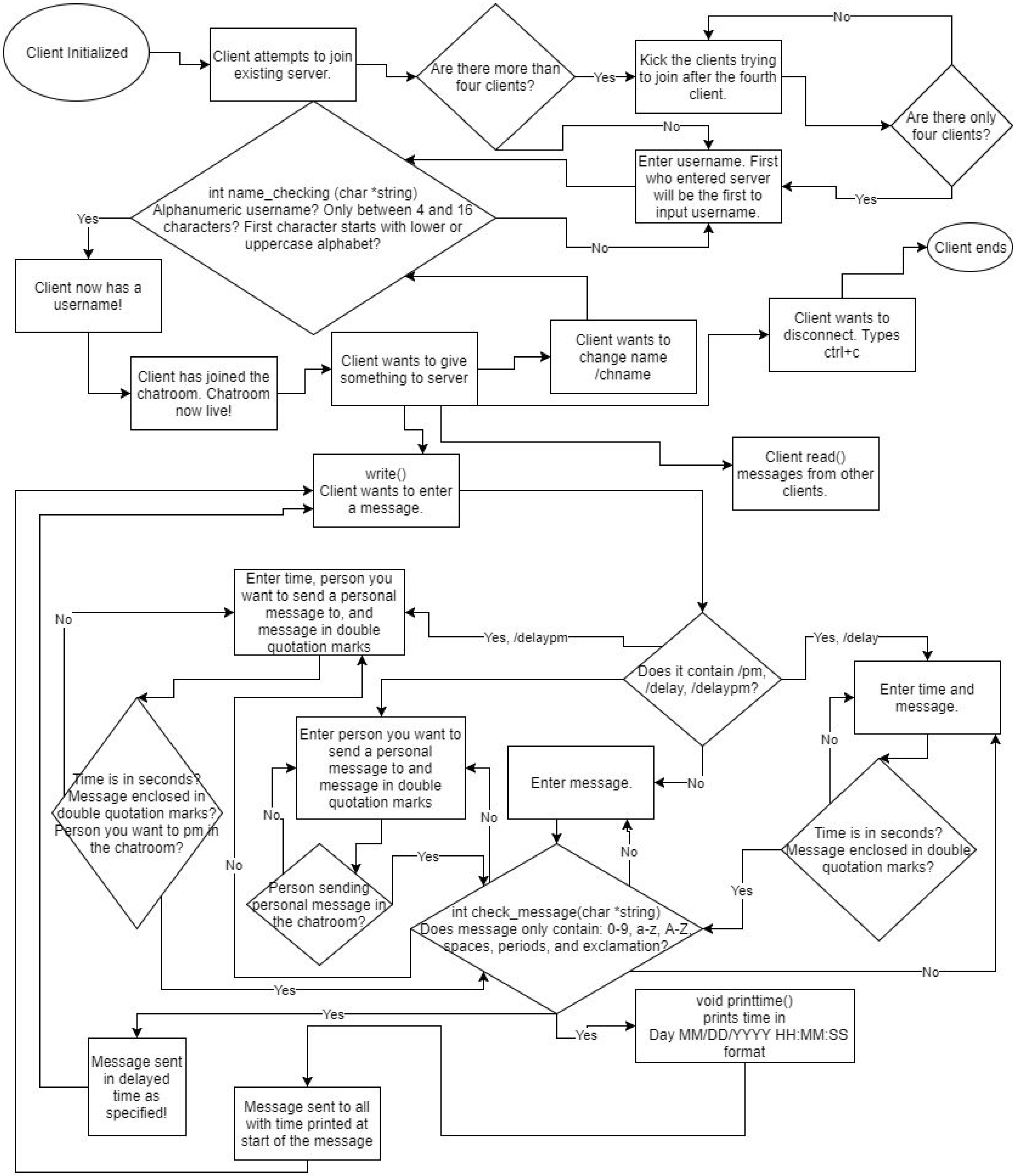
The system call was used in the server side of the code to know whether if there were clients wanting to join the chat room. Whenever a fifth client tried joining in the room, another series of process will decline its request to join. The fifth client will not be put into queue. As for the client side, *select()* was used in order to for the receive or send messages to the server.

A new bug arose whenever after one of the four initial clients leaves from the chatroom then another two new clients joins. The server accepts them both, which is a problem since there should only be four clients at a given time. This was fixed when instead of the size of the array, the size of int was used in the *send().*

Server State Diagram


Server Initialized
select()
Are there more than four clients?
Yes
Kick the clients trying to join after the fourth client.
No
Are there only four clients?
No
Yes
Enter username. First who entered server will be the first to input username.
int name_checking (char *string) Alphanumeric username? Only between 4 and 16 characters? First character starts with lower or uppercase alphabet?
Yes
No
Client now has a username!
Client has joined the chatroom. Chatroom now live!
Client entered something.
message_t parser(char *string, int size) Server figures out what it is.
Client has entered: /chname <new name>
Client wants to enter a message.
Server turns off.
Client types ctrl + c
Server kicks all clients
Enter time, person you want to send a personal message to, and message in double quotation marks
No
Yes, /delaypm
Does it contain /pm, /delay, /delaypm?
Yes, /delay
Enter time and message.
Time is in seconds? Message enclosed in double quotation marks? Person you want to pm in the chatroom?
Enter person you want to send a personal message to and message in double quotation marks
Enter message.
No
No
No
No
No
Person sending personal message in the chatroom?
Yes
No
int check_message(char *string) Does message only contain: 0-9, a-z, A-Z, spaces, periods, and exclamation?
Time is in seconds? Message enclosed in double quotation marks?
Yes
No
Yes
Yes
Yes
void printtime() prints time in Day MM/DD/YYYY HH:MM:SS format
Message sent in delayed time as specified!
Message sent to all with time printed at start of the message

Client State Diagram


Client Initialized
Client attempts to join existing server.
Are there more than four clients?
Yes
Kick the clients trying to join after the fourth client.
No
Are there only four clients?
No
Enter username. First who entered server will be the first to input username.
Yes
int name_checking (char *string)
Alphanumeric username? Only between 4 and 16 characters? First character starts with lower or uppercase alphabet?
Yes
No
Client ends
Client now has a username!
Client has joined the chatroom. Chatroom now live!
Client wants to give something to server
Client wants to change name /chname
Client wants to disconnect. Types ctrl+c
write()
Client wants to enter a message.
Client read() messages from other clients.
Enter time, person you want to send a personal message to, and message in double quotation marks
No
Yes, /delaypm
Does it contain /pm, /delay, /delaypm?
Yes, /delay
Enter time and message.
No
Time is in seconds? Message enclosed in double quotation marks? Person you want to pm in the chatroom?
Enter person you want to send a personal message to and message in double quotation marks
Enter message.
No
No
No
No
Person sending personal message in the chatroom?
Yes
No
Time is in seconds? Message enclosed in double quotation marks?
Yes
int check_message(char *string)
Does message only contain: 0-9, a-z, A-Z, spaces, periods, and exclamation?
No
Yes
Yes
Yes
void printtime()
prints time in
Day MM/DD/YYYY HH:MM:SS format
Message sent in delayed time as specified!
Message sent to all with time printed at start of the message