

C-Project - Chat application

Salam AL KAISSI Shafiq MALO

June 8, 2024

1 1. Introduction

This report will illustrate a chat application that works using the command line, it consists of the integration of four files Chat, Client, Server and SerialServer, and we used C language to program this application.

2. Application features

The application after improvement can provide the following features:

- The server connects between more than two clients.
- The server port number can be changed even after the application is compiled.
- The server saves the private and broadcast messages sent between clients in record logs and these can be viewed even after closing the session and reopening it again with a new connection.
- The server shows how many are connected in real time with the name of the connection, where the number of connections will increase for new connections and decrease for any closed connection.
- The server will show a notification that a new connection joined with the name also a notification for a closed connection with the name.
- The application provides the ability to send private messages between two connections without broadcasting the message to all connections.

3. Testing the application and the results

Below image illustrates the application in action with three connections showing the following:

- The server window on the top right shows the number of active connections with the name for each connection, as well as the inputted port number that needs to be entered in order to allow others to join this server.

- [illegible]

The following image illustrates the server window and show when a connection is closed the number of connections will be decreased:

```
s24alkal@vl-tp-br-021: ~/Téléchargements/C_Project-ShafiqMALO_Sal...
Enter The PORT Number: 1212
Client 'Shafiq' connected
Current online clients: 1
>
Client 'Salam' connected
Current online clients: 2
Client 'Mike' connected
Current online clients: 3
>
>
Salam> hi
Salam> hi
Mike> hi
Mike>
Mike> hi
Salam> hi
Shafiq> hi
Shafiq> how are you
Mike> hi
Error reading message: Success
Client 'Mike' disconnected
Current online clients: 2
```

2

the following image test the ability to send private message from one connection to another specified connection by adding @ followed by the connection name

```

s24alkai@vl-tp-br-021: ~/Téléchargements/C_Project/msc-l...
Salam> hi
> aflq>
Mike> hi
> aflq>
Mike>
> aflq>
Mike> hi
> aflq>
Salam> hi
> aflq>
Shafiq> hi
Shafiq> how are you
Shafiq> @Salam hi
Shafiq> @Mike hi
Mike> hi
> aflq>
Salam> @Shafiq hi.. How are you!
> aflq>
Salam> Hi all how are you!
> aflq>
Shafiq>

s24alkai@vl-tp-br-021: ~/Téléchargements/C_Project/
Welcome Salam
Salam> h
> lam>
> lam>
Salam> hi
Salam> hi
Mike> hi
> lam>
Mike>
> lam>
Mike> hi
> lam>
Salam> hi
Shafiq> hi
> lam>
Shafiq> how are you
> lam>
Shafiq> @Salam hi
> lam>
Mike> hi
> lam>
Salam> @Shafiq hi.. How are you!
Salam> Hi all how are you!
Salam>

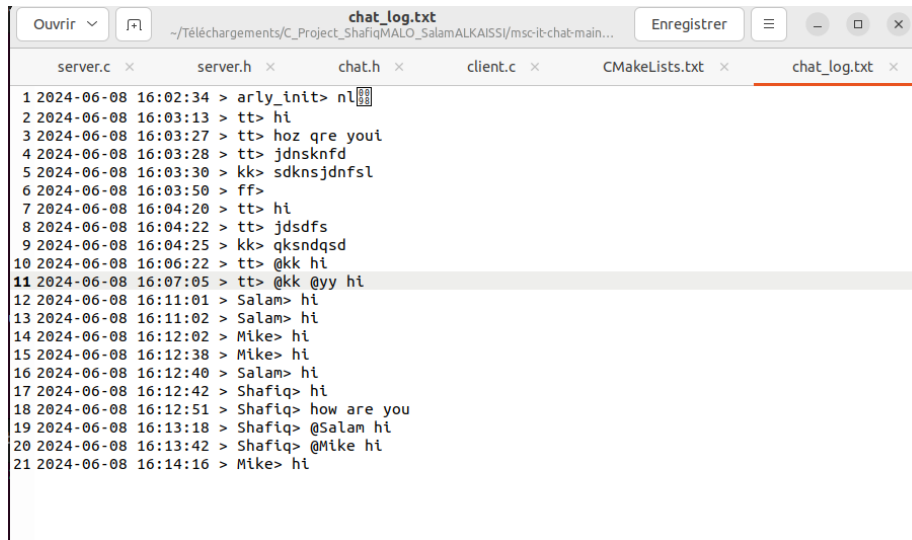
Current online clients: 1
>
Client 'Salam' connected
Current online clients: 2
Client 'Mike' connected
Current online clients: 3
>
>
Salam> hi
Salam> hi
Mike> hi
Mike>
Mike> hi
Salam> hi
Shafiq> hi
Shafiq> how are you
Mike> hi
Error reading message: Success
Client 'Mike' disconnected
Current online clients: 2
Checking 1 fds
Salam> Hi all how are you!

Welcome Mike
Mike> hi
> ke>
> ke>
Salam> hi
> ke>
Salam> hi
> ke>
Mike> hi
Mike>
Mike> hi
Salam> hi
> ke>
Shafiq> hi
> ke>
Shafiq> how are you
> ke>
Shafiq> @Mike hi
> ke>
Mike> hi
Mike> ^C
s24alkai@vl-tp-br-021: ~/Téléchargements/C_Project/

```

Figure 3: Illustration of the private messages.

The following image illustrates the record logs that will save all the private and broadcast messages sent between clients and those messages related to two sessions.

A screenshot of a text editor window titled 'chat_log.txt'. The window shows a list of chat messages with timestamps and user names. The messages are numbered 1 through 21. The window has a menu bar with 'Ouvrir', 'Enregistrer', and a search icon. The file path is '~/.Téléchargements/C_Project_ShafiqMALO_SalamALKAISSI/msc-it-chat-main...'. The tabs at the top are 'server.c', 'server.h', 'chat.h', 'client.c', 'CMakeLists.txt', and 'chat_log.txt'.

```
1 2024-06-08 16:02:34 > arly_init> nl
2 2024-06-08 16:03:13 > tt> hi
3 2024-06-08 16:03:27 > tt> hoz gre youi
4 2024-06-08 16:03:28 > tt> jdnsknd
5 2024-06-08 16:03:30 > kk> sdknsjdnfsl
6 2024-06-08 16:03:50 > ff>
7 2024-06-08 16:04:20 > tt> hi
8 2024-06-08 16:04:22 > tt> jdsdfs
9 2024-06-08 16:04:25 > kk> qksndqsd
10 2024-06-08 16:06:22 > tt> @kk hi
11 2024-06-08 16:07:05 > tt> @kk @yy hi
12 2024-06-08 16:11:01 > Salam> hi
13 2024-06-08 16:11:02 > Salam> hi
14 2024-06-08 16:12:02 > Mike> hi
15 2024-06-08 16:12:38 > Mike> hi
16 2024-06-08 16:12:40 > Salam> hi
17 2024-06-08 16:12:42 > Shafiq> hi
18 2024-06-08 16:12:51 > Shafiq> how are you
19 2024-06-08 16:13:18 > Shafiq> @Salam hi
20 2024-06-08 16:13:42 > Shafiq> @Mike hi
21 2024-06-08 16:14:16 > Mike> hi
```

Figure 4: Record logs example.

4. Suggested improvements:

The Chat application can be improved through the following:

- Adding User Authentication that will require linking each user to a username and password. The problem with this is the need for a database to store both the user's name and password and a mechanism to check the entered information.
- Improving the record logs to be able to categorize the sessions and link the session with date, time, and duration.
- Synchronizing the application with the time and date to allow the chat to add the time for each message and the date of the conversation.
- Adding Acknowledgement Notification to notify the sender when the recipient receives the message.