

# Report

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TCP-based-chat

## Usage:

Use command 'make' (Makefile) to compile the source code. (Using g++)

## Run:

client:

```
./client \<ipaddress> \<port> \<id>
```

server:

```
./server \<listen-port>
```

## Design:

Server - Client

1. Client will send a connection message to server with its id at the beginning.
2. When the server received a connection from client it will create a new thread to handle the command from this client.
3. /list: The server maintains a list of the waiting client when client call /list the server will send this list.
4. /wait: The client will create a new port to listen the chat connection. First will use select to accept () in a new listen thread then it send the new port to

server and server will add this client's information to the waiting list.

5. /connect <id>: When a client request connection the server will search the waiting list and return the result back to the client.
6. /left: When a client stops waiting it will send /left to server and the server can remove it from waiting list.

#### Client – Client

1. /connect <id>: A client get the information from server it can connect to another client by the new port number and start chat. It will start a message receive thread to recv () and type send message in the main thread.
2. Ctrl-c: the client can use ctrl-c to leave the waiting state and chatting state with a state change.
3. /quit will always exit the program.

#### **Potential problem:**

1. There might some memory leak with the socket or thread.
2. Client might cannot connect to an old port when the waiting one update a new one.
3. Ctrl-c sometimes has some issue.
4. Connection between client might lost.
5. Waiting list might no clear the leave client in some cases.

#### **Test:**

## From two client side

```
unix.lt.ucsc.edu - PuTTY
-bash-4.2$ ./client 127.0.0.1 12345 hhlili
Socket created
hhlili> /wait
waiting for connection.
hhlili> ^C
Stopped waiting.
hhlili> /list
show list
hhlili> /wait
waiting for connection.
hhlili>
Connection from lily
hhlili>
lily: hi-
hhlili> hi-
hhlili>
lily: here is lily
hhlili>
lily: hihihi
hhlili>
lily: bye
hhlili> bye
hhlili>
Left conversation with lily
hhlili> /list
show list
hhlili> /quit
-bash-4.2$

unix.lt.ucsc.edu - PuTTY
-bash-4.2$ cd github/
-bash-4.2$ cd TCP-based-chat/
-bash-4.2$ cd bin
-bash-4.2$ ./client 127.0.0.1 12345 lily
Socket created
lily> /list
show list
lily> /connect hhlili
connect to hhlili...
connection address: 127.0.0.1 49021
Socket created
lily>
Connection from hhlili
lily> hi-
lily>
hhlili: hi-
lily> here is lily
lily> hihihi
lily> bye
lily>
hhlili: bye
lily> ^C
Left conversation.
lily>
Left conversation with hhlili
lily> /quit
-bash-4.2$
```

## From server side

```
unix.lt.ucsc.edu - PuTTY
-bash-4.2$ make
g++ -o ./bin/client -g ./src/Chat_Client.cpp ./src/simpleSocket.cpp -lpthread
g++ -o ./bin/server -g ./src/Chat_Server.cpp ./src/simpleSocket.cpp -lpthread
-bash-4.2$ cd bin
-bash-4.2$ ./server 12345
=====Waiting for client's request=====
hhlili is comming!
127.0.0.1 35896

lily is comming!
127.0.0.1 35902

hhlili>wait for connection
Add waiting port for hhlili: 48681
hhlili>stop waiting
hhlili>show list
hhlili>wait for connection
Add waiting port for hhlili: 49021
lily>show list
lily>connect to hhlili...
hhlili>show list
hhlili left.
lily left.
```