COMP 4621 Project Report

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For the Server side :

1. General

   Functions:

   1. For the user_add function, I normally append the user to the end of the listOfUsers array and increase user_count by 1. Note that listOfUsers contains all the users that have registered, whether online or offline.
   2. isNewUser function, it will go through the listOfUsers array, comparing the name with the elements' name in the list. It will return -1 if the incoming name is a new user, else return 0.
   3. get_username function, it will go through the listOfUsers array, comparing the socket with the elements' socket in the list. It will return the user name of the incoming socket.
   4. Get_sockfd, it will go through the listOfUsers array, comparing the name with the elements' names in the list. It will return the user socket of the incoming user name.

   Initialization:

   The server will first create a listening socket, following the same procedure as introduced in the lab. The socket(AF_INET, SOCK_STREAM, 0) will return a socket used as the listening socket. AF_INET means address family, SOCK_STREAM for TCP connection, 0 for setting proper protocol automatically.

   We then bind the socket to the address and port number using the bind function and call listen function, specifying the maximum pending connection.

   Main loop:

   We first call the poll function, passing the array of socket descriptors, descriptor count, and timeout. -1 means the poll blocks indefinitely.

   We then loop through the pfds array. If we find there's data ready to be read and it is the listener socket, we know there's a new connection. We call accept function and add it to the pfds array through the add_to_pfds function then we send the welcome message to the client.

2. Register:

If the message we got is a registration message, we first extract the message we want. *To implement the bonus part, the user input upon registration is in the form of "username:password", in addition, we would prepend "REGISTER" to inform the server that we got a registration message. For example, if the username is aa and the password is 1234, the message server got is "REGISTERaa:1234". We then extract the name and the password.* After finishing this, we examine that if the return value of isNewUser function is -1, we know it is a new user. We allocate the space for the new user user_info_t variable, initialize its socket and state, then add it to listOfUsers array by calling the user_add function. We then create a message box, which is simply a .txt file by using fopen function. *We also create a password file for the newly registered user. The filename is "password_username.txt".* Afterward, we broadcast the message to all online users by for-looping the pfds array. Finally, we send the success message to the new user. *Additionally, we will prepend "SUCCESS" to the message sent to the newly registered user. For all the latter cases related to password validation, if the password fits the user, we will always prepend the "SUCCESS" to the message sent to the user.*

If the user has already registered, we will first check whether the password is correct or not. This is done by opening the password file for the user. If the password is not correct, we will send "FAILURE" to the user, requiring a correct password. Otherwise, we find the registration record by looping through the listOfUsers array using the name of the user. We then update the state and the socket of the user. *Afterward, we send the welcome message to the user, with "SUCCESS" prepended as mentioned above.* We open the message box of the user, read and send the message line by line. We empty the message box by calling fopen in write mode. Finally, we broadcast the welcome message to all other users.

3. Direct messages to online users

We first get the send name by calling the get_username function. Then we extract the destination name and the message from the original message. This is done by a for-loop. We then find the destination socket by calling the get_sockfd function. If the return value of the get_sockfd function is -1, we know that the user doesn't exist, and we send the warning message. Else, we first check the destination user's state. If the user is online, we directly send the message. Otherwise, we open the message box of the destination user and send the message.

4. Exit

Additional to simply requiring the user's correct password endlessly, I took into account the case when the user wants just to exit. To do this, we will simply check whether the corresponding name to the socket exists. As we have set the offline user's socket to -2 (mentioned in the latter part of EXIT), there will be no user found, and the

returned name will be empty. We will wait for the user to disconnect and close the socket. Otherwise, We first set the user's state to offline and set the user's socket to -2, then broadcast the leaving message to all of the users except the one that was trying to leave. In this case, we avoid the conflicts when newly registered users share the same socket value as the offline ones. Finally, we close the socket and delete it from the pfds array.

5. Offline message box

As mentioned above, we call fopen function in "w" mode to create the message box. We use the "a" mode to append a message when the user is offline, read the message in "r" mode when the user returns, and call the "w" mode again to empty the message box.

6. Broadcast messages

As mentioned above, we loop through the pfds array and send the message, except the one who sends it.

7. WHO message

We loop through the listOfUsers array and get the name of registered users. If the user was online, we append an "*". Afterward, we send the message to the user initiating the request.

For the Client side :

1. void recv_server_msg_handler()
   The function will operate in an infinite while loop. It will call the recv function and write the data to the buffer.

2. void check_format()
   This function is implemented to check the format of the user's input upon password registration/login. If the client wants to exit immediately during the period, we will send the exit message to the server and close the socket. We don't need to close any threads as they aren't created yet. We will check whether the user follows the input format "username:password", and also whether the username exceeds the maximum length.

3. Initialization
   It will follow the same steps to create a socket. Then it will connect to the server via connect function. After receiving the connection message, it will read the user's input name by first calling the fget function. After this, it will call strcspn to calculate the length of the input without '\n' and replace the '\n' with '\0'.We will call the check_format function to check user's input. It will send the register

message to the server. While the return message from the server is not correct, which means that the password is not correct, we will ask the user to input again. The user can choose to enter EXIT, meaning that he don't want to register/login anymore. Finally, it will create a thread using pthread_create.

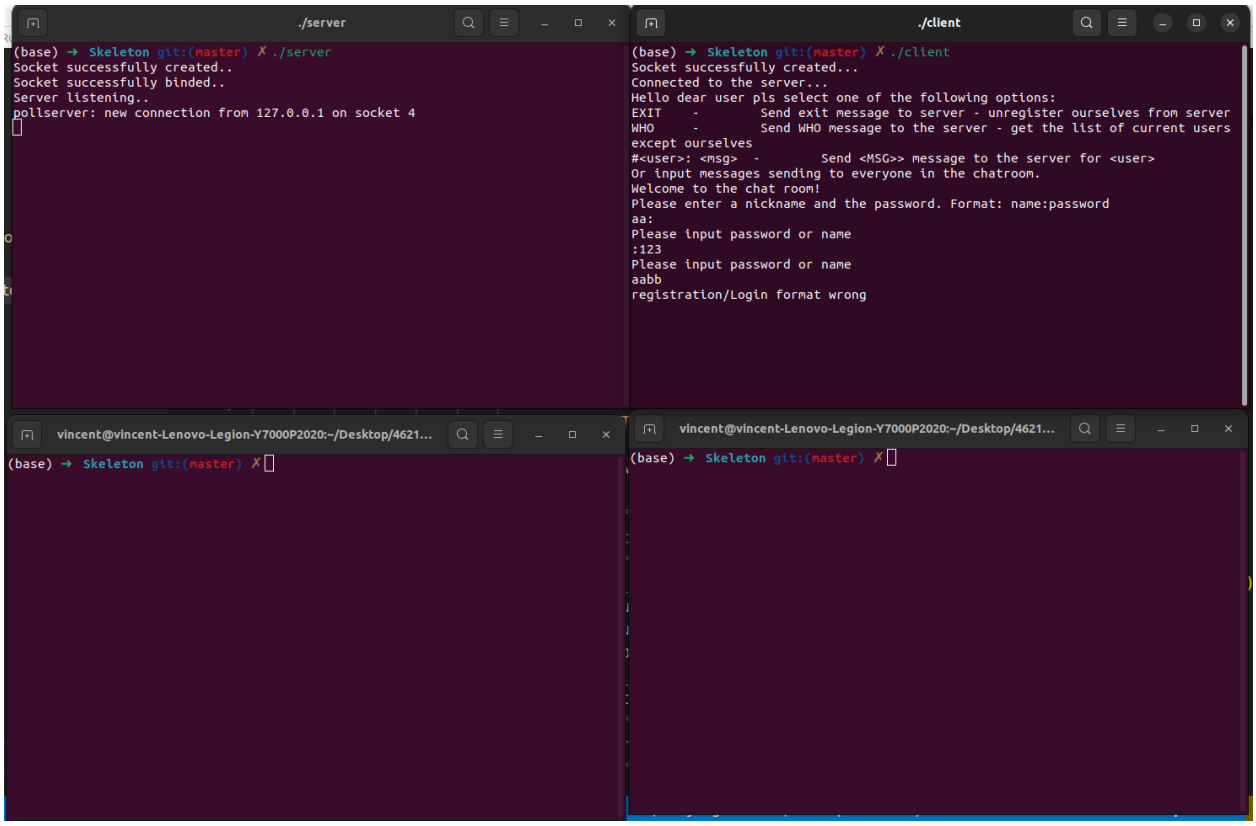
4. "chat with the server" loop
   If the message user inputted is EXIT, it will first send the exit message to the server. Then it will send a close thread request to the thread that has been created. If successful, we will close the socket.

   For the case when the user asks to find out the existing user(WHO) and sends the direct message(#), we just send the raw message to the server.

   For the case of broadcasting the message, we will append the user name, add the ":" sign, and append the message.

Bonus1. Password registration&validation
I mainly modified the REGISTRATION part and EXIT part on the server side and added condition checks for the client side. The parts for the bonus have been underlined and italic.

Screenshot:


./server
(base) ➜ Skeleton git:(master) ✗ ./server
Socket successfully created..
Socket successfully binded..
Server listening..
pollserver: new connection from 127.0.0.1 on socket 4
./client
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Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:
Please input password or name
:123
Please input password or name
aabb
registration/Login format wrong
vincent@vincent-Lenovo-Legion-Y7000P2020:~/Desktop/4621...
(base) ➜ Skeleton git:(master) ✗
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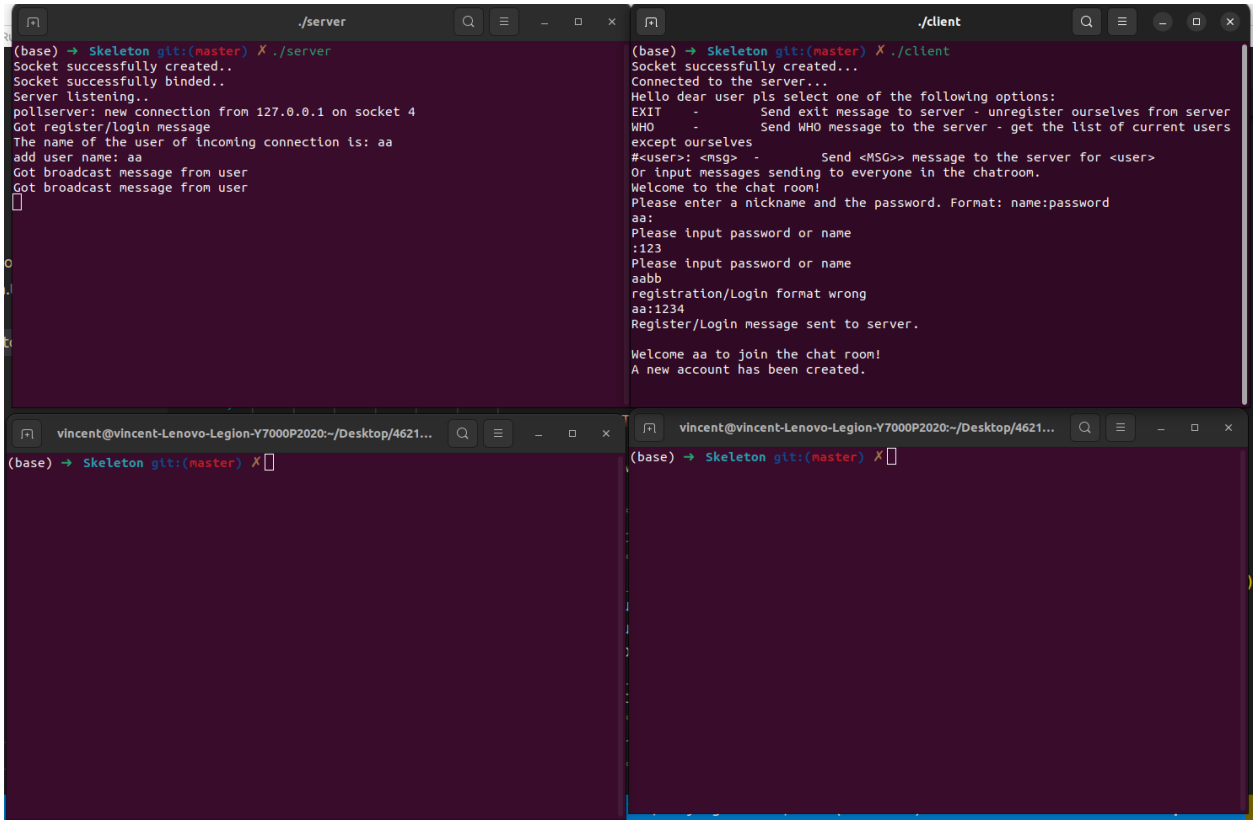
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Got register/login message
The name of the user of incoming connection is: aa
add user name: aa
Got broadcast message from user
Got broadcast message from user
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Please input password or name
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registration/Login format wrong
aa:1234
Register/Login message sent to server.
Welcome aa to join the chat room!
A new account has been created.
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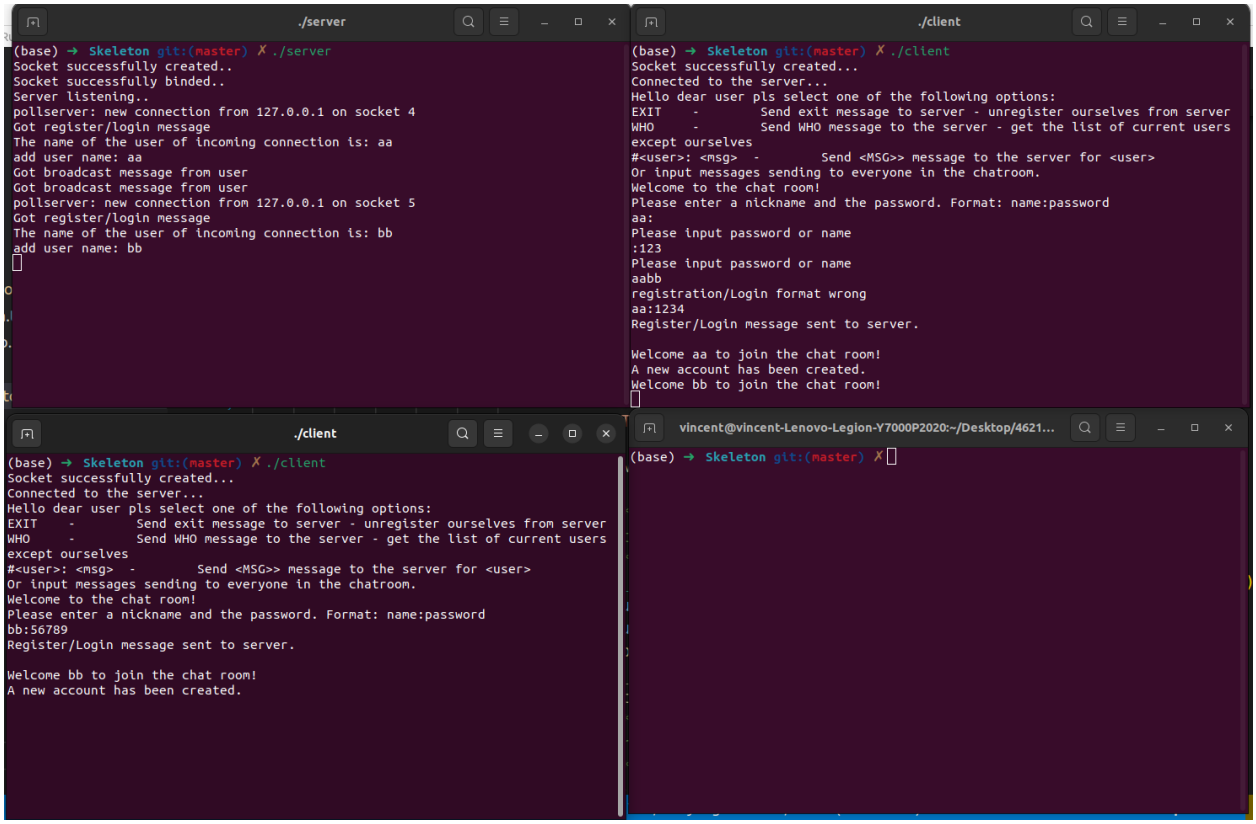
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pollserver: new connection from 127.0.0.1 on socket 5
Got register/login message
The name of the user of incoming connection is: bb
add user name: bb
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Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
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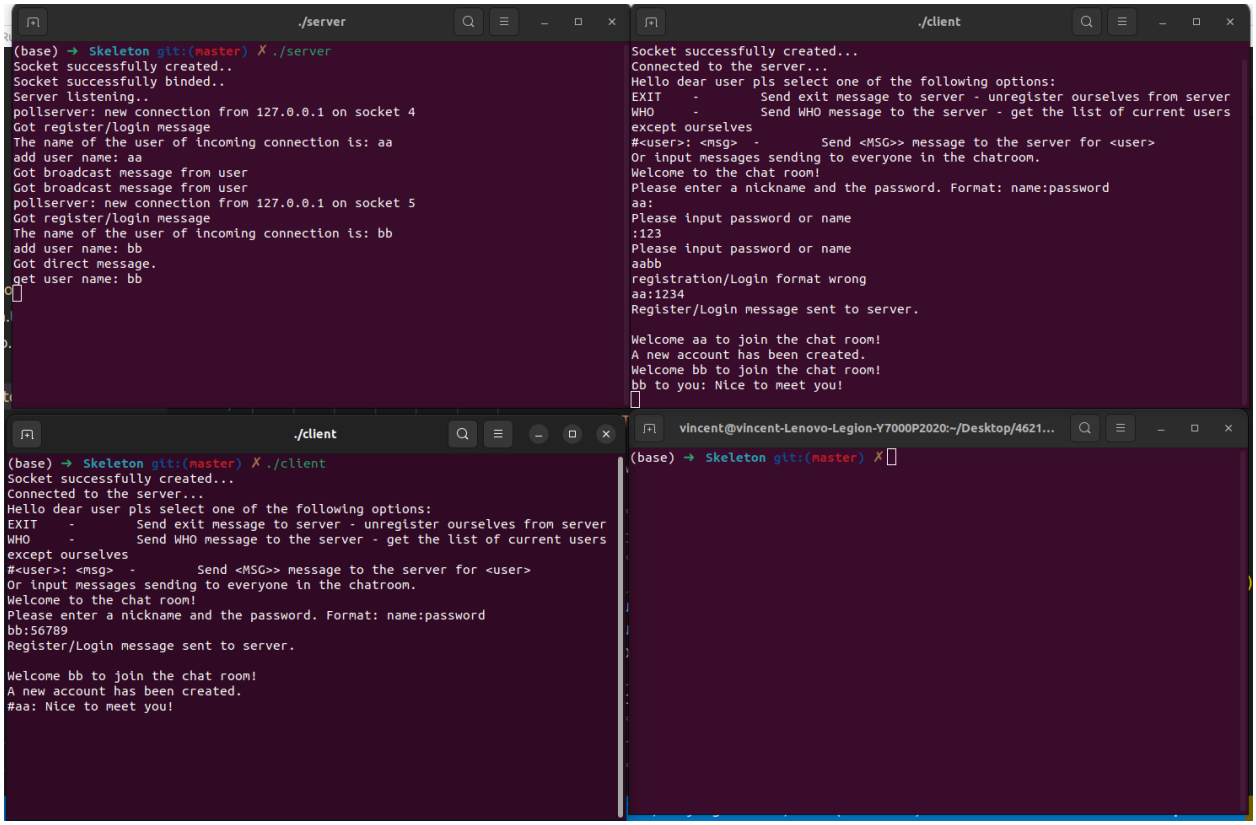
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add user name: bb
Got direct message.
get user name: bb
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bb to you: Nice to meet you!
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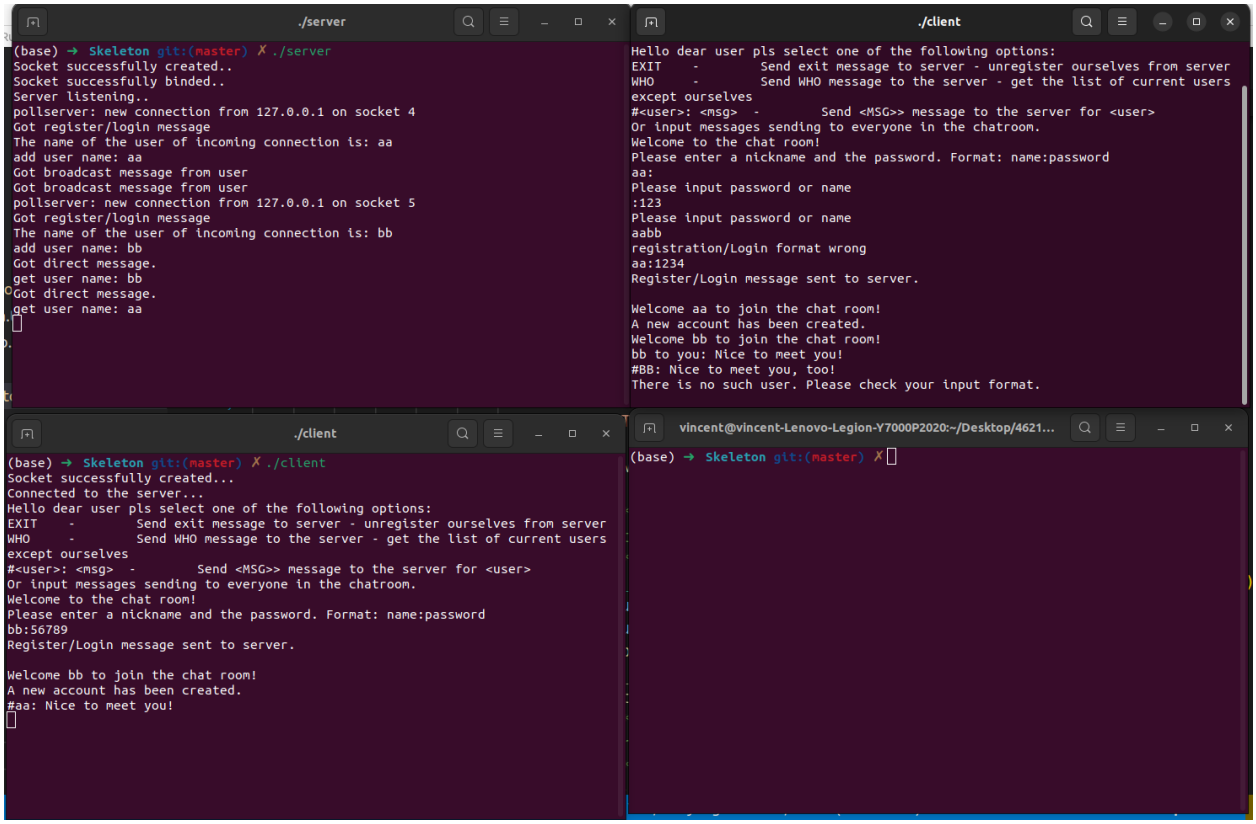
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add user name: bb
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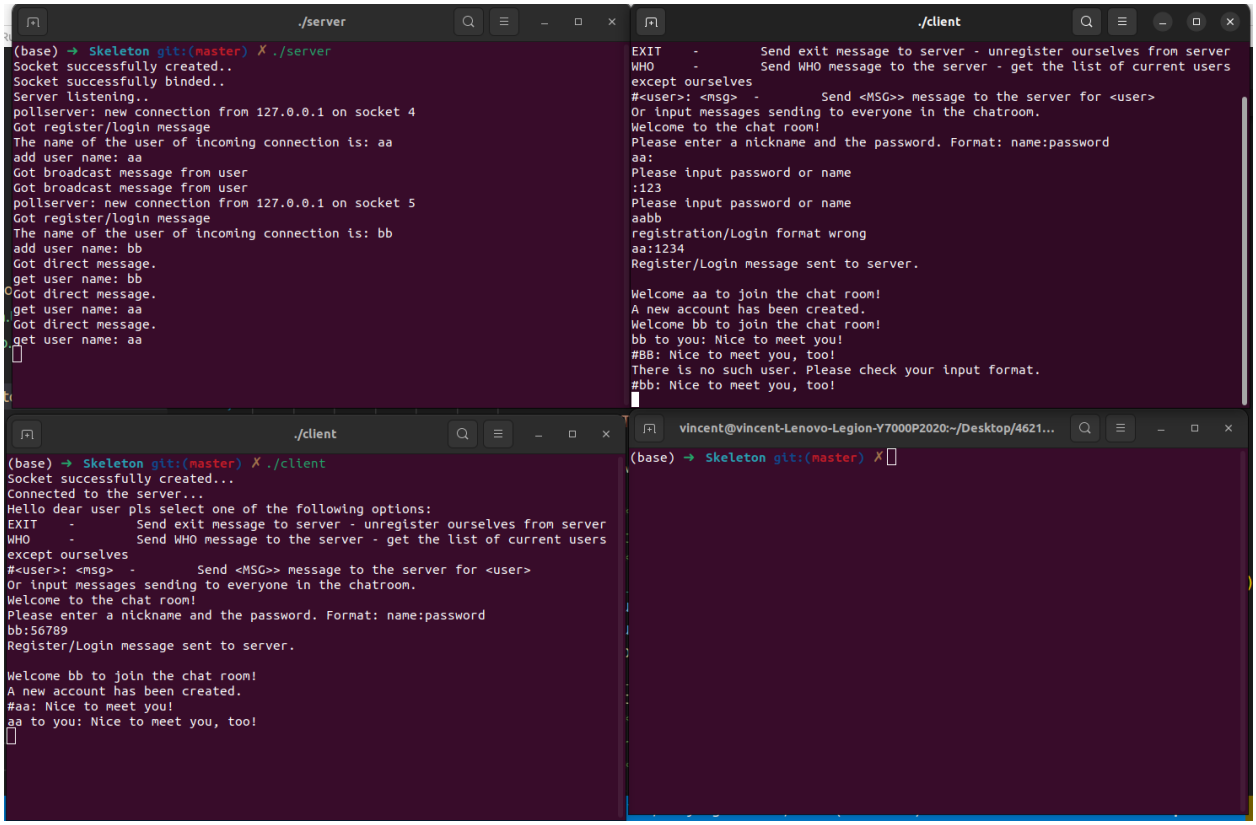
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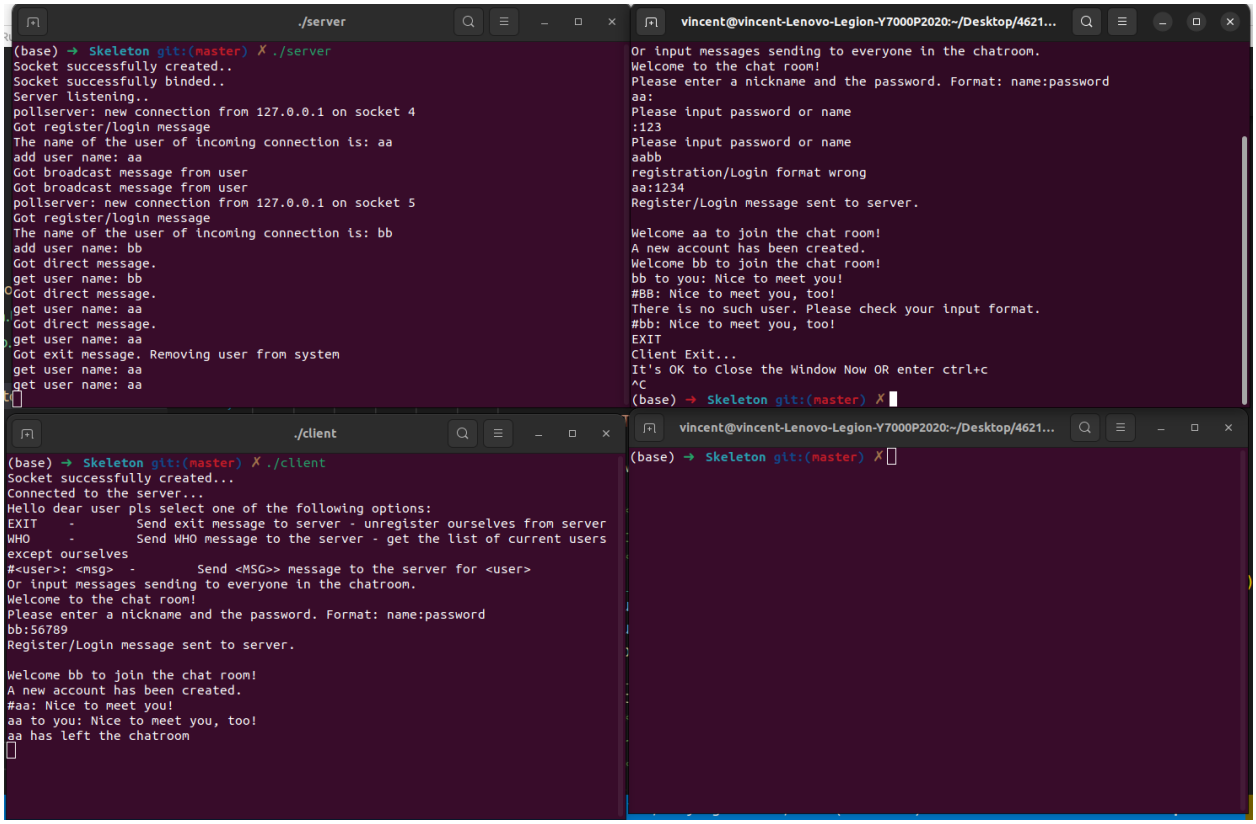
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The name of the user of incoming connection is: bb
add user name: bb
Got direct message.
get user name: bb
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
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A new account has been created.
Welcome bb to join the chat room!
bb to you: Nice to meet you!
#BB: Nice to meet you, too!
There is no such user. Please check your input format.
#bb: Nice to meet you, too!
EXIT
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
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Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
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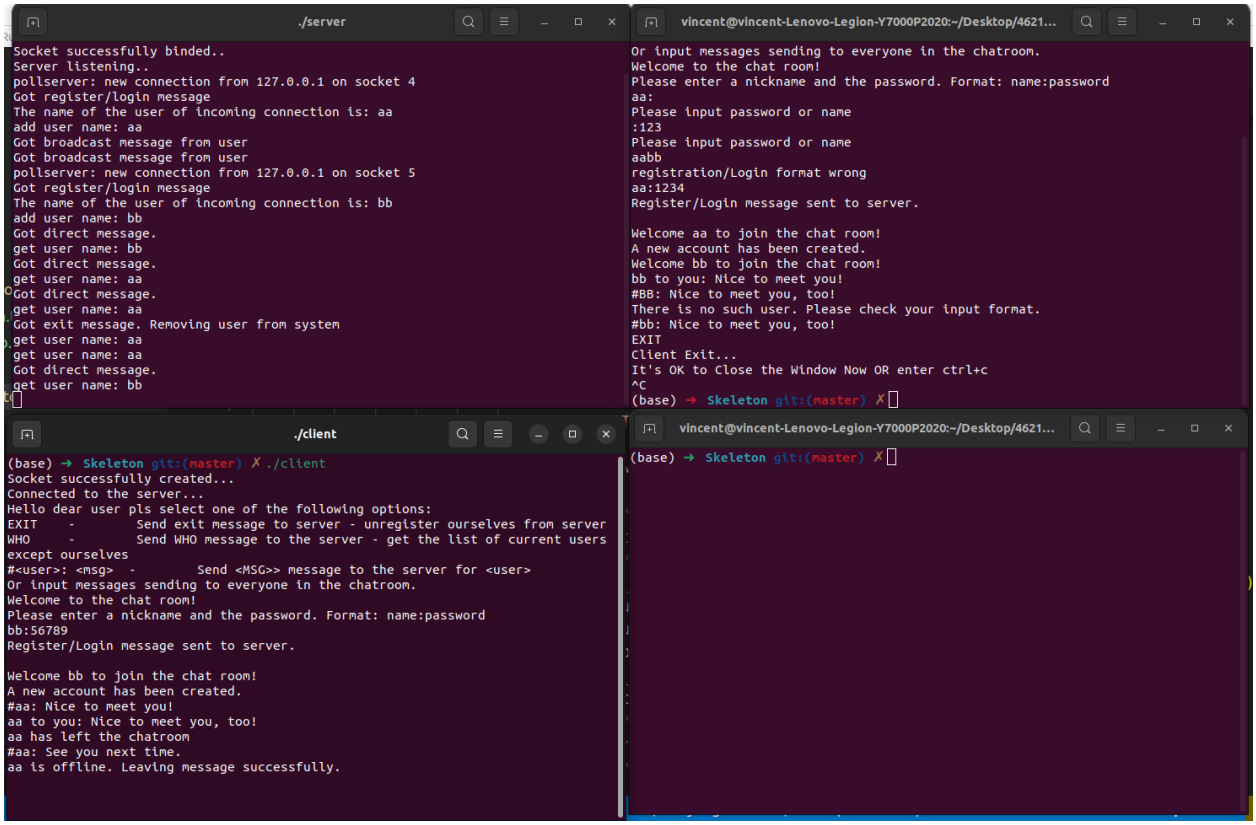
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#BB: Nice to meet you, too!
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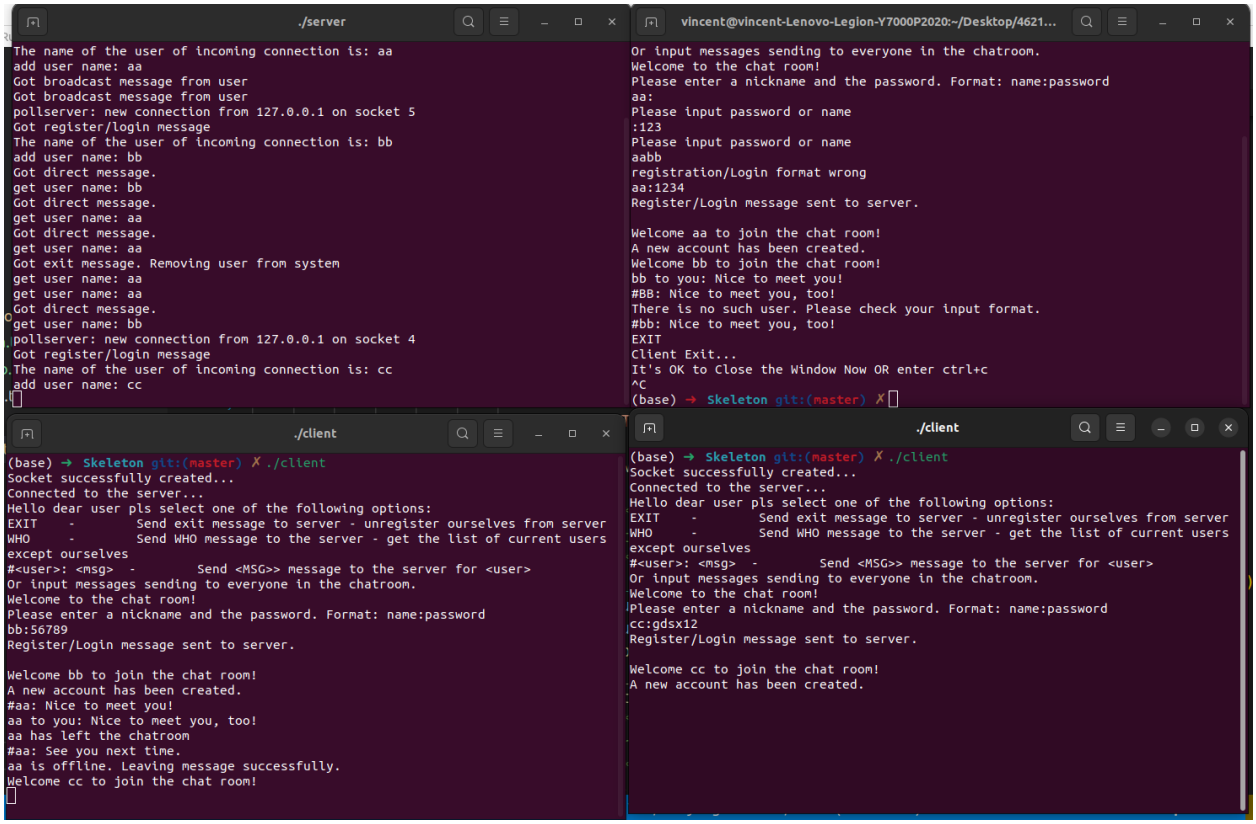
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
vincent@vincent-Lenovo-Legion-Y7000P2020:~/Desktop/4621...
(base) ➜ Skeleton git:(master) ✗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Got exit message. Removing user from system
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get user name: aa
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pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
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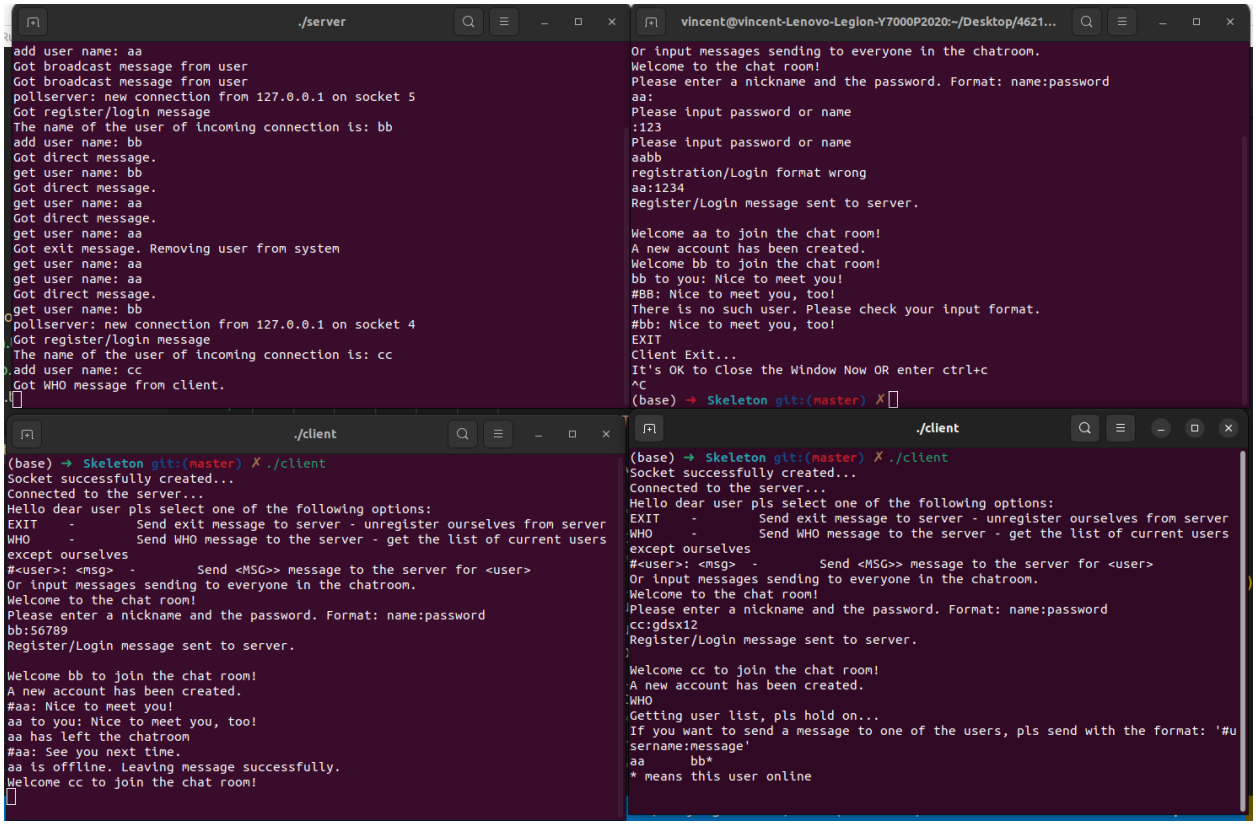
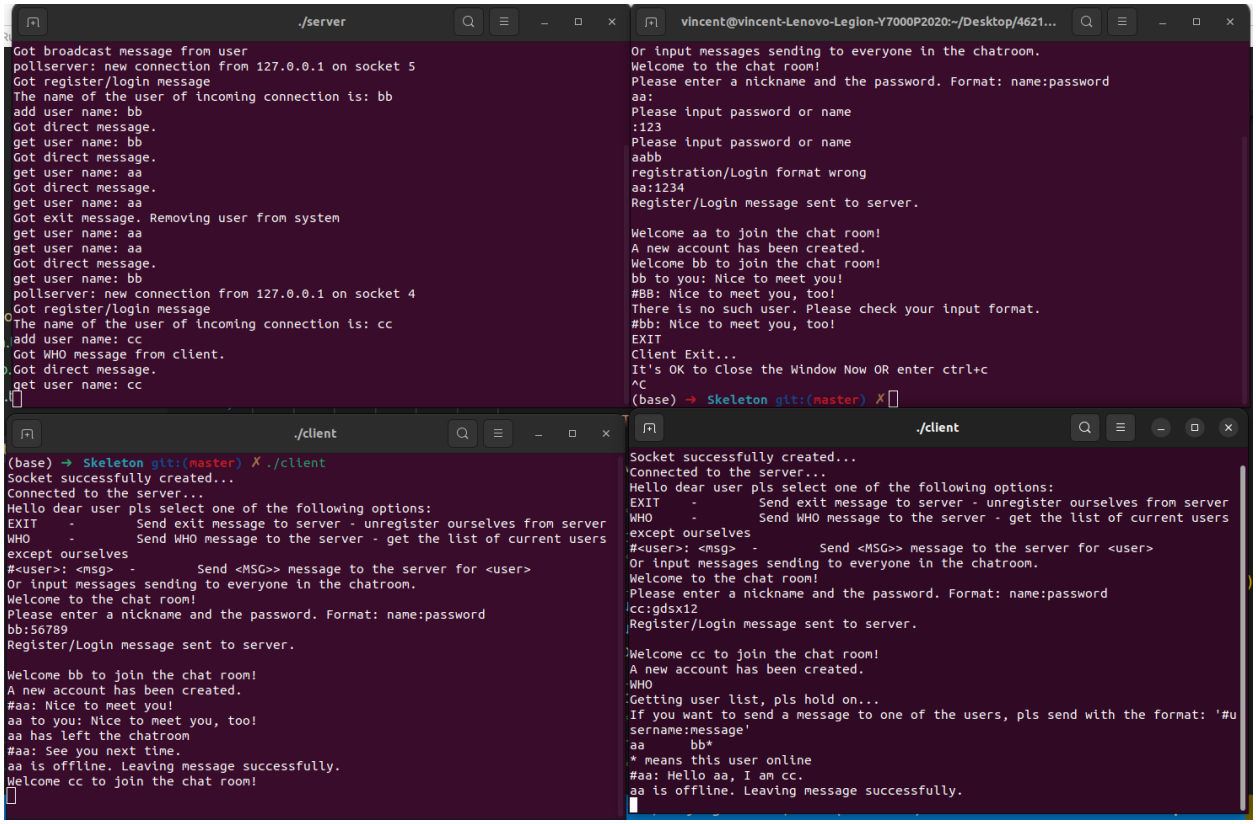
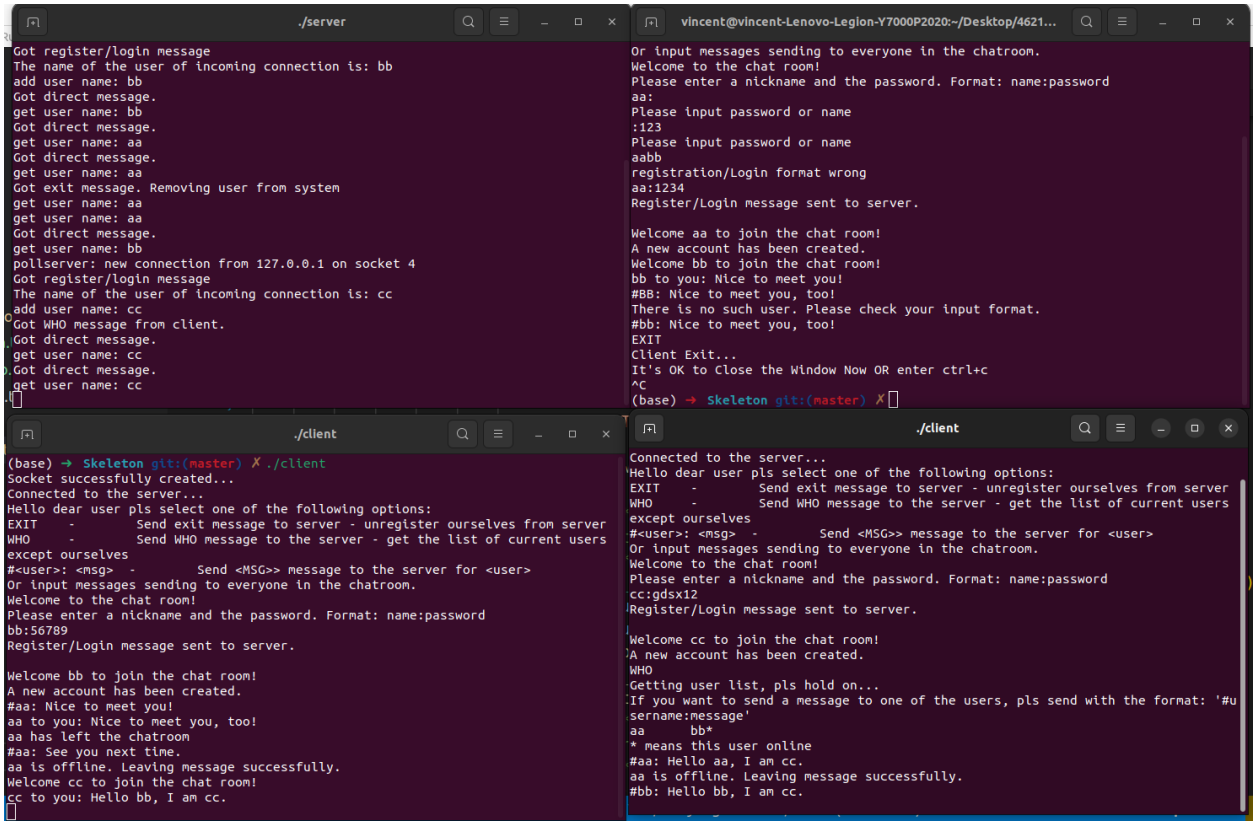
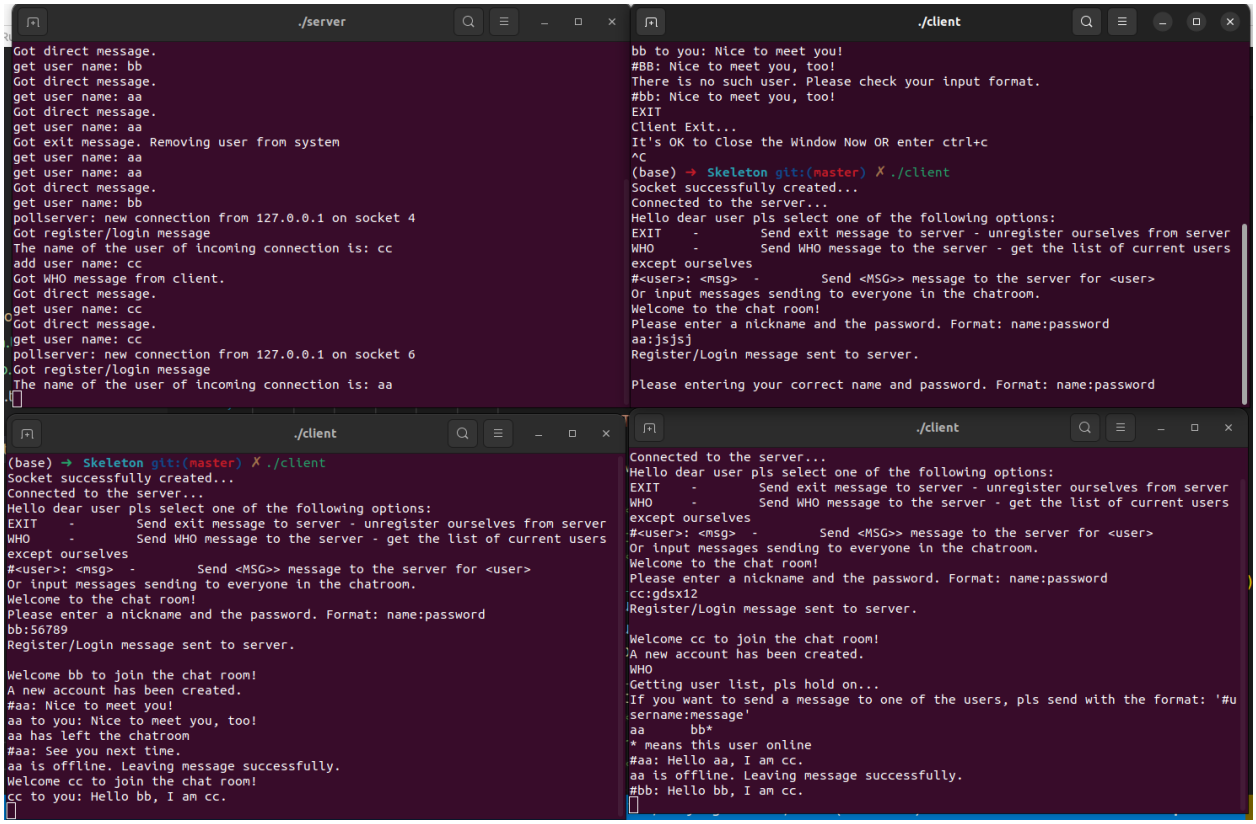
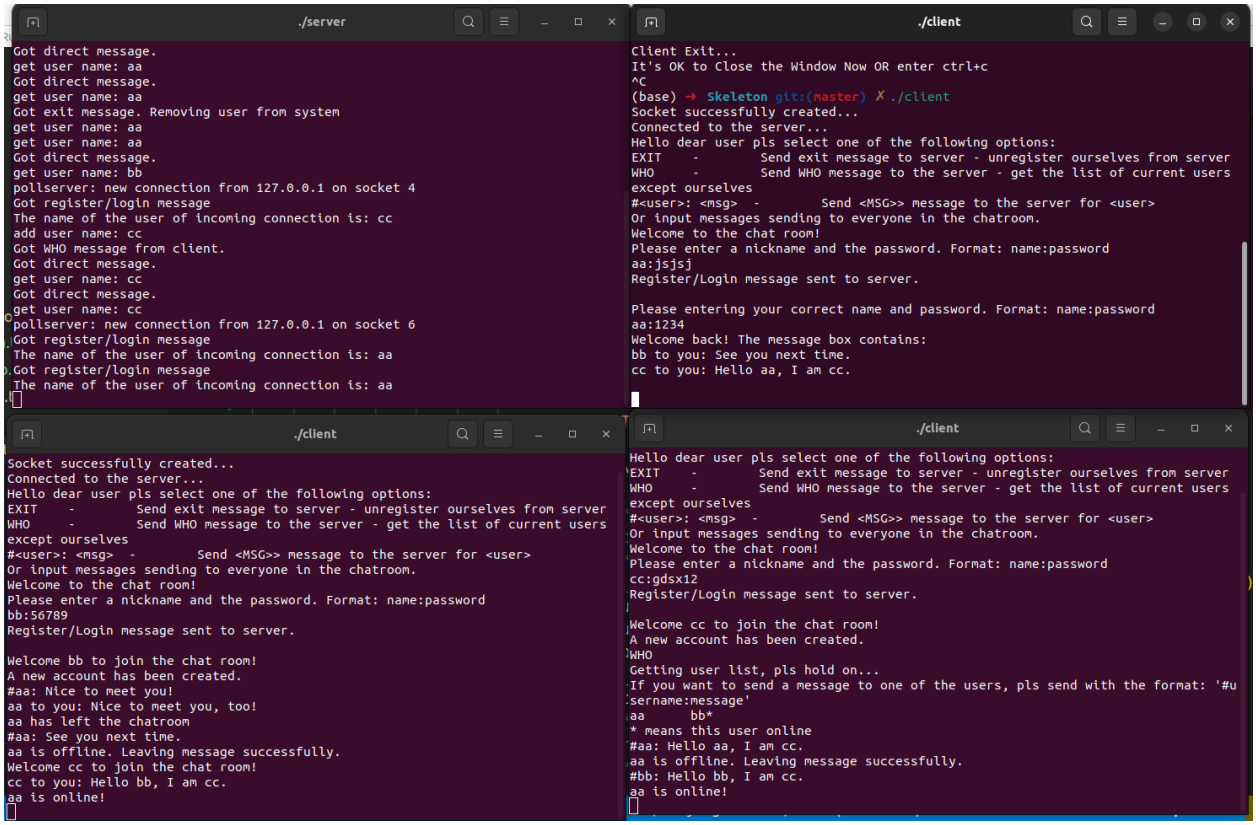
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.

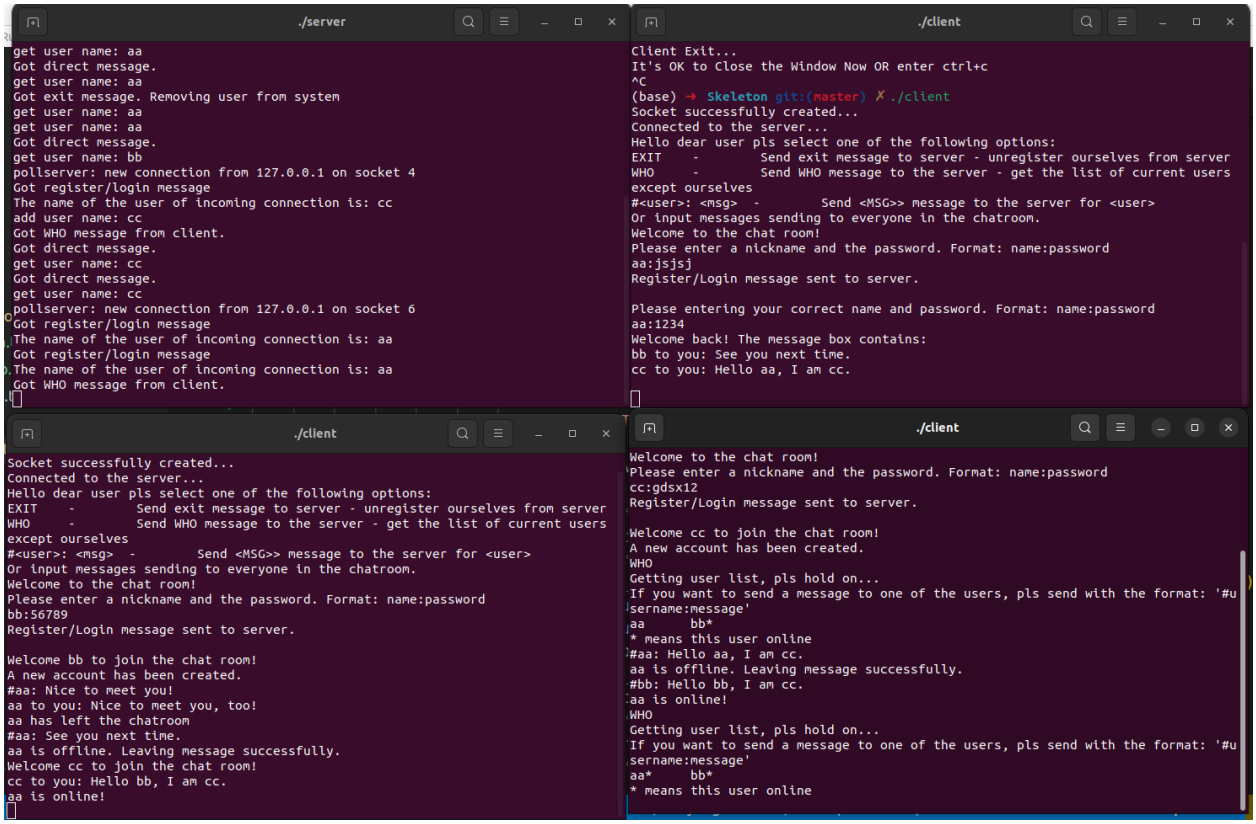

./server
add user name: aa
Got broadcast message from user
Got broadcast message from user
pollserver: new connection from 127.0.0.1 on socket 5
Got register/login message
The name of the user of incoming connection is: bb
add user name: bb
Got direct message.
get user name: bb
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
vincent@vincent-Lenovo-Legion-Y7000P2020:~/Desktop/4621...
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:
Please input password or name
:123
Please input password or name
aabb
registration/Login format wrong
aa:1234
Register/Login message sent to server.
Welcome aa to join the chat room!
A new account has been created.
Welcome bb to join the chat room!
bb to you: Nice to meet you!
#BB: Nice to meet you, too!
There is no such user. Please check your input format.
#bb: Nice to meet you, too!
EXIT
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online

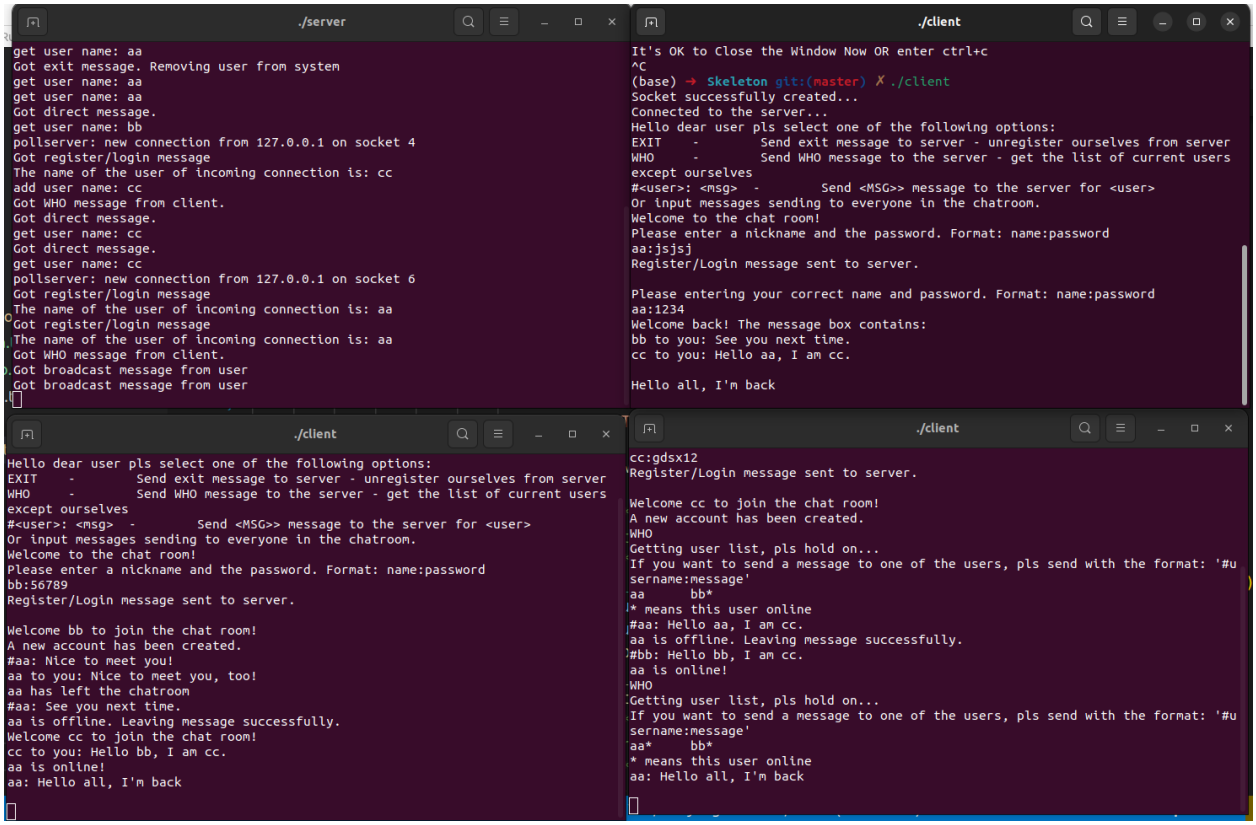

./server
Got broadcast message from user
pollserver: new connection from 127.0.0.1 on socket 5
Got register/login message
The name of the user of incoming connection is: bb
add user name: bb
Got direct message.
get user name: bb
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
vincent@vincent-Lenovo-Legion-Y7000P2020:~/Desktop/4621...
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:
Please input password or name
:123
Please input password or name
aabb
registration/Login format wrong
aa:1234
Register/Login message sent to server.
Welcome aa to join the chat room!
A new account has been created.
Welcome bb to join the chat room!
bb to you: Nice to meet you!
#BB: Nice to meet you, too!
There is no such user. Please check your input format.
#bb: Nice to meet you, too!
EXIT
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.


./server
Got register/login message
The name of the user of incoming connection is: bb
add user name: bb
Got direct message.
get user name: bb
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
Got direct message.
get user name: cc
vincent@vincent-Lenovo-Legion-Y7000P2020:~/Desktop/4621...
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:
Please input password or name
:123
Please input password or name
aabb
registration/Login format wrong
aa:1234
Register/Login message sent to server.
Welcome aa to join the chat room!
A new account has been created.
Welcome bb to join the chat room!
bb to you: Nice to meet you!
#BB: Nice to meet you, too!
There is no such user. Please check your input format.
#bb: Nice to meet you, too!
EXIT
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
cc to you: Hello bb, I am cc.
./client
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.
#bb: Hello bb, I am cc.


./server
Got direct message.
get user name: bb
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
Got direct message.
get user name: cc
pollserver: new connection from 127.0.0.1 on socket 6
Got register/login message
The name of the user of incoming connection is: aa
./client
bb to you: Nice to meet you!
#BB: Nice to meet you, too!
There is no such user. Please check your input format.
#bb: Nice to meet you, too!
EXIT
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:jsjsj
Register/Login message sent to server.
Please entering your correct name and password. Format: name:password
./client
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
cc to you: Hello bb, I am cc.
./client
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.
#bb: Hello bb, I am cc.


./server
Got direct message.
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
Got direct message.
get user name: cc
pollserver: new connection from 127.0.0.1 on socket 6
Got register/login message
The name of the user of incoming connection is: aa
Got register/login message
The name of the user of incoming connection is: aa
./client
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:jsjsj
Register/Login message sent to server.
Please entering your correct name and password. Format: name:password
aa:1234
Welcome back! The message box contains:
bb to you: See you next time.
cc to you: Hello aa, I am cc.
./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
cc to you: Hello bb, I am cc.
aa is online!
./client
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.
#bb: Hello bb, I am cc.
aa is online!


./server
get user name: aa
Got direct message.
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
Got direct message.
get user name: cc
pollserver: new connection from 127.0.0.1 on socket 6
Got register/login message
The name of the user of incoming connection is: aa
Got register/login message
The name of the user of incoming connection is: aa
Got WHO message from client.
./client
Client Exit...
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:jsjsj
Register/Login message sent to server.
Please entering your correct name and password. Format: name:password
aa:1234
Welcome back! The message box contains:
bb to you: See you next time.
cc to you: Hello aa, I am cc.
./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
cc to you: Hello bb, I am cc.
aa is online!
./client
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.
#bb: Hello bb, I am cc.
aa is online!
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa* bb*
* means this user online


./server
get user name: aa
Got exit message. Removing user from system
get user name: aa
get user name: aa
Got direct message.
get user name: bb
pollserver: new connection from 127.0.0.1 on socket 4
Got register/login message
The name of the user of incoming connection is: cc
add user name: cc
Got WHO message from client.
Got direct message.
get user name: cc
Got direct message.
get user name: cc
pollserver: new connection from 127.0.0.1 on socket 6
Got register/login message
The name of the user of incoming connection is: aa
Got register/login message
The name of the user of incoming connection is: aa
Got WHO message from client.
Got broadcast message from user
Got broadcast message from user
./client
It's OK to Close the Window Now OR enter ctrl+c
^C
(base) ➜ Skeleton git:(master) ✗ ./client
Socket successfully created...
Connected to the server...
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
aa:jsjsj
Register/Login message sent to server.
Please entering your correct name and password. Format: name:password
aa:1234
Welcome back! The message box contains:
bb to you: See you next time.
cc to you: Hello aa, I am cc.
Hello all, I'm back
./client
Hello dear user pls select one of the following options:
EXIT - Send exit message to server - unregister ourselves from server
WHO - Send WHO message to the server - get the list of current users
except ourselves
#<user>: <msg> - Send <MSG>> message to the server for <user>
Or input messages sending to everyone in the chatroom.
Welcome to the chat room!
Please enter a nickname and the password. Format: name:password
bb:56789
Register/Login message sent to server.
Welcome bb to join the chat room!
A new account has been created.
#aa: Nice to meet you!
aa to you: Nice to meet you, too!
aa has left the chatroom
#aa: See you next time.
aa is offline. Leaving message successfully.
Welcome cc to join the chat room!
cc to you: Hello bb, I am cc.
aa is online!
aa: Hello all, I'm back
./client
cc:gdsx12
Register/Login message sent to server.
Welcome cc to join the chat room!
A new account has been created.
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa bb*
* means this user online
#aa: Hello aa, I am cc.
aa is offline. Leaving message successfully.
#bb: Hello bb, I am cc.
aa is online!
WHO
Getting user list, pls hold on...
If you want to send a message to one of the users, pls send with the format: '#username:message'
aa* bb*
* means this user online
aa: Hello all, I'm back