Linux Chat Room Testing Document

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Test Environment

To fully test this program, you will need at least three separate computers connected to a LAN. Testing done on Fedora 27 OS, connected to LAN with firewall disabled (iptables -F & -X)

Test Cases

A list of test cases, separated by category

Program execution

Number	Desciption	Step(s) Taken	Expected Result	Outcome
1	Program runs	- $ make all - $ ./chatroom	Prompts user for mode	PASS
2	Program runs in Client mode	- $ ./chatroom *prompted for mode* - Enter C	Client-version welcome msg printed	PASS
3	Program runs in Server mode	- $ ./chatroom *prompted for mode* - Enter S (for server)	Server-version welcome msg printed	PASS

Connection

4	Client connects to Server	*welcome msg on client side is only printed once client connected - Run program instance 1 in server mode *see test case 3 - ip: ip of server eg. 192.168.0.21 - port: 8000 - Run program instance 2 (can be on same host) in client mode *see test case 3 - port: 8000	Same as test case 2: welcome msg printed Server side will print msg saying new client IP connected	PASS

5	Client can disconnect from server, and have server notice it	- connect to Server *see test case 4 - /disconnect or /d	Server will print msg saying client with IP disconnected Client will return to idle to choose different mode	PASS
6	Multiple clients can connect, then disconnect from server, and server will log that info	- client1 connects *see test case 4 on how to connect - client2 connect - client3 connect - client1 $ /d - client2 $ /d - client3 $ /d	Server will log connection & disconnection of clients with their IPs	PASS

Send & Receive

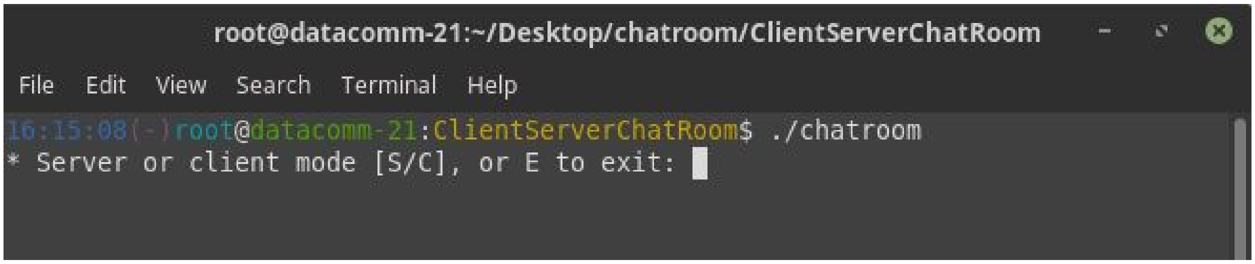
7	Server receives 1 client message, 1 client connected	- have different server instance running - on client instance, enter msg (eg. Hello world)	Server will display msg with time stamp & ip from client, with msg saying Hello world The client would have what they entered displayed, but not in packet form (no ip and timestamp).	PASS
8	Server receives 1 client message, 2 or more clients connected	- have different server instance running - on 1 client instance, enter msg (eg. Hello world) - other clients must have different IP addresses (running on different hosts)	Server will display msg with time stamp & ip from client, with the message Every client except the author of the message would display the message with a timestamp and ip	PASS

9	Server receives multiple messages from different clients	- have different server instance running - other clients must have different IP addresses (running on different hosts) Conversation: -client1: client1 msg -client2: client2 msg -client3: client3 msg	Server will print out chatlog *in addition to printing connect info <client1ip><timestamp>client1 msg <client2ip><timestamp>client2 msg <client3ip><timestamp>client3 msg	
10	Client or server logs conversation	- have server, multiple clients and choose to save a log. Check for file with up-to-date conversation	A file appears and has the same text of a conversation displayed on the console	PASS

Screenshots

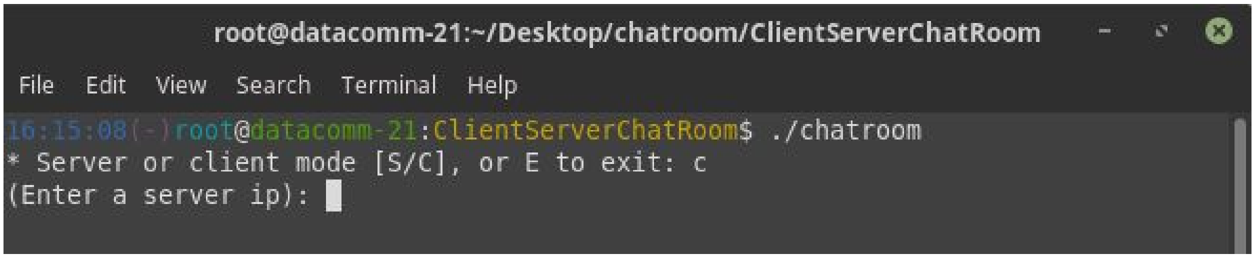
Illustrations of the test cases at work.

Execution



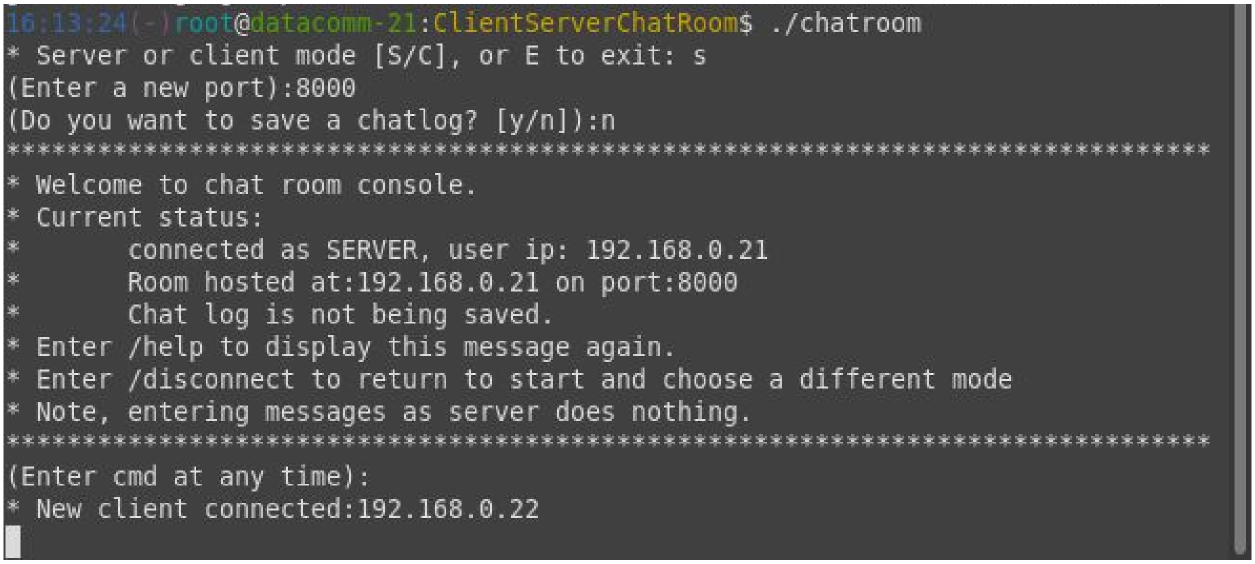
```
16:15:08(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: 
```

Figure 1: Test 1, program starts



```
16:15:08(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: c
(Enter a server ip): 
```

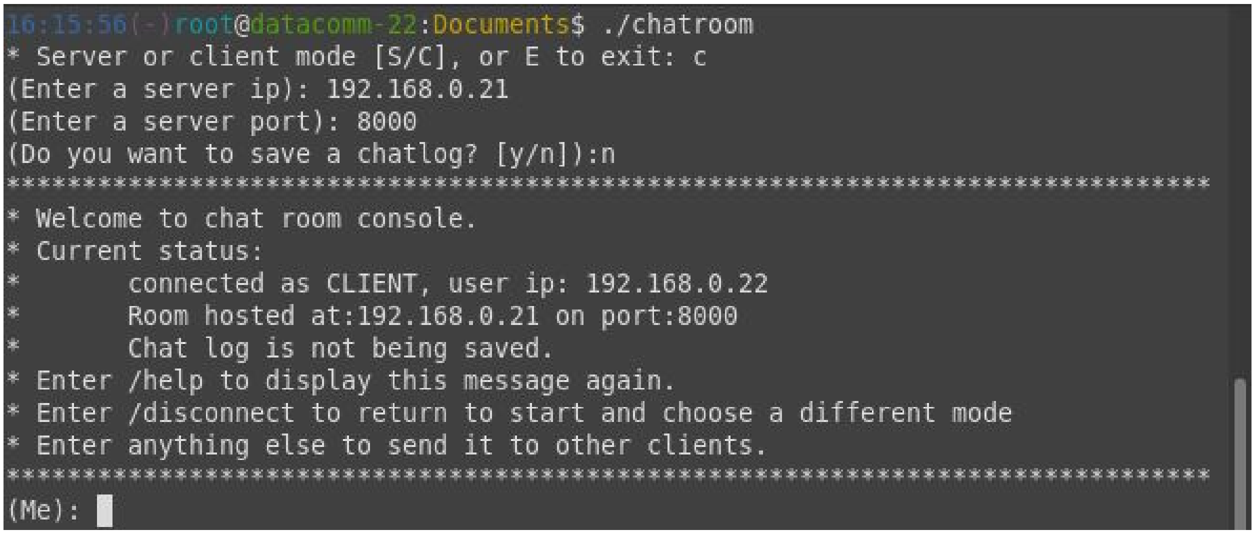
Figure 2: Test 2, program runs in client mode



```
16:13:24(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: s
(Enter a new port):8000
(Do you want to save a chatlog? [y/n]):n
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       Chat log is not being saved.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
* New client connected:192.168.0.22
```

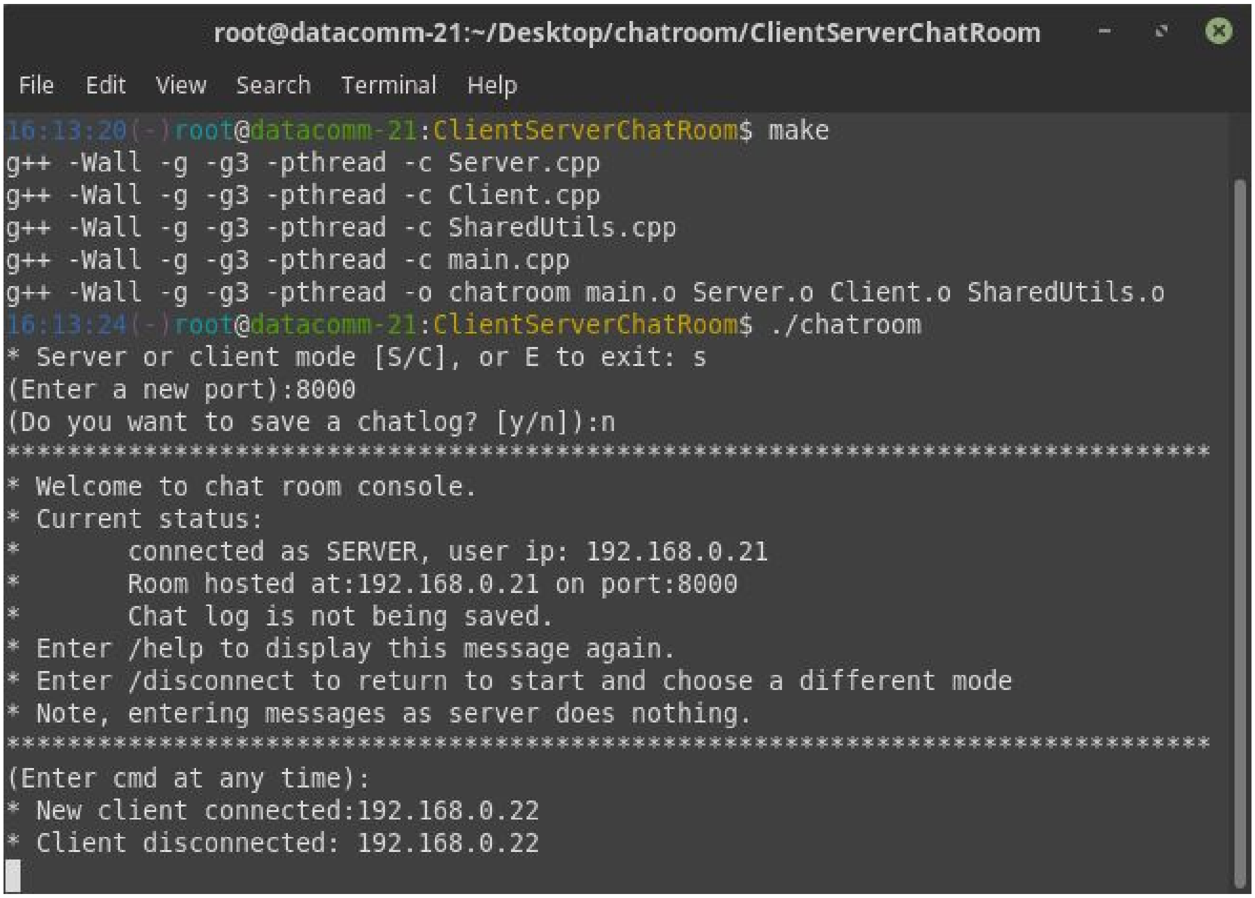
Figure 3: Test 3, program runs in server mode; shows a client connected successfully

Connection



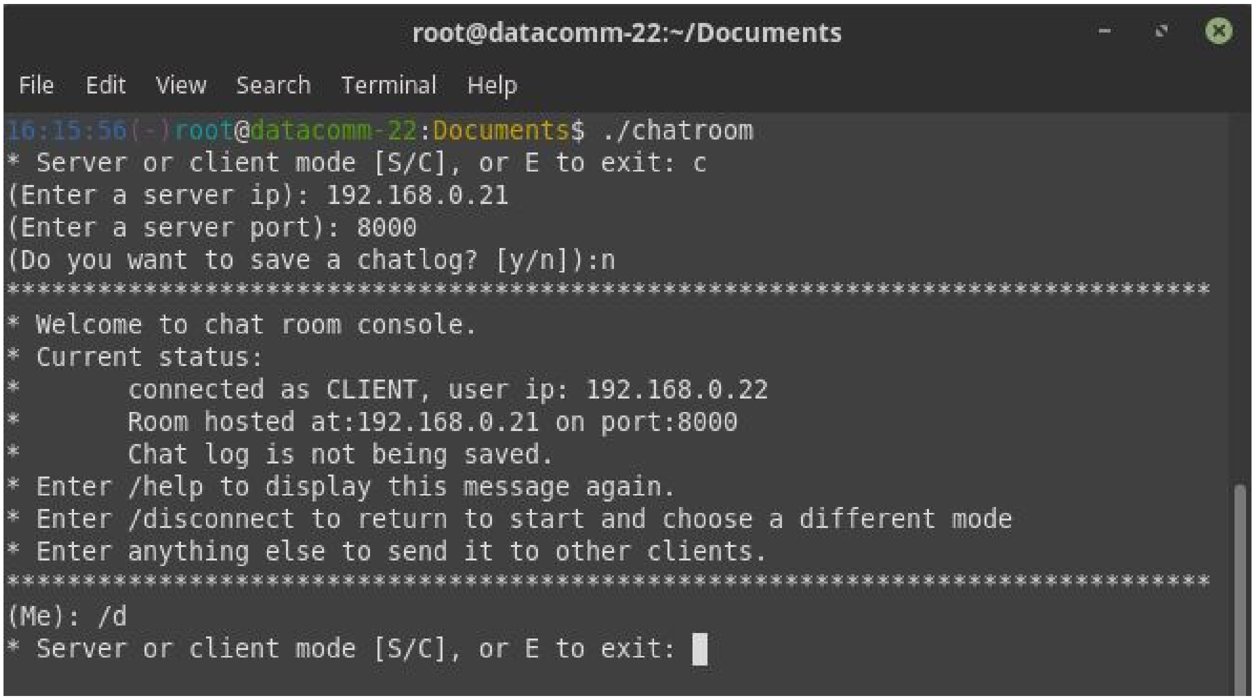
```
16:15:56(-)root@datacomm-22:Documents$ ./chatroom
* Server or client mode [S/C], or E to exit: c
(Enter a server ip): 192.168.0.21
(Enter a server port): 8000
(Do you want to save a chatlog? [y/n]):n
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as CLIENT, user ip: 192.168.0.22
*       Room hosted at:192.168.0.21 on port:8000
*       Chat log is not being saved.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Enter anything else to send it to other clients.
*******************************************************************************
(Me):
```

Figure 4: Test 4, client successfully connects to a server



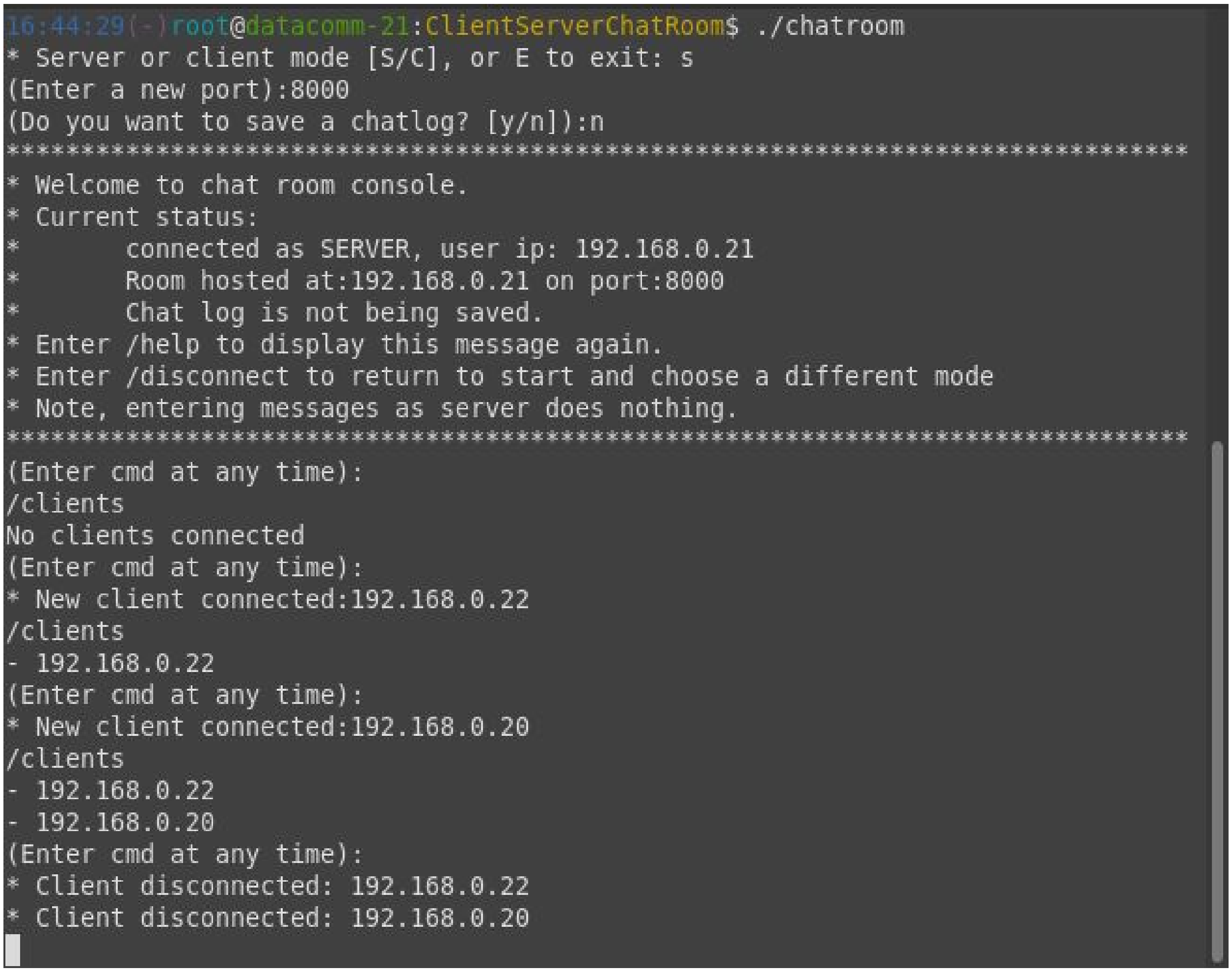
```
16:13:20(-)root@datacomm-21:ClientServerChatRoom$ make
g++ -Wall -g -g3 -pthread -c Server.cpp
g++ -Wall -g -g3 -pthread -c Client.cpp
g++ -Wall -g -g3 -pthread -c SharedUtils.cpp
g++ -Wall -g -g3 -pthread -c main.cpp
g++ -Wall -g -g3 -pthread -o chatroom main.o Server.o Client.o SharedUtils.o
16:13:24(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: s
(Enter a new port):8000
(Do you want to save a chatlog? [y/n]):n
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       Chat log is not being saved.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
* New client connected:192.168.0.22
* Client disconnected: 192.168.0.22
```

Figure 5: Test 5, client disconnects from server (serverside)



```
16:15:56(-)root@datacomm-22:Documents$ ./chatroom
* Server or client mode [S/C], or E to exit: c
(Enter a server ip): 192.168.0.21
(Enter a server port): 8000
(Do you want to save a chatlog? [y/n]):n
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as CLIENT, user ip: 192.168.0.22
*       Room hosted at:192.168.0.21 on port:8000
*       Chat log is not being saved.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Enter anything else to send it to other clients.
*******************************************************************************
(Me): /d
* Server or client mode [S/C], or E to exit: 
```

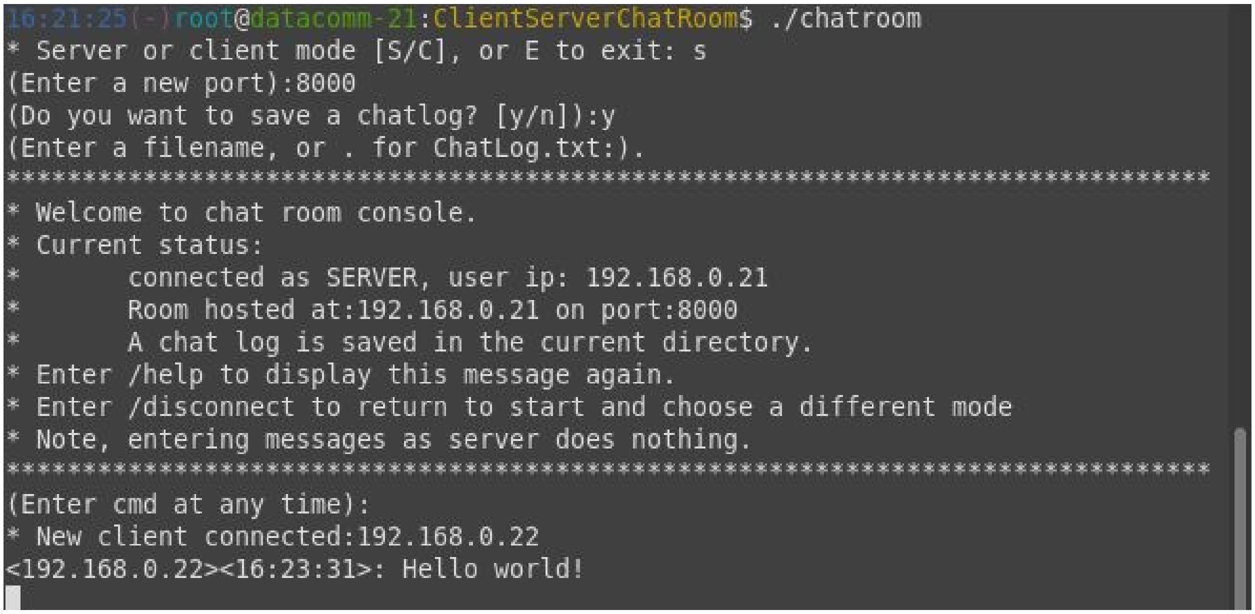
Figure 6: Test 5, client disconnects from server (clientside)



```
16:44:29(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: s
(Enter a new port):8000
(Do you want to save a chatlog? [y/n]):n
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       Chat log is not being saved.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
/clients
No clients connected
(Enter cmd at any time):
* New client connected:192.168.0.22
/clients
- 192.168.0.22
(Enter cmd at any time):
* New client connected:192.168.0.20
/clients
- 192.168.0.22
- 192.168.0.20
(Enter cmd at any time):
* Client disconnected: 192.168.0.22
* Client disconnected: 192.168.0.20
```

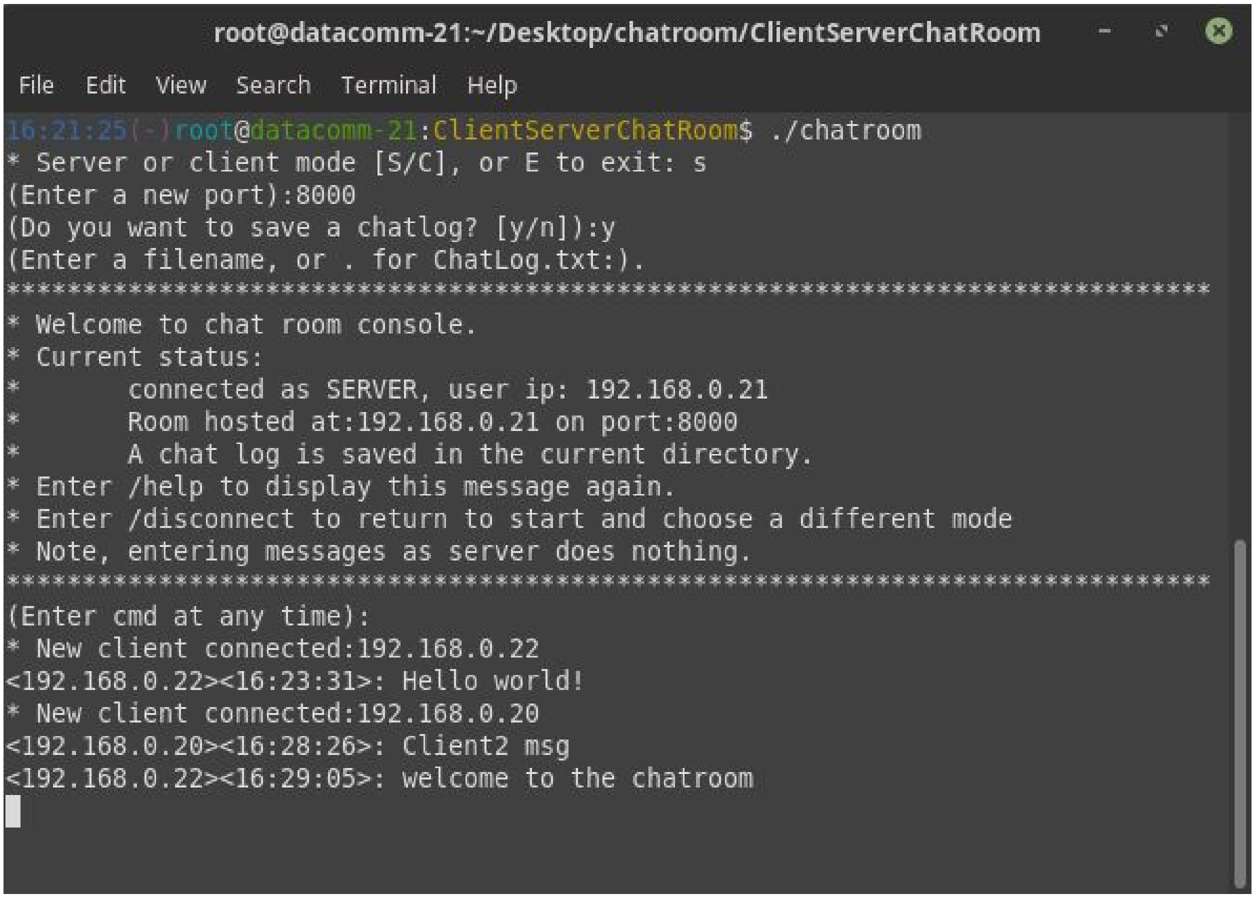
Figure 7: Test 6, multiple clients connect and disconnect from a server (serverside)

Send and Receive



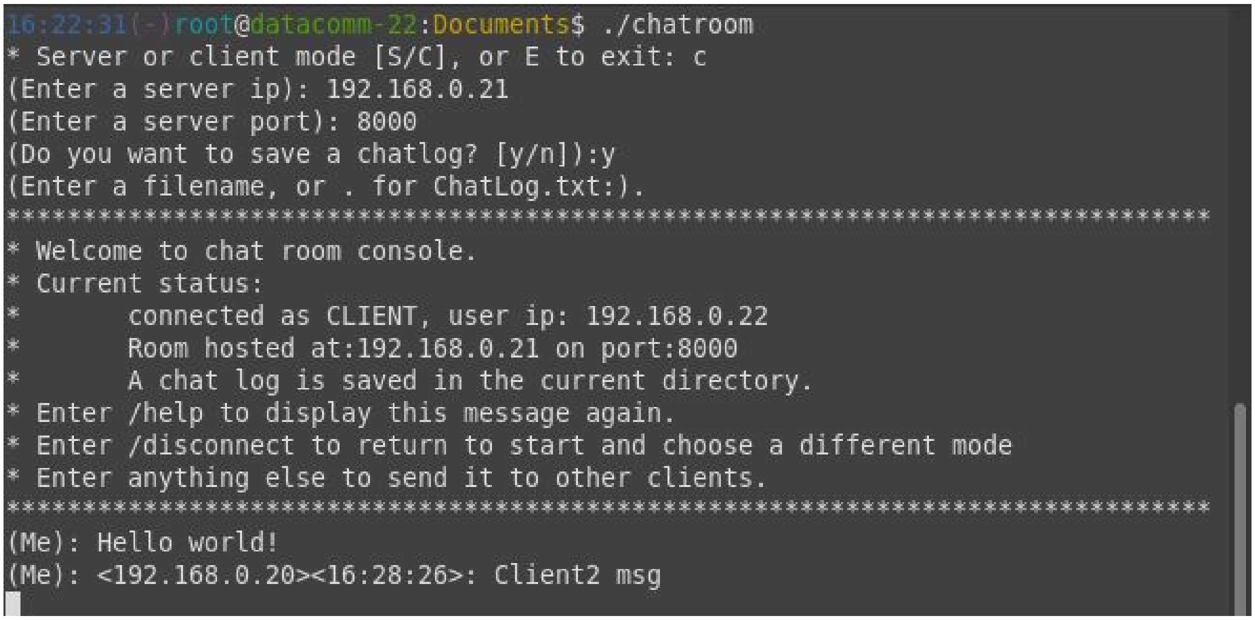
```
16:21:25(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: s
(Enter a new port):8000
(Do you want to save a chatlog? [y/n]):y
(Enter a filename, or . for ChatLog.txt:).
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       A chat log is saved in the current directory.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
* New client connected:192.168.0.22
<192.168.0.22><16:23:31>: Hello world!
```

Figure 8: Test 7, server receives message(s) from client, 1 client connected


root@datacomm-21:~/Desktop/chatroom/ClientServerChatRoom
File Edit View Search Terminal Help

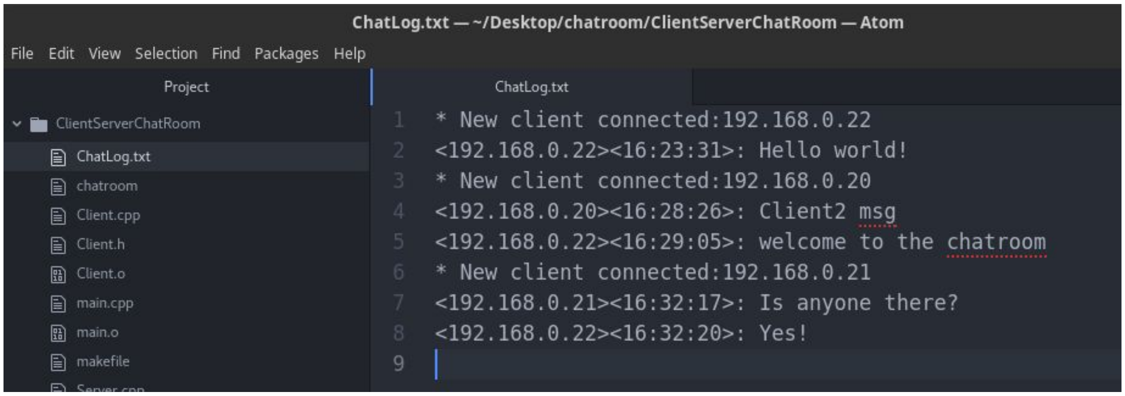
```
16:21:25(-)root@datacomm-21:ClientServerChatRoom$ ./chatroom
* Server or client mode [S/C], or E to exit: s
(Enter a new port):8000
(Do you want to save a chatlog? [y/n]):y
(Enter a filename, or . for ChatLog.txt:).
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       A chat log is saved in the current directory.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
* New client connected:192.168.0.22
<192.168.0.22><16:23:31>: Hello world!
* New client connected:192.168.0.20
<192.168.0.20><16:28:26>: Client2 msg
<192.168.0.22><16:29:05>: welcome to the chatroom
```

Figure 9: Tests 8 and 9, receiving message(s), multiple clients connected (serverside)



```
16:22:31(-)root@datacomm-22:Documents$ ./chatroom
* Server or client mode [S/C], or E to exit: c
(Enter a server ip): 192.168.0.21
(Enter a server port): 8000
(Do you want to save a chatlog? [y/n]):y
(Enter a filename, or . for ChatLog.txt:).
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as CLIENT, user ip: 192.168.0.22
*       Room hosted at:192.168.0.21 on port:8000
*       A chat log is saved in the current directory.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Enter anything else to send it to other clients.
*******************************************************************************
(Me): Hello world!
(Me): <192.168.0.20><16:28:26>: Client2 msg
```

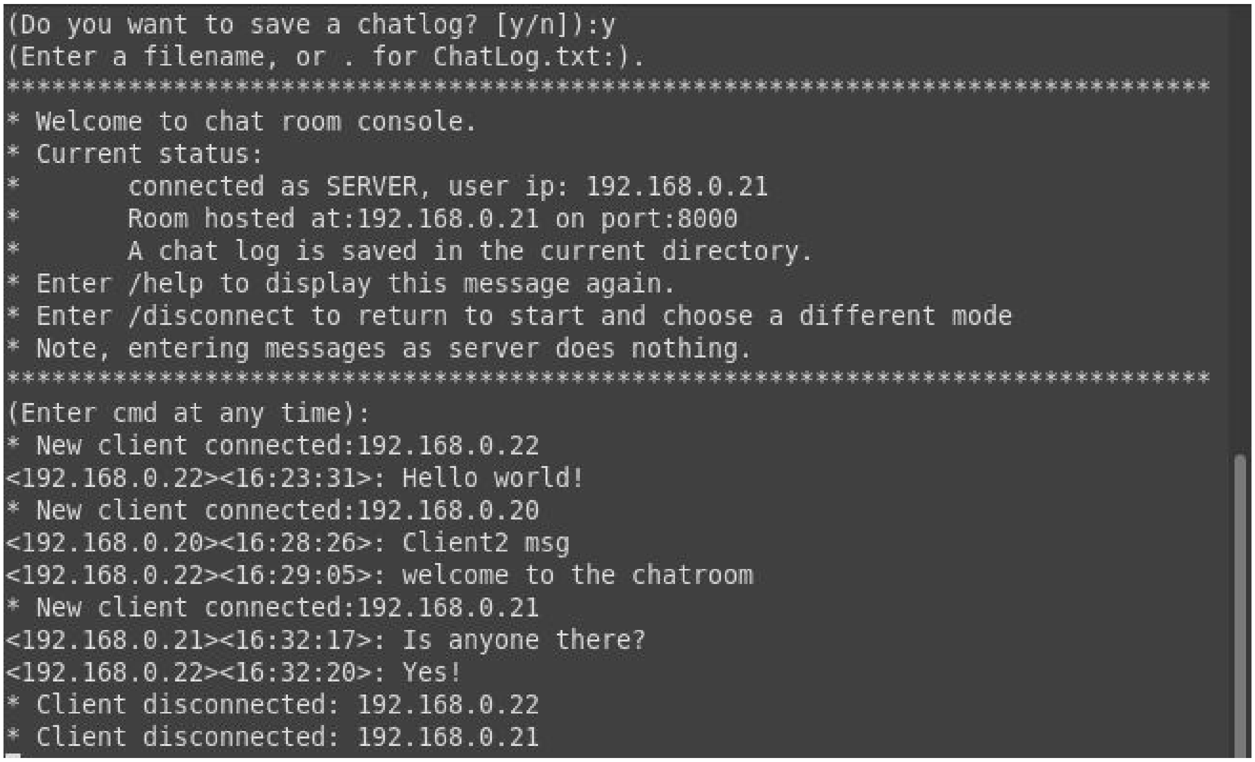
Figure 10: Test 8, receiving message(s), multiple clients connected (clientside)



```
* New client connected:192.168.0.22
<192.168.0.22><16:23:31>: Hello world!
* New client connected:192.168.0.20
<192.168.0.20><16:28:26>: Client2 msg
<192.168.0.22><16:29:05>: welcome to the chatroom
* New client connected:192.168.0.21
<192.168.0.21><16:32:17>: Is anyone there?
<192.168.0.22><16:32:20>: Yes!

```

Figure 11: Test 10, chatlog from server (file in root directory)



```
(Do you want to save a chatlog? [y/n]):y
(Enter a filename, or . for ChatLog.txt:).
*******************************************************************************
* Welcome to chat room console.
* Current status:
*       connected as SERVER, user ip: 192.168.0.21
*       Room hosted at:192.168.0.21 on port:8000
*       A chat log is saved in the current directory.
* Enter /help to display this message again.
* Enter /disconnect to return to start and choose a different mode
* Note, entering messages as server does nothing.
*******************************************************************************
(Enter cmd at any time):
* New client connected:192.168.0.22
<192.168.0.22><16:23:31>: Hello world!
* New client connected:192.168.0.20
<192.168.0.20><16:28:26>: Client2 msg
<192.168.0.22><16:29:05>: welcome to the chatroom
* New client connected:192.168.0.21
<192.168.0.21><16:32:17>: Is anyone there?
<192.168.0.22><16:32:20>: Yes!
* Client disconnected: 192.168.0.22
* Client disconnected: 192.168.0.21
```

Figure 12: Test 10, chatlog display from server (console)