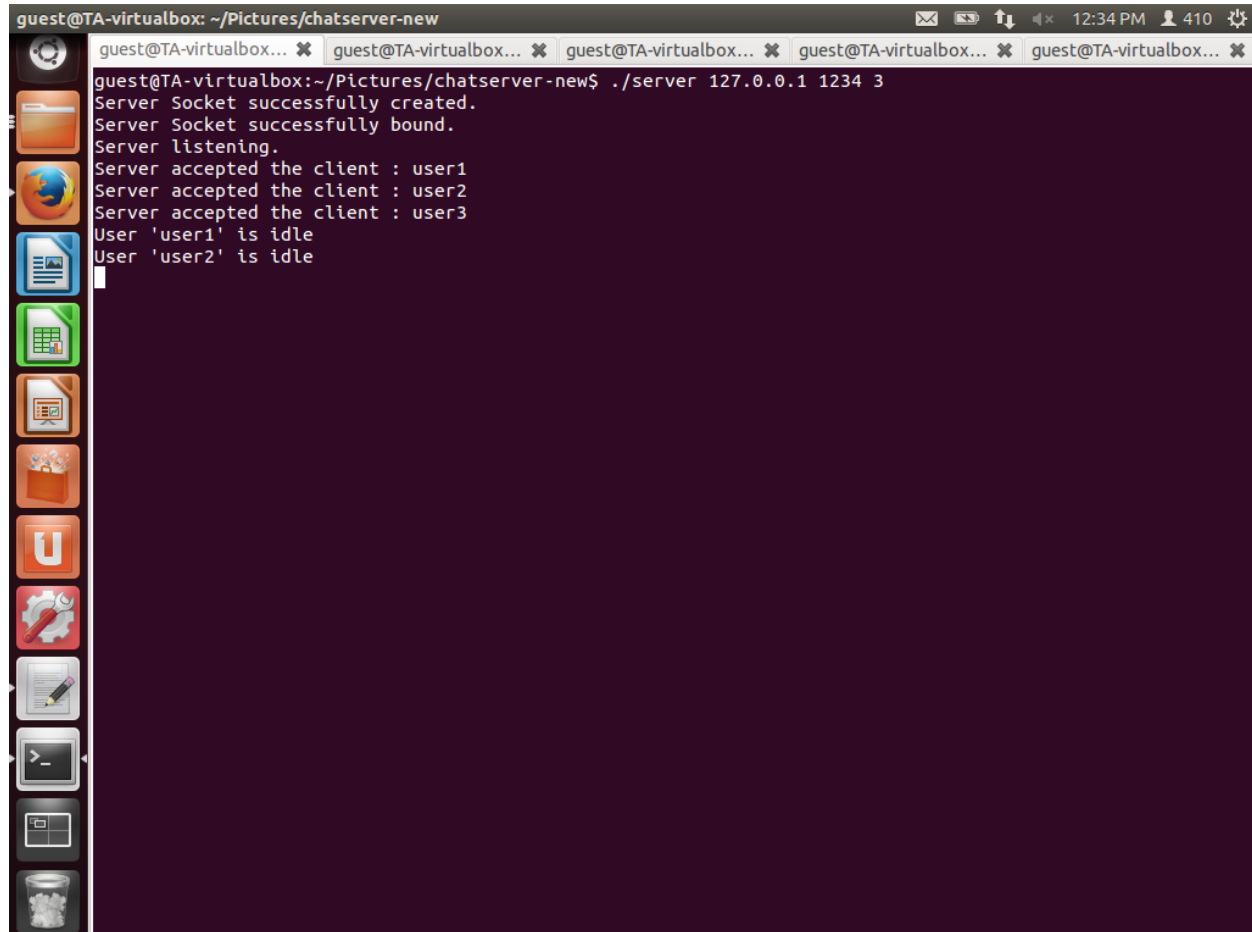


## TCP Simple Broadcast Chat Server and Client ECEN 602 Network Programming Assignment 2 Test Cases

### TestCase 1

1 server with 3 clients



The screenshot shows a terminal window titled "guest@TA-virtualbox: ~/Pictures/chatserver-new". The terminal output is as follows:

```
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./server 127.0.0.1 1234 3
Server Socket successfully created.
Server Socket successfully bound.
Server listening.
Server accepted the client : user1
Server accepted the client : user2
Server accepted the client : user3
User 'user1' is idle
User 'user2' is idle
```

The terminal window has a dark purple background and a light blue title bar. The left sidebar contains various application icons, including a web browser, a file manager, and a terminal. The top status bar shows the time as 12:34 PM and the user as 410.

Server

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user1 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 1
User 'user2' is now ONLINE
User 'user3' is now ONLINE
Time out!! No user input for 10 secs 0 usecs
User 'user2' is now IDLE
User 'user3' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user2' is now IDLE
User 'user3' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user2' is now IDLE
User 'user3' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user2' is now IDLE
```

Client1



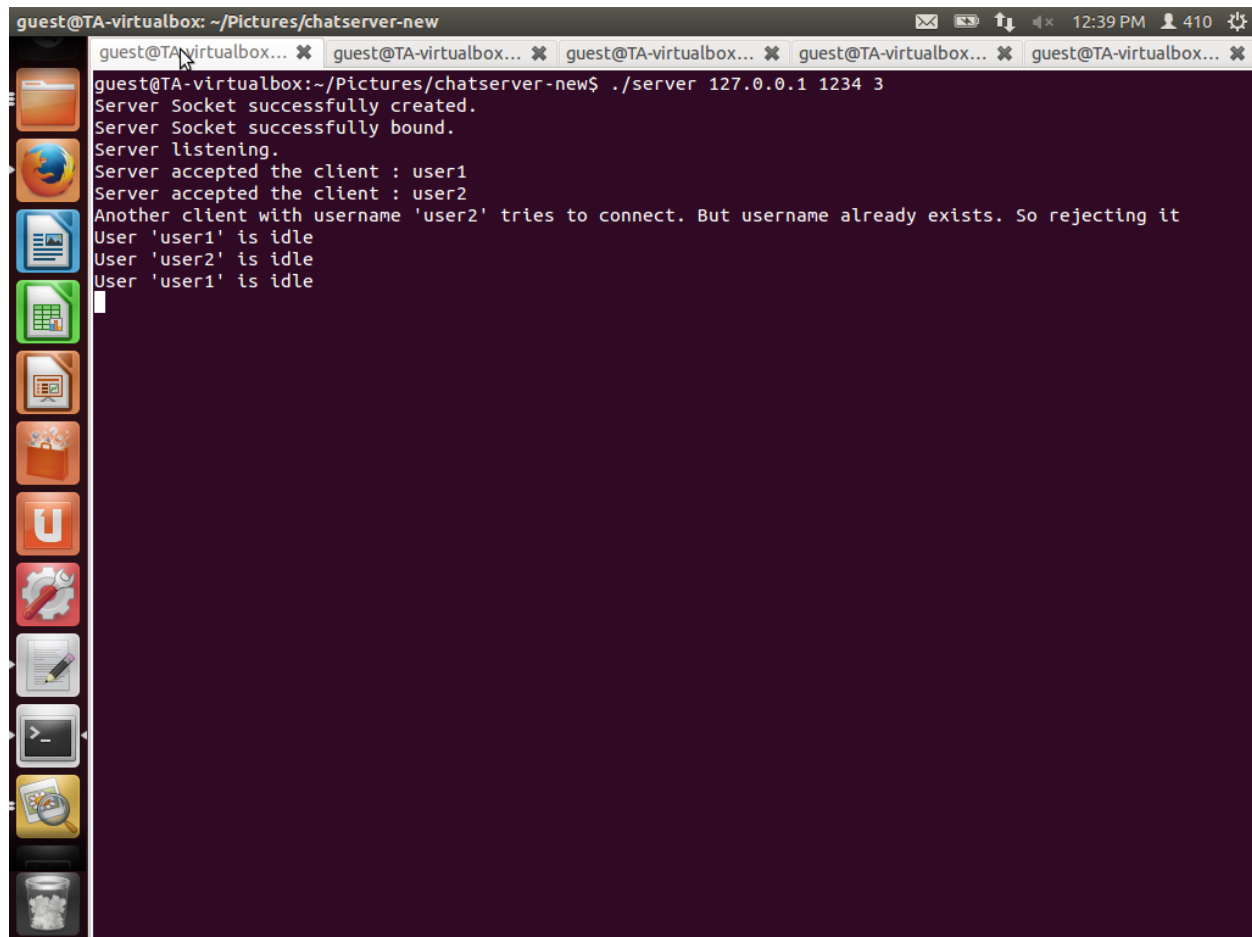
A screenshot of a Kali Linux desktop environment. The background is black. On the left side, there is a vertical dock containing several application icons: a gear (Settings), a folder (Files), a web browser (Firefox), a document with a magnifying glass (Find), a calendar, a file explorer, a terminal, a network icon, a power button, and a trash can. At the top of the screen, there is a taskbar with multiple instances of a terminal window titled "guest@TA-virtualbox...". The active terminal window shows the following text:

```
guest@TA-virtualbox: ~/Pictures/chatserver-new$ ./client user3 127.0.0.1 1234  
Socket successfully created..  
connected to the server..  
ACK Message from Server is 3 user1,user2  
User 'user1' is now IDLE  
User 'user2' is now IDLE  
Time out!! No user input for 10 secs 0 usecs  
User 'user1' is now IDLE  
User 'user2' is now IDLE  
Time out!! No user input for 10 secs 0 usecs  
User 'user1' is now IDLE  
User 'user2' is now IDLE  
Time out!! No user input for 10 secs 0 usecs  
User 'user1' is now IDLE  
User 'user2' is now IDLE  
Time out!! No user input for 10 secs 0 usecs  
User 'user1' is now IDLE  
User 'user2' is now IDLE  
Time out!! No user input for 10 secs 0 usecs
```

The terminal text indicates that a client has connected to a server, received an acknowledgment message, and then enters a loop where it checks for user input every 10 seconds, finding no input each time.

### Client 3

## TestCase2

A terminal window titled 'guest@TA-virtualbox: ~/Pictures/chatserver-new' with a dark purple background and white text. The window has a standard Linux desktop environment on the left with icons for a folder, Firefox, LibreOffice Writer, LibreOffice Calc, LibreOffice Impress, a file manager, a terminal, a search tool, and a trash can. The terminal output shows the execution of a chat server script. The script starts by creating a socket, binding it to 127.0.0.1 on port 1234, and listening. It then accepts two clients, 'user1' and 'user2'. After a short delay, it rejects a third client attempt because the username 'user2' is already in use. The status of 'user1' and 'user2' is reported as 'idle' multiple times.

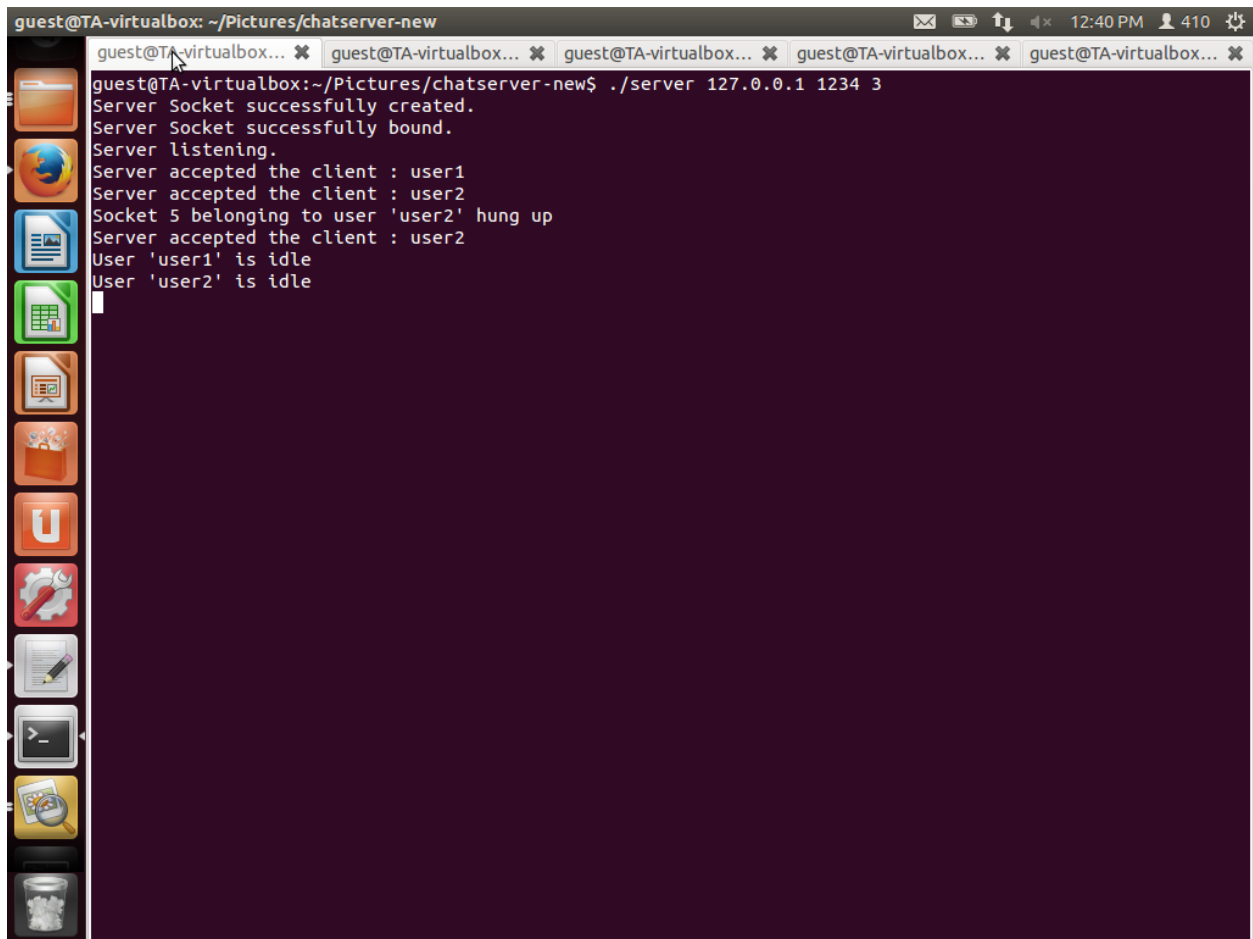
```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./server 127.0.0.1 1234 3
Server Socket successfully created.
Server Socket successfully bound.
Server listening.
Server accepted the client : user1
Server accepted the client : user2
Another client with username 'user2' tries to connect. But username already exists. So rejecting it
User 'user1' is idle
User 'user2' is idle
User 'user2' is idle
User 'user1' is idle
```

server rejects a client with a duplicate username

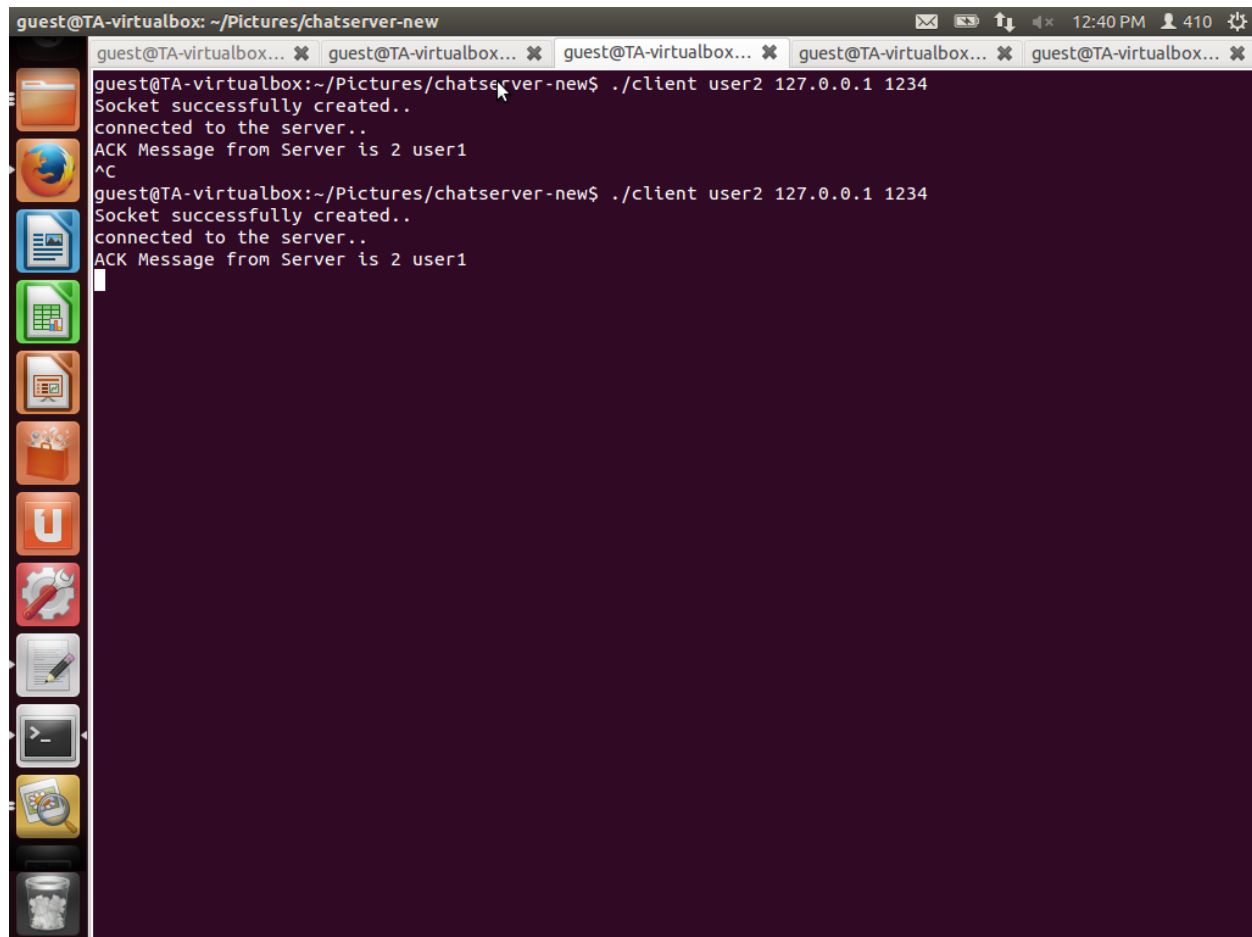
```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user2 127.0.0.1 1234
Socket successfully created..
connected to the server..
Disconnected.NAK Message from Server is Invalid username
guest@TA-virtualbox:~/Pictures/chatserver-new$
```

Duplicate client name message to client

### Testcase3

A terminal window titled 'guest@TA-virtualbox: ~/Pictures/chatserver-new' with a dark purple background. The window shows the execution of a chat server program. The output includes: 'Server Socket successfully created.', 'Server Socket successfully bound.', 'Server listening.', 'Server accepted the client : user1', 'Server accepted the client : user2', 'Socket 5 belonging to user 'user2' hung up', 'Server accepted the client : user2', 'User 'user1' is idle', and 'User 'user2' is idle'. The left sidebar contains various application icons. The top bar shows system status icons and the time '12:40 PM'.

server allows a previously used username to be reused

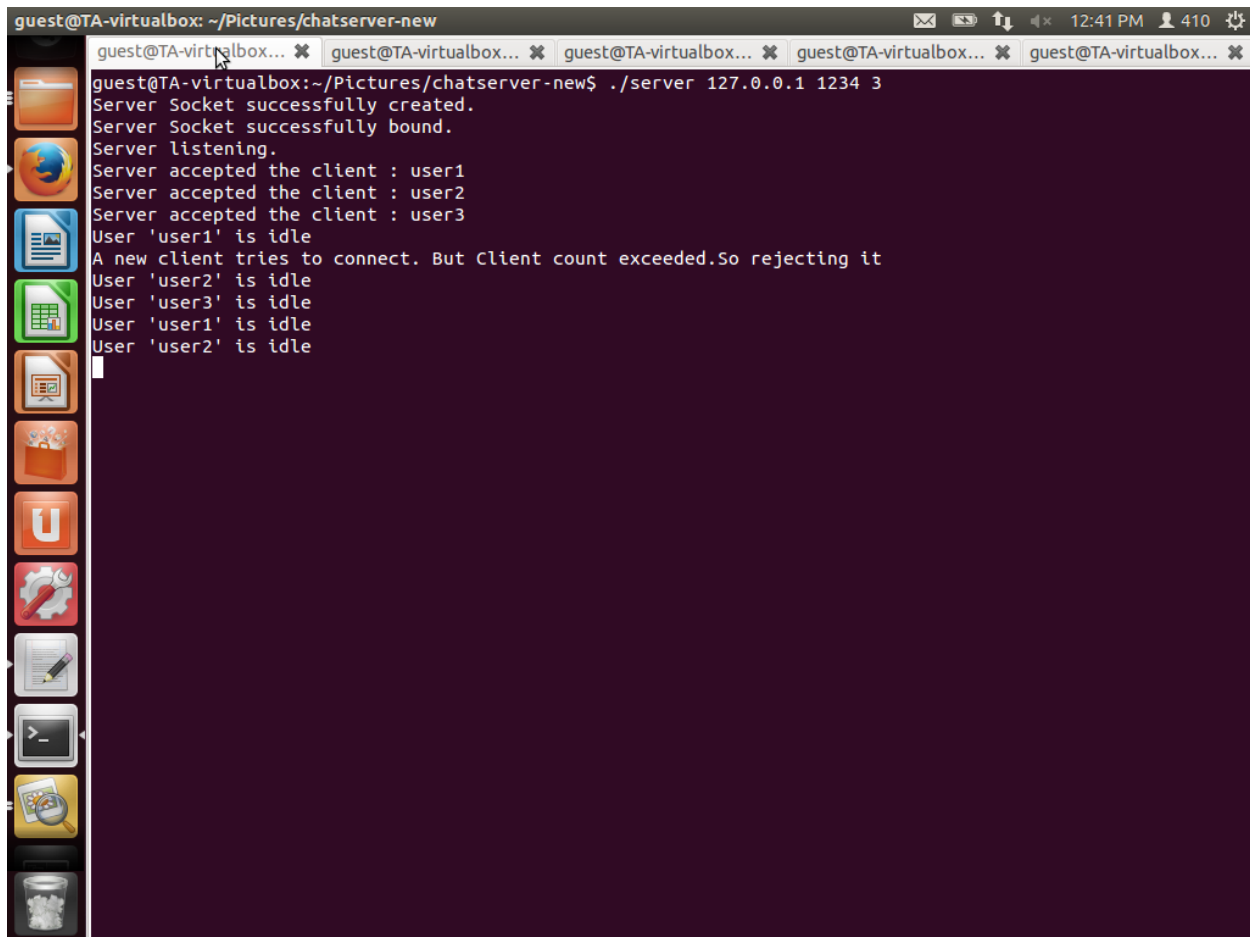
A terminal window titled 'guest@TA-virtualbox: ~/Pictures/chatserver-new' with a dark purple background. The window shows a sequence of commands and outputs for a chat client. The first command is './client user2 127.0.0.1 1234', followed by 'ACK Message from Server is 2 user1'. Then, the user presses '^C' to interrupt the process. The second command is './client user2 127.0.0.1 1234', followed by 'ACK Message from Server is 2 user1'. The terminal has a sidebar on the left with various application icons. The top of the window shows a standard Linux desktop environment with system icons and a clock displaying 12:40 PM.

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user2 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 2 user1
^C
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user2 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 2 user1
```

user2 disconnecting and connecting back



#### Test case 4

A screenshot of a terminal window titled 'guest@TA-virtualbox: ~/Pictures/chatserver-new'. The terminal shows the execution of a chat server program. The output includes: 'Server Socket successfully created.', 'Server Socket successfully bound.', 'Server listening.', 'Server accepted the client : user1', 'Server accepted the client : user2', 'Server accepted the client : user3', 'User 'user1' is idle', 'A new client tries to connect. But Client count exceeded. So rejecting it', 'User 'user2' is idle', 'User 'user3' is idle', 'User 'user1' is idle', and 'User 'user2' is idle'. The terminal has a dark purple background and a light-colored text. On the left side, there is a vertical dock with various application icons. The top of the window shows a standard Linux desktop environment with a taskbar and system tray.

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./server 127.0.0.1 1234 3
Server Socket successfully created.
Server Socket successfully bound.
Server listening.
Server accepted the client : user1
Server accepted the client : user2
Server accepted the client : user3
User 'user1' is idle
A new client tries to connect. But Client count exceeded. So rejecting it
User 'user2' is idle
User 'user3' is idle
User 'user1' is idle
User 'user2' is idle
```

server rejects the client because it exceeds the maximum number of clients allowed

#### Testcase 5

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./server 127.0.0.1 1234 3
Server Socket successfully created.
Server Socket successfully bound.
Server listening.
Server accepted the client : user1
Server accepted the client : user2
User 'user1' is idle
User 'user2' is idle
Socket 5 belonging to user 'user2' hung up
User 'user1' is idle
```

IDLE

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user1 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 1
User 'user2' is now ONLINE
Time out!! No user input for 10 secs 0 usecs
User 'user2' is now IDLE
User 'user2' is now OFFLINE
Time out!! No user input for 10 secs 0 usecs
Time out!! No user input for 10 secs 0 usecs
Time out!! No user input for 10 secs 0 usecs
```

ONLINE OFFLINE

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... gues@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user2 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 2 user1
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
^C
guest@TA-virtualbox:~/Pictures/chatserver-new$
```

BONUS Test Cases IDLE ACK NAK OFFLINE ONLINE

```
guest@TA-virtualbox: ~/Pictures/chatserver-new
guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox... guest@TA-virtualbox...
guest@TA-virtualbox:~/Pictures/chatserver-new$ ./client user2 127.0.0.1 1234
Socket successfully created..
connected to the server..
ACK Message from Server is 2 user1
User 'user3' is now ONLINE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
User 'user3' is now IDLE
User 'user1' is now IDLE
Time out!! No user input for 10 secs 0 usecs
Server disconnected
: Success
guest@TA-virtualbox:~/Pictures/chatserver-new$
```