Lab Report Computer Networks

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Group Number - 16

In this lab we have made a Multiple Client Chat application in which two client can communicate with each other without knowing the details like the ip or port of the other client . In such situations Server comes in handy and keep tracks of all the clients and also ensures that the message is delivered to the correct client and thus acts as an intermediatory between any two clients.

How does the server keeps track of all the clients ??

In our implementation we have created an array of threads where each thread corresponds to a client . In this way we have to just iterate through the array to find the correct client and deliver the required message .

How do we identify all the clients ??

In our implementation we have used the names of the client as a distinguisher . At the time a new client enter the application we ask for his name and each thread corresponding to a client has an attribute clientName which we use to distinguish and find the client .

How do we ensure that once a message is sent the client can send another message rather than alternatively receiving and sending ??

In order to solve this problem we have created an input thread and an output thread that helps us in keeping the sending and receiving options separately and therefore we can send and receive message any number of time and any order.

What are the various options that the chat application provides ??

Our chat application provides the following option :

(i) status → if you enter "$status" as the string instead of the receiver's name then it displays the entire list of online clients as well as offline clients .

(ii) close → if you enter "$close" as the string then it closes the thread of the client and in turn the server also return "$close". Hence closing the connection.

(iii) offline → if any client wishes to go offline he/she just needs to type "$offline" and he/she goes offline and therefore cannot receive any message until he/she goes back online but can send message if he/she is offline.

(iv) online → if anny client if offline and wishes to go online back then he/she needs to type "$online" and the status is changed to online just in case if he is already online then he remains online .

How does the application maintains the availability status of the client that is online / offline ??

For each client there is a corresponding thread and each thread has a variable named status whose value by default is -1 and as the new client enters status changes to 1 and when we ask it to go offline status changes to 0 .

How do we maintain the privacy of the message ??

Since the contents message sent by the sender client are private only the server know the name of the sender client and the contents it searches the list of all the clients that are active on the application if the client if found and is online the message is received or else the respective error or alert message is displayed and the contents are dumped by the server . In this way the privacy of the message is kept and no other client knows the content or who sent the message to whom.

Does the receiver receives the message even if he is offline ??

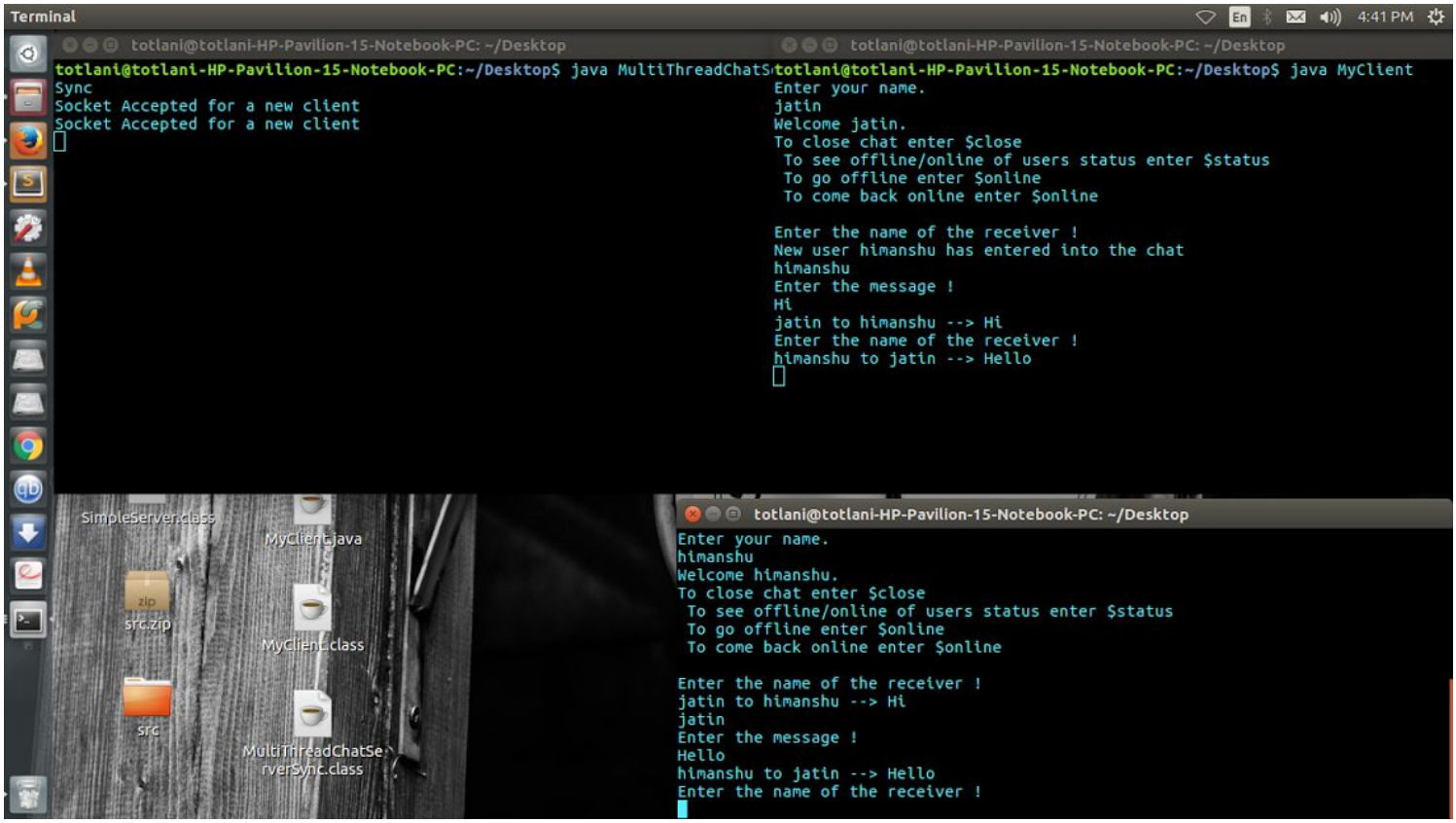
No the receiver does not receive the message if he is offline , but in our application we have given it the authority to send the message if the client is even offline .

Is the message delivered if the user is online ??

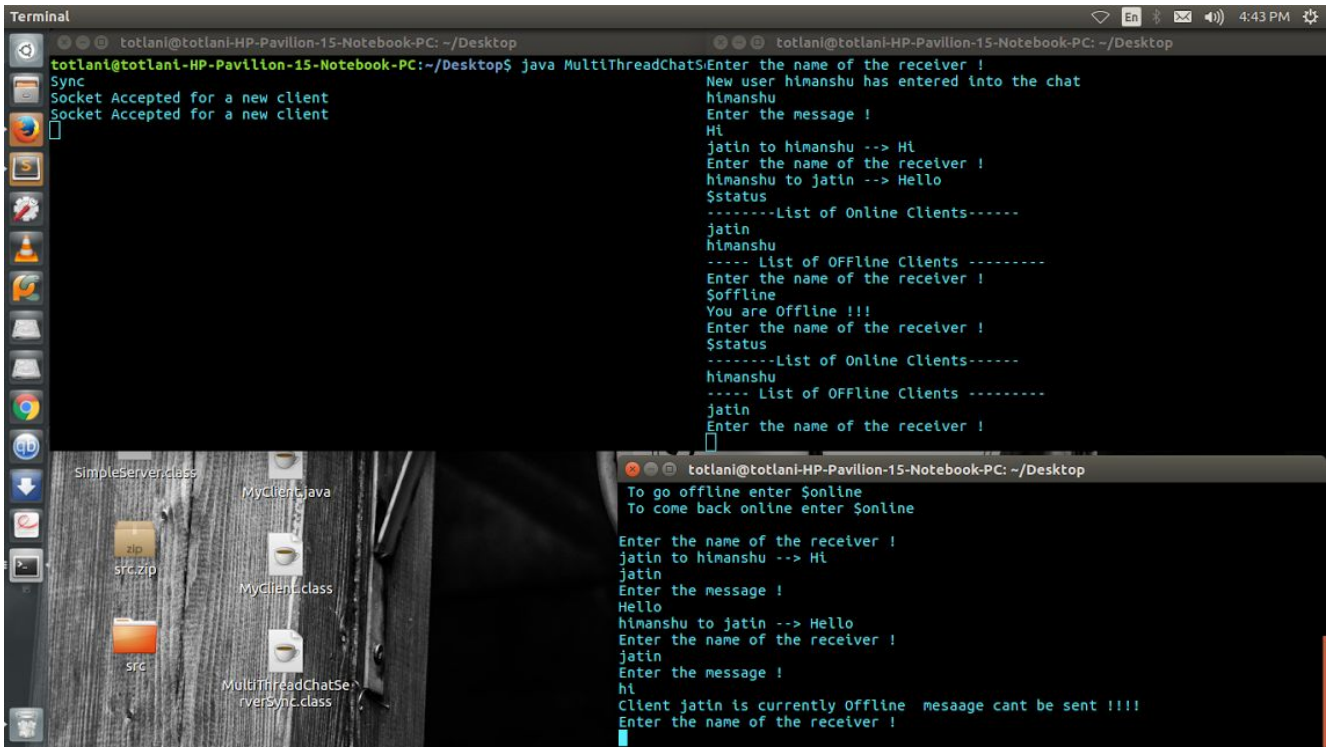
Yes the message is delivered only if the client is online .

Screenshots

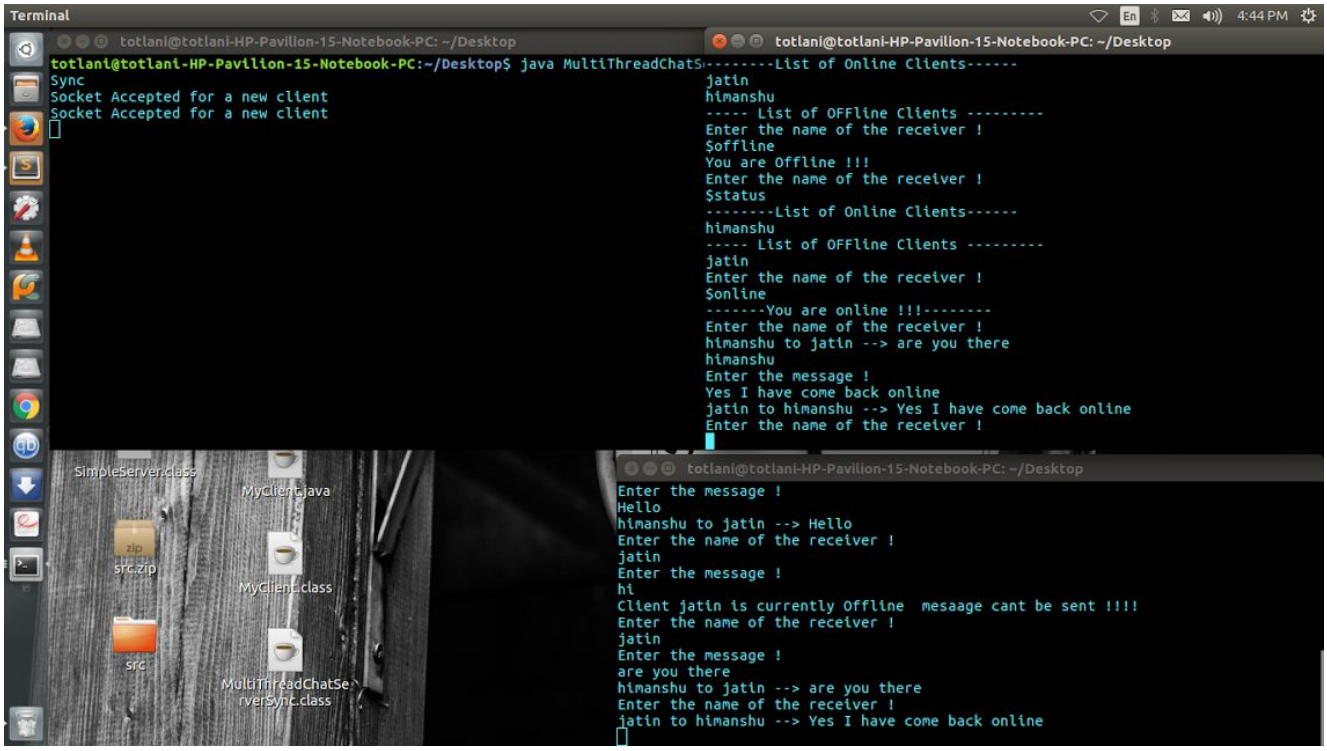
1) **Client to client chat , others cannot see**



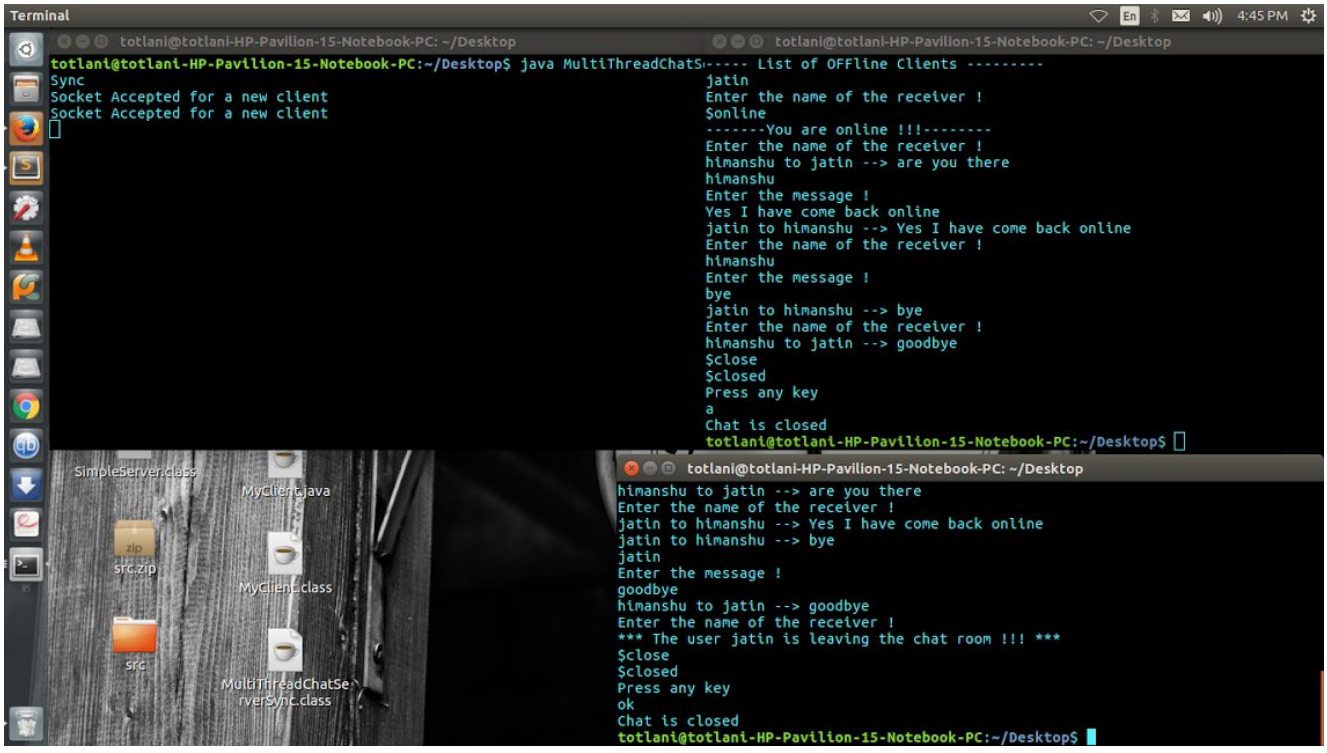
2) $status to check availability of users



3) $offline and $online commands



4) $close command



Readme
Compiling:
javac MyChatServer.java
javac MyClient.java

Run:-
First run the server using
java MyChatServer

Then any number of clients can connect to the server to open the chat

Note:- server is on port number 2222 , thus all the clients connect to port 2222 for establishing the connection. This can be replaced with a specific IP if need be.