

Network Programming Assignment-1

Chat Application

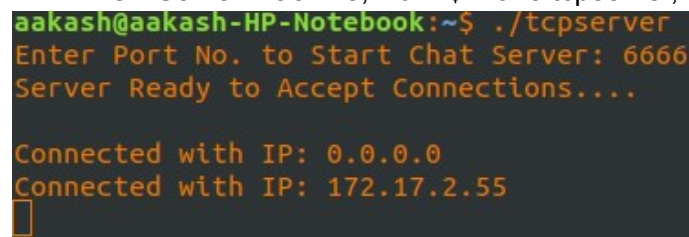
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Files: 1. tcpserver.c
2. tcpclient.c

The Server application creates new child for each new client connected. For Inter-process communication, a message queue is used (for directing messages among clients). For storing user details, shared memory is used among all the server processes.

Running The Application:

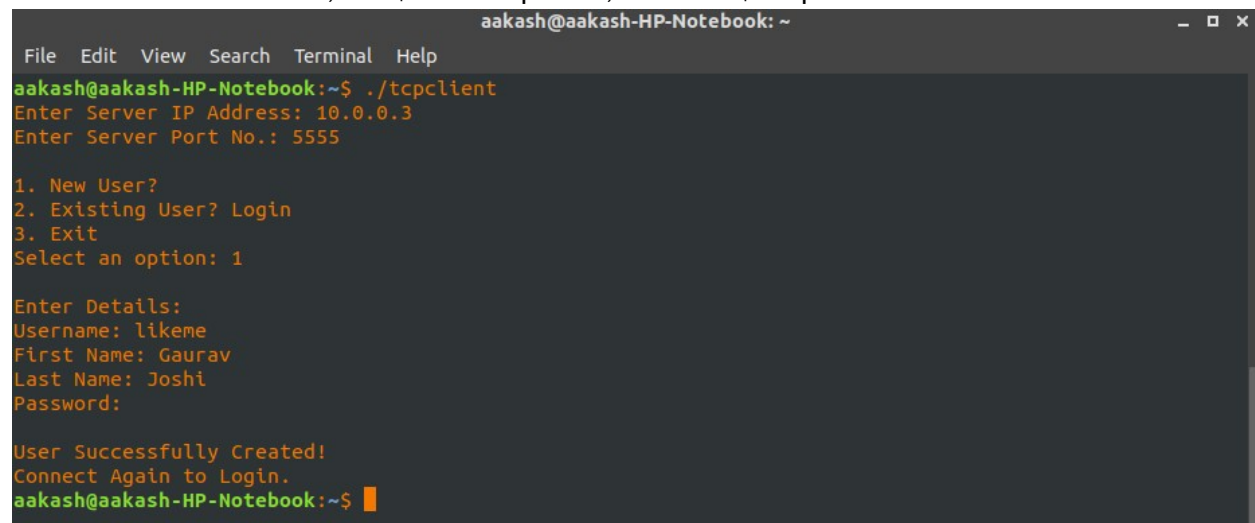
1. On Server Machine, Run \$ make tcpserver, then run \$./tcpserver



```
aakash@aakash-HP-Notebook:~$ ./tcpserver
Enter Port No. to Start Chat Server: 6666
Server Ready to Accept Connections....

Connected with IP: 0.0.0.0
Connected with IP: 172.17.2.55
█
```

2. On Client Machine, run \$ make tcpclient, then run \$./tcpclient



```
aakash@aakash-HP-Notebook: ~
File Edit View Search Terminal Help
aakash@aakash-HP-Notebook:~$ ./tcpclient
Enter Server IP Address: 10.0.0.3
Enter Server Port No.: 5555

1. New User?
2. Existing User? Login
3. Exit
Select an option: 1

Enter Details:
Username: likeme
First Name: Gaurav
Last Name: Joshi
Password:

User Successfully Created!
Connect Again to Login.
aakash@aakash-HP-Notebook:~$ █
```

The application supports user creation, duplicate username verification, and password verification.

Users need to enter the IP Address and Port No. on which the server is running in order to connect to the chat system.

a) Connecting To Server

```
aakash@aakash-HP-Notebook:~$ ./tcpclient
Enter Server IP Address: 10.0.0.3
Enter Server Port No.: 5555

1. New User?
2. Existing User? Login
3. Exit
Select an option: 2

Enter Username: aakash
Enter Password:

Message from Server: Welcome Aakash!

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option: 
```

c) Sending Private Message

Sender:

```
aakash@aakash-HP-Notebook: ~
File Edit View Search Terminal Help

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option: 1

Send To: deepak
Enter Message: Hello Deepak! How was the dinner?

Message Sent

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option: 
```

Receiver:

```
4. Block a User
5. Unblock a User
6. Exit
Select an option:
Message from Gaurav: Hello Deepak! How was the dinner?

```

If the receiver is online, the message is immediately printed on his/her side. But if the user is offline, the message is delivered as soon as he/she comes online (if the receiver hasn't blocked the sender).

d) Sending Message to All Users (Broadcast Message)

A user can send a broadcast message to all the other users using option 2.

Sender:

```
What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option: 2
Enter Message: Hello All! Meet me tonight at the lake.

Message Sent

What would you like to do?
1. Send a Private Message
```

Receiver 1:

```
6. Exit
Select an option:
Message from Gaurav: Hello Deepak! How was the dinner?

Message from Gaurav: Hello All! Meet me tonight at the lake.
█
```

Receiver 2:

```
deepak          Deepak Kar      Offline

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option:
Message from Gaurav: Hello All! Meet me tonight at the lake.
█
```

e) Getting Status of Users

Using option 3 will print a list of registered users within the chat system with their status (whether online/offline). * indicates the username of self.

```
3
Total Number of Users: 4
USERNAME      NAME      STATUS
aakash        Aakash Bajaj   Online
likeme        Gaurav Joshi   Offline
deepak*       Deepak Kar     Online
amit31        Amit Soni      Online

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
```

f) Additional Feature: User Blocking & Unblocking

By using options 4 and 5, a user can block or unblock messages from any other user just by supplying his/her username. By default, all users are unblocked for any new user. But the user can still send messages to the blocked user(if he/she hasn't blocked the user back). The messages sent during blocked period won't be queued and will be destroyed at the server.

```
aakash@aakash-HP-Notebook: ~
File Edit View Search Terminal Help
Message from Server: Welcome Amit!

What would you like to do?
1. Send a Private Message
2. Send a Broadcast Message
3. Get Status of Other Users
4. Block a User
5. Unblock a User
6. Exit
Select an option:
Message from Deepak: Hello All
4

Enter Username to Block: deepak

What would you like to do?
1. Send a Private Message
```