COMPUTER NETWORKS

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TY Comp Div-2, T4 Batch

Assignment-4: Chat Room

Server.py

```python
import socket
import threading

severSocket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
serverAddress = ('localhost', 9876)
severSocket.bind(serverAddress)
severSocket.listen(5)
print(f"Server is listening on {serverAddress[0]}:{serverAddress[1]}")

clients = {}

def broadcast(message, sender_name):
    for name, client_socket in clients.items():
        if name != sender_name:
            try:
                client_socket.send(message)
            except:
                del clients[name]

def handle_client(client_socket, client_name):
    try:
        while True:
            message = client_socket.recv(1024)
            if message:
                broadcast_message = f"{client_name}: {message.decode('utf-8')}"
                print(broadcast_message)
                broadcast(broadcast_message.encode('utf-8'), client_name)
            else:
                break
    except Exception as e:
        print(f"Error: {str(e)}")
    finally:
        del clients[client_name]
        leave_message = f"{client_name} has left the chat."
        print(leave_message)
        broadcast(leave_message.encode('utf-8'), client_name)
        client_socket.close()

def send_message(client_socket, client_name):
    while True:
        message = input()
        if message:
            if message == "quit":
                for name, client_socket in clients.items():
                    client_socket.close()
                severSocket.close()
                exit()
            broadcast(("Server: "+message).encode('utf-8'), "Sever")

while True:

    clientSocket, clientAddress = severSocket.accept()
    print(f"Accepted connection from {clientAddress[0]}:{clientAddress[1]}")

    username = clientSocket.recv(1024).decode('utf-8')
    print(f"Client's username is {username}.")

    clients[username] = clientSocket

    join_message = f"{username} has joined the chat."
    print(join_message)
    broadcast(join_message.encode('utf-8'), username)

    client_handler = threading.Thread(target=handle_client, args=(clientSocket, username))
    client_handler.start()

    send_thread = threading.Thread(target=send_message, args=(clientSocket, username))
    send_thread.start()
```

Client.py

```python
import socket
import sys
import threading

if len(sys.argv) != 3:
    sys.exit(1)

serverIP = sys.argv[1]
serverPort = int(sys.argv[2])

clientSocket = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
serverSocket = (serverIP, serverPort)

clientSocket.connect(serverSocket)

username = input("Username: ")
clientSocket.send(username.encode('utf-8'))

def receive_input():
    while True:
        serverResponse = clientSocket.recv(1024).decode('utf-8')
        print(f"{serverResponse}")

receive_thread = threading.Thread(target=receive_input)
receive_thread.start()

while True:
    userInput = input()
    if userInput == "quit":
        clientSocket.close()
        exit()

    clientSocket.send(userInput.encode('utf-8'))
```
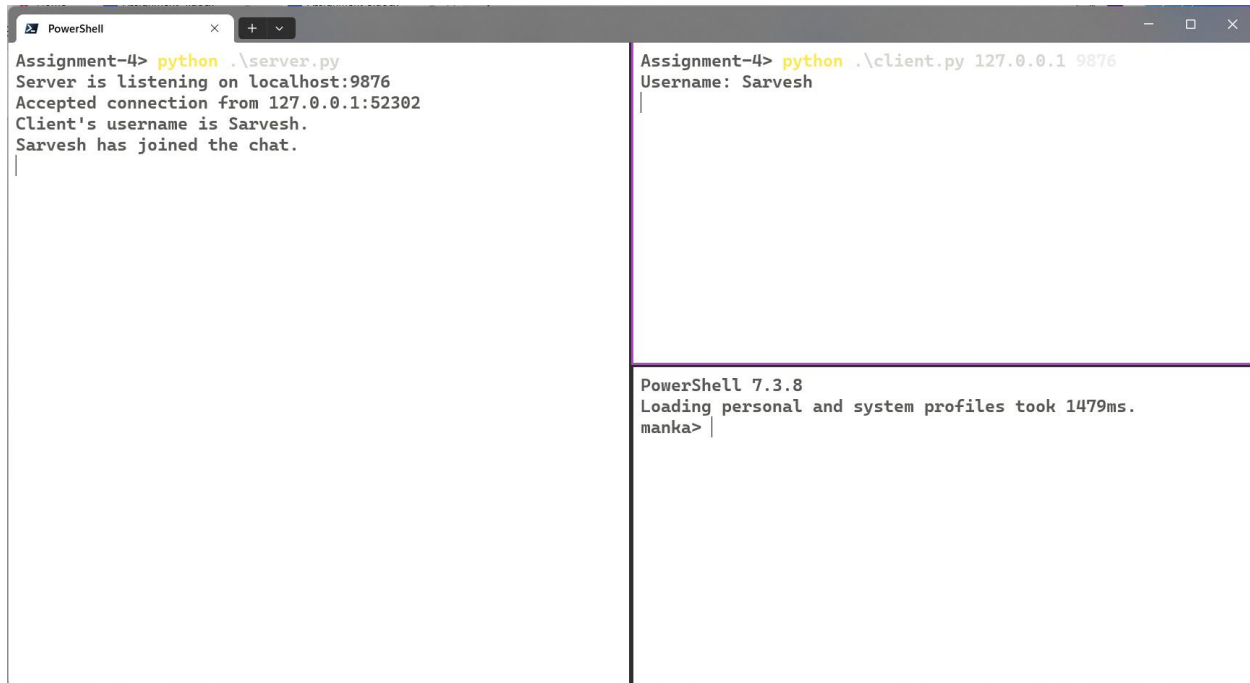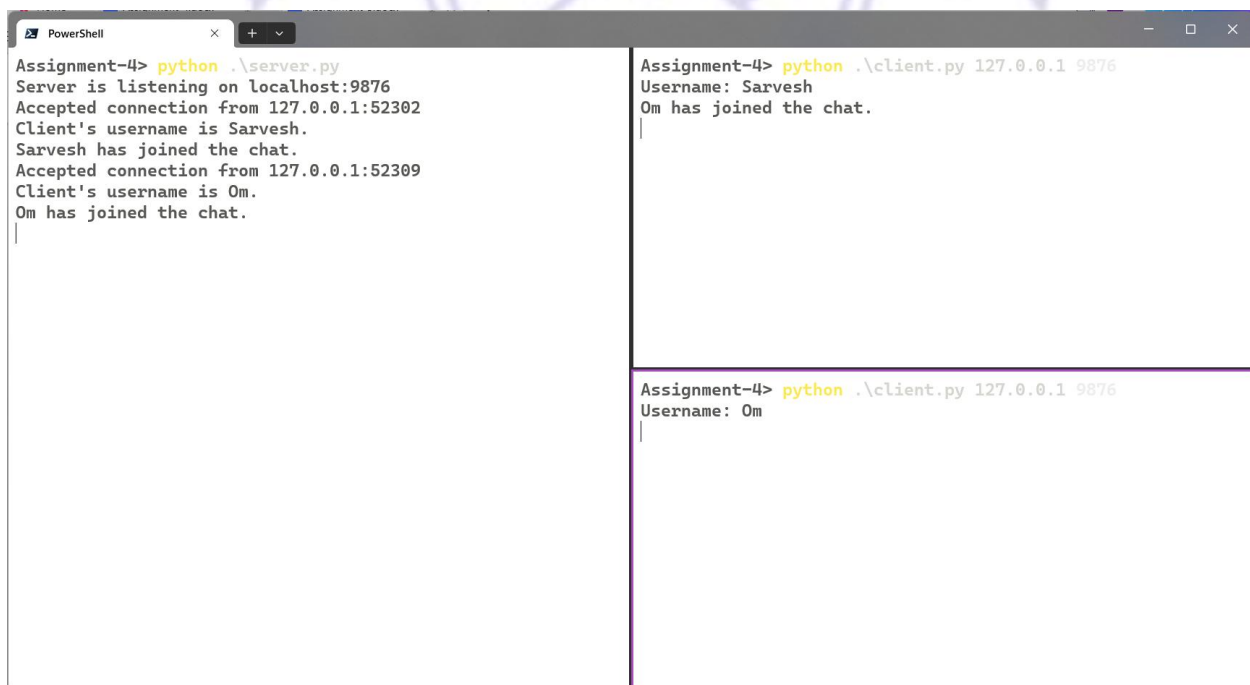
Output:

Connected to users


```
PowerShell        ×    + ∨                                                    –  □  ×

Assignment-4> python .\server.py          Assignment-4> python .\client.py 127.0.0.1 9876
Server is listening on localhost:9876     Username: Sarvesh
Accepted connection from 127.0.0.1:52302  |
Client's username is Sarvesh.
Sarvesh has joined the chat.
|




                                          ────────────────────────────────────────────
                                          PowerShell 7.3.8
                                          Loading personal and system profiles took 1479ms.
                                          manka> |
```



```
PowerShell        ×    + ∨                                                    –  □  ×

Assignment-4> python .\server.py          Assignment-4> python .\client.py 127.0.0.1 9876
Server is listening on localhost:9876     Username: Sarvesh
Accepted connection from 127.0.0.1:52302  Om has joined the chat.
Client's username is Sarvesh.             |
Sarvesh has joined the chat.
Accepted connection from 127.0.0.1:52309
Client's username is Om.
Om has joined the chat.
|
                                          ────────────────────────────────────────────
                                          Assignment-4> python .\client.py 127.0.0.1 9876
                                          Username: Om
                                          |
```

Server Sending broadcast message to all clients


```
PowerShell

Assignment-4> python .\server.py
Server is listening on localhost:9876
Accepted connection from 127.0.0.1:52302
Client's username is Sarvesh.
Sarvesh has joined the chat.
Accepted connection from 127.0.0.1:52309
Client's username is Om.
Om has joined the chat.
Welcome guys!
```

```
Assignment-4> python .\client.py 127.0.0.1 9876
Username: Sarvesh
Om has joined the chat.
Server: Welcome guys!
```

```
Assignment-4> python .\client.py 127.0.0.1 9876
Username: Om
Server: Welcome guys!
```

Chatting


```
PowerShell

Assignment-4> python .\server.py
Server is listening on localhost:9876
Accepted connection from 127.0.0.1:52302
Client's username is Sarvesh.
Sarvesh has joined the chat.
Accepted connection from 127.0.0.1:52309
Client's username is Om.
Om has joined the chat.
Welcome guys!
Sarvesh: My name is Sarvesh from India!
Om: Hello, Om here! From California!
```

```
Assignment-4> python .\client.py 127.0.0.1 9876
Username: Sarvesh
Om has joined the chat.
Server: Welcome guys!
My name is Sarvesh from India!
Om: Hello, Om here! From California!
```

```
Assignment-4> python .\client.py 127.0.0.1 9876
Username: Om
Server: Welcome guys!
Sarvesh: My name is Sarvesh from India!
Hello, Om here! From California!
```