

ASSIGNMENT 2

Socket Programming TCP Group Chat

server.py

To begin, we must import the threading and socket modules into server.py.

Within a program, a thread is a series of instructions. Using several threads is analogous to using multiple programs.

The host id and port number were then set. After that, we make a server object. After that, we must bind the server to the host and the port. Then, for any incoming connection to the server, we initiate listening mode.

To transmit a message from client A to client B, we must first send a message to the server, which acts as an intermediary between the two clients.

After that, we'll make an empty list for clients and the nickname.

Then we create a broadcast function that transmits a message from the server to all connected clients. It only accepts one parameter, i.e., the message.

Create a new function named function handle that manages each client's connection.

Client A connects to the server and sends a message to Client B, so we'll wrap our code in a try except block to do this, which is used to handle exceptions.

To receive the client's connection, we must now write a function called receive.

On the server, the accept method is always active. It waits for any client to connect. This procedure creates a new socket with the client's connection and address.

Then a message is printed like a connection is established and then we want to return the address.

Then invoke the broadcast function inorder to send the message to all the connected users, telling them that this user has joined the chat room.

Lastly, create and start the thread inorder to invoke the handle function.

client.py

To begin, we must import the threading and socket modules into client.py.

Here, we took input from the client and stored the data to variable nickname.

Then we created a client object. Instead of binding a client to the host, we connect the client to the local host and our port.

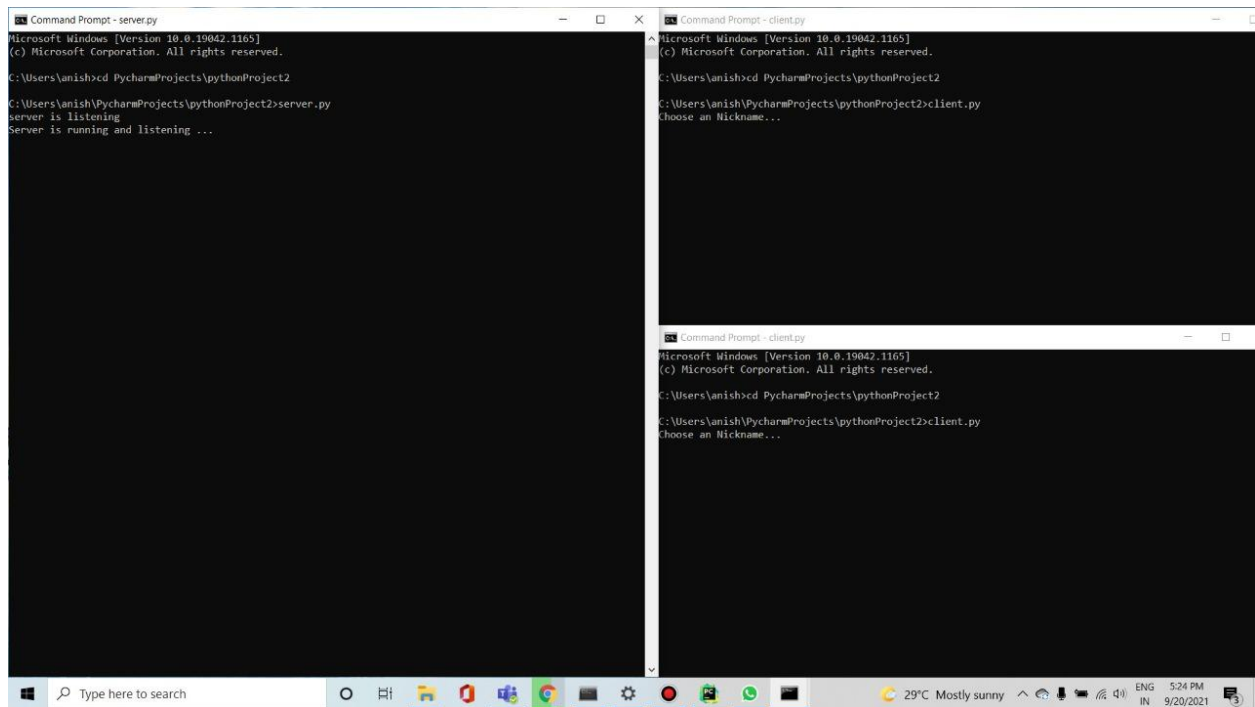
Now we will create two functions for two threads, one for receiving messages from other clients through the server and another for sending messages to other clients through the server.

For that, first we create a receive function. Inside the function, run a while loop with a try and except block.

Next, create the write function to run a while loop. Server is listening all the time, the client chooses a nickname connected to the server. The Client input the message and send it to other clients.

Lastly, we create two threads, one for the receive and other for the write method.

Screenshots



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Command Prompt - server.py
Microsoft Windows [Version 10.0.19042.1165]
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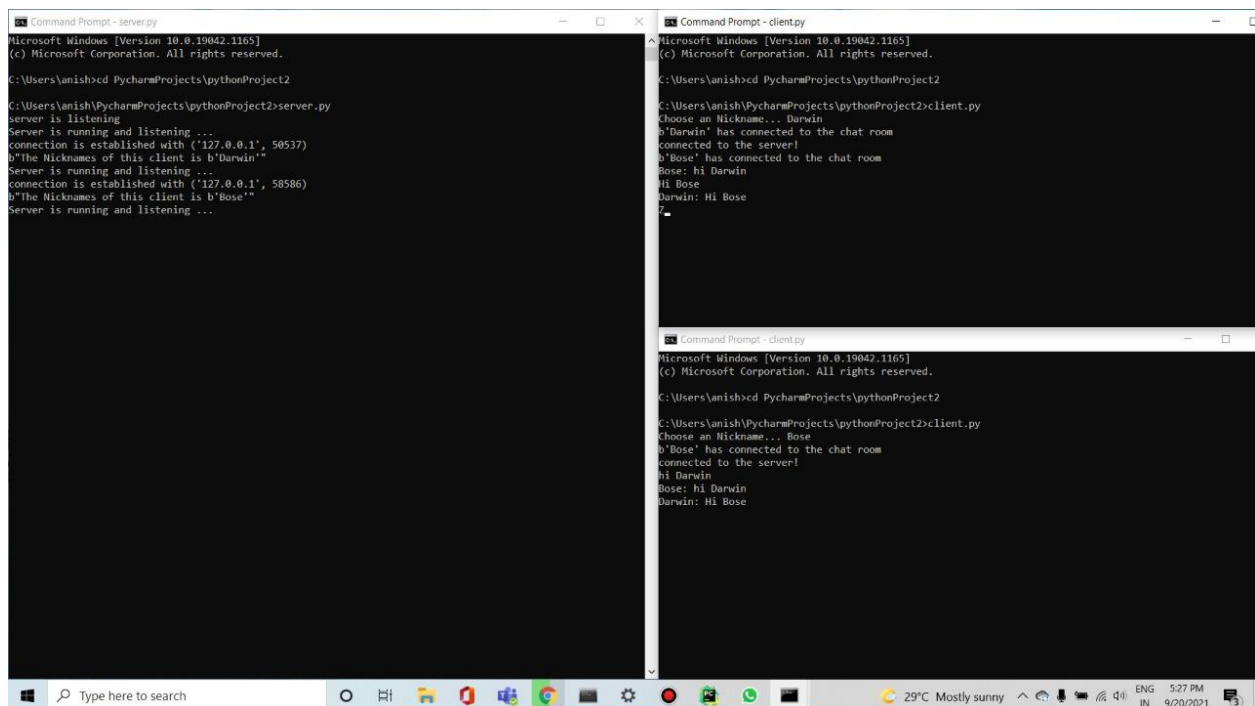
C:\Users\anish>cd PycharmProjects\pythonProject2

C:\Users\anish\PycharmProjects\pythonProject2>server.py
server is listening
Server is running and listening ...

Command Prompt - client.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anish>cd PycharmProjects\pythonProject2

C:\Users\anish\PycharmProjects\pythonProject2>client.py
Choose an Nickname...
```



```
Command Prompt - server.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anish>cd PycharmProjects\pythonProject2

C:\Users\anish\PycharmProjects\pythonProject2>server.py
server is listening
Server is running and listening ...
connection is established with ("127.0.0.1", 50537)
b"The Nicknames of this client is b'Darwin'"
Server is running and listening ...
connection is established with ("127.0.0.1", 50586)
b"The Nicknames of this client is b'Bose'"
Server is running and listening ...

Command Prompt - client.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

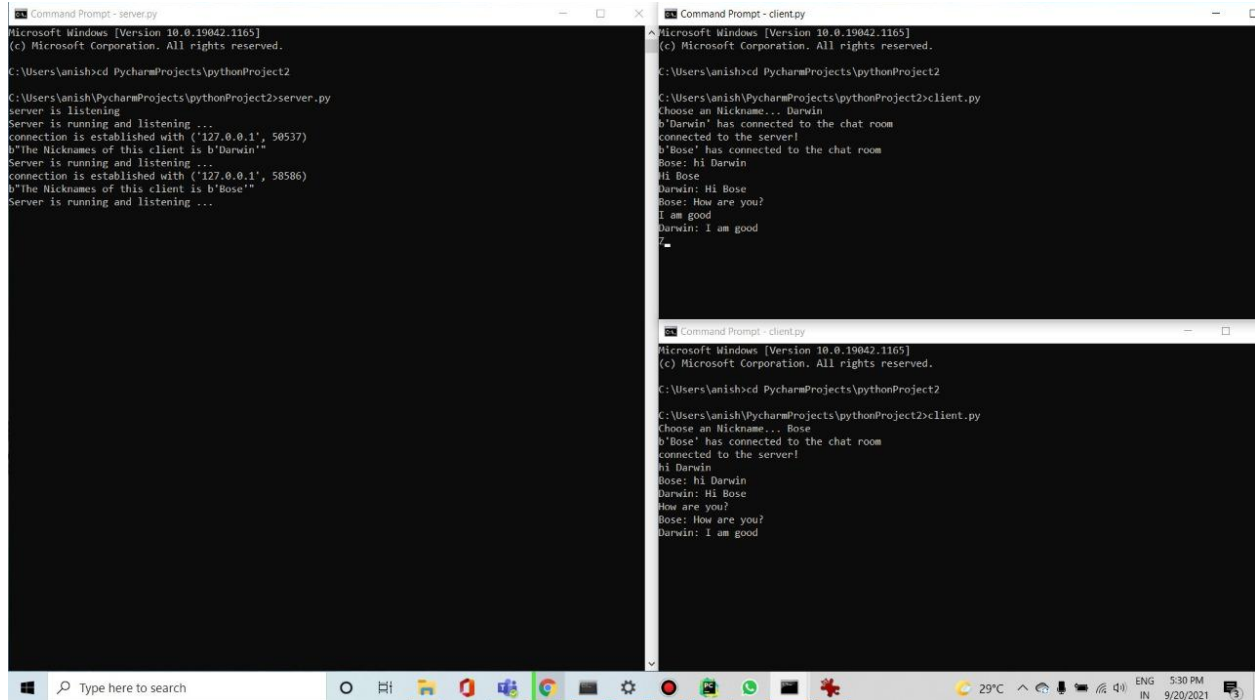
C:\Users\anish>cd PycharmProjects\pythonProject2

C:\Users\anish\PycharmProjects\pythonProject2>client.py
Choose an Nickname... Darwin
b'Darwin' has connected to the chat room
connected to the server!
b'Bose' has connected to the chat room
Bose: hi Darwin
Hi Bose
Darwin: Hi Bose
?

Command Prompt - client.py
Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anish>cd PycharmProjects\pythonProject2

C:\Users\anish\PycharmProjects\pythonProject2>client.py
Choose an Nickname... Bose
b'Bose' has connected to the chat room
connected to the server!
Hi Darwin
Bose: hi Darwin
Darwin: Hi Bose
```



The image shows two overlapping Windows Command Prompt windows. The top-left window, titled 'Command Prompt - server.py', displays the output of a Python script running a chat server. It shows the server listening, establishing connections with two clients (IPs 127.0.0.1), and assigning them nicknames 'b'Darwin' and 'b'Bose'. The top-right window, titled 'Command Prompt - client.py', shows the output of a Python script running a chat client. It prompts the user to choose a nickname, then shows the client connecting to the server and sending/receiving messages: 'hi Darwin', 'Hi Bose', 'Darwin: Hi Bose', 'Bose: How are you?', 'I am good', and 'Darwin: I am good'. A third, smaller Command Prompt window is visible below the others, also showing the client's output.

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Microsoft Windows [Version 10.0.19042.1165]
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C:\Users\anish>cd PycharmProjects\pythonProject2
C:\Users\anish>cd PycharmProjects\pythonProject2>server.py
Server is listening
Server is running and listening ...
connection is established with ('127.0.0.1', 50537)
b"The Nicknames of this client is b'Darwin'"
Server is running and listening ...
connection is established with ('127.0.0.1', 50586)
b"The Nicknames of this client is b'Bose'"
Server is running and listening ...

Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anish>cd PycharmProjects\pythonProject2
C:\Users\anish>cd PycharmProjects\pythonProject2>client.py
Choose an Nickname... Darwin
b'Darwin' has connected to the chat room
connected to the server!
b'Bose' has connected to the chat room
Bose: hi Darwin
Hi Bose
Darwin: Hi Bose
Bose: How are you?
I am good
Darwin: I am good

Microsoft Windows [Version 10.0.19042.1165]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anish>cd PycharmProjects\pythonProject2
C:\Users\anish>cd PycharmProjects\pythonProject2>client.py
Choose an Nickname... Bose
b'Bose' has connected to the chat room
connected to the server!
hi Darwin
Bose: hi Darwin
Darwin: Hi Bose
How are you?
Bose: How are you?
Darwin: I am good
```

PLAGIARISM STATEMENT

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