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Practice 1

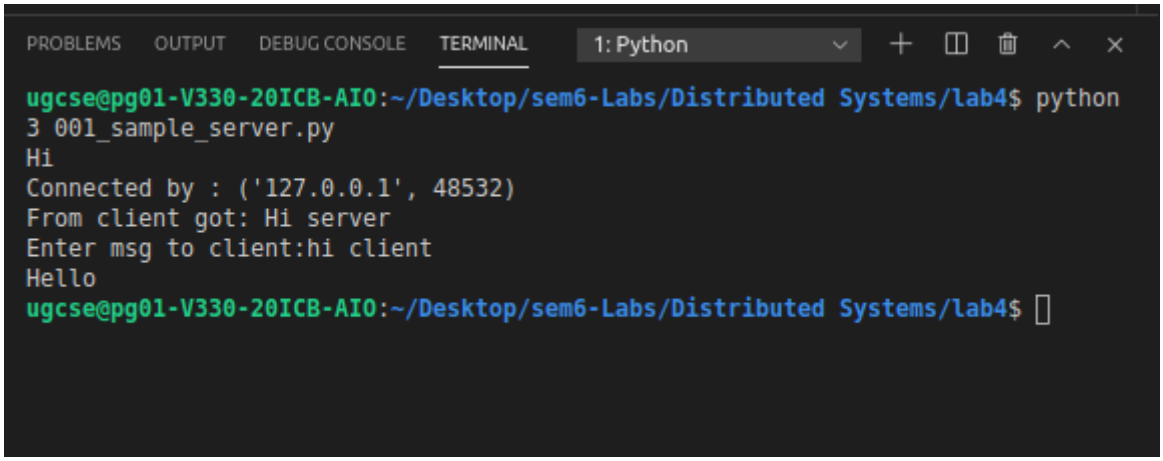
Server:

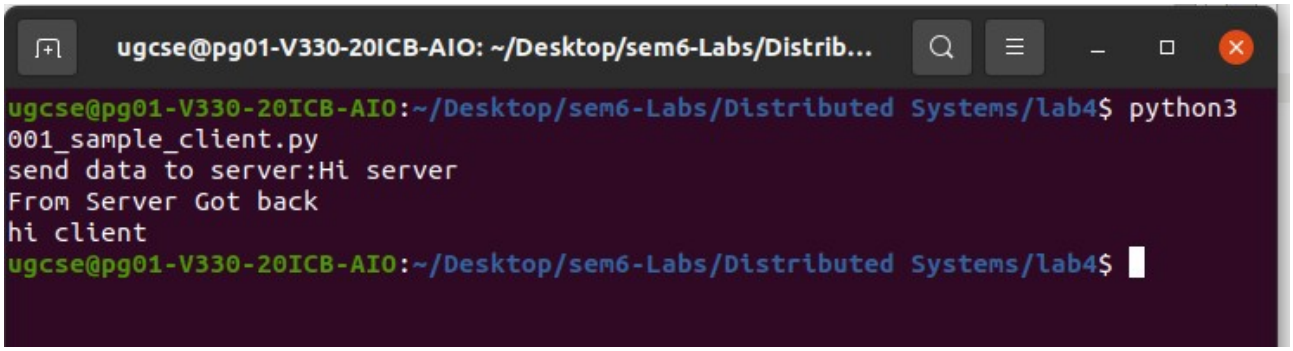
```
import socket

# host=socket.gethostname()

HOST = '127.0.0.1'
PORT = 2053

with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.bind((HOST,PORT))
    s.listen(5)
    conn,addr=s.accept()
    print("Hi")

    with conn:
        print("Connected by :",addr)
        while True:
            data=conn.recv(1024)
            if data:
                print("From client got:",data.decode())
                data=input("Enter msg to client:")

            if not data:
                break

            conn.sendall(bytearray(data,'utf-8'))

print("Hello")

conn.close()
```

Client

```
import  socket

HOST='127.0.0.1'
PORT=2053

with socket.socket(socket.AF_INET,socket.SOCK_STREAM) as s:
    s.connect((HOST,PORT))
    data=input("send data to server:")
    s.sendall(bytearray(data,'utf-8'))
    data=s.recv(1024)
```

```
print("From Server Got back")
print(data.decode())
```





Practice 2

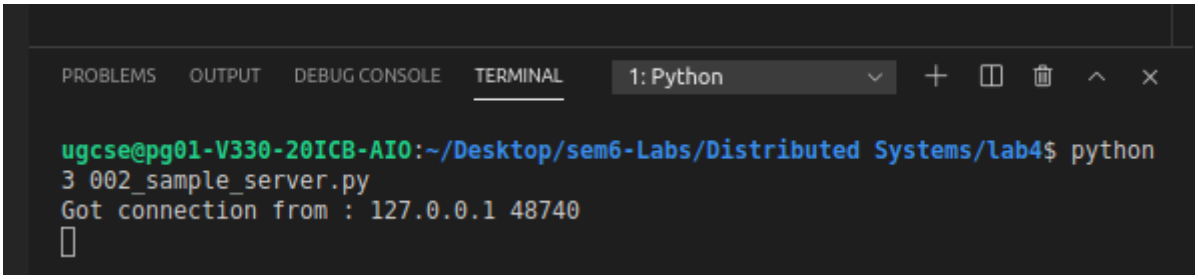
Server

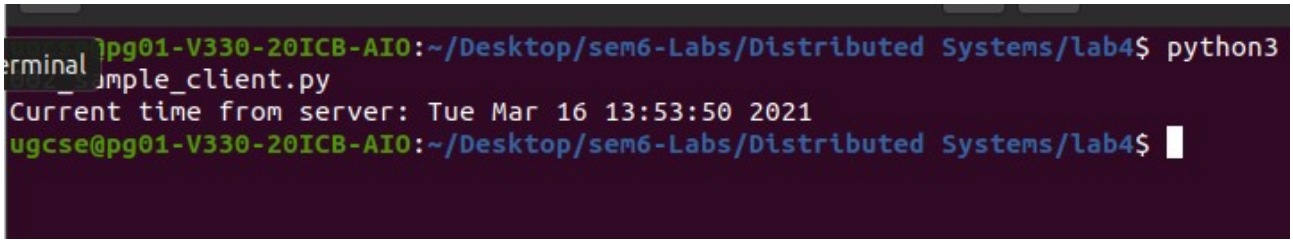
```
import socket
import time

serversoc=socket.socket(socket.AF_INET,socket.SOCK_STREAM)

host=socket.gethostname()

port=9992

serversoc.bind((host,port))

serversoc.listen(5)

while True:
   conn,addr=serversoc.accept()

   print("Got connection from :",addr[0],addr[1])
```

```
    currentTime=time.ctime(time.time())

    conn.send(currentTime.encode('ascii'))
    conn.close()
serversoc.close()
```

Client

```
import socket
s=socket.socket(socket.AF_INET,socket.SOCK_STREAM)
host=socket.gethostname()
port=9992

s.connect((host,port))

tm=s.recv(1024)

print("Current time from server:",tm.decode())

s.close()
```





Practice 3

Client

```
import socket
s=socket.socket(socket.AF_INET,socket.SOCK_STREAM)
host=socket.gethostname()
port=9991

s.connect((host,port))
```

```
while True:
    print("Client:",end=' ')
    data=str(input())
    temp=data
    s.sendall(bytearray(data,'utf-8'))
    if temp.lower()=='bye':
            break

    data=s.recv(1024)
    print("Server:",data.decode())
    if data.decode().lower()=='bye':
            break



s.close()
```

Server

```
import socket
import time

serversoc=socket.socket(socket.AF_INET,socket.SOCK_STREAM)

host=socket.gethostname()

port=9991

serversoc.bind((host,port))

serversoc.listen(5)

conn,addr=serversoc.accept()

while True:

    data=conn.recv(1024)

    if data:
        print("Client: ",data.decode())
        if data.decode().lower()=='bye':
            break

    print("Server:",end=' ')
    send_data=str(input())

    conn.sendall(bytearray(send_data,'utf-8'))

    if send_data.lower()=='bye':
            break
```

serversoc.close()

```
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$ python
3 003_sample_server.py
Client:  Hi server
Server: Hi client
Client:  How are you doing?
Server: Doing Good
Client:  Bye
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$
```

```
ugcse@pg01-V330-20ICB-AIO: ~/Desktop/sem6-Labs/Distrib...
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$ python3
003_sample_client.py
Client: Hi server
Server: Hi client
Client: How are you doing?
Server: Doing Good
Client: Bye
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$
```

Practice 4

Server

```
import socket
import os
from _thread import *

ServerSocket = socket.socket()

host = '127.0.0.1'
port = 11596

ThreadCount = 0

try:
        ServerSocket.bind((host, port))
except socket.error as e:
        print(str(e))

print('Waitiing for a Connection..')
ServerSocket.listen(5)

def threaded_client(connection):
        connection.send(str.encode('Welcome to the Server'))
```

```
        while True:
                data = connection.recv(2048)
                print('Received from client :' + str(ThreadCount) +data.decode())
                Inputs = input('Server Says: ')
                if not data:
                        break
                connection.sendall(Inputs.encode())
        connection.close()

while True:
        Client, address = ServerSocket.accept()
        print('Connected to: ' + address[0] + ':' + str(address[1]))
        start_new_thread(threaded_client, (Client, ))
        ThreadCount += 1
        print('Thread Number: ' + str(ThreadCount))
ServerSocket.close()
```

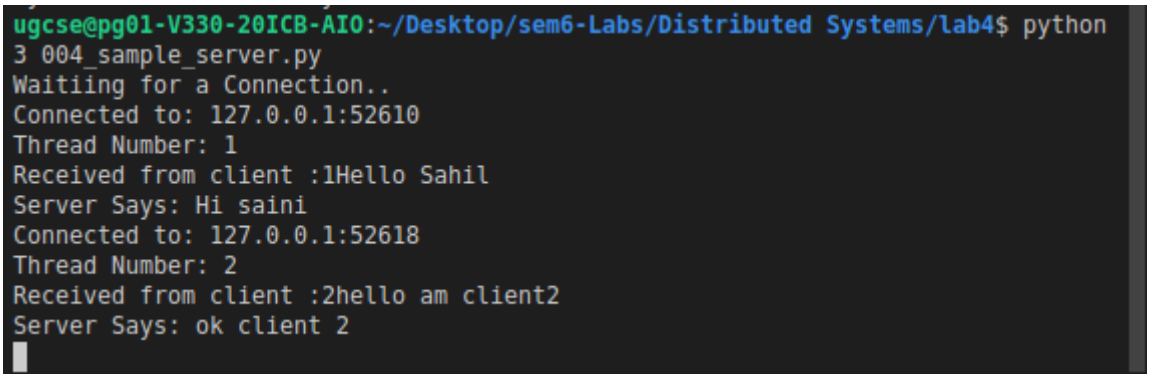
Client 1

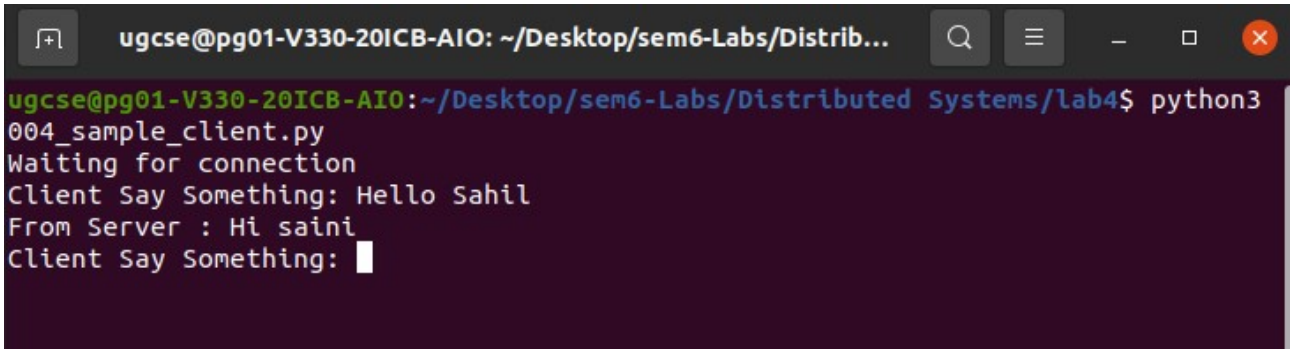
```
import socket

ClientSocket = socket.socket()

host = '127.0.0.1'
port = 11596

print('Waiting for connection')

try:
        ClientSocket.connect((host, port))
except socket.error as e:
        print(str(e))

Response = ClientSocket.recv(1024)

while True:
        Input = input('Client Say Something: ')
        ClientSocket.send(str.encode(Input))
        Response = ClientSocket.recv(1024)
        print('From Server : ' + Response.decode())
ClientSocket.close()
```

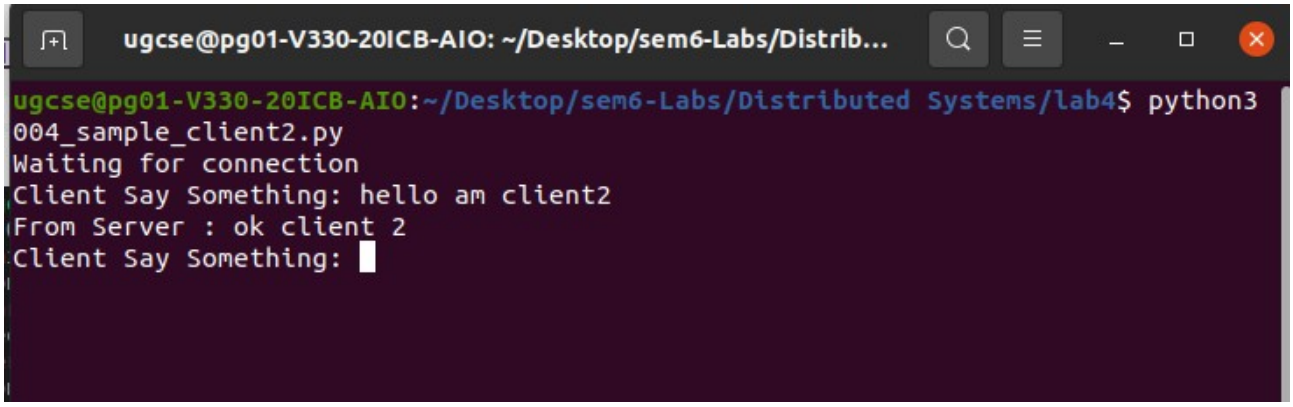
Client 2

```
import socket

ClientSocket = socket.socket()

host = '127.0.0.1'
```

```
port = 11596

print('Waiting for connection')

try:
        ClientSocket.connect((host, port))
except socket.error as e:
        print(str(e))

Response = ClientSocket.recv(1024)

while True:
        Input = input('Client Say Something: ')
        ClientSocket.send(str.encode(Input))
        Response = ClientSocket.recv(1024)
        print('From Server : ' + Response.decode())
ClientSocket.close()
```







EXERCISE

Question 1:

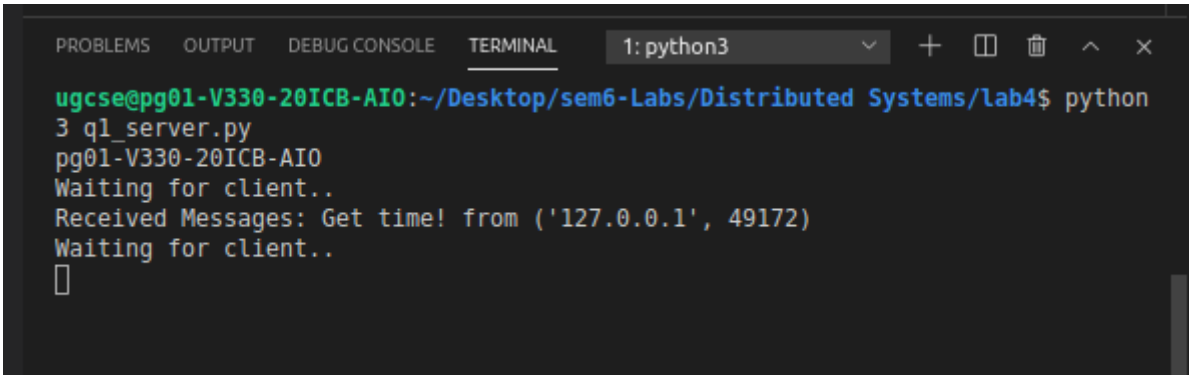
Server

```
import socket
import time

sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
print(udp_host)
udp_port = 12345
sock.bind((udp_host,udp_port))

while True:
        print("Waiting for client..")
        data,addr  = sock.recvfrom(1024)
        print("Received Messages:",data.decode(),"from",addr)
        currenttime = time.ctime(time.time())+"\r\n"
        sock.sendto(currenttime.encode(),addr)
```

Client

```
import socket
import time
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
udp_port = 12345
print(udp_host)

msg = "Get time!"
print("UDP target IP:", udp_host)
print("UDP target Port:", udp_port)
```

```
sock.sendto(msg.encode(),(udp_host,udp_port))
tm,addr = sock.recvfrom(1024)
print("Time is:",tm.decode())
```



Question2

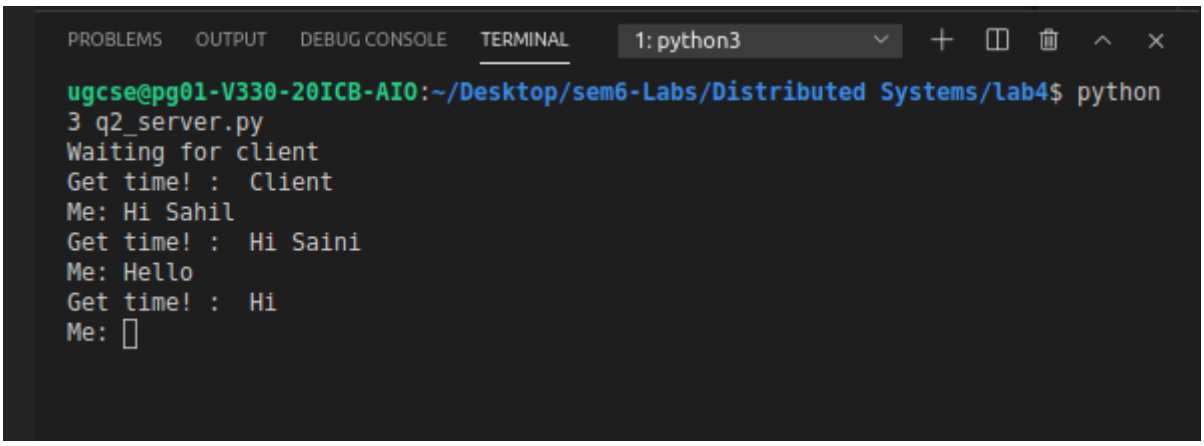
Server

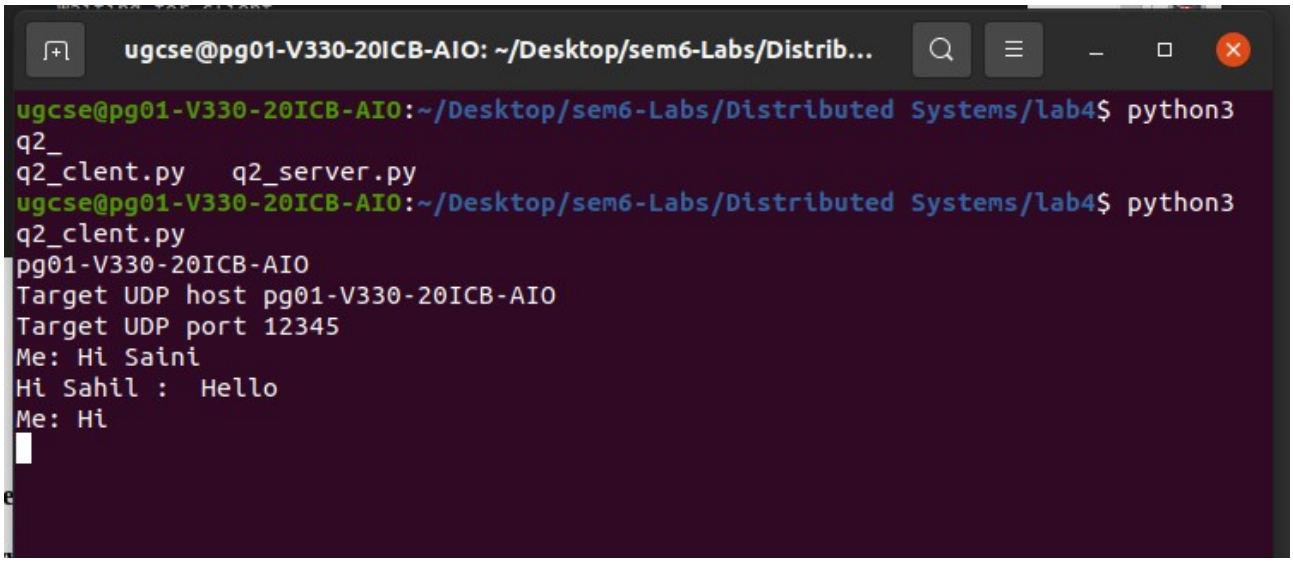
```
import socket as skt
import time
sock = skt.socket(skt.AF_INET, skt.SOCK_DGRAM)

udp_host = skt.gethostname()
udp_port = 12345

sock.bind((udp_host, udp_port))
print('Waiting for client')
data, addr = sock.recvfrom(1024)
msg = 'Server'
sock.sendto(msg.encode(), addr)
name = data.decode()
while True:
        data, addr = sock.recvfrom(1024)
        if data.decode() == 'exit':
                print(name, ' has exited')
        else:
                print(name, ": ", data.decode())
```

```
        msg = input('Me: ')

        sock.sendto(msg.encode(), addr)
        if msg == 'exit':
                break
```

Client

```
import socket as skt

sock = skt.socket(skt.AF_INET, skt.SOCK_DGRAM)

udp_host = skt.gethostname()
print(udp_host)
udp_port = 12345
msg = "Hello brother"
print('Target UDP host {}\nTarget UDP port {}'.format(str(udp_host), str(udp_port)))

msg = 'Client'
sock.sendto(msg.encode(), (udp_host, udp_port))
data, addr = sock.recvfrom(1024)
name = data.decode()

while True:
        msg = input('Me: ')
        sock.sendto(msg.encode(), (udp_host, udp_port))
        if msg == 'exit':
                break
        data, addr = sock.recvfrom(1024)
        if data.decode() == 'exit':
                print(name, ' has exited')
        else:
                print(name, ": ", data.decode())
```





Question 3:

Server

```
import socket

HOST = '172.16.58.54'
PORT = 2003
s = socket.socket()
s.bind((HOST, PORT))
s.listen()

print("\nWaiting for incoming connections...\n")

conn, addr = s.accept()

print("Received connection from ", addr[0], "(", addr[1], ")\n")

s_name = conn.recv(1024)
```

```
s_name = s_name.decode()

print(s_name, "has connected to the chat room\nEnter [e] to exit chat room\n")
name = input(str("Enter your name: "))
conn.send(name.encode())

while True:
        message = input(str("Me : "))
        if message == "[e]":
                message = "Left chat room!"
                conn.send(message.encode())
                print("\n")
                break
        conn.send(message.encode())
        message = conn.recv(1024)
        message = message.decode()
        print(s_name, ":", message)
```

Client

```
import socket
HOST = '172.16.58.54'
PORT = 2003
s = socket.socket()
name = input(str("\nEnter your name: "))
s.connect((HOST, PORT))
s.send(name.encode())
s_name = s.recv(1024)
s_name = s_name.decode()
print(s_name, "has joined the chat room\nEnter E to exit chat room\n")
while True:
   message = s.recv(1024)
   message = message.decode()
   print(s_name, ":", message)
   message = input(str("Me : "))
   if message == "E":
      message = "Left chat room!"
      s.send(message.encode())
      print("\n")
      break
   s.send(message.encode())
```

Machine1(Server)

```
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$ hostname -I
172.16.58.54 192.168.122.1
ugcse@pg01-V330-20ICB-AIO:~/Desktop/sem6-Labs/Distributed Systems/lab4$ python3 q3_server.py

Waiting for incoming connections...

Received connection from  172.16.58.28 ( 41494 )

Sahilu has connected to the chat room
Enter [e] to exit chat room

Enter your name: saini
Me : hello
Sahilu : Hello
Me : how are you Harsha
Sahilu : Im good
Me : bye
Sahilu : bye
Me : E
Sahilu : Left chat room!
Me :
```

Machine2(client)

```
Enter your name: Sahilu
saini has joined the chat room
Enter E to exit chat room

saini : hello
Me : Hello
saini : how are you Harsha
Me : Im good
saini : bye
Me : bye
E
saini : E
Me :
```

//**ENDS**//