///solved
///client

```
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
udp_port = 12345
# For UDP
# Host IP
# specified port to connect
msg = "UDP Program!"
print ("UDP target IP:", udp_host)
print ("UDP target Port:", udp_port)
sock.sendto(msg.encode(),(udp_host,udp_port))
```

///server

```
import socket
sock = socket.socket(socket.AF_INET,socket.SOCK_DGRAM)
udp_host = socket.gethostname()
# For UDP
# Host IP
udp_port = 12345
# specified port to connect
sock.bind((udp_host, udp_port))
while True:
    print ("Waiting for client...")
    data,addr = sock.recvfrom(1024)
    #receive data from client
    print ("Received Messages:",data.decode()," from",addr)
```

//1A
//client

```
import socket
HOST = '127.0.0.1' # The server's hostname or IP address
PORT = 2053
# The port used by the server
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.connect((HOST, PORT))
    s.sendall(b'Hello, world')
    data = s.recv(1024)
    print('Received Connection')
    print('Server:', data.decode())
```

//**server**

```
import socket
HOST = '127.0.0.1' # Standard loopback interface address (localhost)
PORT = 2053
# Port to listen on (non-privileged ports are > 1023)
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as s:
    s.bind((HOST, PORT))
    s.listen()
    conn, addr = s.accept()
    with conn:
```

```
        print('Connected by', addr)
        while True:
            data = conn.recv(1024)
            if data:
                print("Client: ",data.decode())
            data = input("Enter message to client:");
            if not data:
                break;
            # sending message as bytes to client.
            conn.sendall(bytearray(data, 'utf-8'));
    conn.close()
```

//2A
//client
#client.py

```
import socket
# create a socket object
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
# get local machine name
host = socket.gethostname()
port = 9991
# connection to hostname on the port.
s.connect((host, port))
# Receive no more than 1024 bytes
tm = s.recv(1024)
print(' Current time from Sever :', tm.decode())
s.close()
```

//server

```
# server.py
import socket
import time
# create a socket object
serversocket = socket.socket(
socket.AF_INET, socket.SOCK_STREAM)
# get local machine name
host = socket.gethostname()
port = 9991
# bind to the port
serversocket.bind((host, port))
# queue up to 5 requests
serversocket.listen(5)
while True:
# establish a connection
    clientsocket,addr = serversocket.accept()
    print("Got a connection from %s" % str(addr))
    currentTime = time.ctime(time.time()) + "\r\n"
    clientsocket.send(currentTime.encode('ascii'))
    clientsocket.close()
```

//3A
//client

```
import socket
HOST = '127.0.0.1' # Standard loopback interface address (localhost)
```

```
PORT = 31621 # Port to listen on (non-privileged ports are > 1023)
s = socket.socket()
name = input(str("\nEnter your name: "))
print("\nTrying to connect to ", HOST, "(", PORT, ")\n")
s.connect((HOST, PORT))
print("Connected...\n")
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())
```

//server

```
# server.py
import socket
HOST = '127.0.0.1' # Standard loopback interface address (localhost)
PORT = 31621 # Port to listen on (non-privileged ports are > 1023)
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)
```

//4A

//client

```
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()
```

//server

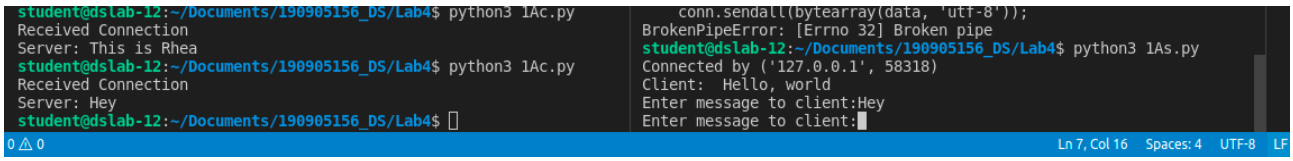
```
import socket
import os
from _thread import *
ServerSocket = socket.socket()
host = '127.0.0.1'
port = 11596
ThreadCount = 0
try:
    ServerSocket.bind((host, port))
except socket.error as e:
    print(str(e))
print('Waitiing for a Connection..')
ServerSocket.listen(5)

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()
```

Solved

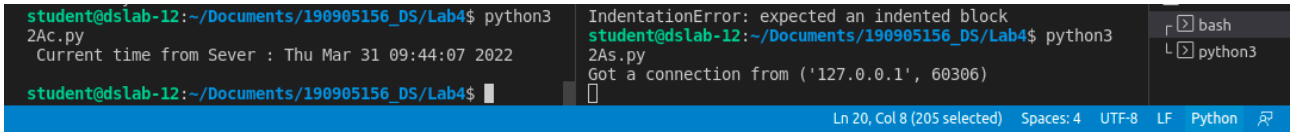
```
student@dslab-12:~/Documents/190905156_DS/Lab4$ python3 server.py
Waiting for client...
Received Messages: UDP Program!  from ('127.0.0.1', 47615)
Waiting for client...
```

```
student@dslab-12:~/Documents/190905156_DS/Lab4$ python3 client.py
UDP target IP: dslab-12
UDP target Port: 12345
student@dslab-12:~/Documents/190905156_DS/Lab4$
```

1A)



2A)



3A)

```
KeyboardInterrupt
student@dslab-12:~/Documents/1909
05156_DS/Lab4$ python3 3Ac.py

Enter your name: Rhea Adhikari

Trying to connect to  127.0.0.1 (
 31621 )

Connected...

XYZ has joined the chat room
Enter [e] to exit chat room

XYZ : Hey
Me : Hi!!!\
XYZ : Wassup
Me : Nothing much
```

```
student@dslab-12:~/Documents/1909
05156_DS/Lab4$ python3 3As.py

Waiting for incoming connections.
..

Received connection from  127.0.0
.1 ( 45982 )

Rhea Adhikari has connected to th
e chat room
Enter [e] to exit chat room

Enter your name: XYZ
Me : Hey
Rhea Adhikari : Hi!!!\
Me : Wassup
Rhea Adhikari : Nothing much
Me :
```

4)

```
Input))Response = ClientSocket.re
cv(1024)

              ^
SyntaxError: invalid syntax
student@dslab-12:~/Documents/1909
05156_DS/Lab4$ python3 4Ac.py
Waiting for connection
Client Say Something: Hi
From Server : Hello
Client Say Something: How are you
From Server : Im good
Client Say Something:
```

```
    fd, addr = self._accept()
KeyboardInterrupt
student@dslab-12:~/Documents/1909
05156_DS/Lab4$ python3 4As.py
Waitiing for a Connection..
Connected to: 127.0.0.1:43570
Thread Number: 1
Received from client :1Hi
Server Says: Hello
Received from client :1How are yo
u
Server Says: Im good
```