Network Programming LAB 1

WAP to design a socket API to set a communication between server and client using UDP transmission (localhost + interface)

Localhost

Server Program

```python
import socket

# Define IP and Port for socket
localIP     = "127.0.0.1"
localPort   = 2000
bufferSize  = 1024


msgFromServer       = "Hello Client".encode()
# Create a datagram socket
UDPServerSocket = socket.socket(socket.AF_INET, socket.SOCK_DGR/

# Bind to address and ip
UDPServerSocket.bind((localIP, localPort))
print("UDP server up and listening")

# Listen for incoming datagrams
while(True):
    clientMsg, clientAddress = UDPServerSocket.recvfrom(bufferS:
    print(f"Message from Client: {clientMsg.decode()}")
    print(f"Client IP Address: {clientAddress}")
```

```
        # Sending a reply to client
        UDPServerSocket.sendto(msgFromServer, clientAddress)
```
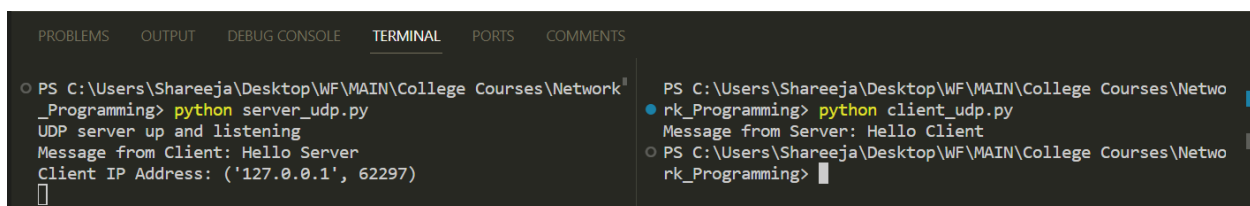
Client Program

```
import socket

msgFromClient = "Hello Server".encode()
serverIP = '127.0.0.1'
serverPort = 2000
bufferSize = 1024

# Create a UDP socket at client side
UDPClientSocket = socket.socket(family=socket.AF_INET, type=soc
# Send to server using created UDP socket
UDPClientSocket.sendto(msgFromClient, (serverIP, serverPort))
msgFromServer, serverAddress = UDPClientSocket.recvfrom(bufferS:
print(f"Message from Server {msgFromServer}")
UDPClientSocket.close()
```

Output

Interface

Server Program

```
import socket
port = 5000
bufferSize = 1024
```

```python
serverSocket = socket.socket(socket.AF_INET, socket.SOCK_DGRAM
serverSocket.bind(('192.168.137.1', port))

print (f"Server listening on port {port}\n")

while True:
    msgFromClient, addr = serverSocket.recvfrom(bufferSize)
    print (f"Message from Client: {msgFromClient.decode()}")
    msgToClient = input('Enter message here: ')
    serverSocket.sendto(msgToClient.encode(), addr)

serverSocket.close()
```

Client Program

```python
from socket import socket, AF_INET, SOCK_DGRAM

SERVER_IP = '192.168.137.1'
PORT_NUMBER = 5000
SIZE = 1024
print("Test client sending packets to IP {0}, via port {1}\n".f(
SERVER_IP, PORT_NUMBER))

mySocket = socket(AF_INET, SOCK_DGRAM)
mySocket.connect((SERVER_IP, PORT_NUMBER))

while True:
msgToServer = input('Enter message here: ')
mySocket.send(msgToServer.encode())
msgFromServer = mySocket.recv(SIZE)
print(f"Message from Server: {msgFromServer.decode()}")
mySocket.close()
```

Client Output

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

○ manminder@Manminders-MacBook-Pro network_programming % python3 interface_client.
  py
  Test client sending packets to IP 192.168.137.1, via port 5000

  Enter message here: Hi... Manminder here
  Message from Server: Hi, I'm Hisham. What's up?
  Enter message here: I'm grt....wbu?
  Message from Server: I'm doing amazing... anyways, gtg, ttyl
```

Server Output

```
○ PS C:\Users\Shareeja\Desktop\WF\MAIN\College Courses\Network_Programming> python -u "c:\Users
  ork_Programming\server_interfacing.py"
  Server listening on port 5000

  Message from Client: Hi... Manminder here
  Enter message here: Hi, I'm Hisham. What's up?
  Message from Client: I'm grt....wbu?
  Enter message here: I'm doing amazing... anyways, gtg, ttyl
```