

Network Programming LAB 1

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

Localhost

Server Program

```
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_DGRAM)

# 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
UDPCliSocket = socket.socket(family=socket.AF_INET, type=soci
# Send to server using created UDP socket
UDPCliSocket.sendto(msgFromClient, (serverIP, serverPort))
msgFromServer, serverAddress = UDPCliSocket.recvfrom(bufferS:
print(f"Message from Server {msgFromServer}")
UDPCliSocket.close()

```

Output

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
PS C:\Users\Shareeja\Desktop\WF\MAIN\College Courses\Network
_Programming> python server_udp.py
UDP server up and listening
Message from Client: Hello Server
Client IP Address: ('127.0.0.1', 62297)
█
PS C:\Users\Shareeja\Desktop\WF\MAIN\College Courses\Netwo
rk_Programming> python client_udp.py
Message from Server: Hello Client
PS C:\Users\Shareeja\Desktop\WF\MAIN\College Courses\Netwo
rk_Programming> █

```

Interface

Server Program

```

import socket
port = 5000
bufferSize = 1024

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

```

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".format(
    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\Shareeja\Desktop\WF\MAIN\College Courses\Network_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
```