Title: Lab Assignment on Unit V: (Use JAVA/PYTHON)

Write a program using UDP sockets for wired network to implement a.
Peer to Peer Chat
b. Multiuser Chat

PROGRAM

```
/*--------------Client Side-----------------*/
import java.net.*; import
java.nio.charset.StandardCharsets; import
java.io.*;

public class Client { public static void main(String
   args[])throws Exception{ DatagramSocket datagramSocket =
   new DatagramSocket(84);

      byte[] buffer;
      InetAddress receiverAddress = InetAddress.getLocalHost();
      BufferedReader br=new BufferedReader(new
InputStreamReader(System.in));
      String str="",str2="";
      System.out.println("------Client Side------\n Type your message");
      while(!str.equals("stop")){ str=br.readLine(); buffer =
      str.getBytes();
         DatagramPacket packet = new DatagramPacket( buffer,
                buffer.length, receiverAddress, 85);
         datagramSocket.send(packet);
         byte[] buffer1 = new byte[10];
         DatagramPacket packet1 = new DatagramPacket(buffer1,
buffer1.length);
         datagramSocket.receive(packet1);
         buffer1 = packet1.getData();
         String str1 = new String(buffer1, StandardCharsets.UTF_8);
         System.out.println("Server says: "+str1);

      }
   }
}
/*
 ------------------OUTPUT----------------------

 Microsoft Windows [Version 10.0.19041.508]
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```

```
C:\Users\dell>cd C:\Users\dell\Java\CN\UDPchat

C:\Users\dell\Java\CN\UDPchat>javac Client.java

C:\Users\dell\Java\CN\UDPchat>java Client
------Client Side------
 Type your message
Hi John
Server says: Hello Sam
curran How are you?
Server says: I am fine.
okay
Server says: What about
I am fine too
Server says: okay
stop
Server says: stop

C:\Users\dell\Java\CN\UDPchat>


*/


/*---------------Server side--------------*/


import java.net.*; import
java.nio.charset.StandardCharsets; import
java.io.*;


public class Server {

   public static void main(String args[])throws Exception{
      DatagramSocket datagramSocket = new DatagramSocket(85);

      byte[] buffer;
      InetAddress receiverAddress = InetAddress.getLocalHost();
   BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

   String str="",str2="";
```

```
   System.out.println("------Server Side------\n Type your message");
   while(!str.equals("stop")){ byte[] buffer1 = new byte[10];
      DatagramPacket packet1 = new DatagramPacket(buffer1,
      buffer1.length);

      datagramSocket.receive(packet1);
      buffer1 = packet1.getData();
      String str1 = new String(buffer1, StandardCharsets.UTF_8);
      System.out.println("Client says:
      "+str1); str=br.readLine(); buffer =
      str.getBytes();
      DatagramPacket packet = new DatagramPacket(buffer,
buffer.length,receiverAddress, 84);
datagramSocket.send(packet);

      }
   }
}



/*
------------------OUTPUT---------------------------

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C:\Users\dell>CD C:\Users\dell\Java\CN\UDPchat

C:\Users\dell\Java\CN\UDPchat>javac Server.java

C:\Users\dell\Java\CN\UDPchat>java Server
------Server Side------
 Type your message
Client says: Hi Jay
Hello Sam curran
Client says: How are yo
I am fine. Client says:
okay What about you ?
Client says: I am fine
okay
Client says: stop
stop
```

```
C:\Users\dell\Java\CN\UDPchat>

*/
```

UDP Socket:

Q1 What is Datagram?

→ A Datagram is a basic transfer unit associated with a packet-switched network.

- Datagrams are typically structured in header & payload sections
- Datagram provide a connectionless communication service time and order of arrival of datagram need not be guaranteed by the network.

Q2 Differentiate betn TCP & UDP socket.

TCP socket	UDP socket.
① TCP is heavy weighted	UDP is light weight.
② TCP doesn't support broadcasting	UDP support broadcasting.
③ TCP is connection oriented protocol	UDP is datagram oriented protocol.
④ TCP is reliable as it guarantees delivery of data to the destination router.	The delivery of data to the destination cannot be guaranteed in UDP
⑤ TCP is comparatively slower than UDP.	UDP is faster simpler & more efficient than TCP.
⑥ TCP has a (20-36) bytes variable length header	UDP has a 8 bytes fixed length header.

Q3 What information is contained in UDP packet?

① UDP works by gathering data in a UDP packet & adding its own header information to the packet.

② This data consist of the source & destination ports to communication the packet length & a checksum.

③ After ~~sum~~ UDP packet are encapsulated in an IP packet they're send off to their destinations.

Q4 What is port number, it works at which layer?

Ans A port number is a way to identify a specific process to which an internet or other network message is to be forwarded when it arrives at a server.

- 21 = FTP
- 23 = Telnet
- 80 = HTTP
- 161 = SNMP

port number works at the transport layer.

Q5 Define Network Socket.

- A network socket is a software structure within a network of a computer network that serves as an endpoint for sending & receiving data across the network.
- The structure & properties of a socket are defined by an application programming interface (API) for the networking architecture. Sockets are created only during the lifetime of a process of an application running in the node.