Date: 22 /8 /24

Lab Practical #07:

Study Client-Server Socket programming - TCP & UDP

Practical Assignment #07:

1. **Write a C/Java code for TCP Server-Client Socket Programming.**
2. **Write a C/Java code for UDP Server-Client Socket Programming.**

1. For TCP Server-Client:

TCP Server Program:

```
import java.net.*;
import java.io.*;
public class Server{
    private Socket socket = null;
    private ServerSocket server = null;
    private DataInputStream in = null;
    public Server(int port){
        try{
            server = new ServerSocket(port);
            System.out.println("Server started");
            System.out.println("Waiting for a client ...");
            socket = server.accept();
            System.out.println("Client accepted");
            in = new DataInputStream(
                new BufferedInputStream(socket.getInputStream()));
            String line = "";
            while (!line.equals("Over")){
                try{
                    line = in.readUTF();
                    System.out.println(line);       }
                catch(IOException i){
                    System.out.println(i);}}
            System.out.println("Closing connection");
            socket.close();
            in.close();}
        catch(IOException i){
            System.out.println(i);}}
    public static void main(String args[])  {
        Server server = new Server(5000);}}
```

TCP Client Program:

```
import java.io.*;
import java.net.*;
```

Date: 22 /8 /24

```
public class Client {
        private Socket socket = null;
        private DataInputStream input = null;
        private DataOutputStream out = null;
        public Client(String address, int port){
                try {
                        socket = new Socket(address, port);
                        System.out.println("Connected");
                        input = new DataInputStream(System.in);
                        out = new DataOutputStream(
                                socket.getOutputStream());}
                catch (UnknownHostException u) {
                        System.out.println(u);
                        return;         }
                catch (IOException i) {
                        System.out.println(i);
                        return;         }
                String line = "";
                while (!line.equals("Over")) {
                        try {
                                line = input.readLine();
                                out.writeUTF(line);}
                        catch (IOException i) {
                                System.out.println(i);}}
                try {
                        input.close();
                        out.close();
                        socket.close();}
                catch (IOException i) {
                        System.out.println(i);}}
        public static void main(String args[])  {
                Client client = new Client("127.0.0.1", 5000);}}
```

2. For UDP Server-Client:

UDP Server Program:

```
import java.io.IOException;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.net.SocketException;
public class udpServer{
        public static void main(String[] args) throws IOException
        {
                DatagramSocket ds = new DatagramSocket(1234);
```

Date: 22 /8 /24

```
        byte[] receive = new byte[65535];
        DatagramPacket DpReceive = null;
        while (true)    {
            DpReceive = new DatagramPacket(receive, receive.length);
            ds.receive(DpReceive);
            System.out.println("Client:-" + data(receive));
            if (data(receive).toString().equals("bye"))              {
                System.out.println("Client sent bye.....EXITING");
                break; }
            receive = new byte[65535]; }
    public static StringBuilder data(byte[] a) {
        if (a == null)
            return null;
        StringBuilder ret = new StringBuilder();
        int i = 0;
        while (a[i] != 0) {
            ret.append((char) a[i]);
            i++; }
        return ret; }}
```

UDP Client Program:

```
import java.io.IOException;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.util.Scanner;
public class udpClient {
    public static void main(String args[]) throws IOException {
        Scanner sc = new Scanner(System.in);
        DatagramSocket ds = new DatagramSocket();
        InetAddress ip = InetAddress.getLocalHost();
        byte buf[] = null;
        while (true)            {
            String inp = sc.nextLine();
            buf = inp.getBytes();
                DatagramPacket DpSend =
            new DatagramPacket(buf, buf.length, ip, 1234);
            ds.send(DpSend);
            if (inp.equals("bye"))
                break; }}}
```