**Lab Practical #06:**

Study Client-Server Socket programming - TCP & UDP

**Practical Assignment #06:**

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

**TCP Server Program:**

import java.io.\*;

import java.net.\*;

public class TCPServer {

    public static void main(String[] args) throws IOException {

        ServerSocket serverSocket = new ServerSocket(3000);

        System.out.println("Server is running.");

        Socket clienSocket = serverSocket.accept();

        System.out.println("Client Connected.");

        BufferedReader in = new BufferedReader(new InputStreamReader(clienSocket.getInputStream()));

        PrintWriter out = new PrintWriter(clienSocket.getOutputStream(), true);

        String message = in.readLine();

        System.out.println("Client Says: " + message);

        out.println("Message recieved by the server.");

        clienSocket.close();

        serverSocket.close();

    }

}

**TCP Client Program:**

import java.io.\*;

import java.net.\*;

public class TCPClient {

    public static void main(String[] args) throws IOException {

        Socket socket = new Socket("localhost", 3000);

        PrintWriter out = new PrintWriter(socket.getOutputStream(), true);

        BufferedReader in = new BufferedReader(new InputStreamReader(socket.getInputStream()));

        out.println("Hello from client");

        String response = in.readLine();

        System.out.println("Server says: " + response);

        socket.close();

    }

}

1. **For UDP Server-Client:**

**UDP Server Program:**

import java.io.\*;

import java.net.\*;

public class UDPServer {

    public static void main(String[] args) throws IOException {

        DatagramSocket ds = new DatagramSocket(3001);

        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];

        }

        ds.close();

    }

    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.\*;

import java.net.\*;

import java.util.\*;

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, 3001);

            ds.send(DpSend);

            if (inp.equals("bye")) break;

        }

        sc.close();

        ds.close();

    }

}