Date: 09/07/2025

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.**

1. 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();
   }
}
```

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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();
   }
}
```

2. 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();
```

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```
            buf = inp.getBytes();

            DatagramPacket DpSend = new DatagramPacket(buf, buf.length, ip, 3001);

            ds.send(DpSend);

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

        sc.close();
        ds.close();
    }
}
```