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Class:	S. Y. B.Tech (Computer Engineering)
Course:	Computer Networks (DJ12CEL405)
Date of Performance:	
Date of Submission:	
Experiment No.:	06
Aim:	Socket TCP and UDP

AIM: **TO IMPLEMENT TCP AND UDP SOCKET COMMUNICATION IN JAVA.**

TCP:

CODE:

Server.java

```
// A Java program for a Server
import java.net.*;
import java.io.*;

public class Server {
    // initialize socket and input stream
    private Socket socket = null;
    private ServerSocket server = null;
    private DataInputStream in = null;

    private DataInputStream input = null;
    private DataOutputStream out = null;

    // constructor with port
    public Server(int port) {
        // starts server and waits for a connection
        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");
```

```
            // takes input from the client socket
            in = new DataInputStream(
                    new BufferedInputStream(socket.getInputStream()));

            out = new DataOutputStream(
                    socket.getOutputStream());

            input = new DataInputStream(System.in);

            String line = "";

            // reads message from client until "Over" is sent
            while (!line.equals("Over")) {
                try {
                    line = in.readUTF();
                    System.out.println(line);

                    line = input.readLine();
                    out.writeUTF(line);

                } catch (IOException i) {
                    System.out.println(i);
                }
            }
            System.out.println("Closing connection");

            // close connection
            socket.close();
            in.close();
        } catch (IOException i) {
            System.out.println(i);
        }
    }

    public static void main(String args[]) {
        Server server = new Server(5000);
    }
}
```

Client.java

```
// A Java program for a Client
import java.io.*;
import java.net.*;

public class Client {
    // initialize socket and input output streams
    private Socket socket = null;
    private DataInputStream input = null;
    private DataOutputStream out = null;

    private DataInputStream in = null;

    // constructor to put ip address and port
    public Client(String address, int port) {
        // establish a connection
        try {
            socket = new Socket(address, port);
            System.out.println("Connected");

            // takes input from terminal
            input = new DataInputStream(System.in);

            // sends output to the socket
            out = new DataOutputStream(
                    socket.getOutputStream());

            in = new DataInputStream(
                    new BufferedInputStream(socket.getInputStream()));
        } catch (UnknownHostException u) {
            System.out.println(u);
            return;
        } catch (IOException i) {
            System.out.println(i);
            return;
        }

        // string to read message from input
        String line = "";

        // keep reading until "Over" is input
        while (!line.equals("Over")) {
            try {
                line = input.readLine();
```

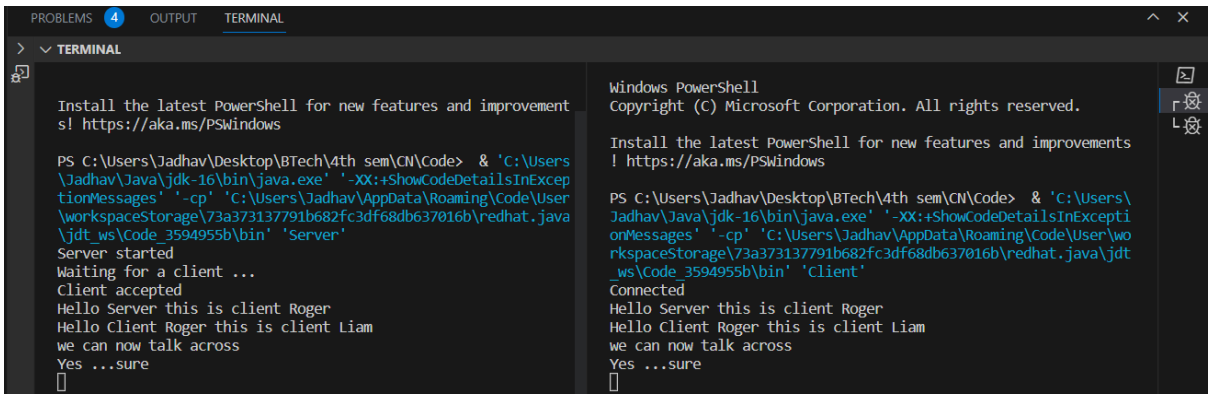
```
                out.writeUTF(line);

                line = in.readUTF();
                System.out.println(line);
            } catch (IOException i) {
                System.out.println(i);
            }
        }

        // close the connection
        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);
    }
}
```

OUTPUT:



UDP:

CODE:

Server.java:

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

class Server {
    public static void main(String args[]) throws Exception {
        DatagramSocket serverSocket = new DatagramSocket(9876);
        BufferedReader inFromServer = new BufferedReader(new InputStreamReader(System.in));
        byte[] receiveData = new byte[1024];
        byte[] sendData = new byte[1024];
        while (true) {
            DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);
            serverSocket.receive(receivePacket);
            String sentence = new String(receivePacket.getData());
            System.out.println("RECEIVED: " + sentence);
            InetAddress IPAddress = receivePacket.getAddress();
            int port = receivePacket.getPort();
            String sentSentence = inFromServer.readLine();
            // String capitalizedSentence = sentence.toUpperCase();
            sendData = sentSentence.getBytes();
            DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, IPAddress,
port);
            serverSocket.send(sendPacket);
            receiveData = new byte[1024];
            if (sentSentence.equalsIgnoreCase("bye")) {
                serverSocket.close();
                break;
            }
        }
    }
}
```

Client.java:

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

class Client {
    public static void main(String args[]) throws Exception {
        BufferedReader inFromUser = new BufferedReader(new InputStreamReader(System.in));
        DatagramSocket clientSocket = new DatagramSocket();
        InetAddress IPAddress = InetAddress.getByName("localhost");
        byte[] sendData = new byte[1024];
        byte[] receiveData = new byte[1024];
        while (true) {
            String sentence = inFromUser.readLine();
            sendData = sentence.getBytes();
            DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, IPAddress,
9876);
            clientSocket.send(sendPacket);
```

```
            DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);
            clientSocket.receive(receivePacket);
            String modifiedSentence = new String(receivePacket.getData());
            System.out.println("FROM SERVER:" + modifiedSentence);
            receiveData = new byte[1024];
            if (sentence.equalsIgnoreCase("bye")) {
                clientSocket.close();
                break;
            }
        }
    }
}
```

OUTPUT: