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Problem Statement : Socket Programming using C/C++/Java. a. TCP Client, TCP Server b. UDP Client, UDP Server.

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**TCP Client code:**

```
import java.net.*;

import java.io.*;

class MyClient{

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

        Socket s=new Socket("localhost",3333);

        DataInputStream din=new DataInputStream(s.getInputStream());

        DataOutputStream dout=new DataOutputStream(s.getOutputStream());

        BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

        String str="",str2="";

        while(!str.equals("stop")){

            str=br.readLine();

            dout.writeUTF(str);

            dout.flush();

            str2=din.readUTF();

            System.out.println("Server says: "+str2);

        }

        dout.close();

        s.close();

    }

}
```

**TCP Server code:**

```
import java.net.*;

import java.io.*;
```

```

class MyServer{

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

        ServerSocket ss=new ServerSocket(3333);

        Socket s=ss.accept();

        DataInputStream din=new DataInputStream(s.getInputStream());

        DataOutputStream dout=new DataOutputStream(s.getOutputStream());

        BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

        String str="",str2="";

        while(!str.equals("stop")){

            str=din.readUTF();

            System.out.println("client says: "+str);

            str2=br.readLine();

            dout.writeUTF(str2);

            dout.flush();

        }

        din.close();

        s.close();

        ss.close();

    }

}

```

Output:

The image shows two side-by-side screenshots of Windows command prompts. The left window shows the compilation and execution of the server program, while the right window shows the compilation and execution of the client program.

```

C:\Windows\System32\cmd.e x
Microsoft Windows [Version 10.0.22623.1180]
(c) Microsoft Corporation. All rights reserved.

E:\3rd-year\sem 1\CN>javac MyServer.java

E:\3rd-year\sem 1\CN>java MyServer.java
client says: Hi i am Vedant
Hey Vedant

C:\Windows\System32\cmd.e x
Microsoft Windows [Version 10.0.22623.1180]
(c) Microsoft Corporation. All rights reserved.

E:\3rd-year\sem 1\CN>javac MyClient.java

E:\3rd-year\sem 1\CN>java MyClient.java
Hi i am Vedant
Server says: Hey Vedant
|

```

### UDP Server :

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

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

```
public class UDPServer {  
    public static void main(String[] args) {  
        try (DatagramSocket serverSocket = new DatagramSocket(9876)) {  
            while (true) {  
                byte[] receiveData = new byte[1024];  
                DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);  
                serverSocket.receive(receivePacket);  
  
                InetAddress clientAddress = receivePacket.getAddress();  
                int clientPort = receivePacket.getPort();  
  
                String clientMessage = new String(receivePacket.getData(), 0, receivePacket.getLength());  
                System.out.println("Received from " + clientAddress + ":" + clientPort + ": " + clientMessage);  
  
                // Read a response message from the server console  
                BufferedReader br = new BufferedReader(new InputStreamReader(System.in));  
                System.out.print("Enter a response for the client: ");  
                String serverResponse = br.readLine();  
                byte[] sendData = serverResponse.getBytes();  
  
                DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, clientAddress,  
clientPort);  
                serverSocket.send(sendPacket);  
            }  
        } catch (IOException e) {  
            e.printStackTrace();  
        }  
    }  
}
```

```
    }  
    }  
}
```

UDP Client :

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

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

```
public class UDPClient {
```

```
    public static void main(String[] args) {
```

```
        try (DatagramSocket clientSocket = new DatagramSocket()) {
```

```
            InetAddress serverAddress = InetAddress.getByName("localhost");
```

```
            int serverPort = 9876;
```

```
            while (true) {
```

```
                // Read a message from the client console
```

```
                BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
```

```
                System.out.print("Enter a message for the server: ");
```

```
                String clientMessage = br.readLine();
```

```
                byte[] sendData = clientMessage.getBytes();
```

```
                DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, serverAddress,  
serverPort);
```

```
                clientSocket.send(sendPacket);
```

```
                byte[] receiveData = new byte[1024];
```

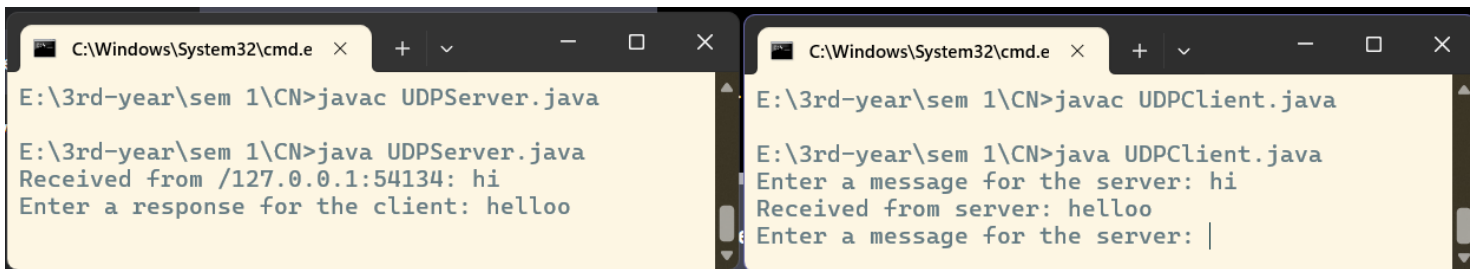
```
                DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);
```

```
                clientSocket.receive(receivePacket);
```

```
                String serverResponse = new String(receivePacket.getData(), 0, receivePacket.getLength());
```

```
        System.out.println("Received from server: " + serverResponse);
    }
} catch (IOException e) {
    e.printStackTrace();
}
}
}
```

**Output:**



The image shows two side-by-side Windows command prompt windows. The left window shows the compilation and execution of a UDP server program. The right window shows the compilation and execution of a UDP client program. Both windows show a successful exchange of a 'hi' message from the client to the server, resulting in a 'helloo' response from the server.

```
C:\Windows\System32\cmd.e x
E:\3rd-year\sem 1\CN>javac UDPServer.java
E:\3rd-year\sem 1\CN>java UDPServer.java
Received from /127.0.0.1:54134: hi
Enter a response for the client: helloo
```

```
C:\Windows\System32\cmd.e x
E:\3rd-year\sem 1\CN>javac UDPClient.java
E:\3rd-year\sem 1\CN>java UDPClient.java
Enter a message for the server: hi
Received from server: helloo
Enter a message for the server: |
```