CL-IX Assignment 1B

Roll No. 43104
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Assignment 1B - UDP Java Sockets

Aim: To develop any distributed application through implementing client-server communication programs based on UDP Java Sockets.

Problem Statment: String Manipulation: Design a distributed application that consists of client-server communication using TCP, UDP & RMI techniques in Java. Multiple clients can simultaneously connect to the server and multiple clients submit two strings to the server and the server returns the concatenation of the given strings.

File 1:

Server.java

```
// Java program to illustrate Server side
// Implementation using DatagramSocket
import java.io.IOException;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.net.SocketException;

public class Server
{
        public static void main(String[] args) throws IOException
        {
                // Step 1 : Create a socket to listen at port 1234
                DatagramSocket ds = new DatagramSocket(1234);
                byte[] receive = new byte[65535];

                StringBuilder answer = new StringBuilder();
        DatagramPacket DpReceive = null;

        for(int i=0; i<2; i++)
        {

            // Step 2 : create a DatgramPacket to receive the data.
            DpReceive = new DatagramPacket(receive, receive.length);

            // Step 3 : revieve the data in byte buffer.
            ds.receive(DpReceive);

            answer = answer.append(data(receive));

            // Clear the buffer after every message.
            receive = new byte[65535];
        }
        System.out.println("Concatenation of Input Strings : " + answer);
    }

    // A utility method to convert the byte array
    // data into a string representation.
    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;
    }
}
```

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File 2:

Client.java

```
// Java program to illustrate Client side
// Implementation using DatagramSocket
import java.io.IOException;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.util.Scanner;

public class Client
{
	public static void main(String args[]) throws IOException
	{
		Scanner sc = new Scanner(System.in);

		// Step 1:Create the socket object for
		// carrying the data.
		DatagramSocket ds = new DatagramSocket();

		InetAddress ip = InetAddress.getLocalHost();
		byte buf[] = null;

		System.out.println("Enter input - ");
		for(int i=0; i<2; i++)
		{

			System.out.print("String " + (i+1) + " : ");

			String inp = sc.nextLine();

			// convert the String input into the byte array.
			buf = inp.getBytes();

			// Step 2 : Create the datagramPacket for sending
```

```
                        // the data.
                        DatagramPacket DpSend =
                                new DatagramPacket(buf, buf.length, ip, 1234);

                        // Step 3 : invoke the send call to actually send
                        // the data.
                        ds.send(DpSend);

                }
        }
}
```

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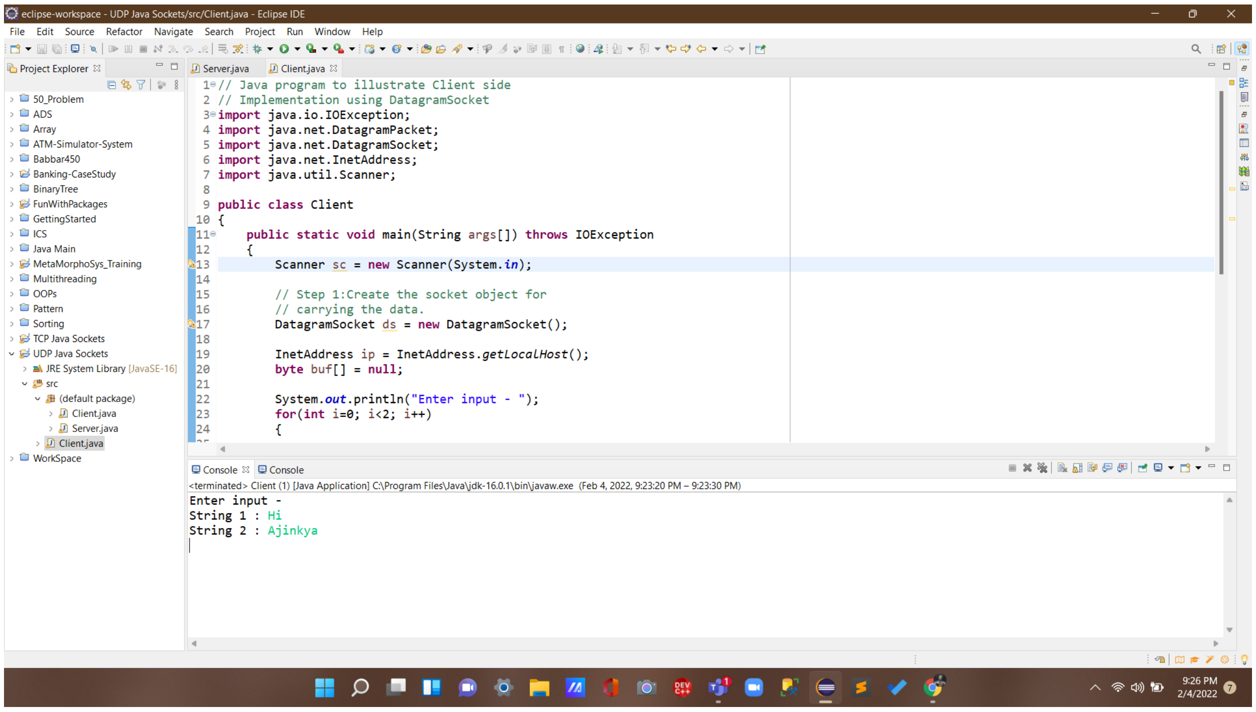
Client Console:



eclipse-workspace - UDP Java Sockets/src/Client.java - Eclipse IDE

```
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// Implementation using DatagramSocket
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import java.net.DatagramSocket;
import java.net.InetAddress;
import java.util.Scanner;

public class Client
{
    public static void main(String args[]) throws IOException
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        Scanner sc = new Scanner(System.in);

        // Step 1:Create the socket object for
        // carrying the data.
        DatagramSocket ds = new DatagramSocket();

        InetAddress ip = InetAddress.getLocalHost();
        byte buf[] = null;

        System.out.println("Enter input - ");
        for(int i=0; i<2; i++)
        {
```
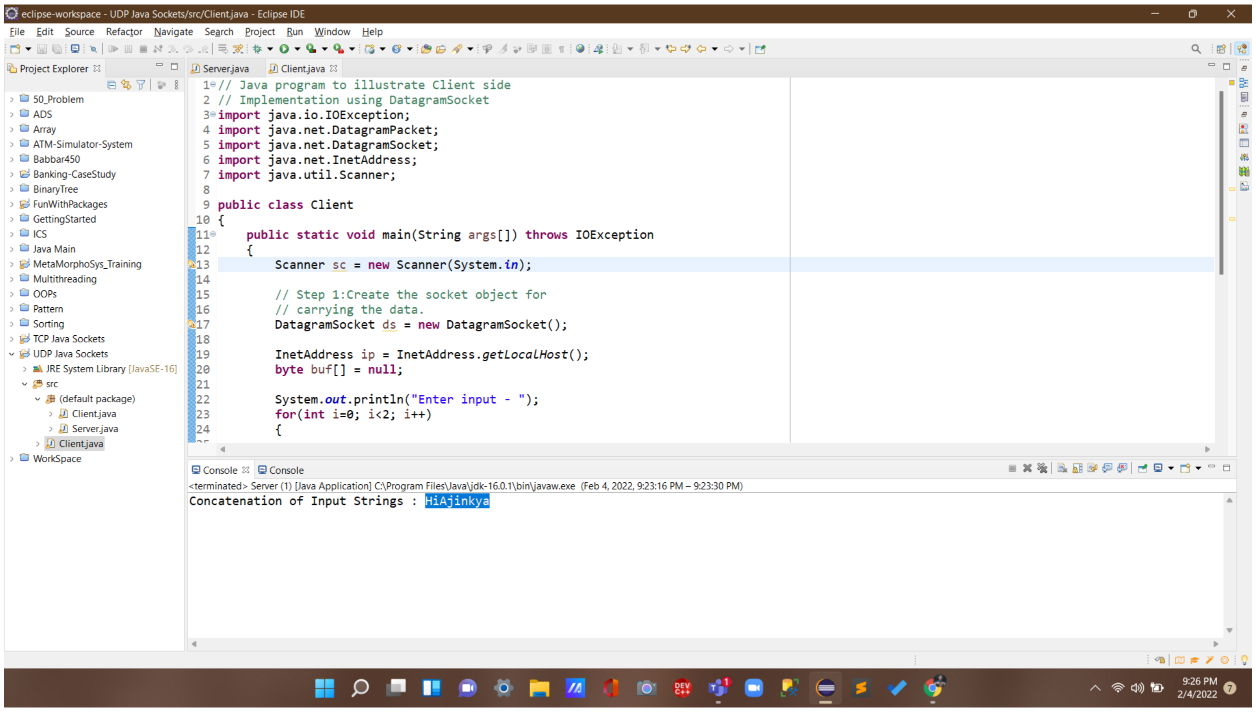

```
<terminated> Client (1) [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (Feb 4, 2022, 9:23:20 PM – 9:23:30 PM)
Enter input -
String 1 : Hi
String 2 : Ajinkya
```

Server Console:



```java
// Java program to illustrate Client side
// Implementation using DatagramSocket
import java.io.IOException;
import java.net.DatagramPacket;
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public class Client
{
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        Scanner sc = new Scanner(System.in);

        // Step 1:Create the socket object for
        // carrying the data.
        DatagramSocket ds = new DatagramSocket();

        InetAddress ip = InetAddress.getLocalHost();
        byte buf[] = null;

        System.out.println("Enter input - ");
        for(int i=0; i<2; i++)
        {
```

```
<terminated> Server (1) [Java Application] C:\Program Files\Java\jdk-16.0.1\bin\javaw.exe  (Feb 4, 2022, 9:23:16 PM – 9:23:30 PM)
Concatenation of Input Strings : HiAjinkya
```

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Conclusion: Developed distributed application through implementing client-server communication programs based on UDP Java Sockets.

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