

Program: **Server.java**

```

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.ServerSocket;
import java.net.Socket;
import java.util.Vector;

// ALL CLASS MUST BE PUBLIC TO COMMUNICATE ON NETWORK
public class Server {
    // WHAT TYPE OF DATA STORING IN VECTOR <PRINT WRITER>
    private static Vector<PrintWriter> writers = new Vector<PrintWriter>();
    public static void main(String args[]) throws Exception {
        // SERVER SOCKET CLASS IE SERVER PUBLISH THAT LISTENING ON THIS PORT
        ServerSocket listener = new ServerSocket(9001); // PORT NO. 9001
        // DISPLAYING MESSAGE
        System.out.println("The server is running at port 9001.");
        // CONTINUOUSLY LISTENING
        while (true)
        {
            // START() IS A METHOD OF THREAD
            new Handler(listener.accept()).start();
        }
    }
    // INHERITING THREAD CLASS
    private static class Handler extends Thread {
        private Socket socket;

        public Handler(Socket socket) {
            this.socket = socket;
        }
        // EXECUTE PER THREAD
        public void run() {
            try { // SOCKET.GETINPUTSTREAM-- READ DATA FROM PARTICULAR CLIENT
                BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
                // WRITE TO EACH AND EVERY CLIENT
                PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
                // BROADCAST MESSAGE SUBMITNAME
                out.println("SUBMITNAME");
                // SERVER READ AND STORE DATA
                String name = in.readLine();
                System.out.println(name + "joined");
                // ADD METHOD TO STORE OUT IN VECTOR
                writers.add(out);
                // CONTINUOUSLY SEND AND RECIEVE
                while (true) {
                    String input = in.readLine();
                    System.out.println("MESSAGE " + name + ":" + input);
                    for (PrintWriter x : writers)
                        x.println("MESSAGE " + name + ":" + input);
                }
            } catch (Exception e) {
                System.err.println(e);
            }
        }
    }
}

```

Program: master.java

```
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.Socket;
import java.util.Scanner;

public class master {
    public static void main(String args[]) throws Exception {
        Scanner sc = new Scanner(System.in);
        Socket socket = new Socket("localhost", 9001);
        // READ DATA FROM SOCKET
        BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
        PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
        System.out.print("Enter your name:");
        String name = sc.nextLine();
        while (true) {
            // READ MESSAGE OF A SERVER WHICH IS SUBMITNAME IN SERVER
            String line = in.readLine();
            String msg = "";
            if (line.startsWith("SUBMITNAME"))
                out.println(name);
            // MESSAGE COMING FROM SERVER FOR LOOP
            else if (line.startsWith("MESSAGE"))
                System.out.println(line.substring(8));
            // MASTER GIVEN ON INPUT I.E ENTER YOUR NAME
            if (name.startsWith("master")) {
                System.out.print("Enter a message:");
                msg = sc.nextLine();
                out.println(msg);
            }
            if (msg.equals("stop")) {
                System.exit(0);
            }
        }
    }
}
```

Program: slave1.java

```
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.Socket;
import java.util.Scanner;

public class slavel {
    public static void main(String[] args) throws Exception {
        Scanner sc = new Scanner(System.in);
        Socket socket = new Socket("localhost", 9001);
        BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
        PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
        System.out.print("Enter your name: ");
        String name = sc.nextLine();
        while (true) {
            String msg = "";
            String line = in.readLine();
            if (line.startsWith("SUBMITNAME"))
                out.println(name);
        }
    }
}
```

```

else if (line.startsWith("MESSAGE"))
    System.out.println("\n" + line.substring(8));
if (name.startsWith("slave1")) {
    System.out.print("Enter a message: ");
    msg = sc.nextLine();
    out.println(msg);
}
if (msg.equals("stop")) {
    System.exit(0);
}
}
}
}

```

Program: slave2.java

```

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.Socket;
import java.util.Scanner;

public class slave2 {
    public static void main(String[] args) throws Exception {
        Scanner sc = new Scanner(System.in);
        Socket socket = new Socket("localhost", 9001);
        BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
        PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
        System.out.print("Enter your name:");
        String name = sc.nextLine();
        while (true) {
            String msg = "";
            String line = in.readLine();
            if (line.startsWith("SUBMITNAME"))
                out.println(name);
            else if (line.startsWith("MESSAGE"))
                System.out.println("\n" + line.substring(8));
            if (name.startsWith("slave2")) {
                System.out.print("Enter a message: ");
                msg = sc.nextLine();
                out.println(msg);
            }
            if (msg.equals("stop")) {
                System.exit(0);
            }
        }
    }
}

```

C:\Windows\System32\cmd.exe - java Server

```
Microsoft Windows [Version 10.0.19045.5371]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student.RCOESRV\Documents\MoinMN>set path="C:\Program Files\Java\jdk1.8.0_31\bin"

C:\Users\student.RCOESRV\Documents\MoinMN>javac Server.java

C:\Users\student.RCOESRV\Documents\MoinMN>java Server
The server is running at port 9001.
master Moin MNjoined
slave1 Rohitjoined
slave2 Hardikjoined
MESSAGE master Moin MN:Hi I am Master.
MESSAGE slave1 Rohit:Hi!
MESSAGE slave2 Hardik:Hello, Good Morning!
```

C:\Windows\System32\cmd.exe - java master

```
Microsoft Windows [Version 10.0.19045.5371]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student.RCOESRV\Documents\MoinMN>javac master.java

C:\Users\student.RCOESRV\Documents\MoinMN>java master
Enter your name:master Moin MN
Enter a message:Hi I am Master.
master Moin MN:Hi I am Master.
Enter a message:
```

C:\Windows\System32\cmd.exe - java slave1

```
Microsoft Windows [Version 10.0.19045.5371]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student.RCOESRV\Documents\MoinMN>javac slave1.java

C:\Users\student.RCOESRV\Documents\MoinMN>java slave1
Enter your name: slave1 Rohit
Enter a message: Hii!

master Moin MN:Hi I am Master.
Enter a message:
```

C:\Windows\System32\cmd.exe - java slave2

```
Microsoft Windows [Version 10.0.19045.5371]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student.RCOESRV\Documents\MoinMN>javac slave2.java

C:\Users\student.RCOESRV\Documents\MoinMN>java slave2
Enter your name:slave2 Hardik
Enter a message: Hello, Good Morning!

master Moin MN:Hi I am Master.
Enter a message:
```