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server.java

```
//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;

public class Server {
private static Vector<PrintWriter> writers = new Vector<PrintWriter>();

public static void main(String[] args) throws Exception {
ServerSocket listener = new ServerSocket(9001);
System.out.println("The server is running at port 9001."); while
(true)
new Handler(listener.accept()).start();
}

private static class Handler extends Thread {
private Socket socket;

public Handler(Socket socket) {
this.socket = socket;
}

public void run() {
try {
BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
out.println("SUBMITNAME");
String name = in.readLine();
System.out.println(name + " joined");
writers.add(out);
while (true) {
String input = in.readLine();
for (PrintWriter writer : writers)
writer.println("MESSAGE" + name + ":" + input);
```

```
    }
  } catch (Exception e) {
    System.err.println(e);
  }
  }
 }
}
```

master.java

```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);
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 line = in.readLine();
if (line.startsWith("SUBMITNAME")) {
out.println(name);
} else if (line.startsWith("MESSAGE")) {
System.out.println(line.substring(8));
}
if(name.startsWith("master")) {
System.out.print("Enter a message: ");
out.println(sc.nextLine());
}
}
}
}
```

slave1.java

```java
import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.io.PrintWriter;
```

```java
import java.net.Socket;
import java.util.Scanner;
public class slave1 {
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 line = in.readLine();
if (line.startsWith("SUBMITNAME")) {
out.println(name);
} else if (line.startsWith("MESSAGE")) {
System.out.println(line.substring(8));
}
if(name.startsWith("master")) {
System.out.print("Enter a message: ");
out.println(sc.nextLine());
}
}
}
}
```

slave2.java

```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 line = in.readLine();
if (line.startsWith("SUBMITNAME")) {
out.println(name);
} else if (line.startsWith("MESSAGE")) {
System.out.println(line.substring(8));
}
if(name.startsWith("master")) {
System.out.print("Enter a message: ");
out.println(sc.nextLine());
}
}
}
}
```

output