Lab 1

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Date: 9/21/2021

How to run the program:

1. Download the Lab1.zip folder.
2. For the question 1,
   1) open a terminal window and use the command line as follows.

      ```
      >> cd Lab1
      >> ls
      >> cd src
      >> ls
      >> cd Lab1_Q1
      >> ls
      >> java Server.java
      ```

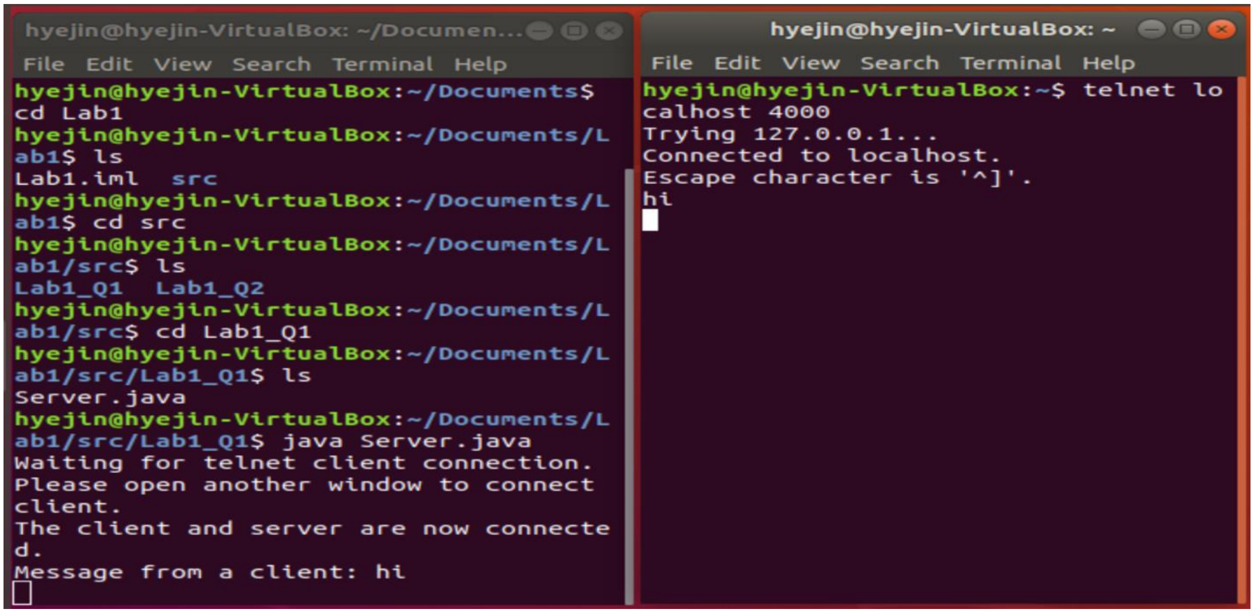
      After then, the message will come up like “Waiting for telnet client connection. Please open another window to connect client.”

   2) open another terminal window and use the command line as follows.

      ```
      >> telnet localhost 4000
      ```

      After then, the message will be seen as “Trying 127.0.0.1… Connected to localhost. Escape character is ‘^]’.” in the client window. Also, the message “The client and server are now connected” in the server window.

   3) Now, the client can send message in the client window, like “hi,” and the server will respond like “Message from a client: hi.”
   4) Finally, the result will show like below screenshot picture.



hyejin@hyejin-VirtualBox: ~/Documen...
File Edit View Search Terminal Help
hyejin@hyejin-VirtualBox: ~
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~/Documents$
cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/L
ab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/L
ab1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/L
ab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/L
ab1/src$ cd Lab1_Q1
hyejin@hyejin-VirtualBox:~/Documents/L
ab1/src/Lab1_Q1$ ls
Server.java
hyejin@hyejin-VirtualBox:~/Documents/L
ab1/src/Lab1_Q1$ java Server.java
Waiting for telnet client connection.
Please open another window to connect
client.
The client and server are now connecte
d.
Message from a client: hi
```

```
hyejin@hyejin-VirtualBox:~$ telnet lo
calhost 4000
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
hi
```

3. For the question 2,

1) open a terminal window and use the command line as follows.

>> cd Lab1
>> ls
>> cd src
>> ls
>> cd Lab1_Q2
>> ls
>> java Server.java

After then, the message will come up like “The server is now waiting for the clients.”

2) Open a new terminal window and use the command line as follows.

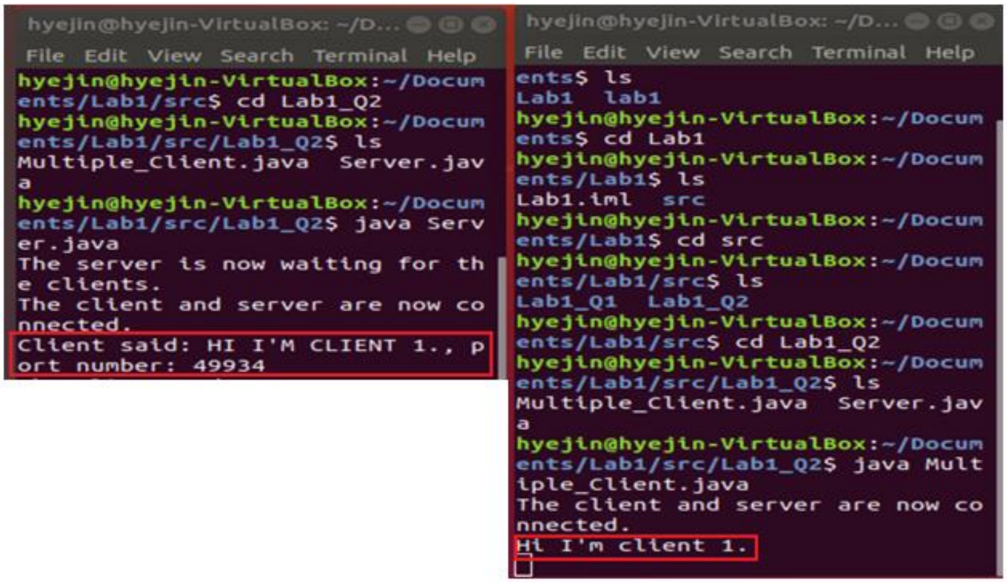
>> cd Lab1
>> ls
>> cd src
>> ls
>> cd Lab1_Q2
>> ls
>> java Multiple_Client.java

After then, the message will be seen like “The client and server are now connected.” Also, in the server window, the message will be seen as “The client and server are now connected.”

3) Now the client can say “Hi I’m client 1.”

4) Then, in the server, the message from the client will be seen like “HI I’M CLIENT 1.. Port number: 49934” (The port number would be changed.)

5) The result screenshot will be like as follow:



hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Serv
er.java
The server is now waiting for th
e clients.
The client and server are now co
nnected.
Client said: HI I'M CLIENT 1., p
ort number: 49934
```

hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help

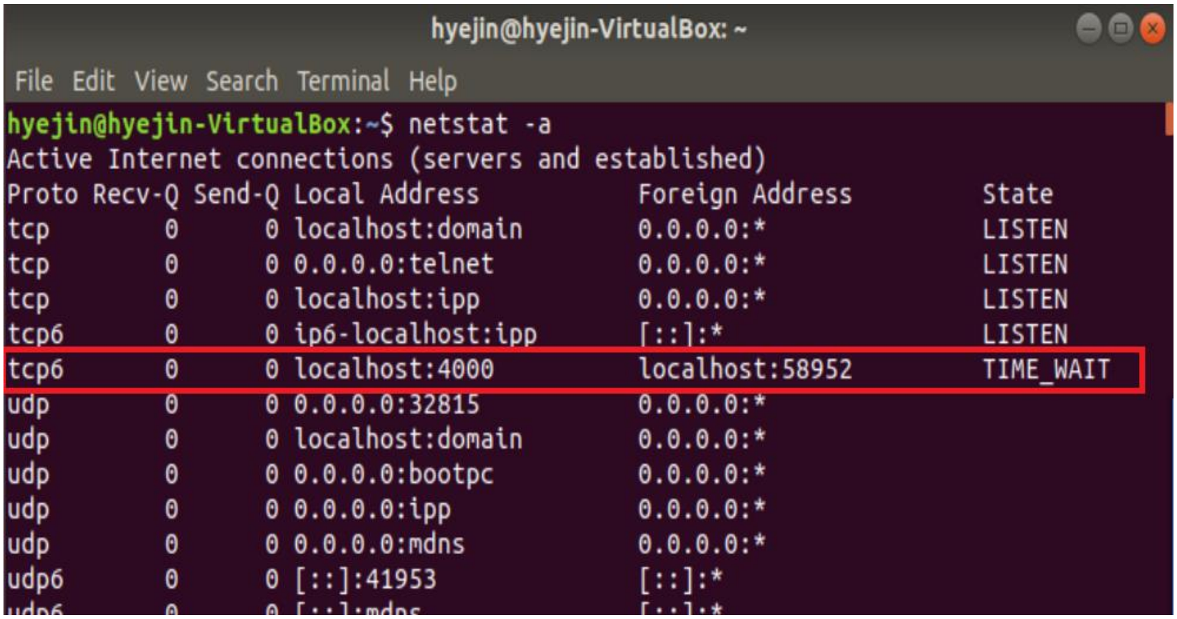
```
ents$ ls
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Docum
ents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Mult
iple_Client.java
The client and server are now co
nnected.
Hi I'm client 1.
```

6) In order to connect multiple clients, open new terminals and follow the step 2).

Question 1

1.1

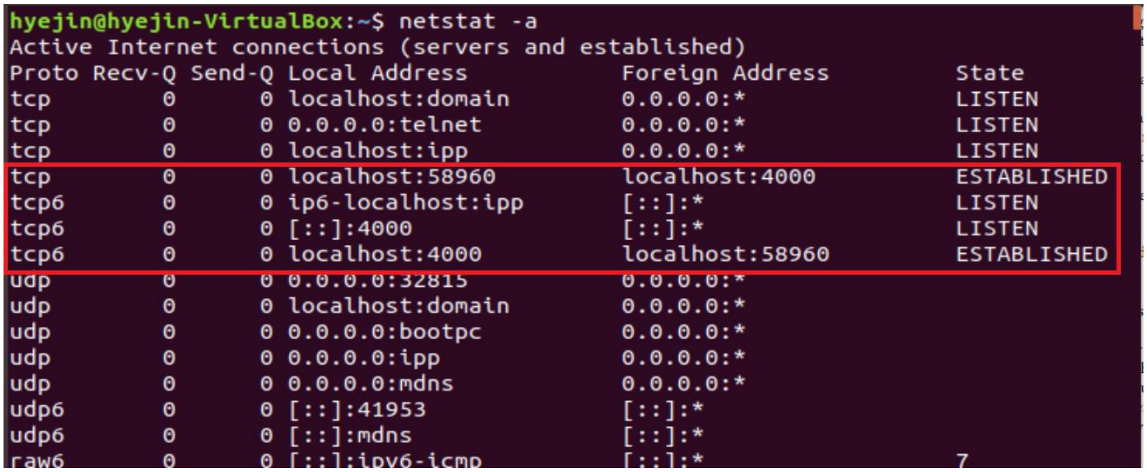
First, I used netstat in order to find the port, and the localhost 4000 was waiting for the client contact as below screenshot.



hyejin@hyejin-VirtualBox: ~
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:telnet          0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
tcp6       0      0 localhost:4000          localhost:58952         TIME_WAIT
udp        0      0 0.0.0.0:32815           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:bootpc          0.0.0.0:*
udp        0      0 0.0.0.0:ipp             0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:41953              [::]:*
udp6       0      0 [::]:mdns               [::]:*
```

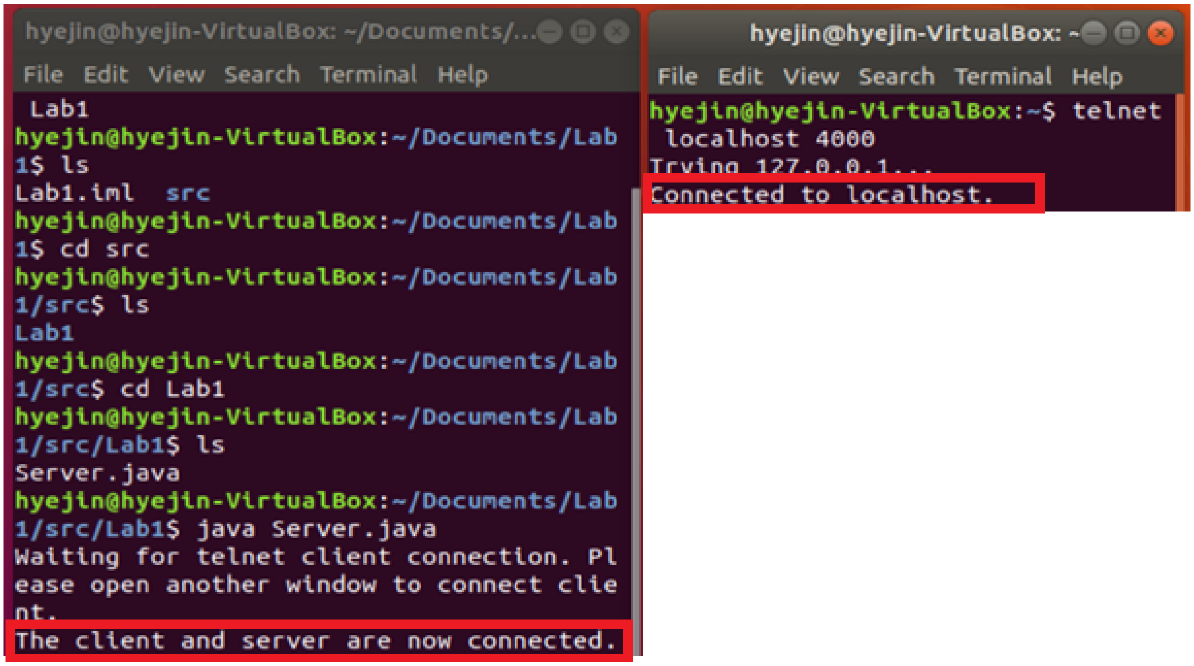
After connecting the server and the client, the connection by localhost 4000 was established as below picture.



```
hyejin@hyejin-VirtualBox:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:telnet          0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp        0      0 localhost:58960         localhost:4000          ESTABLISHED
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
tcp6       0      0 [::]:4000               [::]:*                  LISTEN
tcp6       0      0 localhost:4000          localhost:58960         ESTABLISHED
udp        0      0 0.0.0.0:32815           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:bootpc          0.0.0.0:*
udp        0      0 0.0.0.0:ipp             0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:41953              [::]:*
udp6       0      0 [::]:mdns               [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
```

1.2

After I built the server in a terminal, I connected this server to the client by using the telnet with localhost 4000 as below picture. After connected, the left window shows "The client and server are now connected," and the right window shows, "connected to localhost" as below picture.



hyejin@hyejin-VirtualBox: ~/Documents/...
File Edit View Search Terminal Help

```
 Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ ls
Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ ls
Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ java Server.java
Waiting for telnet client connection. Pl
ease open another window to connect clie
nt.
The client and server are now connected.
```

hyejin@hyejin-VirtualBox: ~
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~$ telnet
 localhost 4000
Trying 127.0.0.1...
Connected to localhost.
```

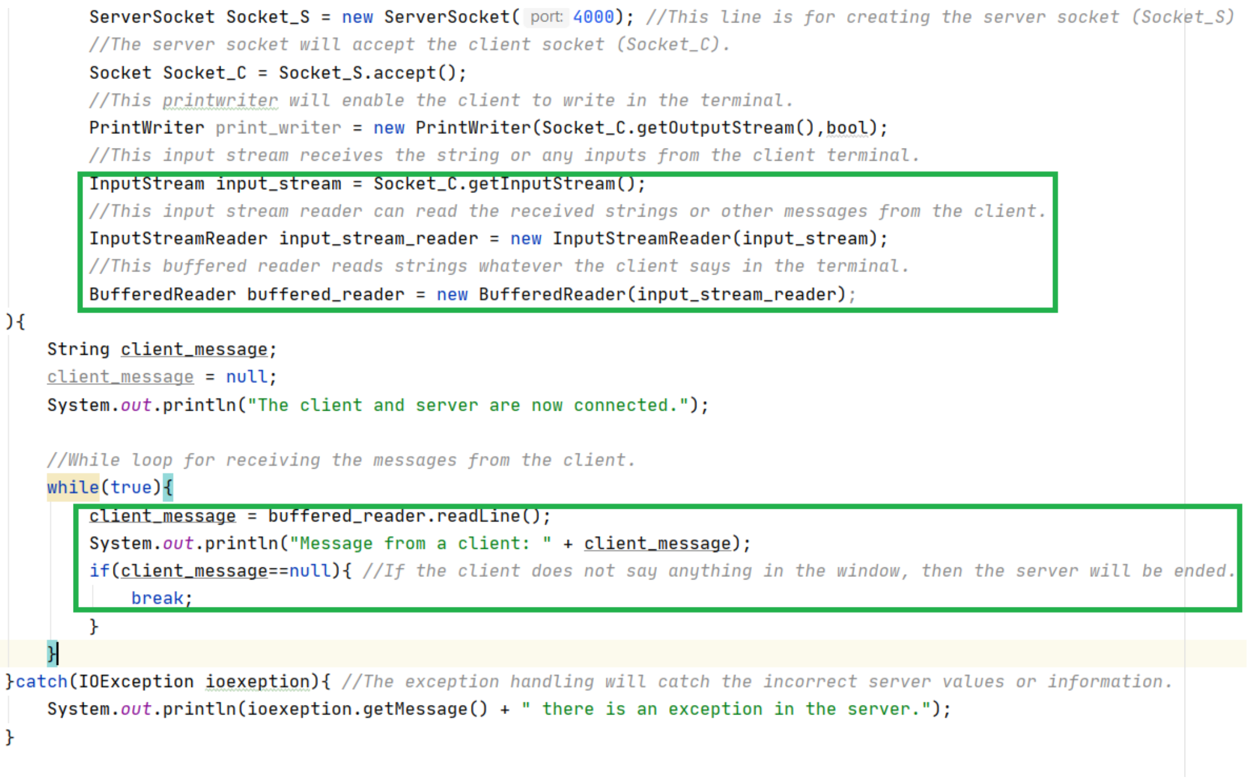
1.3

Now the client can send messages, such as “Hi from client,” to the server. In the right window, the client says, “hi,” “hello,” and “my name is.” As a respond to the client, the server in the left window, it shows “Message from a client: hi,” “Message from a client: hello,” and “Message from a client: my name is” as below screenshot picture.

1.3.1

The modified server code is in the Lab1_Q1 folder attached to the assignment tab. As below picture shows, I modified the server code using buffered reader and input stream reader in order to read the client’s message.

< Modified Code in the folder Lab_Q1 folder and Server.java file >

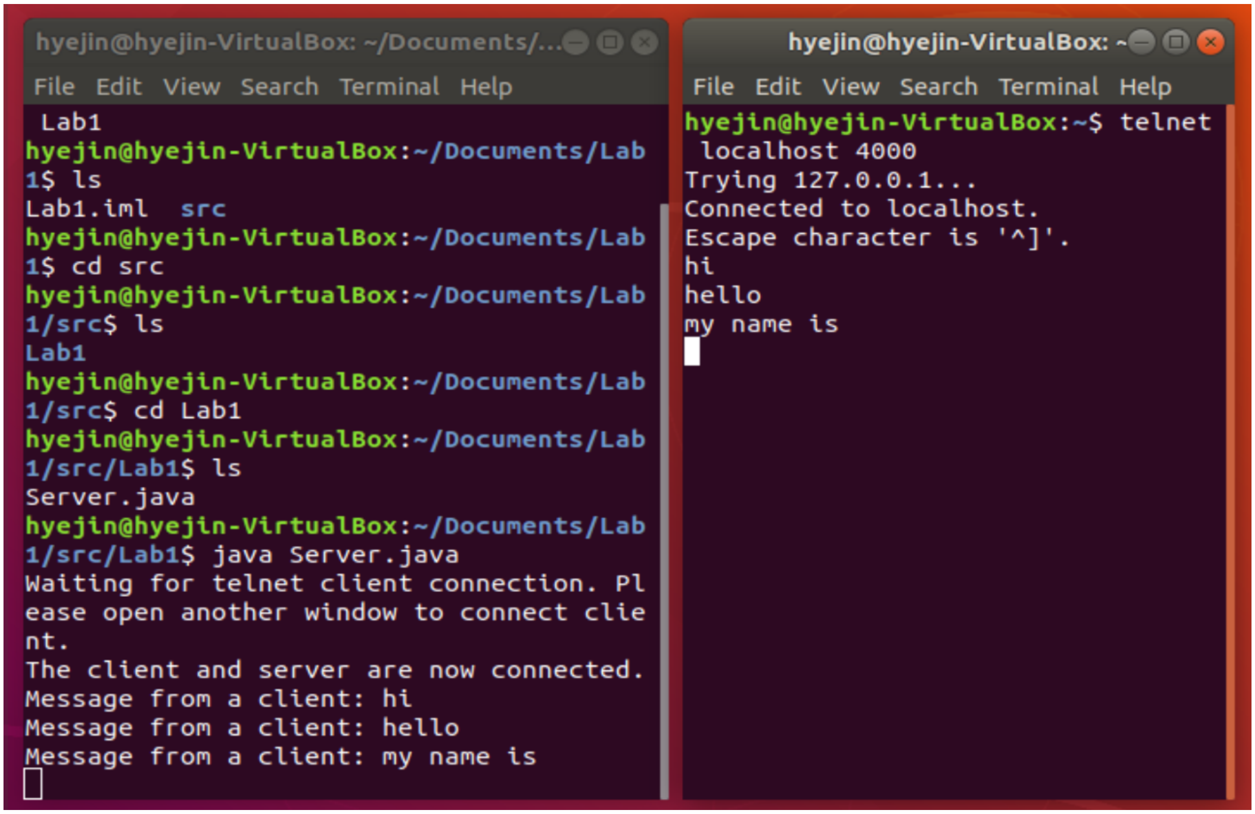


```
        ServerSocket Socket_S = new ServerSocket( port: 4000); //This line is for creating the server socket (Socket_S)
        //The server socket will accept the client socket (Socket_C).
        Socket Socket_C = Socket_S.accept();
        //This printwriter will enable the client to write in the terminal.
        PrintWriter print_writer = new PrintWriter(Socket_C.getOutputStream(),bool);
        //This input stream receives the string or any inputs from the client terminal.
        InputStream input_stream = Socket_C.getInputStream();
        //This input stream reader can read the received strings or other messages from the client.
        InputStreamReader input_stream_reader = new InputStreamReader(input_stream);
        //This buffered reader reads strings whatever the client says in the terminal.
        BufferedReader buffered_reader = new BufferedReader(input_stream_reader);
){
    String client_message;
    client_message = null;
    System.out.println("The client and server are now connected.");

    //While loop for receiving the messages from the client.
    while(true){
        client_message = buffered_reader.readLine();
        System.out.println("Message from a client: " + client_message);
        if(client_message==null){ //If the client does not say anything in the window, then the server will be ended.
            break;
        }
    }
}catch(IOException ioexception){ //The exception handling will catch the incorrect server values or information.
    System.out.println(ioexception.getMessage() + " there is an exception in the server.");
}
```

1.3.2

As below picture has shown, the telnet was utilized to send multiple messages through the modified server, such as “hi,” “hello,” and “my name is.”



hyejin@hyejin-VirtualBox: ~/Documents/...
File Edit View Search Terminal Help

```
 Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ ls
Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ ls
Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ java Server.java
Waiting for telnet client connection. Pl
ease open another window to connect clie
nt.
The client and server are now connected.
Message from a client: hi
Message from a client: hello
Message from a client: my name is
```

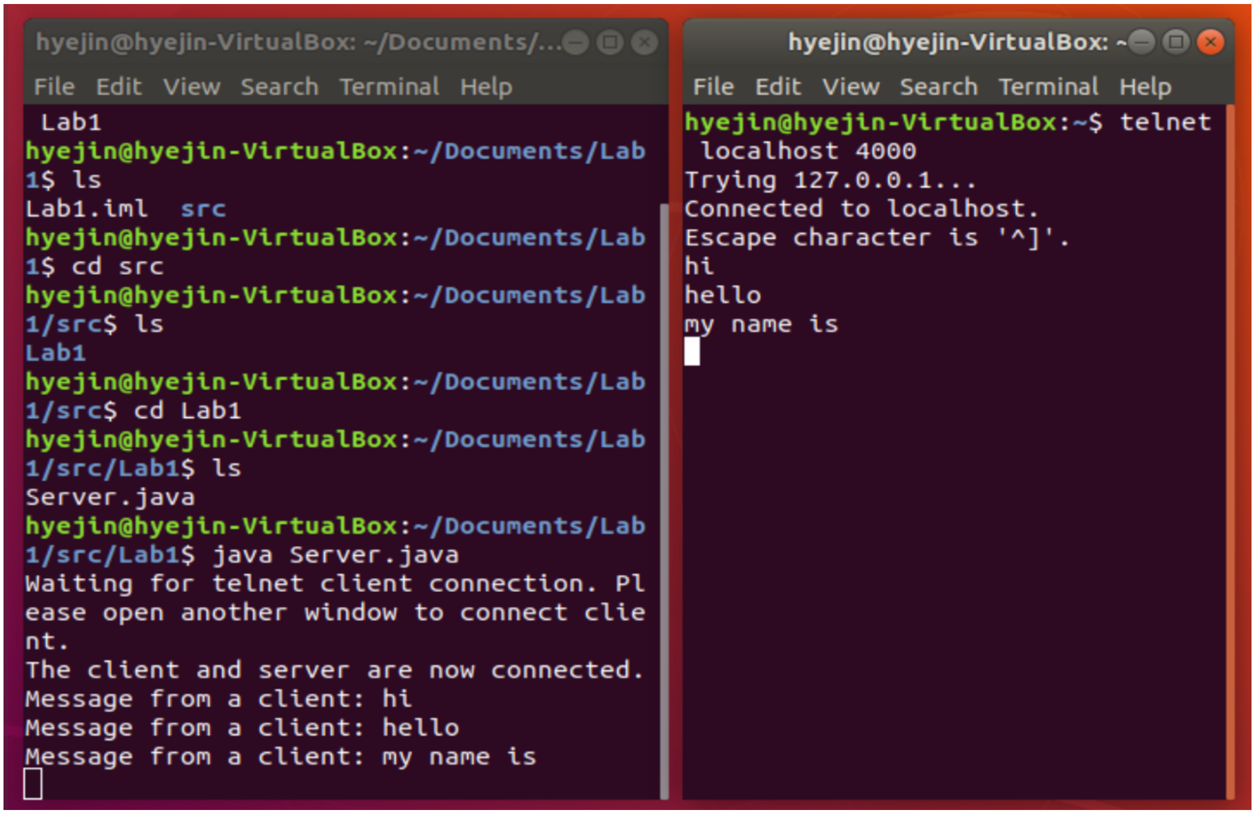
hyejin@hyejin-VirtualBox: ~
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~$ telnet
 localhost 4000
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
hi
hello
my name is
```

Question 2

2.1

As already shown in the 1.3.2, the result is that the server can receive multiple messages from the client after connecting the server and the client through telnet. Whenever the client sends messages, the client can read the message simultaneously in the server window as well as the client window.



hyejin@hyejin-VirtualBox: ~/Documents/...
File Edit View Search Terminal Help

```
 Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ ls
Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src$ cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ ls
Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab
1/src/Lab1$ java Server.java
Waiting for telnet client connection. Pl
ease open another window to connect clie
nt.
The client and server are now connected.
Message from a client: hi
Message from a client: hello
Message from a client: my name is
```

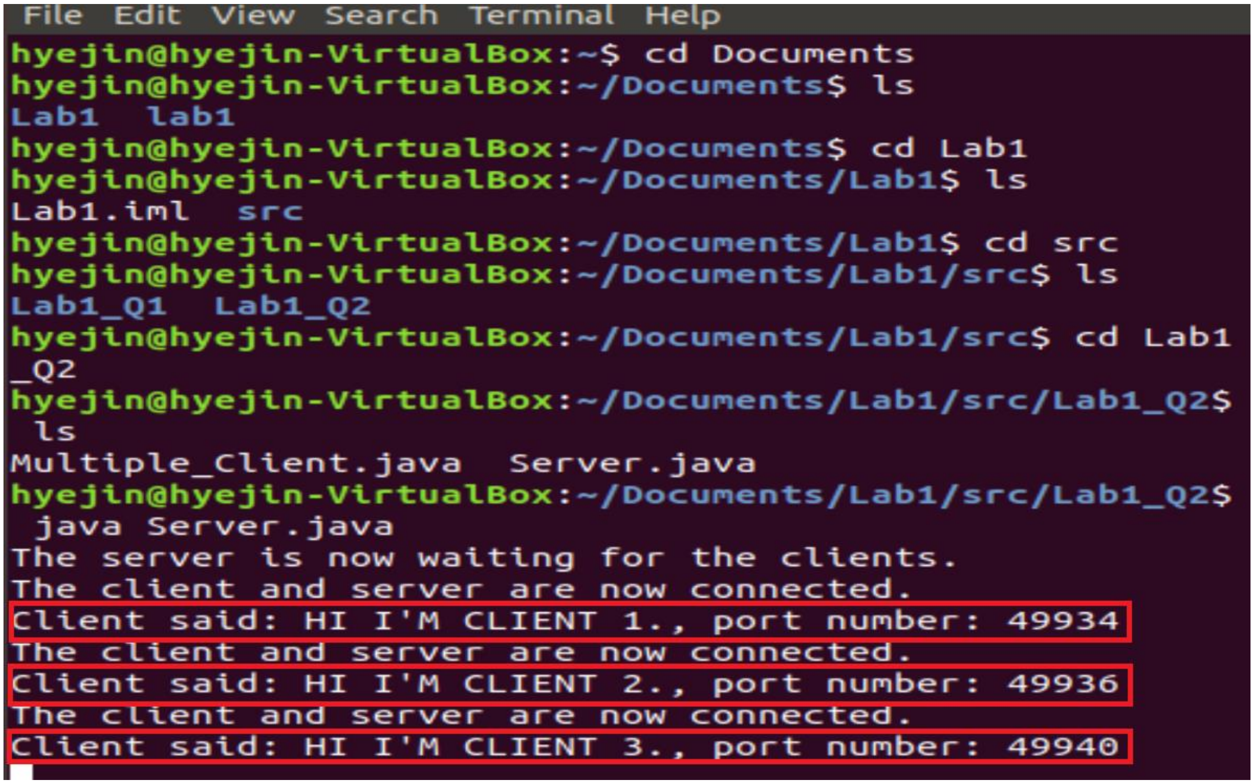
hyejin@hyejin-VirtualBox: ~
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~$ telnet
 localhost 4000
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
hi
hello
my name is
```

2.2

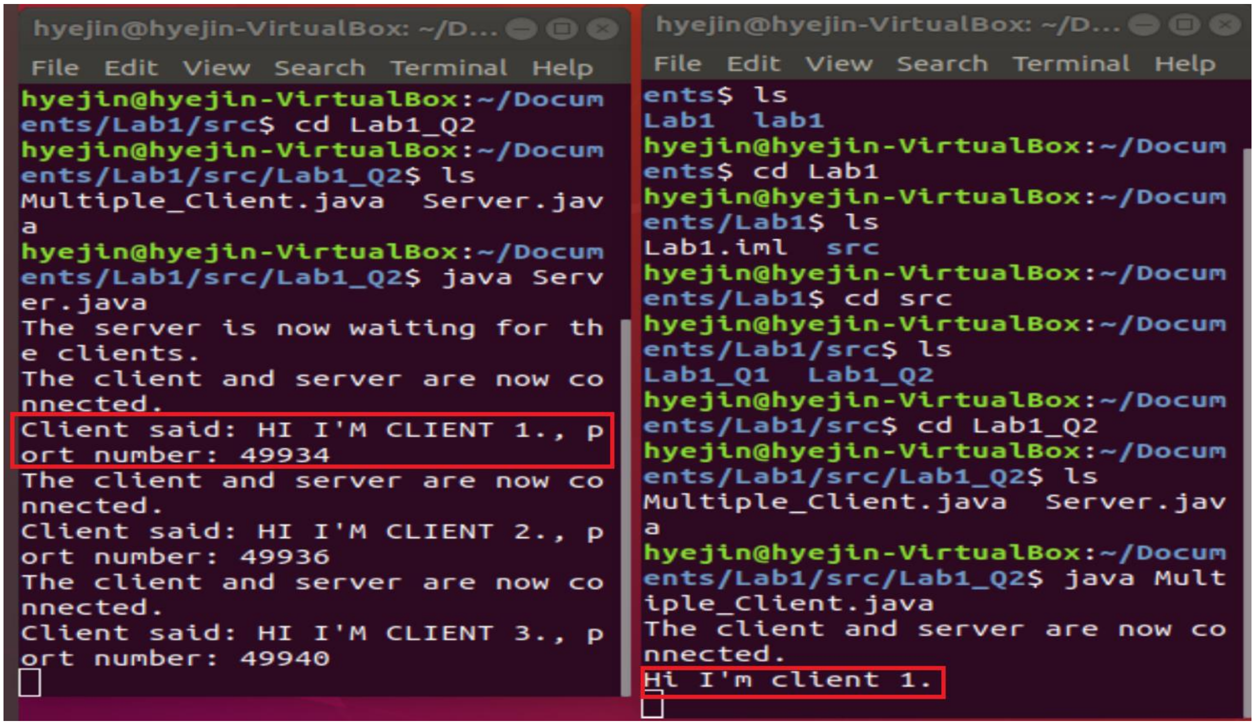
Yes. After modifying the server code, the multiple clients can be connected to the server. The below picture shows the server's window which is connected to client 1, client 2 and client 3. And the clients and the server can interact simultaneously now.

< Server Window >



```
hyejin@hyejin-VirtualBox:~$ cd Documents
hyejin@hyejin-VirtualBox:~/Documents$ ls
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Documents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src$ cd Lab1
_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src/Lab1_Q2$
 ls
Multiple_Client.java  Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src/Lab1_Q2$
 java Server.java
The server is now waiting for the clients.
The client and server are now connected.
Client said: HI I'M CLIENT 1., port number: 49934
The client and server are now connected.
Client said: HI I'M CLIENT 2., port number: 49936
The client and server are now connected.
Client said: HI I'M CLIENT 3., port number: 49940
```

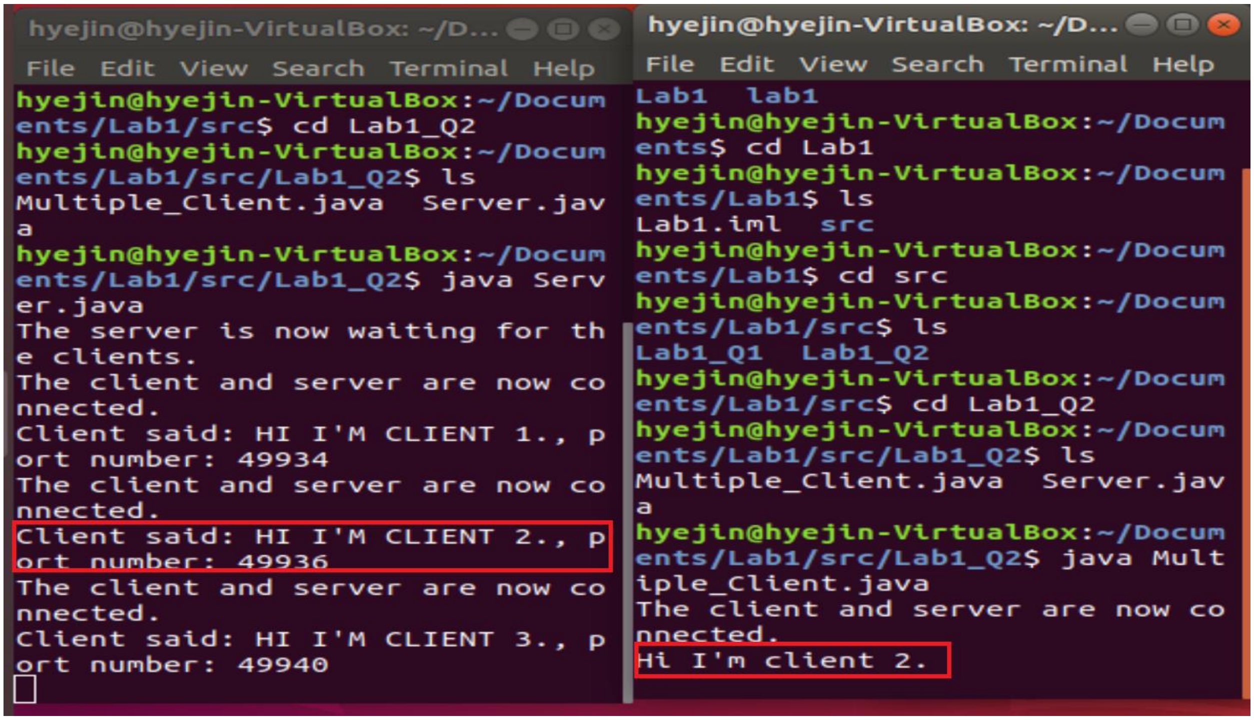
< Client 1 Window >


hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help
hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Serv
er.java
The server is now waiting for th
e clients.
The client and server are now co
nnected.
Client said: HI I'M CLIENT 1., p
ort number: 49934
The client and server are now co
nnected.
Client said: HI I'M CLIENT 2., p
ort number: 49936
The client and server are now co
nnected.
Client said: HI I'M CLIENT 3., p
ort number: 49940
```

```
ents$ ls
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Docum
ents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Mult
iple_Client.java
The client and server are now co
nnected.
Hi I'm client 1.
```

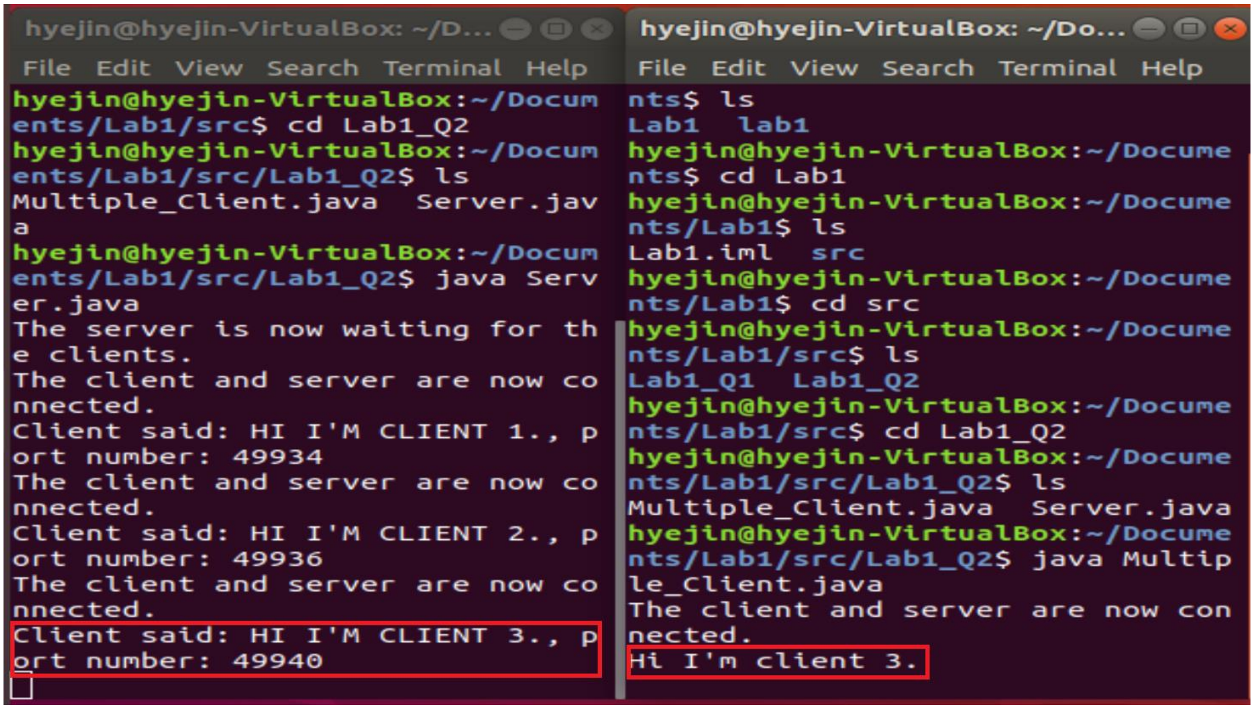
< Client 2 Window >


hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help
hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help

```
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Serv
er.java
The server is now waiting for th
e clients.
The client and server are now co
nnected.
Client said: HI I'M CLIENT 1., p
ort number: 49934
The client and server are now co
nnected.
Client said: HI I'M CLIENT 2., p
ort number: 49936
The client and server are now co
nnected.
Client said: HI I'M CLIENT 3., p
ort number: 49940
```

```
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Docum
ents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Mult
iple_Client.java
The client and server are now co
nnected.
Hi I'm client 2.
```

< Client 3 Window >


hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help
hyejin@hyejin-VirtualBox: ~/Do...
File Edit View Search Terminal Help

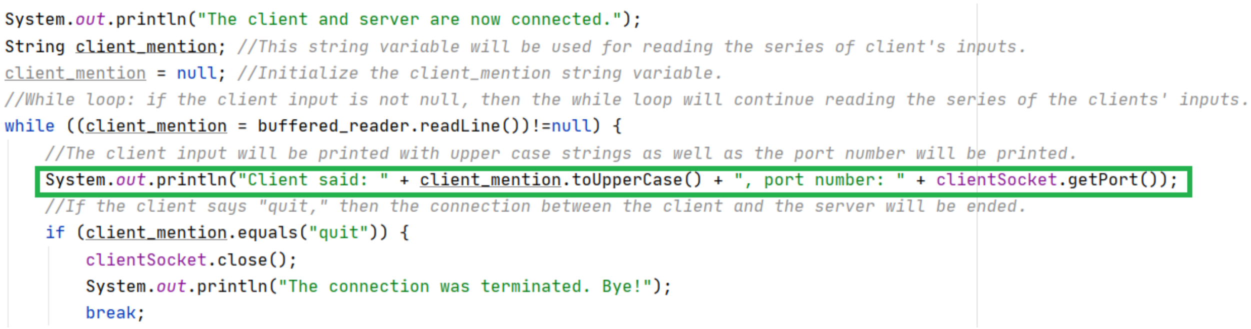
```
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Serv
er.java
The server is now waiting for th
e clients.
The client and server are now co
nnected.
Client said: HI I'M CLIENT 1., p
ort number: 49934
The client and server are now co
nnected.
Client said: HI I'M CLIENT 2., p
ort number: 49936
The client and server are now co
nnected.
Client said: HI I'M CLIENT 3., p
ort number: 49940
```

```
nts$ ls
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Docume
nts$ cd Lab1
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.java
hyejin@hyejin-VirtualBox:~/Docume
nts/Lab1/src/Lab1_Q2$ java Multip
le_Client.java
The client and server are now con
nected.
Hi I'm client 3.
```

2.3

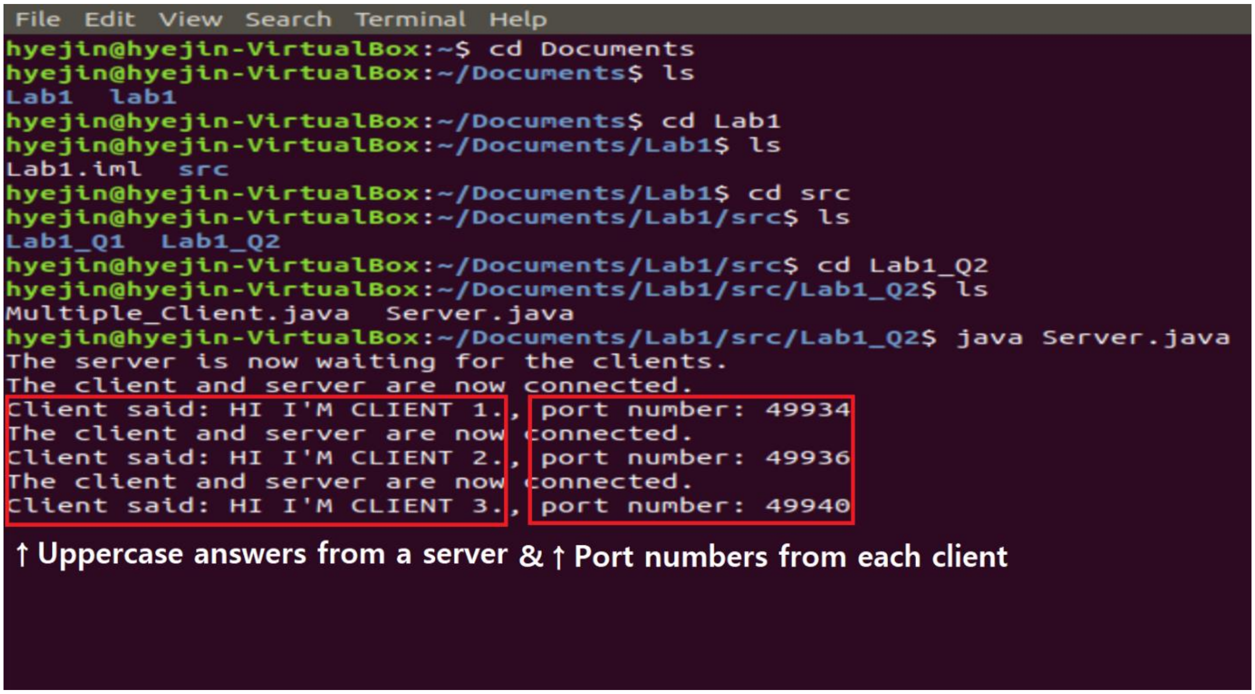
As below code, the server now replies to the clients' inputs with uppercase responds using toUpperCase() method as well as the port number with getPort() method. Also, the second picture shows the uppercase responses from the server as well as the clients' port numbers.

< Modified Server Code in the Lab1_Q2 folder and Server.java file >



```
System.out.println("The client and server are now connected.");
String client_mention; //This string variable will be used for reading the series of client's inputs.
client_mention = null; //Initialize the client_mention string variable.
//While loop: if the client input is not null, then the while loop will continue reading the series of the clients' inputs.
while ((client_mention = buffered_reader.readLine())!=null) {
    //The client input will be printed with upper case strings as well as the port number will be printed.
    System.out.println("Client said: " + client_mention.toUpperCase() + ", port number: " + clientSocket.getPort());
    //If the client says "quit," then the connection between the client and the server will be ended.
    if (client_mention.equals("quit")) {
        clientSocket.close();
        System.out.println("The connection was terminated. Bye!");
        break;
```

< Server Window with uppercase and port numbers >



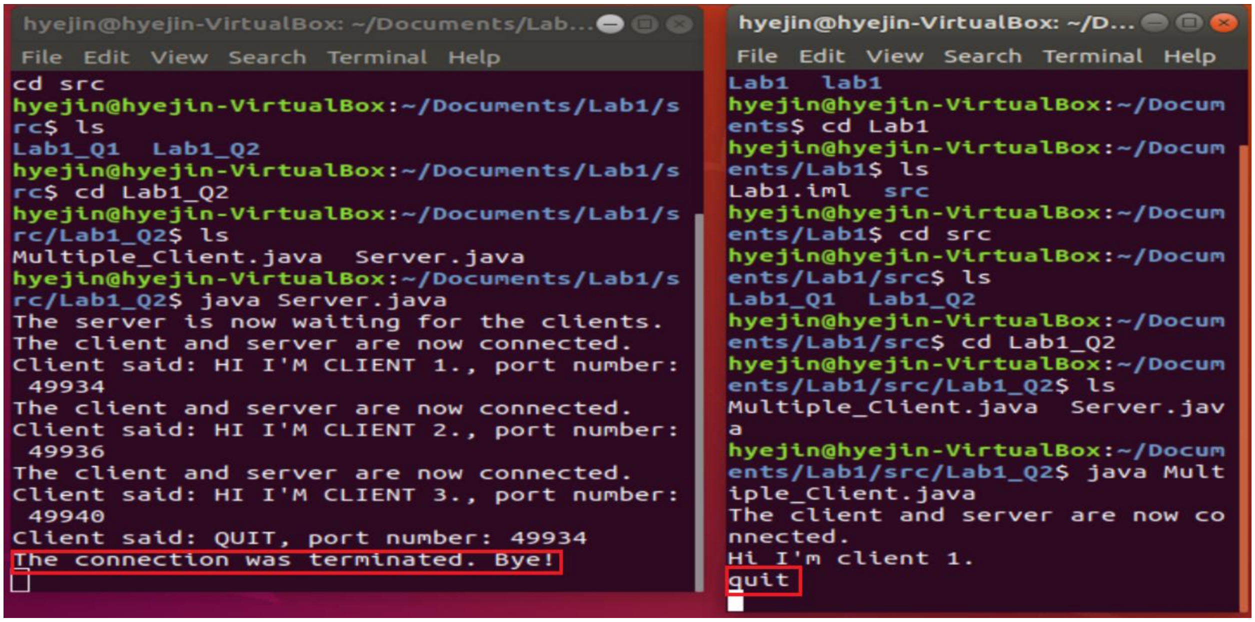
```
hyejin@hyejin-VirtualBox:~$ cd Documents
hyejin@hyejin-VirtualBox:~/Documents$ ls
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Documents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Documents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Documents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab1/src/Lab1_Q2$ java Server.java
The server is now waiting for the clients.
The client and server are now connected.
Client said: HI I'M CLIENT 1., port number: 49934
The client and server are now connected.
Client said: HI I'M CLIENT 2., port number: 49936
The client and server are now connected.
Client said: HI I'M CLIENT 3., port number: 49940
```

↑ Uppercase answers from a server & ↑ Port numbers from each client

2.4

After modifying the client code for quitting the connection, as the below picture, when the client says “quit,” then the server says “The connection was terminated. Bye!” After the client says “quit,” then the server does not respond the client because their connection was terminated.

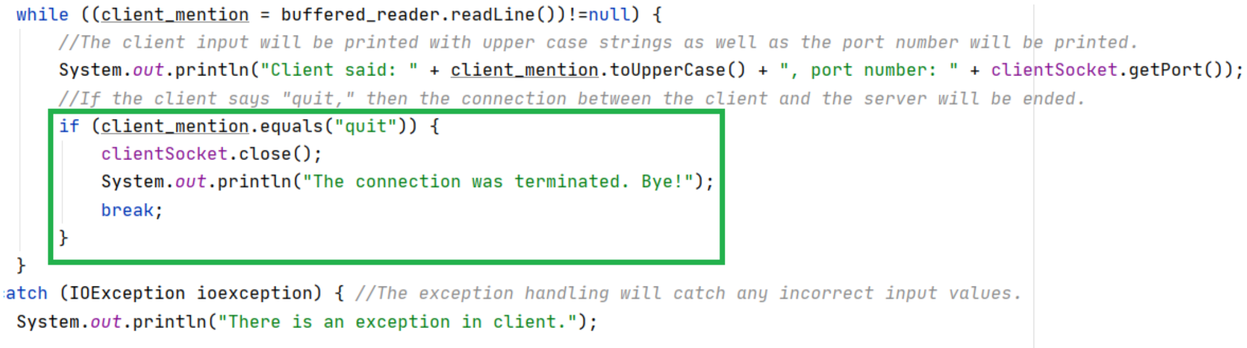
< Server Window & Client Window >


hyejin@hyejin-VirtualBox: ~/Documents/Lab...
File Edit View Search Terminal Help
hyejin@hyejin-VirtualBox: ~/D...
File Edit View Search Terminal Help

```
cd src
hyejin@hyejin-VirtualBox:~/Documents/Lab1/s
rc$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/s
rc$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Documents/Lab1/s
rc/Lab1_Q2$ ls
Multiple_Client.java  Server.java
hyejin@hyejin-VirtualBox:~/Documents/Lab1/s
rc/Lab1_Q2$ java Server.java
The server is now waiting for the clients.
The client and server are now connected.
Client said: HI I'M CLIENT 1., port number:
 49934
The client and server are now connected.
Client said: HI I'M CLIENT 2., port number:
 49936
The client and server are now connected.
Client said: HI I'M CLIENT 3., port number:
 49940
Client said: QUIT, port number: 49934
The connection was terminated. Bye!
```

```
Lab1  lab1
hyejin@hyejin-VirtualBox:~/Docum
ents$ cd Lab1
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ ls
Lab1.iml  src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1$ cd src
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ ls
Lab1_Q1  Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src$ cd Lab1_Q2
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ ls
Multiple_Client.java  Server.jav
a
hyejin@hyejin-VirtualBox:~/Docum
ents/Lab1/src/Lab1_Q2$ java Mult
iple_Client.java
The client and server are now co
nnected.
Hi I'm client 1.
quit
```

< Modified Code in the Lab1_Q2 folder and Server.java file>



```
 while ((client_mention = buffered_reader.readLine())!=null) {
     //The client input will be printed with upper case strings as well as the port number will be printed.
     System.out.println("Client said: " + client_mention.toUpperCase() + ", port number: " + clientSocket.getPort());
     //If the client says "quit," then the connection between the client and the server will be ended.
     if (client_mention.equals("quit")) {
         clientSocket.close();
         System.out.println("The connection was terminated. Bye!");
         break;
     }
 }
atch (IOException ioexception) { //The exception handling will catch any incorrect input values.
 System.out.println("There is an exception in client.");
```