**Practical 3**

**Aim:**

Write a java program using java.net library. Client will take 2 numbers from user and sends it to Server. Server will add them and reply addition of those numbers. Client will display the result on its own output screen. (TCP Protocol)

**Description:**

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Fig. 1. Concurrent Client Server scenario

**Program code:**

**EchoClient2.java**

//TCP Client

**import** java**.**io**.\*;**

**import** java**.**net**.\*;**

public class EchoClient2 **{**

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

String serverHostname **=** **new** String **(**"127.0.0.1"**);**

**if** **(**args**.**length **>** 0**)**

serverHostname **=** args**[**0**];**

System**.**out**.**println **(**"Attemping to connect to host " **+**

serverHostname **+** " on port 10008."**);**

Socket echoSocket **=** **null;**

PrintWriter out **=** **null;**

BufferedReader in **=** **null;**

**try** **{**

echoSocket **=** **new** Socket**(**serverHostname**,** 10008**);**

out **=** **new** PrintWriter**(**echoSocket**.**getOutputStream**(),** **true);**

in **=** **new** BufferedReader**(new** InputStreamReader**(**

echoSocket**.**getInputStream**()));**

**}** **catch** **(**UnknownHostException e**)** **{**

System**.**err**.**println**(**"Don't know about host: " **+** serverHostname**);**

System**.**exit**(**1**);**

**}** **catch** **(**IOException e**)** **{**

System**.**err**.**println**(**"Couldn't get I/O for "

**+** "the connection to: " **+** serverHostname**);**

System**.**exit**(**1**);**

**}**

BufferedReader stdIn **=** **new** BufferedReader**(**

**new** InputStreamReader**(**System**.**in**));**

String userInput**;**

Add ob **=** **new** Add**();**

System**.**out**.**println **(**"Type Message 1 (\"Bye.\" to quit)"**);**

**while** **((**userInput **=** stdIn**.**readLine**())** **!=** **null)**

**{**

ob**.**a **=** Integer**.**parseInt**(**userInput**);**

System**.**out**.**println **(**"Type Message 2 (\"Bye.\" to quit)"**);**

userInput **=** stdIn**.**readLine**();**

ob**.**b **=** Integer**.**parseInt**(**userInput**);**

userInput **=** ob**.**toString**();**

out**.**println**(**userInput**);**

// end loop

**if** **(**userInput**.**equals**(**"Bye."**))**

**break;**

System**.**out**.**println**(**"echo: " **+** in**.**readLine**());**

**}**

out**.**close**();**

in**.**close**();**

stdIn**.**close**();**

echoSocket**.**close**();**

**}** **}**

**EchoServer2.java**

//UDP Server

**import** java**.**net**.\*;**

**import** java**.**io**.\*;**

**import** java**.**util**.\*;**

public class EchoServer2 **extends** Thread

**{**

protected Socket clientSocket**;**

public static void main**(**String**[]** args**)** **throws** IOException

**{**

ServerSocket serverSocket **=** **null;**

**try** **{**

serverSocket **=** **new** ServerSocket**(**10008**);**

System**.**out**.**println**(**"Enroll: 130050131071"**);**

System**.**out**.**println **(**"Connection Socket Created"**);**

**try** **{**

**while** **(true)**

**{**

System**.**out**.**println **(**"Waiting for Connection"**);**

**new** EchoServer2 **(**serverSocket**.**accept**());**

**}**

**}**

**catch** **(**IOException e**)**

**{**

System**.**err**.**println**(**"Accept failed."**);**

System**.**exit**(**1**);**

**}**

**}**

**catch** **(**IOException e**)**

**{**

System**.**err**.**println**(**"Could not listen on port: 10008."**);**

System**.**exit**(**1**);**

**}**

**finally**

**{**

**try** **{**

serverSocket**.**close**();**

**}**

**catch** **(**IOException e**)**

**{**

System**.**err**.**println**(**"Could not close port: 10008."**);**

System**.**exit**(**1**);**

**}**

**}**

**}**

private EchoServer2 **(**Socket clientSoc**)**

**{**

clientSocket **=** clientSoc**;**

start**();**

**}**

public void run**()**

**{**

System**.**out**.**println **(**"New Communication Thread Started"**);**

**try** **{**

PrintWriter out **=** **new** PrintWriter**(**clientSocket**.**getOutputStream**(),**

**true);**

BufferedReader in **=** **new** BufferedReader**(**

**new** InputStreamReader**(** clientSocket**.**getInputStream**()));**

String inputLine**;**

String**[]** inputTemp **=** **new** String**[**3**];**

**while** **((**inputLine **=** in**.**readLine**())** **!=** **null)**

**{**

System**.**out**.**println **(**"Server: " **+** inputLine**);**

inputTemp **=** inputLine**.**split**(**":"**);**

int sum **=** 0**;**

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

int j **=** Integer**.**parseInt**(**inputTemp**[**i**]);**

sum **+=** j**;**

**}**

out**.**println**(**"Sum is: "**+**sum**);**

**if** **(**inputLine**.**equals**(**"Bye."**))**

**break;**

**}**

out**.**close**();**

in**.**close**();**

clientSocket**.**close**();**

**}**

**catch** **(**IOException e**)**

**{**

System**.**err**.**println**(**"Problem with Communication Server"**);**

System**.**exit**(**1**);**

**}**

**}**

**}**

**Add.java**

//Add class

**import** java**.**net**.\*;**

**import** java**.**io**.\*;**

public class Add

**{**

int a**,**b**;**

public String toString**()**

**{**

**return** **(this.**a**+**":"**+this.**b**);**

**}**

**}**

**Input Output:**

