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**Contents of Baskaran\_sxb7586.zip**

'Socket Programming' folder - contains source code and class files

**Project particulars :**

1. Language used - Java  
2. IDE Used - Eclipse Java Neon

**This document includes :**

1. Steps to compile and run the program  
2. Internal working of the program  
3. References used  
  
**Steps to compile the program:**

1. Import the Java project(contents inside the Socket Programming folder) in the IDE, save and compile.

**Steps to run the program:**

1. Run Server.java to start the Server  
2. Run Client.java to start the client (can be run multiple times to start multiple clients).  
3. Click on 'Connect' button on Client GUI  
4. Enter a name for the client and click on 'Register' on Client GUI  
5. Click on 'Start' to start generating random numbers one after the other automatically  
6. Click on 'Stop' to stop generating random number.

**Internal working of the program:**

**1**. **Execute Server.java** - **ServerGUI.java** invoked  
 server up and running and ready for client connection

**2**. **Execute** **Client.java** - Client GUI invoked for interaction with user

**3. User clicks on 'Connect' button**   
 A. connection established with server  
 i. server and client display that connection has been established

**4. User enters client name in input box on client GUI and clicks on 'Register' button.**  
 Internally,  
 A. Client verifies that client name is not empty  
 i. If empty, it requests user for a client name  
 B. Client converts given name to Http format and prints it in the console  
 B. Client name sent to server  
 D. Server prints the unparsed message from client on GUI  
 D. Server parses it and obtains the client name   
 C. Server validates client name(checks whether it is already present in the client list)  
 i. if it is not unique - sends message 'Failure'(in http format) to client   
 after displaying in http format on the GUI.  
 In this case, client asks user to enter another name for client   
 Go back to step 4.  
 ii. if it is unique - displays 'Connection established with clientname'  
 and sends message 'Success'(in http format) to client after  
 displaying in http format on the GUI.  
 It adds the client to its list of currently connected clients - which is displayed in the 'List of connected clients' box in the GUI.  
 In this case, client informs user that client name has been   
 registered and asks client to click on Start.

**5. User clicks on 'Start' button.**

Internally,  
 A. Client generates a random number and sends it to server in http format   
 after printing it in http format in the console.  
 B. Server receives it and prints it in http format on the GUI.  
 C. Server parses it, waits for that many seconds and displays on the GUI  
 that it is waiting for those seconds for the specified 'clientname'  
 D. Server responds to client that it waited for that many seconds  
 E. Client prints the message from server that it waited for those number of   
 seconds.  
 F. generates a new random number and the process continues

**6. User clicks on 'Stop' button**

Internally,  
 A. Client terminates connection with server and notifies the user  
 B. Server finds that client has terminated   
 i. Server closes the socket connection  
 ii. Removes the disconnected client from its client list  
 iii. Updates these information by displaying on the GUI

The same steps are carried out concurrently in case of multiple clients being connected to the server.

**References :**

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