FAST- National University of Computer and Emerging Sciences, Karachi.

FAST School of Computing
Assignment # 1(CLO-2), Spring 2023
CS3001- Computer Networks

ASSIGNMENT-I (CHAT MESSENGER)

Submission Guidelines:

➢ **This is a group assignment. Each group can be of two members only.**
➢ **This is a programming assignment and the submission will be based on 4-5 minutes demo followed by a short viva on Monday 06th March, 2023.**
➢ **Each group member have to submit the code and screenshot of the working demo on Google classroom.**
➢ **The student ID, names and section must be mentioned clearly during the demo.**
➢ **Each group should mark their attendance during the demo.**
➢ **Plagiarism in any form will result in straight "F".**

Assignment # 1 (100 points)

Develop a simple "Chat Messenger" that is connection oriented (i.e. it uses TCP) and that consists of a Client and a Server Program.

1) The Server runs first and waits for some client to contact it.
2) Client Program starts and connects to the server.
3) Client-Server sends and receives messages.

An Example for each step is shown below.

Step 1) A Server should listen to a specific Port as shown in the diagram. In Diagram It is 6789
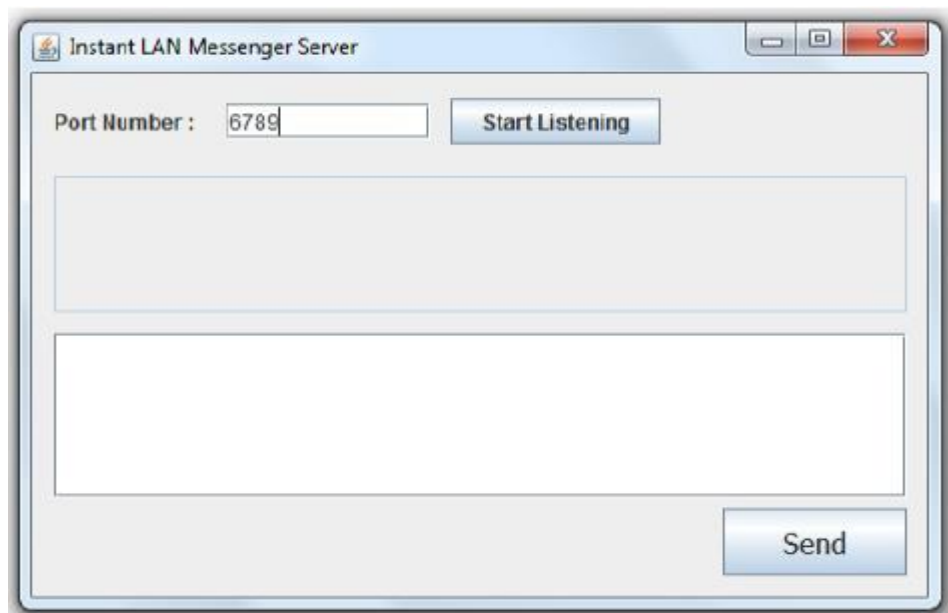
Step 2) A Client should specify IP Address and Port of the Server as shown in the Diagram. In the Diagram it is 127.0.0.1:6789
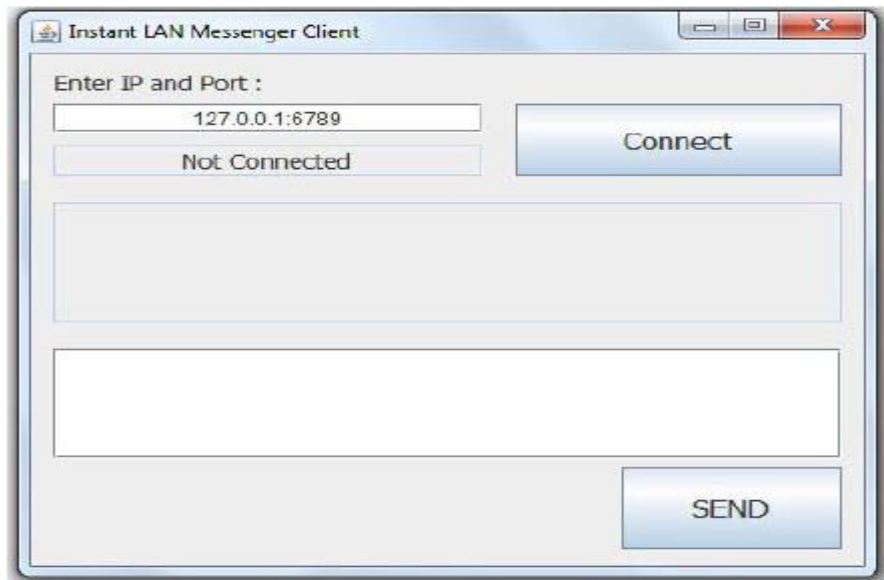
Step 3) Both Programs can send/receive messages successfully through socket (Port). If you are running both programs on the same system then server IP can be '127.0.0.1' while you can also use your private IP in place of 'localhost' IP.
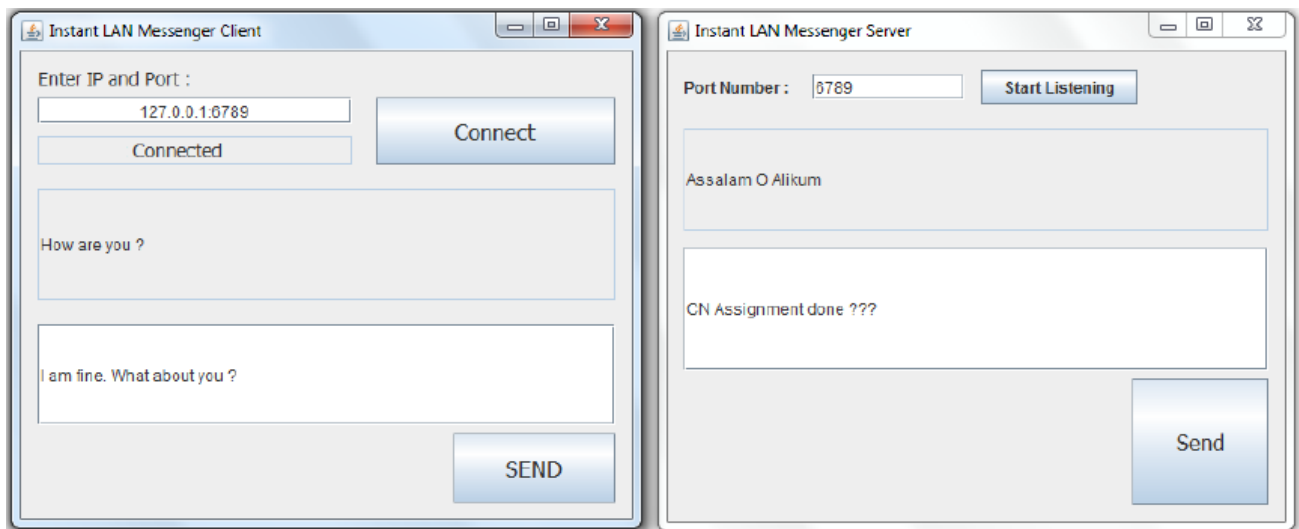
Both the programs should be able to send and receive messages simultaneously and for this purpose you can use threads. Each Program will have one "Input Thread" and one "Output Thread". Input Thread waits for the input that may come from the other program while Output Thread sends the typed message to the other program using sockets.

(Hint: You can understand basics of Socket Programming with TCP by reading and practicing the code given in book "Computer Networking – A Top-Down Approach by Kurose Ross" Page Number 165 and 168.)