

Lab12

Chat Server and Client
(Threading, Synchronization, Sockets,
Mail Box Design Pattern, and Other Pit Falls)

Today's Lab

- Today you will have to implement most of the server side functionality of the Chat Program
- This includes implementing the 3 classes:
 - Socket_Server which accepts new connections and creates a ListenerThread for the new connection
 - ListenerThread which listens over a specific socket for communications.
 - BroadCastThread which broadcasts messages to all clients.

- There are several Synchronization issues that need to be solved.
- On the Client side the problem between the ClientListenerThread and the client is handled by passing all modifications off to the AWT thread via `SwingUtilities.invokeLater()`

- On the server side you must deal with synchronization issue of passing messages to the BroadcastThread. This is currently set up to use a LinkedBlockingQueue as a mail box.
 - Messages are passed into the queue from ListenerThreads. The BroadcastThread runs a loop which blocks on the queue until there is something in the queue. Thus adds to the queue occur on the ListenerThread and removes from the queue on the BroadcastThread.

- There is one more synchronization issue that you must discover and resolve on the Server side of the application. (Hint: think about all the data structures on the server and who is modifying them)

- The client side is fully functioning and does not need to be modified. However you should read the client code to figure out how to implement the server so it works with the clients.