Assignment: Implement a multi client chat application

Submission due: 16th February 2016

Write multi-client chat application consisting of both client and server programs. In this chat application simultaneously several client can communicate with each other. For this you need a single server program that clients connect to. The client programs send the chat text (input) to the server and then the server distributes that chat text to all the other clients. Each client then displays the text sent to it by the server. Server should be able to handle several clients concurrently. It should work fine as clients come and go. This can be implemented in two ways

1. Server can handle multiple clients simultaneously by forking a separate process for each client.
2. Server can create separate threads (instead of processes) to handle separate clients.

In general, the server program:

- Accepts connection requests from clients
- For each accepted connection start a process/thread
- Each process/thread reads data from the client and sends it to all other clients or selected clients
- When a process/thread detects that a client has disconnected it should free allotted resources and stop processing for that client

Prepare a detailed report of the experiments you have done, and your observations on

How do the various server architectures (multi-process and multi-threaded) compare in terms of their scalability i.e., in terms of

(i) number of concurrent clients supported
(ii) rate of client request replies sent per second
(iii) delay in responding to client requests