Project for MI 2.01 Systems & Networks

Centralized Chat System

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1 Objectives

The objective of this project is to implement a centralized chat system, similar to Internet Relay Chat (IRC). In such a system, client-to-client text messages must first be passed to a centralized server, then the server forwards the messages to the destination client (figure 1).

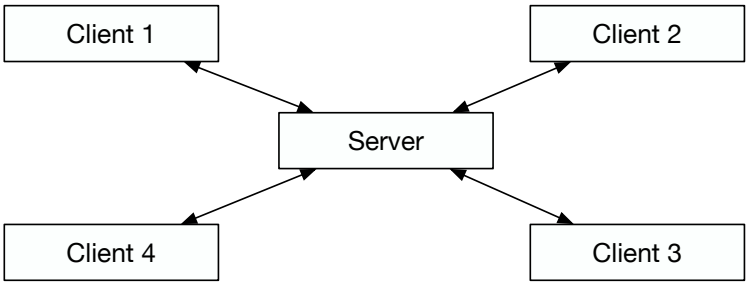

Figure 1: Architecture

Implementation of user-authentication mechanism for each new connection is a bonus.

2 Instructions

The whole system (both server and client) should work with multiplexed, nonblocking TCP socket.

2.1 Server

The server listens on a specific port for incoming connection. Any received data is considered as a text message and is forwarded to another client, although you can support broadcasting as well, depending on your designed protocol.

Your server serves each new client with a separated `fork()`. Main process and the forked processes use `pipe()` as communication mechanism. Figure 2 illustrates this design.

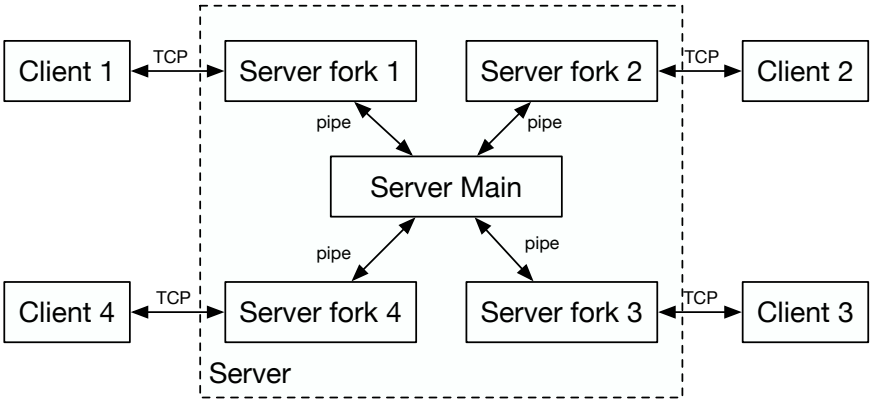

Figure 2: Detailed server structure

2.2 Client

The client takes the server hostname from STDIN or from program arguments, connects to the server, waits for input message from STDIN and sends them as messages to server. Incoming messages (from other clients, forwarded by the server) is printed on the client's terminal.

Your client should separate a thread for input and a thread for networking.

2.3 Submission

You must submit your project using GitHub, including all source code and a report (describing your designed chat protocol). Submission deadline is Monday, April 8th 23:59, Hanoi time.