IT 694 - CN Date: 15/02/2022

Assignment : 3

List of Topics: Socket Programming, Inter-Process Communication, fork()

Group Chat Application:

Group chat application operates as follows:

1. Chatserver maintains a list of unique group-names.
2. Clients register with the server with a unique user name.
3. Clients can query the Server for available group-names.
4. Client can send a request to join one of the groups. Joining a group doesn't mean that the client is connected.
5. Client can also "unjoin" a group.
6. On connecting with the group, client is able to send and receive messages to/from the group members.
7. Chat messages are first sent from the client to the server. Server then copies the message to all the other members of the group. Copied message also contain the name of the sender of the message.
8. On disconnecting from the server, server buffers last K messages for each of the client.
9. On next connection, server also passes on the buffered messages with timestamps.

- Design the application protocol that runs on top of TCP sockets. Clearly list all the protocol messages, their sequences, and the format. Protocol should also handle relevant error conditions.
- Server should be implemented such that a child process is created (fork) to handle each of the clients.
- **For this assignment, assume that there is only one group existing on the server. This can later be extended to multiple groups.**

  Also make sure that

1. All clients request with the server.

2. Whenever Server receives any connect request, it makes a child process, and sends child process's handle to the requested client.
3. And when child received any message from the client then it will broadcast that message to all the child process(Hint: Send message to the server then server will broadcast to all it's child processes)

Submission:

1. Submit assignment with the report consists of an input file and output file with proper explanation of each output of all the exercises in pdf format.
2. Add all the outputs and a brief description of the commands used in the given demo scripts in the report.
3. Submitted code in a report should be well commented.
4. Submit a zip file with your student id which will consist of the folder for each script & respective outputs. one common report in a parent directory.

   Eg:

   group-id-2021***.zip

   - report.pdf
   - PR1
     - Script
     - Its respective output
   - PR2
     - Script
     - Its respective output

5. Submission Deadline: 19/02/2022(Saturday), 23:59:00
6. Penalties will be imposed for the late submission.