University of Dhaka
Computer Science and Engineering
4th Year 2nd Semester B.Sc.: 2024
CSE4269: Parallel and Distributed Systems
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Assignment Code: A1
Assignment Title: Knock Knock Server and Clients.

- Objectives
  The objective of this assignment is to write a Knock Knock server and associated clients. The server starts and waits for clients to connect. Once a client connects with the server, the server sends the string, "Knock Knock" – starting a knock knock joke. The client sends the corresponding string – "Who's there?", and the joke continues until the joke is finished properly with proper responses from the client and the server. An example communication between the server and the client is as follows:

  Server: Knock knock!
  Client: Who's there?
  Server: Turnip.
  Client: Turnip who?
  Server: Turnip the heat. It's freezing.
  Server: Would you like to listen to another? (Y/N)

  At this moment, the server is presenting a choice to the client of whether the client would like to continue listening to other jokes. If the client agrees, the whole process continues. If the client disagrees, the client is terminated.

  The communication must be precise. The responses from the clients MUST be spelling sensitive but not case sensitive. If there is an inconsistent response from the client, the server will remind the client what it was supposed to say and start the joke from the very beginning. An example communication is as follows. Notice the erroneous responses from the client.

  Server: Knock knock!
  Client: Who there?
  Server: You are supposed to say, "Who's there?". Let's try again.
  Server: Knock knock!
  Client: Who's there?
  Server: Echo
  Client: Echo?
  Server: You are supposed to say, "Echo who?". Let's try again.
  Server: Knock knock!

  The server should continue as mentioned until the client is able to finish communicat-

ing through the whole joke.

For this assignment you must maintain a database of minimum 15 knock knock jokes and serve them up to the clients one by one. On a certain session, the client MUST not be served the same joke more than once. The jokes MUST also be served in a random order. Once a client has listened to all the jokes there is to offer, the server will send a string saying, "I have no more jokes to tell." Once this string is received, the client will terminate.
Once the server serves all jokes to all his clients or all of its clients terminate, the server itself will terminate. Be very careful about this. If there is even one client waiting to listen to the very last joke, the server MUST remain active.

You will be assessed based on the following criteria.

1. Server
   (a) The server is able to communicate with multiple clients properly and in parallel. Communication with one client should not impede communicating with another.
   (b) The server must handle every client separately and serve jokes to them separately in a random manner. Same sequence should not be followed while serving jokes to clients in parallel.
   (c) The server MUST be able to recover and continue if a client sends any inconsistent response.
   (d) Once all the clients are served, the server should terminate.
2. Client
   (a) The client should connect with the server and allow the user to communicate properly.
   (b) Once a client listens to all the jokes or chooses to not hear any more, the client should terminate properly.
   (c) There MUST be a minimum of three clients that can run in parallel.
3. Technicality:
   (a) Coding Platform: C/C++
   (b) Your code should be able to run a server on one machine and multiple clients on
      i. Same machine
      ii. Separate Machine
   (c) There MUST be a minimum of three clients that can run in parallel.

- Marks
  1. Your code will net you 20% marks.
  2. The rest of the marks 80% will be based on demonstration : Viva and Testing.
- Marks Distribution
  1. Server
     (a) 10
     (b) 10
     (c) 5
     (d) 5
  2. Client

   (a) 5
   (b) 5
   (c) 5
3. Jokes Database: 5
4. Separate Machine: 10
5. Makefile: 5
6. Proper Comments: 5
7. Test Case: 10
8. Bonus Marks=15
   (a) Coding Style(5): Writing the code in a professional manner
   (b) Database Design (5): Normally you can use .txt file as your source. But if you have any other approach that will be considered for the bonus part.
   (c) Additional Features (5)

- Deliverables and Submission

1. A single package containing all necessary files, codes and instructions for running the program on a generic machine.
2. The deliverables are to be sent in a single compressed package by email. The compressed filename must be of the format: [Roll No.]_[Assignment Code].
3. Example: SH-017_A1.tar / SH-017_A1.zip
4. Submit in the classroom.

- Penalty

1. Plagiarism: If it can be proven beyond reasonable doubt that the assignment code(s) was plagiarized, the code will be invalid and no marks will be attributed.
2. Late Submission: Failure to submit the assignment on time will result in 50% cumulative reduced mark which will be activated each week after the original submission date has passed.

Submission Deadline 2025/09/15(Midnight)