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Description:

The system will be a three-tiered client-server architecture composing of the presentation layer (client), a data layer (server), and a SQLite database file. The client will accept input from the user, relay commands from user to the server, and provide output to the user from the server. The server will process commands from the client including database queries and replication configuration parameters and return requested information to the client. The database will replicate itself into a backup database server at a frequency predetermined by the administrators at the startup of the server by spawning off a thread any time the frequency is changed by the administrator. All communications between client and server must be authenticated using cryptographical methods.

Server Attributes:

* Distribution transparency

Distribution transparency is achieved through a secondary backup server that replicates current data in the event of a failure~~. If a failure is to occur, such as the primary server shutting down, then the client will automatically switch connections to the backup server. Therefore, the only noticeable impact to the client will be data loss between the last backup time and the time of failure.~~

* Distributed architecture

Diagram

Description automatically generated

* Security, to include authentication and data confidentiality.

Security will be implemented through a SSL session over the TCP connection to create a secure connection for data transfer.

* Replication of either processes or data. At least one is required.

Data will be replicated at a frequency specified by the user/administrator.

* Consistency (if replicating data)

Consistency is ensured through periodic backups at set intervals.

* Fault Tolerance. Your project must implement some method of fault tolerance, typically by replicating processes, data, or both.

Fault tolerance is achieved through the replication of the database ~~and automatic failure in the event of the primary database shutting down~~.