3/17/2025

- Started changing our implementation to use persistent storage (SQLite3)
    - Working off of the specification Pedro and I came up with here: Design Exercise: Replication
    - References:
        - https://www.geeksforgeeks.org/sql-using-python/
        - https://www.sqlitetutorial.net/
- Wrote code into the __init__ function of each server to set the structure of the database that each of the servers will talk to
- Read about the need to commit the sqlite3 connection after every change to the database or changes WILL NOT BE IN THE DATABASE
- Decided to keep the lock structure we used for grpc so that only one thread can talk to the server's sql database at a time, even though the threadexecutor will have up to 10 threads running at the same time
- Finished changes on create account, login, logout, delete messages, and delete account
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- INSERT INTO users (username, password, logged_in) VALUES ("duck", "password1", 1)
- INSERT INTO messages (sender_username, recipient_username, message, timestamp, instant, delivered) VALUES ("goose", "duck", "hi", datetime("now"), 0, 0)

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- Finished implementation of list accounts, send message, read messages, and read instant messages functions in the server using persistent storage
- Added a sender_username column to the table because we forgot it initially
- Started testing if old functionality still works (just switching to persistent storage)
    - Needed to switch check_same_thread=False for multithreading

3/24/2025

- Met with Pedro to work on the failing of the servers
- Decided how the client should decide who is the master server when it is first being set up - when a new client sets up, it asks each port whether or not it's the leader server to decide who to talk to
    - Needed to add a isMaster() proto/grpc function for this to work

- When a client gets an error from a grpc function, it should run a function that just goes through the list of potential ports and asks who is the master
- If a “non-master” server starts being talked to by a client, it just returns an error forever - prevents the issue of having two masters
- Decided if a commit attempt errors out when talking to a port, we just assume they died
    - Remove them from active_ports
- We decided to implement heartbeat messages/health check let everyone know if someone is dead