PingPong

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Goal

- Build a lightweight application that allows two clients to communicate both ways
  - Real-time text chat
  - File transfer
- Demonstrate concepts of TCP sockets, framing, and basic application protocol design

Reason

- Something like Discord, Slack, etc
- Applies class concepts
  - TCP
  - Framing and Protocols
  - Error detection
- Hands-on socket programming experience for future large projects

Tools

- Python
  - Socket (client/server networking)
  - Threading (multiple clients)
  - Json
  - Hashlib (file integrity)
- Wireshark (to inspect TCP packets and confirm reliability)

Timetable

- Sept: Topic approval + simple two-way chat
- Oct: Add file transfer + logging
- Nov: Testing, protocol polish
- Dec: Final demo, report draft

Deliverables

1. Source code
    a. server.py → handles multiple clients, relays chat, manages file transfer
    b. client.py → connects to a server, sends/receives chat + files
    c. protocol.py → helper functions for framing, checksums, JSON headers
    d. Well-structured repo
2. Executable demo
    a. Two clients chatting in real-time
    b. Sending a file from one client, receiving intact at the other
    c. Wireshark capture showing TCP handshake, etc
3. Documentation
    a. README.md
    b. Design document
    c. Final report

Closing

This project will show how 2+ clients can talk, share files, and verify integrity using concepts learned in this class