Networking Project Proposal

CSE 3101 - Computer Networking

Project Title: Group-Chatting

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1 Objectives & Motivation

The objective of this project is to create a multi-client chat application that allows multiple clients to connect to a server and communicate with each other in real-time. Additionally, the project aims to incorporate a file-sharing feature, enabling users to share files such as PDFs, images, or other documents. The motivation behind this project is to demonstrate proficiency in networking concepts, multi-threading, inter-process communication, and file handling while building a practical and useful application.

2 Technology to be Used

- Language: Python

- Framework: None (will utilize Python's built-in socket library for networking)

- Additional Libraries: None (to keep the project simple and focused)

3 Features to be Built

1. **Server Class**:

    - Listens for incoming client connections
    - Creates a new thread for each connected client
    - Handles client disconnections gracefully

2. **ClientHandler Class**:

    - Handles each client connection
    - Reads messages from the client
    - Broadcasts the messages to all connected clients
    - Manages client disconnections

3. **Client Class**:

    - Connects to the server
    - Sends messages to the server
    - Listens for messages from other clients
    - Handles user input and display of received messages

- Supports file sharing: Allows users to send and receive files during the chat session

4   Networking Concepts to be Used

- Socket Programming: Utilizing TCP/IP sockets for communication between the server and clients.

- Multi-Threading: Employing threads to handle multiple client connections simultaneously.

- Client-Server Architecture: Implementing a client-server model for communication.

5   Prospective Applications of the Project

1. Learning Tool: The project can serve as a learning resource for understanding socket programming, multi-threading, inter-process communication, file handling, and incorporating additional features like file sharing.

2. Collaboration Platform: The chat application can be expanded to support collaborative work environments where users can exchange messages and share files seamlessly.

3. Remote Support: With file-sharing capabilities, the application can be utilized for providing remote assistance and support services where real-time communication and sharing of documents are required.