Team Contract

1. Contract Overview

This contract aims to clarify the roles, responsibilities, and collaboration methods of team members for the development of a real-time communication (IM) software project, ensuring the project progresses smoothly and is completed efficiently.

2. Team Member Information

- 戴　睿
- 李卓枢
- 唐佳晨
- 陈奕帆

3. Goals and Scope

Develop a comprehensive real-time online chat software based on a client-server architecture that enables message transmission between multiple endpoints.

3.1 Message Transmission:

Implement architectures to ensure real-time message delivery, reliability, and temporal consistency.

3.2 User Interaction:

Design a clean and user-friendly UI interface that is intuitive and easy to use.

3.3 Core Features:

- Basic Functionality: Real-time message sending and receiving.
- Read/Unread Status: Indicate whether messages have been read or not.
- History Search: Enable users to search through historical messages.
- Online File Sharing: Allow users to share files in real-time.

4. Roles and Responsibilities

4.1 Project Manager

- Project Planning: Develop and manage the project schedule, including key milestones and deadlines.
- Coordination: Facilitate communication among team members and ensure alignment with project goals.
- Resource Management: Allocate resources effectively and manage any project-related issues or risks.
- Stakeholder Communication: Act as the primary contact point for external stakeholders and project sponsors.

4.2 Frontend Developer

- UI Design: Design and create a user-friendly and intuitive UI that aligns with the project's goals.
- Frontend Development: Implement frontend features including real-time messaging interfaces, message read/unread indicators, and historical message search.
- Integration: Ensure frontend components properly interact with backend APIs.
- User Experience: Conduct usability testing to refine UI/UX based on feedback.

4.3 Backend Developer

- Server-Side Logic: Develop the server-side architecture to support real-time message delivery, reliability, and consistency.
- Database Management: Design and manage the database schema for storing user data, message history, and file attachments.
- API Development: Create and maintain APIs that facilitate communication between the frontend and backend.
- Performance Optimization: Ensure the system can handle high loads and optimize performance for real-time operations.

4.4 Tester and Documentation

- Software Testing: Develop and execute test plans to ensure all features (real-time messaging, read/unread status, search functionality, file sharing) work as intended.
- Bug Reporting: Identify, document, and track bugs and issues; work with developers to resolve them.
- Documentation: Write comprehensive user documentation and technical documentation to support software use and maintenance.
- User Feedback: Gather and analyze user feedback to inform iterative improvements.

5. Implementation Method and Framework

5.1 Development Framework

- Programming Language: C++
- Development Tool: Qt Framework
- Compiler: Use a Qt-compatible compiler (such as MSVC or GCC)
- Build System: CMake for configuring and managing project builds

5.2 Project Structure

- Frontend: Develop the user interface using Qt Widgets or Qt Quick.
- Backend: Handle network communication and server logic using the Qt Network modul Development Framework
- Database: Choose an appropriate database (such as SQLite) and manage it using Qt’ s SQL module.
- Concurrency Handling: Implement concurrent processing and task scheduling using Qt’ s multithreading capabilities.

5.3 Version Control

- System: Git
- Repository: Project code and documentation stored in the team’ s Git repository.

6. Deadlines and Milestones

6.1 First Deadline (11:59pm, Aug 22)

- Team contract (placed in docs/team-contract.pdf)
- Conversation design
- Client-server protocol (placed in docs/design-milestone-1.pdf)

6.2 Second Deadline (11:59pm, Aug 28)

- Concurrency strategy
- UI sketches (paper sketches)
- Testing strategy
- Demo of a working portion of the project demonstrating significant effort in understanding a critical or high-risk area

6.3 Third Deadline (11:59pm, Sep 10)

- Implementation
- Tests
- Testing report
- Revised design
- Individual reflection

7. Problem Solving Mechanism

- **Issue Reporting**: Any team member who identifies an issue should immediately report it to the project manager.
- **Issue Discussion**: The team will hold regular meetings to discuss and resolve issues.
- **Decision-Making Process**: Reach consensus through team discussions; in case of disputes, decisions will be made by voting.