SYSC 4907

Come and Chat(C&C):

Fourth Year Engineering Project Proposal

Carleton University

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1. **Introduction**

**1.1 Purpose**

Instant messaging is an efficient way to deliver information, and today, instant messaging software has become an integral part of our lives. For some of the most famous instant messaging software, such as Discord, WhatsApp and FaceBook Messenger, we enjoy the convenience they offer while occasionally complaining about their shortcomings. This has led us to take a keen interest in such software.

In this project, we will build an imitated, web-based instant messaging software called Come and Chat(C&C). This proposal will outline the proposed plan and objectives to complete a working prototype of the project in early January 2023.

* 1. **Scope**

The C&C will provide mechanisms for signing up/in users, searching users, adding/deleting friends, sending/receiving messages to/from friends, building group chats, recording chat history, and allowing users to post messages as their status, allowing users' friend to see users' status.

More functions could be added after the functions above are implemented. Customized parts are always considered after the procedures above.

**1.3 Definition, Acronyms, and Abbreviations**

Message --- Information in text, image, audio, video, link, or hybrid.

Friend --- A relationship between users that gives both parties a quick link to each other.

Status --- A message posted by a user that the user’s friends can only see.

Chat --- A connection tube between two users.

Group Chat --- A connection tube among three or more users.

The system --- represents the C&C Instant Messaging Software system.

1. **Background**

In order to study the functions and implementation methods of the project, we look for information about discord.

Discord is a chat software. Discord started from game voice and IM tool services, then turned to live broadcast platform, and then opened a community platform for game stores, becoming the preferred tool for game players to communicate and collaborate in games.

According to the discord development log, discord's internal resources include Application, Audit Logs, Auto Modification, Channels, Emoji, Guild, Guild Scheduled, Guild Template, Invite, Stage Instance, Sticker, Users, Voice, and Webhook. Our project also uses chat technology. Some internal resources of discord are helpful to our project. The user object in discord contains a variety of attributes, including id, username, avatar, locale, email and other attributes that we can apply to our own projects. The services for corresponding users include acquiring users, acquiring current users, modifying user information, and acquiring current users' Guilds. Guild object has id, name, owner\_ ID, roles, etc. The corresponding service methods include creating Guilds, obtaining Guilds, modifying Guilds information, deleting Guilds, etc. Object is associated with a database structure.

This information describes the functions and specific implementation methods of discord, and helps us define the basic functions that we need to have when designing projects.

// TODO

1. **Objectives**

**3.1 Functional Requirements**

**3.1.1 Identity and Relationship Functions**

3.1.1.1 Users provide phone number/email address, nickname, and password to sign up for the system.

3.1.1.2 Users provide their phone number/email address and password to sign in.

3.1.1.3 Users can modify their profiles by changing personal information.

3.1.1.4 Users search for other users by phone number/email address/username.

3.1.1.5 A user can apply to be a friend of another user.

3.1.1.6 A user can approve/reject a friend request from another user.

3.1.1.7 A user can delete a friend.

3.1.1.8 A user can create a group chat by inviting friends as group members.

3.1.1.9 A user can leave a group chat.

3.1.1.10 A user, as a group member of a group chat, can invite their friends to join the group chat.

**3.1.2 Communication Functions**

3.1.2.1 Users can only communicate with their friends.

3.1.2.2 Only the user themselves and the friend can see messages in a chat.

3.1.2.3 All users in a group chat can see messages from all users in the group chat.

3.1.2.4 A user can view the chatting histories of chats and group chats.

3.1.2.5 Users can send text, image, audio, video, link, or hybrid-type messages in chats.

3.1.2.6 Users can only see their own and their friends' status.

3.1.2.7 Users can write text as comments to status.

3.1.2.8 Users can post text, image, audio, video, link, or hybrid-type messages as their status.

**3.1.4 System Scheduling**

3.1.4.1 The system shall use the MVC model.

**3.2 Page Requirements**

3.2.1 The list shows all friends' chats, and group chats should exist the whole time after signing in.

3.2.2 Signing in/up page should be a separate page from the chatting pages.

3.2.3 The avatar list of all users in a group chat should be shown when users are in a group chat window.

3.2.4 All messages sent by a user should appear with their avatar simultaneously.

**3.3 Performance Requirements**

3.3.1 Any operation on the website should be performed in 5 seconds.

**3.4 Design Constraints**

3.4.1 The system shall be usable at least on Chrome.

3.4.2 The system shall support PC and mobile.

3.4.3 The system must comply with the relevant privacy legislation.

**3.5 Software Quality Attributes**

3.5.1 Users can only see messages in chats between themselves and their friends and the group chat they joined.

3.5.2 Users can only view the history of messages that they can see.

3.5.3 The system can be remotely accessible to all users.

3.5.4 The system shall protect all users' information.

**3.6 Other Requirements**

3.6.1 The hard deadline for the system is the end of April of next year for project completion.

**3.7 Measurability**

When all 3.1 (Functional requirements), 3.2 (Page requirements) and 3.6 (Other requirements) are met, the project is primed for completion. When 3.3 (Performance requirements), 3.4 (Design Constraints) and 3.5 (Software Quality Attributes) have been completed, the project has been fully completed. If extra functions are added the project is considered to be over-completed.

1. **Individual Mission Statements**

**4.1 Yunzhou Liu**

In this graduation project, I was mainly responsible for the back-end part of the project. The back-end part includes the creation and maintenance of databases. For the instance associated with the database, the instance properties need to correspond to the database fields in order to retrieve the database records. The back end also includes the service layer, whose main function is to integrate database operations, such as adding, modifying, deleting and searching data.

In proposal, I wrote part II Background, part V Relation to Degree Program, part VI Plan, and part VIII Risks and Mitigation.

**4.2 Shizhong Shang**

In this project, I will focus on the front-end. The front-end is support by the back-end and contains the transfer data from the database, decide the site layers, and UI design. Such as make our function easy enough to use, understandable for all the users and looks clear and peaceful.

In this proposal, I wrote section 6 - Plan, 8 - Risk and Mitigatin, 9 - Conclusion and all subsections with my name as the title.

**4.3 Zirui Qiao**

In designing, my job is to lead our team to think and establish the general structure of our project. In development, I will be the connecting hub between the front-end and back-end. I will help my teammates with their work if any of them are too busy to do their part of the project development. In testing, my responsibility is to create the performance tests and record the results.

In this proposal, I wrote section 1 - Introduction; section 3 - Objectives; section 7 - Timetable and all subsections with my name as the title.

1. **Relation to Degree Program**

**5.1 Yunzhou Liu (the group formet)**

My major is computer system engineering. I learned the basic programming languages java, python and c. The back-end part I am responsible for in the project is written in the java language. I also learned about database structure, which can be applied to the creation of project databases.

I learned sysc3020, which introduces the structure of software engineering, which helps me build the overall structure of the project. The various drawing techniques I used in the project, such as uml diagrams, and the hierarchical knowledge required for a complete project come from this course. In the two courses of SYSC 3303 and SYSC 3310, I learned about real-time systems, which can help me solve the concurrent problem of multiple people sending messages at the same time in the project. Sysc4801 taught about security issues in information transmission. I will use this knowledge to ensure the safety of information transmission in the project. Ecor2050 and ecor4995 have taught me the processes and specifications to pay attention to when making projects.

**5.2 Shizhong Shang**

I am major in Software Engineering, which mainly studying program designing, programing and communication skills. In the final project, we will use HTML, CSS and JS to build the front-end of this web app, and the back-end is java based, the database is built with MYSQL and Redis.

I’ve learnt java code from SYSC 2004, SYSC 3110 and SYSC 4806, these three courses teaches java code. In SYSC 3110, we are divided into groups to do a game project, it will helps as with scheduling and team working. In SYSC 4806, I chose a online servy as the project, it will help us with the using of database, HTML, CSS and JS.

SYSC 3120 and SYSC 4106 will help us with the beginning of the designing of this web-app, such as the structure, use cases and the diagrams. And by digging into the project, we will get a better understanding of how to organize this project and doing the risk management.

CCDP 2100 has trained us how to communicate with each other especially the team members are from different background.

**5.3 Zirui Qiao**

My major degree is Software Engineering which taught me about programming skills, data structure and, most important - project management. In this project, we will build the front-end part with Vue3, the back-end part with Java and the database part with MYSQL and Redis.

I learned about Java and used it as a tool to build projects in SYSC2004, SYSC3110 and SYSC3303. These courses helped me build a firm base for Java which would be very helpful in this project. SYSC2100 taught me about data structure and algorithms, and COMP3005 taught me about the operation of Databases; these two courses will reduce the hindrance in database development. The design and management of a project are always essential, SYSC3120 and SYSC4106 are great courses, and I will practice the knowledge in this project. This semester, SYSC4101 is a course on software validation, and I believe I will use what I have learned in this class in this project.

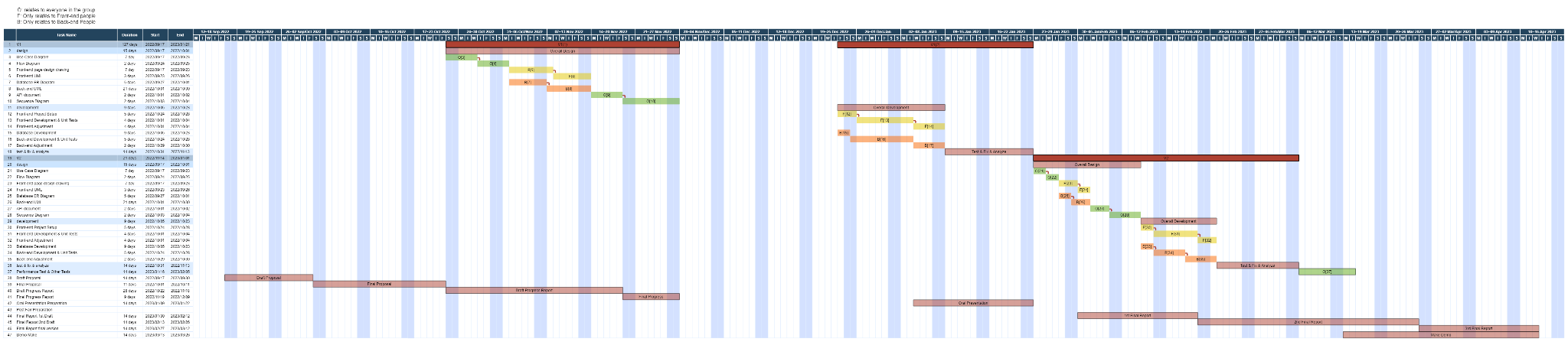
Communication skills can be easily overlooked, but with the help of CCDP2100 and ECOR4995, I am aware of the importance of communication skills and will apply them in this project.

1. **Plan**

// shizhong shang & yunzhou liu

1. **Timetable**

The timetable can be divided into 2 parts, version 1 and version 2. Version 1 will be completed before Jan 22, 2023, and version 2 will be completed before Mar 14, 2023.



1. **Risks and Mitigation**

// shizhong shang & yunzhou liu

1. **Special Equipment Required**

One or many servers are required for this project.

1. **Conclusion**

C&C is aimed to build a public, fun, peace and attractive web communication tool for everybody. People can upload everything with no worries, and talk to friends or stringers to have some good time. To achieve this goal, we will build C&C from basic functions: texting, grouping, muit people, delete people and dending pictures. After that, we will find some way to make strangers able to talk to each other, so people can have a chance to know more people. C&C might also add some functions that can let users able to do their own diary, and show out their life.

**Reference**