

# High-Level Design Document

C<sup>3</sup>U



---

Group A1

Version 1.0.0

Chen Hing Chin 1155174447

Du Fangzhou 1155173892

Gao Jiaqi 1155157043

Li Peiran 1155174020

Zhou Jieya 1155173741

Date: 01/02/2024

CSCI3100

Department of Computer Science and Engineering

The Chinese University of Hong Kong

## Table of Contents

<u>1. Introduction.....</u>	<u>3</u>
<u>1.1 Project Overview.....</u>	<u>3</u>
<u>1.2 System Features.....</u>	<u>3</u>
<u>1.2.1 User Authentication.....</u>	<u>3</u>
<u>1.2.2 User Profile.....</u>	<u>3</u>
<u>1.2.3 User Interaction.....</u>	<u>3</u>
<u>1.2.4 Post.....</u>	<u>4</u>
<u>1.2.5 Admin User.....</u>	<u>5</u>
<u>1.2.6 Search.....</u>	<u>5</u>
<u>1.2.7 Recommendation.....</u>	<u>5</u>
<u>2 System Architecture.....</u>	<u>6</u>
<u>2.1 Technologies.....</u>	<u>6</u>
<u>2.2 Architecture Diagram.....</u>	<u>6</u>
<u>2.3 System Components.....</u>	<u>7</u>
<u>2.3.1 Admin User Interface.....</u>	<u>7</u>
<u>2.3.2 Login Interface.....</u>	<u>7</u>
<u>2.3.3 User Menu Interface.....</u>	<u>7</u>
<u>2.3.4 Private Chat Interface.....</u>	<u>7</u>
<u>2.3.5 Post Interface.....</u>	<u>7</u>
<u>2.3.6 Search Interface.....</u>	<u>7</u>

## **1. Introduction**

### **1.1 Project Overview**

C<sup>3</sup>U is a content-oriented web application whose name stands for “Conveniently Connect and Communicate with U”. C<sup>3</sup>U offers a diverse range of features that seamlessly integrate social networking and content creation. The features of C<sup>3</sup>U include user authentication, user profile, user interaction, post, admin user, search and recommendation. Beyond the fundamental functions of the social application, the software also prioritizes enhancing the user experience through personalized recommendations and user privacy protections. These additional features contribute to a more enjoyable and secure user community on C<sup>3</sup>U.

### **1.2 System Features**

#### **1.2.1 User Authentication**

i. Register:

Users can create an account by providing an email address, a password and a nickname.

ii. Login and LogOut:

Registered users can log in with their email address and password. Users can log out after login.

iii. Reset Password:

If a user forgets their password, they can request a password reset by typing in the verification code sent to their email box, after which they will be able to set a new password.

#### **1.2.2 User Profile**

i. Profile Display:

Each user has a profile page showing their nickname, avatar, bio and other personal information. Recent posts of the user will be shown below, along with their personal information.

ii. Profile Modification:

A newly created account will have a default profile picture with other information remaining empty. Users can upload their profile pictures and edit their personal information on the settings page.

#### **1.2.3 User Interaction**

i. Private Messaging:

Private Messaging allows users to message other users directly in a secure and private chat room. Users can enjoy one-on-one conversations, share information, and post efficiently. This real-time seamless discussion can be carried out with a single button press. In addition, users can only send one text message to a stranger (non-friend) a day until they receive a reply from the other side.

ii. Social System:

The Social System allows users to send friend requests or follow others' profiles. Followers will receive timely updates on posts and blog releases from the users they follow and from their friends. In addition, there are no limitations on private messaging between friends.

v. User Interaction History:

The interaction history maintains a list of records of users' interactions. Including friend requests, messages received, and new followers.

iv. User Interaction Analytics:

The analytics could provide insights into user patterns and preferences based on application browsing history and user interaction history. It will enhance the understanding of your post viewers' and followers' backgrounds and interests, let the creator proceed with content strategy, and collect data for decision-making.

v. Notifications:

When there are new messages, friend requests, or any relevant user interactions, a push will be sent to your phone or email, ensuring users stay informed with important information and respond to them on time.

vi. Blacklist:

Users can block or report other users to prevent any further interaction. When someone is on your blacklist, he/she cannot view your profile and post, send friend requests, follow you or send messages.

#### **1.2.4 Post**

i. Post :

Users can publish posts that allow them to share a range of content, such as text, photos, and videos. Once a post is published, users can review their posts on their home page, where the posts are organized in reverse chronological order. Past posts are editable and erasable by users.

ii. Like and Comment:

All posts will have a "like" button in the bottom right corner. Users can express their approval or favoritism of the post by clicking this button. Our web page will keep track of how many times a post has been "liked" and display it next to the "like" button. Additionally, users can comment below the post. These comments posted below the post can be commented on again by other users.

iii. Repost:

Users can repost other user's posts on our webpage. When reposting, users can choose to include their own comments on the original post. After a post has been reposted, it will appear on the repost author's homepage until the original owner of the post deletes it.

iv. Privacy Settings:

Posts are published publicly by default, but users have the option to adjust the privacy settings. They can choose to make posts visible only to the owner, only to followers, only to specific users, or hide them from certain users. Additionally, users can modify the visibility of their posts even after they have been published.

v. Tags:

Users can add tags to their posts when publishing them. They can select already-existing tags or make new ones. Adding tags helps users' posts to be discovered by more interested users and increases the exposure of the posts.

#### **1.2.5 Admin User**

##### **i. View Posts:**

The Admin user can access and view all posts, including their contents and associated details such as the post's timestamp, the author of the post, and their comments.

##### **ii. Delete Posts:**

After reviewing posts and comments, the Admin user will decide whether to display them publicly. If the content is found to violate the user policy, it will be deleted.

##### **iii. View Users:**

The Admin user can access all user's personal information and further manage the users.

##### **iv. Block Users:**

The Admin user has the authority to block the account if any of the following content violates the user policy: posts, comments, or conversations among the users. A blocked account can still log in, but the user won't be allowed to create posts and comments or engage in chat.

##### **v. Unblock Users:**

When a user disagrees with the blocking, they can object. If it is found that there was an error in the blocking, the account will be unblocked, restoring its normal function. Besides, after the completion of the specific discipline, the account will also be unblocked.

##### **vi. Delete Users:**

When the prohibited behavior exceeds the threshold, or a user voluntarily deactivates the account, the account will be permanently deleted. All content associated with the account, such as posts, comments, and other contributions, will be removed, and the account will no longer be accessible.

#### **1.2.6 Search**

##### **i. Search Users:**

This search function will be used to find the specified accounts. Users can retrieve the relevant user by entering their name, ID, and other key information.

##### **ii. Search Posts:**

This function enables users to search for relevant posts based on keywords, tags, posters, posting time, etc. The search results will be prioritized based on specific characteristics, such as recency or popularity. Additionally, the search history can be saved.

##### **iii. Trend:**

This feature can automatically display the current trending topics when users search.

#### **1.2.7 Recommendation**

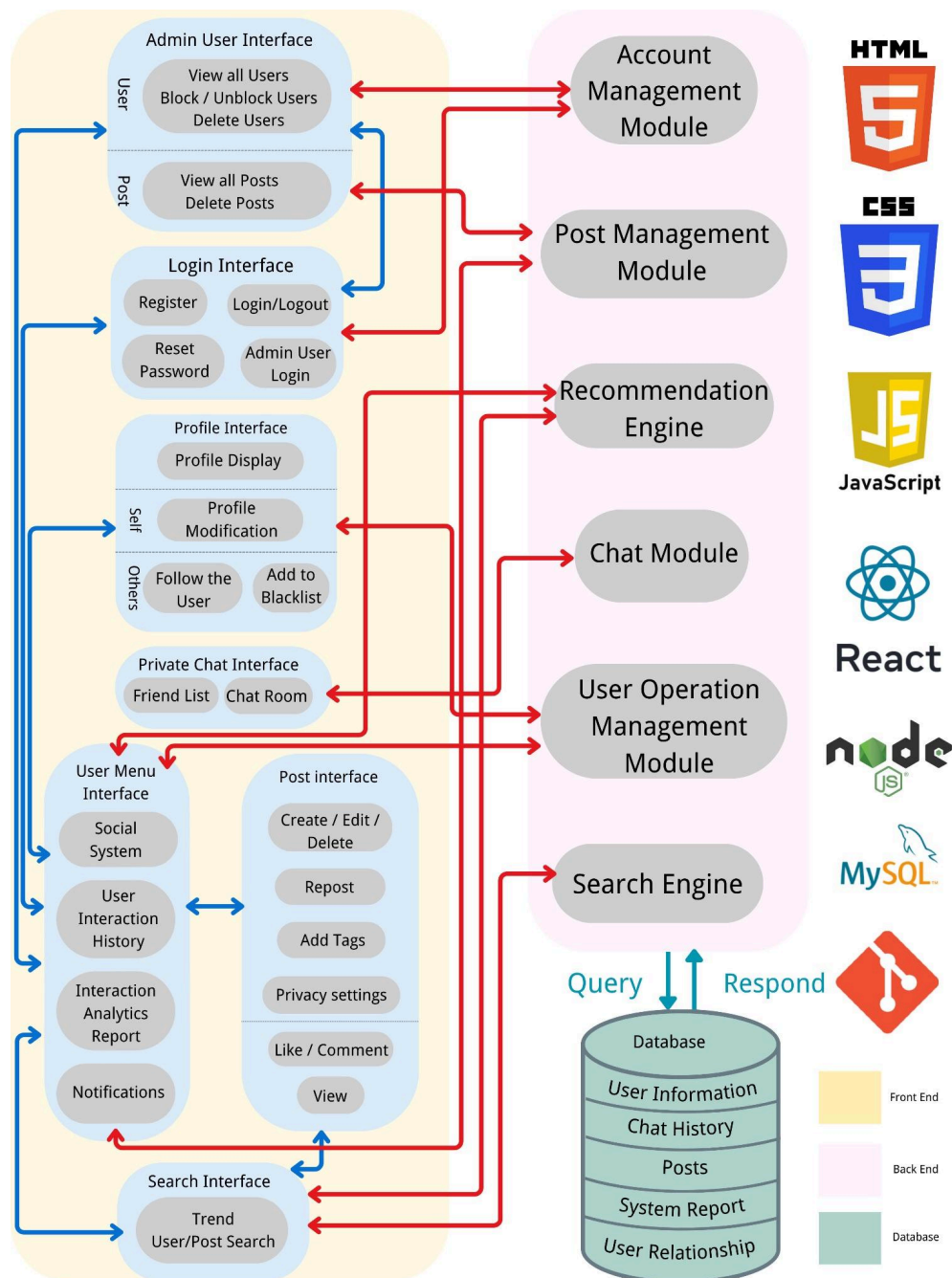
This feature is specifically tailored to cater to individual users' needs. By analyzing users' search history, reading history, and frequency of liking posts, their preferences can be predicted.

## 2 System Architecture

### 2.1 Technologies

The adopted technologies in this program include HTML, CSS, JavaScript, React, Node.js, Express, MySQL and Git. For the front end, we use HTML, CSS, JavaScript, and take React as the framework. For the back end, we use Node.js as the runtime environment, Express as the framework, and MySQL for database management. In addition, Git is used for version control.

### 2.2 Architecture Diagram



## **2.3 System Components**

### **2.3.1 Admin User Interface**

Admin User Interface manages posted content, including posts, comments, and chatting, which is supported by Post Management Module views and deletes content. In addition, the Admin User Interface will manage all registered users. The account management module in the back-end will block/unblock or delete the users.

### **2.3.2 Login Interface**

The login interface has register, login, and admin user login functions. The operations will be processed by the account management module, which will interact with the user information database table to add accounts and authenticate users' credentials.

### **2.3.3 User Profile Interface**

The user profile interface displays users' information, which allows users to edit their own profile and follow or block other users on others' profile pages. The operations are conducted by the user operation management module on the server side. The information of users and their relationships are stored in the user information table and the user relationship table in the database, respectively.

### **2.3.4 User Menu Interface**

The User Interaction component of our application focuses on pushing communication, connection and engagement between users. It connected to the backend modules User Operation Management Module, Recommendation Engine and Post Management Module. These features are crucial in establishing a dynamic user community in our application.

### **2.3.5 Private Chat Interface**

The Private Chat Interface connects to the backend Chat Module, providing a secure and private one-on-one conversation environment. This feature enhances communication and deeper connections between users.

### **2.3.6 Post Interface**

The post interface allows users to post, repost, comment, add tags, and set privacy settings for a post. On the front end, it has connections with the user menu interface and search interface. The post management module on the back end will support all the actions related to the posts.

### **2.3.7 Search Interface**

The Search Interface allows users to discover trends and search for topics and users that align with their interests. It will connect with both the post interface and user menu interface in the front end. The Search Engine and recommendation Engine from the band end will support this search action.