

# CSC3170-report

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## 1 Cover page

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## 2 Project Abstract

In an era marked by digital interconnectedness, individuals seek innovative ways to chronicle their lives and share experiences with friends and family. The advent of multimedia diaries on the web has revolutionized personal storytelling, blending textual records with vivid images to create a rich tapestry of memories. This research delves into the intricate design considerations of a web-based platform dedicated to diary keeping and memoir sharing, where text records and photos constitute the primary data elements. The challenges lie not only in structuring this diverse data set but also in implementing essential functionalities such as adding, deleting, editing, and searching records. A pivotal aspect of this research focuses on the development of a robust database architecture to seamlessly manage user-generated content. Fundamental questions arise regarding the organization of data, including the incorporation of user names, unique identifiers, record timestamps, comments, and more. The effectiveness of queries, ranging from routine tasks like adding and editing entries to advanced operations such as content search, stands as a critical element in the user experience. Beyond the basic functionalities, this paper investigates the complex realm of access control. Determining who can view specific records and contribute comments introduces an intricate layer of security and privacy considerations. Crafting an access mechanism that strikes a balance between openness and user control is pivotal to fostering a sense of community while respecting individual boundaries. In the advanced stages of exploration, the research extends into leveraging existing technologies and techniques to enhance the diary-keeping experience. This includes the application of database algorithms, such as those found in graph databases, to optimize search speeds. Additionally, considerations are given to secure and efficient data storage in the cloud, acknowledging the potential enormity of multimedia content generated by users. The paper also contemplates automatic summarizing techniques to categorize and organize diary entries, streamlining the retrieval and analysis of content.

### 3 The background

#### Objectives and Deliverables

The primary objective of the proposed database project is to create a comprehensive web platform for diary and memoir management. The key deliverables include:

1. Diary/Memoir Management System: Develop a user-friendly system that allows users to create, edit, delete, and search for diary entries or memoirs.
2. Multimedia Integration: Enable users to enrich their entries with text and photos, providing a more immersive and expressive experience.
3. User Authentication and Authorization: Implement a robust user management system that ensures data privacy and security. Define access permissions to control who can view, comment, and interact with each user's records.
4. Database Structure and Queries: Design and implement the database structure to efficiently store user information, diary entries, photos, comments, and other relevant data. Develop queries for common operations such as adding, deleting, editing, and searching entries.
5. Advanced Features: Explore advanced database techniques, such as using algorithms (e.g., graph database) to speed up searches. Consider cloud storage for secure storage of large data. Implement automatic summarization algorithms to classify and summarize diary entries.
6. Web/User Interface: Create an intuitive and visually appealing web interface that facilitates easy interaction with the diary/memoir management system.
7. Testing with Real Data: Conduct thorough testing with real data to ensure the system's reliability, performance, and user satisfaction.
8. Documentation and Reporting: Provide comprehensive documentation detailing the project's design, implementation, and testing. Prepare a report and presentation summarizing the project's goals, achievements, and future possibilities.

#### Significance, Benefits, and Impacts

- Personal Expression: The project enables individuals to express themselves through diary entries and memoirs, fostering self-reflection and creativity.
- Connectivity: Facilitates sharing memories with family and friends, enhancing social connections and preserving meaningful moments.

- Practical Application: Offers a real-life application of a well-designed database system, showcasing the practicality and versatility of database technologies.

## **Review of State-of-the-Art Technologies**

Existing technologies in the field of diary and memoir management include various journaling apps and personal blogs. However, these often lack the comprehensive features and customization options that the proposed project aims to provide. The reference books explores advanced techniques in multimedia database systems. By delving into adaptive image retrieval and kernel-based methods, this source guides the incorporation of multimedia components into our diary management system. The goal is to offer users a more immersive and expressive experience by seamlessly integrating text and multimedia elements. Additionally, advancements in database management systems, web development frameworks, and cloud storage solutions will be considered to incorporate the latest and most efficient technologies into the project. Techniques such as graph databases for efficient relationship representation may be explored in the advanced stages of the project.

## 4 System description

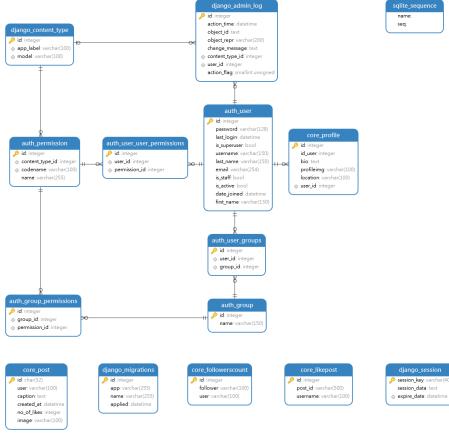


Figure 1: Enter Caption

This system mainly takes advantage of the relationship between users and posts to realize the functions.

registration

Any user can register an account in our system. He needs to initialize his account and passcode at the first time. Then he can log into our system with the account and his passcode.

release posts

After logging into the system, the user can release the posts. The post can be pictures, words, or both of them. As a result, the post can have three different types: picture, word, and mixed. follow user

The user can choose to follow other users so that he can see their posts in the home page. It is efficient for the user to follow the latest posts of those users that he cares about.

comment

The user can comment on the posts in the post area, as the form of words. Besides, they can decide whether to give a like to the post.

## 5 The implementation of the system

### Functional Requirements

#### User Authentication

System must support user registration, login, and profile management, as indicated by `auth_user` and `auth_user_groups` tables.

#### Content Management

Capability to handle user-generated content, as suggested by the `core_post` table, including posting, editing, and deleting content.

#### Social Interactions

Features for following users (`core_followers count`), liking posts (`core_like post`), and user group management (`auth_group`, `auth_group_permissions`).

#### Permissions and Security

Managing user permissions and roles (`auth_permission`, `auth_user_user_permissions`).

### Non-Functional Requirements

#### Scalability

Ability to handle increasing amounts of data and users.

#### Security

Protecting user data and ensuring privacy compliance.

#### Performance

Ensuring fast response times and efficient data handling.

#### Usability

User-friendly interface and easy navigation.

## **Data Requirements**

**Handling large volumes of textual and multimedia content**  
(posts, images).

**Ensuring data integrity and consistency across various tables**  
**Efficient data retrieval and storage mechanisms**

## **Resource Identification**

### **Hardware**

Servers for hosting the application and database, storage systems.

### **Software**

Development tools, database management system (mySQL), back-end and front-end frameworks.

### **Human Resources**

Project manager, developers, database administrators, security experts, quality assurance testers.

## **Database Design Summary for Personal Diary System**

### **Overview**

The schema is designed with MySQL, reflecting a lightweight and efficient approach suited for handling the data needs of a personal diary application.

### **Key Tables and Their Roles**

#### **auth\_user**

Manages user information, including credentials, personal details, and login activity. Supports authentication and user profile management.

### **auth\_group and auth\_group\_permissions**

Define user groups and manage permissions, allowing for role-based access control. Essential for implementing administrative roles or grouping users with common privileges.

### **core\_post**

Central to the application, storing individual posts. Holds information about the post content, author, creation date, like count, and associated images.

### **core\_profile**

Extends user information, allowing users to add personal bios, profile images, and location details. Enhances user engagement by personalizing user profiles.

### **core\_followers\_count and core\_like\_post**

Enable social interactions; `core_followers_count` manages user relationships (followers), and `core_like_post` tracks likes on posts. Facilitates community building and user engagement within the platform.

### **auth\_user\_groups and auth\_user\_user\_permissions**

Manage the association between users and groups and between users and specific permissions. Provide fine-grained control over user access and capabilities within the system.

## **Various Administrative Tables**

(`django_admin_log`, `django_content_type`, `django_migrations`, `django_session`) Handle administrative tasks, content type management, session tracking, and migration records. Essential for maintaining the integrity, security, and smooth operation of the system.

## 7 System description

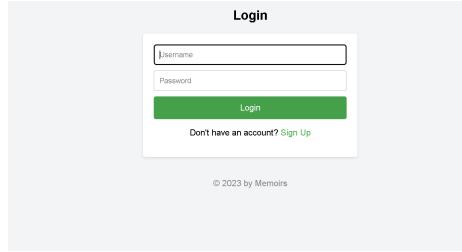
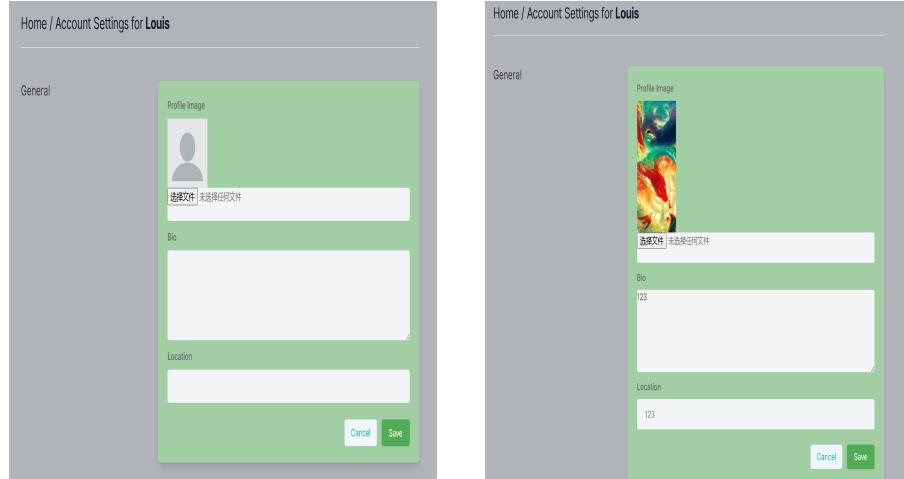


Figure 2: Enter Caption



## 6 The testing of the system

We test our system and it can run smoothly. Here are the testing results of each function.

log in user interface

When a user tries to log into the webpage system, he will be required to enter his username and password, like what is shown below. If he doesn't have one, he can click on sign-up to register an account.

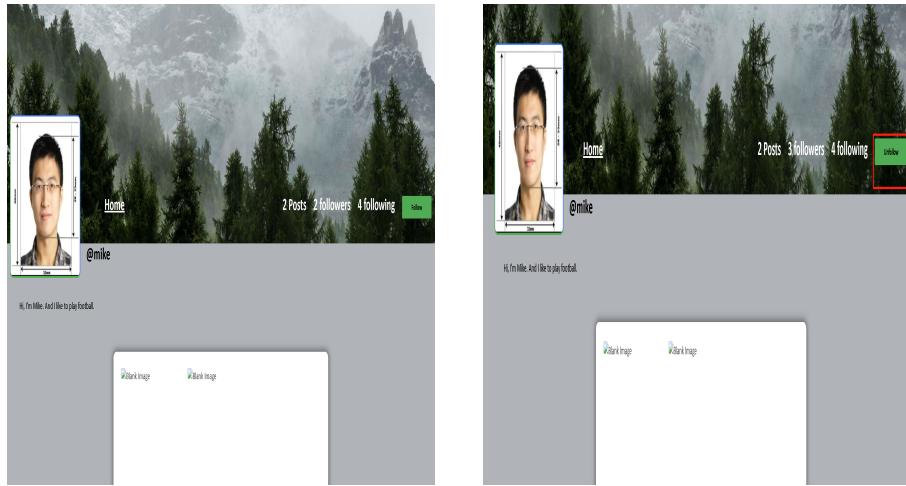
profile edition

After logging in, a user can edit his profile and add his biography and location. The results is like the following. home page//

user following

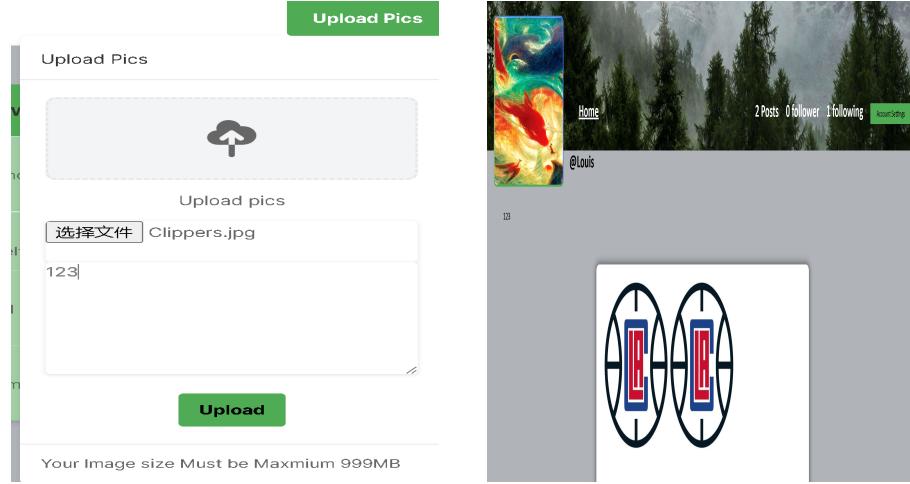
## 8 System description

Figure 3: Enter Caption



A user can choose to follow another user, with the results as follows.  
upload posts

A user can upload the posts with pictures, with the results as follows.



## 9 Conclusion and future work

Our research project focused on developing a web-based platform for diary-keeping and memoir-sharing by combining textual and image records to create a vivid storytelling experience for the user. The project explores the design considerations and implementation challenges associated with structuring diverse data sets and implementing essential functionalities such as adding, deleting, editing, and searching records.

The proposed project enabled users to create, edit, delete, and search for entries while integrating multimedia elements. User authentication and authorization systems ensure data privacy and security, while a well-designed database structure and optimized queries enhance system efficiency. The project also focuses on an intuitive web interface, thorough testing with real data, and comprehensive documentation.

In the future, there are several avenues for further development and enhancement of the project. This includes incorporating video post functionality, enabling users to share their experiences in a more immersive manner. Improving search efficiency through advanced algorithms and techniques would enhance the user experience, making it easier to find specific diary entries or memoirs. Additionally, implementing the option for users to set a visible range for their posts would provide them with greater control over the visibility and privacy of their content, ensuring a tailored sharing experience.

## 10 References

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