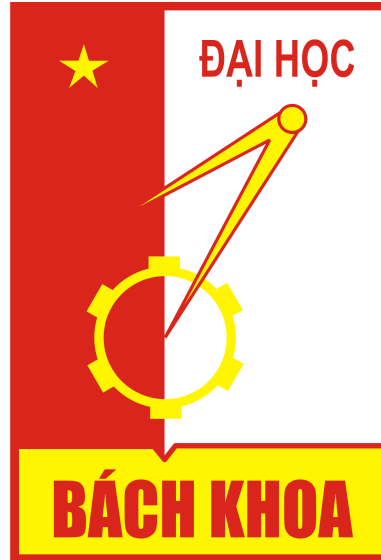


**HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF INFORMATION TECHNOLOGY AND  
COMMUNICATION**

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**PROJECT REPORT**

**Web Programming**

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**Ha Noi, July 2023**

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# CHAPTER 1. INTRODUCTION

## 1.1 Motivation

A blog website serves as a multifaceted platform allowing individuals to share their knowledge, expertise, and experiences, providing education and inspiration to readers. Additionally, it helps establish an online presence and personal brand, enabling professionals to showcase their skills and portfolio while demonstrating expertise in a specific field. Simultaneously, a blog website can serve as a creative outlet, allowing individuals to express ideas and opinions through different mediums. Furthermore, it offers potential income generation opportunities through monetization strategies such as advertisements, sponsored content, and affiliate marketing. Lastly, a blog website facilitates networking and collaboration, connecting individuals with like-minded bloggers, industry professionals, and fostering a supportive community. Overall, the creation of a blog website encompasses these motivations, making it a versatile platform for personal and professional growth.

## 1.2 Objectives and scope

The objective of our small blog website is to provide a focused platform that offers valuable and concise content to our readers within a specific niche or topic. With a limited scope, we aim to curate and present high-quality articles that cater to the specific interests and needs of our target audience. By delivering informative and engaging posts, we strive to establish ourselves as a reliable source of knowledge and insights within our niche, fostering a sense of community and facilitating meaningful discussions among our readers. Through our user-friendly interface and interactive features, we aim to create an inclusive space that encourages active participation and engagement, ultimately enhancing the overall user experience and establishing long-term reader loyalty.

## 1.3 Tentative solution

Our blog website aims to utilize the combined potential of Node.js and React.js to create an innovative and efficient platform. By leveraging Node.js for server-side rendering, we can optimize data processing and enhance the website's performance, ensuring faster loading times and improved responsiveness. The use of React.js will enable us to build a highly interactive and dynamic user interface, allowing for seamless navigation and an engaging browsing experience. Additionally, we plan to integrate various plugins and libraries compatible with Node.js and React.js to enhance the website's functionality, such as content management

systems and social media integrations. Through the implementation of this tentative solution, we aim to deliver a modern, feature-rich blog website that offers a smooth and captivating user experience while leveraging the strengths of Node.js and React.js.

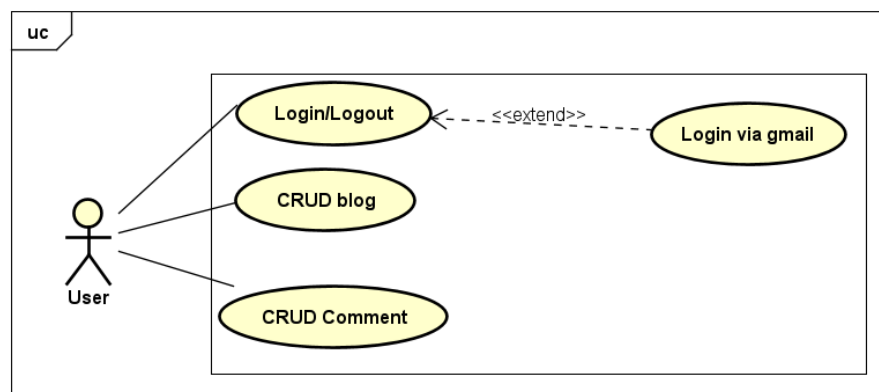
## CHAPTER 2. REQUIREMENT SURVEY AND ANALYSIS

### 2.1 Functional Overview

The main functions of our application include:

- Sign up and login
- CRUD blog
- CRUD comment

### 2.2 General use case diagram



**Figure 2.1:** General use case diagram of Application

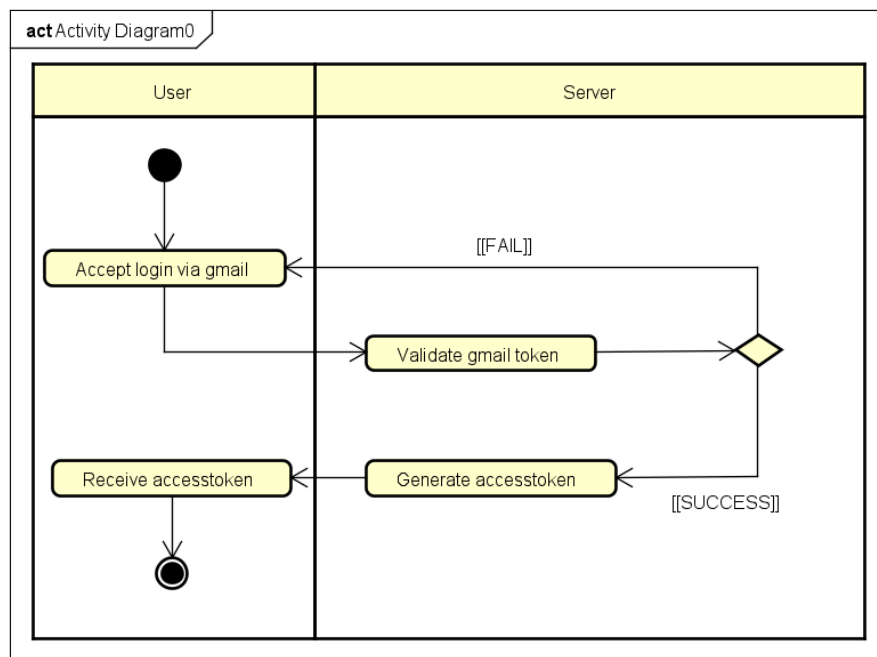
The application's use case diagram illustrates the main functionalities and interactions between two key actors: the users (humans) and the system. The users interact with the application through various use cases, and the system handles their actions accordingly.

### 2.3 Functional description

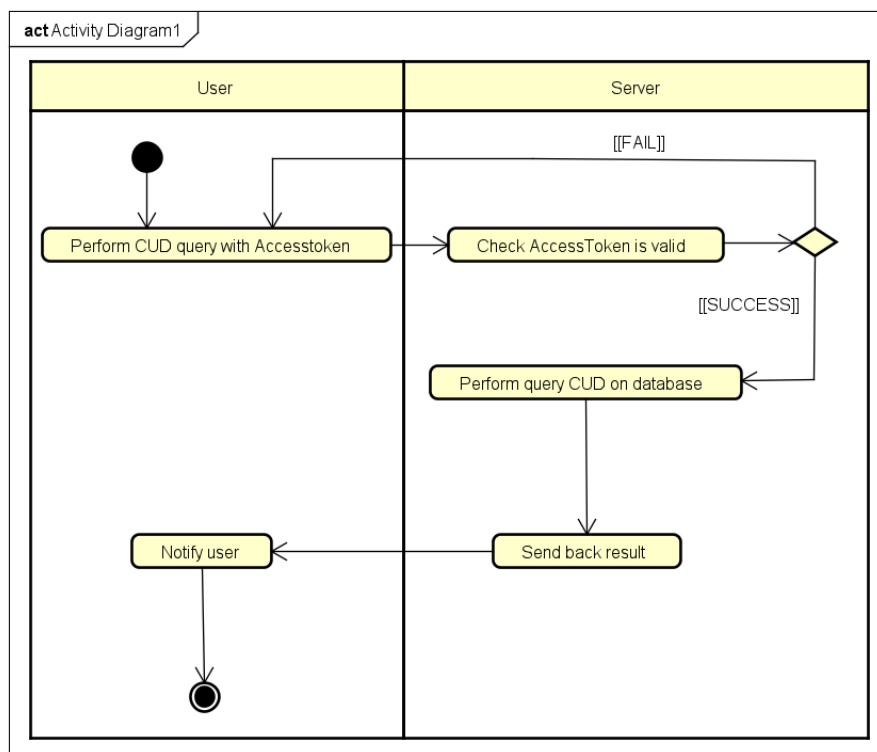
#### 2.3.1 Description of use case Login

Initially, user input username and password to login normally. Server will check valid input and send back the AccessToken. User can then use the AccessToken to query any thing in the server.

User can also choose to login via gmail. The UI will popup a new window for them to accept login.

**Figure 2.2:** Usecase Login

### 2.3.2 Description of use case CRUD Blog

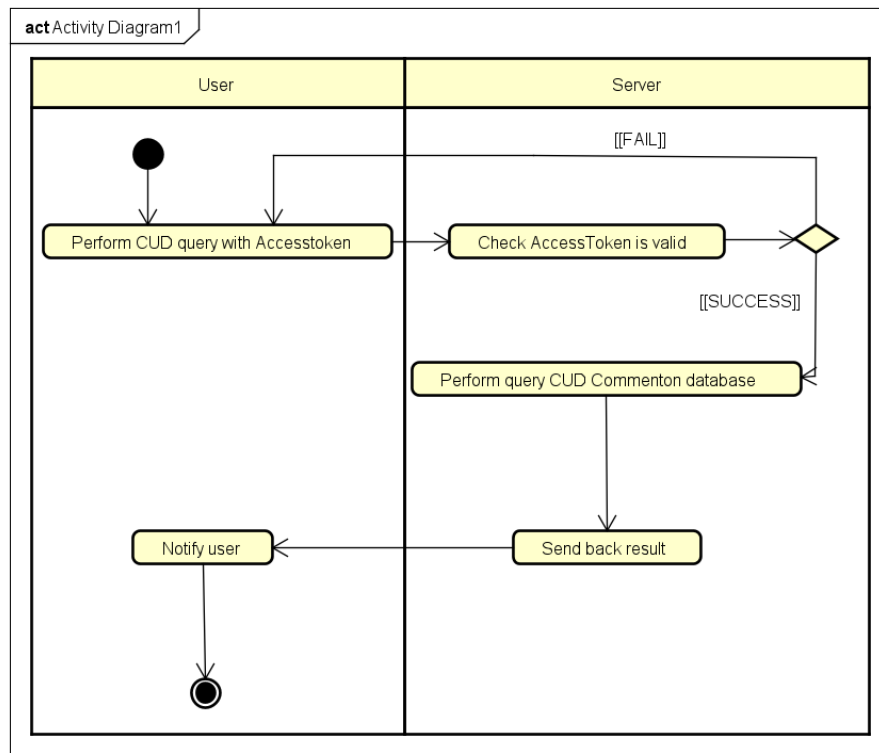
**Figure 2.3:** Usecase CUD Blog

For reading blog, user need to access the website and everyone can get blog from server, which would query from database. There no needs to make authentication. For CUD blog, user need to query with Accesstoken, server will check token, perform query in database and then notify the result

### 2.3.3 Description of use case CRUD Comment

For reading comment, user need to access the website and everyone can get comment from server, which would query from database. There no needs to make authentication.

For CUD blog, user need to query with Accesstoken, server will check token, perform query in database and then notify the result



**Figure 2.4:** Usecase CUD Comment

## **CHAPTER 3. PROJECT SOLUTION**

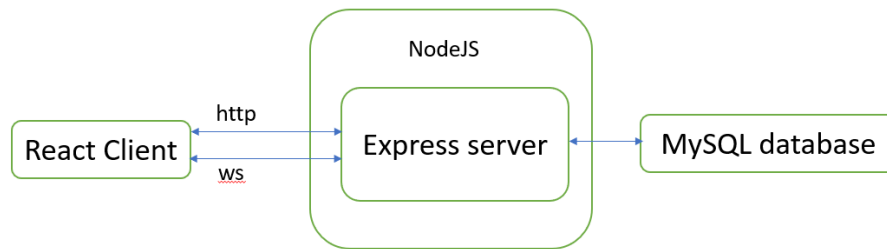
In our methodology, we develop a secure and efficient blog website using the Nodejs framework for back-end. Clients can login via Gmail using Firebase third-party. We also use JWT for login with username and password, which is popularly secure. NodeJS also enable large number of user access server simultaneously without losing performance. React is also an CSR library which is fast and high performance.

When creating a blog, user may post image with large file size. So we use Cloudinary third party to store the image faster. We also use Nodemailer to enable sending email function and SocketIO for connecting socket between client and server, which enable real-time data update.



## CHAPTER 4. ARCHITECTURE DESIGN

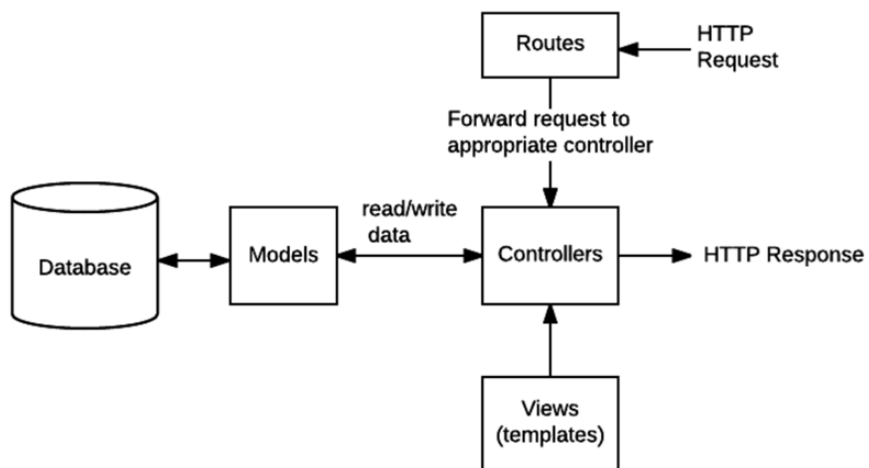
### 4.1 System Architecture



**Figure 4.1:** General Architecture

In client side, we also use socket IO for users to receive blog reaction in real time. So there are two connection with server: http and ws

### 4.2 MVC Architecture



**Figure 4.2:** MVC Architecture

### 4.3 Class Design Architecture

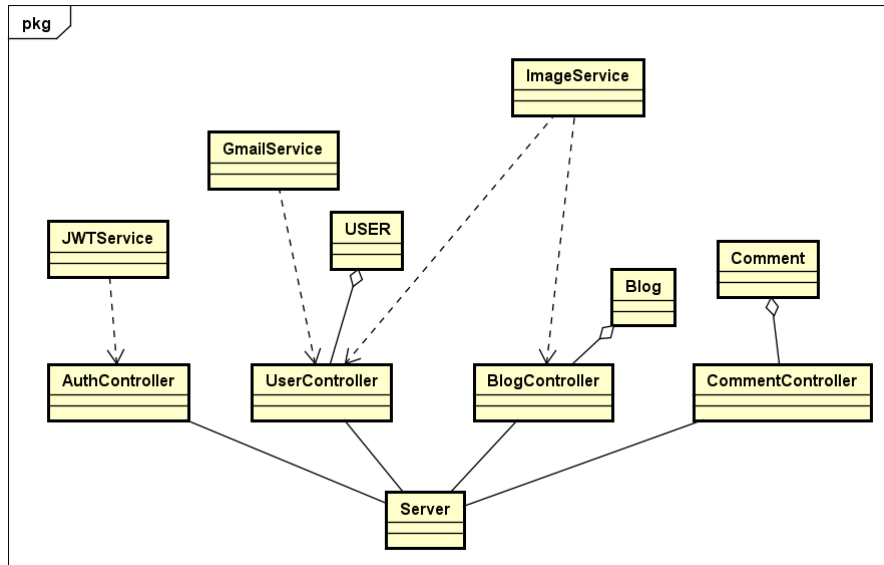


Figure 4.3: Class Diagram

### 4.4 Database Architecture

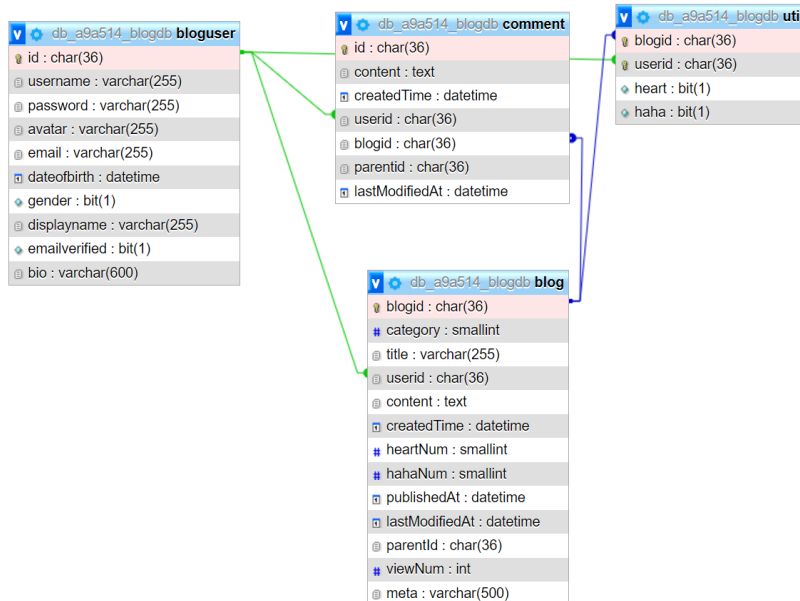


Figure 4.4: Database Diagram

## 4.5 Frontend Design

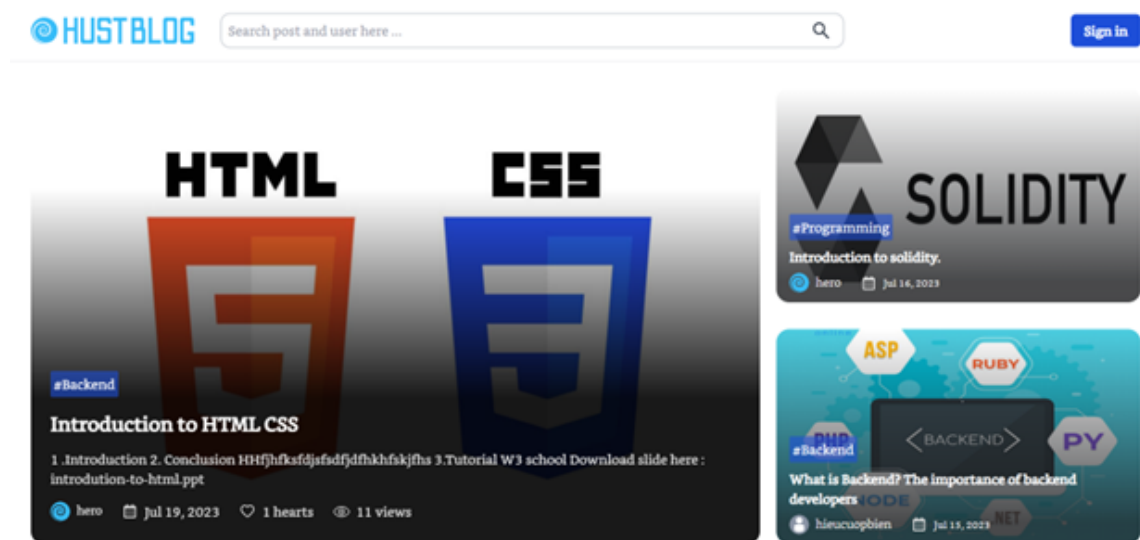


Figure 4.5: Home Page

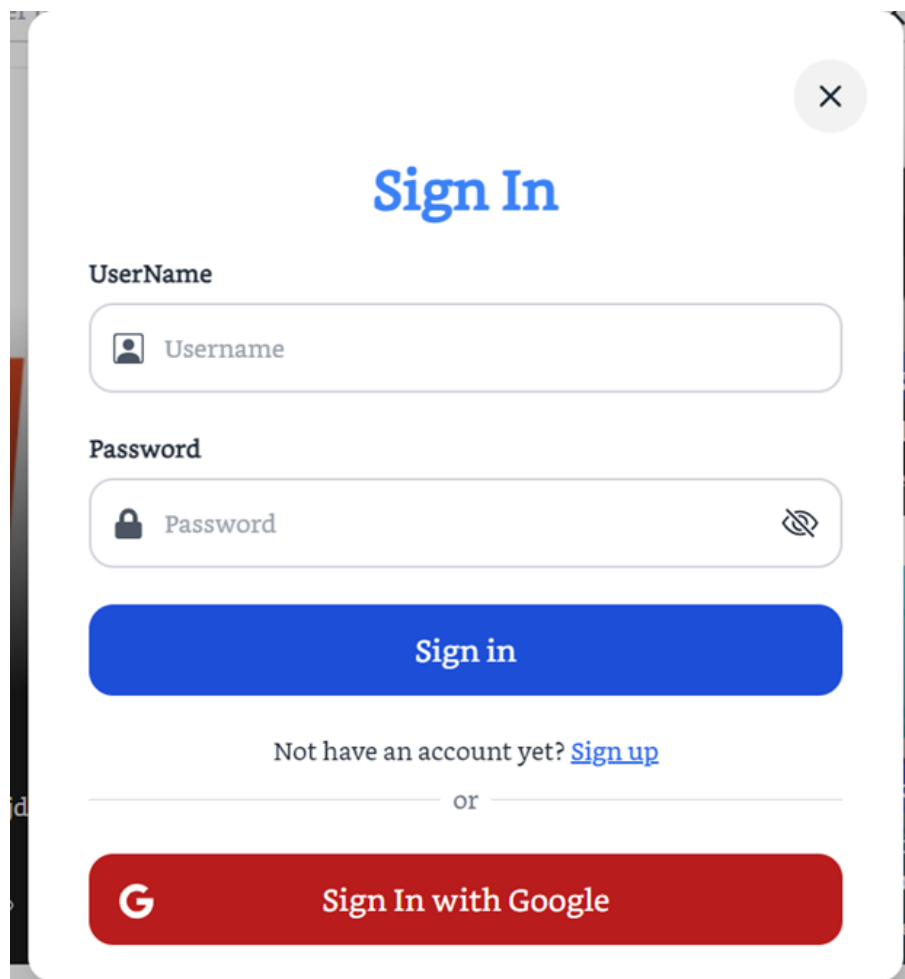
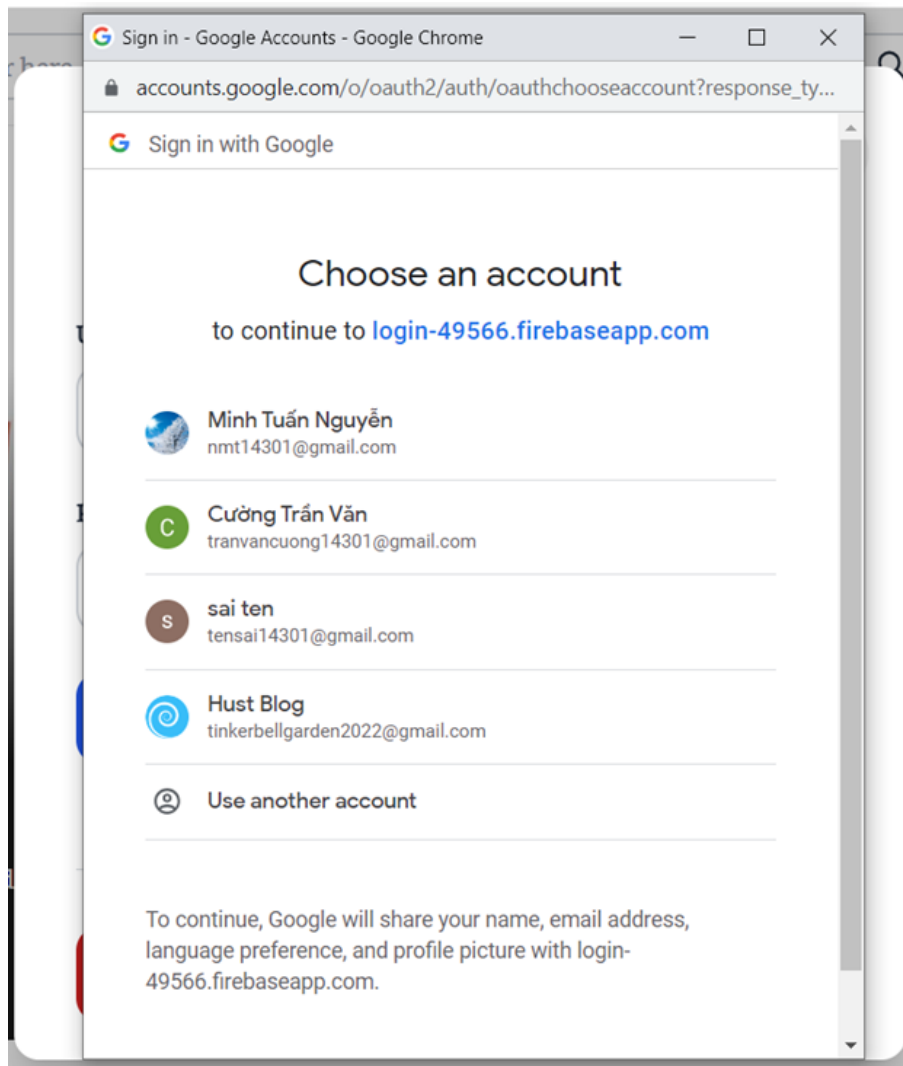
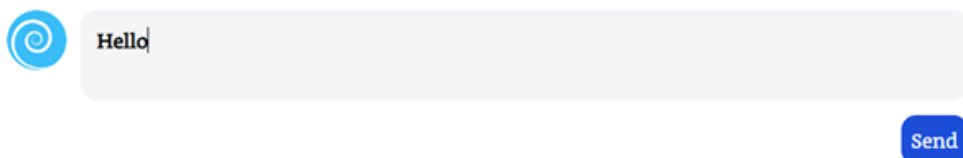
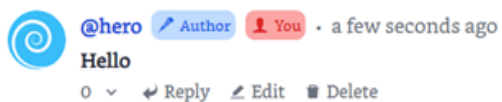
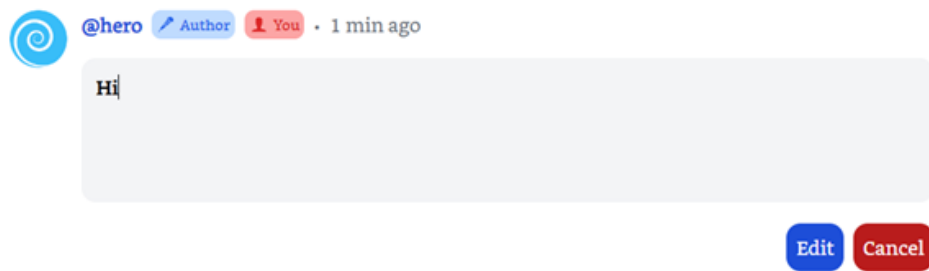


Figure 4.6: Login Dialog

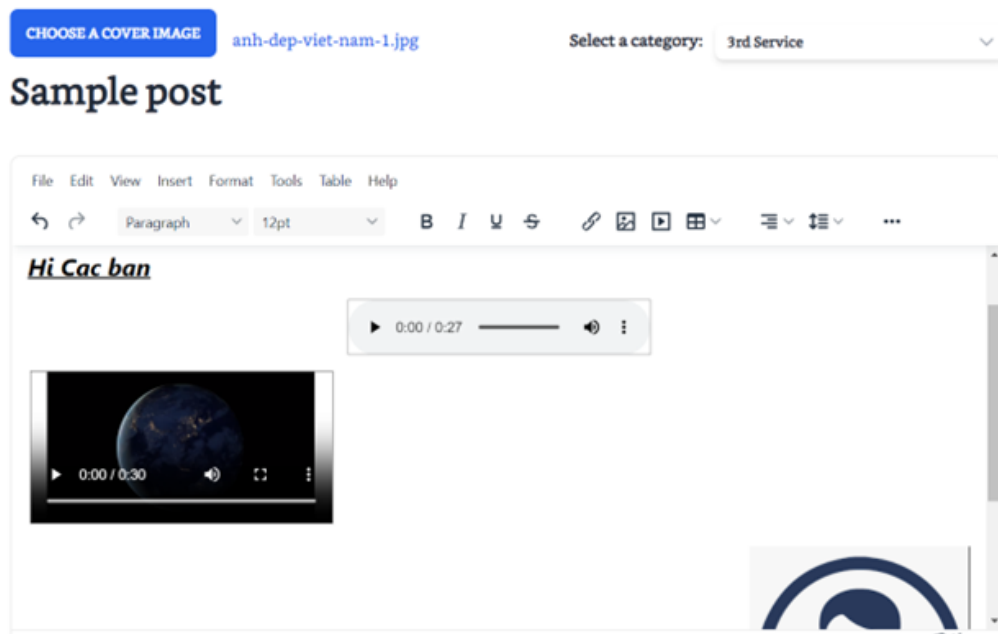
**Figure 4.7:** Login with Gmail

## Comment

**Figure 4.8:** Create Comment**Figure 4.9:** View Comment



**Figure 4.10:** Edit Comment



**Figure 4.11:** CRUD Blog

## **CHAPTER 5. CONCLUSION AND FUTURE WORK**

In conclusion, this blog website helps us a lot to understand how to create a website from the scratch and how to work in a team. From this project, we can have better understanding about the backend and frontend development. In details, we know how to design database structure and API for servers. We learned about design the UI/UX in frontend, which is very important for us in the future job. This is also a golden opportunities for us to learn how to work in a team and communicate with each others. We will try to improve the application more to give better performance to end user in future work.