
# UNIVERSITY OF GREENWICH

# COMP1640 – Enterprise Web Software Development

## Course Work

| | |
|---|---|
| ID number | **001478210** |
| Student submission date | **4/29/2025** |
| Name | **Tang Minh Nhut** |

# Table of Contents

# I. Introduction

By offering a screen grab and remarks regarding the benefits and drawbacks of the final product as well as the entire process from start to finish, this coursework seeks to assess both the final product and the development process. Additionally, by developing a weight-scoring model to evaluate individual contributions according to predetermined criteria, this coursework offers a critical perspective on performance and teamwork. Discuss each person's efficacy and point out their advantages and disadvantages. Additionally, this coursework includes a self-evaluation component that includes a reflective analysis of one's own performance as well as an honest reflection on one's own contributions, outlining tasks completed, difficulties encountered, and tactics used.

# II. Evaluation of Product and Process

## 1)Usability:

Since this is a school-owned website for student tutors, the administrator assigns the account. The product is user-friendly, making the website easy to use even for inexperienced end users. The primary website color scheme is blue, black, and white, which contrasts well and makes the site feel modern and appropriate for most users. Additionally, a website can be utilized across various platforms. For instance, it has a stunning user interface that works on tablets, phones, and PCs.

## 2)Functionaly:

Our website has a number of features designed for different types of users. To ensure efficient user access management, administrators have the ability to create and remove accounts. Students, staff, tutors, and administrators can all log in and out with ease. Students can update their information, and tutors can manage theirs. Students can download pertinent documents whenever it's convenient for them and turn in their assignments via chat box. Mentors can keep an eye on the list of students they are guiding, go over their work, and offer insightful criticism. After reviewing this feedback, interns can make the necessary updates to their work progress. The website places a high value on usability and simplicity, making it possible for users to navigate through its features with ease.

## 3)Security

Because using the system requires an account and certain functions are only accessible by specific account roles, the system still maintains a high level of security and privacy. To access administrative rights, for instance, only administrators are able to create and modify accounts. In order to pair tutors and students to begin a new course, staff can oversee all tutors and students. Password encryption also protects account passwords. To recover the original password, the system employs the bcrypt hash function, an irreversible one-way encryption function. An attacker cannot take any action to steal personal accounts, even if they are successful in breaching the database system.

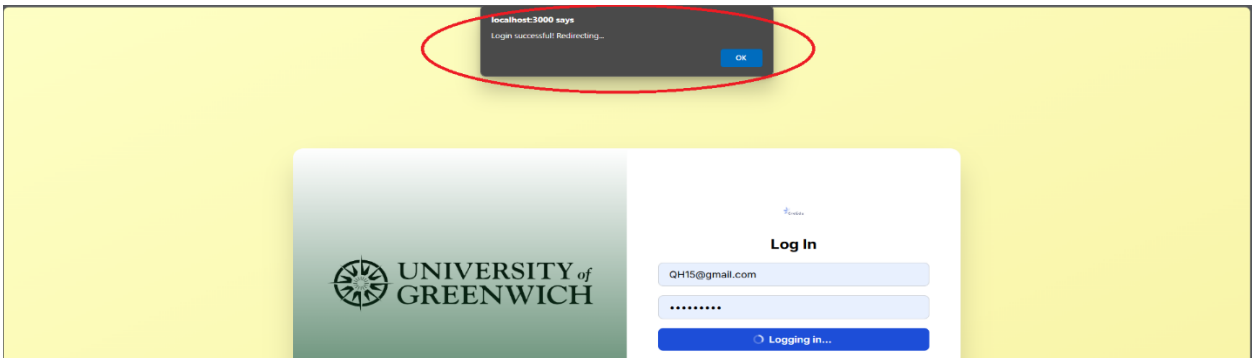
# 4)Design

I used Jakob Nielsen's 10 Usability Heuristics for User Interface Design as the primary framework to assess the website's design quality. These heuristics are commonly accepted as industry norms for evaluating an interface's usability, efficiency, and intuitiveness. I examined the system using each of the following principles: error prevention, consistency and standards, user control and freedom, and visibility of system status. An objective assessment that identifies both the areas where usability and the user experience as a whole could be enhanced as well as the strengths is made possible by this methodical approach.

(Nielsen, 2024)

## 4.1 Visibility of System Status

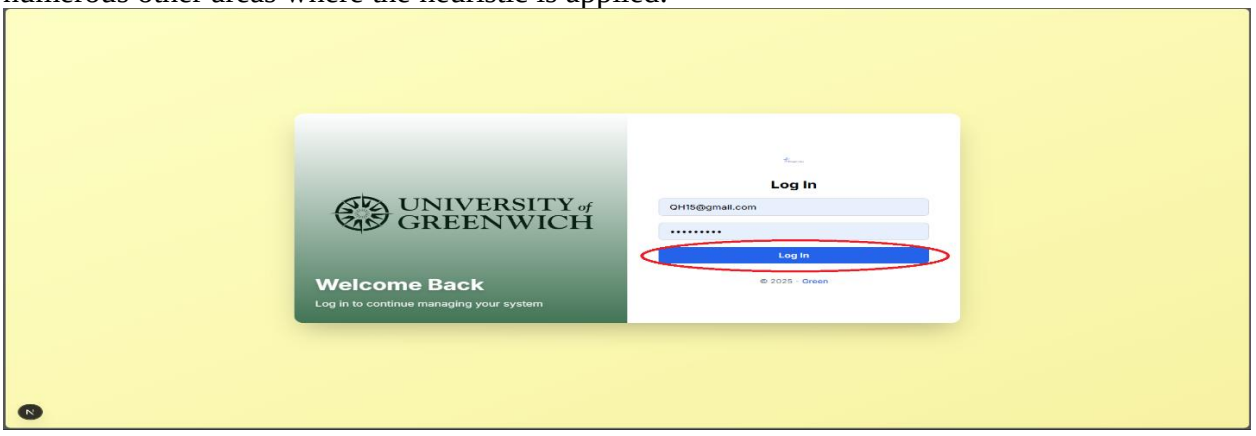
End users are informed about the function operation by the website. Nielsen's heuristic is supported, for instance, when a user contributes to the system and is informed if the creation was successful.




*Example Pictute 1 Visibility of System Status*

## 4.2 Match Between the System and the Real World

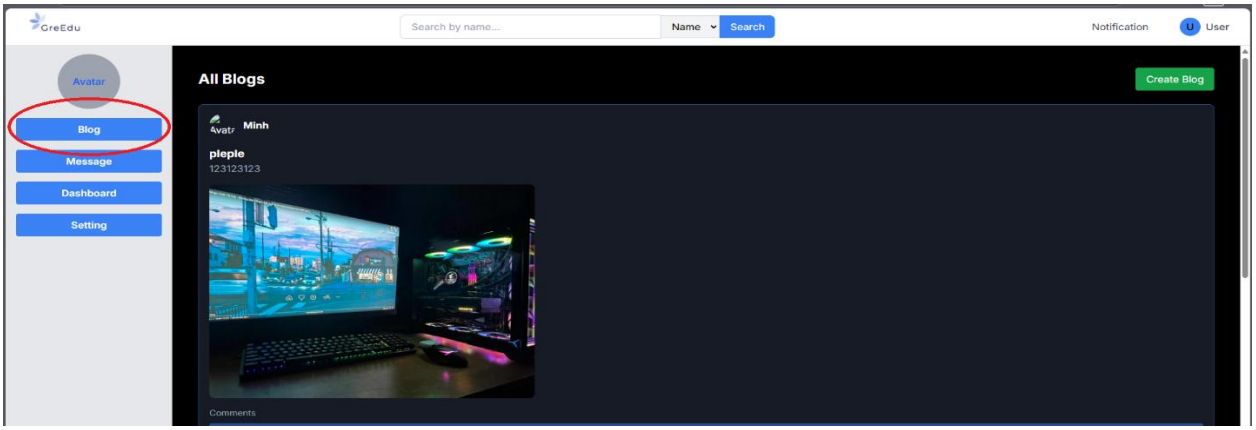
Since some people may not understand the word authenticate, we follow it and use log-in instead of authenticate, which may seem strange in the real world. It serves as an illustration of numerous other areas where the heuristic is applied.




*Example Pictute 2 Match Between the System and the Real World*

## 4.3 User Control and Freedom

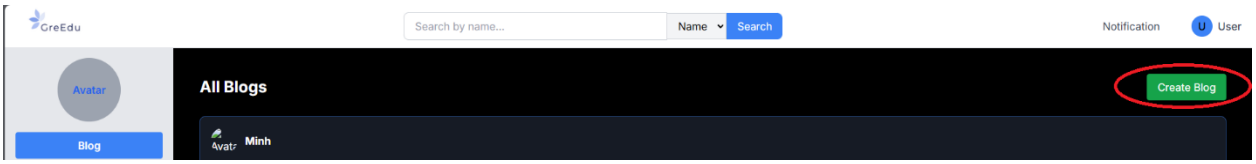
Because the site is still web-based for both tutors and students, end users can easily navigate back to the main page from anywhere. They can click the blog button to go back to the home page, which adheres to search guidelines, whenever they reach a page, they don't like.




*Example Pictute 3 User Control and Freedom*

## 4.4 Consistency and Standards

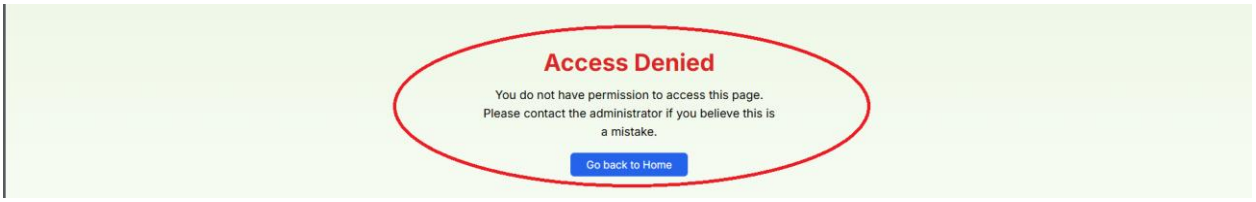
In various contexts, the website has the same meaning. When it says "create," the user is aware that the button will produce an object that corresponds to their current location; for instance, it will produce a blog when they are in the Blog.



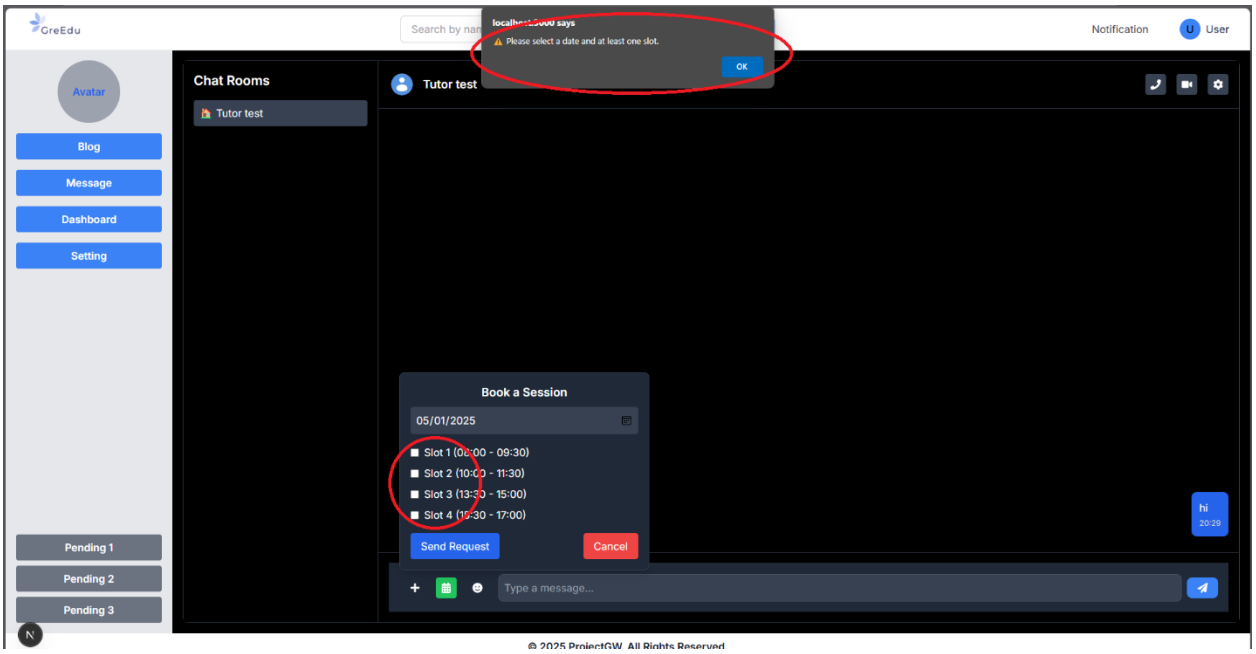

*Example Pictute 4 Consistency and Standards*

## 4.5 Error Prevention

By prohibiting end users from providing inaccurate information, the website will avoid mistakes. For instance, before creating or updating any information, the website will ask you to complete the blanks. For instance, students must choose all available options when scheduling an appointment before sending it to a tutor. The website will also block access to pages with improper access permissions. For instance, pages with staff rights are inaccessible to accounts with tutor and student roles.



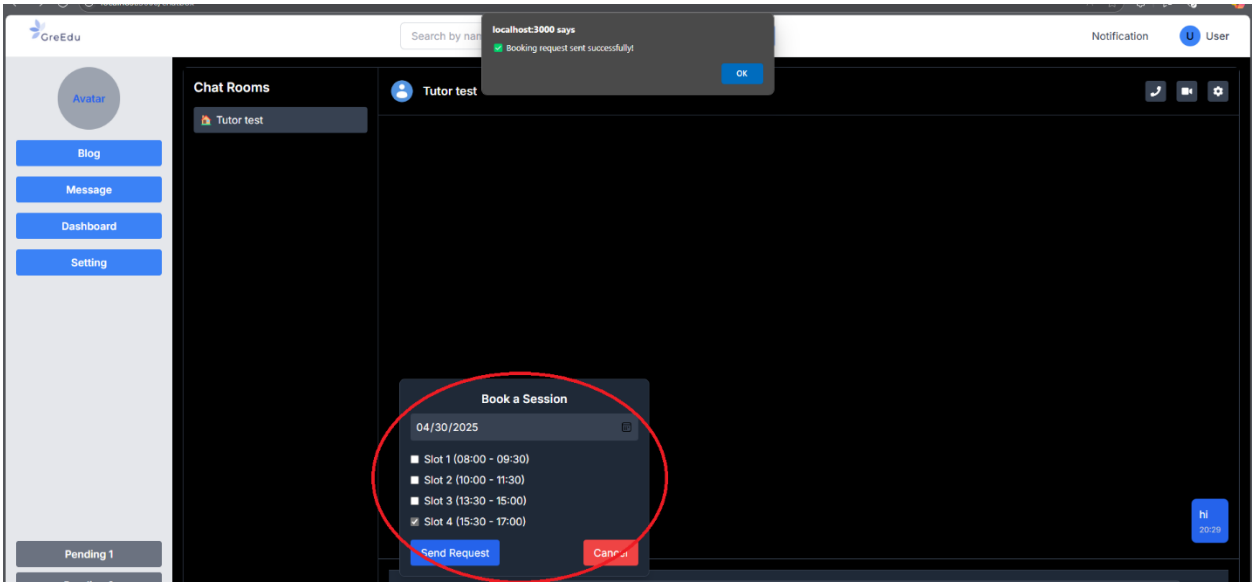

*Example Pictute 5 Error Prevention 1*




*Example Pictute 6 Error Prevention 2*

## 4.6 Recognition Rather than Recall

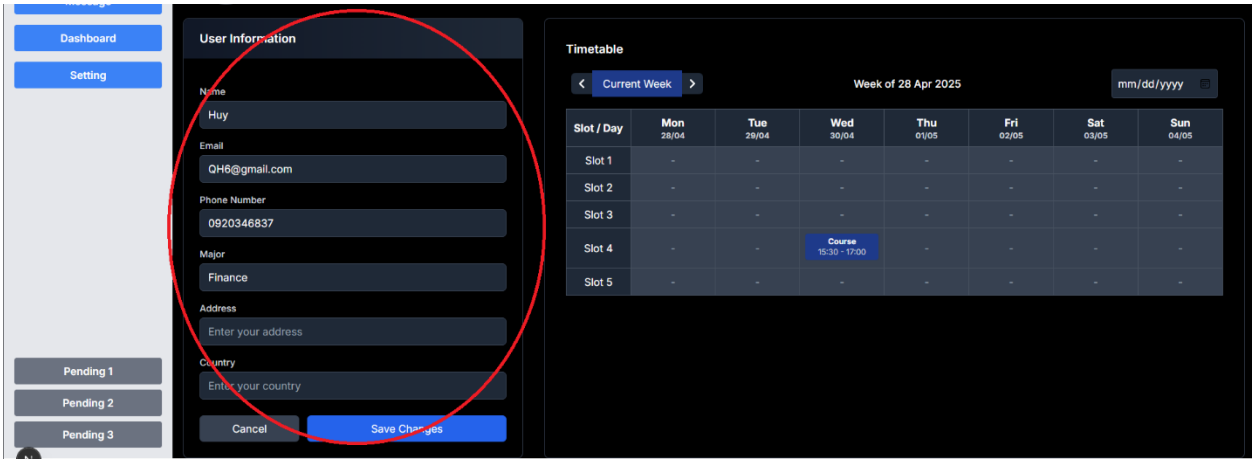
Users only need to remember their username and password on this easy-to-use website. For instance, users may occasionally need to recall which contribution they attempted to submit when providing feedback, so we show all the information; all they have to do is choose and submit the data. For instance, the appointment booking feature includes a calendar where users can choose the date and time and see the specific time slot so they can make a decision immediately.




*Example Pictute 7 Recognition Rather than Recall*

## 4.7 Flexibility and Efficiency of Use

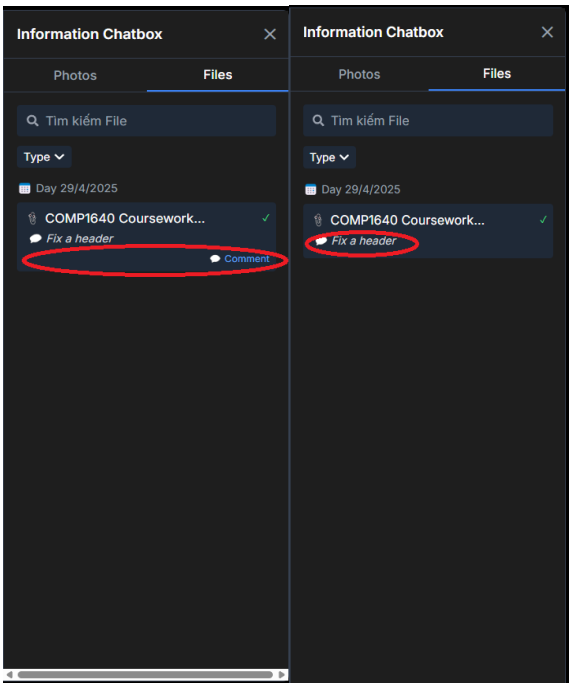
Users can personalize their profile pictures on the website, which may indicate that, in accordance with Heuristic, user avatars help users feel more connected to the system.




*Example Pictute 8 Flexibility and Efficiency of Use*

## 4.8 Aesthetic and Minimalist Design

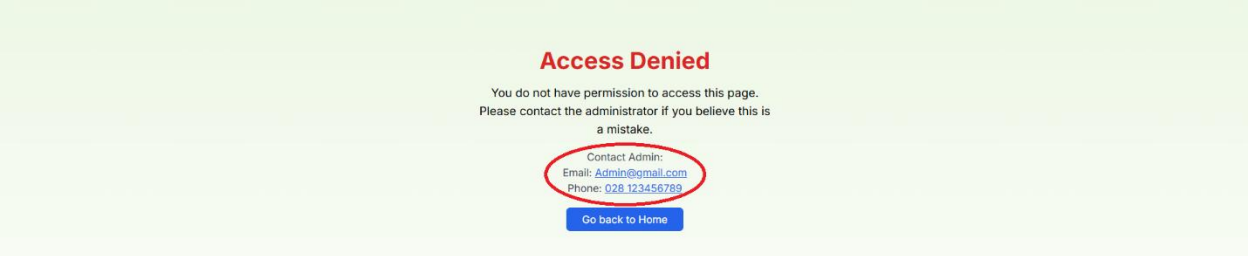
By adhering to the Heuristic of aesthetic and minimalist design, the website maintains minimal functionality and avoids overburdening the user with features. We have several features on the chat box page, for instance, each devoted to a particular function, like students submitting their work while tutors view and comment on it. While tutors can leave comments on the work in the chat box, students can click to view it.




*Example Pictute 9 Aesthetic and Minimalist Design*

## 4.9 Help Users Recognize, Diagnose, and Recover from Errors

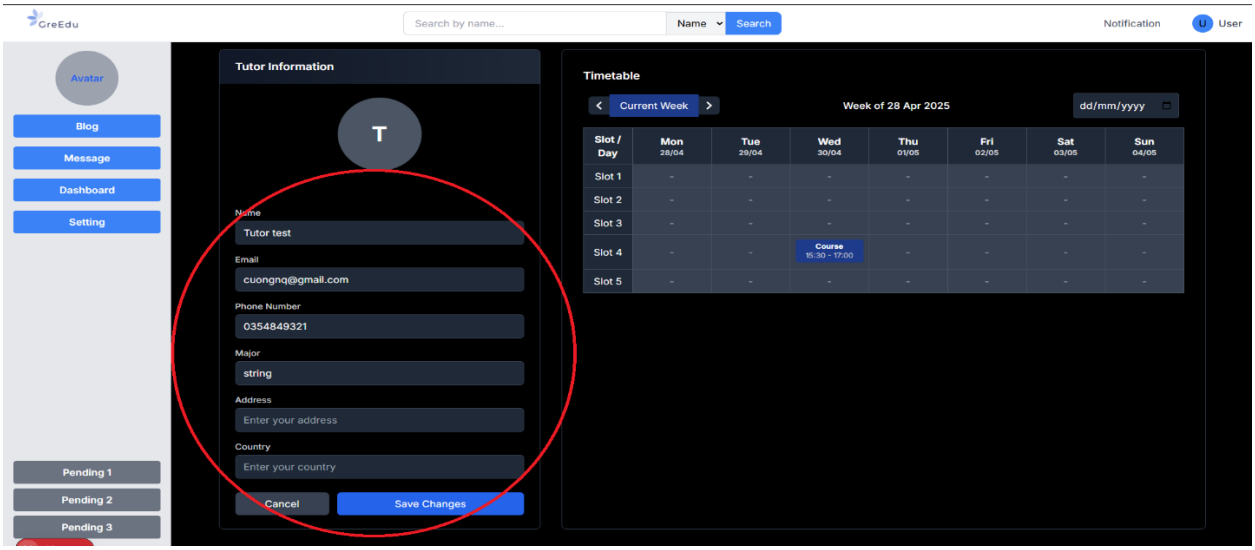
In accordance with the heuristic of assisting users in identifying, diagnosing, and recovering from errors, the website recommends that the user contact the developer by providing their email address and phone number whenever an error occurs.




*Example Pictute 10 Help Users Recognize, Diagnose, and Recover from Errors*

## 4.10 Help and Documentation

In accordance with the heuristic help and documentation rule, the website includes text when users edit their accounts to instruct them on what data to enter in the designated field.




*Example Pictute 11 Help and Documentation*

## 4.11 Summarize

A website that follows Jakob Nielsen's 10 Usability Heuristics for User Interface Design generally demonstrates sound design principles and makes sure that the interface is usable, efficient, and accessible on a range of devices, including PCs, tablets, and smartphones. With features and access controls catered to their requirements, the system accommodates a variety of user roles, including administrators, students, tutors, and staff. Role-based permissions and bcrypt-encrypted passwords strengthen security. Simple navigation, unambiguous system feedback, error-prevention features, and a minimalist design that doesn't overwhelm users are all examples of the website's excellent usability. But system performance needs to be improved because depending too much on online

and non-SQL databases slows down loading times and requires reloading images to display properly, which detracts from the user experience overall.

To strengthen the platform, a number of additional improvements could be made. By providing external access to critical data, exporting data to Excel would simplify business operations. Scalability, dependability, and accessibility for a wider user base could all be significantly improved by moving the website to a cloud-based infrastructure. Additionally, a smoother user experience and quicker data retrieval would result from improving the internal search algorithms. Including a chatbot with AI capabilities, like ChatGPT, could improve user experience even more by offering prompt support and clarifications, guiding users through the platform, and assisting them in effectively comprehending feedback. Finally, improving the feedback system to allow mentors and interns to communicate in real time would encourage more dynamic teamwork and greatly increase the platform's educational value and interactivity.

## 5) Agile/Scrum Process and Design Method Evaluation

Our development team used the Agile methodology, specifically the Scrum framework, to successfully manage the project within limited timeframes. Scrum was selected because it enabled the client to actively participate in the entire development process. We were able to get feedback at every stage and improve the product to better meet the client's needs by presenting prototypes early and often. The team used at least three online discussions and weekly in-person meetings to implement the Scrum methodology, track progress, and promptly adjust to any changes in requirements. Based on user stories that reflected real-world roles like administrators, tutors, and students, a prioritized backlog was produced.

Because the platform supports multiple roles, each of which requires different functionalities, using user stories proved to be very beneficial. To enhance team performance and product quality, tasks were divided into manageable sprints, each of which concluded with a review and adjustment session. By following Scrum principles, which include iterative development, continuous integration, and early delivery of key features, we were able to maintain consistent progress despite the team's limited human resources. Despite our team's lack of experience with NoSQL databases, we carefully considered our options over several meetings and ultimately chose MongoDB as our database solution because of its adaptable, non-structured format.

The team needed more time to learn about database integration because only one team member, Huy, had any prior experience with MongoDB. In order to push ourselves and take advantage of contemporary technologies for creating scalable web applications, we chose Next.js for the framework and Visual Studio Code as the development environment. Every team member conducted independent research on Next.js components, structures, and framework-specific procedures during the project. However, there were delays because the database designer was unable to quickly instruct the team on how to connect to and use the database. As a result, there was a rush to finish fundamental CRUD tasks for various models by the deadline. Additionally,

Huy, our team leader and primary backend developer, was given the task of handling the particularly difficult API functionalities.

The team encountered a number of challenges in spite of their hard work. Following client feedback, rework was necessary due to misunderstandings of the original client requirements. There were challenges with using GitLab as source control as well; some members were reluctant to push updates for fear of disrupting the system, which was made worse by the fact that they had previously lost work because of authority function errors. Timely collaboration was also hampered by technical problems and inefficient online notification systems, which occasionally caused delays in team member communication.

Jakob Nielsen's 10 Usability Heuristics served as the team's framework for design, directing all interface choices. To make sure the finished product was user-centred, intuitive, and efficient across PCs, tablets, and smartphones, we gave top priority to usability, error prevention, and a minimalist design philosophy. The product's simplicity and accessibility were improved by the methodical application of these heuristics. However, communication difficulties and technological learning curves made it clear how crucial it is to keep up a steady feedback loop and effective knowledge exchange throughout the project.

# III. Evaluation of team

| Name | Position | Factor | Rating | Comments |
|---|---|---|---|---|
| Nguyen Quang Huy | Leader & Back-End | Attendance: 10<br>Initiative: 9<br>Communication: 10<br>Timekeeping: 10<br>Cooperation: 10<br>Attention: 9<br>Dedication: 10 | 9.7 | The team's principal back-end developer and leader was Nguyen Quang Huy. By offering precise implementation concepts and skillfully leading the group during the development phase, he displayed exceptional leadership. In order to guarantee that the front-end and back-end components were seamlessly aligned, Huy was instrumental in assisting team members in understanding the back-end requirements and structure. The team's overall success was significantly influenced by his strong back-end development technical skills, excellent communication, initiative, and dedication. Huy exhibits a high degree of competence and professionalism in his ability to stay on course, foresee front-end requirements, and provide dependable solutions. |

| | | | | |
|---|---|---|---|---|
| Nguyen Hoang | Back-End | Attendance: 8<br>Initiative: 7<br>Communication: 7<br>Timekeeping: 8<br>Cooperation: 8<br>Attention: 7<br>Dedication: 8 | 7.5 | In back-end development, Nguyen Hoang showed strong technical proficiency and a rapid rate of learning. In general, his coding outputs were reliable and free of errors. But because of his dependence on the team leader's strict direction, Hoang occasionally lost sight of deadlines and took longer than expected to finish tasks. Although he made valuable technical contributions, his general focus and time management throughout the project were inconsistent, most likely as a result of outside obligations. Hoang has a great chance to grow into an even more valuable team member with improved focus and deadline adherence. |
| Nguyen Quoc Cuong | Front-End | Attendance: 9<br>Initiative: 7<br>Communication: 8<br>Timekeeping: 8<br>Cooperation: 10<br>Attention: 8<br>Dedication: 10 | 8.5 | Even in the face of challenging circumstances, Nguyen Quoc Cuong consistently worked to finish tasks to the best of his abilities and showed a strong willingness to learn. Despite not being a skilled front-end developer, Cuong demonstrated great flexibility and tenacity, which helped the team achieve its objectives. His commitment and diligence enabled him to gradually advance his coding abilities. Cuong has the capacity to become a very competent front-end developer in the future with more practice and concentration. |

| | | | | |
|---|---|---|---|---|
| Tang Minh Nhut | Front-End | Attendance: 9<br>Initiative: 9<br>Communication: 9<br>Timekeeping: 9<br>Cooperation: 10<br>Attention: 9<br>Dedication: 10 | 9.3 | Tang Minh Nhut showed excellent front-end development fundamentals, grasped project requirements fast, and regularly completed work on schedule as directed by the leader. He demonstrated a careful and attention to detail, frequently making sure that every task was finished and accurate before proceeding. The final outputs were extremely well-polished, thorough, and error-free, despite the fact that this perfectionist mindset occasionally resulted in slight delays when compared to the original schedule. The team's success was largely attributed to Nhut's strong technical skills and dedication to excellence. |
| Thai Hoang Tuan Kiet | Design & Tester | Attendance: 10<br>Initiative: 10<br>Communication: 9<br>Timekeeping: 9<br>Cooperation: 9<br>Attention: 9<br>Dedication: 10 | 9.4 | As the team's primary designer, Thai Hoang Tuan Kiet made a substantial contribution by demonstrating her strong design abilities and taking the initiative to come up with ideas and effectively convey them to the other members of the team. His artistic endeavors served as the basis for the project's structural and visual design. Kiet showed a strong desire to learn and put forth effort to complete testing tasks to the best of his ability, despite his lack of advanced technical testing skills and lack of testing experience. Throughout the project, he was a great asset to the team because of his commitment and flexibility. |

# IV. Self-evaluation

I was given the responsibility of front-end web development for this project. In accordance with Jakob Nielsen's 10 Usability Heuristics for User Interface Design, I was in charge of creating and executing the user interface. I set out to make sure the interface was accessible to all roles, easy to use, and intuitive from the beginning. I decided to utilize a free user interface template from shadcn/ui and divided the interfaces for the admin (which I kept simple) and other roles like staff, tutor, and student (which I made more aesthetically pleasing).

Initially, there were issues with properly importing and arranging template files. The first template was too basic and unfunctional, and I experienced delays as a result of improper file placement. In order to make maintenance easier, it was necessary to replace it with a better one, update file references, and refactor header, footer, and sidebar components. I organized the front-end using Next.js, which improved component management and routing effectiveness.

I connected different front-end views with back-end APIs after the important pages—Login, Blog (HomePage), Information, Tutor, Staff, and Chatbox—were finished. I worked on CRUD functions and integrated endpoints, such as managing tutor-student matches, scheduling appointments, filtering uploaded documents and images, enabling real-time chat using Socket.IO, and posting and retrieving blog content. Getting used to Socket.IO for real-time messaging—a tool I had never used before—was one of the hardest things to do. Learning and testing implementation strategies took time.

GitLab conflicts were a major technical problem for us because multiple developers editing the same files at the same time frequently resulted in merge errors. Since the front-end was created without thoroughly examining the API specifications, there was also a problem with the initial front-end layout and back-end APIs not being in alignment. Delays and additional work were required to connect the two as a result. I stayed dedicated to my role in spite of these challenges. I approached every problem with an eye towards finding a solution and actively participated in conversations and problem-solving.

Additionally, I helped teammates by encouraging perseverance when morale declined and providing support during trying times. This project taught me a number of important lessons. First, I came to understand how crucial it is to have faith in teammates and let them take care of their duties rather than interfering too much. Second, I realized how important communication is to Agile development, particularly when using Scrum methodology, which requires regular meetings and information exchange.

Finally, because our team's initial misunderstanding resulted in needless rework and time pressure later, I learnt how important it is to fully understand client requirements from the beginning. In general, I think I made a valuable contribution to the project. I am pleased with how I managed the team dynamics and the technical difficulties, and I can clearly see that my technical abilities and cooperative attitude have improved.

# V. Conclusion

The final product, development process, team performance, and individual contributions were all thoroughly evaluated in this coursework. I have learnt a lot about our website's advantages and disadvantages as well as the project's overall execution through thorough analysis. While the Agile Scrum methodology enabled the team to flexibly adapt to changing requirements despite communication and technical obstacles, the implementation of Jakob Nielsen's 10 Usability Heuristics ensured that the platform was user-friendly, efficient, and accessible across devices.

The importance of cooperation, leadership, and constant communication in accomplishing project objectives was brought to light by evaluating team performance. Every team member made a significant contribution, exhibiting initiative, commitment, and a readiness to grow and overcome challenges. Self-evaluation also highlighted the value of introspection, team trust, and a thorough understanding of client requirements in order to avoid expensive rework.

The team eventually produced a functional and user-centred website that satisfied the primary customer requirements, despite obstacles like uneven Scrum practices, early front-end and back-end misalignments, and difficulties with GitLab collaboration. This experience reaffirmed how important excellent leadership, solid technical underpinnings, and clear communication are to seeing a project through to completion. My future technical development, project management, and teamwork abilities will all be significantly impacted and enhanced by the lessons I've learnt from this project.

# References

Nielsen, J., 2024. *10 Usability Heuristics for User Interface Design.* [Online] Available at: https://www.nngroup.com/articles/ten-usability-heuristics/ [Accessed 29 April 2025].