FACULTY OF COMPUTING

SECP1513-06: TECHNOLOGY AND INFORMATION SYSTEM

PROJECT DESIGN THINKING

SEM 1 – 2025/2026

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Introduction

This project is about building a system or solutions based on the principle of design thinking. The purpose for implementing this principle is to address the common challenges in barber services by empathizing user problems, identifying main problems and developing a user centered solution through prototyping and testing

Phase 1: Empathy

This stage focused on understanding user needs, frustrations, and expectations regarding barber services. Information was gathered through customer interviews and direct observation of the haircut process.

Several key pain points were identified, including long waiting times, unclear pricing, difficulty in trusting new barbers, and the lack of a proper booking and update system. Many customers expressed frustration on time management and mainly rely on friend's recommendations due to limited online reviews or portfolios.

From these findings, Users desire predictability in scheduling and wait times, and seek convenience through modern digital tools. They expect an improved experience featuring online booking, clear information, and access to barber portfolios to make confident decisions.

Figure 1: An interview has been conducted

Phase 2: Define

Problem Definition

Customers currently waste a significant amount of time coordinating haircuts through WhatsApp messages and walk-in visits. The booking process is inefficient and unclear. Meanwhile, barbers lack a simple platform to showcase their work and manage customer bookings effectively. Additionally, many customers are unsure which hairstyle best suits them, making decision-making difficult.

Proposed Outcome

The project aims to develop a friendly, mobile-first platform that simplifies hairstyle discovery, booking, and barber selection. This solution will streamline haircutting process while helping barbers manage bookings and promote their works more efficiently.

Phase 3: Ideate

The ideation process involved the team members in the creation of a large number of ideas without considering their viability. The process was carried out under brainstorming activities that brought into consideration the use of technology to enhance the process of barbering. The processes were done after the completion of the define and empathy stages.

Discussion and evaluation of the ideas have helped the team to combine the best of them into one to cater to their practicality as well as innovation. The ideas selected have been aimed at delivering a smoother experience while considering the needs of the user in a creative manner.

Figure 2: A conducted meeting brainstorming idea

Phase 4: Prototype

The prototype named TheCutLab, aims to make the booking process easier and improve the experience for both customers and barbers.

Development started with a low-fidelity prototype, designed using Canva. This helped visualize the basic layout, navigation, and placement of features. During this stage, the team quickly explored different interface ideas and made early design choices without worrying about technical details. The low-fidelity prototype shows the main screens, including the home menu, booking page, and barber portfolio layout (Figure 3).
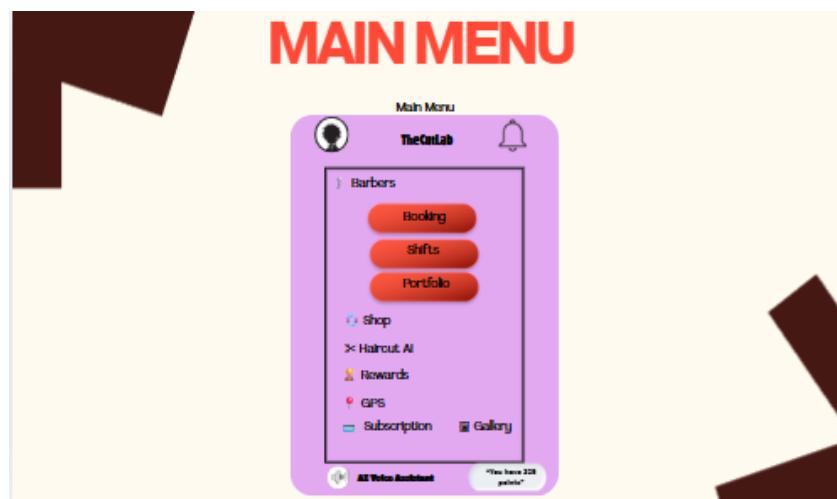
Figure 3

After refining the design, a high-fidelity prototype was created using HTML. This version has interactive buttons, smooth navigation between pages, and a mobile-like interface that looks like a real application. Each feature, such as booking, viewing portfolios, hairstyle recommendation (Haircut AI), and rewards, is a clickable element. (Figure 4).

Figure 4 (https://zuhairi06s.github.io/SECP1513-06-Design-Thinking/)
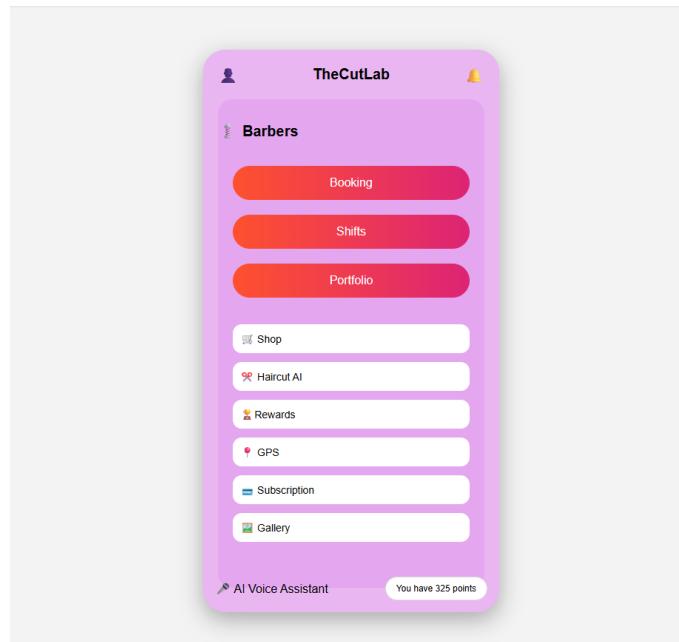
The high-fidelity prototype was published using GitHub Pages, so users can access and interact with it through a web browser. This method makes testing easy and allows the prototype to be shared conveniently during presentations and user testing sessions.

Phase 5: Test

The testing phase was carried out to understand how well the TheCutLab prototype works from a user's perspective. The prototype was evaluated by one representative user, a 19-year-old UTM student who regularly visits barbers and fits the target user profile.

Overall, the user found the booking process much easier and faster compared to using WhatsApp or walk-in methods. The ability to view barber portfolios before booking helped the user feel more confident in choosing a barber.

However, the user suggested a few improvements, including clearer booking confirmation feedback, more noticeable navigation buttons and back button improvement. Based on this feedback, small changes were made to improve clarity and user flow.

Figure 5: Tested by user

Problems, Solutions and Team Working

Problem Statement - Barber

- <u>Time wasted before haircut</u>

  Customers usually must wait for a long time before getting a haircut. This causes user to be frustrated and angry because of the inefficient time management.

- <u>Barber Choices</u>

  Customers usually stick with one regular barber because of their strong trust. The absence of the barber causes the customer to experience a loss in time.

- <u>Haircut choices</u>

  Some customers are indecisive in making type of haircuts. They are afraid of being shamed because of the unsuitability of the chosen haircuts with them.

Solutions

- <u>Barber shift display</u>

  Show real-time status for available barbers.

- <u>Book and schedule features for barbers</u>

  A structured booking system for streamlined workflow.

- <u>Smart auto reminder system</u>

  Send reminders to user before the next cut.

- <u>Barber portfolio section</u>

  Show barber's information including ratings and reviews.

- <u>Ai virtual try on and hairstyle recommendation</u>

  Help customer by giving recommendations about the best haircut.

Team Working

Initially, we discussed on the problems along with the solutions. We listed out on the problems with solutions. We then presented our findings and got a validation from our lecturer to proceed with this project.

During empathy and design phase, we interview a customer and get their opinions and reviews regarding their problems. We carry out a session to discuss about the customer's pain points and compared it with the problems analysed before.

During ideation phase, brainstorm sessions are made, where each member proposed on ideas and the final solutions are made by majority votes. Every role is distributed among team members according to their strength and group decisions in meeting.

Assessment

End of project demonstration:

From the prototype built, we can see that the features including booking schedule, barbers' shifts and portfolio and Haircut AI were provided. This shows that they met the requirement of users which are efficient time management, easy barbers' information and shifts evaluation and haircuts recommendation for smaller choices scope. The prototype also offers a user-friendly UI for convenience usage.

During transition between phases:

By interviewing a user and obtaining the information needed, we completed the empathy phase. After that, the define and ideate phase were done by having several discussions including physically and asynchronously through WhatsApp. Lastly, the prototype and testing were done by letting the user experience the prototype and leaving feedback and reviews.

Evidence

Empathy

User's Information	
Age	19
Job	Student
Gender	Male
Education level	Degree

Table 1: User's Background

Question	Answers
As a student, is there any challenge in taking care of our hairstyle?	"The challenge that i usually face when getting a haircut, is I don't really know how long that I need to wait when I'm trying to get a haircut, sometimes, I end up waiting longer than an hour and sometimes only a few minutes."
Is there any difficulty when you try to find a good barber?	"I usually rely on the same barber. It is because i don't feel confident when choosing another barber and sometimes it really pisses me off when the main barber isn't available."
Is there any difficulty in experience that you been experiencing before this?	"The difficulty that i usually face is, I think I'm a very indecisive person when it comes to choosing a haircut. I don't even know what haircut is really suitable for me."

Table 2: Interview Questions and Answers

Define

Definition	Functions/Purpose
User needs a clear booking system	To reduce waiting time
User needs access to barber portfolios	To build trust
User needs a hairstyle guidance	To make confident decisions
Barbers need a simple system	To manage bookings efficiently

Table 3: Problems definition

Ideate

List of solutions	
Barber shift display	Booking and scheduling features for every barber
Menu Prices	Loyalty points system
GPS Integration	Smart auto reminder system
Subscription plan	Interactive gallery
Barber portflios section	Online Shop
AI virtual try-on and hairstyle recommendation	

Individual Reflection

ZUHAIRI:

My main goal in this course is to gain practical skills and real-world experience to prepare for a career in the IT industry. I also hope to use my knowledge in the future to help educate and inspire younger generations. This design thinking project helped me understand how to solve problems from the user's perspective rather than relying only on my own assumptions. Building the prototype improved my skills in HTML and using GitHub, which directly supports my career goals. To improve my potential in the industry, I need to continue developing my technical, problem-solving, and communication skills by practicing programming, working on projects, collaborating in teams, and learning from user feedback.

SHAHEED:

My goal is to have a successful IT career. This project prepared me by teaching technical precision and empathy for solving problems, crucial for creating users' security solutions. I plan to earn CCNA certifications and pursue internships for real-word challenges, continuously studying, remaining curious, and embracing growth in both technical and professional aspects. This experience sharpened critical thinking and established a practical framework for solving complex problems, ensuring a strong technical foundation and user-oriented design insight.

AMMAR:

At the end of the semester, I hope I can apply all the skills and knowledge that i learned in this course in the future. I also hopefully i can teach other people to understand how these technology work nowadays. The design thinking project gives me awareness how important to work as a team for this project to complete. This project also teaches me how to work as a team to complete certain goal and i learn on how to brainstorm.

DINIE:

My aim for this course is to equip myself with good technical skills that will aid me in being productive in the information technology sector when I graduate. I would like to emerge as an individual who can produce digital solutions that are relevant, valuable, and useful to people. The design thinking project has had a huge impact on the way I tackle problems. The experience has helped fill the gap between theory and practice when dealing with concepts taught in class. To maximize my prospects within the information technology field, I also need to work towards developing myself through practice. This includes working towards improving codes, learning through experience, learning from mistakes.

RIDWAN:

Attending this course, I gained both technical and practical skills including my understanding on cloud concepts, PC assembly and security-related skills. By implementing this knowledge, I hope to further my studies in Network and Security and develop future solutions addressing real-world problems. Through this project design thinking, I learned a structured, user-centered approach on building an app from scratch. This is helpful for designing a secure and efficient network solution. Overall, this course allows me to focus on developing several skills, including python coding language, VMware and Linux. To improve my industry potential, I will practice on applying the principles of design thinking and skills learnt on building small projects and solving problems.

Member Role

Zuhairi: Prototype Builder

Shaheed: Video Editing / Camera man

Dinie: Camera man / Report Formatter

Ammar: Interviewer / Report formatter

Ridwan: Report formatter

Word Count: 1537 (excluding cover page, tables and figures)