UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECP 1513 TECHNOLOGY AND INFORMATION SYSTEM

DESIGN & THINKING PROJECT: SmartStudy E-learning

PREPARED BY : GROUP 4

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1.0 INTRODUCTION

Students are continually required to balance their studies, time and learning resources in this ever-advancing technological society. We have chosen the name of "SmartStudy E-learning" for our Design Thinking task to address a lot of these problems. The app was designed, with the aim of making it easier and efficient, for students to organize their lives. The app proposes a smart study and user-friendly platform for students to manage their study materials, plan their schedules, and receive notifications; along with more organized learning practices. Through Design Thinking, we are discovering the real needs of students so that we can have real world outcomes and tangible solutions to better their academic life**.**

1.2 What is smart E-Learning?

SmartStudy E-learning is short for electronic learning,refers to the use of digital technologies and internet-based resources to facilitate education outside of traditional classrooms. It allows learners to access educational content, attend virtual classes, complete assignments, and engage in interactive learning at their own pace and convenience. With the rise of mobile technology, e-learning has become even more flexible and accessible, enabling students to learn anytime, anywhere. SmartStudy E-learning takes advantage of these capabilities by creating an integrated digital platform specifically tailored to student needs, combining organization tools with educational support systems.

2.1 Empathize

We started by trying to really understand what students go through in their day-to-day academic lives. We talked to them, sent out surveys, and watched how they study and manage their time. A common theme quickly emerged and many students felt overwhelmed. They struggle to keep their study materials organized, especially when handling several subjects at once.
These conversations and observations helped us step into their shoes. We didn’t want to assume we wanted to feel what they felt..

2.2 Define

From all the insights we gathered, we were able to clearly define the heart of the problem. Students need a smarter and more efficient way to manage their studies and learning resources because their current methods feel scattered, messy, and take up too much time.This statement became our anchor. It gave us clarity and kept us focused on solving a real, relatable issue.

2.3 Ideate

With a clear problem in mind, we moved on to brainstorming. Nothing was off the table—we threw out all kinds of ideas, big and small. Some of the most exciting ones included:

- A built-in calendar for scheduling
- A simple way to organize notes in the cloud
- Smart reminders
- Separate folders for each subject
- AI-based study suggestions
- Tools to study with friends or get feedback from peers

Eventually, we narrowed it down to the ideas that felt most useful and doable. These became the backbone of our solution: the SmartStudy E-learning app.

2.4 Prototype

Then came the fun part bringing our idea to life. We built a working prototype of the SmartStudy app that featured:

- A **customized dashboard** that shows your tasks and schedule at a glance
- A **resource manager** to upload and organize your study materials
- **Reminders** for important dates and deadlines
- **Collaboration tools** so you can study with friends or get help when needed

We made sure the design was simple and intuitive. Our goal was to make something students could pick up and use right away, without needing a manual.

2.5 Test

Finally, we put the prototype in students' hands. We watched how they used it, asked them what they liked, and listened carefully to what didn't work.
Their feedback was incredibly valuable. They helped us spot areas that needed improvement, like making the interface more user-friendly or adding new features like a progress tracker or offline access.

In the end, testing helped us make sure our app didn't just *work*—it *worked for them*. It felt right, met their needs, and supported their learning in a real, meaningful way.

3.0 DETAILED DESCRIPTION

3.1 Problem

Students face significant challenges in digital learning due to unstable internet, unreliable platforms, and low-performance devices. These issues lead to frequent system downtimes, slow loading, failed uploads/downloads, and difficulties in accessing or managing learning materials especially on mobile devices with limited storage. Poor audio quality, communication disruptions in online classes, and a lack of cybersecurity awareness further worsen the experience, ultimately affecting students' learning efficiency and academic performance.

3.2 Solution

Our app is designed to tackle the core challenges faced by students in digital learning environments by offering a powerful, AI-driven solution that transforms the way they access, manage, and interact with educational content.

From minimizing system downtime through intelligent load balancing to optimizing uploads and downloads with smart file compression, the app ensures smooth performance even on low-bandwidth connections. It intelligently organizes files, frees up storage with smart cloud suggestions, and enhances online class experiences through real-time noise cancellation and audio clarity tools.

Additionally, the built-in AI security assistant proactively protects devices and educates users on safe digital practices. By addressing every major pain point from slow access and poor file management to communication and security issues our app empowers students to focus on what truly matters: learning, without the frustration of technical barriers. It's not just a tool, it's a complete digital learning companion built to adapt, optimize, and support students all the way.

3.3 Team Working

Our team began by selecting Iza as leader due to her strong leadership background. We then chose “SmartStudy E-Learning” as our project topic, recognizing its relevance to UTM students. Guided by the five design thinking phases Empathy, Define, Ideate, Prototype, and Test we approached the project with a structured, user-focused mindset.

Leavinish led interviews with UTM students, providing insights that helped us refine our solution. We collaborated primarily through WhatsApp and organized all notes in a shared Google Docs for efficiency.

Each member contributed based on their strengths: Sundra handled app design, Luqman developed a 3D model, Iza prepared intro materials, and Leavinish and Louis managed interviews and Q&A. Clear communication and strong teamwork ensured smooth progress and a successful prototype delivery.

4.0 DESIGN THINKING ASSESSMENT POINTS

The development of the Smart E-Learning App followed the Design Thinking methodology, a user-centered approach that emphasizes empathy, creativity, and iterative problem solving. The methodology consists of five main phases: Empathize, Define, Ideate, Prototype, and Test. Below is a detailed explanation of each phase in the context of our project.

4.1 Empathy Phase

In this initial phase, we aimed to understand the real problems and needs of students who were engaging in Online Learning. We collected data through an online survey completed by 60 participants. By immersing ourselves in their learning experience, we discovered key frustrations such as slow system response, difficulties in uploading and downloading files, storage limitations on mobile devices, poor audio quality during classes, and lack of digital security awareness.

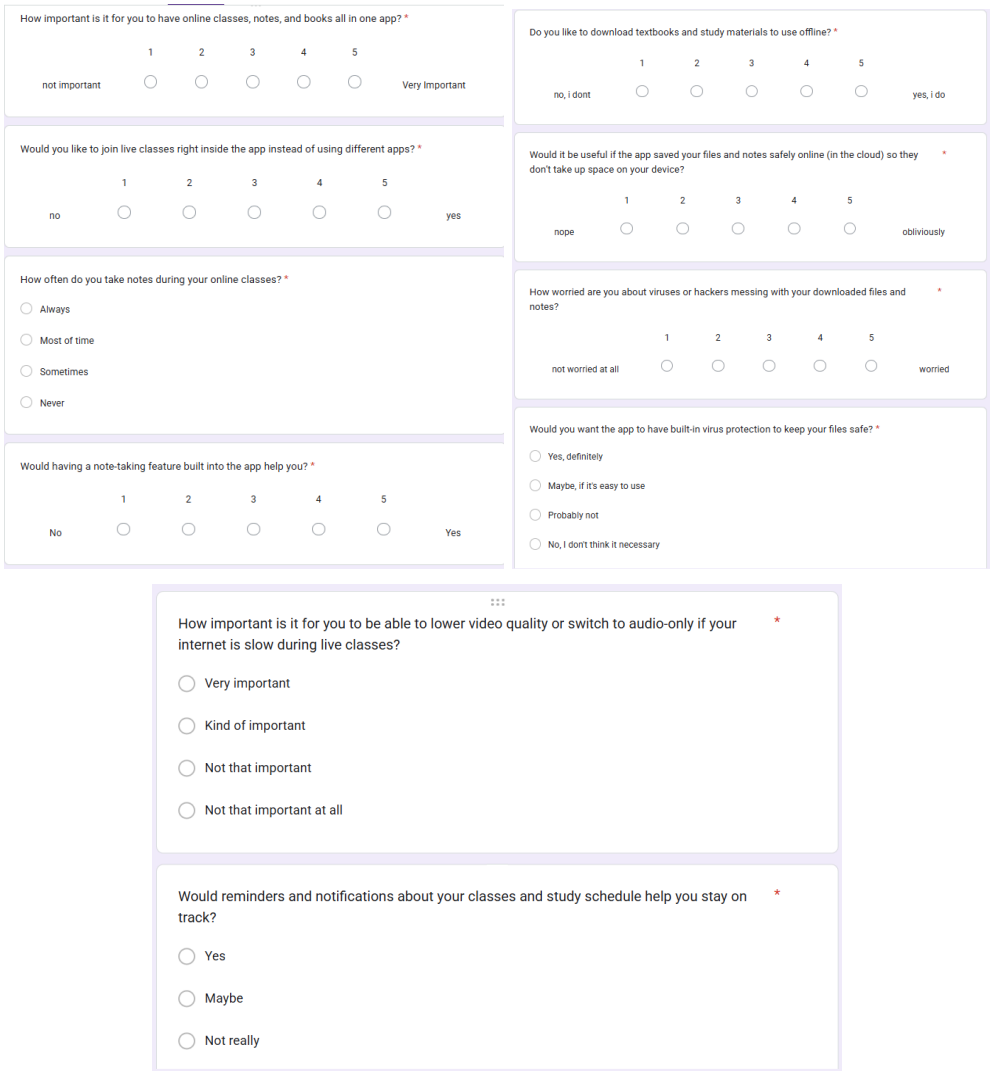

Figure 1 Screenshot of our Google Form Survey

4.2 Define Phase

Based on surveys and interviews with 60 UTM students across various faculties, we identified common issues in online learning .These findings shaped the direction of our solution to address the core technical and usability challenges faced by students. Below is a screenshot of the survey results.

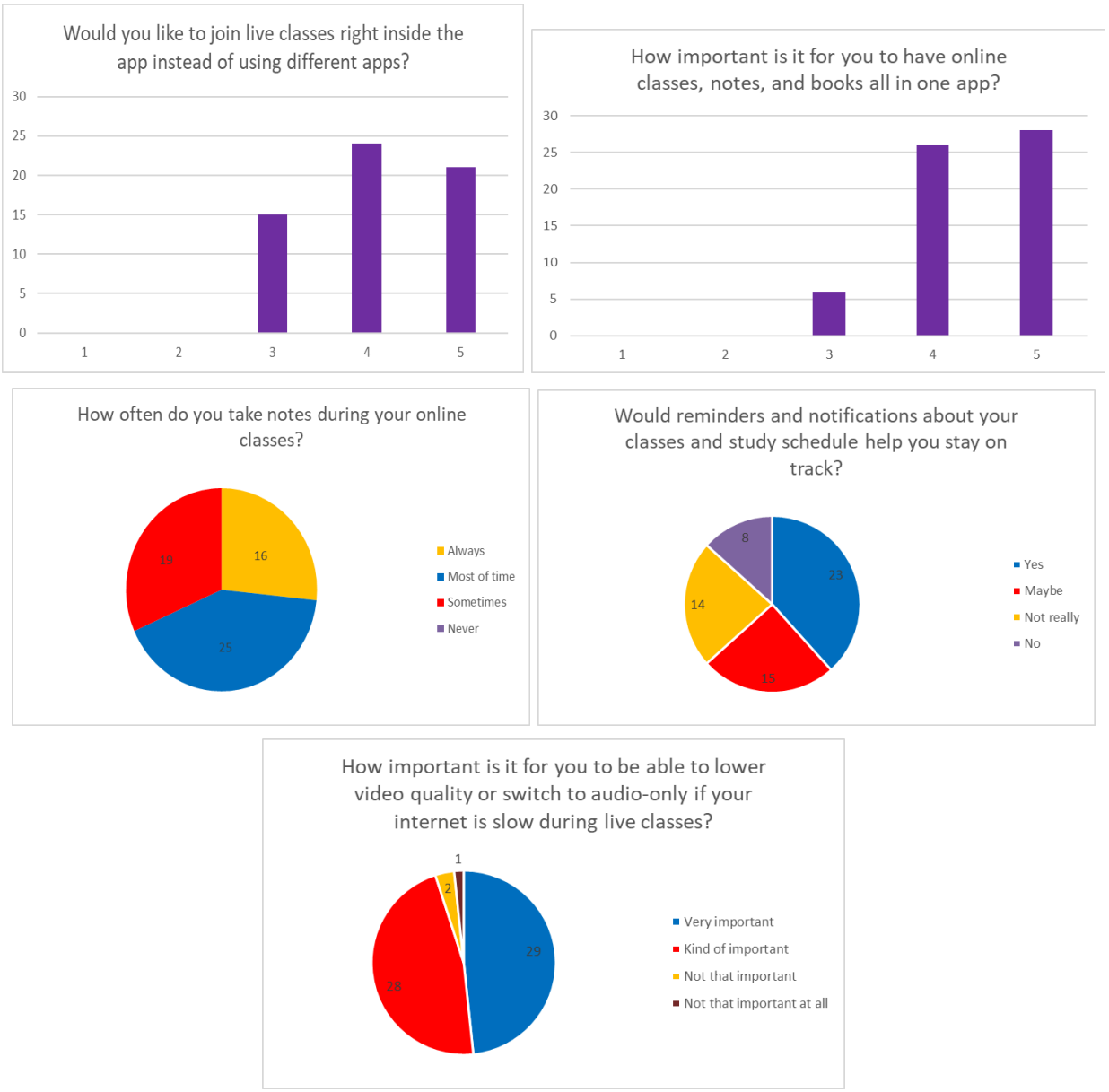

Figure 2 Google Form Survey data collection

4.2 Ideate Phase

We held brainstorming sessions and online discussions to generate ideas that could solve the identified problems. We all agreed on several innovative features to include in the app, such as AI-based file organization, cloud storage, real-time noise cancellation during online classes, and an AI assistant to help students manage tasks and materials. These ideas laid the foundation for our prototype design.

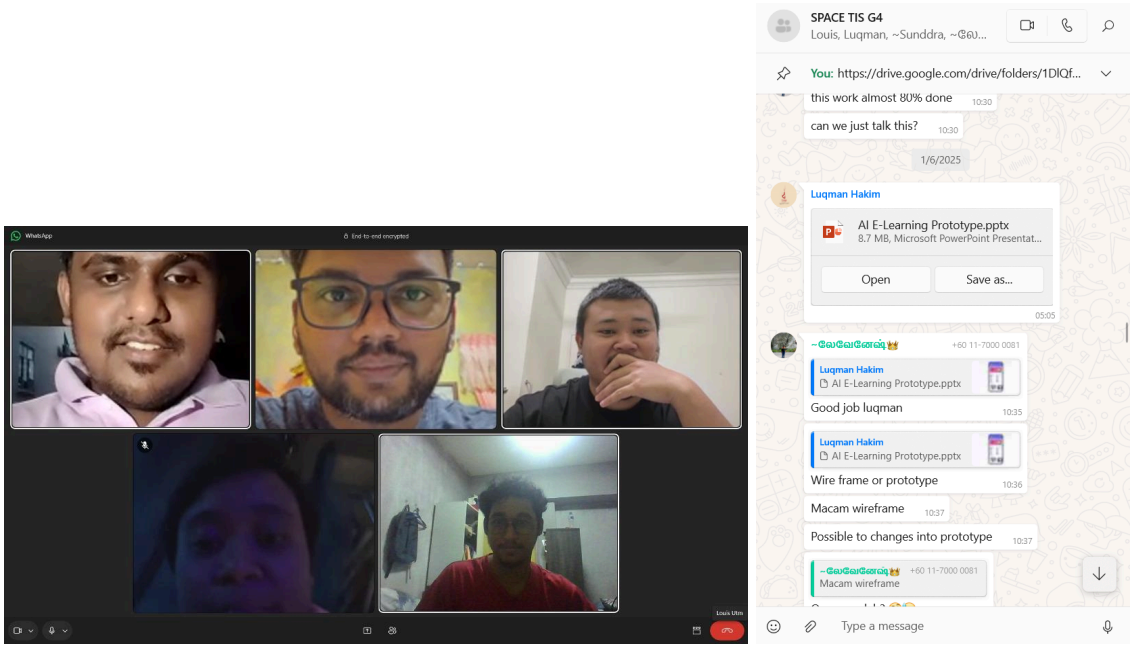

Figure 3 Photo and WhatsApp chat of our online discussion

4.3 Prototype Phase

We translated our ideas into a low-fidelity prototype of the Smart E-Learning App, focusing on the user interface, structure, and core features.

Step 1: Sketching & Layout Planning
We used powerpoint to outline the app's layout and navigation flow, identifying key components such as the home dashboard, AI-powered file manager, online classroom, cloud storage, AI assistant, and settings.

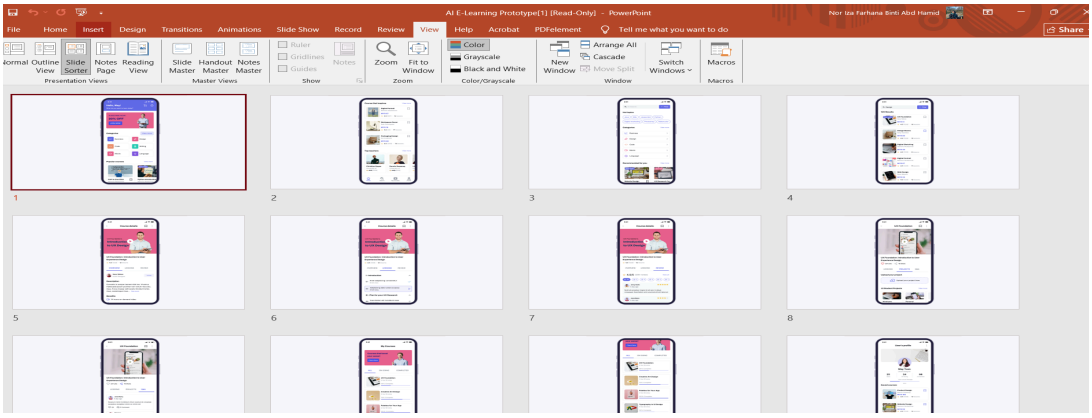

Figure 4 Snippet of our apps layout

Step 2: Digital Prototype

We then developed a clickable prototype using Visily to create a wireframe, designed to simulate mobile or tablet interactions. It demonstrated how users could navigate the app, upload/download files, join virtual classes, organize documents, and interact with the AI assistant.

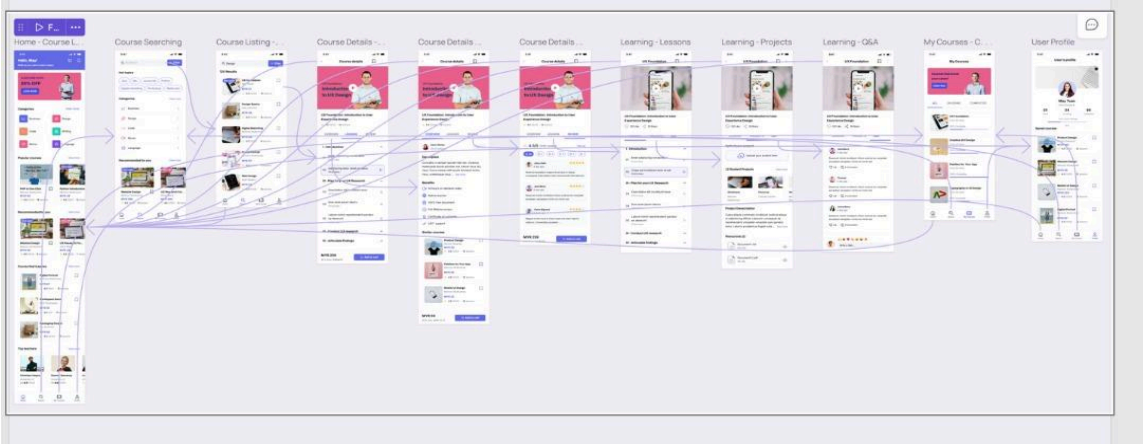

Figure 5 Visily Wireframe

4.4 Prototype Testing Phase

We presented the Smart E-Learning App prototype using Visily wireframe to several users, who provided valuable feedback. Most agreed the app effectively addressed key issues like file organization, storage limitations, and online class usability. Users found the AI features helpful and easy to use, though some suggested enhancing the interface and adding file preview/editing functions. This feedback will guide future improvements.

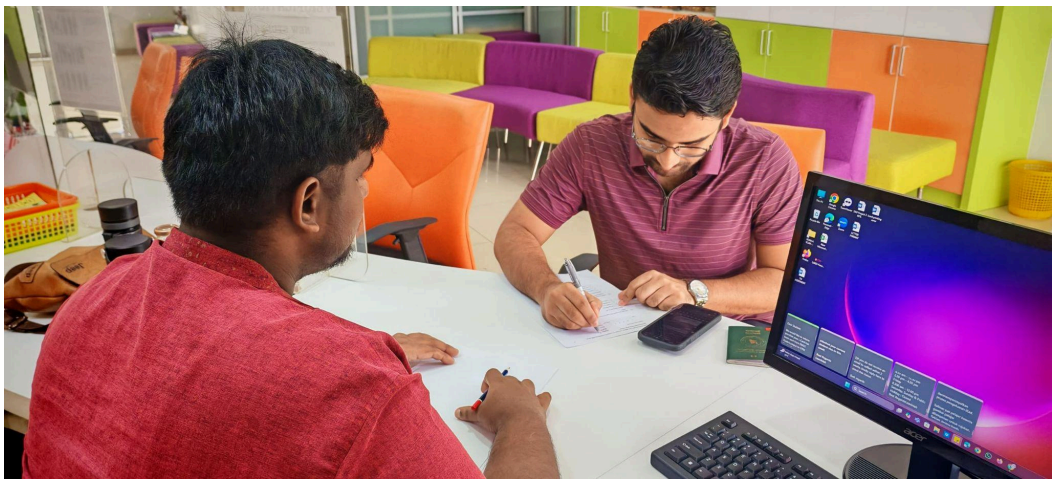

Figure 6 Prototype testing

5.0 REFLECTION

NOR IZA FARHANA SX210317ECRHS01

1. **What is your goal/dream with regard to your course/program?**

   To become an innovative tech professional who creates smart, user-friendly solutions.

2. **How does this design thinking impact on your goal/dream regarding your program?**

   It taught me to solve problems with empathy, think creatively, and build solutions that truly meet user needs.

3. **What is the action/improvement/plan necessary for you to improve your potential in the industry?**

   I aim to sharpen my technical skills, take on more real-world projects, and keep improving my teamwork and communication.

LUQMAN HAKIM BIN ROSLAN SX210316ECRHS01

1. **What is your goal/dream with regard to your course/program?**

   My goal in pursuing this course is to build a strong foundation in technology and information systems, and ultimately become a skilled professional in the digital technology or IT industry.

2. **How does this design thinking impact on your goal/dream with regard to your program?**

   The Design Thinking project has had a significant impact on how I view problem-solving within my field by going through each stage—empathize, define, ideate, prototype, and test.

3. **What is the action/improvement/plan necessary for you to improve your potential in the industry?**

   I plan to focus on both technical and soft skill development. On the technical side, I will deepen my knowledge in programming, UI/UX design, and system development through online courses and personal projects. On the soft skills I will work on improving communication, teamwork, and critical thinking

LEAVINISH A/L BALASUBRAMANIAM SX240278ECRHS01

1.What is your goal/dream with regard to your course/program?

My goal is to learn everything I can about computer science, including both soft skills and technical (hard) skills, so I can improve my chances of getting a better job. I chose this course because I've always had a strong interest in this field. On top of that, we're moving into an era where AI and advanced technologies are shaping the future—and at the heart of all this progress is computer science.

2.How does this design thinking impact on your goal/dream with regard to your program?

I am grateful for design thinking as I feel that it is both inspirational, engendering creativity and aspirational, encouraging us to hope for better outcomes, and indeed, to create them.Besides, it is also offers us a tool kit to for creating better outcomes in the world that offer true value to our stakeholders.

3.What is the action/improvement/plan necessary for you to improve your potential in the industry?

i)By researching on a project, task, and product at google, Ai tools, youtube which i usually do before a task.

ii) Always talk to my superior ,classmates, coworkers and more to my Lecture to get a better view.

iii)Always store my assessment work and flow work like how,sources, what in my personal space.

SUNDDRA PAANDIAN A/L SINNASAMY SX240264ECRHS01

1.What is your goal/dream with regard to your course/program?

To become a skilled cybersecurity professional with a strong foundation in both offensive and defensive security. I aspire to lead initiatives that safeguard digital environments while continuously learning and contributing to the security community.

2.How does this design thinking impact on your goal/dream with regard to your program?

Design Thinking helped me approach cybersecurity problems from a user-centric angle. By empathizing with users and understanding pain points, I've become more effective at designing solutions that are secure, intuitive, and practical. It taught me to think beyond technical fixes and focus on real-world usability.

3.What is the action/improvement/plan necessary for you to improve your potential in the industry?

i) Continue enhancing my red team and IAM (Identity and Access Management) expertise through certifications and projects.

ii) Engage in more collaborative, interdisciplinary work to strengthen communication and adaptability.

iii) Build a public portfolio (like this GitHub repo) to reflect growth, share learning, and attract opportunities in the cybersecurity field.

LOUIS PAUL A/L KUALIANTAISAMI SX240262ECRHS01

1. **What is your goal/dream with regard to your course/program?**

In terms of cybersecurity, I want to become a proficient professional who can use creative, user-centered methods to solve real-world problems. I want to use what I learn to develop meaningful solutions, particularly in areas like digital transformation, sustainable development, or enhancing everyday user experiences. In the end, I want to contribute to projects that have a long-lasting, positive impact on the environment and society.

2. **How does this design thinking impact on your goal/dream with regard to your program?**

I can address challenges creatively and sympathetically thanks to design thinking. It allows iterative testing, accelerates prototyping, and fosters a deeper comprehension of user demands. I can maintain my focus on developing solutions that are not only useful but also worthwhile and easy to use by utilizing design thinking. This way of thinking improves my capacity for critical thought and innovation, both of which are vital to reaching my objective of using my work to truly impact the world.

3. **What is the action/improvement/plan necessary for you to improve your potential in the industry?**

- Participate in cooperative projects, freelance work, or internships to obtain practical experience.
- Keep learning by remaining current with technologies, techniques, and trends in the industry, such as agile development, sustainability principles, and UX research.
- Create a compelling portfolio that highlights ability to solve problems, be creative, and have an impact.
- To learn from others and discover opportunities, connect with professionals at conferences, events, or online groups.
- Ask for feedback frequently in order to hone my abilities and keep getting better.

6.0 TASK DISTRIBUTION

NO.	NAME	TASK
1	LEAVINISH A/L BALASUBRAMANIAM (SX240278ECRHS01)	1)Report 2) reflection 3)Manage questionnaire 4) Demonstration Video 5) Interview and demonstrations with UTM students
2	NOR IZA FARHANA BT ABD HAMID (SX210317ECRHS01)	1)Report 2) reflection 3)Manage google survey and questionnaire
3	LUQMAN HAKIM BIN ROSLAN (SX210316ECRHS01)	1)Report 2) reflection 3)Wire frame and prototyping
4	LOUIS PAUL A/L KUALIANTAISAMI (SX240262ECRHS01)	1)reflection 2)Demonstration Video
5.	SUNDDRA PAANDIAN A/L SINNASAMY (SX240264ECRHS01)	1)reflection 2)Demonstration Video