



FACULTY OF COMPUTING
UTM Johor Bahru

SECP1513-TECHNOLOGY AND INFORMATION SYSTEM

SECTION-07

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PROJECT-DESIGN THINKING MINDSYNC INTEGRATED SYSTEM WITH E-LEARNING

[Video Link for Design Thinking](#)

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1.0 Introduction

Design thinking is a problem-solving approach focused on understanding user needs and creating innovative solutions. It involves five stages: Empathize, Define, Ideate, Prototype, and Test.

Stress and burnout are common challenges for students, often caused by disorganization and missed deadlines. Our project, "UTM MindSync," integrates with the e-learning system to help students stay organized, reduce stress, and avoid missing deadlines. The system combines academic and daily life to minimize the gap, reducing stress and enhancing well-being.

2.0 Detailed Steps and Descriptions in Design Thinking

2.1 Empathy Phase

In the Empathy phase, we identified challenges faced by UTM students, for instance, stress from deadlines and assignments. We interviewed Tasneem, a student in Electrical Engineering, who can barely handle her deadlines. Such an interview gave us an insight into the problems that the students face, and it led us to choose features for our system which could effectively address the issues.

2.2 Define phase

In the define phase of our project, we mainly focused on articulating the challenges that our student mentioned in the interview, highlighting issues such as difficulty in keeping track of deadlines, prioritization of tasks, keeping up with changes as well as enhancing their mental wellbeing. We have identified the root cause of this problem which is the lack of a system that handles these issues.

2.3 Ideate Phase

In the Ideate phase, we brainstormed ideas to address the identified problems. Ideas were categorized as rational, intermediate, and radical. We discarded the idea of creating a new AI-driven app and decided instead to integrate our system with e-learning. Key features included a personalized to-do list, notifications, and mental health check-ins.

2.4 Prototype Phase

In the prototype phase, we developed a prototype of the UTM MindSync system, incorporating features such as personalized to-do list, progress tracking, and mental wellness tools. The prototype was designed to integrate seamlessly with the e-learning system.

2.5 Test Phase

In the test phase, the team conducted user tests to gather feedback on the prototype's usability, functionality, and effectiveness, which is crucial for identifying potential limitations and enhancing the product further. Students provided insights on how well the system addressed their needs.

2.6 Log Journal

No	Activity Description	Date
1	Initial meeting to brainstorm ideas and assign roles.	17/11/2024
2	Conducted research and interviews to understand student challenges.	22/11/2024
3	Defined the problem and brainstormed solution features.	30/11/2024
4	Created wireframes and design concepts for the app.	05/12/2024
5	Developed the first prototype of the system.	15/12/2024
6	Tested prototype with students.	22/12/2024
7	Final review and adjustments before presentation.	10/01/2025
8	Submitted the final report and video.	14/01/2025

Table 1: Log journal of activities

3.0 Detailed descriptions

3.1 Problem

Students face significant challenges in managing their university tasks, assignments, and activities due to the limitations of current tools. Existing applications require students to manually enter all their tasks and assignments, which is time-consuming.. Planning becomes much more difficult when university assignments frequently change, as these tools do not automatically update deadlines. Handling and scheduling academic tasks alongside personal activities like group meetings and appointments becomes overwhelming. Without a system customized to their specific needs, students often struggle to manage their workload effectively, leading to missed deadlines, forgotten tasks, and increased stress.

3.2 Solution

Through interviews and questionnaires, we identified the need for a system that integrates with UTM's e-learning platform. Our solution automatically syncs assignments, deadlines, and updates, removing the need for manual input. The system includes a personalized to-do list that combines academic and personal tasks, with custom categories and notes. Students can prioritize tasks and track progress with features like "To Do," "In Progress," and "Done." Notifications will remind students of upcoming deadlines. Additionally, we've included wellness features such as daily mood logging, personalized study break reminders, and motivational tips to support mental well-being, reduce stress, and help students balance academic and personal responsibilities. This integrated system aims to streamline task management while promoting students' mental health.

3.3 Team working

Throughout the entire design thinking process, our team worked together effectively to brainstorm ideas in order to understand the students' needs.. In **Define** and **Ideate**, we worked as a group to decide on key features and solutions, ensuring everyone's ideas were considered. Tasks were then divided based on strengths: **Tagwa** and **Leena** conducted interviews and surveys, **Mathaba** developed the prototype, **Hodan** and **Raghad** handled documentation. The team members worked together to make regular reviews during **Prototype** and **Test** phases. Open communication and teamwork helped us overcome challenges and led to success.

4.0 Design thinking assessment points

4.1 During the End of the Project Demonstration

At the end of the project, we assessed the final results to ensure the prototype met goals, addressed user needs, and solved the identified challenges. During the final demonstration, we received validation that the system was effective, and some features were specifically highlighted as being particularly impactful.

4.2 During the Transition Between Design Thinking Phases

Assessment occurred between phases to review progress, gather feedback, and refine the approach before moving forward to the next phase. This step-by-step validation kept our progress consistent and focused, as we gathered, analyzed, and incorporated feedback to improve the system's functionality and align it with user needs.

5.0 Design thinking evidence

5.1 The sample work

5.1.1 Empathy stage



Figure 1.1 :Interview in the Empathy stage

What is your current year of study?

15 responses

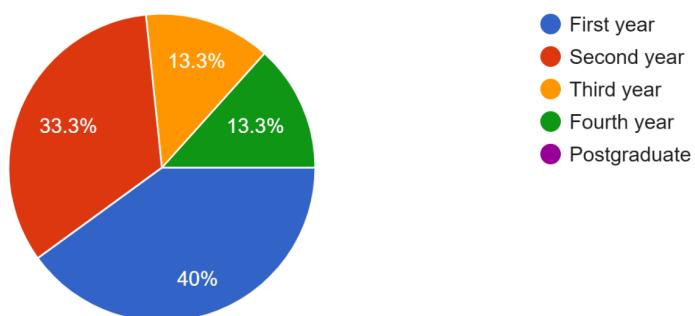


Figure 1.2 :survey in the Empathy stage

5.1.2 Define stage

Copy of Challenges and Needs: Enhancing E-Learning Task Manager

Responses 15

Questions Responses Settings

I always need to re check elearning every day to see my due dates

I forget deadlines because I just track in my head

I find it hard to prioritize tasks and track how much I have completed

What tools or apps do you currently use to manage your tasks, assignments, and deadlines?

Copy chart

15 responses

Tool/App	Responses	Percentage
Google calendar	2	(13.3%)
Notion	1	(6.7%)
Microsoft To Do	1	(6.7%)
None	10	(86.7%)
Power planner	1	(6.7%)

What problems do you face with the current apps or tools you use for managing your schedule

Tagwa Kubur, Leena Ata, Ragad Ali, Mathaba Hassan, HODAN HASSAN ABDILAH

Figure 2.1: Define problems in Define stage

Copy of Challenges and Needs: Enhancing E-Learning Task Manager

Responses 15

Questions Responses Settings

What kind of challenges do you face when balancing academic tasks with other activities, like group projects, meetings, and personal time?

15 responses

I always feel behind on both and I can't prioritize well

I find it hard to manage smaller personal activities with big deadlines

Group projects take longer and sometimes I don't plan them well and I feel in a mess

Group project deadlines often clash with personal plans and I don't track any of them properly

I can barely find time for my personal life because I always don't prioritize my day tasks

It is hard to focus on group meetings when I have my own work and I don't manage my time well

I forget my personal tasks because of deadlines a lot of the time

I get overwhelmed by deadlines so I don't plan my personal time at all

It is very hard to balance them and it is hard to focus on group meetings, deadlines and personal life at the same time

Tagwa Kubur, Leena Ata, Ragad Ali, Mathaba Hassan, HODAN HASSAN ABDILAH

Figure 2.2: Define problems in Define stage

5.1.3 Ideate stage



Figure 3:Brainstorming in Ideate stage

5.1.4 Prototype stage

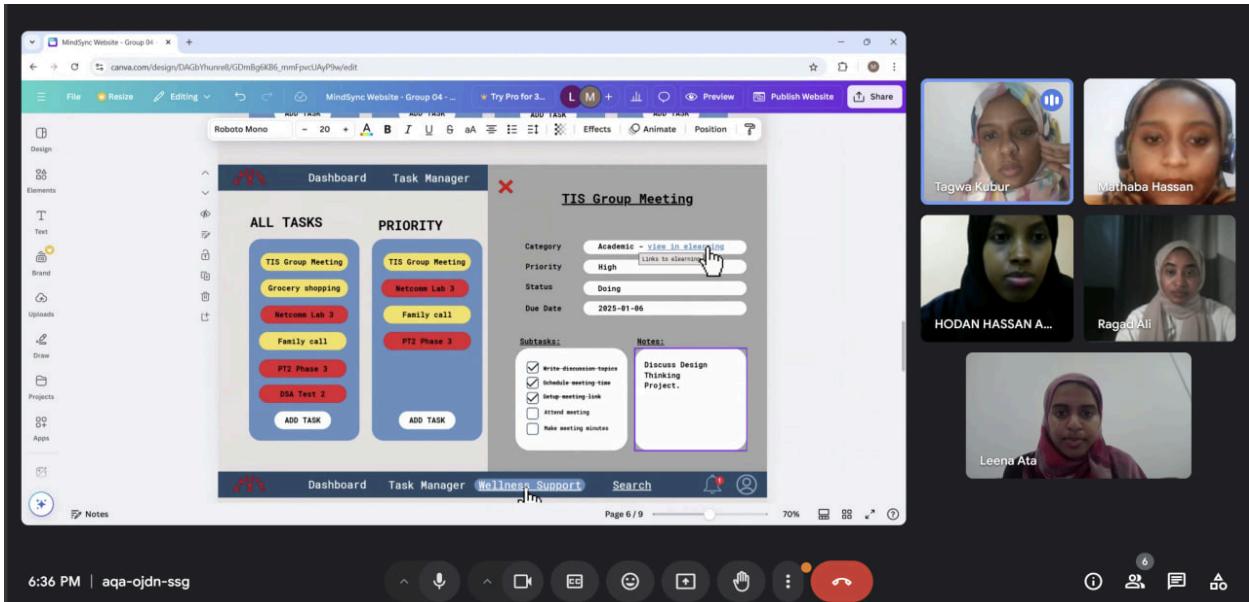


Figure 4: Prototype development meeting discussion

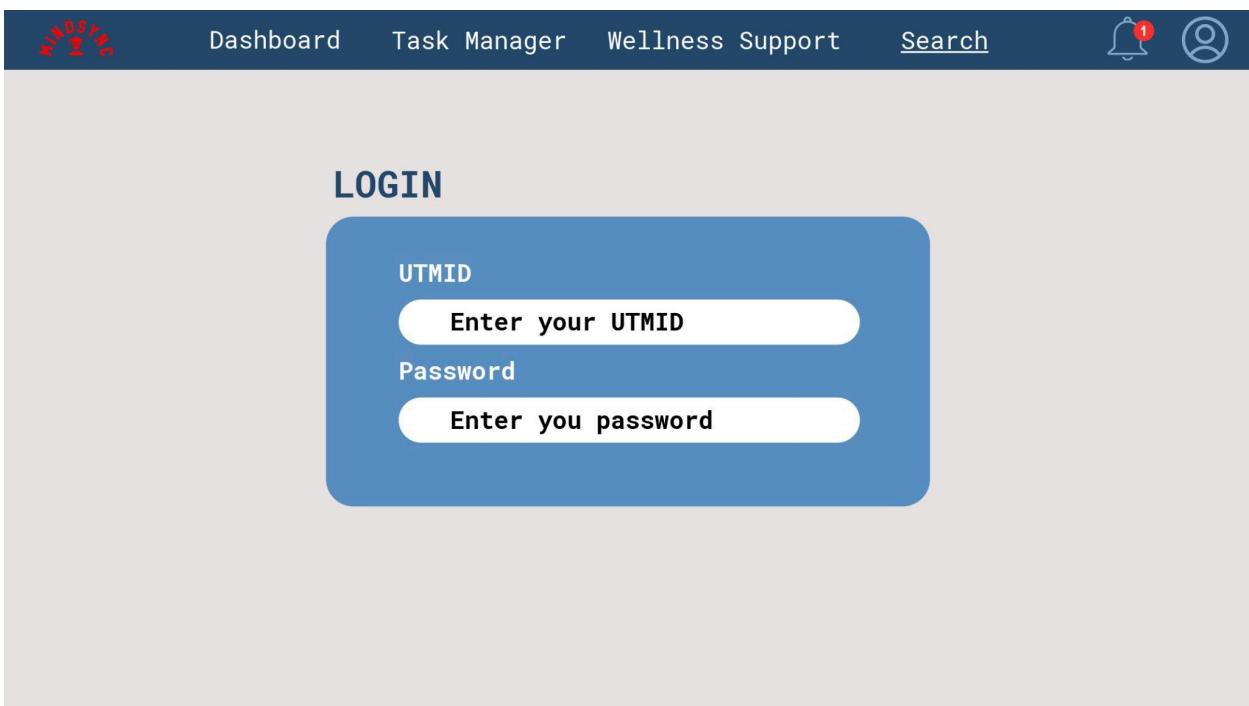


Figure 4.1: Login Page Interface

The screenshot shows a dashboard interface with a header containing a logo, 'Dashboard', 'Task Manager', 'Wellness Support', 'Search', and notification icons for a bell and user profile. Below the header is a section titled 'TIMELINE' with three buttons: 'Next 7 days', 'Sort by dates', and 'Search by activity type or name'. A table displays four tasks:

DUE	DEADLINE	TIME LEFT	STATUS
TIS Group meeting	2025-01-06	23 hours	<input type="checkbox"/>
Grocery shopping	2025-01-06	23 hours	<input checked="" type="checkbox"/>
Netcomm Lab3	2025-01-08	5 days	<input checked="" type="checkbox"/>
Family Call	2025-01-10	7 days	<input type="checkbox"/>

Figure 4.2: To-do List Dashboard Interface

This screenshot is identical to Figure 4.2, showing the same dashboard layout and task list. However, the 'TIS Group meeting' task in the timeline table now has a mouse cursor hovering over it, triggering a context menu with the option 'View in elearning'.

Figure 4.3: Task Timeline with Deadline Alerts

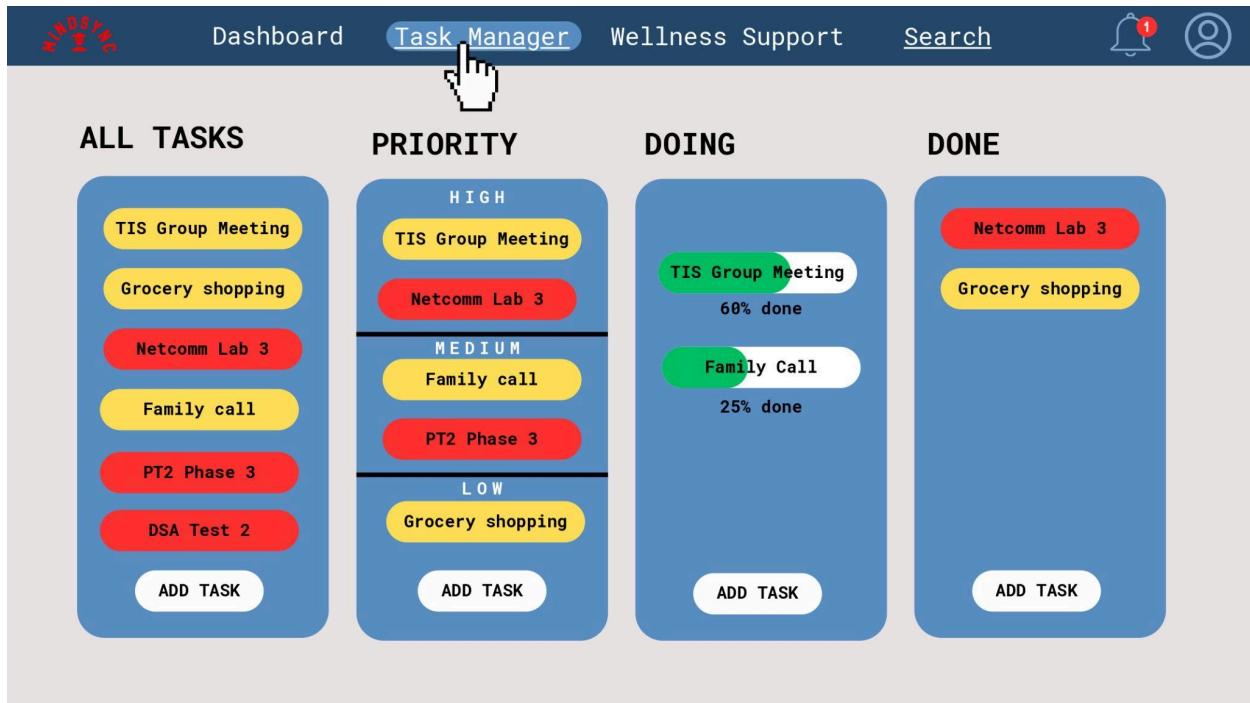


Figure 4.4: Progress Tracking Dashboard

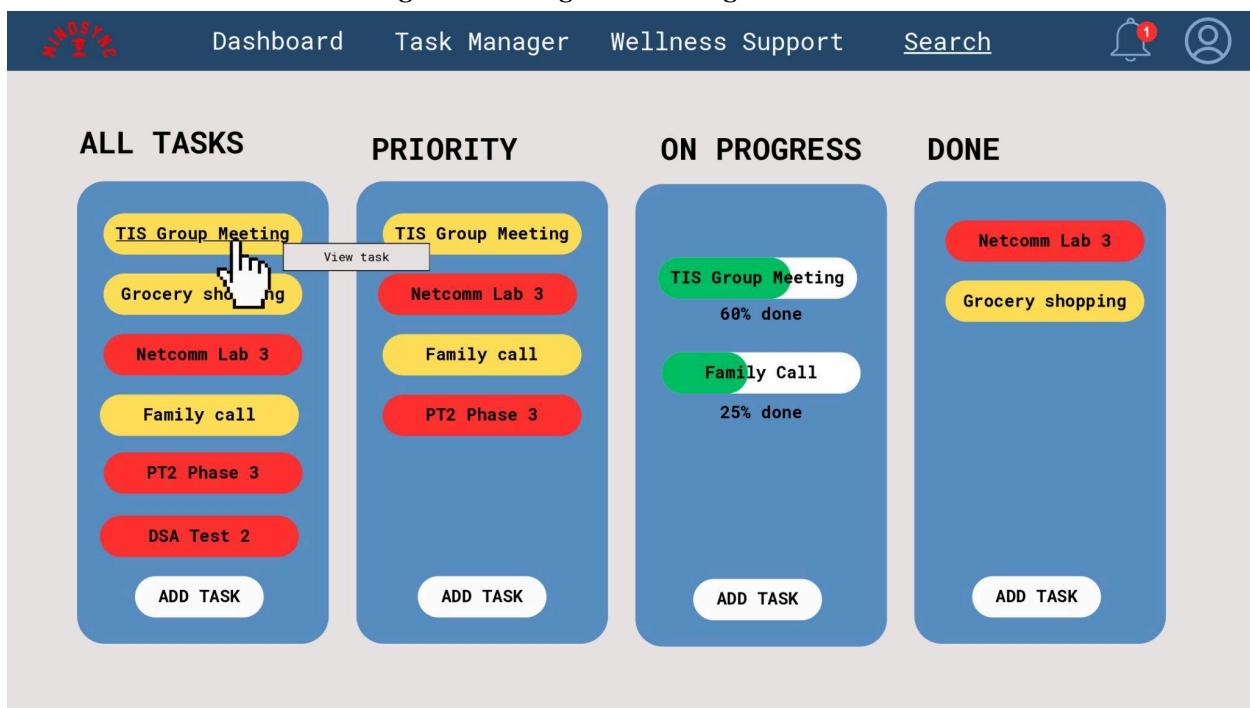


Figure 4.5: Task interaction from dashboard

The screenshot shows a dashboard with tabs for 'Dashboard', 'Task Manager', and 'Wellness Support'. The 'Task Manager' tab is active, displaying two sections: 'ALL TASKS' and 'PRIORITY'. The 'ALL TASKS' section contains tasks like 'TIS Group Meeting', 'Grocery shopping', 'Netcomm Lab 3', etc. The 'PRIORITY' section contains tasks like 'TIS Group Meeting', 'Netcomm Lab 3', 'Family call', etc. A modal window for the task 'TIS Group Meeting' is open, showing details such as Category (Academic), Priority (High), Status (Doing), Due Date (2025-01-06), Subtasks (checkboxes for 'Write discussion topics', 'Schedule meeting time', 'Setup meeting link', 'Attend meeting', 'Make meeting minutes'), and Notes ('Discuss Design Thinking Project.').

Figure 4.6: Task detail view

The screenshot shows the 'Wellness Support' tab active. It features a 'MOOD TRACKER - HOW ARE WE FEELING TODAY?' section with five icons: 'STRESSED' (person sweating), 'TIRED' (person sleeping), 'COOKED' (person in kitchen), 'CHILL' (dog), and 'HAPPY' (two dogs). Below this are 'TIP OF THE DAY' and 'QUOTE OF THE DAY' sections. The 'TIP OF THE DAY' tip is: "REMEMBER TO TAKE BREAKS AND LISTEN TO YOUR BODY'S NEEDS." The 'QUOTE OF THE DAY' quote is: "HAPPINESS CAN BE FOUND, EVEN IN THE DARKEST OF TIMES, IF ONE ONLY REMEMBERS TO TURN ON THE LIGHT." - ALBUS DUMBLEDORE, HARRY POTTER AND THE PRISONER OF AZKABAN BY J.K. ROWLING".

Figure 4.7: Wellness Support Interface

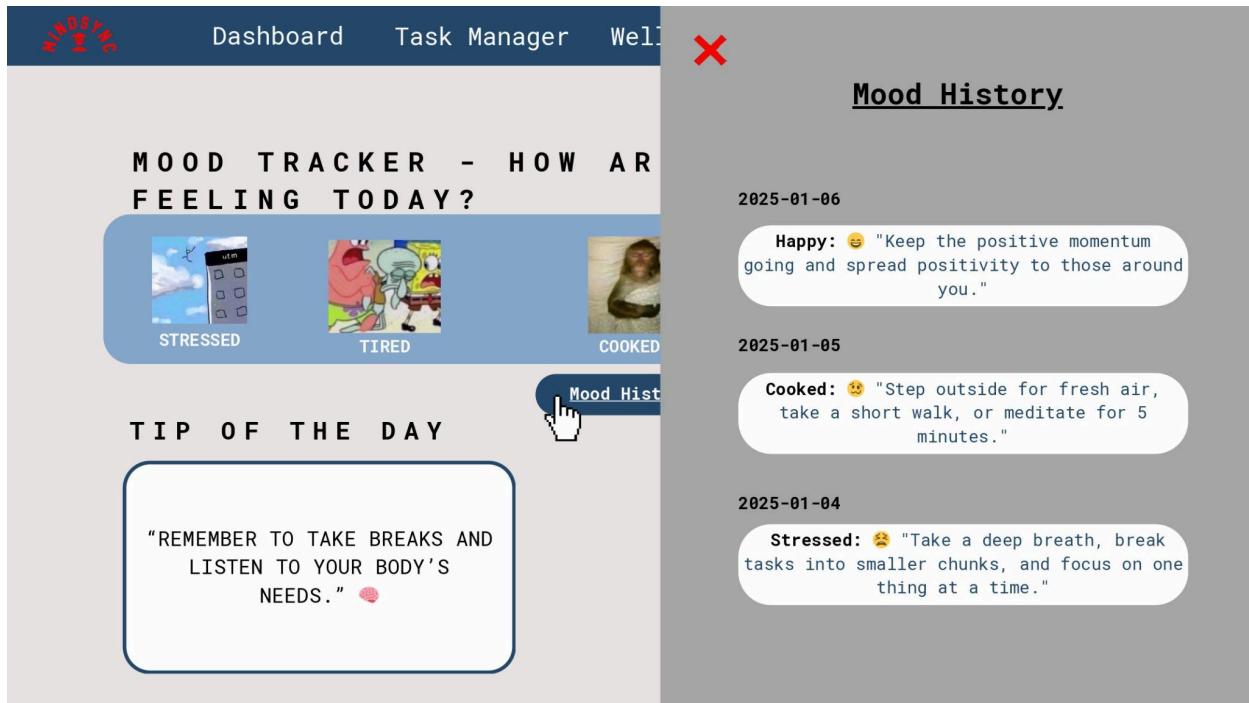


Figure 4.8: Mood History Tracker

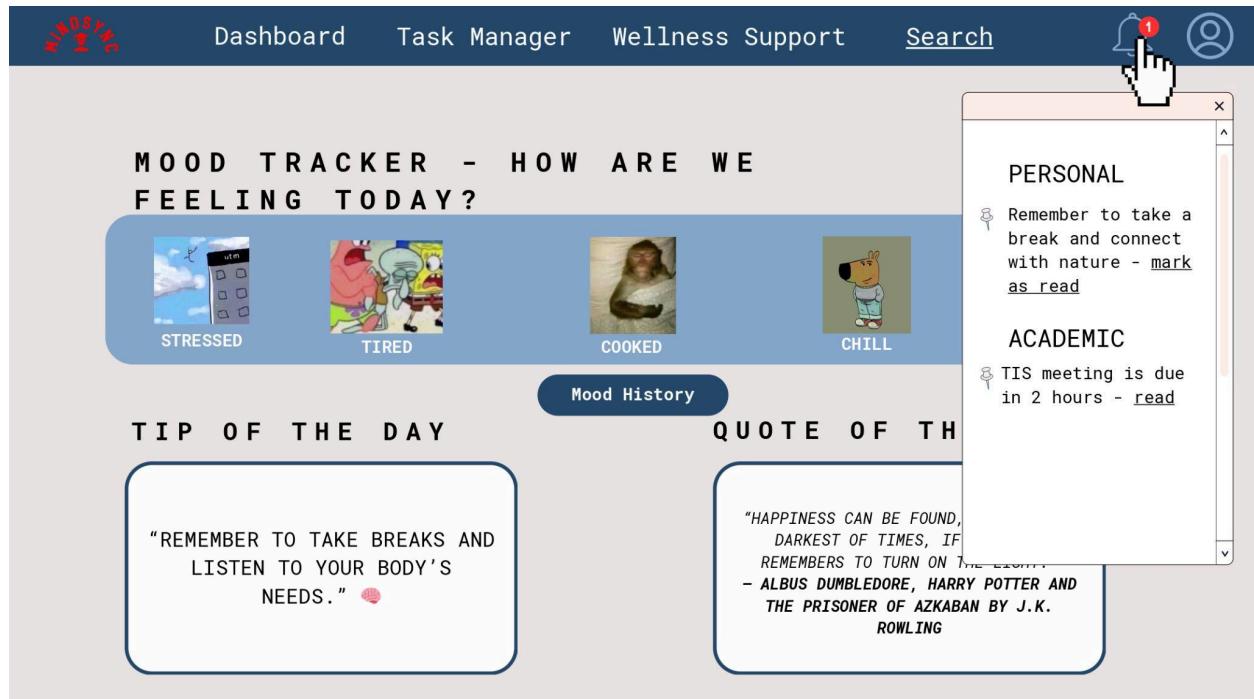


Figure 4.9: Personalized and academic reminders notifications

5.1.5 Test stage



Figure 5:User test the system and giveing feedback

5.2 Record for each phase

5.2.1 Empathy:

During this phase, we conducted an interview and a Google Form survey to gather users' needs and problems.

5.2.1.1 Interview details

The table below shows the questions and answers that have been obtained from the interview session.

Questions	Answer
What is your name ?	My name is Tasneem
What do you study ?	I study electrical engineering
In which semester are you now?	I am in semseter two.
What specific challenges do you face when keeping track of deadlines for assignments and tests?	I often miss deadlines because it's hard to keep track of everything. Managing overlapping assignments and tests is also very stressful .
What tools or apps do you currently use to manage your tasks and assignments?	I use Google Calendar for reminders and a notebook for listing my tasks. I've tried apps like Notion and power planner , but they're too time-consuming to set up and maintain.
What problems do you face with the current apps or tools you use for scheduling during the semester?	Manually entering all tasks and deadlines is very time-consuming. When new assignments are added, I don't always remember to update them in the schedule .
How do you usually manage sudden changes in deadlines or new assignments?	Sudden changes can be stressful because they disrupt my plans. I try to update my schedule, but I don't always have enough time to do that and forget about it .
Do you find it difficult to prioritize tasks when you have multiple assignments and tests at the same time? If yes, how do you currently handle this?	Yes, it's definitely hard to prioritize.. I usually try to focus on what's due first or what seems most urgent.

What challenges do you face when balancing academic and personal activities?	I have assignments and tasks to complete, but I also need to attend group project meetings or meet with professors or attend faculty or club activities . It's hard to keep track of all these things.
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Table 2 : Details for Interview session

5.2.1.2 Data Analysis of Responses from Survey

What is your current year of study?

15 responses

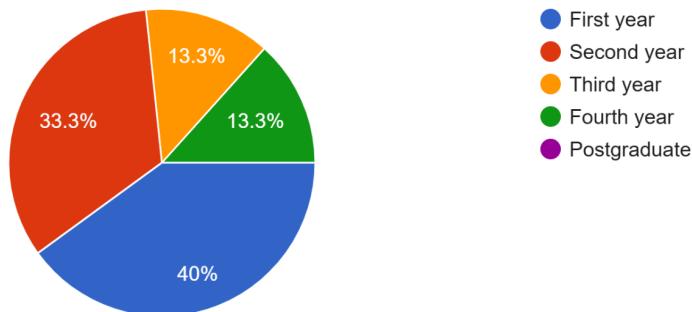


Figure 6.1 : Pie chart shows year of study of respondents

What is your faculty?

15 responses

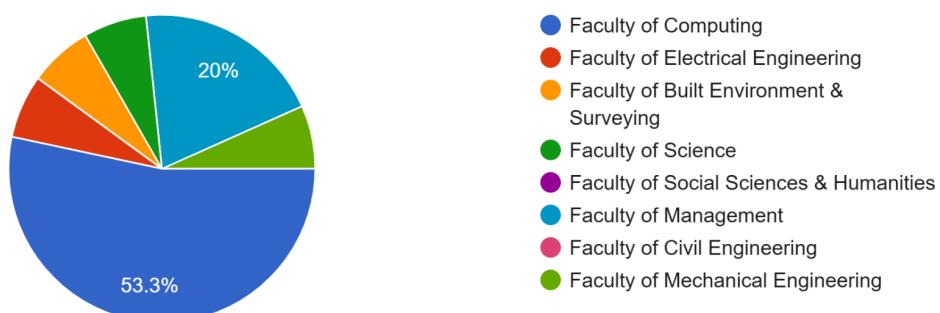


Figure 6.2 : Pie chart shows faculty of respondents

Form responses summary 

What specific challenges do you face when keeping track of deadlines for assignments, tests, and deadlines?

I forget deadlines because I just track in my head
It's hard to balance deadlines for multiple classes.
Deadlines sometimes overlap, and I don't know which one to focus on first
I don't plan ahead so I sometimes miss deadlines or find out when it is too soon.
I struggle to balance assignments and deadlines with my personal schedule.
I always feel stressed and have to check elearning multiple times a day to see all my deadlines
Long deadlines dont seem urgent to me and it suddenly surprises me when it is near i dont get any notifications for it
It is hard to keep management of all my assignments and tests in one place
I dont keep track of which deadline to focus on first
i alwys need to re check elearning every day to see my due dates
i cant track tests i just track my deadlines in elearning and the tests clash with my assignments and sometimes i have to miss an assignment because of a test
I often miss deadlines of assignments that are on the same day because i dont plan in advance
I find it hard to prioritize tasks and track how much i have completed
They are always at the same time and i dont prioritize that is why I cant manage everything together
I sometimes suddenly find out about new deadlines when my friends tell me

Figure 6.3 : Question 3 responses- Challenges in keeping track of deadlines

Form responses summary 

What problems do you face with the current apps or tools you use for managing your schedule during the semester?

I currently don't use any apps I lose motivation to use them.
I don't use any app.
I have to put all my deadlines and assignments manually
I don't use any app
I can't track my progress in a specific assignment
I am not using an app
I cant track my progress for an assignment especially long phases projects this semester i just receive notifications for them only
i dont use app because i feel like they are too messy
i dont use they are complex for me
i just use elearning to check my deadlines i dont manage any schedule
i am not using app
I dont use app i find them cluttered with many things
I cant track how much i have completed
I am lazy to use such apps because i have to put all my deadlines by myself
I get lazy to put all my assignments in it

Figure 6.4 : Question 4 responses - Problems with current apps or tools

What tools or apps do you currently use to manage your tasks, assignments, and deadlines?

15 responses

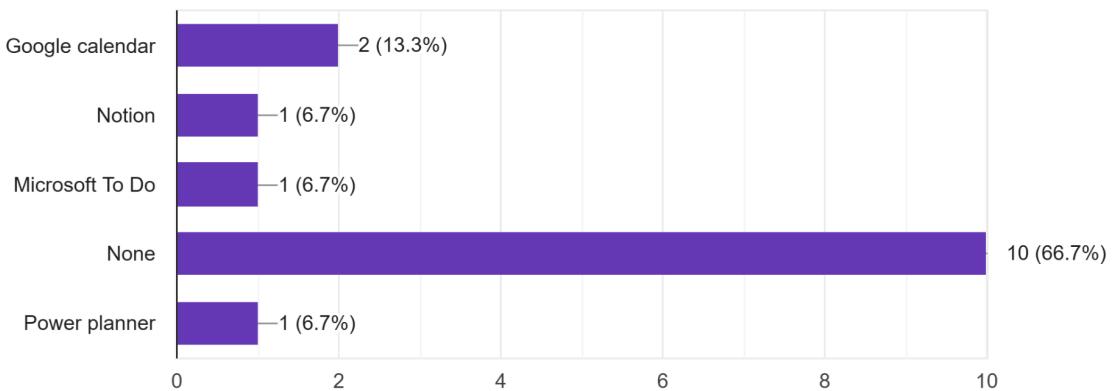


Figure 6.5: Bar chart shows tools or apps used by respondents

Do you often feel that tasks or deadlines overlap, making it hard to manage your time effectively?

15 responses

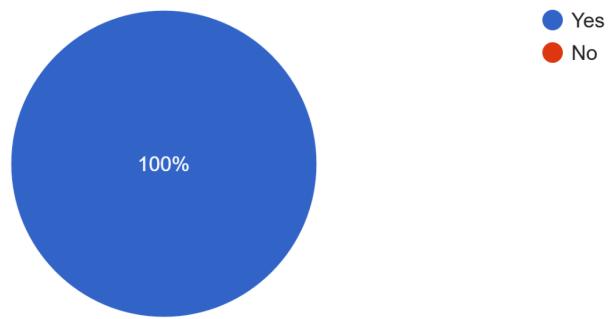


Figure 6.6: Pie chart shows question 5 responses- Task Overlap

Form responses summary ▼ grid

What kind of challenges do you face when balancing academic tasks with other activities, like group projects, meetings, and personal time? ✓

I always feel like there's not enough time for anything, and I can't manage my time
Group project deadlines often clash with personal plans and I don't track any of them properly
I find it hard to manage smaller personal activities with big deadlines
It's overwhelming because everything seems important and I don't keep track of them.
group projects take longer and sometimes I dont plan them well and i feel in a mess
I get overwhelmed by deadlines so i dont plan my personal time alot
I always feel behind on both and i cant prioritize well
i feel bad taking breaks because i am overwhelmed by tasks
It is haard to focus on group meetings when I have my own work and i dont manage my time well
i dont have a lot of personal time and i dont feel in a good mood to take time for myself
it is very hard to baalance them and it is hard to focus on group meetings, deadlines and personal life at the same time
I forget my personal tasks because of deadlines alot of the time
I dont feel motivated to do everything and i feel stressed when trying to manage them together
I find it very hard to baalance them together and I always feel sad and stressed and not enough time to focus on personal life
I can barely find time for my personal life because I always dont prioritize my day task

Figure 6.7 : Question 6 responses- challenges in balancing academic tasks with other activities

5.2.2 Define:

The table shows problems faced by the respondent.

Problems	Description
Difficulty in keeping track of deadlines	Students struggle to track deadlines, especially with frequent changes or added tasks.
Challenges with prioritizing tasks	Students find it hard to prioritize tasks, impacting their ability to manage workload.
Struggle with sudden changes in deadlines	Unexpected deadline changes disrupt schedules and make it difficult to stay organized.
Struggle with balancing academic and personal tasks	Balancing academic responsibilities with personal activities is challenging.
Lack of wellness support	Students feel stressed and unmotivated, with no way to track mood or take breaks.

Table 3 : Problems faced by respondents

5.2.3 Ideate:

The table below shows possible solutions to address the respondent's problems:

Rational	Intermediate	Radical
<ul style="list-style-type: none">- Provide a basic to-do list with manual input for tasks, priority, and a simple picture for health check.	<ul style="list-style-type: none">- Create a detailed to-do list integrated with e-learning, with task priority, notifications for changes, and mental health check-ins with visual engaging images.	<ul style="list-style-type: none">- Develop an AI based app that auto-recommends new plans based on deadline changes and provides mood tracking insights.

Table 4 : Recommended solutions categorized

5.2.4 Prototype:

Our group decided to use solutions from the intermediate category based on the following reasons:

Category	Reason
Rational	Easy to implement, but requires manual input and lacks engagement, which doesn't fully address students' challenges.
Radical	Innovative but too complex, as we lack expertise to develop an AI-based application.

Table 5: Reasons for prototype selection

Therefore, we decided to use features from the intermediate category: personalized to-do list, task priority, notifications, and a mental health check-in.

5.2.5 Test:

After completing the prototype, we demonstrated it to Saja, one of our Google Form respondents. We explained the features and how they addressed the identified challenges. Saja actively engaged during the demonstration, pointing out specific features that she found particularly helpful and sharing how the system could benefit her in daily use

6.0 Reflections

My goal throughout my career is to use software development to produce real-world solutions to problems. I was able to gain a thorough understanding of the complete design thinking process through this project. It emphasised how crucial each step is to creating efficient solutions. I intend to learn new technologies, take part in projects, improve my problem solving skills, and communication skills, obtain real-world experience through internships and teamwork in order to improve my industrial potential. **-Leena**

This design thinking project has brought me closer to developing innovative, user-centered technology solutions that address real-world problems effectively. I learned the importance of empathy and understanding user needs. It showed how to combine creativity, problem-solving, and practical design to create meaningful solutions, equipping me with the skills and mindset needed to achieve my aspirations in this program. **-Ragad**

As a software engineering student , one of my goals is to build strong problem-solving skills to come up with solutions for real-world challenges. This project showed me how an approach like design thinking can turn ideas into impactful outcomes.By using a systematic approach, focusing on user needs, and collaborating with a team , I gained a better understanding on how to use design thinking to solve problems . To improve my potential in the industry,I plan to practice problem-solving skills by working on more projects , and continue using design thinking to address challenges and deliver meaningful solutions. **-Tagwa**

This project has been a great learning experience, emphasizing the importance of understanding user needs. By applying design thinking, I developed a solution that can help students manage tasks efficiently. The process taught me how to balance creativity and practicality, refine ideas through feedback, and create user-centered solutions that address real problems, preparing me for future challenges in technology design. **-Hodan**

My goal as a software engineering student is to develop software to fulfil my own needs for creativity while also helping others bring their ideas to life. This project taught me to focus on user needs, emphasizing empathy, collaboration, and iteration, which aligns with my goal of creating impactful software. To improve my potential, I plan to gain hands-on experience through internships, work on my problem-solving skills, and stay updated on new technologies. - **Mathaba**

7.0 The task for each member

Phase	Task category	Member
Phase 1: proposal	Idea development	Mathaba
	Research on existing system	Leena
	Problem identification	Tagwa
	Solution proposal	All Members
Phase 2: information gathering and analysis	Survey and data collection	Leena
	Interview	Tagwa
	Data analysis	Leena and Tagwa
Phase 3: prototype	Prototype development	Mathaba
Phase 4: Testing	User feedback	Leena
Phase 5: report compilation	Problem and solution documentation	Leena
	Design thinking assessment	Ragad & Hodan
	Report assembly	All members
	Design thinking evidence	Ragad & Hodan
	Prepare the video	Ragad & Hodan
Phase 6: review	Final review	All members
	Editing and formatting	Mathaba

Table 6: Tasks division

8.0 References

- [1] Interaction Design Foundation. (n.d.). *What is design thinking?* Retrieved from <https://www.interaction-design.org/literature/topics/design-thinking>
- [2] GeeksforGeeks. (n.d.). *5 stages in the design thinking process.* Retrieved from [5 Stages in the Design Thinking Process - GeeksforGeeks](#)

9.0 Appendix

Video link: <https://youtu.be/LmbTwomkTWg?si=jrKvUuyAMIqXd3Tk>