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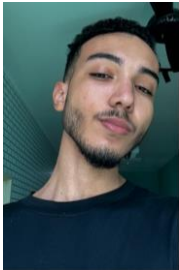UTM Johor Bahru

Report on Design Thinking Project

Subject : Technology and Information Systems (SECP 1513)
Section : 01
Name of Lecturer : Dr. Azurah binti Abu Samah
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Comments by Grader:

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Introduction

Design thinking is not only a problem-solving method but also a mindset that encourages a collaborative and iterative approach to innovation. It involves understanding the needs and perspectives of the users, generating, testing and improving the ideas and outcomes. Innovation, collaboration and user satisfaction can be enhanced by design thinking, which is a versatile method that can be applied to various domains.The five phases of design thinking which is empathy, define, ideate, prototype, and test—provide a structured framework for guiding the creative process.

In the context of application software development, the principles of design thinking can be harnessed to create intuitive and user-friendly interfaces. It is different from system software, where system software is essential for operating the computer hardware. The different types of application software can be developed to accomplish different tasks such as word processing, spreadsheets, database application, media players and graphic software.

Now, applying design thinking to the "UTM GoRide" project, the focus is on addressing commuting challenges faced by UTM students. The mobile application aims to streamline carpooling platforms and provide real-time updates on public transportation. By incorporating the principles of design thinking, the development team can ensure that the app is not only technically robust but also resonates with the specific needs and preferences of UTM students.

In conclusion, the integration of design thinking principles into software development processes, especially for applications like "UTM GoRide", enhances innovation, collaboration, and user satisfaction. This approach goes beyond just solving problems; it creates solutions that are tailored to the users' experiences, ultimately contributing to a more meaningful and effective application.

Detailed Steps and Descriptions

Phase 1: Empathy

Empathy is a stage where the investors understand the users needs in order to execute the crucial phase to solve problems. Our focus was on UTM students who encountered difficulties in facing commuting issues. We had conducted a few interviews with UTM students about their problem regarding this issue. After conducting a few interviews we find that most students have similar problems such as public transportation arriving does not suit their time, and the distance from college to their respective faculties is too far. We are inquired about the challenges they regularly confront and come out with ideas to create apps.

Phase 2: Define

Identifying and addressing the user's issue is the primary focus during the definition stage. After taking the interviews, we have concluded that a common issue among Utm students is lack of transportation, leading to extended waiting time for orders in Prebet Utm Transportation by using telegram. This is the significant part because we found that using telegrams might cause them time and very stressful to wait for replies from the drivers. So to help with this, we could upgrade this system by creating new apps for UTM students to solve the commuting issue.

Phase 3: Ideate

During the ideation stage, many creative solutions are generated through brainstorming and discussion processes. Systematic approach is employed to list and categorize ideas, progressing through various phases to explore any alternative ways that could benefit the users. First, we just list all ideas that could be beneficial for our new apps. Furthermore we list down every pros & cons of the ideas in every aspect to make the apps friendly users for Utm students. One of the ideas that could be used is creating Mobile apps for real-time public transportation updates, bike-sharing programs, or a carpooling platform.

Phase 4: Prototype

The prototyping phase serves as an experimental stage aimed at identifying the most optimal solutions and incorporating them into the final product. Following our discussions, we found solutions and proceeded to create a prototype based on mobile apps by utilizing design tools such as Canva for its development.

Phase 5: Test

Test is a stage in which the user tests a prototype and gets feedback from the users so that the inventors can revisit the previous step to iterate the process and enhance the product. We demonstrate our prototype after the processing of the prototype. We also explain the features of 'UTMGORide' to users and get some feedback from users so that we can improve our prototype.

Detailed description

Problem faced by users

UTM students who do not have access to their own vehicles are encountering several difficulties when commuting. For instance, they often have to wait for hours for buses or drivers, only to find them already full upon arrival. Additionally, the distance between the college and faculty can be quite far, exacerbating the problem. To mitigate this, many students are resorting to the Prebet UTM Transportation Telegram group. However, the group lacks drivers, with almost 200 students requesting one per day. Moreover, the telegram messages are unorganized, making it difficult for students to find a driver to take them to their destination on time.

The commuting challenges faced by UTM students without access to personal vehicles are not unique to this university alone, similar issues are prevalent across various universities. At other academic institutions, students who rely on public transportation or carpooling services encounter comparable difficulties. At UTM University, students often experience prolonged waiting times for buses or rideshare drivers due to high demand and limited transport availability. The situation is caused by the distance between different academic buildings, making it challenging for students to navigate the campus efficiently.

Moreover, the struggle to secure reliable transportation is a widespread issue. Students have reported difficulties in finding available drivers through existing communication channels, resulting in delays and missed classes. However, these platforms often lack the necessary structure and organization to effectively connect students with available drivers. Many students find themselves resorting to various informal communication channels, such as university-specific Facebook groups or WhatsApp chats, to seek transportation assistance. However, these platforms often lack the necessary features to facilitate an organized and reliable transportation system, leading to frustration and inconvenience for students who depend on these services daily.

In summary, the commuting challenges faced by UTM students without personal vehicles are not isolated incidents but reflect a broader issue experienced by students at different universities. The common themes include extended wait times, insufficient available drivers, and the lack of organized communication channels. A comprehensive solution that considers the needs of students across multiple universities would greatly enhance the overall commuting experience for this demographic.

Solution

"UTM GoRide" goes beyond just connecting students with available drivers, it aims to create a comprehensive and user-friendly experience for efficient commuting. The application enhances the reliability of the service, the app employs a real-time notification system. Students receive instant updates on the status of their ride requests, including driver availability and estimated arrival times. This feature minimizes uncertainty and ensures that students can plan their journeys with confidence, reducing the likelihood of missed classes or appointments.

Recognizing the diversity of transportation preferences, "UTM GoRide" allows students to choose between private rideshare options and real-time public transportation updates. This versatility ensures that students have access to a range of transportation choices, catering to individual preferences and varying commute distances within the campus.

Additionally, the application prioritizes safety by implementing a verification system for both drivers and passengers. This not only establishes a secure environment for users but also contributes to the overall accountability of the transportation network within the university community.

In response to the disorganization found in existing communication channels, "UTM GoRide" features a well-structured and user-friendly interface. The chat box allows seamless communication between students and drivers, streamlining the process of sharing travel details. The app's intuitive design ensures that students can quickly and easily access the information they need, fostering efficiency and reducing the time spent navigating the application.

Considering the evolving needs of students, "UTM GoRide" is designed to adapt and grow with the user community. Regular updates and feedback mechanisms are integrated to gather insights from users, enabling continuous improvement and the introduction of new features based on the changing dynamics of commuting preferences and challenges.

In summary, "UTM GoRide" is not just a ride-sharing application, it's a comprehensive solution tailored to the unique needs of university students. From real-time tracking and transparent reviews to safety measures and versatile transportation options, the app is poised to revolutionize the commuting experience, providing a reliable, efficient, and user-centric solution for students across the campus.

Teamwork

In our first meeting, we distributed the task to each member. Thaqif will focus on Graphic User Interface(GUI) and detailed steps. Abdallah will concentrate more on production of video, assessment points and ideas and improvement. Jocelyn and Harresh focus on the report where Jocelyn did introduction and detailed description and Harreah did prototype selection and customer feedback. Alya will do interviews to collect data about commuting issues in UTM.

Initially, it was challenging for our team to find a suitable time to discuss our project. However, we managed to come up with a successful solution that combined both physical and virtual meetings. Despite our diverse ethnic backgrounds and countries of origin, we collaborated seamlessly and efficiently. Our unique perspectives allowed us to think outside the box and find solutions quickly.

Group Meeting

1. **Attendance (5/5)**
   - Abdallah
   - Alya Qistina
   - Harresh
   - Jocelyn Wong
   - Muhammad Thaqif

2. **Date**

   15/11/2023

3. **Meeting Location**

   Sultanah Zanariah Library and Google Meet

4. **Meeting Start/Finish**
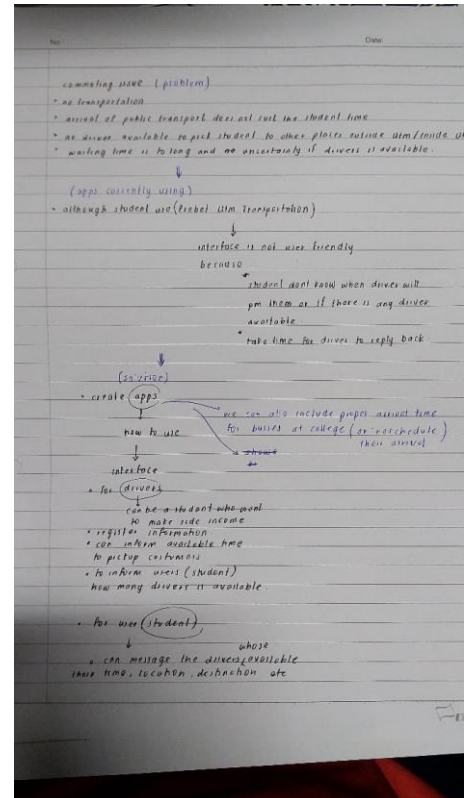
   Meeting Start: 10:00am
   Meeting End: 11:30am

5. **Agenda**
   - Separate Task
   - Discuss idea of our topic

6. **Meeting Record**

   -

7. Evidence

Design Thinking Assessment

During the end of the project demonstration

At the end of our project, our team performed admirably. Despite dividing our tasks, we supported one another, and each team member diligently contributed to the project's completion. Through this experience, we gained insights into the applicability of design thinking as a problem-solving approach in various aspects of life. Additionally, we realized that developing an app posed its own set of challenges, as we had to meet the requirements of each design thinking phase.

During the transition between design thinking phases

During the transition phase, we encounter various unfamiliar problems without predetermined solutions for the issues users confront. Additionally, differing ideas sometimes lead to disagreements in discussions, but collectively, we deliberate and select the most appropriate solution. Throughout each stage of the design thinking process, we collaborate to address and resolve encountered challenges.

Design Thinking Evidence

1) Sample work

A. Empathy

During this phase we do an interview session to identify problems faced by the users to gain early information on how to solve the problem. Interview sessions during the empathy phase give us full understanding of the problem and can bring good ideas on how to tackle the problem.

i. Interviewing Utm Students.

B. Define & Ideate

In this phase we discuss a few things to solve the problem.We discuss the ideas that could benefit the user and ease most of the students regarding their problem.
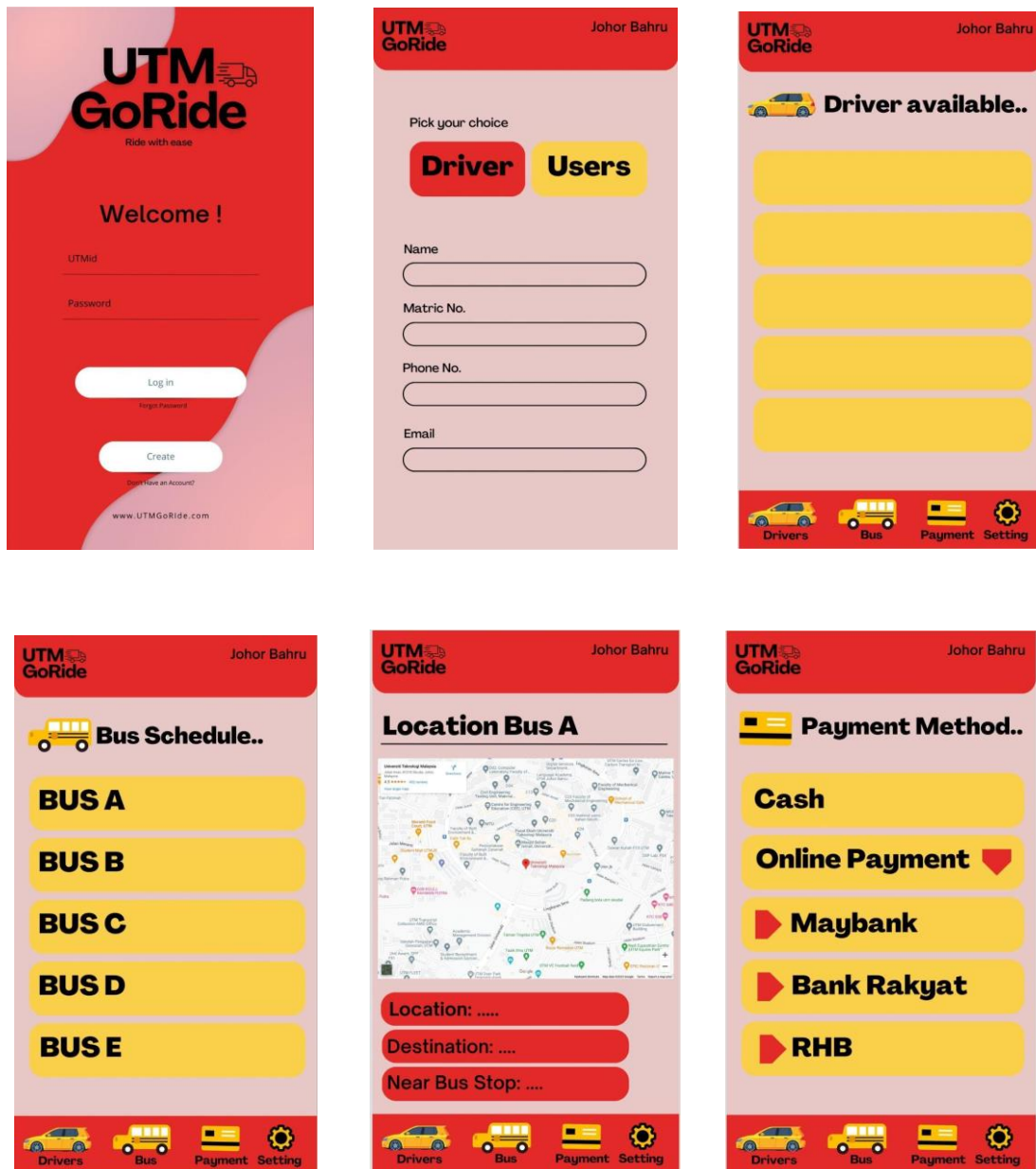

ii. Discussing the problem and ideas.

C. Prototype

Designing the apps "UTMGORide" and initialise a few interface for the users to make it suitable for the student

Users Interface

Drivers Interface

2) Record for each phase

A. Empathy

The table below is the questions and answers during the interview session.

First User

Name	Melody Lui Ruo Ning
Occupation	Student
Age	19
Field	Computer Science (Computer Network And Security)
Have you encountered any problems with UTM's transportation system?	Yes.
If Yes, what problems are there?	1. Not able to catch buses when they arrived ahead of schedule or a little late. 2. It is a bit tiring and far to walk between faculty and college after class or to Arkeds. 3. Too few options for getting around outside UTM.

Second User

Name	Muhammad Aniq Aziq Bin Azme
Occupation	Student
Age	19
Field	Computer Science (Computer Network And Security)
Have you encountered any problems with UTM's transportation system?	Yes.
If Yes, what problems are there?	1. Using Utm Prebet Transportation stresses me out because I need to wait for the driver to accept my order and can drag for hours. 2. I still don't know when or where the bus will arrive at our college and sometimes the bus is already full.

B. Define

Below table showed the problems faced by users.

Problems	Reasons/Description
UTM buses are not consistently on time or punctual	- Bus may arrive ahead of time or a little late that makes it difficult for user to predict bus arrival - No specific time on when the bus is going to arrive at your stop
Walking quite far from faculty to college or to Arkeds	- Have to walk when no bus is available at 10AM when the bus driver takes their rest and most of the students have just finished their classes.
Lack of transportations	- User getting less choice because only few transportation that offers to travel outside UTM
Time consuming	- Need to wait quite a long time to wait for driver's replies in Prebet UTM - Need to wait for another round of bus if the current bus is too full
Prebet does not accommodate student's time or schedules	- User need to wait a long time for the driver to accept their request

C. Ideate

This table provides possible ideas that our team members have come out with to solve our user's problem.

Idea Phases	Ideas	Improvement/Reason
First Phase	Create an app "UTMGORide"	● Steps to improvise the current system used by students to orders cars in Telegram apps and waiting for public transportation in UTM
Second Phase	Add Drivers button in the apps	● Students (users) are well informed about the availability of the drivers in Utm area.
Third Phase	Create Bus Icon to inform students	● Users know whereabout of the bus in UTM ● Users are given information on which bus stop they can go while waiting the bus
Fourth Phase	Location	● Will be very accurate using user's live location based on the satellite

D. Prototype

Through our discussion, we decided to use the solution from First Phase, Second Phase and Fourth Phase instead of the Third Phase. The reasons will be listed at below:

Idea Phase	Idea	Reason
First Phase	Planning and Research	● Clearly visualizing the objective our application ● Listing important features such as creating separate Ui for driver and user, bus schedule, driver matching and payment processing
Second Phase	Wireframing and Designing	● Creating the app layout and basic functionality ● Designing the visual elements of the app such as colours, icons and navigation tools
Third Phase	Development	● Implementing UI & UX design based on the design we finalized ● Developing user authentication, driver matching, payment process and communication between driver and passenger ● Integrating third-party services such as maps, payment gateway and notification
Fourth Phase	Testing and Deploying	● Releasing the app in Google Play Store and App Store

		● Monitor any bugs or issues of the app during the post-launch

E. Test

We tested the prototype with some users. We explained the details regarding our prototype to them such as how to register as a driver, checking the bus schedule and selecting their preferred payment method. We also made sure our application is free from any bugs from the users.Thus, they had a great experience. Here is the feedback that we received from two users.

First user

Name	Melody Lui Ruo Ning
Occupation	Student
Age	19
Field	Computer Science (Computer Network And Security)
Feedback	I am able to catch up buses as now I got all the UTM in-campus bus schedules in just one app. Hence, I do not need to depend on a one bus schedule. Not to mention the app interface is fun and functional at the same time

Second user

Name	Muhammad Aniq Aziq Bin Azme
Occupation	Student
Age	19
Field	Computer Science (Computer Network And Security)
Feedback	A straightforward and smooth process of booking a driver until I reach the destination. Booking took less than a minute as there are drivers constantly roaming around UTM.

Reflections

Abdallah Emadeldin Abdelbagi Abdellatif Abdoun

a) What is your goal/dream with regard to your course/program?
My goal is to be a cybersecurity engineer not only but also to be a cyber specialist and professional security specialist in networks etc. This aside, I love being a gray hat hacker, which is what I'm now, so I love being in this industry by all its differences in penetrations, security, and networks.

b) How does this design thinking impact on your goal/dream with regard to your program?
How to connect people right and it works on my debugging skill which is an important skill in our industry.

c) What is the action/improvement/plan necessary for you to improve your potential in the industry?
To work in real life and achieve experiences from specialists in my career more than just studying.

Alya Qistina binti Awaluddin

a) What is your goal/dream with regard to your course/program?
My goal is to learn more about Technology and Information Systems. This is beneficial because it involves an understanding of programming. It's important for me to know what the requests and demands of the market are. In order to construct software correctly as a future programming engineer, I must possess a sufficient understanding of technology and information systems.

b) How does this design thinking impact on your goal/dream with regard to your program?
Design thinking has a significant positive impact on my program-related goals. Through this, I was able to identify my weaknesses and areas for improvement in order to reach my objectives. I have no doubt in saying that design thinking has improved my understanding of my capabilities.

c) What is the action/improvement/plan necessary for you to improve your potential in the industry?
In the future, I would like to install software such as Construct 2 and Unity workshop to   help me get familiar with application software. Additionally, I'd like to enroll in free online workshop courses like freeCodeCamp and edX in order to expand my knowledge base and develop my creative thinking.

Harresh A/L Uthayakumar

a) What is your goal/dream with regard to your course/program?
My goal specific to cybersecurity is to have fun, learn and connect with people in the industry and build relationships with well-minded people. At the same time, I will always be looking for ways to stay ahead of the game. I keep myself updated on the latest technologies, tools and techniques in cybersecurity.

b) How does this design thinking impact on your goal/dream with regard to your program?
Design thinking significantly helped me to understand an issue and find a solution using organized ways. By working in a group of people, I also realized this is how a group of people will collaborate together on a group project when entering the worklife.

c) What is the action/improvement/plan necessary for you to improve your potential in the industry?
I will always look for ways to improve my skills and knowledge in the industry. I keep up with the latest trends, take online courses from Coursera and learn from experts in the field. Additionally, I collaborate with them to learn from their experience and insights. By continuously learning and adapting, I aim to contribute to the advancement of cybersecurity practices.

Jocelyn Wong Yin Xuan

a) What is your goal/dream with regard to your course/program?
My goal regarding my course is to explore the latest trends and innovation in network and security. So, I will gain a solid foundation and advanced skills in network and security concepts, technologies and applications during my study. Moreover, I will also develop my critical thinking, problem solving and communication skills that are important for network and security professionals.

b) How does this design thinking impact on your goal/dream with regard to your program?
Design thinking is a human-centered approach to understand the user's needs. Thus, design thinking helps me to develop a user-centric mindset which is important for creating effective technology that meets the needs and expectations of users.

c) What is the action/improvement/plan necessary for you to improve your potential in the industry?
To improve my potential in the industry, I will seize opportunities to apply my skills and knowledge through various avenues such as projects, competitions, hackathons, or internships. Secondly, I will expand my skill set by taking online courses, attending workshops, and joining communities of interest groups. Finally, I will strive to connect with individuals who share similar interests, goals, or values by joining clubs or seeking out mentors.

Muhammad Thaqif Ammar bin Muhamed Sufian

a) What is your goal/dream with regard to your course/program?
   My goal is to have a top notch career and high salary in the Cybersecurity work field. In doing so, I need to acquire high proficiency in using cybersecurity tools and technologies by gaining hands-on experience in all technical aspects of cybersecurity. In the learning process, I learned that design thinking helps a lot to understand the problem and gaining experience to handle it and solve it in my own way. I hope that this subject can help me to develop skills in responding to any problem relating to my career.

b) How does this design thinking impact on your goal/dream with regard to your program?
   Design Thinking is a step by step process that can be used to solve the problem. Each step consists of ways to organise the ideas that can be used to solve our problem. In this case I find it very helpful for me in order to do my work better when my future career involves solving many problems regarding programming and security.

c) What is the action/improvement/plan necessary for you to improve your potential in the industry?
   I hope that I could have more hands-on experience by participating in cyber security problems, conferences or engaging with the latest cybersecurity trends, technologies and threat landscapes. Gaining practical experience in penetration testing to know more about the security system of the technologies will be the best because it can help me to understand how it really works for my career.

Task for Each Member

NAME	Abdallah Emadeldin Abdelbagi Abdellatif Abdoun	Alya Qistina binti Awaluddin	Harresh A/L Uthayakumar	Jocelyn Wong Yin Xuan	Muhammad Thaqif Ammar bin Muhamed Sufian
Task	Assessment point	Interview	Prototype selection & Reasons	Introduction	Detailed Steps
	Ideas & Improvement	Problems and Description	Customer feedback	Detailed Description	Sample Work
				Edit video	
	Reflection				