



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
Faculty of Engineering

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## **SECP1513 – TECHNOLOGY AND INFORMATION SYSTEM**

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### **ASSIGNMENT: DESIGN THINKING**

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SECTION : 04 – 1 SECRH

COURSE NAME : BACHELOR OF COMPUTER SCIENCE –  
NETWORK AND SYSTEM SECURITY

NO.	NAME	STUDENT ID
1	LIM ZENG KAI	A20EC0068
2	SHARTESWARY A/P BOJARAJOO	A20EC0225
3	AZLINAH BINTI HERMAN	A20EC0018
4	JOEY CHAI WAN YI	A20EC0054

LECTURER'S NAME : DR. GOH EG SU

## Table of Contents

Content	Page
Introduction	1
Log journal	2
Problem	3
Solution	3 - 4
Team working	4
Design Challenge	5
Empathy	5 - 7
Define	8 - 9
Ideate	9
Prototype	10
Test	11
Reflection	12 - 14
Task Assignment	15

## **Introduction**

Design thinking is a technique used to solve a problem with realistic and innovative solution for a particular group of people. In the perspective of being ill-defined or challenging, design thinking is extremely helpful when approaching topics that are wickedly complicated. This mechanism allows individuals to pursue and establish solutions that have not existed before. Design thinking is a good strategy since it relies on the user's expectations. The design thinker should understand what problem people currently having by using direct observation and qualitative data. After the analysis is done, after diagnosing the real problem, the designer is more likely to identify what the real problem is. The designer will develop or brainstorm new ideas without the limitations to produce simple experiments and repeatedly test them in the real world.

To conclude this, there are five phases in design thinking:

- Empathize
- Define
- Ideate
- Prototype
- Test

## **Mobile Application**

Mobile app is software applications that specific for mobile device that really popular nowadays. The mobile app was built exclusively for use on lightweight, wireless computing devices rather than desktop or notebook computers. There are six categories of mobile apps which are for style of living, social media, service, entertainment, and news. Lifestyle mobile apps are the apps that people use to help them discover themselves, what they want and hate, and these apps related to music, food, travel, dating and fitness. Examples of lifestyle mobile apps are Spotify, Grab, Foodpanda and Nike Training Club. Social media apps are the most download apps because these apps help people connect to each other can see their friends' activities and promote their business. Facebook, Instagram and WhatsApp are examples of social media apps. Entertainment apps are the apps that people use to enjoy and release their stress after a long and busy week. These are proving that mobile applications really important and will always expand throughout time.

## **Log journal**

Date	Description
1 November 2020	<ul style="list-style-type: none"> <li>- Discussion about design thinking that related to our chapter</li> <li>- Gave tasks to everyone</li> </ul>
2 November 2020	<ul style="list-style-type: none"> <li>- Listed all the interview questions</li> <li>- Decided which interview session we will joined</li> </ul>
3 November 2020	<ul style="list-style-type: none"> <li>- Joined online interview session in Cisco Webex : session 4, Mr. Mohd Farid and PM Dr. Murtadha (Software Application)</li> </ul>
4 November 2020	<ul style="list-style-type: none"> <li>- Listed all the problems from the interview session</li> <li>- Selected problem statement that related to mobile application</li> </ul>
5 November 2020	<ul style="list-style-type: none"> <li>- Created Google form to survey about UTM Smart</li> <li>- Shared the Google form to Whatsapp group</li> </ul>
6 November 2020	<ul style="list-style-type: none"> <li>- Discussion about the responds from the survey (Google form/interview)</li> <li>- Brainstorming all the solutions to the problems</li> <li>- Agreed to the most applicable solutions</li> </ul>
7 - 8 November 2020	<ul style="list-style-type: none"> <li>- Started making the prototype</li> </ul>
9 November 2020	<ul style="list-style-type: none"> <li>- Updated the progress of the prototype</li> </ul>
10 November 2020	<ul style="list-style-type: none"> <li>- Test the prototype by using Google form to get the review from users</li> <li>- Shared the Google form to Whatsapp group</li> </ul>
11 – 12 November 2020	<ul style="list-style-type: none"> <li>- Started making the report and video</li> </ul>
13 – 15 November 2020	<ul style="list-style-type: none"> <li>- Updated the progress of the report and video</li> </ul>
16 November 2020	<ul style="list-style-type: none"> <li>- Ready to be submit</li> </ul>

### **Problem**

There are many problems we encountered during making this design thinking project that related to our chapter which is basic application software. Based on the interview and survey

about the UTMSmart, we found that there are two main problems which is required multiple log in and limited information.

The first problem is users need to log in multiple times when they open the app. This problem is troublesome because during this pandemic, classes are conducted in online distance learning (ODL) and every student need to scan the quick response (QR) code using the scanner feature in UTMSmart to record their attendance for every class. Thus, students will access the app at least two to three times a day and every time they open the app, they need to enter their username and password which is wasting the precious time. There also some students that do not remember their passwords to log in the app. Hence, this is really a huge problem of UTMSmart.

The second problem is the information that provided from the app is limited. For example, when the users scan the QR code, there are no information about the code like section, lecturer's name and the subject. These make few students clumsily scan the wrong QR code. The app also has fewer features that can give benefits to the users.

### **Solution**

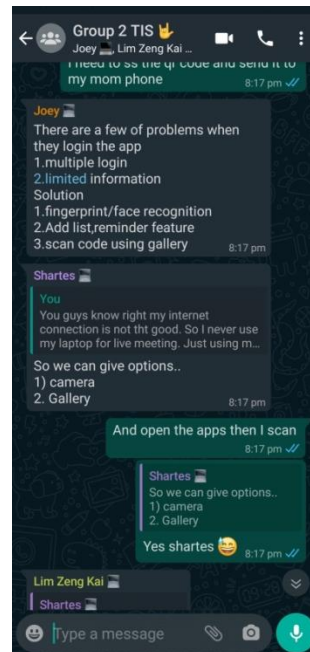
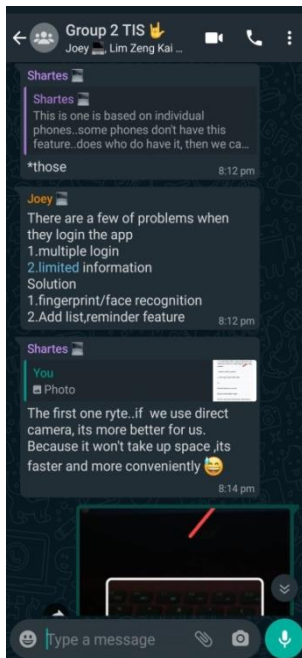
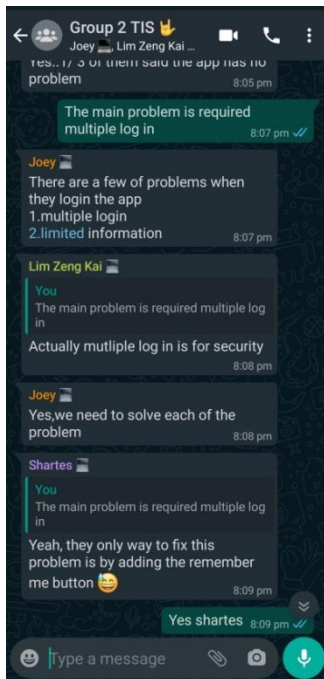
The solution for the first problem are add fingerprint and face recognition to the log in page because most of smartphones nowadays have these technologies. These two systems really efficient because it's less time consuming and not burden the users. The students just put their finger to the fingerprint scanner or using the face id that will automatically log in to the app. We want to put "remember password" key, but it's less secure. Other person can easily access the app because he or she just needs to click the key to open the app.

The second solution is adding more information. For the QR code scanner, we add new features which are can choose from gallery and add information about the code before scanning. This will ensure students scan the correct QR code. We also add new features like list, reminder and food ordering features. We believe that the features that we add will bring tons of benefits to the students. The list and reminder features will make users more productive doing their works, assignments and aware of upcoming quizzes and examination. Students can still have meals when they are too tired or busy to go out by just order the foods using the food ordering features.

### **Team Working**

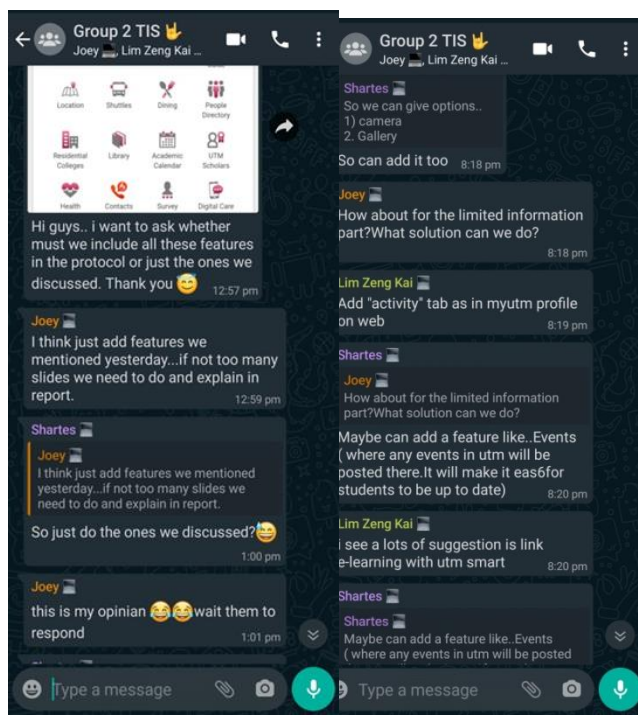
We discuss all the problems and solutions through whatsapp group and gladly all members

are



participating on giving ideas and

opinions.



## **Design Challenge**

We do the five steps in design thinking to succeed this project. For empathy phase, we joined the online interview session and we conduct a survey through Google form to collect and hear about their problems. Next phase which is define, we process the results from the empathy phase to understand deeply about their thoughts and problems of the UTMSmart. Then, we discovered that there are two main problems of the app to the users. As soon as we uncovered their problems, we came up with many solutions to solve the issues. This phase is known as ideate. This step not just provides solutions but we need to choose the most effective ways to overcome the obstacle. Next we present our idea in the form of a model that essay to be understands. We create the layout of the app in the pdf and distribute to the Whatsapp group to get the reviews from students. These steps are prototype and testing.

## **Step and description**

### **i)Empathy**

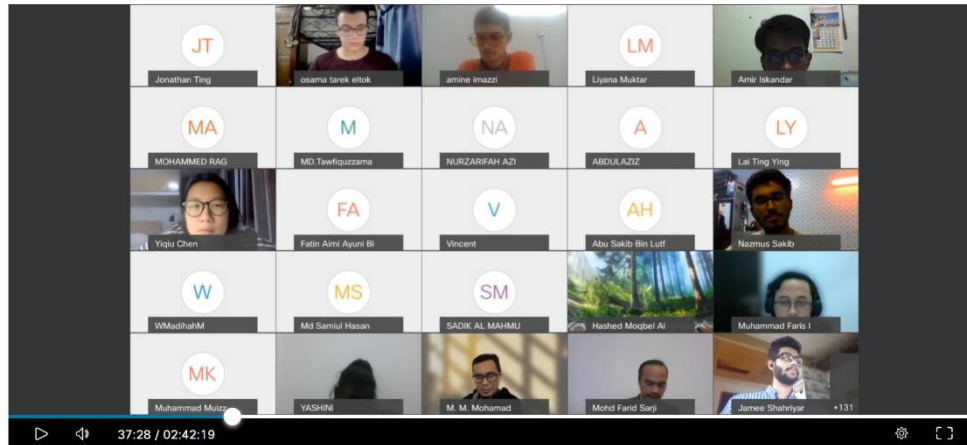
In the first design thinking evidence, we are interviewing Mr. Mohd Farid and PM Dr. Murtadha about the mobile application on 3 November, at 9.00 pm. All of the members attend the meeting.

Question: Do you have any experience in developing an app?

Answer: The answer is yes. My team in UTM Digital has the division of digital innovation. One of the co-development is UTMSmart, which is a mobile application. To be honest, our mobile application has failed 3 times previously because of a lack of experience, lack of technical capabilities, and lack of communication with each other. We also lack the programming skills and some of us know that mobile programming is a bit different perspective of building the mobile enterprise application. Our research already spends 36 thousand to build this mobile application.



### Interview Online - Student Assignment (3 Nov ...



<https://utm.webex.com/recordingservice/sites/utm/recording/playback/6d693c394bd342749aa38465e6b9a6b0> (Password: Pd2KnRjt)

After that, we are identifying the problems faced by the student when using UTMSmart app. We set our main target user as the student of UTM, thus our survey is conducted among student in UTM. We are not conducting direct interview session because of the current pandemic. Then, we list out some problems which they will usually face when running the UTMSmart app. We create a google form and send it through social media such as Whatsapp and Telegram for the student to fill up the survey. Through the survey, we manage to know extra problems and suggestions to modify our prototype.



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*ProblemUTMSmart - Notepad
File Edit Format View Help

Problems when using UTMSmart app

1.Gender
2.Age
3.Faculty/School
4.Country
5.Semester
6.Are you using UTMSmart app?
7.Why you use UTMSmart?
8.Do you face any problem when using UTMSmart?
9.What are the problem?
10.Any suggestion?

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Diagram: List of questions for interviewees

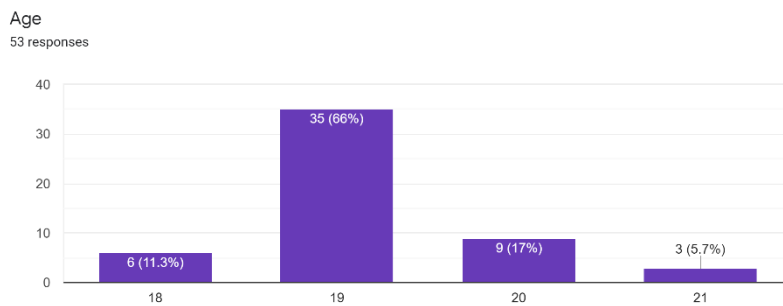


Chart: Age of interviewees

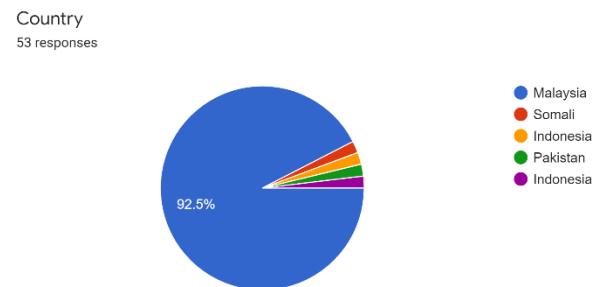


Chart: Background of interviewees

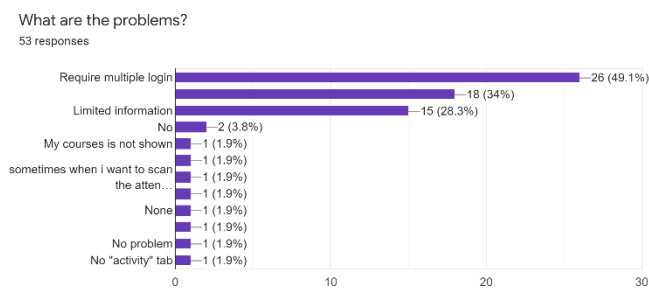


Chart: Problem faced by interviewees

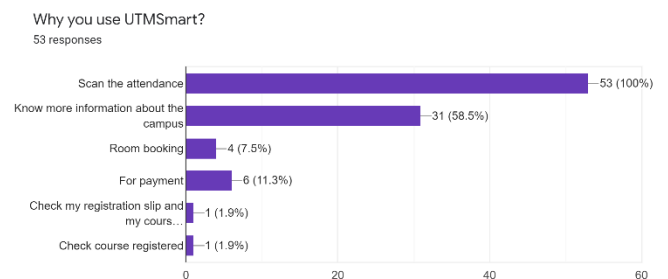
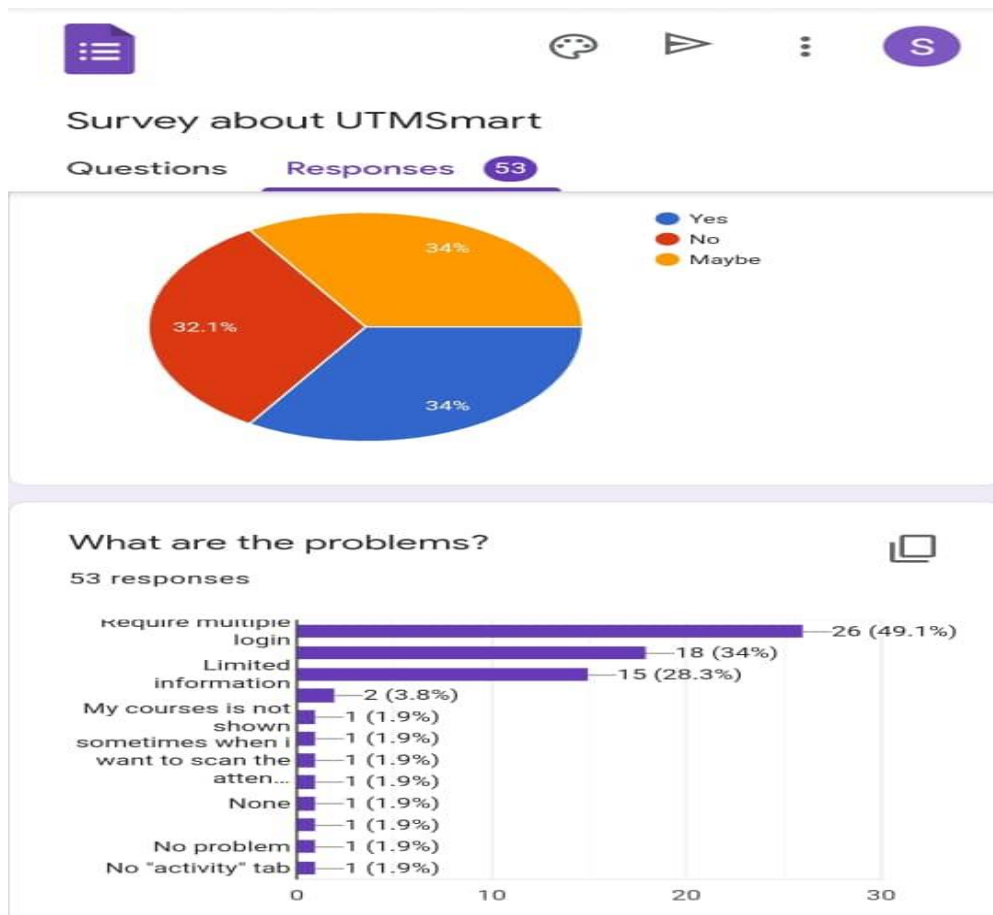


Chart: Reason of interviewees using UTMSmart

<https://forms.gle/MF4Ht5PLfKvRrFpv6>

ii) Define

Based on the survey created by the group, students mentioned several problems they faced while using the app.



The main problem – The app required multiple logins to access the app. This was a major inconvenience to the students, especially those who are in a rush.

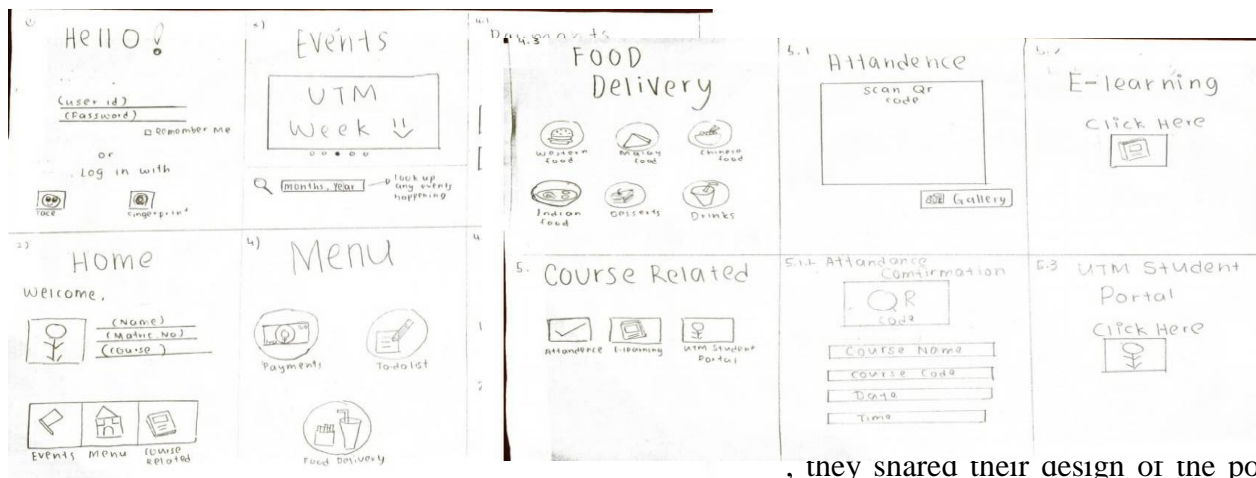
Solution- The team added multiple login options. Login by facial recognition and fingerprint could ease the students by providing them with a faster way to log in.

The problem – The app provides limited information regarding the attendance of the course after scanning the QR code. This causes the students to scan the attendance for the wrong section or course due to lack of information.

Solution- The team added a feature that shows crucial information (E.g. Lecture name, section, date, time and subject name) and giving them the option to accept or delete the attendance). This will allow students to submit attendance for their correct class and avoid any accidents.

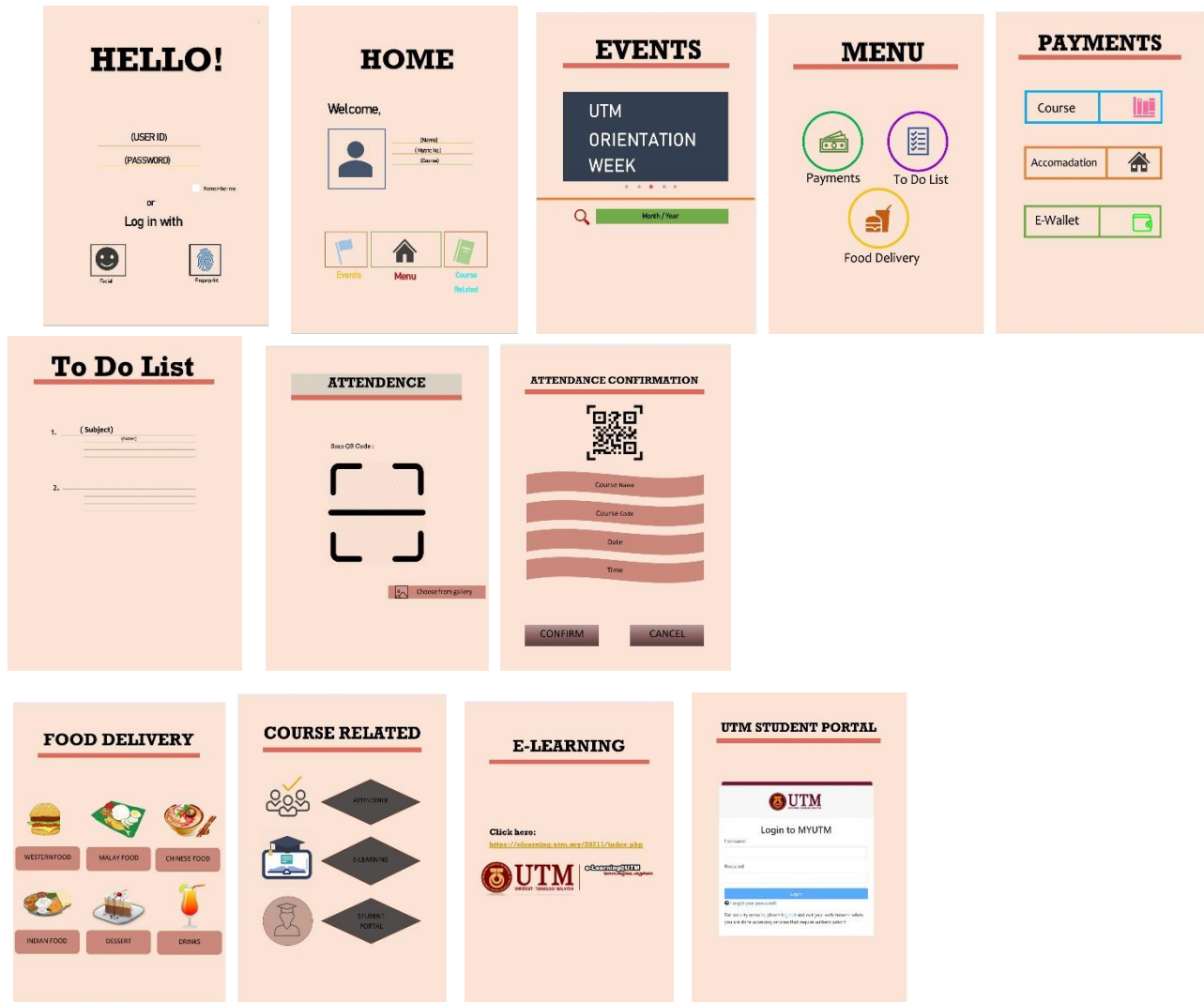
### iii) Ideate

A discussion was held in the WhatsApp group. The group members discussed suitable improvements and features that could be done. The team used the survey from the students as the main reference when giving opinions. After the discussion, the prototype team (Sharteswary & Joey) drew basic sketches of the prototype on papers. The sketches included some of the appropriate suggestions given by other students in the survey and suitable features that could aid the students (E.g. The link to UTM e-learning platform link, UTM student portal and confirmation of class attendance after scanning the QR code). Once the prototype team ( Sharteswary & Joey) was done sketching, the main sketch of the prototype was shared to the other group members to get their opinions and inputs on the prototype. Once everyone on the team agreed with the sketch, the prototype team began making the prototype.



and  
the

, they shared their design of the prototype with the rest of the group. The group discussed on the designs given and agreed create the app with aesthetic features. A few changes were made to the prototype to tailor the aesthetics theme. Once the changes were made, a prototype made by Sharteswary and Joey managed to gain every members' approval.



## v) Test

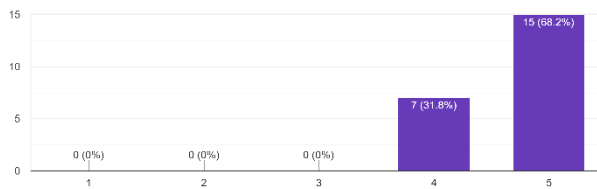
In the last phase of design thinking evidence, we list some features and improvements to our prototype. Then, we create another google form and send it through social media to get feedback from students. We display our prototype in the google form so that they have an introduction in the operation of our prototype. After viewing our prototype, they can rate base on their satisfaction with the prototype. Lastly, they can give their review and suggestion at the end of the survey. We keep on innovating our prototype until it fulfils perfectly the expectation of the users. After several improvements, the interviewees give us positive feedback and think this app will benefit the student of UTM.

### Feedback of design thinking project

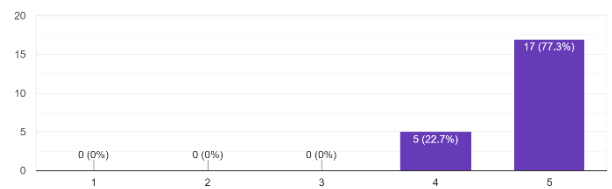
- 1.Do you think log in with face id and fingerprint beneficial you?
- 2.Do you think adding a to do list feature beneficial you?
- 3.Do you think choose from gallery to get qr code beneficial you?
- 4.Do you think adding a attendance confirmation feature benefits you before submitting attendance?
- 5.Do you think adding a food delivery feature beneficial you?
- 6.Do you think access to e-learning through app beneficial you?
- 7.Any feedback to us?

### Diagram: Questions of feedback of interviewees

Do you think adding a to do list feature beneficial you?  
22 responses



Do you think adding a food delivery feature beneficial you?  
22 responses



### Diagram: Feedback of interviewees

<https://forms.gle/KSPw6uKMtNqVX6y98>

YouTube link to the video we make for this design thinking project:

<https://youtu.be/zG8m5WSohsg>

### **Reflection**

#### **LIM ZENG KAI:**

The course I study in UTM is computer network and security, my main goal is to become a successful IT security engineer. I hope I can equip all the requirement to become an advanced IT security engineer. Furthermore, I would like to create a better version system away from penetration attack of the hacker. For example, I am interested in Artificial Intelligence and I wish can develop an advanced program which uses artificial intelligence in a security system to help the company.

Through the design thinking process, it provides a clear flow for the real-life problem and it will help me in my future because we need to consider all the part when doing a program. When we

follow these 5 steps it will help us understand what we are doing and let our work more efficient. I hope can master these skills so can strengthen me in my future job.

First and foremost, I will never stop learning because there are a lot of new things that can be explored. Besides, the technology will be more advance in future so I must also improve myself if not I will fall behind. To get an improvement, I have the plan to join some club like AIROST, CyberX and DSC in UTM then I can be explored to more competition and knowledge. This will help me can be more explore to different situation and improve my potential in the industry.

#### **SHARTESWARY A/P BOJARAJOO :**

My goal is to learn and gain valuable knowledge regarding Information system. In today's modern day and time, it is crucial for students who wish to venture to the world of technology to be equipped with ample knowledge. I want to be able to apply the priceless knowledge I learnt in this course in the near future where I join the workforce and be a meaningful member of society by contributing for the betterment of community, society and country.

This program has opened my eyes and mind to the possibilities of today's technology and has been a guide for me to prepare myself before entering the workforce.

In order to improve myself, I will keep an open mind, gain more experience, always keep on learning and never give up on my passion of technology. I have always believed that having burning passion, it would act as drive for me to achieve my goals.

**JOEY CHAI WAN YI:**

I have been contracting with programming and robotic since I am in secondary school. Thus, I have the passion to be a software engineer in the future to accomplish my dream. I hope that I can equip with all the requirements of being a successful software engineer when I completed my course.

This design thinking project reminds me that teamwork among groupmates is really important in completing a project. To become a software engineer, I must ensure myself to involve actively in the discussion and contribute my effort to the team. I have to become more innovative to improve my project and fulfill the expectation of the user.

I keep taking part in extra-curricular activities that can enhance my skill and potential in the industry. Recently, I had applied to join the UTM Airost Team of cohort 20/21 and CyberX Club to challenge myself in mastering the skills that are needed to become a software engineer.

**AZLINAH BINTI HERMAN:**

Regarding to the course that I studied which is computer network and security, my goal is to become a successful network engineer. In the future, I wish to become very expert and skillful in this field. Thus, I must have all the qualification that needed to become an outstanding engineer. For example, have ample knowledge about computer hardware, network framework, IP addressing, firewall, routing and troubleshooting. I also plan to build new network systems that can help many people in our country and the world to have a better life.

These design thinking projects really have big impact in my goal to become a competence network engineer. This project changed the way how I think when solved the problems or obstacles that I faced. In other words, this assessment developed my critical thinking skills on

another level. I never thought that just follow five steps which are empathy, define, ideate, prototype and test in design thinking can produce an efficient solution to a problem.

There are many plans that I need to do to improve my potential in the industry. I need to develop high level of soft skills and hard skills in myself. Effective communication skills which are important to present idea and listen to the problems, teamwork which is the ability to work with others without being discriminate and problem-solving skills that produce creative and fast solution will ensure any types of projects that conducted by the engineer will be run smoothly. I also need to aware and to become fast-learner to the latest technologies as its rapidly growing. Lastly, I need to attend lots of talk, course and seminar to enhance my knowledge.

### **Task Assignment**

No	Name of Member	Task
1	LIM ZENG KAI (A20EC0068)	<ul style="list-style-type: none"><li>● Idea generation</li><li>● Report writing</li><li>● Video editing</li><li>● Interview session with expert</li></ul>
2	AZLINAH BINTI HERMAN (A20EC0018)	<ul style="list-style-type: none"><li>● Idea generation</li><li>● Report writing</li><li>● Interview session with expert</li><li>● Collect interview question</li></ul>



3	JOEY CHAI WAN YI (A20EC0054)	<ul style="list-style-type: none"> <li>● Idea generation</li> <li>● Report writing</li> <li>● Prototype design</li> <li>● Survey making</li> <li>● Interview session with expert</li> </ul>
4	SHARTESWARY A/P BOJARAJOO A20EC0225	<ul style="list-style-type: none"> <li>● Idea generation</li> <li>● Report writing</li> <li>● Prototype design</li> <li>● Interview session with expert</li> <li>● Video recording</li> </ul>