UTM
UNIVERSITI TEKNOLOGI MALAYSIA
SCHOOL OF COMPUTING
FACULTY OF ENGINEERING

DESIGN THINKING REPORT

SECP1513

TECHNOLOGY AND INFORMATION SYSTEM

SECTION: 04

COURSE: BACHELOR OF COMPUTER SCIENCE (COMPUTER NETWORK AND SECURITY) WITH HONORS

LECTURER NAME: DR. GOH EG SU

GROUP MEMBERS:

NO.	NAME	MATRIC NO.
1.	JAUDAN AFZAL	A20EC0308
2.	NURMAZLI AZLIN BINTI MOHD RAZALI	A20EC0125
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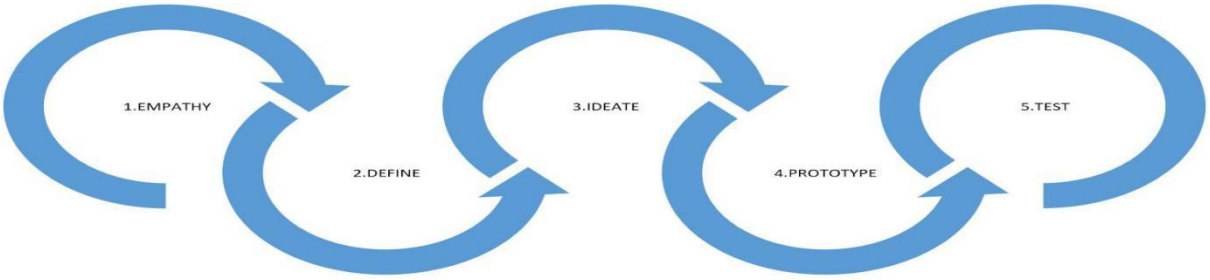
1.0 INTRODUCTION

The problem is composed of two characters, one representing trouble and the other, opportunity. That depends on how you think about it. Design Thinking is an iterative process to understand the user, challenge assumptions, and redefine problems in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding. Hence, a solution-based approach to solving problems can be generated through a design thinking process.

The creative and innovative thinking process can train not only the students but also people from all walks of life to generate great ideas through questioning and getting the problems or needs from the users to create a product or service to improve human living standards. That is the reason why now our life is more convenient and comfortable than before.

Design Thinking including five steps ：



1. Empathy

Empathy is a starting point to observe the behavior of the user in their daily life. Next, an interview session will be carried out between the user and us to know the needs and problems of the user.

2. Define

We should put ourselves in the user's shoes to map out a viewpoint that is based on user needs and insight. So, we can identify the problem statement and the aspects we should consider.

3. Ideate

Brainstorming creative ideas and selecting and developing the potential solution.

4. Prototype

We are hands-on in building one or more draft version models of our ideas to show others. It allows us to explore our ideas and get the opinion of others.

5. Test

We need to test the model to continually improve it until it is successful and workable.

2.0 DETAIL STEP AND DESCRIPTIONS

The first phase of design thinking is empathy, a process to understand the feelings and experiences of others. It is important to empathize with users as we can know deeply about their desires, thoughts, and emotions. To gain those insights, we created a google form to ask about the users' problems when they use input and output devices specifically a remote control. Also, we carried out an interview session on the Webex platform with one of the UTM staff, Mr. Nik Kamal Izuddin, and asking whether he faces the same problem with remote control or not.

From the survey and the interview that we did, we got a few opinions mainly are about they misplace or lose their remote control, the remote control is not functioning properly, not convenient, and so on as in Figure 1 and Figure 2. This is the second step where we define the problems. We gathered and analyzed all the information given by the users.

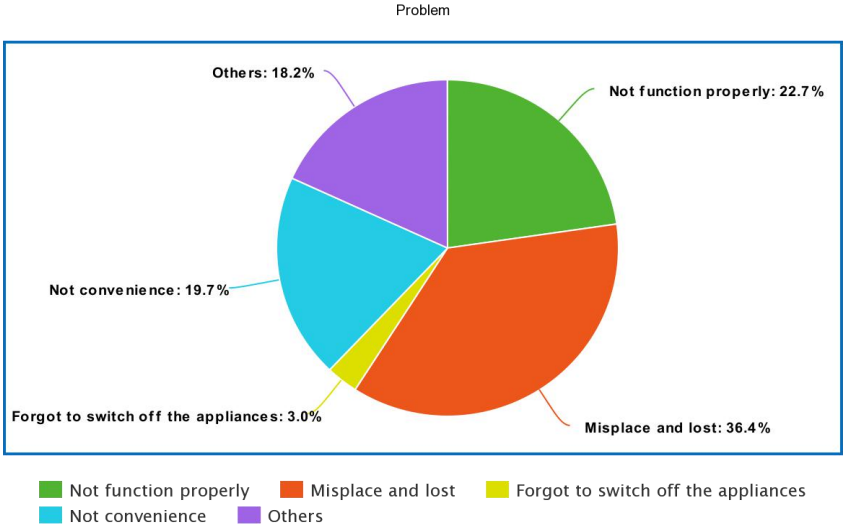


Figure 2.1 Pie Chart of Survey Response

The third step is the ideate phase. We did brainstorm on how to prevent the problems and difficulties when using the remote control. All the group members gave ideas and we came out with one solution that more convenient and better than a remote control. We decided to create a voice control device, a device that will recognize the user's voice and do the command. For example, when the user enters the living room, they only need to say 'switch on the air-conditioner', then the device will automatically send a signal to the air-conditioner to turn on. The device is also connected to the user's smartphone so that the user can use

either the voice control device or their smartphone. It is easier as the user brings their smartphone anywhere and they can control the appliances at home from far away. For instance, as the user reaches home, they do not need to come out from his car to open the gate. Their smartphone that is connected to the autogate will send a signal when they arrive home.

After we got the solution to these problems, we move to the next step which is making a prototype. We make a rough draft of our idea into real life to show and let the user experience this alternative. Since we cannot be in the university to prepare this prototype physically, we find another way by creating the prototype digitally. We used the PicsArt and Photoshop application to visualize the prototype in the image.

Figure 2.2 The device prototype

Figure 2.3 The application prototype

Lastly, to accomplish the design thinking process, we test the prototype that has been created for the user. The alternative that we chose for this phase is we shared the digital prototype and a google form through WhatsApp. The google form is used to ask for feedback and their opinion about our prototype. From their observation, they gave a few ideas for us to improve our prototype.

3.0 PROJECT MEETING MINUTES

Meeting/Project Name:	Design thinking		
Date of Meeting:	November 3,2020	**Time:**	4:00 p.m. – 5:00 p.m.
Minutes Prepared By:	Siti Hajar	**Location:**	Webex Meeting
1. Meeting Objective			
Discuss about solving interviewees's problem using input and output devices especially remote control.			
2. Attendees			
Group Members: Wong Pei San, Jaudan Afzal, Nurmazli Azlin, Siti Hajar			
3. Agenda and Notes, Decisions, Issues			
Topic	**Discussion**		
Welcome Group Members	Wong Pei San opened the meeting and welcomed group members. The introduction was made.		
Empathize	Group members interviewed UTM staff, Mr. Nik Kamal Izuddin, and asked about his problem using remote control during the Webex meeting. Nurmazli Azlin also makes google form to find more about remote's control problems. The participants' age range is 19-25 years old and they have some same problems.		
Define The Problems	Based on Azlin's information, users are having problems especially misplaced or lose a remote control, the remote control was not functioning accurately and lazy to pick remote control. These problems always happen in daily life.		

Ideate The Solution	Group members were giving ideas to solve the problems. Pei San gave an idea by setting up an alarm system on the remote control and use the button to find it by listening to the alarm sound. Jaudan suggested using a voice-recognition system to switch on devices. Hajar's idea was for users using one remote control to control all devices. Azlin said we could use a Bluetooth device to find and connect to the remote control. The final decision is to use a voice control device for all appliances at home. The device can connect to the user's smartphone. Hence, it easier for the user to give a command.
Divide the task	Pei San divided tasks among other group members. Jaudan is in charge of collecting design thinking phase evidence, Azlin is responsible for writing details about the design thinking phase while Siti Hajar is in charge of writing details about teamwork. Lastly, Pei San's task is to write an introduction.
Public comment	Jaudan asked if there was any other business, public comment, or future agenda items. None was heard. Pei San moved to adjourn the meeting. The meeting was adjourned at 5.00 p.m.

4. Action Items

Action		**Assigned**	**Due Date**	**Status**
1.	Pei San requested the prototype need to be done in next week.	Group members	November 10, 2020	

The meeting evidence is shown :

3.1 PROJECT MEETING MINUTES

Meeting/Project Name:	Design thinking		
Date of Meeting:	November 8,2020	**Time:**	9:00 p.m. – 10:15 p.m.
Minutes Prepared By:	Siti Hajar	**Location:**	Webex Meeting

1. Meeting Objective

Discuss about the prototype of voice control device.

2. Attendees

Group Members: Wong Pei San, Jaudan Afzal, Nurmazli Azlin, Siti Hajar

3. Agenda and Notes, Decisions, Issues

Topic	**Discussion**
Welcome Group Members	Wong Pei San opened the meeting.
Review of 3rd November meeting	Each member updated their progress of work. Wong Pei San finished writing the introduction of the report. Azlin stated statistics of the user ' s problem. Jaudan was in progress writing design thinking ' s evidence. Siti Hajar was in the progress of collecting teamwork evidence.
Progress of prototype	Jaudan will be creating a voice control device meanwhile Azlin responsible for creating a device menu with help from group members. Pei San created the app logo.
Public comment	Azlin asked if there was any other business, public comment, or future agenda items. None were heard. Wong Pei San moved to adjourn the meeting. The meeting was adjourned at 10.15 p.m.

4. Action Items

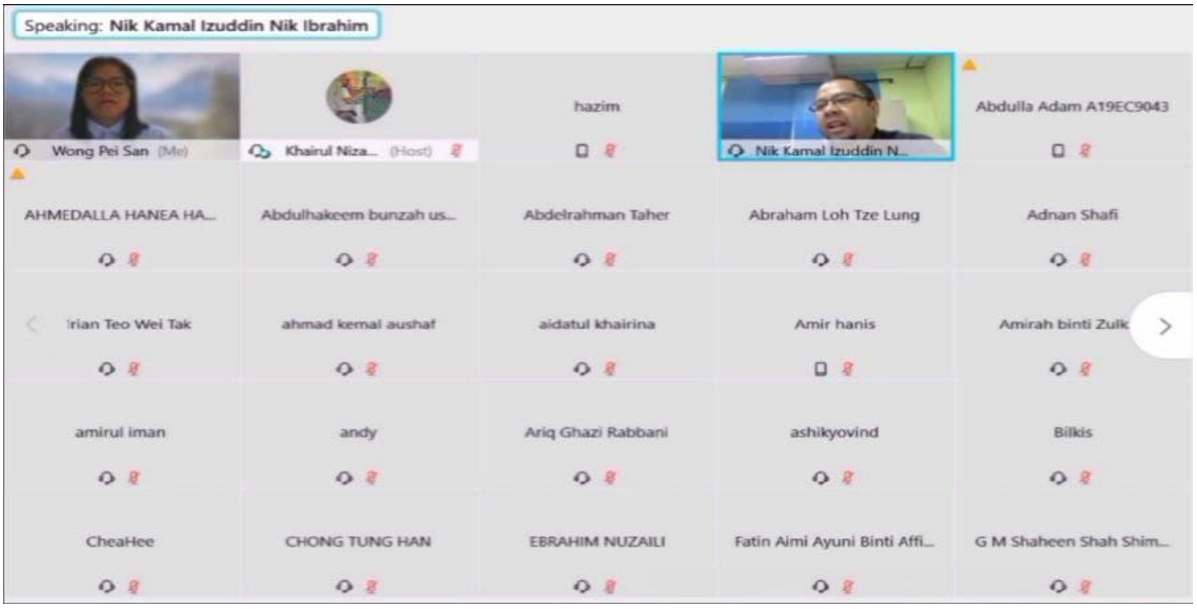
Action		**Assigned**	**Due Date**	**Status**
1.	Jaudan requested to test the voice control device.	Jaudan	November 12, 2020	

The meeting evidence is shown below:

4.0 DESIGN THINKING EVIDENCES

4.1 Empathy

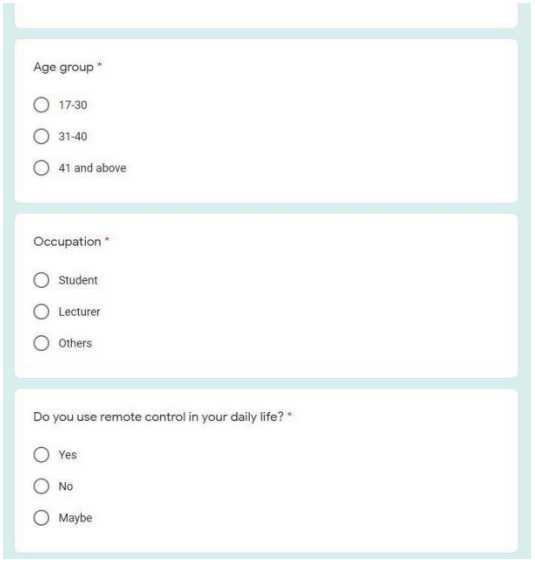
An interview session was carried out with Mr. Nik Kamal Izzudin to know the needs and problems of user at on Tuesday, 3 November 2020.

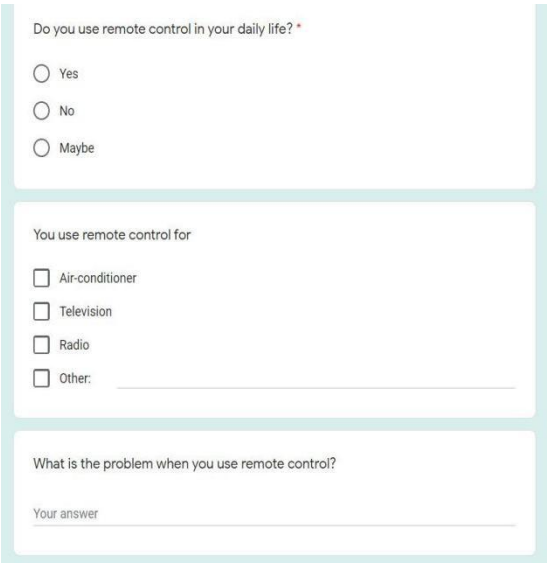


4.2 Define :

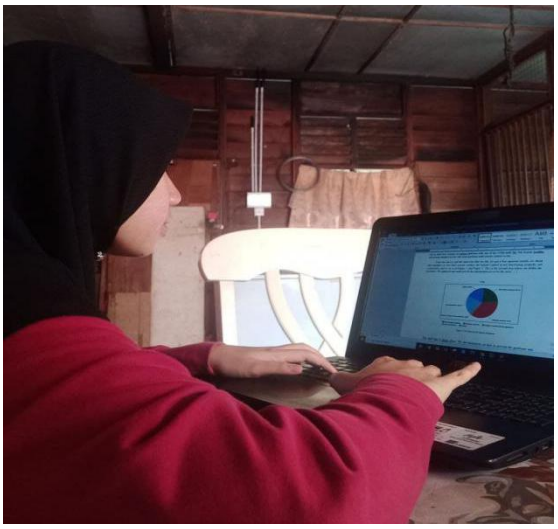
Azlin is writing the survey's questions :

The questions for the survey's participants regarding their name, occupation, daily use of a remote controller and the problems with using them.





Nurmazli Azlin is compiling the survey's results.

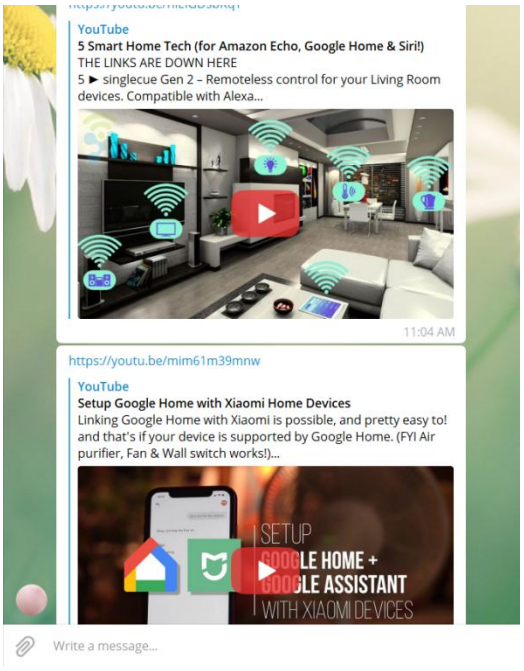


The survey's results are displayed on the table

You use remote control fo	What is the problem when you use remote control?
Television	Have to push the button many times
Television	i feel lazy to take the remote when it is too far
Television, Fan	Sometimes the remote control not operating properly or not responding at all
Television	Maybe the batteries
Air-conditioner, Television	Always misplace the remote control, remote control cant function sometimes.
Air-conditioner	forgot where i put it
Air-conditioner, Television	no problem
Television	no battery sometimes and too lazy to take
Television	Numbering changes
Air-conditioner, Television	Short range
Television	Limited control
Air-conditioner, Television	Sometimes remote control need to aim really accurate to the signal receiver
Television	
Air-conditioner, Television	Out of batteries
Television	
Air-conditioner, Television	-
Air-conditioner, Television	Red ray not really function
Air-conditioner, Television	No
Air-conditioner, Television	No problem apparently, but wish for a sturdier case that is able to withstand accidental falls.

4.3 Ideate:

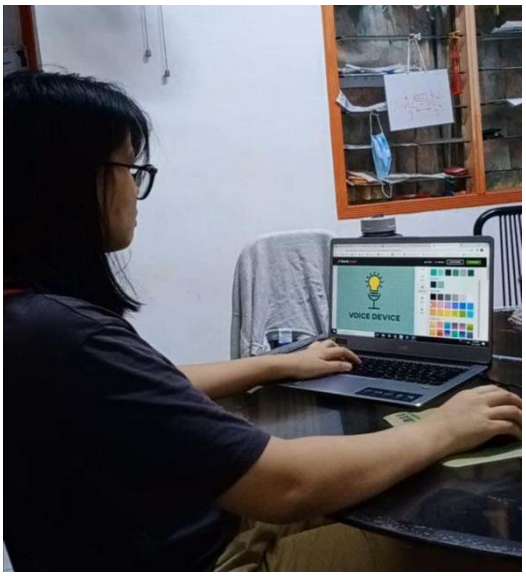
Various ideas and inspirations from our group members for the prototype



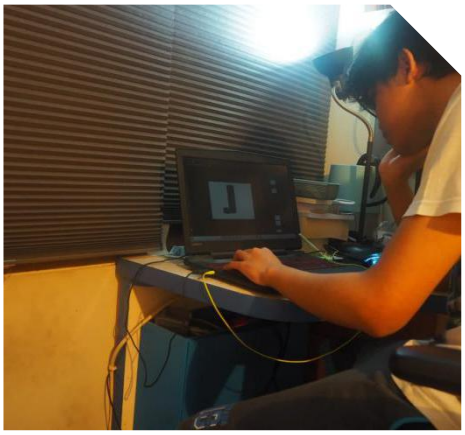
Example of voice control device design

4.4 Prototype:

Wong Pei San designing the app's logo using BrandCrowd.



Jaudan was desgining the voice control devices outlook



These pictures shown are combination of our ideas to create prototype.

Figure 4.4.1 Voice control device

Figure 4.4.2 Homepage view

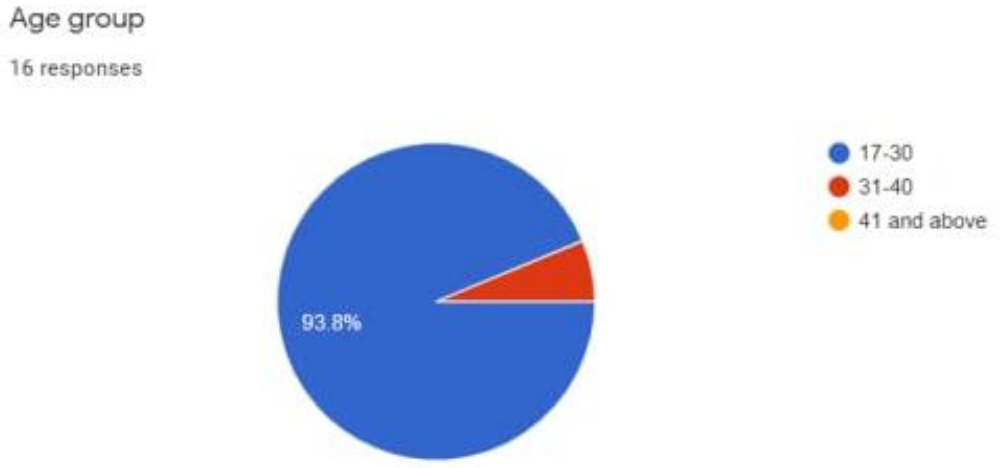
Figure 4.4.3 Location view

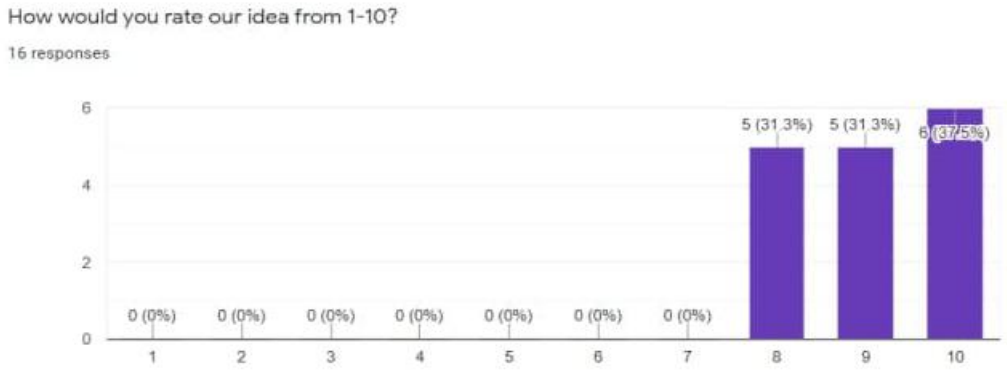
Figure 4.4.4 Appliance view

Figure 4.4.5 Switch view

4.5 Test

Statistics of prototype's feedback from user.





Survey's results of prototype feedback: Opinion & Suggestion for improvement

Name	Age group	What is your feedback or	Are there any suggestion	How would you rate our idea from 1-10?
Yap you quan	17-30	Good	Good	10
Jenny	17-30	Nice innovation.	Since there's an apps wh	8
catherine han	17-30	Great and innovative	May be can increase mor	9
Fatin Nursyahraien Binti I	17-30	It's cool and interesting.	It's so nice and that's enc	10
Nur Fatiha Zulaikah Binti	17-30	Great, it's look cool!!!!	You must put tracker, whe	8
Muhammad Amir Syafiq I	17-30	Really cool. I think this de	You said about this idea (	8
Aisyah	17-30	Nice , awesome , mantul	Use attractive & cute sym	9
Hamba Allah	31-40	I love this	Overall is okay , but I like	10
Andrew Ong Juay Meng	17-30	Very nice	Very nice	10
Nurul Farhana Abd Talib	17-30	Look quite good and impi	Not a suggestion but a qu	9
Siti Nor Safariah bt Husir	17-30	Good idea bcs i always fe	Put sensor in the remote	8
Ng Zhen Bin	17-30	Good idea	No	10
Nazirah	17-30	smart and wise	Maybe not	8
Nurul Izzati	17-30	Good, the app can save (	The apps should be smoo	9
Tee Jun Wei	17-30	brilliant idea	no goos job	9
NG CHED WEI	17-30	Good	No suggestion	10

5.0 REFLECTIONS

5.1 Jaudan Afzal's reflection

Employability in the technological sphere needs a base-level general knowledge on all things technology that is my first goal for this course, even in a world where most HR people say that a college degree is not mandatory to be hired. General knowledge on all things technology is at the upmost importance to be recruited into a company to show those HR people that you are very passionate and dependable in your field and so, what better way than learn from the expert? So that I can understand everything clearly and thoroughly. My second goal is that, after spending some time of attending this course I realized that I could actually use the knowledge from this course to use it for entrepreneurial needs and because of that I hope that I could use the knowledge that I learned from this course to have a first movers' advantage in business or come up with a value proposition for a business idea.

Design thinking improved my second goal more so than my first one, I realized that by using design thinking I could make a product that is viable and attractive to potential customers to wit, by using the empathy and define method I could gauge my customers, make a problem statement that makes sense, and market the idea's values and features to the right audience. Another one is the ideate and prototyping process, the ideate process could help me plan a product faster instead of re-inventing the wheel and to also make the result more satisfying and the prototyping process allows me to do an iterative development of the product which is good for the product on the long run. When it comes to my first goal I think, design thinking comes in play when I am more of the person that is part of a team that is making the product as a small and up-and-coming collective, not so much when I am in a more specific role in IT for example if I am a software engineer in a big company I do not need to do all of the design thinking process maybe some, but not all because they have the sufficient amount of employees to do that job but, it is different when I work in let us just say a startup where my job position is way more flexible and the number of employees are fewer than in a big company which means, I might have to do some if not all of the design thinking process in that position.

I think the necessary action to improve my potential in the industry is, more awareness and the need to improve my team-working skills. Because I felt that through this whole process I have not communicated enough and more concerned with doing some assignments in my own time instead of doing it in my team's time and also awareness because in this day and age, remote work job is a

valid work environment which means that I have to be more aware on other that remote work job's timezone because I could be doing a job faraway in let us just say Denmark and not adhering to that place's timezone could prove fatal to me.

5.2 Wong Pei San’s reflection

When I was 16 years old, I make up my mind to study network and security, the reason is getting the influence from the breakout of the Wannacry issue. I realize the main con of the technology improvements is the leakage of user’s data which probably be putting our life at risk. So, my goal is to be a cybersecurity analyst who is responsible to analyse threats that may affect business and maintain awareness of emerging threats to avoid hackers from stealing the privacy document. That means the technology information system program can enrich me with the basic knowledge of computing such as the network traffic and operating system before going to a higher level.

The design thinking process gives me a clear idea map and mindset on what should do in the next step to create a product or services that can prevent data leakage issues.The most important is to empower me with good communication skills to deliver a clear message to my teammates. I also learn to be responsible for our task given and the ways to guide a team For example, be persuasive when speaking instead of forcing the teammates to do the task.

The action for me to improve my potential in the industry is to strengthen my hard skills and soft skills. Working in a team is not a simple thing, so the first thing is to understand people's needs through listening. Many arguments happen because of misunderstanding. The second is keeping a positive mindset. I should be a rational problem-solver and keep calm under no circumstances instead of pointing fingers at others. The last one is respect for everyone. Be open-minded and respectful to their opinion rather than stubborn with my ideas.

5.3 Nurmazli Azlin's reflection

Nowadays, every human need technology to communicate and share information. We use many applications every day such as e-mail, WhatsApp, Telegram and other applications that need data to be transferred from one end to the other. The issue of how to travel the data and how to protect these data can be answered in this course, Bachelor of Computer Science (Computer Network and Security). My goal for my course is I want to be an IT Security Engineer that capable of designing, implementing and controlling computer network systems. By becoming a great IT Security Engineer, I can protect the network infrastructure of an enterprise by developing policies and procedures and enforcing them.

In order to have those qualities in my future work, I need to possess not only the technical skills but also my soft skills too. Communication, leadership, problem solving and teamwork are what the recruiter will be searching for in their employee. All these skills can be developed in many ways and one of them is from the Design Thinking process. This process taught me how to handle a real-world problem and find the solution. Along the journey to reach the final phase, I learned a lot of things and values from my group. I could view problems from many points of view and think for the solutions innovatively and creatively. It also encourages me to communicate a lot with my group members as we need to give our own opinion, suggestion and ideas. All in all, I slowly sharpen my soft skills in many aspects and get myself prepare for my degree and working life in the future.

I realize that there are many competitors and fresh graduates that be unemployed. Thus, by developing these soft skills can help me to win more jobs and accelerate my career. The most necessary skills that I need to improve is my communication skill. Every job position needs some interaction with colleagues or customers. To improve this skill, I need to practice more in speaking English, multiply my vocabulary and always interact with other people. Also, I have to be fearless to speak out my opinion and suggestion from now as I will face a more challenging environment in the future.

5.4 Siti Hajar's reflection

As the world becomes more and more advanced, the rise of information and communication technology (ICT) such as the internet, software and computers increase the market research as people want to invent new technology and it is become as competition. In fact, technologies provided social interaction as it become as a bridge for different cultures and knowledge. Besides, I love playing video games, watching movies from different countries and it poke my curiosity to know how people invented computers, radio and television. I also love the organization named Anonymous as I read about their activities in 2012. Hence, I decided to satisfy my curiosity by furthering my studies in Bachelor of Computer Science (Networks and Computer Security). My dream is to become an information security engineer as I want to protect my information from getting hacked.

As I am doing this project, design thinking process help me learned how to solve problems systematically. In order to achieve my dream, I need to know my challenges and opportunities. I need to organise my priorities so I do not get stray far from my goals. Besides, design thinking also help me learned how to create new invention requested by clients. This process can be applied during my working life to satisfy client's request. Lastly, it build and sharpen my soft skills such as communication skills and teamwork as I learned to invent new technologies with my members.

As we living in technologies era, there are many people pursuing to be in IT prospect job. It is very challenging as there are many graduates from well-known universities. I need to have outstanding talents in information and communication technology to compete with them. Therefore, I need to learn more about information system, network and security. I also need to sharpen my soft skills as it become criteria from employer as they want all-rounder employee. Lastly, I need to get excellent grades and extraordinary in curriculum to show to employer about the balance of my life.

6.0 The task for each member

GROUP MEMBER	TASK
Nurmazli Azlin	She was responsible for writing details about the design thinking phase, designing the app's homepage, location, application and switch view and carry out a user's survey about the remote control problem they faced.
Wong Pei San	She was in charge of writing the introduction, designing the app's logo and editing the design thinking video.
Jaudan Afzal	He need to collect the design thinking phase evidence, do a survey to get user's feedback and design the voice control device.
Siti Hajar	She was responsible for writing details about teamwork and compiling the design thinking report.

7.0 REFERENCES

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3. Notthedylan. (2020, November 11) .*GROUP 1 DESIGN THINKING - TECHNOLOGY & INFORMATION SYSTEM SECTION 08* [Video]. Youtube. https://www.youtube.com/watch?v=IAIZ7EihKMQ&feature=youtu.be

Youtube Link

https://youtu.be/e0YxLeKSBnc