UTM
UNIVERSITI TEKNOLOGI MALAYSIA

DESIGN THINKING

CHAPTER 4 :

SYSTEM SOFTWARE

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Content

INTRODUCTION

Design thinking is a process that we seek to understand the user, challenge assumptions, and find the problems in attempt to identify alternative strategies and solve the problems. Design Thinking is very useful for people nowadays because it can be used in any fields no matter Technology, Education or Business. Design thinking is important process to revolve a deep interest in developing an understanding of the people for whom we design the product or service to them. Questioning is one of the way that make a start of the design thinking because it make us identify the problems that happen to the users. Design thinking involve some experiments like sketching, prototyping and testing.

There are five phases of the design thinking:

- Empathize (users)
- Define (user's needs, problems and insights)
- Ideate (challenging assumptions and creating innovative ideas to solve it)
- Prototype (creating solution)
- Test (solution)

System software is a type of computer program with function to run a computer's hardware and application programs.

Example of system software :

- Operating system (OS)
- Utility software
- BIOS (Basic input /output system
- Boot program
- Assembler
- Device driver
- System servers
- Windows/graphical user interface (GUI) system

Detail Step of Design Thinking

DATE	DESCRIPTION
4 November 2019	Meet up a group for discussion - Discussion about topic system software - Thinking about what what will be the outcome of the topic - Plan on who will be interviewed - Give duty Chiam as a meeting planer for this activity Amirul as an interviewer Ayu as a photographer to capture some picture for evidence Aina as an editor of the video
5 November 2019	Interview a lecturer - Dr. Mohd. Razak Bin Samingan Asking about current benefits, problem, opinion system software of iOS and Android
6 November 2019	Meet up a group for discussion - Discussion about respond from our lecturer that we interviewed - Plan on making report, slide and prototype - Record meeting to support the video that we develop
7 November 2019	Processing to make report, slide and prototype
8 November 2019	Search for more ideas to make our report, slide and prototype more ready to be present. Solve problems that appear on that time like spelling.
9 November 2019	Ready to be submit.

Detail Description of the Design Thinking

The problems that people face that relate to our topic which is system software is the quality of the system software that people use nowadays. We only choose iOS and Android as our ideal of the system software. From the investigation and interview, we find out that majority of users say that there are many problems that happening on both iOS and Android.

Problem related	**Detail**	
	iOS	Android
Security and install app	High security system. Need to register a specific account (Apple ID) to install apps. Limited app that can be install.	Weak security system. Easy to get hacker attack and viruses. Easy to install any apps without using an account.
Closing app	Easy to close app Just press the main button or double click at the app. Help the system run smoothly	Need to close the app that we already used before. If not close the app, the app is still run in background. Make the system become slow and lag.
Updating Version and storage of memory	Not much different between versions. Need to update frequently. Occupy a lot storage of memory. Permanent amount storage of memory. Need to buy other phone to get large storage of memory	Too much changes happen went updating from version 5 to version 8 like the way to close the app. For version 5, we need to move the app to the above but now it need to move to the left or right to close it. So, it too hard for user to change their habit to close app in a short of time.
Price	Too expensive.	Economic price.

After we define all the problems that happen on iOS and Android, we make a meeting to brainstorm ideas to solve all problems that source from our interview session with our chosen lecturer. We find out and understand that all users need and no need.

After we had analyzed all the problems and solutions, we finally come out an idea to make new system. During discussion, we come out some idea to keep the positive from iOS and Android, make new name for the new system that we develop and adjust the system so that the system will make the users more satisfaction on it.

Our result is to make new system software that have both iOS and Android benefits and more user friendly such as standard updating system, economic price, close an app just return to home page and medium security.

So, we create a prototype as our item to present how new system that we develop work.

The new system that we develop is the most evident that we had to show our team work spirit.

ASSESSMENT POINT

The assessment point in this design thinking is for us to know about our progress during the transition between the phases in design thinking so that we can carry out the phases successfully. We also can know what we can learn from this design thinking during the end of project demonstration from the assessment point of different phases of design thinking.

During the transition between the design thinking phases

During the empathize phase, we made an interview to the lecturer which in the field of software. This is because the lecturer in software knows more the information and problems about the system software. They know about the problems more details and can share their opinion with us. So, we can understand the user problems better and experience the problems easier.

From the empathize phase, we already knows about the problem so we have to identified the problems in the define phase. During the define phase, we synthesized the problems that faced by the user and try to understand the problems of system software. We came out with their needs and the insights that we uncovered during the empathize phase in order to get the solutions.

After we defined the problems, we carried out the ideate phase. We meet and had a discussion about the solutions to solve the problems of the user. We all gave the opinion about how to solve the problems of system software faced by users. We explored a wide solution and the ideas to improve the system software in order to satisfy the user. Moreover, we picked some of the good solutions and ideas so that we can solve the user problems successfully.

At last, we did the prototype of system software with more user friendly, cheaper, high security and high performance. We discussed a few times and did it together in order to get a better prototype. This prototype can help the user solve the problems of system software successfully.

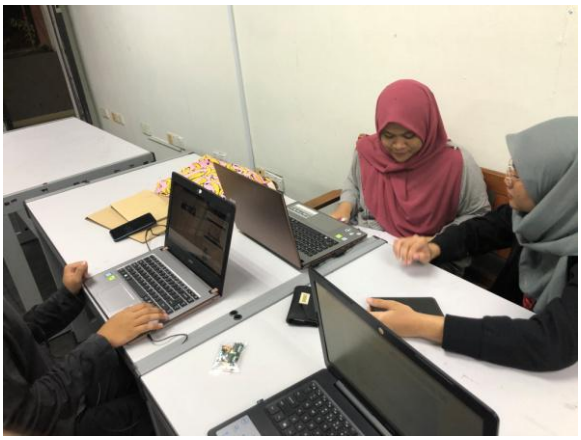
During the end of the project demonstration

During the end of our design thinking demonstration, this design thinking lets us know about the problems of system software that faced by the users. Besides, we know how to solve the problems of users by using the design thinking. We learn about the importance of design thinking for us to think about the solutions and how to do the prototype to perform our project.

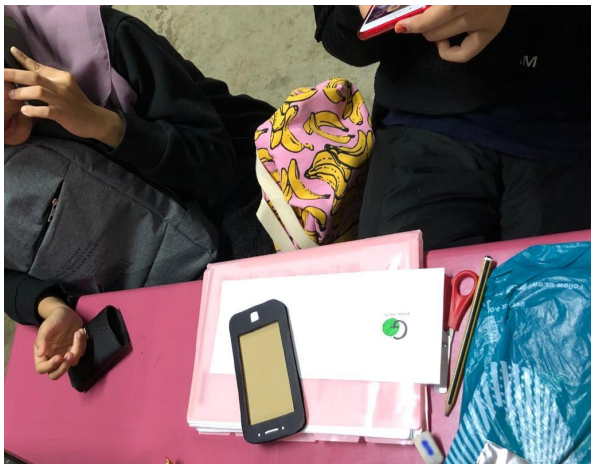
DESIGN THINKING EVIDENCE

EMPHATY

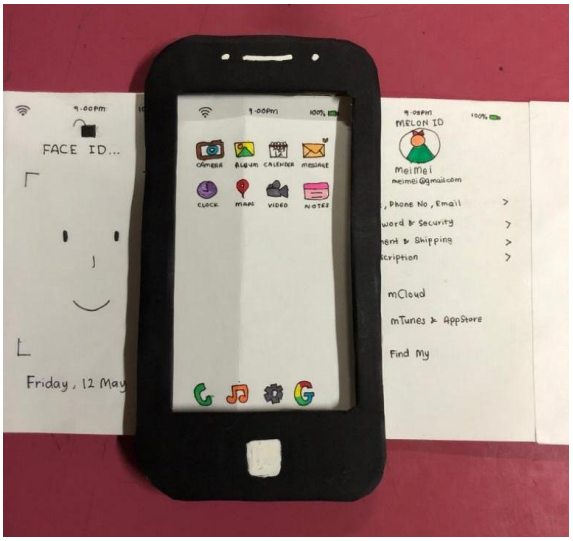
DEFINE



IDEATE



PROTOTYPE



STEPS IN DESIGN THINKING

STEP 1: EMPHATY

In this phase, the user that we interview is Dr Mohd Razak bin Samingan which is a senior lecturer of Programming Technique I from UTM. He is having the knowledge about the System Software and the experiences on using the iOS and Android. There are some questions that we had asked him.

QUESTIONS: What is system software?
ANSWERS: It has some algorithm there. It can run it by online and offline. System software is about operating system. Like what we have here, windows 10 is a system software and power point is software. We need windows 10 to run power point as a software and application software. So we have two different software that handle the overall of the system and hardware.

QUESTIONS: Which operating system offered the best price?
ANSWERS: I preferred the function of iOS but for the price i preferred to Android. Android is more economics to users and it also has all the functional unit for mobile device.

QUESTIONS: Are you comfortable with iOS or Android?
ANSWERS: I have tried both but i think both have its benefits and disadvantages. When I am using iOS, i just need to double click to close the apps. The users do not need to close the apps. However, for android, if I do not close the apps, it will use a lot of memory and it will be lag.

QUESTIONS: What problems do you usually face with iOS or Android?
ANSWERS: For Android, the problem is for different version they applied different ways on how we control the system. I am updating the phone from Android version 5 to Android version 8. I found that is totally different on how to control the device such as how to close the apps, change the windows and so on. For iOS, I think they are more standard in updating different version. Most of the user like iOS because it is not too much different compared to the old version.

QUESTIONS : How about the security?

ANSWERS: For iOS, if you use the fingerprinting or face ID to open the phone, I think it is more secure. For Android, i think it is quite open for user even when I want to install a software or mobile apps in Android. I can download apps or publish without registered with Google Play Store but in iOS it is become compulsory to register it which is the Apple ID. I think iOS is the more secure but it is not develop friendly. It is more difficult to install a mobile apps in iOS compared to Android.

STEP 2: DEFINE

The list of define and problems that comes from empathy.

1. iOS is not user friendly and it is more expensive. For iOS, we have to register an account compulsory such as Apple ID in order to install the apps and using the phone. We have to use the Apple ID to install apps in Apple App Store and it has limited apps to install. Besides, iOS user must use the provided apps in order to do their things. iOS is also more expensive compared to other operating system and it is not affordable to most of the people. Therefore, we think about some ideas to have an operating system that is more user friendly.

2. Android has weaker security. This is because Android is more openly compared to other operating system. We can download the apps in Android without using the account. We also can connect the Android to most of the PC. This causes the security decrease. Android can be hacked and attacked easier by the hacker and viruses.

3. Android always lagging when open too many programs or apps in phone. When we install more apps in Android phone, there are more apps or program is running in the background. Next, there are cache partitions on most of the Android phone and it will clog with junk then will lead to lag of system.

4. iOS need to update frequently and occupy a lot storage of memory. iOS cannot let the users increase the storage with adding the SD card into the phone or increase the RAM of phone. We need to buy a new phone with more storage capacity than before.

STEP 3: IDEATE

BRAINSTORMING PROCESS

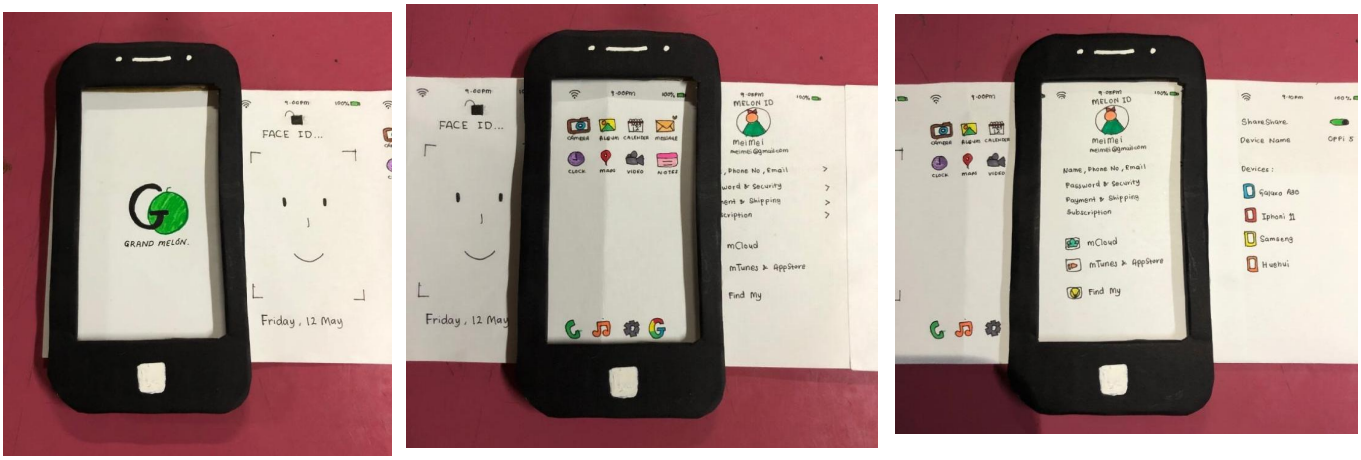
IOS PROBLEMS	ANDROID PROBLEMS
Not user friendly	Weak security
Price not affordable	Lagging when open too many apps
Update frequently and occupy a lot of space	

We observed the problems of user in using iOS and Android. The above table shows that the problems of iOS and Android faced by the user. After we defined the problems, we explored the solutions to solve the problems and find a new operating system that can solve the problems.

We found out a new operating system with more user friendly which is we do not have to register the account and using the apps of phone compulsory and we can install all kinds of apps unlimited. Next, the operating system should have the price around RM 2000 which is affordable to all users. The security of operating system also needed to improve by using face ID and fingerprinting to unlock the phone so that it would not be hacked and attacked by viruses easily.

Besides, the new operating system should have high performances when using it. It should clear the caches and close the apps automatically after specific time so that it will not be lag. The storage of new version of update should not be too big so that the user can have more spaces to install more apps and do not need to upgrade the storage frequently. Our final new operating system is more user friendly, cheaper, high security and high performance.

STEP 4: PROTOTYPE



Based on the solutions that we found out, we created out a prototype of smart phone by using the cardboard and paper. We drew out the lock screen and home screen of the smart phone for new operating system and some functions of the new operating system. We try to do the most suitable prototype that can solve the problems of the user. We added our new ideas and design in this prototype to make a different design and contrast from other operating system.

REFLECTIONS

The goal with regard to this course is developing the operating system that is advanced and useful for people. This design thinking let us learn about the information and knowledge of system software. We learned about how to observe the problems of the user and think about the most effective solutions. Then, we gained the experiences on how to present our solutions in physical way such as prototype. These knowledge and experiences can let us know how to develop the operating software that is advanced and benefits to all people.

This design thinking had deeply impact us on how to develop the operating system. Before that, we just know how to use the operating system and never think about the problems of operating system of system software. During we carry out the design thinking, we realize that there are some problems of phone or software that comes from the operating system of system software. Therefore, we start to think about the problems and solutions on system software. The system software is become more important in today's world. We start to interest about the developing of system software and the operating system that is very famous nowadays such as Microsoft, Mac OS and so on. This has let us want to learn about the knowledge of our courses faster so that we can reach our goal faster.

We will pay more attention during the lesson about the technology and information system so that we can learn more about the system software. Next, we will do more research on the information of system software so that we can adapt the knowledge on the developing of operating system comprehensive. We will also attend more the seminar, talk or exhibition and take part in more competition about the technology and information system.

TASK OF TEAM MEMBERS

Name	Duty
Wan Ahmad Amirul Iman Bin Wan Ahmad Yusmi	Make report for design thinking. Make slide of design thinking for presentation. Combine report and slide of design thinking. Be an interviewer.
Ayu Nazira Binti Azharudin	Make slide for the chapter of our design thinking. Make prototype. Plan for meeting. Be a photography to take photo for evident.
Nuraina Najwa Binti Mohd Rauzi	Make slide for the chapter of our design thinking. Help on make prototype. Plan for meeting. Be a video editor to create video for presentation.
Chiam Wooi Chin	Make report for design thinking. Make some reflection of the event. Make slide of design thinking for presentation. Be a meeting planer for interview session. Search some information that can help our project.