



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

Design Thinking (Group)

SECP1513 TECHNOLOGY AND INFORMATION SYSTEM
SEMESTER I, SESSION 2019/2020

Title: Chapter 7 - Secondary Storage

PREPARED BY

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Section: 09

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INTRODUCTION

What is a Secondary Storage?

Secondary storage that separate from the computer itself, where software and data can be stored on a permanent basis. Secondary storage is a non-volatile memory which can save memory or storage regardless if the computer has power in the other word, the data on it stays there until it is deleted or overwritten by the user. It is also called persistent storage. Secondary storage is storage that does not need to be frequently accessed. Data that is accessed less frequently can be changed to secondary storage devices to free up the primary storage like RAM. There are few types of secondary storage such as magnetic storage and optical storage.

Nowadays, secondary storage as much important as primary storage and tertiary storage. This is because, secondary storage can have more memories compared to primary storage and its is even cheaper compared with the prize. On the other hand, secondary storage also has some negative side as well. Secondary storages like HDD and SSD is way slower than the primary storage like RAM.



DETAILED STEPS AND DESCRIPTIONS

DATE	ACTIVITIES
29 SEPTEMBER 2019 SUNDAY	• Briefing about the project by DR. ADILA FIRDAUS BINTI ARBAIN.
3 OCTOBER 2019 THURSDAY	• First meeting with group members • Observe the problems that users are facing • Distribute the tasks for each group member • Prepare a list of questions relating to secondary storage to ask users
7 OCTOBER 2019 MONDAY	• Interview the users about their background, the problems they are facing, their experience and feelings about it • Try to engage with the problems that are bothering the users • Second meeting with group members • Brainstorm about the solutions to the problems that are related to the concept and theory of secondary storage
16 OCTOBER 2019 WEDNESDAY	• Third meeting with group members • Finalise the idea before presenting it to the lecturer
19 OCTOBER 2019 SATURDAY	• Design the prototype of the system • Demonstrate how the system works to the users using the prototype • Ask the users' feedback and comments on how to improve the system to be more efficient
2 NOVEMBER 2019 SATURDAY	• Improve and upgrade the prototype based on users' feedback • Finalise the design of the prototype
7 NOVEMBER 2019 THURSDAY	• Each member writes a reflection based on the outcome of this project • A conclusion is drawn upon the reflection of each member • Final editing of video and report

ASSESSMENT POINT

Assessment points is conducted during the end of project demonstration and during each stage of design thinking.

 EMPATHIZE	Our target audience for this secondary storage is leaning more towards old and disable people. Hence, we decided to interview an old woman to find out what their problems that they are facing.
 Define Define the problem. DEFINE	In this phase, we analysed and synthesised the problems that we identified in the empathy phase in order to better understand the end users' needs and wants.
 IDEATE	In this phase, we began our brainstorming. During this phase, we listed all the possible ideas like very simple to most difficult ideas to solve the user's problems.
 PROTOTYPE PROTOTYPE	In this phase, we decided to come up with a prototype that is secondary storage. In this phase we made sure our prototype was in line with our outline of the problems and also the user's need. We also kept in mind that the prototype is user friendly.

EMPATHY (STEP 1)

QUESTION THAT ASKED

Q: What is your name?

A: My name is Jeannie.

Q: How old are you?

A: I am 50.

Q: what is your occupation?

A: I am a housewife.

Q: How you are panning your expanses?

A: I buy food, households and personal stuff.

Q: What are your hobbies?

A: My hobbies are singing, dancing, listen to music and watching movies.

Q: How you watch movies?

A: I watch movies by using my phone, but sometimes I download movies my phone won't have enough storage to download it. So, I asked my son to check. And he buys me a new SD card to use. After sometimes I can't download movies and songs.

Q: Do you have any children?

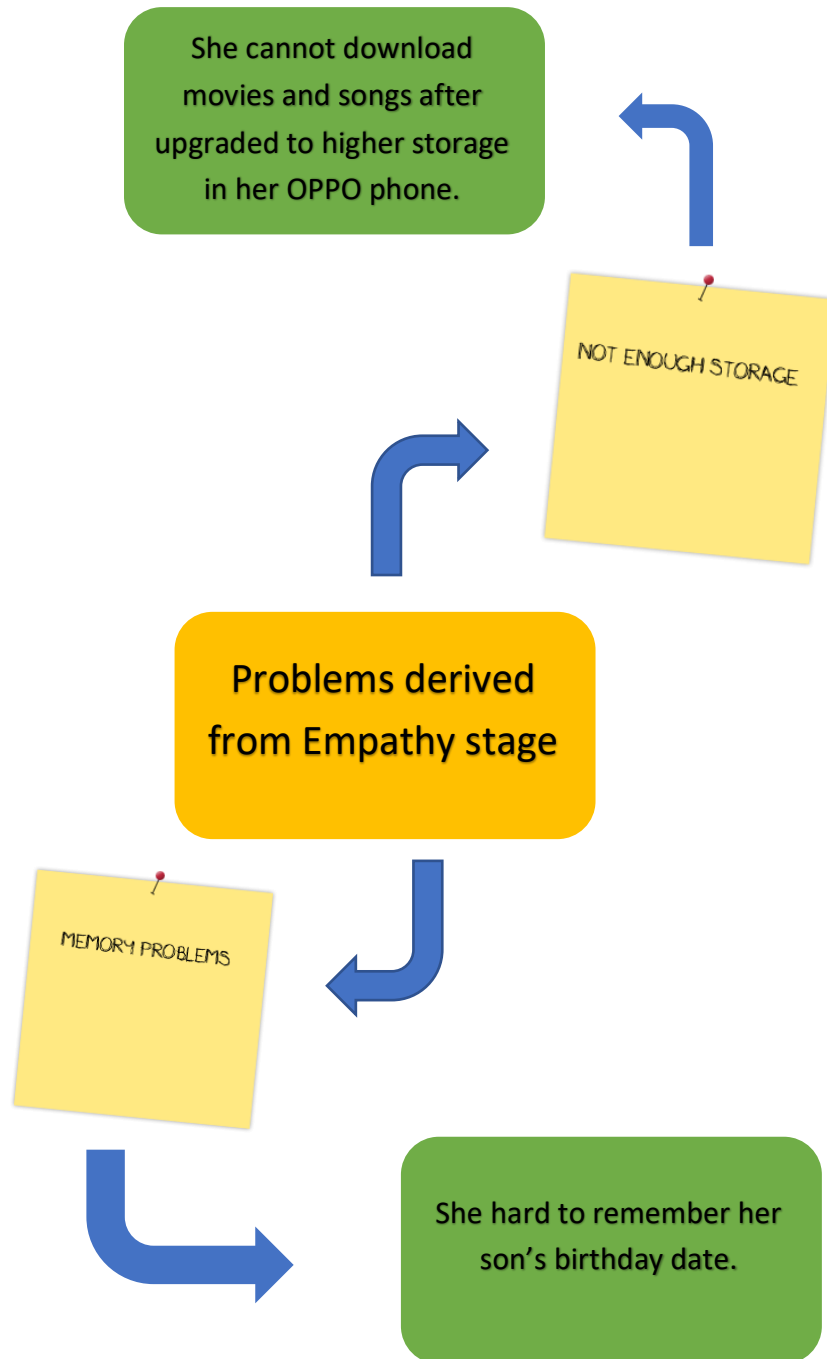
A: I have a son and his name is Weiqi. His age is 15.

Q: Do you know when his birthday?

A: hmmm... I can't remember.



DEFINE (STEP 2)



IDEATE (STEP 3)

EASY		IMMEDIATE		IRRATIONAL
Buying a new SD card Since she does not have enough storage to store movies and songs. And since SD card is small and she is an old woman she cannot handle it because she keeps on losing it. Use a cloud storage But for to use the cloud storage we must have a high-speed internet connection to download it, otherwise we cannot enjoy the movies or songs.		Creating multifunction device with secondary storage. This device will have quite large space of memory to store data. And to ease her, we will add some kind of AI that can operate the device with her voice.		Inserting high-tech hard disk into client body. This idea is impossible. This is because this kind of technologies just very new to the developers and also engineers. We do not have that much knowledge to work with that kind of technologies for now.

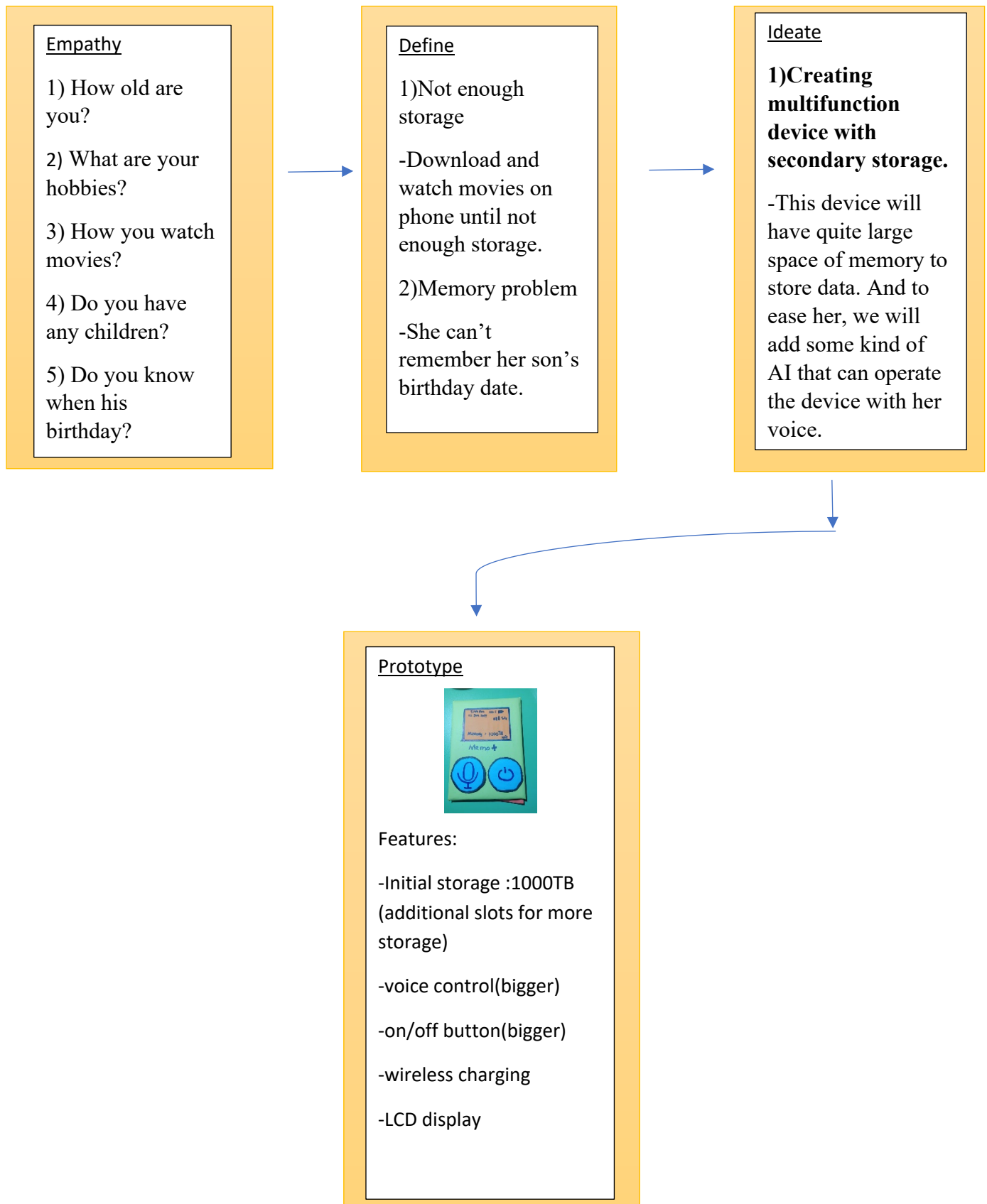


PROTOTYPE

PROTOTYPE 1		PROTOTYPE 2
Product name: Memo+ Features: -Initial storage :1000TB -additional slots for more storage -voice control button -on/off button -wireless charging		Product name: Memo+ Features: -Initial storage :1000TB -additional slots for more storage -voice control(bigger) -on/off button(bigger) -wireless charging -LCD display -headphone Jack

Based on the comparison above, our client happy with 2nd prototype because it fulfils client's needs and expectations as it can store more data and easy to use. Additionally, in that device there are 2 slots for the additional storage. And this device has come with a software in it that help the users to sort out the data accordingly and automatically after downloads the data by the voice command of the client. There are important features that help the user to charge the device wirelessly. Finally, there is LCD display that help her to see the battery status and also storage capacity

MAPPING



REFLECTION

Our goal/ dream regarding our course is to be a respectable networking and security engineers in the industry with a high level of competence and also with problem thinking skill. I believe that this subject which is Technology & Information System will be able to help us to achieve our dream. Besides that, this course also really gives a detailed explanation on how technology around us works and also create a new perspective on how the things work.

Design thinking also has an impact on my dream because it has developed our critical and matured thinking skill. This skill is so important because we are able to solve real life problem. We also learned what is teamwork and the importance of it when it comes to a group work. We learned to trust our group members whilst working on this project.

In my opinion, I should be able to think spontaneously and creative in the same time to solve problems so that will help me in becoming a better employee or employer. One of the essential actions I have to take in order to prepare myself for industry is gaining more experience by joining activities and trips organised by the school. This will help broaden my exposure to real work life.

Task of group member

Name	KISHEN A/L PREKASH	NARENDRAN A/L RAMMUDO	CHIN WEI XIANG	HUANG XIAOSHAN
Tasks	-MAPPING -INTRODUCTION	-IDEATE -DEFINE -DETAILS	-EMPATHY -PROTOTYPE	--TAKING PICTURE
	-REVIEW REPORT -REFLECTION	-DEVELOPING PROTOTYPE	-DEVELOPING PROTOTYPE	-DEVELOPING PROTOTYPE
		-MERGE ALL THE REPORT PART		

Video - <https://www.youtube.com/watch?v=pAxPMSOzlv4&feature=youtu.be>