Design Thinking Report

SECP1513-04 TEKNOLOGI DAN SISTEM MAKLUMAT

(TECHNOLOGY AND INFORMATION SYSTEM)

Dr. Goh Eg Su

Group Members:

Group Members	Matric Number
MUHAMMAD IKHWAN BIN MAZLAN	A20EC0091
BINTANG PRAKASA ANTOVIE	A20EC0295
ABDULRAHMAN MOHAMMED AQEL ASSAGGAF	A18CS4054
CHRISTIAN DIMAS RAMADHANI BUDIYONO	A20EC0296

Table of contents

Table of figures

1 Introduction

Databases are everywhere. It's that simple, they are the warehouse of everyday information for just about everything. They store bank data, doctors, the population census, criminal records, information about UFO sightings, and income tax return data. There is not an organization or company that does not use in one way or another a database, so it is clear that they are a key and juicy piece for any attacker, against which any protection measure is little. This wouldn't be a big problem if our databases were stored in a safe in an unknown location, but then they wouldn't be very useful either. The databases are part of an ecosystem from which access to the information they contain is allowed to certain users. Within this ecosystem, we almost always find a web application or turning it around, practically all web services use in a way or another a database. That is why both worlds are intimately interrelated and so when we think about security we cannot consider these elements as isolated. Web services and the applications that implement it are currently experiencing their moment of maximum expansion. The growth of services 2.0 and the proliferation of cloud computing has led to an explosion in demand.

In conclusion, All this indicates the importance of database security and the extent of its impact on our daily lives and our privacy.

2 Detail steps in design thinking

2.1 Empathy

The primary phase of the Design Thinking measure is to increase an empathic comprehension of the difficulties you are attempting to understand. This includes counseling specialists to discover more about the territory of worry through noticing, drawing in and feeling for individuals to comprehend their encounters and inspirations, just as drenching yourself in the actual climate so we can increase a more profound individual comprehension of the issues in question. Compassion is vital to a human-focused plan cycle, for example, Design Thinking, and sympathy permits plan scholars to put aside their own suspicions about the world to pick up understanding into clients and their requirements. Contingent upon time limitations, a significant measure of data is accumulated at this stage to use during the following stage and to build up the most ideal comprehension of the clients, their requirements, and the issues that underlie the improvement of that specific item.

2.2 Define

During the Define stage, we set up the data we have made and assembled during the Empathize stage.This is the place where we will dissect our perceptions and incorporate them to characterize the center issues that our group have distinguished as yet. The Define stage will help the designers in our group assemble good thoughts to set up highlights, capacities, and whatever other components that will permit them to take care of the issues or, at any rate, permit clients to determine issues themselves with the base of trouble.

2.3 Ideate

During the third phase of the Design Thinking measure, designers are prepared to begin producing thoughts. We've developed to comprehend our clients and their requirements in the Empathize stage, and we've dissected and integrated our

perceptions in the Define stage, and wound up with a human-focused issue explanation. With this strong foundation, we can begin to "consider some fresh possibilities" to recognize new answers for the difficult assertion we've made, and we can begin to search for elective methods of review the issue.It is imperative to get however many thoughts or issue arrangements as could be expected under the circumstances toward the start of the Ideation stage.

2.4 Prototype

The design team will now produce a number of versions of the product or specific features found within the product, so they can investigate the problem solutions generated in the previous stage. Models might be shared and tried inside the group itself, in different offices, or on a little gathering of individuals outside the plan group. This is an exploratory stage, and the point is to distinguish the most ideal answer for every one of the issues recognized during the initial three phases.The arrangements are actualized inside the models, and, individually, they are explored and either acknowledged, improved and reconsidered, or dismissed based on the clients' encounters.

2.5 Test

Designers thoroughly test the total item utilizing the best arrangements recognized during the prototyping stage. This is the last phase of the 5 phase model, yet in an iterative cycle, the outcomes produced during the testing stage are regularly used to reclassify at least one issue and educate the agreement regarding the clients, the states of utilization, how individuals think, act, and believe, and to understand. In any event, during this stage, modifications and refinements are made to preclude issue arrangements and infer as profound a comprehension of the item and its clients as could be expected under the circumstances.

3 Detailed descriptions

After three meetings by voice and video and more than one meeting via telegram groups, we decided that the problem that we will solve is the security of databases.The idea came after Dimas told us that his friend is a web developer and he is afraid that his users data will be exposed because he afraid that anyone will hack his free web hosting server and then he will be able to access the users data.We thought about his problem and we used the design thinking process to find for him a solution that will be good in his case. Our solution biscaly to develop a tool that will be connected to his database. The tool will encrypt the data when it comes and then decrypt the data when he needs to call it. Of Course we could not find this solution without the interview we had with Mr Aris (DBA UTM) that our Doctor managed for us. We learned a lot from that interview and it helped us to understand how data flow works in the databases and we came up with this solution.About the team work we had our leader Ikhwan which he be able to manage everything and he assign for each one a task to finish with a specific deadline to finish all as a one team.
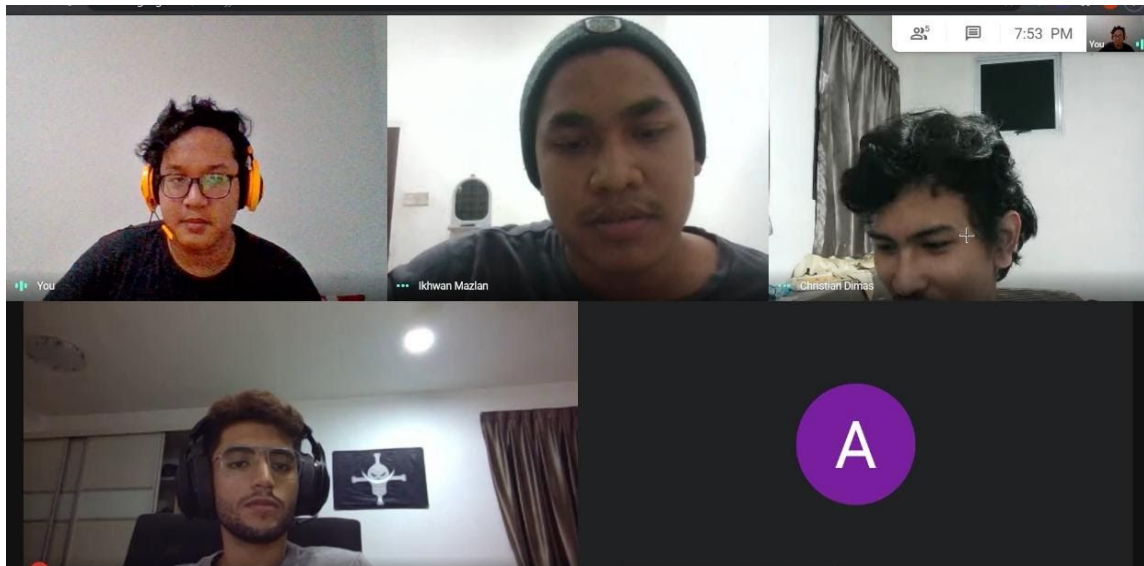
(pic from one of the meetings)

DESIGN THINKING 101 NNGROUP.COM
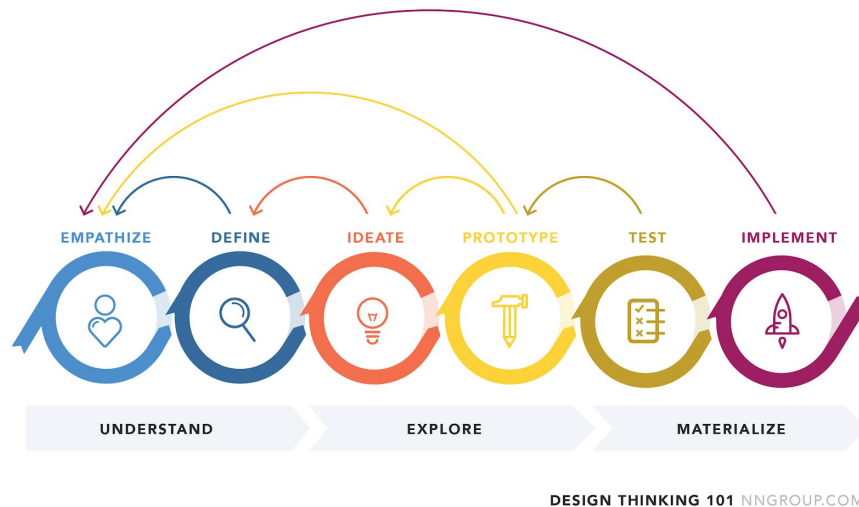
4 Design Thinking

4.1 Empathy

Empathy is the first step of the process in Design Thinking. As a designer, our goal is to get an understanding of the user's problem and try to solve the problem. This process includes observing, engaging, and empathizing with users so we can understand their motivation and their purpose so we combine it together or immerse it with the environment of the user, so we can get more detail about the problem that they are facing. Empathy is a crucial part in a human centered design process, and empathy helps designers to manage assumptions from the thinker's side of the problem. In the empathy stage of the Design Thinking process, we will build empathy, understanding, experience, views, and observations on what will be built in our design

project. Through empathy, designers are able to put himself in the user's brain and connect with how they might be feeling about their problem, circumstance, or situation.

Some question designers can consider to ask to the user :

1. How are you feeling right now?
2. On a scale 1 - 10 what number can you describe your happiness?
3. What words can you indicate these feelings?

4.2 Define

Through a defined process, we define the problem that we acquired during the empathy process in order for us to understand more detail on the problem that we have to solve. The problem is about a database that lacks security. The DBA wants to solve this problem using the most efficient and lowest cost method. The security should prevent hackers from stealing the data. How might we improve security without having to buy new hardwares or even increase the amount of workforce in the company? The solution should help the data to be more secured on both ends.

4.3 Ideate

To get the best solution we have to make some idea and share it in order to get the best solution for the problem we faced. Every person has to give their idea even though its an imaginary and beyond realistic but maybe form that idea we can see the good side and mix it. from this idea when can made the prototype. Our group has met up several times to discuss and brainstorm about how to solve the problem database security. We came up with a few solutions such as Backup Security but this method is not efficient for indie developers and costs more cost also device security but it needs more personal and we likely to use physical security but needs more space to complete it also need good and also internet connection. These three ideas are using hardware and need a longer time and routine control. Thus, the best way to solve Database Security is Encryption. ALL data—including data in the database, and credential data—should be protected with best-in-class encryption while at rest and in transit. All encryption keys should be handled in accordance with best-practice guidelines.

4.4 Prototype

At the beginning we suffered from the nowadays situation after this Covid-19 pandemic and because everyone is another city we could not do any physical prototype as we planned and also because of the CMCO and the lockdown in Indonesia our resources limited for that we choose to make a video prototype that can explain our idea and we all can work on it together .The solution that we choose is 'encryption'. Encryption is the best solution as it costs the least money and the most efficient. Encryption is very random and it is very hard for a hacker to crack the key. The data will be more secured. First, data is received from the user, then during the transmission process to the administrator, the data will be encrypted. For example, the user input is 'Ikhwan Mazlan' , this data will be stored in the database as 'aDcxb kluY' . When the user asks for the data, the data will be decrypted and return to its original form.
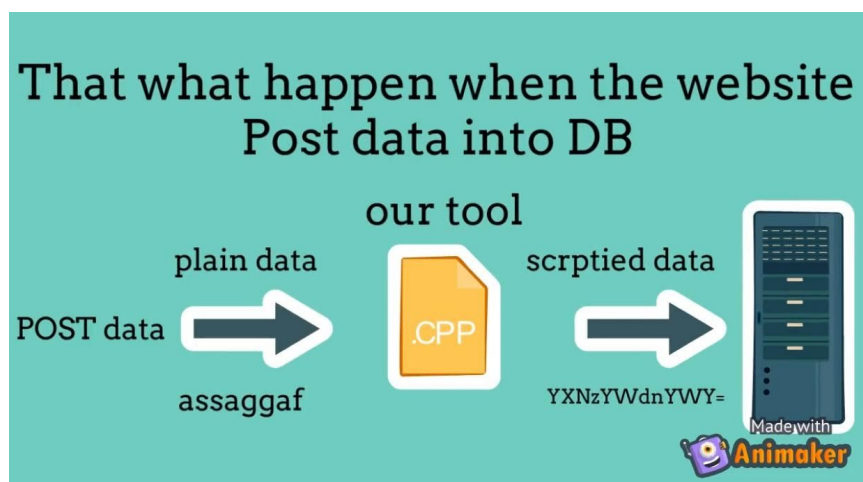
4.5 Test

In this section we will test our prototype and hows the tool work so we can improve tool and to search the weakness of this tool so can be used not just for us, but everybody that needs this tool, after doing several tests, we see the program work properly and it runs as we expect , the user receives a data then the data Encrypted next when the user wants to open, the tool will decrypt the data and it will show as a plain data. We see that using the encryption method we can protect, manage the database and also prevent attackers from attacking the database. we hope we can develop this project so will be useful for other people who get the same problem

5 Reflection:

5.1 Abdulrahman Mohammed Assaggaf

I am a Network & Security student. My dream is to be an expert in the penetration testing area and I used to love this for a long time, even before I went to university, and until now, this my passion, and I hope to achieve my goal in the future. The materials and the teachers helped me a lot and I hope in the future to be able to own my own company in the protection testing service. The design thinking changed my way of thinking before doing any tasks in the future it was a great experience doing this project with these amazing crewmates knowing that I am having nice classmates in the university from a lot of nationalities, even the local students were great to me. I need to implement the design of thinking on all of my problems that will be facing me during my trip in the university because I believe that way of thinking will be the best way to solve all the problems, also it will abbreviate the time of solving any problem. To end all the thanks and the credit to our leader Ikhwan who organized every in the group and was an active leader of helping and assigned the tasks and even explained for each one his mission. Also our great Dr. Goh Eg Su, the one who had a wonderful handling and explanation in the online classes, she treated us well and responded to all our questions with kindness and respect.

5.2 MUHAMMAD IKHWAN BIN MAZLAN

My dream when I choose to take a Networking & Cyber Security course is to be a computer forensic. I love to investigate and I do think I have talent in that field. During this design thinking process, I realise that when facing a problem I should undergo a few steps in order for me to find the perfect solution. Everything in life should be done according to steps, if not you are planning to fail. In computer forensic, when I face a problem instead of pressuring my head to think of the solution, I should create a team to undergo a design thinking process and find the best solution. This Design Thinking also helps me to improve my communication skill . For example, my group interviewed the DBA. We also discussed a lot about this project. Having to interact with the international students really opens my eyes to the outside world. I think I need to improve my critical thinking skills in order to improve my potential in industry. Lastly, I am grateful to have such wonderful and cooperative group mates. They helped me a lot even though we all are so far away from each other. I am also very very grateful that we have Abdulrahman, a 3rd year student in our group. He helped us a lot and guided us during the project. That is all for my reflection. Thanks.

5.3 BINTANG PRAKASA ANTOVIE

When I decided to enter Computer Network & Security, my goal is to become a network provisioning engineer, because I like computers so much and I really like messing around with my PC. I was inspired by my math tutor, he is a network engineer and he already makes 2 computer network labs in Dubai. In this Design Thinking process, I learned and experienced a lot about problem-solving. I learn that when I get a problem, I need to do step by step to solve the problem with an excellent result. In our case, we interviewed Mr. Aris bin Arifin and he is a Database Administrator in UTM, he is very expert in managing database, so we ask him few questions about our problem in databases, and after that we make a prototype about our solution and we test our solution, and then the problem solved. Later, when I already am a network engineer, I hope that I can solve any problem that my company needs because of this Design Thinking process.

5.4 CHRISTIAN DIMAS RAMADHANI BUDIYONO

My dream is to become a Cyber Security. That's why I chose the Computer Network andSecurity course. I like to help people and also love computers. I'm very curious how the computer works . In this design thinking project I learned many lessons, like how to be cooperative and brave to give ideas, it was a great experience even though we cant go to meet each other because of a pandemic we still maintain to have meeting virtually and we share our idea every person has their own way but we decide to take "Encryption method" cause after we discuss the advantage and disadvantage the best solution for this situation is "Encryption" we all agree and i very satisfied with this meeting and hope we can be in the same group again . I can be part of this group with people from many countries. From the experience in this group I realize that many things I must improve, I believe that every problem can be solved faster and efficiently with cooperating with other people. Also I will apply the design of thinking in order to solve my problem. I'm very grateful be part of this group with unique person i met also we have Abdulrahman, the 3rd years student he help and guide us to complete this project also he gave us many advice for our study from his experience. This is my reflection.

6 Task for each member

Name:	Tasks assign
Abdulrahman Mohammed Assaggaf	Interview, Prototype Video, Prototype , Introduction, Detailed descriptions, Formatting
Muhammad Ikhwan Bin Mazlan	Interview, Define, Prototype, Detail step in design thinking
Christian Dimas Ramadhani Budiyono	Interview, Idea, Test
Bintang Prakasa Antovie	Interview, Empathy, Recording Video, Editing Video