



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

TECHNOLOGY AND INFORMATION SYSTEM

SECP 1513 (03)

TASK: DESIGN THINKING

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Program of Study : UHMT1012-47 GRADUATE SUCCESS ATTRIBUTES
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Introduction

We are from group 4 of Technology and Information Systems (SECP1513) section 03. We have proposed a project that uses high technology system and also will help to reduce the Covid-19 virus spreading among the people. Recently, the government found that there have high chances of spreading the virus by using elevators at the apartments, offices, and shopping malls. There are a lot of people who use the elevators every day. We do not know who has the virus. If a person has the virus and he or she presses the buttons in the elevators using his or her bare hands, the virus will spread throughout the buttons. Next, elevator buttons are made up of copper. Copper is known for its ability to kill viruses and bacteria on its surfaces. But the Covid-19 virus will only die after 4 hours of contact with the copper surface. Then, if another person touches the buttons even before the virus dies, it will be transmitted to him or herself. Furthermore, to avoid these situations happen again we are group 4 came up with a new project that uses higher technology. Our group has designed a card reader which reads cards like identity card, apartment cards, and office cards and even matrix cards for university students, QR code, pressure sensors, and voice commands. Our project is mainly about replacing the buttons at the elevators with the things we suggested to avoid spreading of Covid-19 virus.

Empathy

2020 has become the most unfortunate year when a sudden breakout of covid-19 happened. It is not only happened in Malaysia but the whole world too. The whole world facing the pandemic phase. Covid-19 is also one of the main contributors of down fall Malaysia's economies. The only way to decrease the number of total patients and spreaders, are to wear mask on, not to touch anything with bare hand and always care with social distancing.

Since the amount of numbers that infected by Covid-19 are among elderly and children, so they need to be more cautious. Hence, they would bring hand sanitizer everywhere .It is a good thing because you will keep yourself hygienic but using too much might not good for your skin because its contain 60%-99% alcohol (Organization, 2010). Too much alcohol can make your skin dry and irritated.

In this modernizing era, elevator becomes a common facility that help us to move around to another floor. It saves our time and energy. Since its pandemic, we try to avoid as much as possible to not have any contact with person or object. The only way for elevator to operate, we should decide which floor to go with pushing the button. So, to lessen from having so much contact with viruses, we come up with ideas where replacing elevator buttons with card reader, voice command, pressure sensor and QR code. We have discussed on how it works differently depends on situation. We even think and improvised our project for elderly and handicapped to use it.

Aside from that, we even think based on handicapped people perspective. For them, it will be inconvenient especially for someone has difficulty with their legs and blind person. Before pandemic happened, for blind people they will touch the button because it has braille written on. Since its pandemic, it's kind of hard for blind people to use elevator.



Interview session with Dr. Murtadha and Dr. Mohd Farid (3 November 2020)

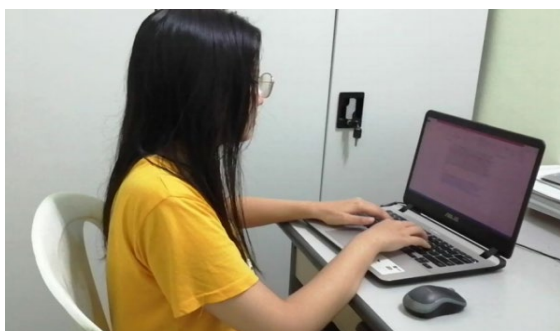
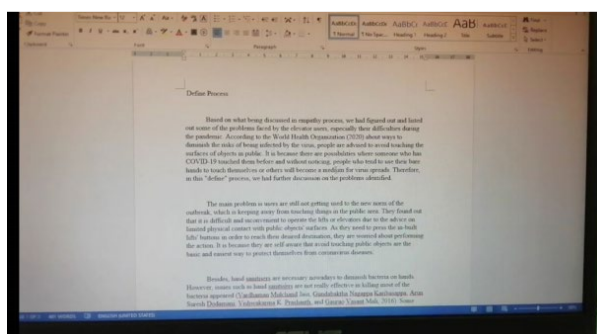
Define

Based on what being discussed in empathy process, we had figured out and listed out some of the problems faced by the elevator users, especially their difficulties during the pandemic. According to the World Health Organization (2020) about ways to

diminish the risks of being infected by the virus, people are advised to avoid touching the surfaces of objects in public. It is because there are possibilities where someone who has COVID-19 touched them before and without noticing, people who tend to use their bare hands to touch themselves or others will become a medium for virus spreads. Therefore, in this "define" process, we had further discussion on the problems identified.

The main problem is users are still not getting used to the new norm of the outbreak, which is keeping away from touching things in the public area. They found out that it is difficult and inconvenient to operate the lifts or elevators due to the advice on limited physical contact with public objects' surfaces. As they need to press the in-built lifts' buttons in order to reach their desired destination, they are worried about performing the action. It is because they are self-aware that avoid touching public objects are the basic and easiest way to protect themselves from coronavirus diseases.

Besides, hand sanitizers are necessary nowadays to diminish bacteria on hands. However, issues such as hand sanitizers are not really effective in killing most of the bacteria appeared (Vardhaman Mulchand Jain, 2016). Some sellers would simply advertise their products to be marketed as hand sanitizers but they are unable to kill the germs. Therefore, they are only labelled as "hand sanitizers" but they are not as useful as the actual sanitizers. In this problem, the public is skepticism towards some of the retailed products. Also, due to the shortage of personal protective equipment, they are costly. So, the public prefers avoiding physical touch and follow the safety precautions on the prevention of the outbreak as these are more reliable and cost-free.



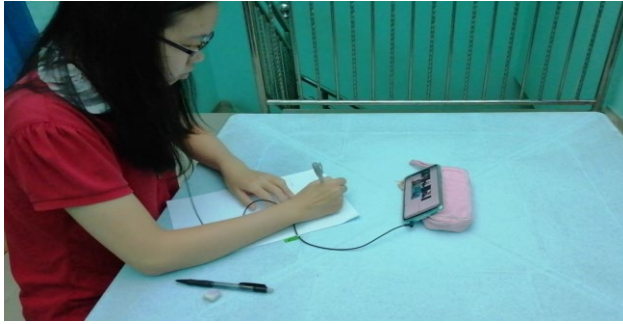
Ideate

We all discuss the way to solve the problem of spreading the covid-19 virus through the surface of the button in the lift during the second-minute meeting. We have come out with a lot of ideas to solve it. For example, we use a card reader to avoid pressing the button of the lift. However, this method is more suitable for a lift in the apartments and offices rather than for the shopping mall. This is because all the people that shopping is enquired to sign up as a member so that they have the card to use. Furthermore, the card also could be easily be stolen and they might lose their private information. To solve this problem, we have to think of using a cardholder and just hang in front so that it can be easy to use and detect if the card is missing.

Besides that, we also come out with the idea of using voice command. This is an easy way for people to use a lift. They can just say which floor they would like to go and lift can send them accordingly. To make the elder people or foreign people easy to use it, we decided to make the voice commands can detect in various languages, like English, Mandarin, and Tamil. Other than that, the use of QR code also can make the people avoid pressing the button of lift. The form is easy to fill where it just needs to choose which floor they would like to go and submit. After the lift received the data, it will send them to the floor as they select.

Not only that, but we also got the idea of using a pressure sensor in the lift. The people can skip the process of pressing the button for the entry and exit. The sensor detects pressure that people come, the door can open automatically after the lift has arrived. For the people inside the lift also, the sensor detects their pressure if they want to go out from the lift. This avoids the pressing button process in the lift to prevent the spreading of the covid-19 virus.

At the end of the minute meeting, we all agree to combine these four ideas. Therefore, our prototype is containing four functions that convenient to people. For those who do not have a card, they can try other methods like scanning QR code, giving the command through voice.



QR code	Elder people don't really know, is problem for them
Card reader	Card missing, hacked
Voice commands	Easy hacked, voice tone
Infrared sensor	Can know people come but the information also easy stole by hacker,



**GO
BUTTONLESS !**

Extra function:
Wave your hand
rapidly on the
screen to activate
the security alarm if
you find someone
suspicious

**The problem = when
using lifts we have
to press buttons..
which lead to
transfer the virus
(covid-19) to other
people**



**The scanner
can identify
IC, residential
cards,
fingerprint
and palms**

**Scanner using
infrared so we
dont need to
touch the
button or
screen**

**Can only detect
resident for access.
precautions for
stalker and any
robbery**

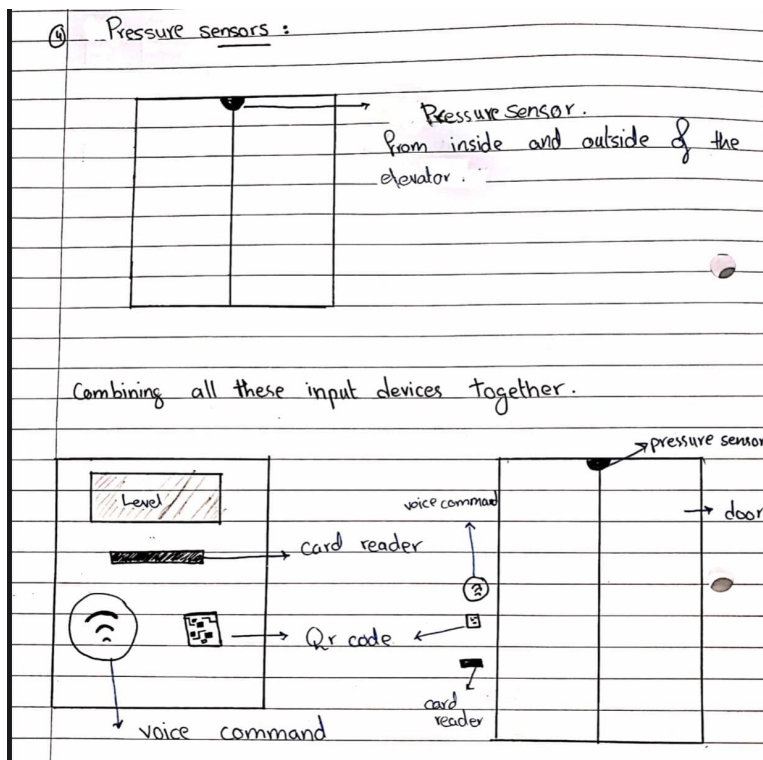
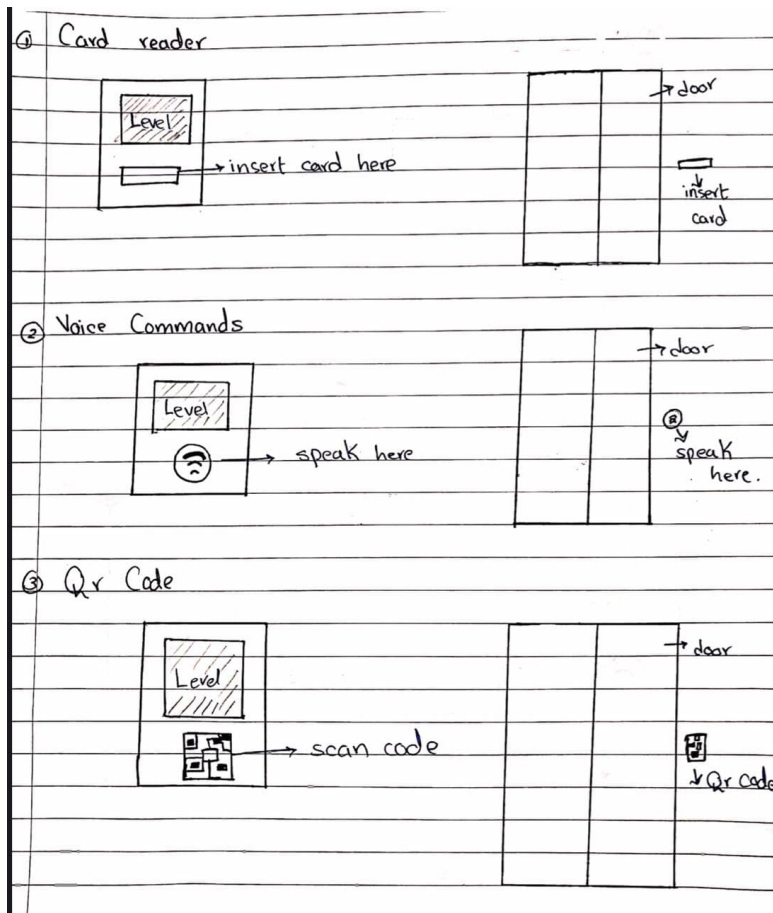
Fatehah
Tay Jia Yi
Tan Ming Hui
Kalai

Prototype

These 4 applications (card reader, voice command, pressure sensor and QR code scan) will help us replace the elevator buttons. It will help us decrease contact with any surface thus decreasing the spread of any virus in the future. Before working on this project we took into consideration people of all ages and also people with disabilities. And these applications are designed to fit all kinds of people. For instance, in a public place, a normal person can use any of these applications to make the elevator move, such as voice command or scanning the QR code to move from one floor to the other. On the other hand, people with any type of paralysis can either be detected by the pressure sensor, use the voice command or even scan the QR code to move depending on their type of paralysis. In addition, these applications can also fit blind, deaf people and elderly people.

Also these applications will provide more security and privacy to people who live in apartment buildings or compounds, as it will only allow the residents to enter the buildings. The residents can either have a special card that will allow them to enter the building, or have a special passcode which they can enter when scanning the QR code.

Test



Reflection

1. What is your goal/dream with regard to your course/program?

Ans. To gain as much knowledge as I can and be able to solve technical dilemmas regarding new technologies in the future.

2. How does this design thinking impact on your goal/dream with regard to your program?

Ans. It made me realize that emphasizing with people is an important step to solve any problem especially the ones related to technology as it allows us to be openminded enough listen to other peoples points of views and listen to many other solutions to get the best final product that will benefit all parties of the problem.

Personally, I have worked on the prototyping and testing of this project and it made me realize how vital it is to transform an idea into something that can be seen by others.

3. What is the action/improvement /plan necessary for you to improve your potential in the industry ?

To be engaged in more group projects so that I improve my listening skills. Thus training myself to think, work in a professional and efficient way.

Group minutes meeting

➤ TIS Design Thinking (1st meeting)

Date: 2/11/2020

Time: 7:55PM – 8:34PM

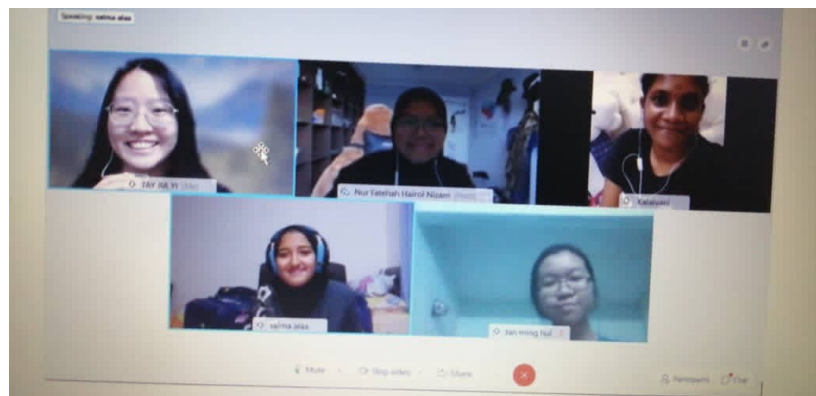
Venue: Online Meeting using Webex

Attendance:

- 1) Nur Fatehah Bt Hairol Nizam
- 2) Tay Jia Yi
- 3) Tan Ming Hui
- 4) Kalaivani A/P Subramaniam
- 5) Salma alaa muhamed mahmoud

Discussion:

- Introducing ourselves to each other.
- Leader (Kalaivani) divides task to each member
- Discussing again about the ways to go button less since covid-19 break out.
- Card reader
- QR Code
- Infra-red Scanner



➤ TIS Design Thinking (2nd meeting)

Date: 5/11/2020

Time: 7:59 PM - 8:49PM

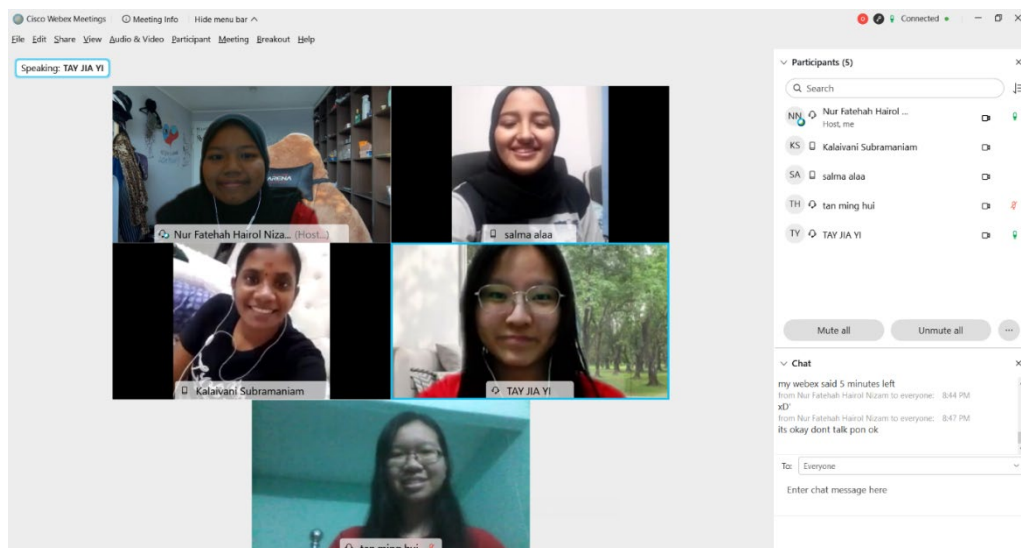
Venue: Online Meeting use Webex

Attendance:

- 1) Nur Fatehah Bt Hairol Nizam
- 2) Tay Jia Yi
- 3) Tan Ming Hui
- 4) Kalaivani A/P Subramaniam
- 5) Salma alaa muhamed mahmoud

Discussion:

- Decided to do one or more than one solution.
- Discussed whether we should go for apartments only or any types of building. Everyone agreed to go any types of building (apartments, offices, shopping malls, universities).
- Everyone updated about their own task.
- Continued to discuss about different way to go button less on elevator. We decided to go with card reader, voice command, pressure sensor and QR code.



Task for each members

MEMBERS	TASKS
Kalaivani A/P Subramaniam (Leader)	<ul style="list-style-type: none">- Set up dates for minute meetings- Divides task for each member- Create video of design thinking- Do the introduction part- Checking the grammar and spelling error
Nur Fatehah Bt Hairol Nizam	<ul style="list-style-type: none">- Do the Empathy part in design thinking- Record the video of minute meetings- Asked questions during the interview with expertise
Tan Ming Hui	<ul style="list-style-type: none">- Do the Ideate part in design thinking
Tay Jia Yi	<ul style="list-style-type: none">- Do the Define part in design thinking- Capture pictures of the minute meetings
Salma alaa muhamed mahmoud	<ul style="list-style-type: none">- Do the Prototype and Test part in design thinking- Creates a quick model of our project- Test it with people