



# UTM

UNIVERSITI TEKNOLOGI MALAYSIA

---

FACULTY OF COMPUTING

SEMESTER 1

2023/2024

---

SECP1513 – TECHNOLOGY AND INFORMATION SYSTEM

SECTION 02

**LECTURER:** DR. ARYATI BINTI BAKRI

| NAME                            | MATRIC NUMBER |
|---------------------------------|---------------|
| NURUL IKA SYAFINY BINTI AZHAR   | A23CS0164     |
| LUBNA AL HAANI BINTI RADZUAN    | A23CS0107     |
| NURAI SYAH BINTI MOHD ZIKRE     | A23CS0160     |
| NUR FIRZANA BINTI BADRUS HISHAM | A23CS0156     |
| NAWWARAH AUNI BINTI NAZRUDIN    | A23CS0143     |

## **TABLE OF CONTENT**

|    |                                      |      |
|----|--------------------------------------|------|
| 1. | Introduction                         | 1    |
| 2. | Work Progress                        | 2    |
| 3. | Design Thinking                      | 3-5  |
|    | 3.1. Empathize                       | 3    |
|    | 3.2. Define                          | 3    |
|    | 3.3. Ideate                          | 4    |
|    | 3.4. Prototype                       | 4    |
|    | 3.5. Test                            | 5    |
| 4. | Reflection                           | 6-8  |
|    | 4.1. Nurul Ika Syafiny Binti Azhar   | 6    |
|    | 4.2. Nuraisyah Binti Mohd Zikre      | 6    |
|    | 4.3. Nur Firzana Binti Badrus Hisham | 7    |
|    | 4.4. Lubna Al Haani Binti Radzuan    | 7    |
|    | 4.5. Nawwarah Auni Binti Nazrudin    | 7-8  |
| 5. | Work Distribution Table              | 9-10 |
| 6. | References                           | 11   |

## **1. Introduction**

Computer is a device where transmission of data occurs where the receiver is able to accept any data that has been input by the sender. Each of us carries at least one computer which is a handphone. Computer was first invented by Charles Babbage who was considered as the founder of the computer in the 19th century (Babbage, 1989, 1). As time passes by, computers are continuously being developed and evolving causing the usage of computers to spread worldwide where it is used in numerous fields such as education, business, and even every industry is using computers to commerce their products.

Invention of well functioned computers comes from a combination of multiple internal computer hardware such as motherboards, memory (RAM), and central processing unit (CPU). These combinations of internal computer hardware have a variety of sizes and weight not to forget about the sky-high price. Invention of computers is not easy due to the tough installation process that contains multiple internal computer hardware. Therefore, computers keep on advancing and evolving to ensure that the coverage of the usage of computers is spread widely to keep pace with the sophistication of technology.

## 2. Work Progress

| No. | Activity Description  | Date                      |
|-----|---|---------------------------|
| 1.  | We discussed work and role distribution between group members. Report frontpage was done during the discussion.   | 16/10/2023                |
| 2.  | Project observation was done around the faculty of computing and we interviewed 2 students during our observation.  | 20/10/2023                |
| 3.  | After gathering the information, we discussed the problem within computer hardware topics and we also discussed the solution and did the prototype sketch with the function detail. | 22/10/2023                |
| 4.  | We built our prototype together based on our sketch and did some design modification .  | 5/11/2023                 |
| 5.  | We did a prototype testing and discussed the improvement that can be done on the prototype.   | 9/11/2023                 |
| 6.  | Each work progress was documented and recorded to be put in one video at the end of the project.  | 10/11/2023-<br>20/11/2023 |
| 7.  | Each member works on their parts and writes reports in this document.   | 16/10/2023-<br>21/11/2023 |

Table 1.1

### **3. Design Thinking**

#### **3.1 Empathize**

When we started this project, we were focused more on computer hardware topics. We do our observation on laptop users around the campus and we can see that almost every user would carry a laptop bag that looks heavy and big in size. During our observation, we interviewed two students. Some of the questions that we asked were “Do you bring your laptop everyday to class or lecture?” and “Did you replace your laptop with other devices?”. The two students answered almost the same, stating that they do not bring their laptop everyday instead use their tablets to write lecture notes in class. The reason why is because the laptops are too heavy and big so it is inconvenient for them to bring it everyday to class.

After engaging with the internet, we found out that the average laptop weight and size is between 1.4-4.5 kg (Mathew, 2023) and 13-17.3 inch (Waqar, n.d.). Thus, we concluded that laptops are inconvenient to include in our daily activities because of its weight and size and people often replace its functionality with tablets since it is more lightweight and easy to use and handle.

#### **3.2 Define**

Based on the problem that has been identified, the problem can be solved by making the components of the computer to become lighter and making the size to become smaller than before. Decreasing the size and weight of the device makes it much more convenient to everyone as we can bring the device anywhere, anytime and even everytime. Not to mention that people can also complete their tasks through computers as the world keeps on advancing where everyone relies on computers for daily usage.

### **3.3 Ideate**

During our discussion, we came up with a few ideas where we're going to make the monitor smaller with no keyboards. With that, it is more convenient for users to bring and use it anywhere they want. However, it is difficult for users to write without a keyboard, therefore, we thought that a wireless virtual laser keyboard is the best solution to this problem. Thus, users also can turn it on and off anytime they want as long as they have a flat surface. Moreover, since these keyboards don't require physical connections, they will help users to reduce cable clutter resulting in a tidy and organized workspace. Lastly, we found there are many cases of missing laptops and we concluded that a laptop must have built-in tracking features where it can help users to locate their devices and protect them from being stolen.

### **3.4 Prototype**

After brainstorming, we decided that a compatible computer with the size of a watch can be used to solve this problem. The size is compact and lightweight. Users can bring this tiny sized computer everywhere easily without struggling. Since the size of the screen will be small, it will be hard for the users to type and interact with it. To fix this problem, we make this watch-sized computer be able to project a bigger keyboard and screen using light that is sensitive to touch. This projectile keyboard and screen can make it easier for the user to input their commands into the computer without struggling to touch the small screen. In figure 1, we include the drawing of our prototype:

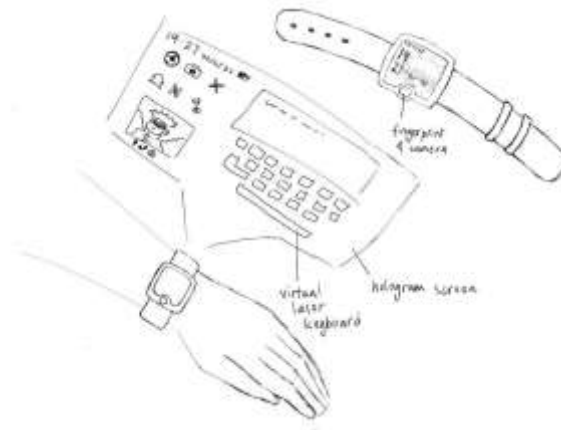


Figure 1

### 3.5 Test

After some reservation of our prototype, we discover some improvement that can be made in order to produce a better product. First of all, we can add a tracker device inside this watch-sized computer to avoid it from getting lost. This is because the size of this device is small and compact which makes it easier to be lost especially when users like to put it at random places and end up forgetting where they placed it. In addition, we can add biometric authentication systems such as retina scans. This can secure device's security better and protect users' privacy from being exposed.

### VIDEO DESIGN THINKING :

[DESIGN THINKING : COMPUTER HARDWARE](#)

## **4. Reflection**

### **4.1 Nurul Ika Syafiny Binti Azhar**

Technology and Information System courses have helped me in knowing the needs of industry and how I can produce a technology that is able to fulfill the customers needs. I hope that by the end of this semester, I will be able to know which skill I need to develop in order to compete in the market and satisfy the needs of industry. After completing this assignment, I know that there are various stages in designing a product. I also need to make sure my product can solve the current problem among the customers in order to make my product marketable. In the future, I need to increase my creativity so I can make extraordinary products that are not like others. I also need to strengthen my teamwork skills in order to interact with my teams better and produce a good product from successful brainstorming among the group members.

### **4.2 Nuraisyah Binti Mohd Zikre**

My goal with regard to my course which is data engineering is not just about being successful but also being able to apply what I have learnt in university in the future and daily life. For example, do observation to identify the problem faced and collect the data from the surrounding and solve it by elaborate the suggestion from the responder. After some time doing this task with the help of my team members, I realized that there are still a lot of things for me to fix and learn. Plus, I also learnt to be more creative and think in a more holistic way to get much better results and always keep track of the work progress of the project to avoid delaying the submission and so on. My plan for me to improve my potential in the industry is by taking part in everything in the project for me to learn more things rather than just do my own part and that's all. Besides, I also wish to work with new people where I can learn to communicate with other people rather than just to stick with the same people as my potential might not develop much.



#### **4.3 Nur Firzana Binti Badrus Hisham**

My goal is gaining so much knowledge about computers not only in hardware but also in software, information systems and so on. Moreover, I also can learn how to improve my soft skills such as communication, problem solving and critical thinking. These things are really important for having advanced skills so that many companies will look after me for a job. Related to my program, this design thinking can make me open-minded and creative to solve the problems in many ways. I also learnt how to communicate and deal with people, especially professionals. My action to improve my potential is to include myself and work with others people that have experienced. I need to learn from my mistakes that I have made before so that I can be a better person in future. I also need to improve my teamwork skills so that I can easily work with people.

#### **4.4 Lubna Al Haani Binti Radzuan**

My objectives for this course, which is a computer science major in data engineering, are to grasp every fundamental concept in computer science, including programming language and also to gain employment in the technology industry such as programmer or data engineer. From this assignment, I can understand more deeply about how problem solving is done in the technology industry. My communications skills were also improved since I had to interview some of the laptop users for this project. Besides, working in teams enhances my critical-thinking skills since I actively participate in the brainstorming process which increases my knowledge and creativity in problem-solving. My plan to improve myself is to enhance my self-learning skill by keeping up with technology evolution and new technology trends.

#### **4.5 Nawwarah Auni Binti Nazrudin**

My dream in studying computer science is to become a qualified and professional IT worker who is capable of solving and programming any computer problems. I also want to contribute to society by participating in the development of environmentally friendly technologies. Design Thinking influences my dream to study computer science by empathizing and understanding users' problems. Therefore, I can exercise my critical

thinking and creativity in solving and developing a product that fulfills users' needs. My plan to improve my potential in the industry is to pursue lifelong learning and keeping up to date with the latest technologies and trends. Next, I also want to attend workshops to learn new skills, do hands-on projects, and earn certificates that can boost my credibility. Finally, I plan to participate in programming competitions such as hackathon to broaden my horizons and gain new ideas as well as friends.

## 5. Work Distribution Table

| CONTENT TITLE           | DESCRIPTION  | PERSON IN CHARGE              |
|-------------------------|--|-------------------------------|
| INTRODUCTION            | A brief history of computers and its evolution over time.                    | Nuraisyah binti Mohd Zikre    |
| WORK PROGRESS           | List of project's flow and activities records.                               | Lubna Al Haani binti Radzuan  |
| EMPATHIZE               | Observing and finding the project objective and problem to solve.            | Lubna Al Haani binti Radzuan  |
| DEFINE                  | Refining the project's objective and goals based on empathy.                 | Nuraisyah binti Mohd Zikre    |
| IDEATE                  | Brainstorming potential solutions to the problem that has been defined.      | Nawwarah Auni binti Nazrudin  |
| PROTOTYPE               | Sketching and designing the product that satisfies all the needs.            | Nurul Ika Syafiny binti Azhar |
| PROTOTYPE MAKING        | Building the prototype to visualize the product in 3D.                       | All member                    |
| TEST                    | Evaluating the prototype and identifying the areas that need to be improved. | Nurul Ika Syafiny binti Azhar |
| REFLECTION              | Listing our goals, impact of this project, and future action of each member. | All member                    |
| WORK DISTRIBUTION TABLE | Showing the description for each content and the person in charge of it.     | Nawwarah Auni binti Nazrudin  |

|            |   |                                    |
|------------|---|------------------------------------|
| VIDEO      | Documentation of the project progress from different angles and points of view. | Nur Firzana binti Badrus<br>Hisham |
| REFERENCES | Reciting all the sources our group refers to using APA format.                  | Nur Firzana binti Badrus<br>Hisham |

Table 1.2

## References

- Babbage, C. (1989). *Science and reform : selected works of Charles Babbage* (A. Hyman, Ed.). Cambridge University Press.
- Hashemi-Pour, C. (n.d.). *What is biometric authentication? / Definition from TechTarget*. TechTarget. <https://www.techtarget.com/searchsecurity/definition/biometric-authentication>
- Mathew, B. (2023, April 12). *How Much Does A Laptop Weigh?* Computer Technicians. <https://computertechnicians.com.au/how-much-does-a-laptop-weigh/>
- Waqar, M. (n.d.). *What Is The Average Laptop Screen Size?* <https://wuschools.com/what-is-the-average-laptop-screen-size/>