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DESIGN THINKING

TAJUK: FAST FOOD ORDERING SYSTEM

NAMA DAN KOD KURSUS: TEKNOLOGI DAN SISTEM MAKLUMAT (SECP1513)

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DESIGN THINKING REPORT

1. INTRODUCTION

Design Thinking is a strategic and practical procedures used by many parties for multi-purpose; developers refer to Design Thinking when **designing their product**, businessmen also practice it within **company-client businesses**. Design Thinking is effective in 2-way interactions to deepen the mutual understanding. The module for Design Thinking follows these 5 core steps in gaining understanding:

- Empathy
- Define
- Ideate
- Prototyping
- Test

2. Phases in Design Thinking

Phase 1: Empathy

Empathise your users by:

- Observing: **Observe the users' behaviour** in their lives
- Engaging: **Engage with the users** through scheduled and random encounters
- Immersing: **Immerse in what your users experience** as your experience

Phase 2: Define

Define your users individually from your individual empathy experiences with said user. Then, *define your point of view on him as the problem statement* to be solved.

Phase 3: Ideate

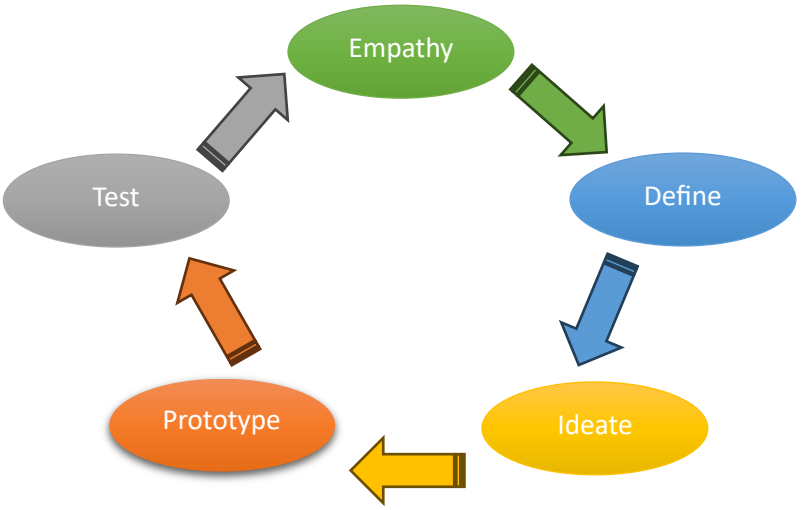
Ideate up all the problem statements from all users, and focus on finding the *solutions that solves THE MOST* of the problems from the vast possible solutions. The goal of this is to *explore with imaginations to build prototypes* for the users.

Phase 4: Prototype

Prototype the ideas from your imagination to further understand your users, the problems, and the steps to take for successful solutions. *Prototyping can be anything that imitates the ideas*; role-playing, writing notes, etc.

Phase 5: Test

Test your prototypes to refine your ideas. *Prototype it as if you know you're right, but test it as if you know you're wrong.*



3. Example of Design Thinking

To further understand Design Thinking, our group decided to use the Design Thinking formula on fast food transaction machine. In this example, we divide the whole scenario into 2 parts; problem of the scenario and the solution to the scenario.

Problem

- Understanding what kind of processing system is suitable for ordering in fast food industry.

To find the most efficient processing system, we decided to research a little bit about how food industry works. Generally, a customer walks in and tells the waiter what he wants *as an order*. The same concept applies to fast food industry except of ordering to waiters, we order at the counters instead. In restaurants, Waiters take order, and once the customer finishes their meal they pay the bill and receive the receipt.

In this example, we see that the receipt is produced instantly after the customer pays the bill. There is a real time response by the machine. We concluded that **Real-Time Processing System** is used to record the order and releases the receipt once the order is paid.

Solution

- Setting up **Real-Time Processing** System to record each order from the customers.

Creating a Real-Time Processing System requires a front-end to interact with the users, thus first a HTML programming language is used. Then, inputs are determined to ask users to enter the detail;

1) Item Select: Choose an item (meal)
2) Item Quantity: Enter quantity of selected item
3) Add More: Optional button for users to select more than 1 items
4) Select Payment: Choose the available payment methods
5) Proceed Payment: Processing the transaction of order

These inputs are then processed and prints the receipt as output. The receipt includes;

1) Order Summary: List of all selected items, quantity for each selected item, total price of all items, taxes, final price of the order.
2) Payment Section: Selected method for payment, a message requesting the user to…

- enter their 6-digit credit card number if the user selects credit card method
- enter amount of cash if the user selects cash method

lastly, it prints the whole receipt with a slogan

"We Look Forward to Your Next Patronage"

4. Assessments

Assessment 1: After each phase in Design Thinking

Our group do assessments after through each phase in Design Thinking to fix the errors in our works and to perfecting the content of the project in terms of accuracy. For example, after deciding that student registration as our first sample processing system, we assessed the flaws of the idea. Through the assessments, we found out the student registration system is a complex system and is not suitable for this project, thus we moved on to a better idea; fast-food transaction system.

Assessment 2: Member's evaluation

At the very end of our project, we assessed each member's usefulness; how much they do work, how is the quality of their work, and more. This assessment is to identify strengths and weakness of our members. As an example, Fazli is a great member that does the work in good quality and meets the deadline, however he is easily stressed out by the overwhelming amount of works.

5. Evidence and Design Thinking

Evidence

VID-20240121-WA0002.mp4

The evidence or the sample work of the system is a video that shows and explains the example of the Real-Time Transaction System coded by Khairullah. In this video we can see the system is able to take multiple meal and the user may insert the quantity of each meal as an order. It shows the summary of the order consisting of price of each meal, quantity of each meal, total price excluding tax, the taxes price, and the total price including taxes.

Design Thinking Sample

Sample: Our group working on the Design Thinking assessment with using fast food industry as our example

The design thinking procedure for the sample above is…

Phase 1: Empathy

From our research, people that are most likely to consume a fast food are university students and young office workers with age between 20 to 39. Thus, these people are most likely to be the users for our transaction machine to order.

Phase 2: Define

From the results of Empathy phase, we can define our transaction system users (fast food consumers) as people with busy life overall.

Phase 3: Ideate

To cater the busy people, the graphical interface of the front-end system must be simple so that they don't get lost in the website (assuming the transaction system is an online website).

Phase 4: Prototype

By ordering a takeaway from a restaurant called *Broasted Chicken King*, I found out that their system is simple because the location of *SELECT* order and *PROCEED TO PAYMENT* button are very direct to access to. This feature is then applied to our system.

Phase 5: Test

After through countless trials and errors, our system is most simple when it only has **ONE page** with the following information in the website while not having confusing interfaces:

- SELECT item (only because the selection of menu is small)
- ADD quantity of selected item
- ORDER SUMMARY with all selected items and taxes
- SELECT payment method
- PROCEED TO PAYMENT

6. Individual Reflections

Fazli
My dream is to be an AI programmer, thus I enrolled in Software Engineering programme. The Design Thinking elements help me understand more on proper process of how a programme or system is created. This will allow me to develop a higher-quality AI machine. Of course, I also plan to study other programming languages besides C++ so I can get better understanding on how AI is created, and how to construct a humane AI machine like the currently famous AI Virtual YouTuber *Neuro-sama*.

Khairullah
My final goal is to become an AI researcher. With this project, it helps broaden my perspective and how certain tools are used for a specific task depending on the compatibility of it with the project. I plan on further learning basics of AI engineering and web development so it may contribute to my skills and my future in the long run.

Azim
I aspire to become a backend engineer, and I recognize the positive impact of design thinking on my dream. It allows me to approach problem-solving strategically and enhances my communication skills within a group setting. To further increase my potential in the industry, I emphasize the importance of continuous learning. The field of software engineering is evolving rapidly, and staying abreast of technological advancements is crucial to avoid falling behind. This commitment ensures that I can adapt to the dynamic landscape, troubleshoot errors effectively, and remain at the forefront of industry trends.

Danial
To achieve my goal as Software Engineer, I needed to broaden my mastery in every aspect and this project has helped me to do so; gaining new knowledge, experience, and skills needed. Design Thinking has honed my understanding on how a programme or a system works. As I planned to continue this course, this project have benefited me to become a better Software Engineer in the future.

7. Tasks Division

Since Design Thinking is a lot of assignments bundled into one major assignment, out group took the approach of dividing the large tasks into smaller tasks to be assigned to each member.

Fazli
Fazli is responsible in writing the whole report.

Khairullah
Khairullah coded an example system of the fast-food transaction system and working together with Danial to create the video for Design Thinking.

Azim
Azim is the one who will be presenting the video created by Khairullah and Danial.

Danial
Teamwork with Khairullah to solely focus on creating the video.