FACULTY OF COMPUTING
UTM Johor Bahru

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Technology and Information Systems
(SECP 1513)

Design Thinking Report

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Lecturer:	Dr. Pang Yee Yong
Theme of Assignment:	Big Data and Artificial Intelligent New Innovation
Group Title:	Physical Exercise for Injury App

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1.INTRODUCTION

Most of our group members are athletes. Injury is a common problem among us. It can be happened anywhere and anytime. Thus, recovery time for the injury must be shorten so that we can live our lives normally without any distraction from the injury. One of the ways to recover the injury quickly is by doing physical exercises. However, the process of finding the exercise for specific injuries can be challenging without professional guidance. To address this challenge, we decided to design a physical exercise app for injury.

The app aims to guide individuals recovering from injuries by providing exercise routine for specific injury. In this app, we use AI to find all the specific exercises needed. Then it will find the most suitable exercise by analysing netizen feedback, experience, professional's article, or something useful. For safety assurance, it minimizes the risk of selecting exercise that could worsen the injury by relying on data.

By combining AI with reliable sources, this app simplifies the recovery process for individuals to manage injuries. Our app will be the best choice for them who are searching for the way to find exercise and guidance for injuries recovery.

2. DETAIL STEP AND DESCRIPTIONS IN DESIGN THINKING PHASE

2.1) Empathy

We identify the problem that faced by our user and get the detail of our problem identifying by creating survey using google form. We send it to user that have problem in injury and told them to their contact that faced same problem. In this phase, we collect data that useful for the next phase.

2.2) Define

In this phase, we identify and make conclusion of our user problem by referring to the collected data from the survey. We make conclusion by following most of the answer selected for each question.

2.3) Ideate

In this phase, we did brainstorm session through physical and online meeting. The main session is the physical one. We get many ideas to overcome the problem faced by our user. while the online just to give new and fresh idea to improve our apps. lastly, the one that we choose is developing an application that suggest physical exercise to our users.

2.4) Prototype

We made a prototype by following the idea generated by the previous phase using an editing app called Canva. we have a simple discussion on how to arrange the app page and button placement in our apps.

2.5) Test

We give our user to try the prototype and get feedback from them. by doing this, we can identify if the app already fulfilled their need and improve it by listening to the user recommendation.

3. PROBLEM, SOLUTION, AND TEAM WORKING

3.1) Problem

In today's world, physical injury is common among people. Physical injury can occur due to sports, age and lifestyle. Injury can be happened on almost all of our body. High intensity sports and less exercises are major factor leading to physical injury during doing sports, while old people don't have strong body anymore to do sports and bad lifestyle may result to unhealthy body that increase the risk of physical injury. People also lack of knowledges about physical injury. Over time, physical injury can lead to more critical condition like inability to sports, chronic bone problems and permanent disability. This risk is the reason to the need of something that can provide knowledge and exposures about physical injuries and its cure to the people with easy access, convenient and efficient to use.

3.2) Solution

After finding out the problems and exploring all potential solutions through meeting and survey, we have decided to make an apps-based solution designed for people to make it easy to use, convenient and efficient. We applied an artificial intelligence in our apps to adds more detail on what users' needs and problems. Our focus is to make the users can determined detail problems and gets the solutions on how to cure or prevent it. We believe that by producing this apps, people can lower the risk of getting physical injury while doing sports.

3.3) Teamwork

To make sure everything goes well, we have divided the task to each one of us. We conduct it through physical and online meeting to make sure everyone understands their tasks and dine their work properly. We divide tasks into few sessions.

As for the information collector, Azan assigned himself to make a survey according to physical injury.

For the report writing, all of us are included since it will make the work become more smooth and easier to complete. Lastly, Yazid, Arif, Anas and Mustaqim have been assigned to make a video.

4. DESIGN THINKING ASSESSMENT POINTS

4.1) End of project demonstration

At the end of our project, we presented the interview conducted and we highlight the main point and the most average answers on the interview to important things to take notes about physical injury. We also tested the prototype made to the users to get their recommendations on improvements and correction that can be done. Therefore, the prototype we made ease the users in finding early and further action to be done about their injury. They also can learn about some exercises that can work together to cure their injury. Ai chatbot also provided to help users find more details information based on their needs.

4.2) Transition Between Phases

Before proceeding into making prototype, we discuss properly on what people needs and requirements based on interview conducted. We also brainstormed and trying all the possible solutions until finalized idea produced during the ideate phase. We try our best in fulfilling users need by referring to the interview and survey made.

5. DESIGN THINKING EVIDENCE

5.1) Empathy

In the empathy stage, this stage required us to gather views from those that are facing problems which are going to be the users of our product. With the views obtained, we may then understand the needs or requirements from users so that the solution or product made can fulfil the needs of users.

For this stage of this design thinking, views and perspective from UTM students on physical injury problem are needed to help us understanding more about these issues for us to find the solution.

Therefore, for us to find the solution, we decided to prepare some questions to conduct an interview with UTM students to obtain about thoughts and opinions about these issues. We already prepare some questions before conducting an interview which are:

1. How often do you experience physical injuries as a student?
2. Do you think it is important to properly treat and recover from a physical injury?
3. Have you used any treatments or remedies for the injury so far? If so, what were they?
4. What is the reason you don't go to physical therapy?
5. Do you have any experienced-on exercise that make your physical condition worse?
6. If there was an app that could help monitor and support your recovery from a physical injury, would you use it?

With these questions, we send a survey to users where these questions were asked, and the responses has been recorded.

How often do you experience physical injuries as a student?
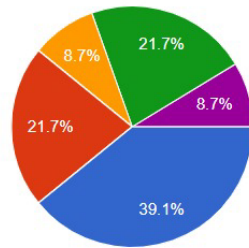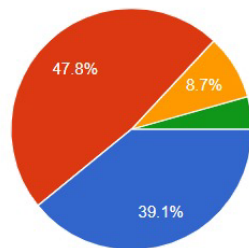
23 responses

- ● Very frequently (e.g., several times a month)
- ● Frequently (e.g., once a month)
- ● Occasionally (e.g., a few times a year)
- ● Rarely (e.g., once or twice a year)
- ● Never

21.7%
8.7%
8.7%
21.7%
39.1%

## Do you think it is important to properly treat and recover from a physical injury?

23 responses

- ● Yes, it is very important.
- ● Somewhat important, depending on the severity of the injury.
- ● Not very important; minor injuries heal on their own.
- ● No, it is not important.

47.8%
8.7%
39.1%

Have you used any treatments or remedies for the injury so far? If so, what were they?

23 responses
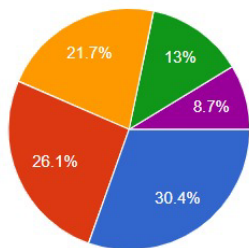
- ● Over-the-counter medication (e.g., ibuprofen, acetaminophen)
- ● Rest, ice, compression, or elevation (RICE method)
- ● Professional care (e.g., physical therapy, doctor-prescribed treatment)
- ● Home or alternative remedies (e.g., massage, herbal supplements)
- ● None of the above

21.7%
13%
8.7%
26.1%
30.4%

8

What is the reason you don't go to physical therapy?
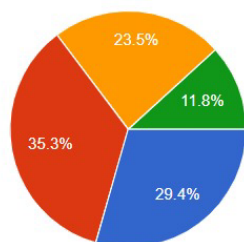
17 responses

- ● Tight on budget
- ● Have no time
- ● Don't have access to local professional therapist
- ● No, I go for physical therapy

23.5%
11.8%
35.3%
29.4%

Do you have any experienced on exercise that make your physical condition worse?

22 responses

- ● Yes
- ● No

27.3%
72.7%
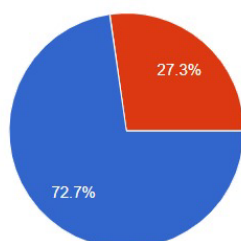
If there was an app that could help monitor and support your recovery from physical injury, would you use it?

23 responses

- ● Yes
- ● No

30.4%
69.6%

Copy chart
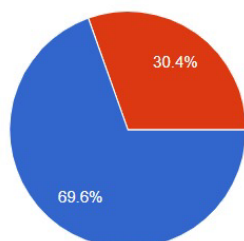
5.2) Define

During this phase, we gathered all the answered that we provided from the Google Form (Survey) to the user and collected all the various of answers from them to make our application improve the accuracy of our analysis about the physical injury. From the feedback given, we breakdown the answer given and conclude the problem faced by our users.

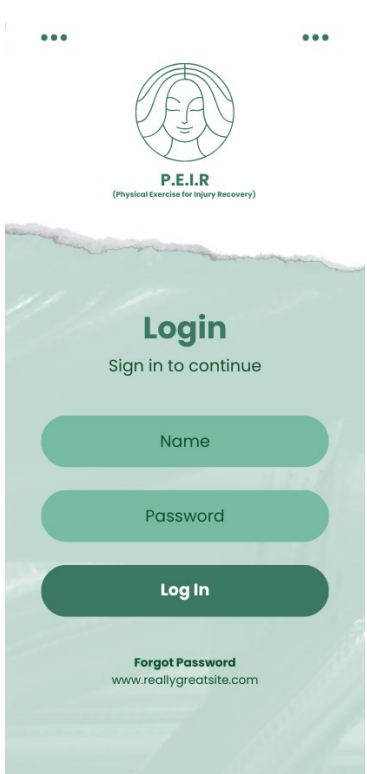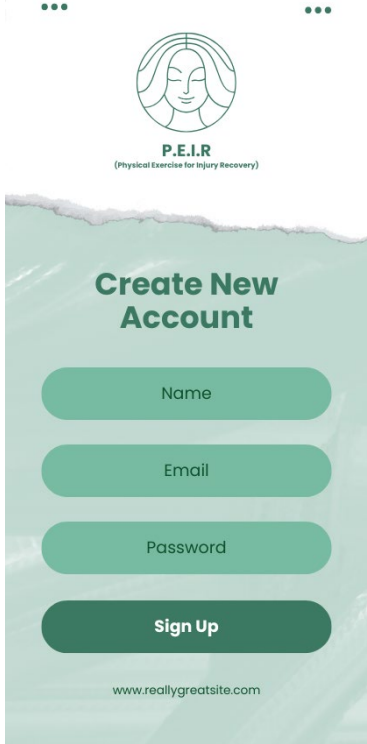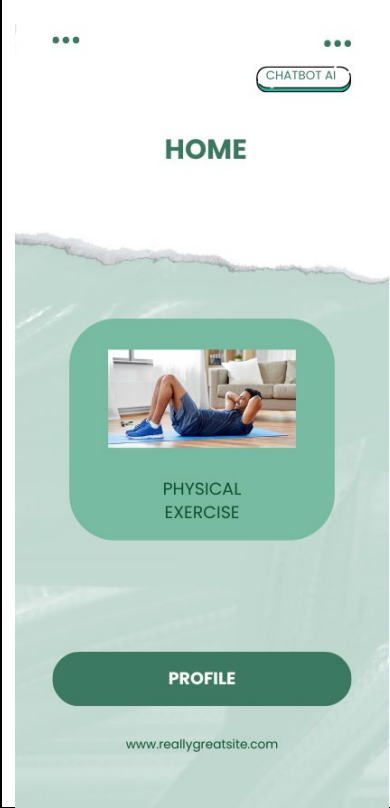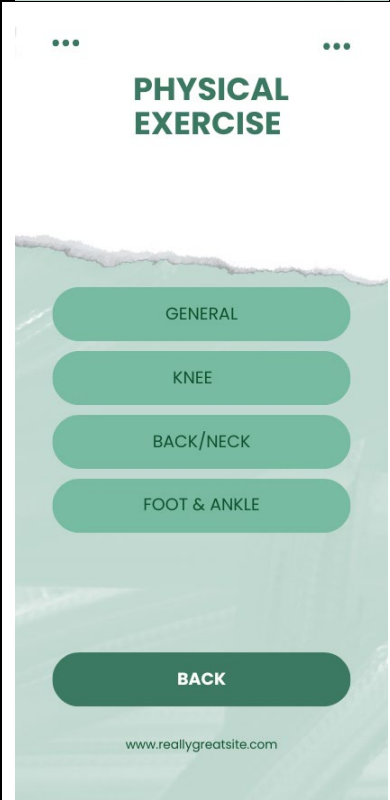| Question	Most answer	Conclusion
1. How often do you experience physical injuries as a student?	• Very Frequently	Injury is common things before them, so they need something that is easy and quick to access
2. Do you think it is important to properly treat and recover from a physical injury?	• Somewhat important, depending on the severity of the injury • Yes, it is very important	Injury is the things that need to be treated from them
3. Have you used any treatments or remedies for the injury so far? If so, what were they?	• Over the counter medication	Medication is an important thing for them
4. What is the reason you don't go to physical therapy?	• Tight on budget • Have no time	They have no budget and time to do physical therapy
5. Do you have any experience on exercise that make your physical condition worse?	• Yes	Most of them have an experience on exercise that make their physical condition worse
6. If there was an app that could help monitor and support your recovery from a physical injury, would you use it?	• Yes	They are interested to use an app to help monitor and support your recovery from a physical injury.

5.3) IDEATE

We have had several meetings to brainstorm solving the problem of our users. The first meeting we meet face to face to have fast and lot of ideas given. The table below shows the solutions for the issues identified.

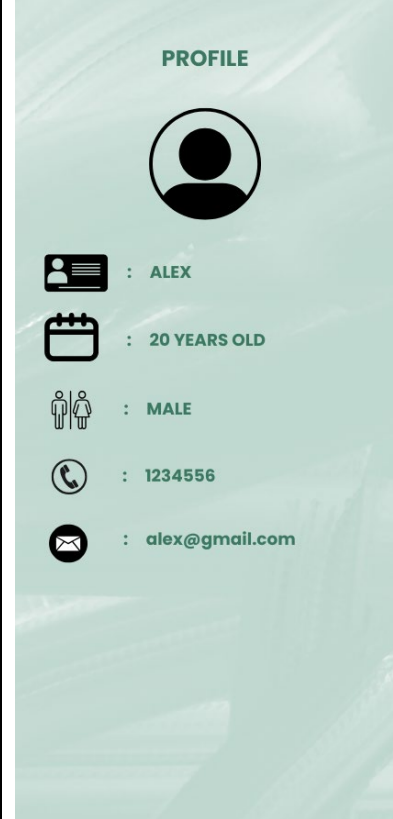| issue	Solution	Reason
Injury is common things before them, so they need something that is easy and quick to access	Create an app	User can access it anywhere and anytime
Injury is the things that need to be treated from them	Move to next step on creating the app.	Confirm that our user needs to recover their injury
Medication is an important thing for them	Add features for AI chat	Ask recommendation for medication that suitable for injury faced.
They have no budget and time to do physical therapy	no subscription needed for the app	Make it easier for users and they don't need to spend money on our application
Most of them have an experience on exercise that make their physical condition worse	Add features for AI chat	To guide users on what exercise is suitable for the recovery injury
They are interested to use an app to help monitor and support your recovery from a physical injury.	Proceed to create the app	Confirm that it is useful for them and will have user if we created the app

5.4) PROTOTYPE

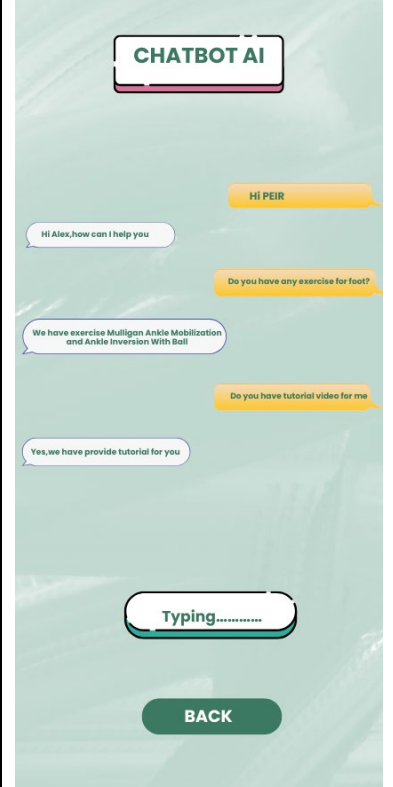| page	explanation
	Login page for sign in to decide which account to use
	Account creating page for user to register an account for our apps

	Home page to choose either physical exercise that provided or chat with AI
	Physical exercise selection page will appear if the physical exercise button was clicked. it will ask user to choose the area of the injury.

GENERAL LATERAL TRUNK STRETCH HOLD 10 SECOND FOR COMPLETE 1 SET REPEAT 5 TIMES PRAYER STRETCH HOLD 10 SECOND FOR COMPLETE 1 SET REPEAT 5 TIMES BACK www.reallygreatsite.com	This page appears if the user chooses the physical exercise for general
KNEE SEATED GASTROC STRETCH HOLD 30 SECOND FOR COMPLETE 1 SET REPEAT 3 TIMES MODIFIED LATERAL PLANK HOLD 5 SECOND REPEAT 10 TIMES BACK www.reallygreatsite.com	This page appears if the user chooses the physical exercise for knee

BACK/NECK SCAPULAR RETRACTIONS HOLD 5 SECOND REPEAT 10 TIMES CERVICAL FLEXION RE _ _ ER _ HOLD 15 SECOND REPEAT 5 TIMES BACK www.reallygreatsite.com	This page appears if the user chooses the physical exercise for back or neck.
FOOT & ANKLE MULLIGAN ANKLE MOBILIZATION HOLD 5 SECOND REPEAT 10 TIMES ANKLE INVERSION WITH BALL HOLD 5 SECOND REPEAT 10 TIMES BACK www.reallygreatsite.com	This page appears if the user chooses the physical exercise for foot and ankle
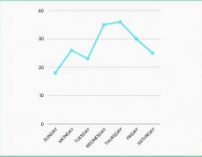
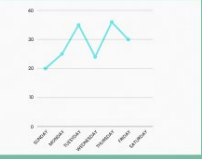|	
PROFILE ![profile avatar] [id] : ALEX [calendar] : 20 YEARS OLD [gender] : MALE [phone] : 1234556 [email] : alex@gmail.com	Profile page to see the information of the user
CHATBOT AI Hi PEIR Hi Alex,how can I help you Do you have any exercise for foot? We have exercise Mulligan Ankle Mobilization and Ankle Inversion With Ball Do you have tutorial video for me Yes,we have provide tutorial for you Typing........... **BACK**	Chatbot AI page for chat with AI to ask for help. For example, asking for the physical exercise for the area that was not prepared in this app.

Workout Track WEEK 1 WEEK 2 BACK www.reallygreatsite.com	Workout page to track the consistency of exercise with this app.

5.5) TEST

We let our user survey and test our prototype. Most of them said that our prototype is good enough to solve their problem. some of them give some recommendation to improve our application. The first recommendation is providing more type of area for physical exercise. Second, add features for friend making so that they have more fun in this app to share experience. Lastly, they recommend to provide the instruction and common mistakes while doing the exercise.
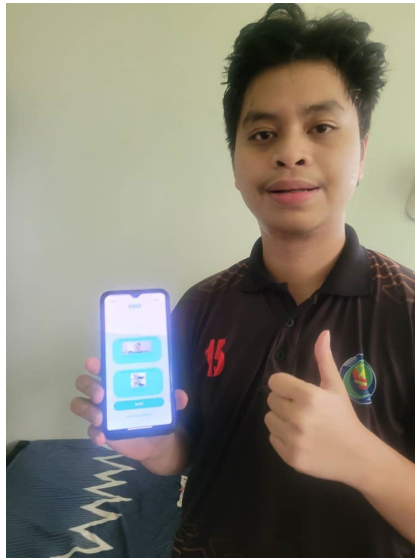
6. Reflections (Individual)

Muhammad Arif

I want to become an expert in programming and creates and efficient coding in order to make works cheaper and easier to use. By doing design thinking, it helps me to understand how to find out the problems, how to provide the solutions based on problems and follow the trends on what people need. For example, I need to master today's programming language, so I can fulfil people needs. I also need to work and involve more on real-life problems to build the critical thinking and problem-solving skills to make sure tasks done properly. Finally, I need to build connections with industry to know currents trends of criteria needed as a programmer to stay relevant on the industry.

Muhammad Anas

I want to become an expert in game development and create games that liked by many gamers. This project helps me to improve my critical thinking in solving problem based on people's need. I will focus and study about the currents trend to give me ideas that satisfied most of the gamers.

Mohammad Yazid

Since we will become older, we are going to face lot of heavy activities. Back, neck and also knee pain will become a big issue for us since it will make our quality works become worse and also our mood will become unstable

Muhammad Mustaqim

Technical skills and using tools are important for solving problems, while soft skills like teamwork and communication help in working well with others. This inspires me to improve in both areas to succeed in the future.

Muhammad Azan Adin

I want to be great at programming and write code that makes work easier and cheaper. Design thinking helps me find problems, solve them, and understand what people need. I need to learn modern programming languages to meet these needs. Working on real-world problems will improve my thinking and problem-solving skills. I also want to connect with industry experts to stay updated on trends and what programmers need to know.

7. Tasks for Each Member

7.0 Task Distribution Among Team Members

No.	Members	Task
1.	Muhammad Arif Bin Muhammad Suhaimi A24CS0126	• Report writing ((Problems, solution and teamwork), Design Thinking Assessment Points, Reflection, Task Distribution) • Video Editing
2.	Muhammad Anas Bin Hamdan A24CS0275	• Report writing (Design Thinking Assessment Points, Reflection) • Prototype Design
3.	Mohammad Yazid Bin Mohd Khairuddin A24CS0117	• Report writing (Problem Description, Solution Description, Reflection) • Video
4.	Muhammad Mustaqim Bin Abd Baki A24CS0140	• Report writing (Team Working Description, Reflection) • Video • Prototype Design
5.	Muhammad Azan Addin Bin Jamal A24CS0128	• Report writing (Detailed Steps and Descriptions of Design Thinking, Evidence for Each Phase, Reflection) • Google Form Survey