CUSTOMISABLE CLOUD-BASED IOT MONITORING SYSTEM
WITH SMARTPHONE INTERFACE

BY

Chew Xiang Kai

A REPORT

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Address:

1052, Jalan Seksyen 1/1, _____

Taman Bandar Barat, _____   Nur Syadhila Binti Che Lah__

31900, Kampar, Perak. _____   Supervisor's name

Date: _24/4/2023_____   **Date**: _____

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It is hereby certified that _____*Chew Xiang Kai*_____ (ID No: __*19ACB04731*__) has completed this final year project/ dissertation/ thesis* entitled "_*Persuasive Augmented Reality Mobile Apps for Kid Healthy Eating*_" under the supervision of ___Nur Syadhila Binti Che Lah___ (Supervisor) from the Department of __Information System_____, Faculty/Institute* of __ Information and Communication Technology_ , and _____(Co-Supervisor)* from the Department of _____, Faculty/Institute* of _____.

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Name   : Chew Xiang Kai_____

Date   : 24/4/2023_____

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ABSTRACT

This project is a mobile application project that related to kids healthy eating. The main purpose is to let kids to recognize the healthy food and not healthy food. Based on above, this project has divided to some module to achieve the main purpose. First will be the Food List module. This module includes several healthy and not healthy food and provide the information short and concise. Not only that, some animation also will be provided to attract the attention of kids. Those animation is related to every food. Through this, kids' attention will not be distracted and can recognize food and some of the information of food. All the information will be store in Firebase Another module will be AR Camera. This module provides an environment for kids to augment the prepared 3D model to reality, kids can interact with it and recognize the food easier. Kids just need to open the module and find a plane, then can select a food model to place and multiple places for same or different model and geometric transformation such as transformation, scaling and rotation is enabled for kids to interact with. The next modules will be calculating the kid's healthy status by provide certain information, the system will calculate the healthy status of the kids. This can interact with another module which is some solution for the kids with health problem. In this module, user can know what the solution is when kids are overweight, underweight, and so on. In short, this application is aim to let kids eat healthier by provide more interesting interaction like animation and augmented reality and support by some function to track health status of kids and solve the problem when health problem occur.

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LIST OF SYMBOLS

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LIST OF ABBREVIATIONS

apps   Application

AR   Augmented Reality

3D   Three Dimension

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CHAPTER 1

Introduction

Nowadays, balance diet and healthy eating is important to kids growing. How parents can let the kids recognize the healthy food and know the kid's healthy status become an issue. picky/selective eater will cause immune system problem, weight problem and probably dental problem. [1]

1.1 Project Background

More and more parents and experts realize the importance of nurturance a healthy eating habit since early childhood. Thus, a good mobile application for kids healthy eating is important to deal with this issue. To let the application more reliable, Augmented Reality (AR) technology will be used in this development project. Recently, Augmented Reality is one of the trendy technologies. AR is a technology that used to augmented or enhanced the reality experience. It will add in a virtual information to the reality world through a digital device such as mobile phone or pad which implement the combination of the virtual and reality information together [7]. AR will provide more information for the reality object so the optical effect and the interactive experience will be enhanced which the reality will be augmented. The common application of AR technique is using the camera of the digital device to scan the object in the reality world and using image recognition technique to show some relevant things such as picture, music or 3D model in the digital device [8]. In this project, some basic function such as educate children to identify the common ingredients in a dish and which dish or food is benefit to their health. For example, provide an attractive animation tell them eat fish will become stronger and provide a animation with a shoulder with big muscle. Moreover, this project will prepare a health calculator of kids for parents, parents could base on the standard given to determine the health status of their kids. Besides the concept of apply Augmented Reality technology in kids healthy eating is help kids in recognizing healthy foods for their daily intake. Kids can get the AR model of the healthy food from this application to recognize the healthy food which closer with the real world. Through this process the learning or recognizing process will be more attractive, the information will be learned during they

interact with the food model. Minimize the attention distracted of kids during the recognizing process is also one of the main considerations when developing this application.

1.2 Problem Statement and Motivation

Before this, kids healthy eating issue always been discussed and try to solve using some traditional approach such as food knowledge book, healthy food information video and some expertise given information. During the process, people found that kids are easy distracted when the information given. Then people try to package the information with attractive animation such as cartoon and so on to attract kids' attention. The distracted problem is become better, but kids healthy eating problem still consider a significant issue. In previous era, technology improve but the major information still gets from radio or television. Parent might don't have enough knowledge to take care of their kids' health and it will lead to some serious issue not to say kids' distracted problem is still there. More and more news and fake expertise give various type of suggestion will also affect parent when monitor their kids' health. In current era, technology is improved to another level, more and more application being introduce which can try to solve kids healthy eating issues The function also suits for the kids no matter from recommends the healthy diet function, the calculate healthy status function or else. But they are less developer consider the attention distracted problem of a kids. If just give the information as much as possible while not consider the kids' attention will be distracted during the process or kids may just ignore this application. Thus, this application adds in multimedia element, minimize the portion of the text include and add Augmented Reality. Most of the apps for kids healthy eating is more like an online recipe instead of considering the kids preferences. Thus, another this application provides the food information, image, animation and so on. If the kids are attracted and tell their parents, in the below of each food information will provide an online recipe for parents to cook. Thus, it can still ease the parent to find recipe but still consider to the preferences of the kids. Moreover, there are even lesser developer develop an application just for the kids to calculate the health status. It may be due to the portion of user, then develop for adult will be more popular. In this application will provide the BMI chart for the parents to check with, it can enlarge and scroll on the application and can download to the gallery to check.

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The motivation is there are too less of apps is develop for the kids recognize the healthy food. Even if there are some apps is similar with this function, it also did not consist of any function for calculate the "kids' BMI" not to mention the AR feature things. But the kids healthy eating issues is become more and more serious in this era. In other words, kids' healthy issues have more consideration from parent. Thus, develop an attractive application for kids to self-learn or for parent to teach to make sure the kids' healthy status is being protected is the main purpose. By using AR model will let the educate kids to recognize health food function become more complete. AR become a trend for the education field as well [9]. In this application will integrate all the good function and develop based on the main purpose. To ease the user to use and to include the latest technology, Augmented Reality to let the kids can recognize the healthy food in an easier, funnier, and more interesting way.

1.3 Project Scope

The project scope of this application will include the healthy food information that provide a basic knowledge to kids to recognize the food include sound, image, animation and video. Besides, it will include the AR model which can let user to augment in reality and also perform any geometric transformation. Moreover, it will provide a health calculator to user to calculate kids' healthy status and provide a chart to let user to observe the health status. Lastly will be if health status is not in a good status, provide some information to handle the situation.

1.4 Project Objectives

The aim of this project is to develop four features which include provide healthy food information, calculate kids' healthy status, AR camera for kids to interact with and a basic knowledge and information to handle kids unhealthy status.

For the provide healthy food information, this project is aimed to provide at least 15 healthy food information without redundancy health information to let kids to

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differentiate and recognize. It is to let the kids have enough knowledge to recognize which food is the healthy food in the daily life. For the information provided will first consist of the picture of the food, name, simple description of the food which also include animation in card after click in the function. Then click in the card view will have more information about the selected food and will provide the link to let parents to navigate to online video for the recipe. It is to make sure if kids recognize and interest with the healthy food, the parents can cook for them.

For the calculate kids' healthy status will be use a formula based on the BMI but it is for the kid's version. It will be weight (kg) divide by two times of height (m). After calculating this, will be provide two BMI graph, one is for girl, and one is for boy. Two of it will include age to let parents to observe the health status. Moreover, it also will be providing a function which can handle if the kids have health problem and provide some solution and suggestion.

For the AR camera, it provide different healthy food 3D model to let kids to interact with, they can find a plane then select whatever food they want and place to observe or interact with, it can scale, transform rotate the 3D object. Through this process, kids are able to learn and recognize the food with an interesting process.

1.5 Contributions

This project will be contributed for both parents and kids. For parents, they have a suitable application to let their kids to learn and recognize the healthy food or an application to let them to guide their kids to recognize healthy food. Moreover, parents can calculate the BMI to observe their kid's health status. It is because parents might not know the actual health status of their kids and it is almost impossible or costly to do a body check-up frequent than usual. Thus, provide a health calculator to let parents to track their kid's health status will contribute more than imagine. Thus, parent can be based on the calculation result to solve the problem. By viewing this data, some symptoms can be observed and prevent in early stages. [3]. Besides, this application provides some information for parents when they found their kids have issues of health. They can based on their kids situation and found some solution.

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For kids, this application will have a better way to let them to learn and recognize the healthy food and their health also will be guarantee due to parents can supervise their health status. In this application will provide the information of the healthy food and some picture to let the kids to recognize the food which same with some educational books or websites. But the different will be kids can view the AR model of the healthy food which will be more realistic and in a more interesting way. Furthermore, after they recognize the food and interest with the healthy food, they can request their parents to cook for them by using the link provided by the link. It is an effective way to let kids to eat healthier. Because it can let the parent know what the healthy food that their kids like. If not, parents might not buy the food because they did not like to eat the food unless their kids request them to buy. Thus, it is one of the ways to let kids eat healthier.

Through this application, parents can supervise their kid's health status no matter form long run or short run. Furthermore, they can have a suitable platform to guide their kids to recognize the healthy food since they are less developer develop the similar application. Kids also able to recognize the healthy food with more interesting way since will be add in an AR feature in this application. Besides, they also can learn about the basic information about the healthy food

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Literature Reviews

2.1.1.1 Wello: Health habits for kids in a fun way

Figure 2-1: enter basic information
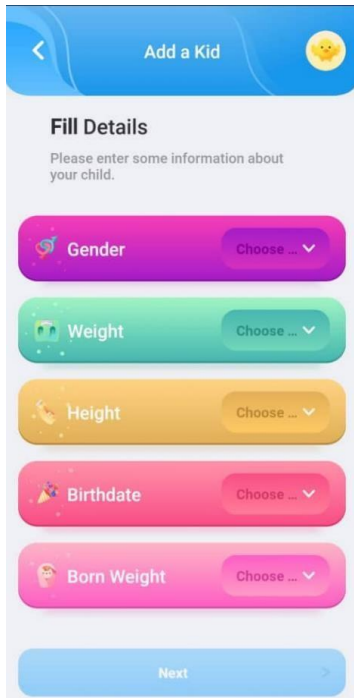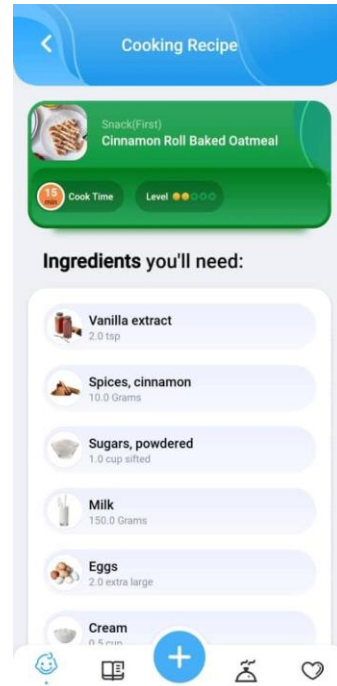

Figure 2-2: cooking recipe

Figure 2-3: restaurant near me

Wello include the track function for parents to track the kid's recent physical activity and encourage social engagement and healthy competition for the kids. Other than

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these, Wello provide a proper information for assist kids healthy eating. Thus, in the following part will more focus on the function in the kids healthy eating.

Wello is an application that help parents to guide the daily food consume of the kids. It provides the function of personalized for every child. By enter the information of the kids (Figure 2-1), the system will customize a total calories and nutrition content for every individual kids. Besides, parents also can choose to enter the food that the kids like. By entering this, the system can customize and suggest the foods that suitable for the kids to meet the requirement of daily nutrition consume. Not only the suggestion for few foods, but the system will also have a Kid's eating plan to ease the parents for the preparation of healthy food. After parents decide which food that want to prepare for their child, the system also have the function to let the user to choose either provide a recipe for the chosen food or provide the nearest restaurant which provide the chosen food. (Figure 2-2 and Figure 2-3) Not only that, Wello also allow parents to choose from the menu about the food that the kids eaten, and the system will calculate the approximate nutrition content of the food. If the accumulated nutrition content is not balance, some nutrition too less or too much. The system will alert the parents to make sure the healthy eating of their kids. Wello also provide some "tasks" to let the parents to complete which is relevant for the kids healthy eating. It is some healthy eating related question about kids. For an example of the question, "What do fast foods frequently contain?", and will provide few choices for parents. It will distribute to many topics such as fast food, process food, vegetable, grains and so on. Before entering to the question, each topic will provide some basic knowledge for parent to learn. Except remind the parents alert their kids healthy passively by receive the key in data, Wello also create the opportunity to let the parents alert the healthy eating of their kids by provide the task.

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2.1.1.2 Strengths, Weakness and Proposed Solution of Wello

The strengths of Wello are it can connect all the family member together. As mentioned in the review, parents can choose what kids is eaten to track the nutrition consume of their kids. Usually, the problem will be mother is busy, then father prepare for the kids' meal, but the phone is at another way could not key in. This function will solve the problem, parents can help each other to enter the meals that kids consume and also can enter as soon as possible to prevent the forget to key in.

Besides, Wello will provide the recommended dishes for the kids based on the basic information given by the parents. It will state clearly what the kids should consume at breakfast, lunch, and dinner. Thus, parents just need to prepare for the food only. If parents do not know how to cook the dishes, this application will provide the recipe and the step to cook by text. If parents do not have time or lack of some ingredients, this application also can provide the nearest restaurant for them based on their location to get the dishes. This function can make sure the parents can provide the healthy food for their kids.

Moreover, Wello provide some basic question for parents to answer. The purpose is to correct some knowledge blindness about parents and strengthen their current knowledge. It provides basic knowledge for parents to view before entering to the question. It provides different chapter which consist different type of food. It can let parents learn to knowledge chapter by chapter. If parents could not meet the minimum requirement of the question, they unable to proceed to next chapter. It will motivate parents to learn the knowledge properly.

However, Wello still have some problem exist. First instead of let user to enter the nutrition content that their kids consume, its application just can let user to choose the dishes from the menu to calculate the kid's nutrition consume. The menu of dish just consists of 100 types of dishes and most of it are western types of food which will let the east country family could not select what their kids consume today or will let this thing become difficult.

Moreover, the recipe step just consists of the word which may not deliver their information clearly. Parents might misunderstand and cook in a wrong way to cook. Due to word sometimes is difficult to understand instead of providing other multimedia

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elements such graphic, audio, video, or animation. Kids may not consume enough nutrition of the food due to the loss of the nutrition by the wrong way of cooking.

 Last, the function of provide the nearest restaurant is not accurate. This application provides a function to let user can find the dishes from their nearest restaurant. But after few times of experiment. This application will just provide one restaurant in certain area. For an example, no matter what dish, no matter the restaurant has this dish or not, in Kampar, new town area, it will just suggest to a restaurant which call "Chao Lou Restaurant". It is a big issue if parents bring their kids to order for a particular dish, but the restaurant does not provide. Not to mention all the Kampar user must be direct to a same restaurant only. It will become an issue if the user become a large portion in a same area.

The proposed solution will be adding a self-filled in function to let the parents enter what the nutrition of their kids consumes. It will be a better solution instead of adding the dishes. It is because different country, different culture, different people will have different way to cook for the dish. Furthermore, they are too much of dishes to be include around the world. If the developer wishes to include all the dishes, the workload may be 10 times compare to current and user also must choose from the list of dishes also will be time consuming. The next solution will be added more multimedia elements to the recipe instead of word. Wello can add some picture for each step to let the recipe become more understandable. A picture can mean a lot, if express by word need more than thousands.[2] When provide another visual element, user can understand what the key of cooking the dish easier. For an example, user can observe the picture to determine the correct way to clean the dishes to make sure the nutrition of food wont lost. The last solution will be telling the user it did not have the nearer restaurant provide the dishes instead of just give the restaurant name, but the restaurant did not provide such dishes.

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2.1.2.1 Baby Panda: Cooking Party

Figure 3-1: Gather at hall

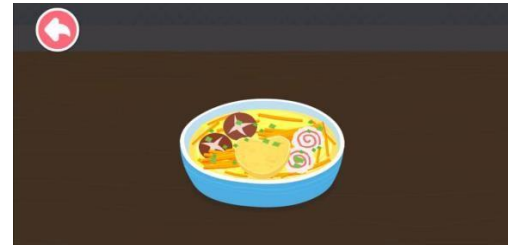*Figure 3-2: make noodles*

Figure 3-3: skive carrot

Figure 3-4: finished product

Baby Panda: Cooking Party provide a more lively, attractive, and interesting character. The colour used in this application is conformity in overall. Based on the success of the field of animation for BabyBus company, the animation and the transition of the scene is attractive for the age group of kids. After clicking the play button in the home screen, the system will direct to the hall with three students (animal), one teacher and one assistant (robot) (Figure3-1). The assistant will suggest two healthy foods to each student and explain how the healthy food will benefit to body. The most interesting part for this application is the user able to act as a participation to involve in the process of cooking. Due to the attractive character and the colour, most of the user is willing to get involved in this process. For an example, the assistant suggests two food which is fish and carrot, and the assistant will explain both are with the function of protect eyes. If user select the noodles with carrot, the system will direct user to involve in the whole process for cooking this dish. User will have to make and cook noodles (Figure 3-2), skive and cut carrot (Figure 3-3), add on the ingredients and the finished product (Figure 3-4) will be shown. Through this process, the interest of kids to eat the healthy food that stated in the apps will be increased and they can recognize more healthy foods. For example, during the process of prepare food salads, they can recognize the new food and fruits name via this process. The reason that chooses Baby Panda: Cooking Party as one of the review is because it is for kids recognize with the healthy food which is have the same purpose with this project.

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2.1.2.2 Strengths, Weakness and Proposed Solution of Baby Panda: Cooking Party

The Strengths of the Baby Panda: Cooking Party will be it have good animation skills. The operation of Baby panda: cooking party is explaining the information of healthy food by audio and let kids to involve in the process of cooking food virtually. This is a successful application to assist kids healthy eating by the attractive animation and smooth transition. Due to the success of the animation, Baby panda: cooking party add in more interaction function with user to attract the attention of them. All the design of the elements is consistent to one style which make the animation look harmonious. It involves many interactivities multimedia to attract the kid's attention. This would assist the kids healthy eating by increase their curiosity about the healthy food in real life and recognize the healthy food.

The weaknesses are this application does not consist of multiple language support to let user to choose. This will cause the user who do not know for a certain language is difficult to understand what the information that the apps try to bring out. As mentioned above, this application is not consisting of any text. It makes the multiple language support function become more important. If not, kids can just treat them as a game only without learning anything. If kids do not understand Mandarin, they will not know the nutrition content, the food is benefit for them and so on. They just can involve in cooking virtually but do not have the ability to learn healthy eating information due to the language difficulty. Moreover, it does not provide any of words, tittle, or subtitle in this apps. This represents it also not friendly with the user who have hearing disabilities. Besides a normal user(kids) without hearing and language difficulty also have some vocabulary they do not know. In this situation they could not identify the vocab correctly also might lead them to a misconception about healthy eating.

The proposed solution will be provided multiple language to let user choose, it can let more kids have the opportunity to learn something from this apps. Kids can choose the language that they understand to have more involvement with this application. Besides, it also can add some important words in the apps. For an example, when skive carrot, the apps may add a text "Carrot" to let kids know currently they are skiving the carrot.

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2.1.3.1 AR watches -augmented reality commerce (AR)
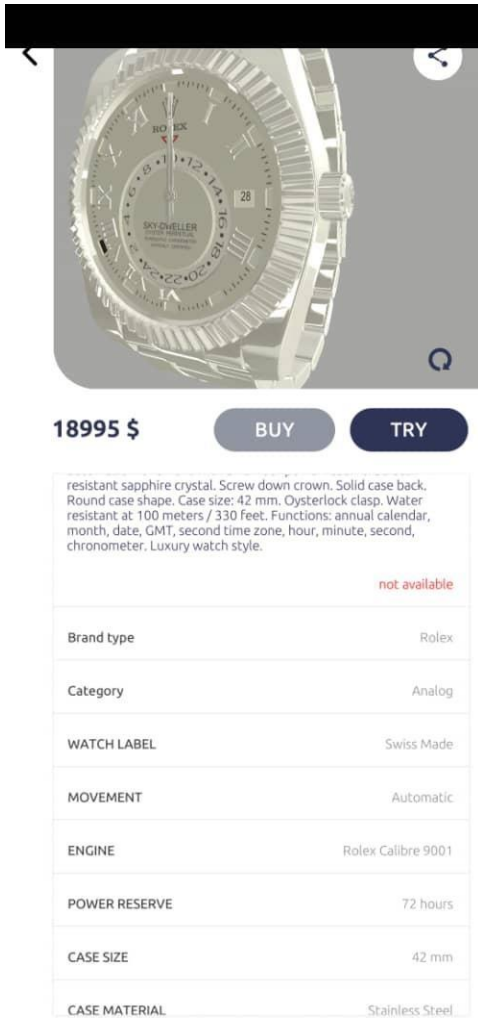
Figure 4-1: 3D image of the watches

Figure 4-2: AR Marker

Figure 4-2:Output

AR watches -augmented reality commerce is a apps that allow user to try the luxury product virtually. The overall flow of this application is choosing the brand that offer by the application. The system will show the watch available based on the brand. After

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select a watch, an AR image of the watch will be generated and rotate horizontally (Figure 4-1). The try button in figure 4-1 will let the user try the watch selected virtually by Augmented Reality. User that wants to try with AR must download AR Marker and print out the marker and put it on the wristband (Figure 4-2 and Figure 4-3). After this, hover the phone to the wristband and the 3D models of watches will show it and the wristband of the user virtually through the phone.

In overall, AR watches is a successful AR application which provide the 3D image preview for the user and using AR to let the user test the watches virtually. User no need to go out then can test the product that is best fit for them. The AR watches also provide a buy button which user can directly buy the watches from the platform which is an application that allow customer to preview, try and buy virtually.

2.1.3.2 Strengths, Weakness and Proposed Solution of AR watches -augmented reality commerce (AR)

The strengths of AR watches will be it is successfully launched an online watches store and let customer to experience of wearing a watch. Especially in this pandemic era, customer buy online but also able see the wearing result through the AR model from the QR code provided. It can let customer to decide which watches is more suit for them. Another strength will be it will provide the AR model also for the watches showing phase refer to figure 4-1. The watches above are the AR model of the watch which is much near to reality, and it can rotate 360 degrees to let user to see the watches clearly before printing out the QR code from online.

The weaknesses of AR watches -augmented reality commerce is the user interface is not developed well. In figure 4-1 can clearly see that the user interface is not fit with some mobile phone. The top and top right user interface has been blocked. There is also some unnecessary blank that show in the user interface. Moreover, AR watches must print out the AR marker and put it on wristband then the watches can show the result. The problem is the apps does not provide the way to download and print out the marker. User must print the marker online. It will troublesome the user because they may download the wrong thing and unable to experience the AR watches on their wrist.

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The proposed solution will be developing more solution to fit more device without the block and the space. It may block some action from the use. For an example, the figure 4-1, user may not press the back button successfully because half of it already been blocked. The second solution will be providing a place to let user download the marker or provide a function to navigate user to a correct website to download the marker. It is to save user time and avoid them access the wrong website which may lead to some cybersecurity problem.

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CHAPTER 3

Proposed Method/Approach

3.1 Agile methodology
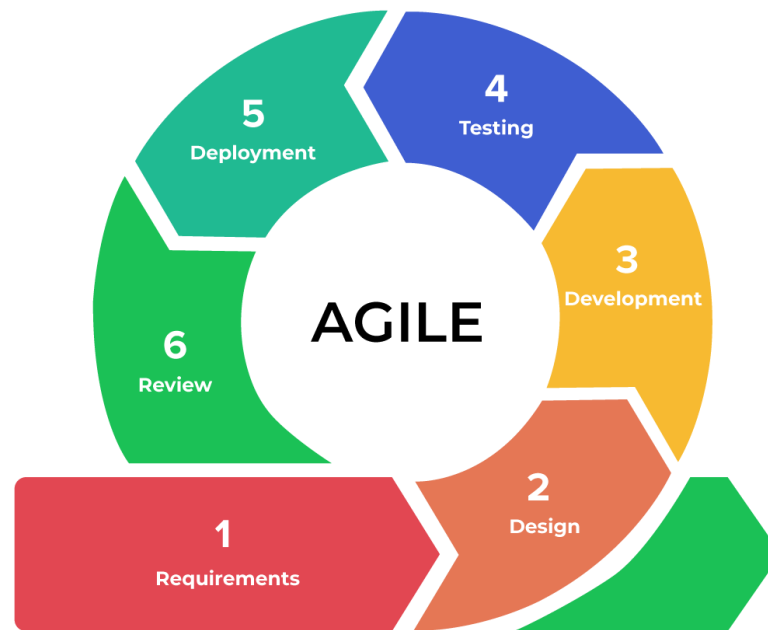
Figuere 5: Agile

The methodology used in this project will be Agile methodology. This methodology usually used in the project that need to change the requirements from time to time. [4] It require to deliver parts of the function regularly and improve it after checking and testing. It can start in small or unclear requirements. Through deliver the parts in a short time and respond and adapt the change to achieve the complete function that require.[6]

The reason of choose Agile methodology for this project is because in every week or bi-weekly, must send a deliverable to supervisor to check and give advice. Weekly or biweekly is considering a short time. Thus, agile development approach will be more suitable methodology for this project. After testing and checking the deliverable, supervisor will give some suggestion to improve the function, and this will consider a new added requirement. By agile methodology will have enough time to adapt the changes require and response in a short time. For an example, supervisor suggest adding

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a search function in the card view part, then the next week deliverable will be added in the search function. After checking, then proceed to next requirements. Although the requirements stated in the beginning of the project, but it will be improved and changing from time to time. From the weekly or biweekly of the new requirements given, it can prevent some mis conceptual during the beginning phase. [5] Besides, the UI/UX design, front-end design and back-end design logic will be changing from time to time to adapt for the latest trend and technologies. Thus, the agile methodology will be more flexible for developer to adapt the changes. Developer can change their design if found some elements is more suitable for kids or if found have better solution to make the back-end design more complete. In short, agile methodology will be the most suitable methodology for this project. No matter from the added or improve needed from supervisor, weekly deliverable, or developer to adapt the latest technologies or the latest trend of design perspective.

3.2   Technology Involved

3.2.1   Hardware

The hardware involved in this project is laptop and android mobile device. A laptop issued for the coding part. The android mobile phone will be act as a physical android emulator to make sure the layout in physical device is same with the design in emulator. Besides its also act as a device to test the performance of application. Since the virtual emulator is depends on the processor of laptop and sometimes it might be lag and difficult to test.

Table 3.1 Specifications of laptop

Description	Specifications
Model	Illegear ROGUE (TGL)
Processor	11th Gen Intel(R) Core (TM) i7-11800H @ 2.30GHz 2.30 GHz
Operating System	Windows 11 Home 64-Bit EM Edition
Graphic	GTX1650
Memory	16GB DDR4 RAM
Storage	512GB

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Table 3.2 Specifications of android mobile device

Description	Specifications	
Device Name	Honor View 10	Galaxy J7 Pro
Model	Huawei Honor BKL-L09	SM-J730GM
version	EMUI 10.0.0	Samsung Experience 8.1
Android version	10	7.0
Processor	HiSilicon Kirin 970	Samsung Exynos 7 Octa 7870
Memory	6GB RAM	3GB RAM
Storage	128GB	64GB

The reason of using physical devices as emulator is because this project involves AR technology and using a physical device will be easier to carry out the result and observe it is successful or not. For Huawe Honor, it is to test the major function and observe the performance of application. Galaxy J7 pro is used to test the AR function. Since Huawei Honor View 10 does not support AR core in play store, Galaxy J7 pro is act as a assisting physical emulator to test AR function.

3.2.2 Software

Table 3.3 Software Specifications

Description	Specifications
IDE	Android Studio Chipmunk 2021.2.1
Database	Firebase
Plugin tool	Scene form, Picasso, Mike Ortiz

Firebase is in charge in charge in most of the information of Food List Module. The food description, food name, food image for list, food image for details, animation and video link will be store in Firebase. When open the application, it will retrieve the data out and show as a list in recycler view and show the detail based on the user choice. Scene form is used to develop another module which is AR camera. It can help to convert the .glb or .obj file format into our camera scene. It also allows developer to develop the minimum and maximum scale of object, the geometric transformation,

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select multiple and different model. Picasso and Mike Ortiz are in charge for the health calculator- BMI chart function. It let developer to produce an image that can be scroll and zoom in a given frame while not disturb to other function. Besides, it also let the image given become downloadable.

3.3.1 Use Case Diagram
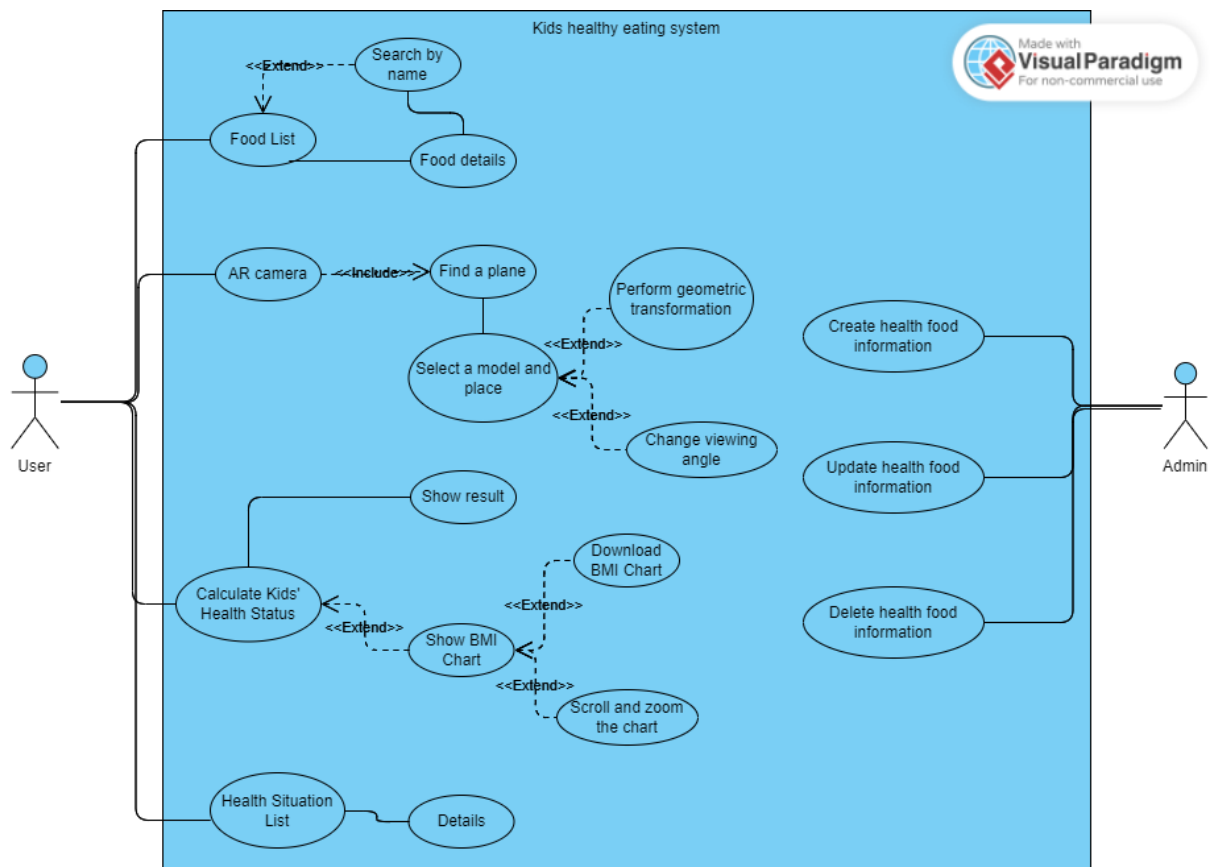
Figure 6-1: Use-case diagram

Admin able to control the data available in food list and can perform create, update and delete function. The data being modify will be change simultaneously to what user see. User able to access four modules. In food list, user can direct choose and go to detail or use the search function. In AR camera, user must move camera to find a plane then select a model to place. After this, they can choose to move the camera view or perform geometric transformation to the object. In health calculator, user can enter the data and get the result and also can get the BMI chart. They can choose to download it to their mobile storage or scroll and zoom to the chart. In health situation, user can choose from the list and will retrieve out the details.

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3.3.2   Block Diagram

Figure 6-2: Block diagram

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3.4   Implementation Issues and Challenges

In this project, the first difficulty will be the AR model is difficult to find. Due to the closing of the website, Polly. There are few platforms provide the free AR model to dow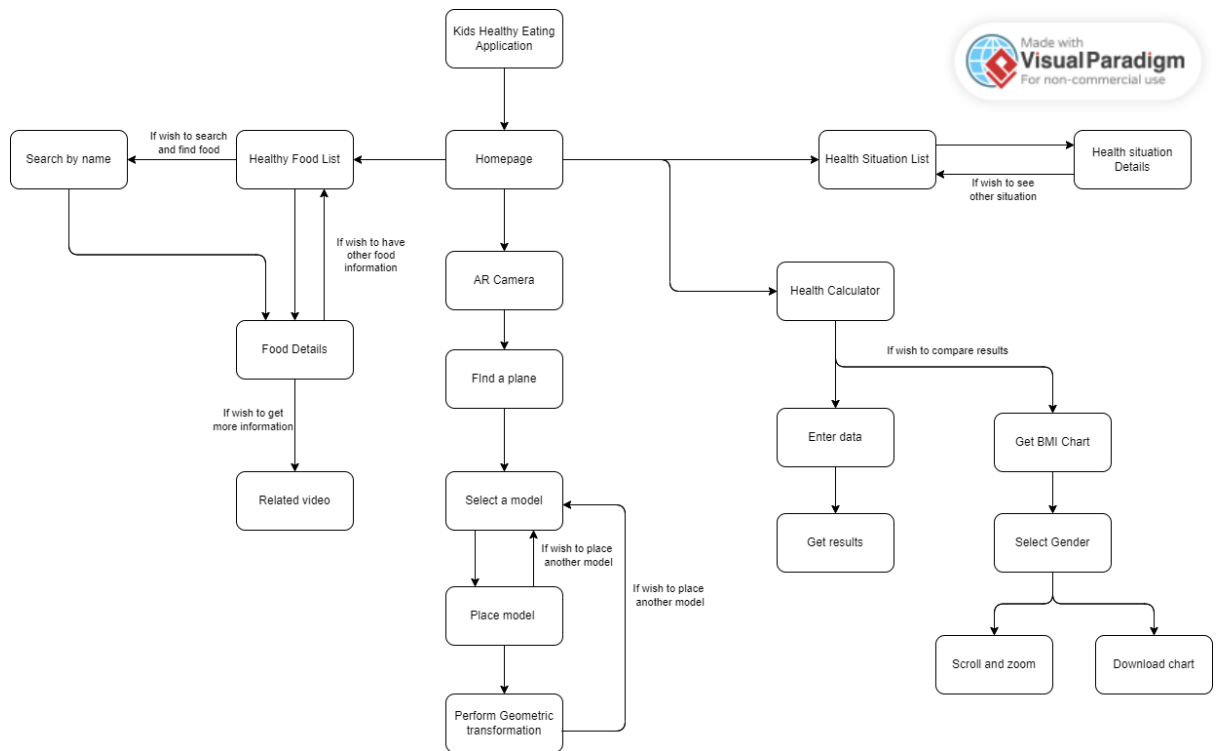nload. This will make the collection process of AR model being difficult or costly. In this project so far does not have any budget, so it will be more challenging process to select suitable AR model. In this project also must make sure the design consistency. For an example, there are two AR models' design is suitable for kids but there are using two different design one of it is cartoon design another one will be closer to the real world. Then one of it might not be used. Since it does not have any budget, then have to spend more time to search few websites from time to time to get the free AR model which make this process become more time consuming.

The second difficulty will be the implementation of the AR. As well known, AR is a latest technology in this era. There are limited resources for research and testing. Thus, to implementation of AR not only need adequate knowledge and also enough patient to keep try and error. During the development process, should expect spent a lot of time but none progress increase.

Besides, not only import the AR model to the scene then sufficient. To let kids, have better experience while using this application. User interaction for geometric transformation is necessary. Thus, there are another time-consuming process to let every model can perform geometric transformation and sometimes the emulator develop for a long time will become lag and need to create a new one which will be another process for downloading and waiting.

After allow user to perform geometric transformation, user might move or scale the model in some unexpected way. To handle some unexpected error like scale the model too big until block the camera view or minimize until difficult to see. The maximum scale, minimum scale also needs to be configured. Not only that, detect the scene and set the limit to move until which area is maximum also need to be consider avoiding move the object out of the scene.

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3.5   Timeline

FYP 1

Week	Planning
Week 1	Plan for the project and prepare the report
Week 2	Define the function of the application
Week 3	Explore and design the UI design of application
Week 4	Finalize suitable UI, find AR model from time to time
Week 5-7	Develop the first function- Healthy Food Information, design the database of the healthy food information
Week 8	Integrate the function with the database
Week 9	Develop the Health status calculator for the calculation function
Week 10	Integrate the developed function with the UI design. Final integration
Week 11	Modify and finalize the report, communicate with supervisor for the submission version
Week 12	Submit Report
Week 12-14	Prepare for the presentation

Table 4.1: *Timeline for FYP 1*

FYP 2

Week	Planning
Week 1	Brief the left part and figure out which part can be improved
Week 2	Start applying the plugin and find suitable model. Communicate with supervisor to define the project structure and design
Week 3	Start developing UI for left module
Week 4	Revise report of fyp1 check where need to be change and prepare the documentation needed for fyp2

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Week 5-7	Develop AR camera and Health situation list module and apply to the UI prepared
Week 8	Develop code to retrieve the 3D model into the scene
Week 9	Let model can perform transformation such as transformation, rotation, and scale.
Week 10	Find more suitable model to let user interact with
Week 11	Modify fyp1 report and finalize fyp2 report to let supervisor to check
Week 12	Finalize the application development and do black box testing
Week 13	Let supervisor to do a final checking and submit
Week 14	Prepare for the presentation

Table 4.2: *Timeline for FYP 2*

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CHAPTER 4

Preliminary Work

4.1 Welcome Screen
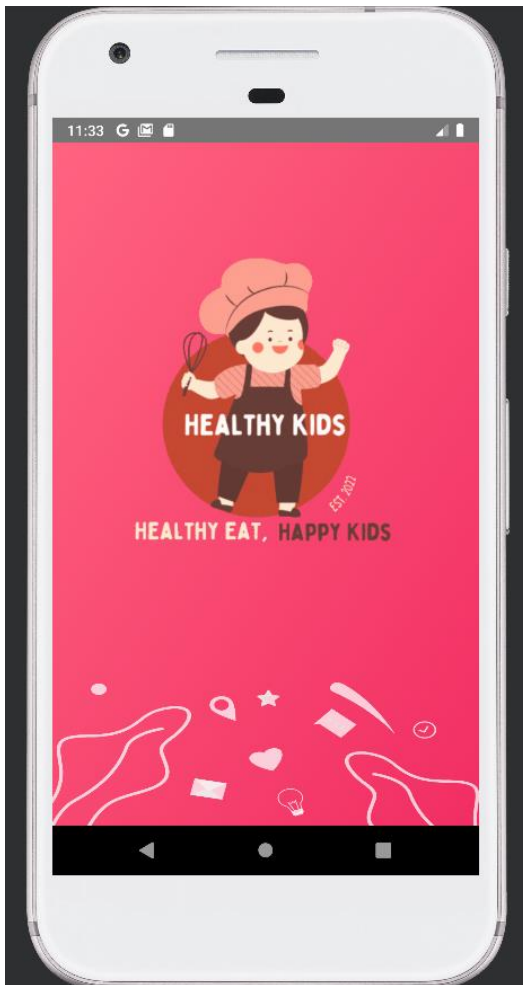
Figure 7-1 Welcome splash screen

When user open the application when have an animation welcome screen before proceeding to main screen

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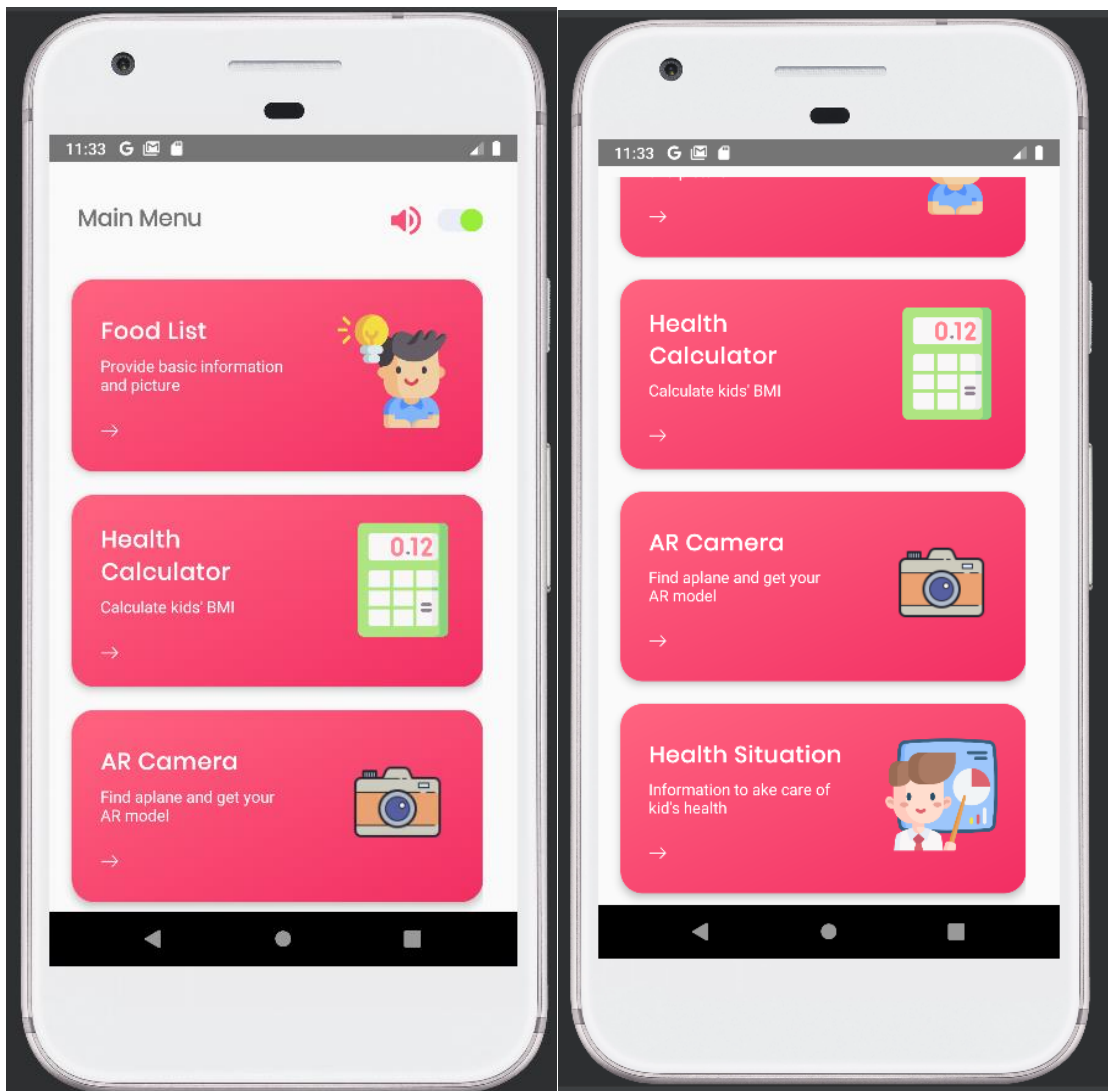
4.2 Main Page

Figure 7-2 and 7-3- Main page of apps

When come to main screen, user can choose the option from the four module and the background music is on by default, user can close by click on it.

4.3 Background music on off button
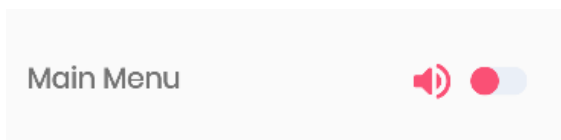
Figure 7-4 close background music

When user off the background music, it will change the color of button to make it more obvious.

4.4 Food List
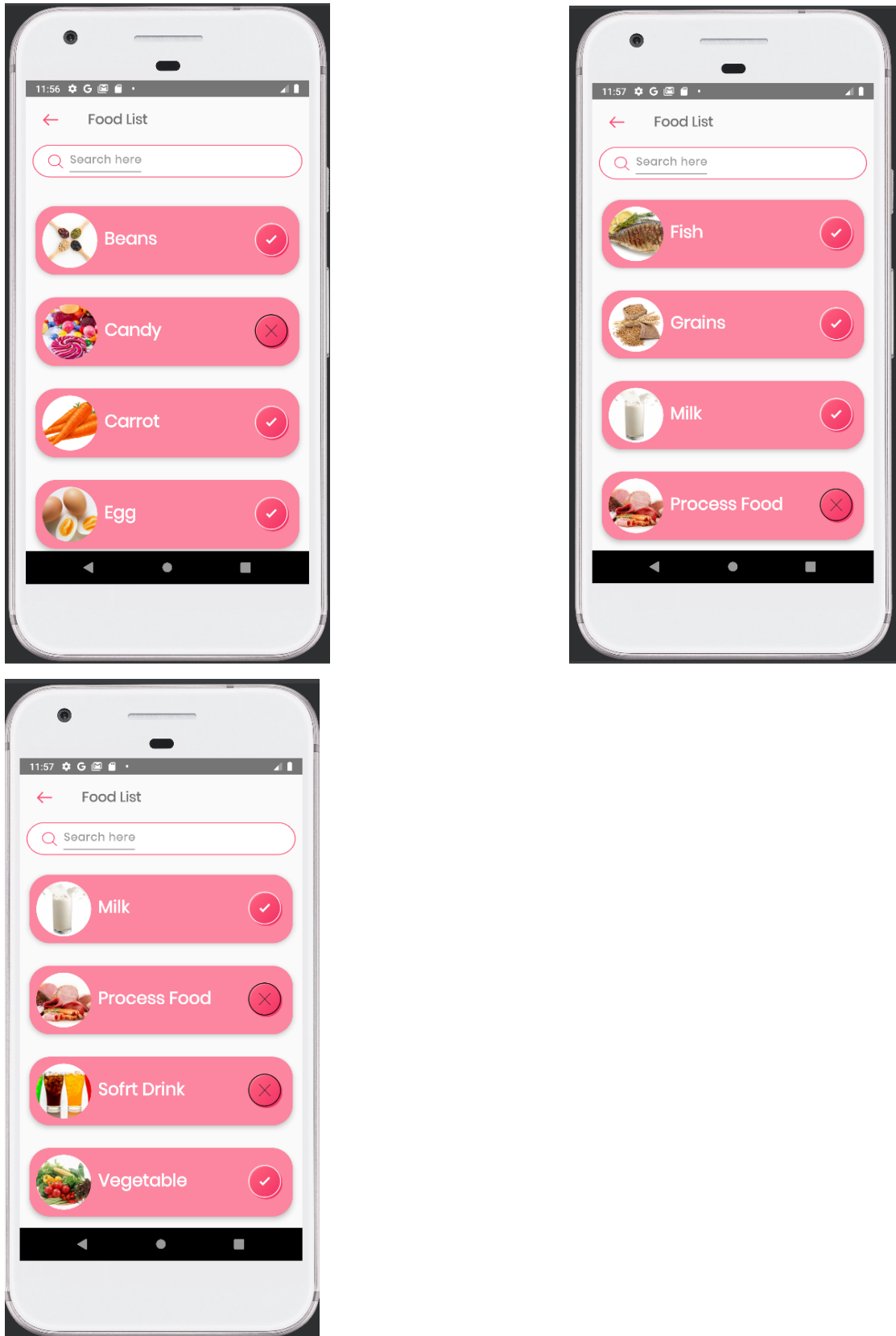
Figure 7-5, 7-6 and 7-7- Food list and search function

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When user enter to the food list module, there are several foods listed with real world image, name, and a symbol to let kids to know which should consume and which should not consume.

4.5 Search
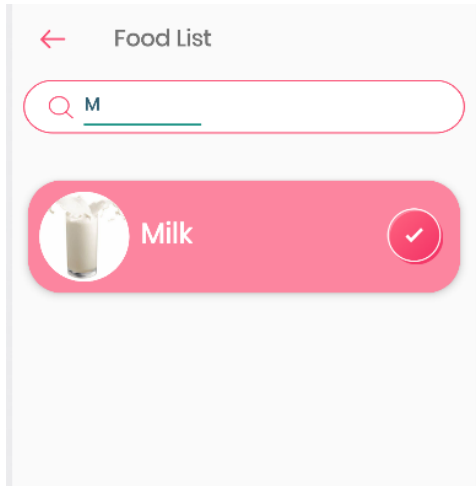
Figure 7-8 Search function

The search function is being set to case sensitive. It have an intention to let kids to learn how to spell of the food and boost their reorganization.

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4.6 Details of food
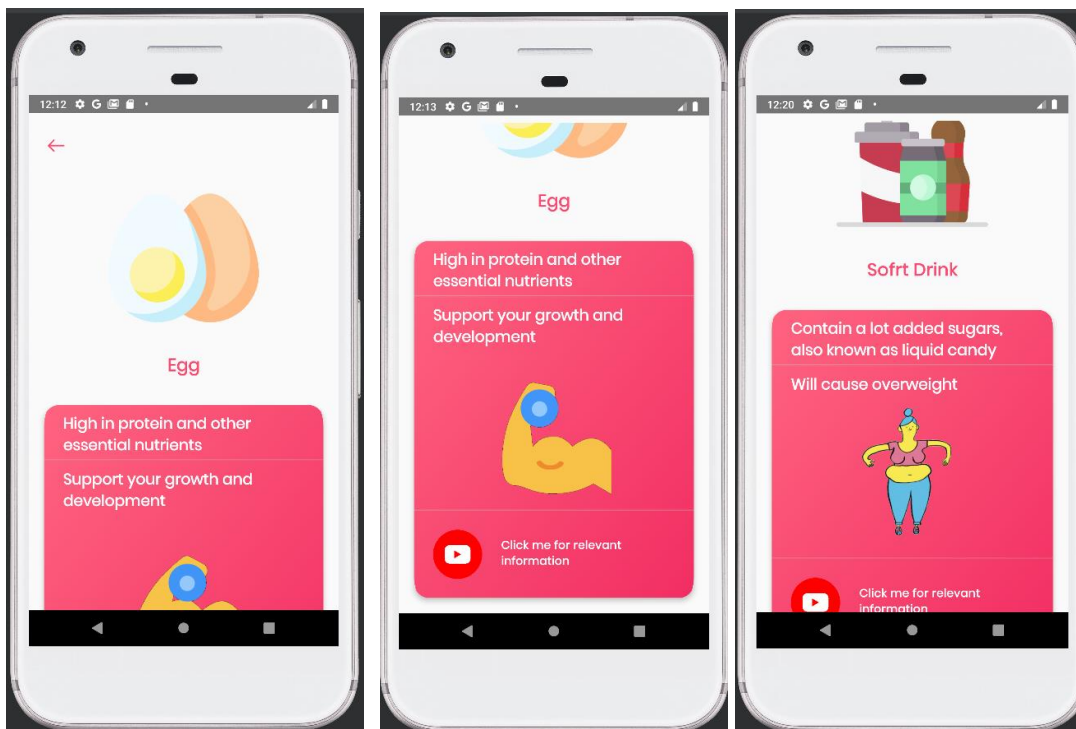
Figures 7-9, 7-10 and 7-11 Detail of food.

When user click on one of the healthy foods from the list will be directed to detail of food page. In this page the content includes a more cartoon image of food, short and concise description of the food and the advantage of consuming the food and an animation of the advantage to make kids more understand and attract kids' attention. Vice versa, if kids click on the non-healthy food, it will show the cartoon image, short description, the disadvantage of consuming the food and animation of the disadvantage. For the video, healthy food will provide the recipe for the food and non-healthy food will provide the detail information of why this food is non-healthy.

4.7 Direct to get the video.
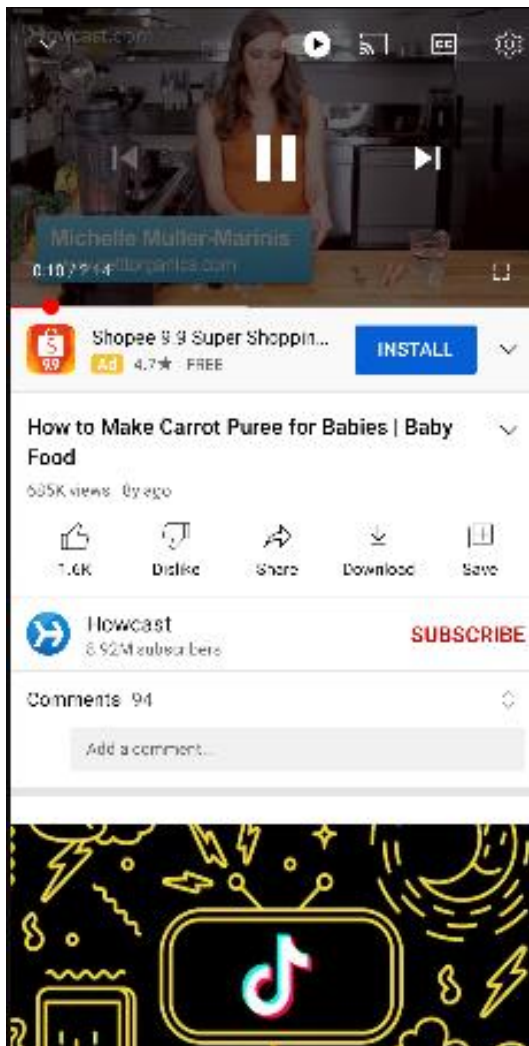
Figure 7-12: Direct to YouTube video

When user click on the video button, they will be direct to the YouTube video which teach user how to cook the relevant food that user clicks or the video that introduce the non-healthy food.

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4.8   Health Calculator
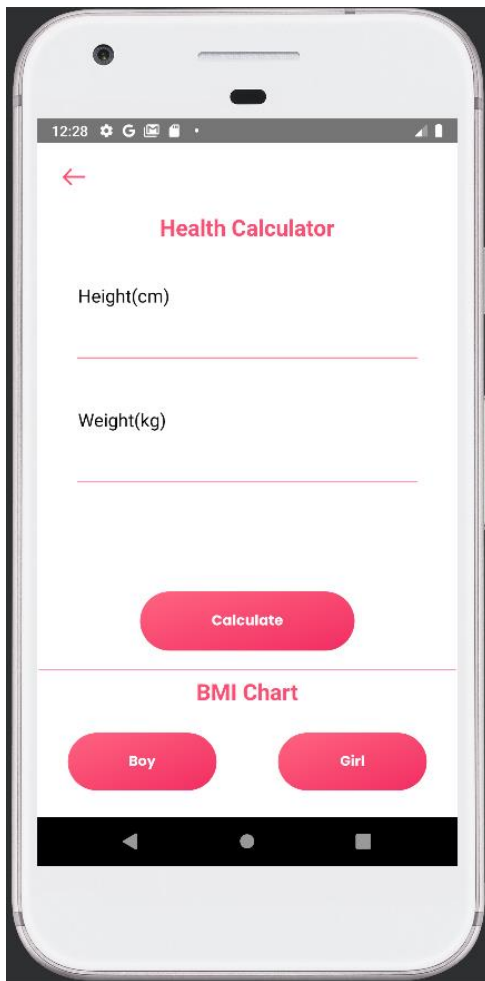
Figure 7-13: Health Calculator

When user click on health calculator, it will direct to this page, and it is separate to two part the above part is a calculator which can calculate the BMI. Below part will provide the BMI chart for user to observe. User no need to search online and it is separate by gender which will become more accurate.

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4.9   Health Calculator-Result
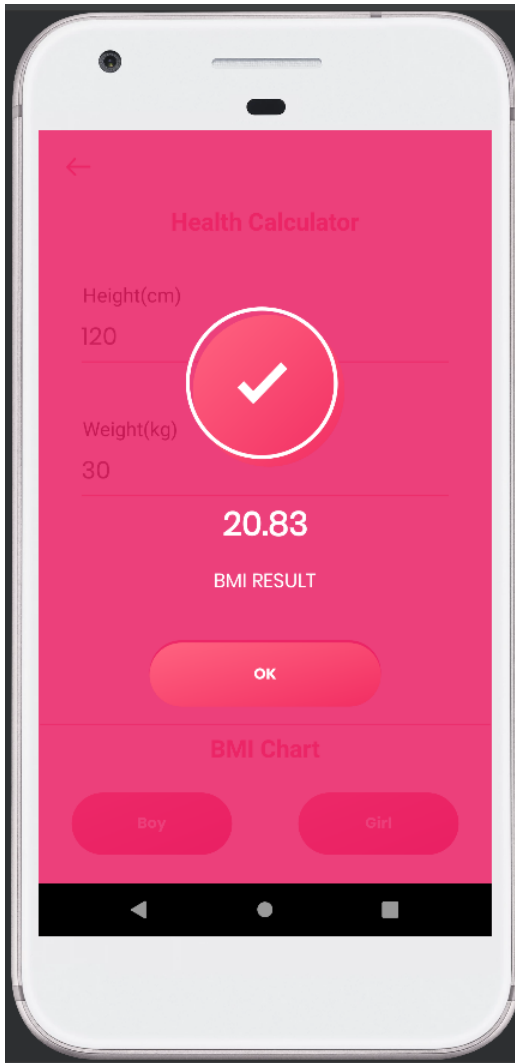
Figure 7-14: Health Calculator-result

After user enter data and calculate, the UI will be like this. The result will pop out and the background will have some percentage of transparent along with the result.

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4.10   Health Calculator-BMI result
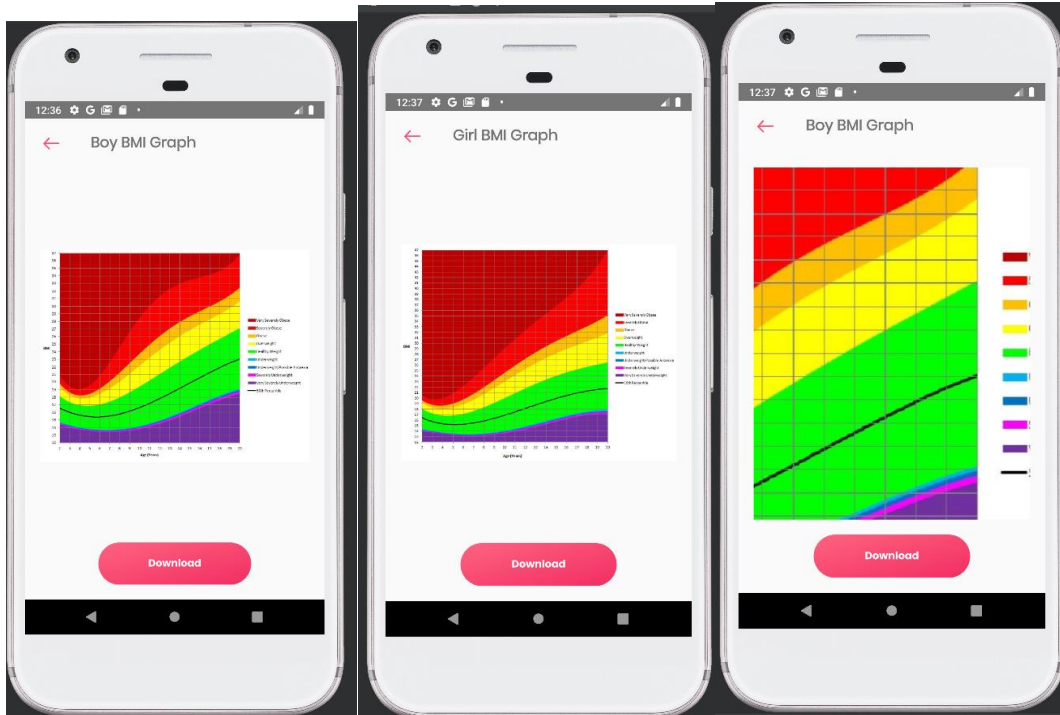
Figure 7-15,16 and 17: Health Calculator-BMI chart

Based on the BMI chart for different gender, user can get a more accurate data. There are also differentiate different level of health situation based on color and an average line. So, user can easily Identify. Moreover, if user could not see clearly, they can zoom and scroll by any action such as double tap for certain part, use two finger to enlarge, scroll and so on. Every action has been set which can ease user and improve user experience. The chart is enlarged on particular not the full screen. User still able to click back, see the chart's gender and click download without minimize back the chart. Besides, user can download the chart by simply click on the download button.

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4.11   AR camera

Figure 7-18, 19 and 20: AR camera scene

When user click on the AR camera, they will first get the figure 17 which ask user to find a plane to place the food model. If success to find a plane it will show as figure 18. It will give a hint to user to let them know where the plane with a doted circle. Then user can select a food model and place. User can choose from the below horizontal recycler view. Every card consists of the image of the food and the name of the food.

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4.12   AR camera-geometric transformation

Figure 7-21, 22, 23, 23 and 25: AR camera scene-geometric transformation

For example, figure 7-21 is the initial scale of the fish and it will show the back of the fish in the following perform the enlargement, shrink, rotation and transformation (click on the model and drag farther)

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4.13   AR camera-multiple model handle

Figure 7-26 and 27: AR camera scene-multiple model handle

Based on figure 7-26, user able to place multiple same models with different geometric in the same scene. In figure 7-27, user able to place multiple same and different model with same and different geometric in a screen.

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4.14   Health Situation
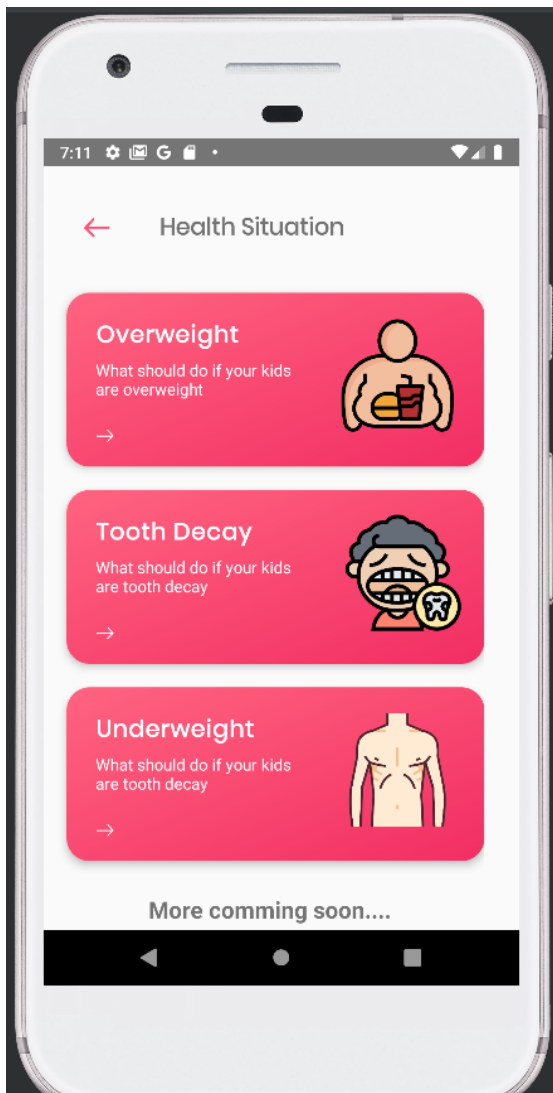
Figure 7-28: Health situation user interface

When user enter to health situation module, they will see the common disease that cause by unhealthy eating. Parent can be based on the situation and guide their kids from the disease or avoid from the disease.

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4.15   Health Situation-Details

Figure 7-29,30 and 31: Health situation details for overweight

After click on the card, it will direct user to details page. From details page, user able to know how to handle with the disease and provide some guidance for them.

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CHAPTER 5

SYSTEM EVALUATION AND DISCUESSION

5.1 Black Box Testing

5.1.1 Food List

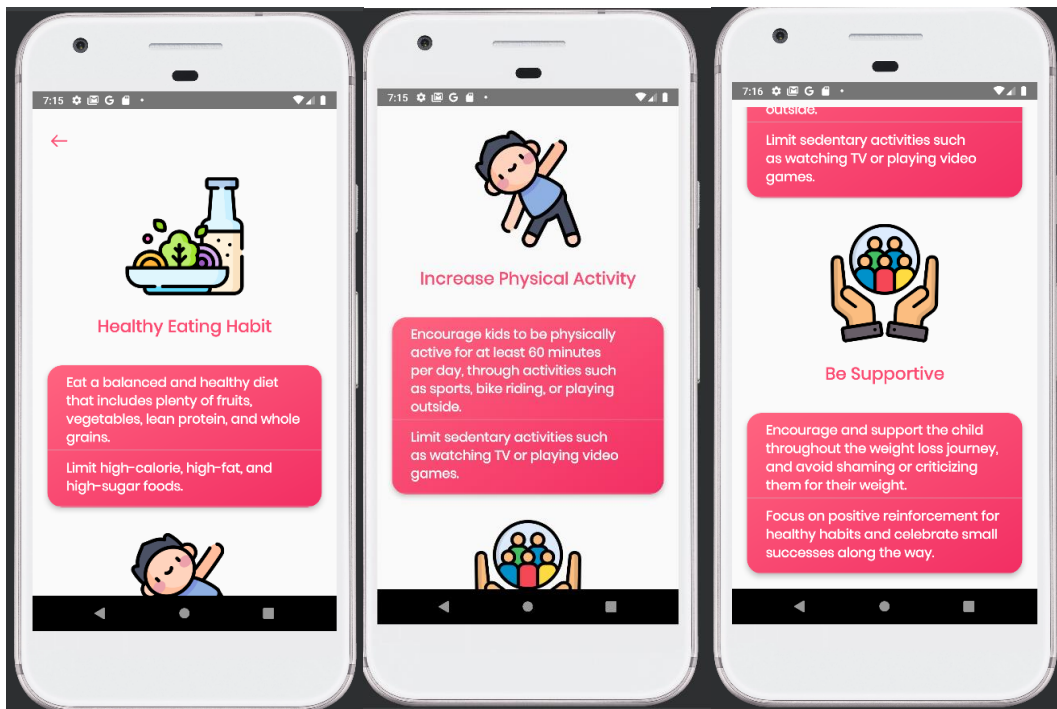| TEST CASE	TEST STEPS	EXPECTED RESULT	ACTUAL RESULT	PASS/FAIL
Check result on entering valid searching name in search function	1. Enter available food name.	The fragment that shows food that match with the searching will show food that match with the searching parameter	As Expected	Pass
Check result on entering invalid searching name in search function	1. Enter non-available food name	The fragment that shows food that match with the searching will show nothing	As Expected	Pass
Check back button	1. Click back button on top left. 2. Click back function that provide by the mobile itelf	The app will be exit instead of back to the food list. This is to make sure the back button not just simply intent and bring user to main page only	As Expected	Pass
Check result on click at one food from food list	1. Click on one of the foods from food list	The result will match with the chosen of user	As Expected	Pass

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| Check result on click at the video button at food details | 1. Click button at the bottom of food details | User will be redirect to relevant video at YouTube | As Expected | Pass |

5.1.2 Health Calculator

TEST CASE	TEST STEPS	EXPECTED RESULT	ACTUAL RESULT	PASS/FAIL
Check result on entering integer or float in the health calculator	1. Enter the correct data type value for weight and height	The input area allow user to enter what they trying to enter	As Expected	Pass
Check result on entering wrong data type	1. Enter character and symbol in the input area	The input area will not allow user to enter the data type	As Expected	Pass
Check result when click on the gender bmi chart	1. Click the BMI chart button	Direct to respective gender's BMI chart page	As Expected	Pass
Check result when user click download for BMI chart	1. Click on the download button at the bottom of the page.	The chart will be download to users' mobile gallery	As Expected	Pass
Check the result when user perform some finger gesture to BMI chart	1. Users enlarge the image by two fingers dragging. 2. Users scroll	The chart able to enlarge based on the user pointed area and scroll based on the finger gesture	As Expected	Pass

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	on the enlarged BMI chart			
Check result user double click on the BMI chart	1. Double click to the normal BMI chart 2. Double click to the enlarged BMI chart	The chart will enlarge to the point user double click when chart is in normal size and will back to normal size when user double clicks to a enlarged chart	As Expected	Pass

5.1.3 AR Camera

TEST CASE	TEST STEPS	EXPECTED RESULT	ACTUAL RESULT	PASS/FAIL
Check result on user first click to enter this module	1. Click on the AR camera button	Have an animation to give hint to user for finding a plane	As Expected	Pass
Check result on successful find a plane	1. Continue moving the camera angle	Doted circle will show to give hint for user that they successful find a plane	As Expected	Pass
Check result when user scroll on the horizontal recycle view for the food model	1. Scroll on the choice of food model	Show the following available food model for choose	As Expected	Pass
Check result when choose a Food model	1. Click on the food model that user	The system will show a toast to let user know the	As Expected	Pass

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	which to place at the plane. 2. Click on the place that which to place the model	model is ready to place after loading and place on the place that user click on		
Check the result when user perform some finger gesture to perform geometric transformation to the food model	1. Users click on the model already being placed. 2. Use two finger to enlarge the food model. 3. Use one finger to drag the model to another place. 4. Rotate the food model	The food model is able to perform any geometric transformation that perform by the user	As Expected	Pass
Check result when place more than one food model in the scene	1. Place more than one food model in the scene 5. Select different food model to place in the scene.	The scene able to place whatever the user wishes to place.	As Expected	Pass

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| Check result when user turn the camera away and back to the scene | 1. Users place the model in the scene.
 2. Turn the camera away to another scene and place another food model in the scene.
 3. Turn back and observe the food model | The food model will still at the place the user place at no matter the user turn away or walk around as long as they didn't exit the module, the model will always at the place. | As Expected | Pass |

5.1.4 Health Situation

TEST CASE	TEST STEPS	EXPECTED RESULT	ACTUAL RESULT	PASS/FAIL
Check result on click one disease from the list	1. Choose from the disease given	Will direct to correct details page	As Expected	Pass
Check back button in details	1. Click back button on top left. 2. Click back function that provide by the mobile itself	The app will be back to the main menu instead of back to the health situation details. This is to make sure the back button not just simply intent and bring user to main page only	As Expected	Pass

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CHAPTER 6

Conclusion

This project is developed for kids healthy eating. It mainly focuses on help kids to learn and recognize the food and let them experience an interesting process. Thus, in this project provide a function for parents to guide or let kids to learn individually for the healthy food information. It also provides some extend function to assist to meet the kids healthy eating objective. For an example, in every health food information will consist of the link of video about the recipe of the health food. Moreover, it also provides AR model. It not only for kids to recognize the healthy food easier, but also to let kids to learn in a fun and interesting way. AR model is more realistic and able to interact with, kids will be able to learn and recognize faster. It will increase the interest of the kids while using this apps. Furthermore, this project will also provide health calculator for parents to observe the kids' health status. It can prevent some serious but invisible issues from initial. From this function, this project has extended to another function which is provide the health situation for parent to recognize the symptom of some common disease and some advice to perform. In short, this project focus on the healthy eating of kids by let them recognize and learn the information of the healthy food. It provides some function for assist and achieve the goal such as recipe link and AR model. Especially the latest technology AR. It will be the first application that contain AR model in this area at current application market which will improve the experience when kids using this application. Not only that, but it also provides a health calculator which is also to make sure the health of the kids. Thus, this application provides the recognize food information function and add in the AR model features which make it differ from other recognize food apps for kids. The health calculator function also an important function of this apps. There are less kids healthy eating apps integrate with the health calculator function which make the parents easier, no need switch application for other function.

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CHAPTER 6

Future Work and Aim

Continuously improve the amount of the listed thing. For food list, the target will be providing more food information without any redundancy information since redundancy information might distract or confuse the user. Next the health situation will also keep update with the latest news to avoid of giving wrong information. Giving wrong information might lead to a serious situation. Thus, update from time to time is important. Not only that the AR model will also increase the amount available in future. Not just simply import to the scene but consider every possible interaction to the object. If with some cost to develop, the AR model result can be better since some good AR model is costly but with better projection, texture, and also lightning effect. Thus, if in future have cost for develop or sponsor for keep continue develop this application. The first thing to consider other than maintain the application will be provide more better AR model to let them interact with more realistic, attractive, and interesting model. The last thing will be improving the UI for the application from time to time. This project UI should continuously consider about the trend of application design of kids to get inspire from that. It also can attract the kids in different era. Since these kids is to mainly serve kids. When kids grow up, there are another batch of kids come and use this application. Thus, be aware of which thing is trendy in kids is important for developing a kid's application. Last but not least, another selling point of this application is using latest technology. So, keep focus on the latest technology being introduce and figure out which is the suitable technology to apply in kids' application to make sure AR is not the last latest technology involve in this application.

In short, future will focus on increase the current dataset to give more information to user and make sure the information accuracy, keep aware of the trend in kids generation to inspire the UI design and additional function or module, keep aware to the latest technology that can be apply in this application and maintain the current application function include AR to ensure it can function when the technology improve is the future work and aim for this application

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REFERENCES

[1] "Health and Social Impact of a Picky Eater". ABC PEDIATRIC THERAPY
NETWORK. https://www.abcpediatrictherapy.com/health-and-social-impact- of-
a-picky-eater/ (accessed Sept. 1,2022)

[2] "The Advantages and Disadvantages of Using Pictures". 123dok. https://text-
id.123dok.com/document/4yr3e4pvy-the-advantages-and-disadvantages-of-
using-pictures.html (accessed Sept.1,2022)

[3] "Symptoms of 12 Serious Diseases and Health Problems". MedicineNet.
https://www.medicinenet.com/symptoms_of_serious_diseases_and_health_pro
blems/index.htm (accessed Sept. 1,2022)

[4] "What Is Agile Methodology? - Overview Of Agile Software Development And
Agile Models". Digite. https://www.digite.com/agile/agile-methodology
(accessed Sept. 1,2022)

[5] "A Guide To The Agile Method In Marketing And Development". Linchpinseo.
https://linchpinseo.com/the-agile-
method/#:~:text=The%20Agile%20Method%20and%20methodology%20is%
20a%20particular,and%20how%20users%20will%20respond%20to%20marke
ting%20strategies (accessed Sept. 1,2022)

[6] Kechit.Goyal. "Agile Methodology Steps & Phases: Complete Explanation".
upGrad. https://www.upgrad.com/blog/agile-methodology-steps-phases/
(accessed Sept. 1,2022)

[7] Hayes.Adam. "What Is Augmented Reality (AR)? Examples and Uses".
Investopedia. https://www.investopedia.com/terms/a/augmented-reality.asp
(accessed Sept. 1,2022)

[8] Gillis. Alexander S. "augmented reality (AR)". WhatIs.com.
https://www.techtarget.com/whatis/definition/augmented-reality-AR (accessed
Sept. 1,2022)

[9] "AUGMENTED AND VIRTUAL REALITY IN EDUCATION". The App
solutions. https://theappsolutions.com/blog/development/ar-vr-in-education/
(accessed Sept. 1,2022)

Bachelor of Information Systems (Honours) Information Systems Engineering
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REFERENCES

[10] Raj. Atul. "Uses of Augmented Reality in education and training". NEXGEN
     INNOVATION. https://www.nexgi.com/technology/augmented-reality/using-ar-
to-educate/. (accessed Sept. 1,2022)

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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 2
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Arrange the fyp 1 left things
-Discuss with supervisor about the structure and the expectation of fyp 2

2. WORK TO BE DONE
-Apply plugin needed to the following module
-Maintain the current code to make it more manageable

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

xiangkai

_____   _____
Supervisor's signature   Student's signature

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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 4
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Design UI
-Revise fyp1 report and check which need to modify and prepare for fyp 2 report

2. WORK TO BE DONE
-Apply plugin needed to the following module
-Maintain the current code to make it more manageable

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

xiangkai

_____   _____

Supervisor's signature   Student's signature

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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 6
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Find some suitable food model that can be apply in AR function
-Research on the AR function to smoothen the following developing process

2. WORK TO BE DONE
-Retrieve .glb file format food model to the scene
-Retrieve more than one food model to the scen
-Find suitable food model from time to time

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

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_____   _____
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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 8
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Model successful add to the scene and can place at the plane and scene
-Can place multiple model instead of one scene one model

2. WORK TO BE DONE
-Let every model can perform geometric transformation include rotate, scale and transform

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

xiangkai

_____   _____

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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 10
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Model can perform geometric transformation
-Handle same model but perform different transformation

2. WORK TO BE DONE
-Doing documentation for fyp 2
-Finalize application development and do black box testing

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

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_____ _____
      Supervisor's signature   Student's signature

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FINAL YEAR PROJECT WEEKLY REPORT
(Project II)

Trimester, Year: 3,3	Study week no.: 12
Student Name & ID: Chew Xiang Kai 19ACB04731	
Supervisor: Nur Syadhila Binti Che Lah	
Project Title: Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating	

1. WORK DONE
-Black box testing
-Complete fyp2 report

2. WORK TO BE DONE
-Let supervisor to do final checking
-Ready to submit
-Prepare for the presentation

3. PROBLEMS ENCOUNTERED
-No problem encountered in this week

4. SELF EVALUATION OF THE PROGRESS
-Still lack of progress will keep move on

xiangkai

_____   _____
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Poster

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PLAGIARISM CHECK RESULT

Fyp 2

ORIGINALITY REPORT

1%	1%	0%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.coursehero.com Internet Source	<1%
2	forums.tomshardware.com Internet Source	<1%
3	gadgets.ndtv.com Internet Source	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		

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Universiti Tunku Abdul Rahman			
Form Title : Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)			
Form Number: FM-IAD-005	Rev No.: 0	Effective Date: 01/10/2013	Page No.: 1of 1

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

Full Name(s) of Candidate(s)	Chew Xiang Kai
ID Number(s)	19ACB04731
Programme / Course	IA
Title of Final Year Project	Persuasive Augmented Reality Mobile Apps for Kids Healthy Eating

Similarity	**Supervisor's Comments** **(Compulsory if parameters of originality exceeds the limits approved by UTAR)**
Overall similarity index: ___1___ **%** **Similarity by source** Internet Sources: _____1_____% Publications: ___0_____ % Student Papers: ___0_____ %	
Number of individual sources listed of more than 3% similarity: _0_____	
Parameters of originality required and limits approved by UTAR are as Follows: (i) **Overall similarity index is 20% and below, and** (ii) **Matching of individual sources listed must be less than 3% each, and** (iii) **Matching texts in continuous block must not exceed 8 words** *Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.*	

<u>Note</u> Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

_____ _____   _____
  Signature of Supervisor   Signature of Co-Supervisor

  Name: Nur Syadhila Binti Che Lah   Name: _____
_____

  Name: 27/4/2023   Date: _____
_____

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UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY
(KAMPAR CAMPUS)
CHECKLIST FOR FYP2 THESIS SUBMISSION

Student Id	19ACB04731
Student Name	Chew Xiang Kai
Supervisor Name	Nur Syadhila Binti Che Lah

TICK (√)	DOCUMENT ITEMS Your report must include all the items below. Put a tick on the left column after you have checked your report with respect to the corresponding item.
√	Front Plastic Cover (for hardcopy)
√	Title Page
√	Signed Report Status Declaration Form
√	Signed FYP Thesis Submission Form
√	Signed form of the Declaration of Originality
√	Acknowledgement
√	Abstract
√	Table of Contents
√	List of Figures (if applicable)
√	List of Tables (if applicable)
√	List of Symbols (if applicable)
√	List of Abbreviations (if applicable)
√	Chapters / Content
√	Bibliography (or References)
√	All references in bibliography are cited in the thesis, especially in the chapter of literature review
√	Appendices (if applicable)
√	Weekly Log
√	Poster
√	Signed Turnitin Report (Plagiarism Check Result - Form Number: FM-IAD-005)
√	I agree 5 marks will be deducted due to incorrect format, declare wrongly the ticked of these items, and/or any dispute happening for these items in this report.

*Include this form (checklist) in the thesis (Bind together as the last page)

I, the author, have checked and confirmed all the items listed in the table are included in my report.

xiangkai

(Signature of Student)
Date:27/4/2023

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