Healthy Food Intake Advisor Using Decision Support System

Lee Jia Hwee, Deden Witarsyah, Shahreen Kasim, Mohd Farhan Md Fudzee

Abstract: The difficulties to decide the food to eat and do not have enough knowledge that what foods should be avoided when pregnant or when facing some health problem. Healthy Food Advisor is an Android based application which acts as a healthy controller to all of the users. The purpose of developing this application is to suggest healthy food to users based on their personal condition in order to make them have a healthy lifestyle. Users are required to record all of the details such as age, height and weight, so the application and calculate the Body Mass Index (BMI) value and caloric needs to user. Application will recommended the most suitable food lists to users according to their personal condition. Through this application, users no longer need to spend more time to think on a meal and busy to search from online that the nutrition information of food. The methodology used to develop this Android based application is Object-oriented Software Development (OOSD) model. Software technology used to develop this application is Ionic Framework where this technology uses web technology language to develop mobile hybrid application. Database used for this system is Firebase while programming language used to develop this application is AngularJS, HTML, TypeScript and SCSS. Hereby, this application is able to provide a simple and portable solution to help people decide the food and increase the knowledge of the public.

Keywords: Calorie, Decision Support System, Healthy Diet, Android, Object-oriented Software Development.

1. INTRODUCTION

Food is an essential part of human's life. It provides nutritional support for an organism and gives human energy to develop and grow, to think, work, move and learn [1]. In order to stay healthy and productive, the body needs a variety of five nutrients which are protein, carbohydrate, fat, vitamins and minerals. It is very important to human intake of different food according to the healthy eating pyramid and the exact amounts of calorie intake are depending on the age, sex and also lifestyle. Time is money is becoming the new buzzword in today's world. People are now spending more time by running after money than spending time for their personal daily life. Hence, they always eat the instant food or fast-food on a meal. They do not realize the quick food is a slow death and always ignore the importance of food intake.Some of them have no idea about the food intake. Hence, they always eat negligent according to their mood and do not concerned about the calorie intake.

The purpose of this project is to develop an application to suggest and recommend the suitable food list to users in order to make them have a fit manner of living. In order to achieve the above mentioned aim of study, there are three objectives have been set, which are:

1. To design an application for the users with suggestion of food intake based on their individual condition in order to save their time and help them make a decision.
2. To develop Healthy Food Intake Advisor to overcome the calorie intake problem.
3. To test the functionality of the Healthy Food Intake Advisor on meeting the requirement of the project.

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Healthy Food Intake Advisor is an Android based application which is specially design to someone those who have no idea to decide the food they need to eat and those have no enough knowledge about the nutrition information and caloric intake. This proposed application will advise users to eat some healthy food according to their individual condition. Moreover, the user can use this application to record their calories intake and calories burned. In order to maintain the healthy condition user must fully understand that calorie intake. This is because calorie intake too low or even too high, it will have several health problems. Hence, this application can make user realize the calorie intake of their daily life. Some existing food advisor applications in the market are having the equivalent function and features as Healthy Food Intake Advisor. Three of existing food advisor application are chosen to compare in this project. There are Food Advisor [2], OrganicFacts [3] and Healthy Food Advisor [4]. The proposed application is required to register and login before user can access it while the existing applications does not required. User personal detail is required in Food Advisor and proposed application. All of these applications consist of auto-advisor and nutrition information. The speciality of the proposed application is the food suggested to the user is depend on all of the individual condition such as health problem, category of food, nutrient required and many more. For existing applications, it just depends on health problem or the nutrient needed. For the proposed application, it have three unique functions compare to others application. The unique functions for proposed application are can let user to record the daily food intake and record the daily exercise in order to calculate the calories burned. The proposed application also can let users to calculate their net calorie and recommended some suitable exercises for user in helping them to burn the excess calories in their body. User can also refer back to the history for food intake. Ionic framework is used for implementing Healthy Food Intake Advisor and which is built using the AngularJS and web technologies language such as HTML, SCSS and TypeScript. Firebase is used in developing the database.

2. IMPLEMENTATION

Analysis and design of application is the main component in the development of applications.

2.1 Use case diagram

Use case diagram can illustrate the views of the application from the user perspective and also the interactions between the application and user [5].

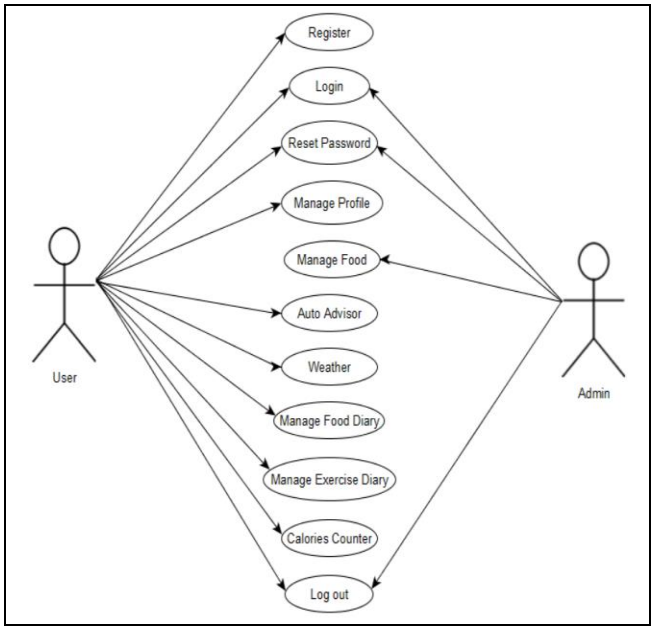

Figure 1.0: *Use Case Diagram*

Figure 1.0 shows the overall activities that work in the Android based Healthy Food Intake Advisor application. There are a total of eleven use cases and two actors in the use case diagram. The actors are played by the user and admin to show the actions can be done. Users are required to register and login to this application. Users are able to reset their password. Users are required to create, display and update their profile. Besides that, users are required to select their personal detail and option so that the application can suggest the more suitable food to users according to their selection. Users are able to search the location and get the current temperature for that location. Application will provide some reference of food to user based on the current temperature. Other than that, user is able to manage their food diary and exercise diary. User is able to calcu-late their net calories and also log out from this application. While for the admin, they also able to login to this application and also reset the password. Admin also able to manage the food such as create new type of food, update the existed food and delete the food

2.2 Flowchart

Flowchart is about demonstrating the overall steps in a procedure [6].

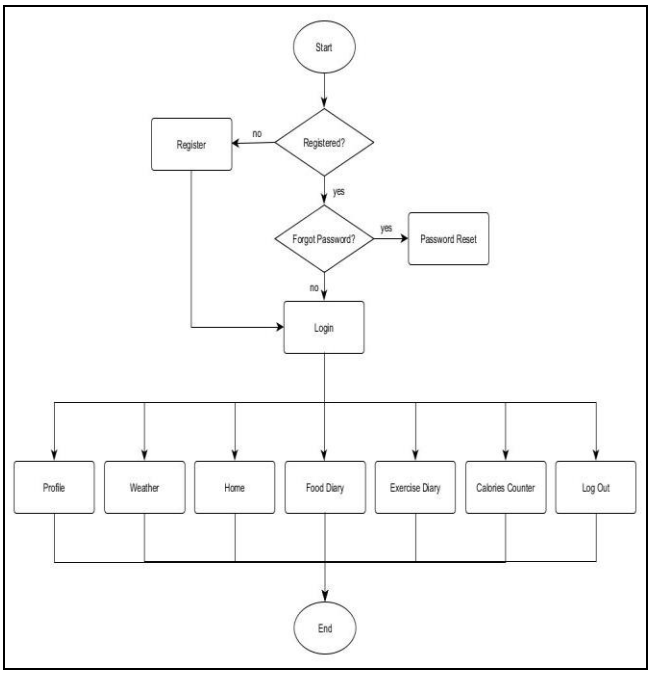

Figure 2.0*: Flow chart of user*

Figure 2.0 illustrates the flowchart diagram of the Healthy Food intake Advisor. Users will need to register and login first before they can proceed to use the application. If users forgot their password, they are required to reset their password in order to get access to the application. Once logged in, users will be redirected to the home page. Inside home page, user is able to choose the option they need, so that a food list will provided based on the selection. Users are also able to search the location in order to get the current temperature for that location. A food list is provided based on the weather displayed. User can create, display and edit their profile. Users are able to record their daily food intake in the Food Diary and record their exercise intake in the Exercise Diary. Users are able to calculate their net calories in the Calories Counter option. If they are done with the application, they can choose to logout from the application.

2.3 Interface of the application

Figure 3.0 show the user interface for the Home page. Users are able to choose the option such as category, health status, nutrition and calories of food, so that the application can recommended the suitable food list to user based on their selection.

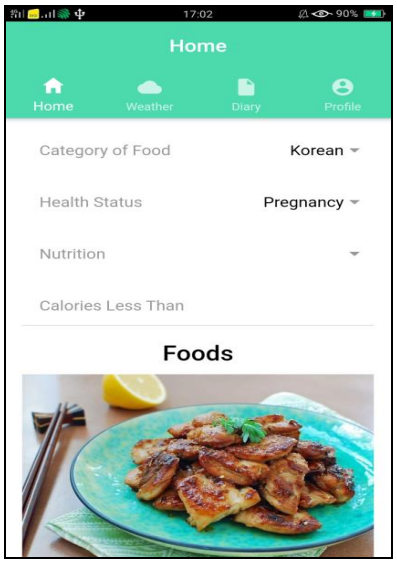

***Figure 3.0**: Home page of Healthy Food Intake Advisor*

Figure 4.0 show the user interface of Nutrition Information page. After the food list provided, users are able to view the nutrition information by click their prefer food.

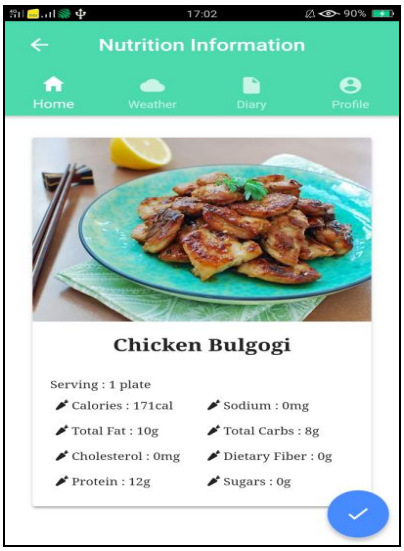

***Figure 4.0:** Nutrition Information page of Healthy Food Intake Advisor*

Figure 5.0 and Figure 6.0 show the user interface of Weather page. Users are able the search their location. After that, the can get the current weather for that location. Users are able to click the button to get the food lists based on the weather displayed.

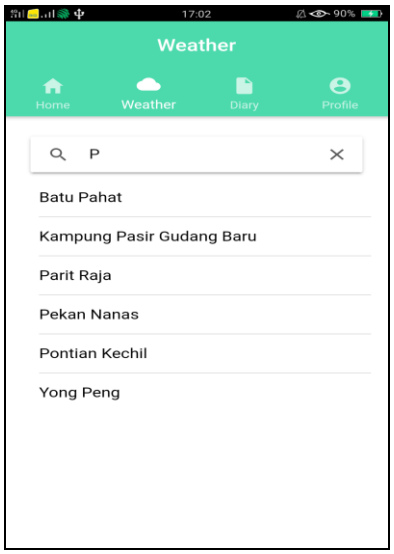

***Figure 5.0:** Weather page of Healthy Food Intake Advisor*

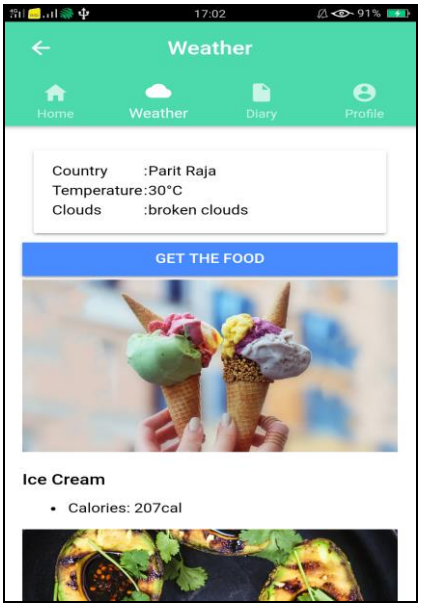

***Figure 6.0**: Weather page of Healthy Food Intake Advisor*

3. RESULT AND TESTING

The purpose of unit testing is to ensure the programming coding for each module in the system meets the need and functions as expected. Error in each module is detected and repaired separately.

TABLE 1
UNIT TEST PLAN FOR USERS

Test Case	Expected Output	Actual Output
User successfully register as a member	User will be redirect to the page that need to fill in the personal detail	Success
User successfully login at the login page	User will be redirect to the home page	Success
User logout from the system	User will be redirect to the login page	Success
User successfully select	A food list will be provided	Success

the option based on each category	based on the selection	
User successfully select the multi option based on each category	A food list will be provided based on the selection	Fail
User click “Weather”	User will be able to search the location	Success
User click “Profile”	User will be able to view and edit their profile	Success
User click “Food Diary”	User will be able to record, view and delete their food intake	Success
User click “Exercise Diary”	User will be able to record, view and delete their exercise intake	Success
User click “Calories Counter”	User will be able to calculate the net calories	Success

Table 1.0 shows the unit test plan for user. The purpose of unit testing for user is to ensure the Healthy Food Intake Advisor acquires the needs and its functionality. Each module for the user is tested to make sure there is no error happen in system. In this table, it showed 1 failure. This failure because each category only can have on selection, multi selection is not provided.

4. CONCLUSION

As a conclusion, Healthy Food Intake Advisor will bring conven-ient to users especially for those who have health problem. They can save time and escape from busy to do research about which food they should avoid it.

ACKNOWLEDGMENT

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