

Development of Cook Based On the Fridge System

Koh Kar Men¹, Noryusliza Abdullah^{1*}

¹Faculty of Computer Science and Information Technology,
Universiti Tun Hussein Onn Malaysia, Parit Raja, 86400, MALAYSIA

*Corresponding Author Designation

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Abstract: Cook based on the fridge system is a recipe discovery system that offered a personalized menu of recipes you can make using the ingredients you have at home. This can help users save time searching for recipes on the Internet. In addition, users can avoid food waste for food that may not last long, such as vegetables and fruit. By using this method, users can gain benefits by not spending time looking for similar recipes on the Internet and recipe books containing the ingredients they have. This system can help users to list down the ingredients they need to buy in the shopping list part. A grocery store locator in the system can help users to spot the nearest grocery store or supermarket to purchase the ingredients. The agile model is used in the process of system development. Tools used to develop in this system are Brackets and XAMPP while the languages used to develop in this system are HTML, CSS, JavaScript and PHP.

Keywords: Cook Based on The Fridge System, Recipe, System

1. Introduction

In several ways, food varies, such as ingredients, cuisine, course, nutrition and taste. Food variation contributes to multiple food preferences, which have a direct influence on our healthcare and social lives [1]. First, food waste, including fresh fruit, fresh vegetables, meat and fish, drinks, bakeries, dairy and eggs, meals, and others, can be categorized into eight forms. In all processes, food waste is produced, starting from pre-purchase, purchase, storage, preparation and consumption. Uncooked and unprocessed fruits and vegetables are likely to have a short period of usability (5-14 days) [2]. Second, if the needed information is being shared through several websites, searching for information on the Web may become challenging. The end user has to submit different queries to a search engine to find the information needed, browse through the results, collect and compile the required information fragments outside of the web pages found [3]. For example, people who have purchased recipe books need time to look for the ingredients they have for the recipes. It also takes some time to look for recipes on the Internet because some of the recipes do not have the ingredients they have. Moreover, obesity and overweight are the main disease public health issues not only in western countries but also in Asian countries due to the rising incidence and the associated morbidity and mortality at an incredible rate.

The aim of this project is to develop a recipe generate system that can help target users cook their food based on the limited ingredients they have in the fridge. The following objectives are set and shown below to achieve this project aim:

- i. To design a cook based on the fridge system based on client-server approach
- ii. To develop matching list recipe based on the selected ingredients for (i)
- iii. To perform alpha and beta testing for the developed system

2. Related Work

2.1 Domain Background of Recipe System

One or more software programs that are used to automate an object conversion to media such as a website recipe are included in a component list, for example, a recipe list. The list of components may be translated to a list of shopping items, such as a grocery list. A recipe web page contains recipes in one example. Users choose one or more of the recipes. The application produces a list of recipe components. There are currently online recipe management services available. The system transforms selected recipes into one or more grocery lists automatically. The list of grocery stores may be used by the consumer to acquire and buy items by hand in a grocery store. Alternatively, for an electronic shopping service, one or more grocery lists can be used as input [4].

2.2 Review on Existing System

There is an existing recipe system which is Tasty, Eat at Home Cooks and Recipe that Crock system. These three existing systems are chosen to make a comparison with the proposed system which is cook based on the fridge system as shown in Table 1. Tasty is a recipe website that provides food videos with instructions for every step when preparing the dish. Users can add a filter such as a dinner, brunch, and any dietary restrictions after searching the ingredients. Eat at Home Cooks focus on recipes that are easy to cook for busy people. Recipe that Crock provides three choices of categories for the user to find their recipes which are the recipe type, ingredient, and the popular when the user clicks on the “Find A Recipe”. For the proposed system, only the payment features are not included.

Table 1: Review on Existing System

Features/ Systems	Tasty	Eat at Home Cooks	Recipe That Crocks	Proposed System
Log In	No	Yes	Yes	Yes
Search Recipe by Ingredients	Yes	Yes	Yes	Yes
Search by category	Yes	Yes	Yes	Yes
Shopping List	No	No	No	Yes
Store Locator	No	No	Yes	Yes
Payment	No	Yes	No	No
Feedback	Yes	Yes	Yes	Yes
Submit Recipes	Yes	No	No	Yes

3. Methodology

The agile model SDLC is used in this project. The word "agile" means "move fast". An adaptive team of Agile Methodology can meet the changing requirements. The ability to meet changing project requirements is essential to the advantages of an agile model. There is no guesswork between the production team and the client, as the customer meets face to face and continues to provide feedback [5]. It is one of the latest models used in the SDLC. The agile technique is defined as iterative and gradual. In short iterations, the software is created which results in small incremental releases with new functionalities. Each iteration follows the SDLC phases for the creation of each user story within a given sprint to ensure the software product's quality [6].

The first phase is the requirement for the project. In this phase, the requirement needs to be determined before start designing the project. All the required data need for this project need to be collected to develop the system. User requirements and the scope of the project need to be determined first before developing the project. Then, the problem of the existing system is identified. Second, a wireframe will be created in the design phase to get an idea or a picture in designing the system. The database is designed in the design phase to store the information of data. The third phase is developing and coding the system. Programming languages used to develop this system are HTML, CSS, JavaScript, and PHP. Software used in this project is Bracket and XAMPP. A test plan will be developed based on the predefined software requirement in the integration and testing phase. Users need to input the test data to check whether the output is expected. The system needs to be fixed if the output is under expectation. In the implementation and deployment phase, the system supposed to be function well and fulfil the user requirement. The last phase is the review stage to check whether it meets the user requirement or not.

4. Results and Discussion

The results and discussion section presents the Analysis and Design and System Implementation of the system. The Analysis and Design section organizes based on the Flowchart Diagram, Data Flow Diagram, and Entity Relationship Diagram (ERD). The System Implementation section presents the modules of the system.

4.1 Analysis and Design

4.1.1 Flowchart Diagram

Figure 1 shows the flowchart diagram for cook based on the fridge system. This activity will be authorized by the admin and user. In the admin part, the admin is required to register and log in to their account before they go to the homepage. After login, the admin can add, update, delete and view the recipe submitted by the users.

For the user part, the user is required to register and log in to their account before going to the homepage. Then, the user can search the recipes by ingredients and category after login. Users can add ingredients they lack for the recipes into the shopping list. Then, users can search the nearest grocery store location to buy their ingredients. Last, user can submit their recipe into the system if they wish to share their recipes.

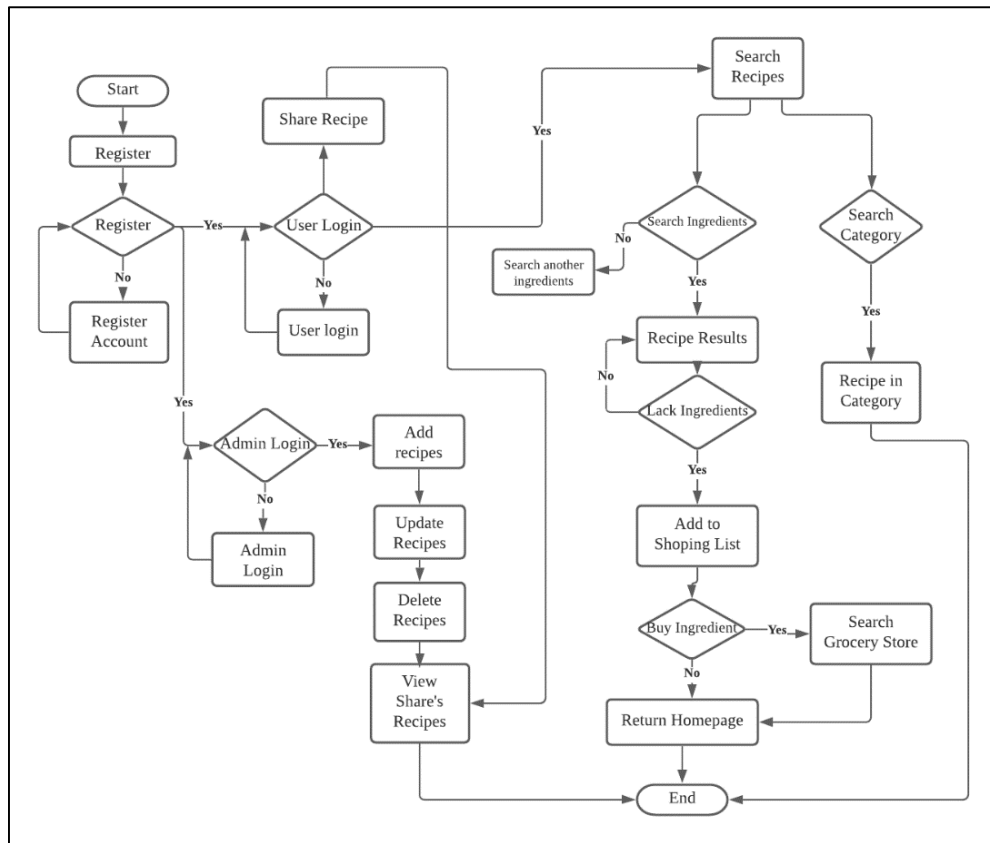


Figure 1: Flowchart Diagram

4.1.2 Data Flow Diagram

Data Flow Diagram shows the overview of data flows and processes involved in the system. Figure 2 shows the context diagram of the system and Figure 3 shows the Data Flow Diagram Level 0.

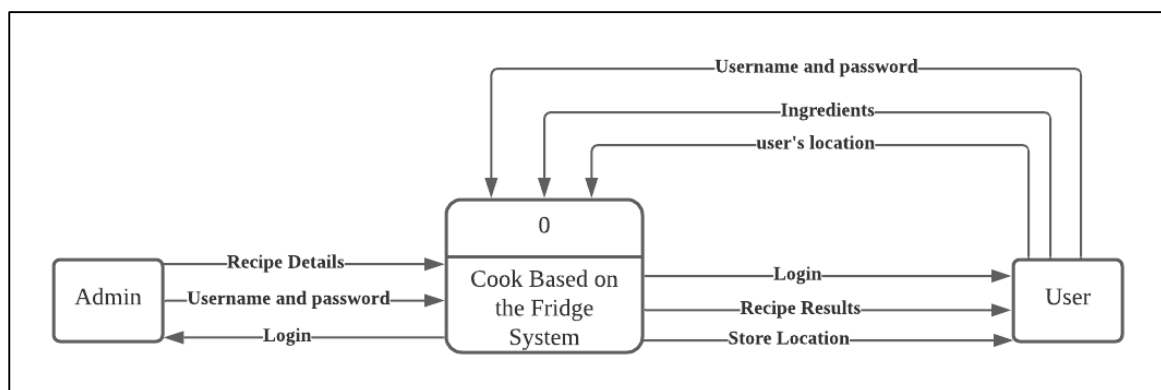


Figure 2: Context Diagram

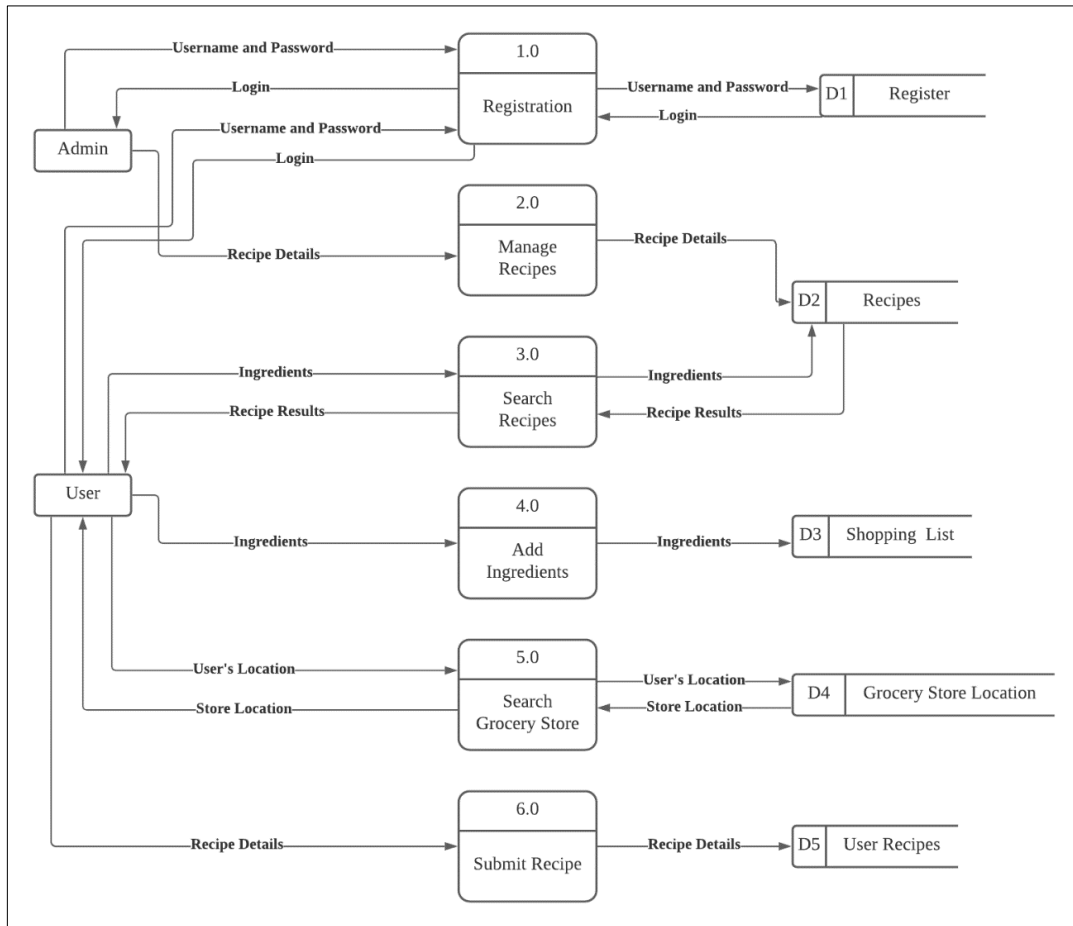


Figure 3: Data Flow Diagram Level 0

4.1.3 Entity Relationship Diagram (ERD)

The Entity Relationship Diagram (ERD) indicates that the real world is a set of entities, their relationships, and their characteristics. ERD offers not only a modelling function but also the basis for a secure and quality database design with its well-defined semantics [7]. Figure 4 shows the entity relationship diagram which consists of entities, attributes, and their relationships.

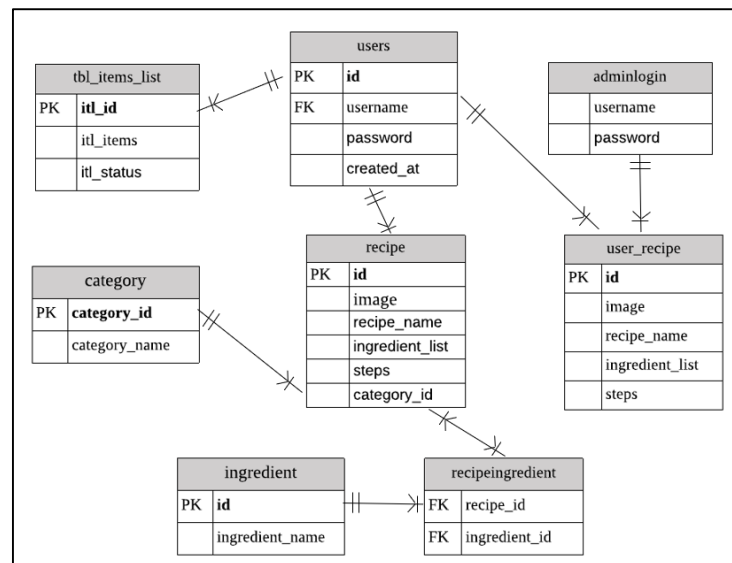


Figure 4: Entity Relationship Diagram (ERD)

4.2 System Implementation

Cook based on the fridge system is a system that generates recipes based on ingredients for the user to save time. Modules in this system will be explained in the following which is Register and Login Module, Generate Recipe Module, Shopping List Module, Grocery Store Locator Module, User Feedback Module, Admin CRUD Recipe Module, and Admin View Recipe Submitted Module.

4.2.1 Implementation of Register and Login Module

Figure 5 and 6 shows the sign-up form and login form. Users are required to enter their username and password before proceed to the homepage. The register button only for user registration only. For admin, they can log in to the system with the username and password provided.

Sign Up
Please fill this form to create an account.

Username

Password

Confirm Password

[Admin Login](#)
Already have an account? [Login here.](#)

Figure 5: Registration Form Page

Login
Please fill in your credentials to login.

Username

Password

[Admin Login](#)

Don't have an account? [Sign up now.](#)

Figure 6: User Login Page

4.2.2 Implementation of Generate Recipe Module

Figure 7 shows the user's homepage. Users can select the ingredient they have by clicking the checkbox and click the submit button. Then, the recipe will be generated based on the ingredient. Users can click on that recipe to view the recipe details. Next, there are 23 types of categories for users to choose from as shown in Figure 8. Users can click on the category they want to view the recipe.

Cook Based
On The Fridge

Home | Recipe by Category | Shopping List | Store Locator | Share your Recipe | Log Out | Reset Password

Hi, user. Welcome to our site.

Select Your Ingredients Here

Dairy
 Butter Egg Milk Parmesan
 Cream Cheese Yoghurt
 Whipped Cream Condensed Milk

Vegetables
 Onion Garlic Ginger Tomato Lettuce
 Potato Carrot Broccoli Corn Mushroom
 Cucumber
 Sweet Potato Cabbage Cauliflower Pumpkin
 Eggplant Yam

Recipes

Message! Select your ingredients in the list and click submit to get the recipe!

Figure 7: User Homepage

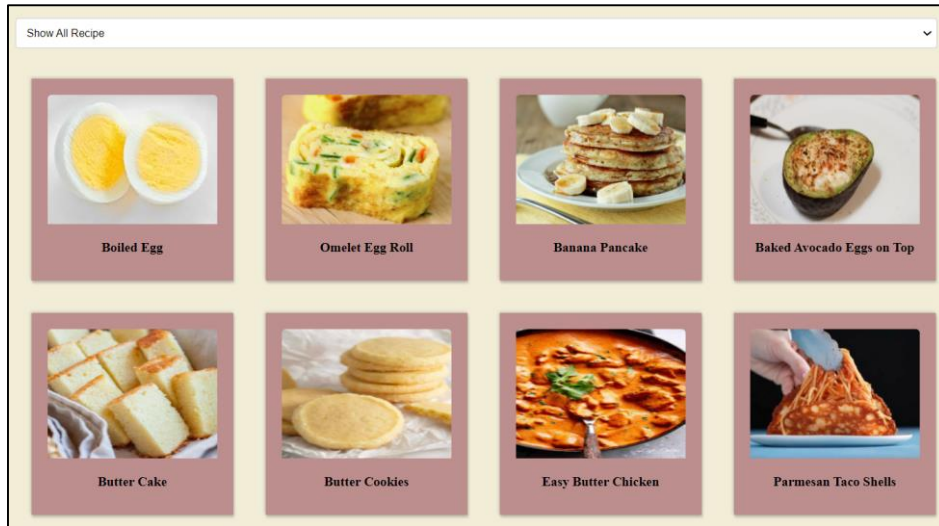


Figure 8: Recipe Filter by Category Page

4.2.3 Implementation of Shopping List Module

Figure 9 shows the shopping list page. Users can click on the Add New Item button to add the ingredient. Users also can click the cross button to delete the desired ingredient. If the user wishes to clear all the ingredients in the list, the user can click the Clear List button. Users can check the checkbox when they had bought the ingredients.

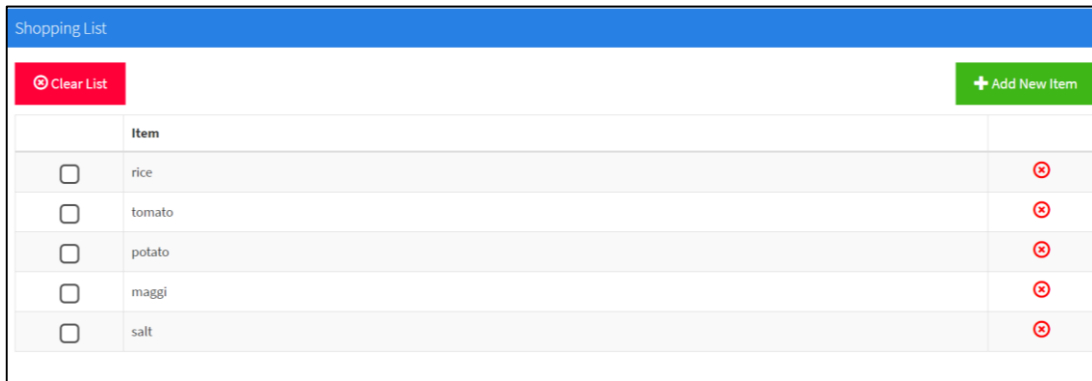


Figure 9: Shopping List Page

4.2.4 Implementation of Grocery Store Locator Module

Users can enter the address location in the textbox as shown in Figure 10. The nearby grocery store is generated based on the user's address. The nearby grocery store will be shown in a list on the left-hand side. Users can click on the icon to view the address, rating, and website of the grocery store by clicking on the icon.

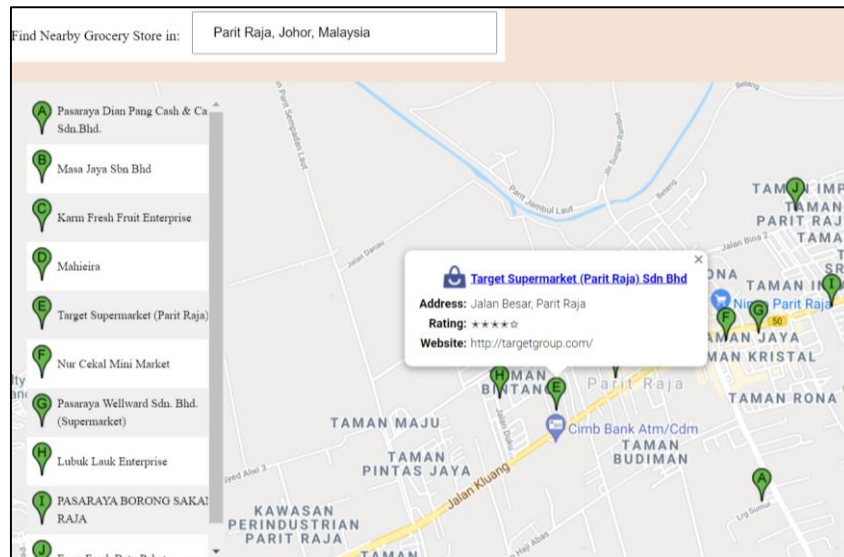


Figure 10: Grocery Store Locator Page

4.2.5 Implementation of User Feedback Module

Users can insert the image, recipe name, ingredient list, and the steps of the recipe and share the recipe as shown in Figure 11.

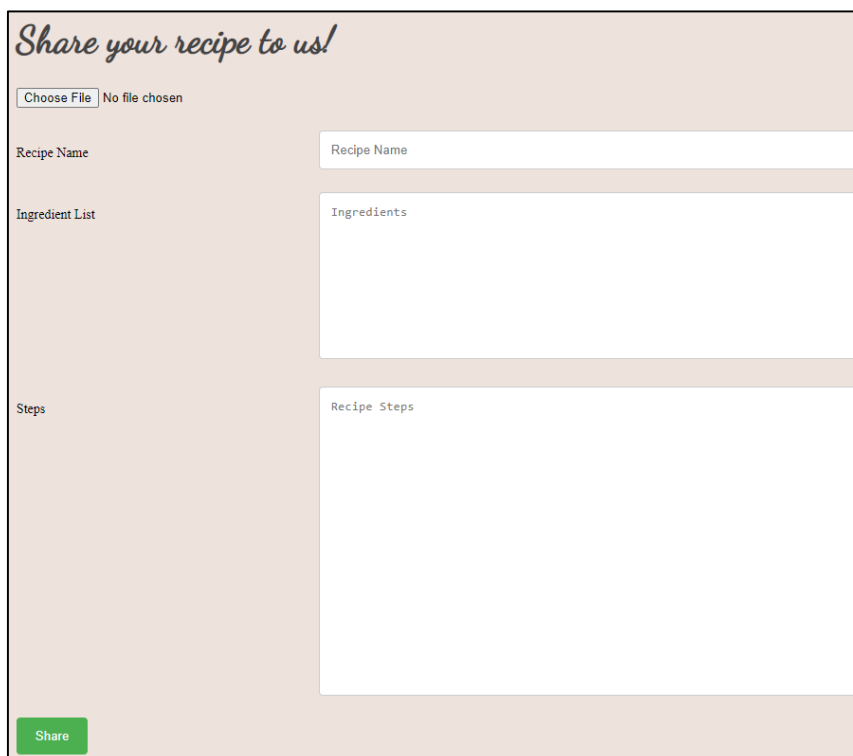


Figure 11: Share Recipe Page

4.2.6 Implementation of Admin CRUD Recipe Module

Figure 12 shows the admin homepage. Admin can view the recipe from the database. If the admin wishes to edit or delete the particular recipe, they can click on the edit or delete button. Next, the admin can view the recipe from a user who shares their recipe and submitted into the system as shown in Figure 13.


Welcome Admin							
Id	Recipe Image	Recipe Name	Ingredient List	Steps	Category ID	Edit	Delete
1		Boiled Egg	Eggs Water	1) Fill a small, medium or large pan 3/4 full with tapwater (depending on how many eggs you desire to cook). 2) Place on the stove over High heat. 3) Once water reaches a boil, place desired quantity of eggs in the water using a Tablespoon or measuring cup. Turn heat down to med-high to prevent overflow. 4) Let eggs BOIL for 5 minutes then SHUT THE HEAT OFF and let them sit in the hot water for 15 more minutes. 5) After 15 minutes, run cold water into the pan until only cool water is left.	1	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Figure 12: Admin Homepage



User Feedback				
Id	Recipe Image	Recipe Name	Ingredient List	Steps
1		grape jam	testing	testing
2		baked avocado egg	banana	testing testing

Figure 13: View Recipe Submitted Page

5. Conclusion

The cook based on the fridge system is used to generate a recipe based on the ingredients for a user to save time. The system can be able to generate the recipe based on the ingredient selected or by category. Users can be able to view the recipe based on the ingredient selection. The user can add the ingredient they lack into the shopping list. Users can also use the grocery store locator to find a nearby grocery store to purchase their ingredients. Through this system, the admin can also add, update, delete and view the recipes from the database. In the future, the system can be improved by connecting with the mobile application to make it more useful for users. Second, the system can also add the comment or feedback section below the recipe to let the user share their opinions. Last, the system can improve by generating the recipe by ingredients more intelligently.

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