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# **KHABO - Your Culinary Companion**

## **CSE 326 : Information System Design**

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# Chapter 1

## Motivation

In today's fast-paced world, where convenience often takes precedence over health and financial considerations, the habit of cooking at home has been gradually eroding. The convenience of ordering food from outside restaurants or opting for ready-made meals has become the norm, leading to several concerning issues. To address these concerns, we have undertaken the development of a software project, "KHABO" aimed at promoting and facilitating home cooking. Our motivation behind this project can be succinctly summarized in the following key points:

### 1.1 Health and Hygiene Concerns

One of the foremost reasons for our project's motivation is the alarming rise in health and hygiene issues associated with consuming food from outside establishments. Numerous reports of foodborne illnesses, substandard hygiene practices, and low-quality ingredients have raised significant concerns among consumers. By encouraging home cooking, we aim to empower individuals to take control of what they eat, ensuring the highest standards of hygiene and nutrition.

### 1.2 Economic Benefits

Eating out or ordering from restaurants can significantly strain one's finances over time. The cost of restaurant meals, delivery fees, and service charges add up quickly, making it a financially unsustainable option for many. Our project seeks to motivate individuals to cook at home, which not only promotes healthier eating but also offers substantial cost savings in the long run. By cooking at home, individuals can better manage their food budgets and allocate their resources more effectively.

### **1.3 Culinary Exploration and Creativity**

Cooking is not merely a necessity but also an enjoyable and fulfilling activity. Many individuals have a passion for cooking and take immense pleasure in experimenting with new recipes and flavors. Our project aims to tap into this intrinsic motivation by providing a platform where users can explore a diverse range of recipes, discover new culinary horizons, and develop their cooking skills as a rewarding hobby.

### **1.4 Sustainable Living**

The environmental impact of the food industry, including food packaging waste and emissions from transportation, cannot be ignored. By cooking at home, individuals can make environmentally conscious choices, reduce waste, and contribute to a more sustainable way of living. Our project encourages users to embrace eco-friendly practices by promoting home-cooked meals.

### **1.5 Ingredient Sourcing Efficiency**

We recognize that one of the barriers to cooking at home is the perceived inconvenience of acquiring ingredients. To address this challenge, our project offers a unique feature that intelligently suggests shops where users can find missing ingredients at the most competitive prices. This feature not only simplifies the shopping process but also demonstrates our commitment to making home cooking accessible and affordable.

In summary, our project aims to rekindle the tradition of home cooking by addressing health, financial, and environmental concerns while celebrating the joy of culinary exploration. By providing a user-friendly platform for recipe search and cost-effective ingredient sourcing, we hope to motivate individuals to embrace the practice of cooking at home, ultimately leading to healthier, happier, and more sustainable lives.

## Chapter 2

# System Overview

KHABO is a multifaceted project that encompasses various modules, each meticulously designed to cater to the diverse needs of culinary enthusiasts and home cooks. Here is an overview of the modules that will constitute KHABO's comprehensive feature set:

### 2.1 Ingredient Scraper Module

- Manually curates a list of websites for ingredient purchases.
- Extracts data about ingredient type, name, and unit price.
- Regularly updates the data to ensure accurate pricing information.

### 2.2 Recipe Storage Module

- Scrapes recipes along with ingredients and stores them in a database.
- Accepts community-generated recipes for a diverse recipe collection.

### 2.3 Cheapest Ingredient Module

- Provides a list of shops selling a specific ingredient.
- Calculates the total cost intelligently, considering factors such as availability, discounts, and delivery time.

### 2.4 Ingredients to Recipe Module

- Analyzes available ingredients and suggests suitable recipes.

## **2.5 Recipe Visualizer Module**

- Presents recipes in an appealing and user-friendly manner.
- Includes step-by-step instructions and visual aids to enhance cooking experiences.

## **2.6 Smart Ingredient Replacement Module**

- Detects ingredient shortages and recommends suitable substitutes.

## Chapter 3

# Requirement Analysis using BPMN Diagram

### 3.1 Feedback Acknowledged

- Original BPMN diagram had an Admin pool which would facilitate user recipe submission evaluation to store them to recipe database. Upon recommendation from advisors, we have dropped the Admin pool and added machine learning (ML) based recipe evaluation lane in the Server pool for faster submission-to-recipe-addition time.

### 3.2 Pools and Lanes

- User
  - Recipe Search
  - Recipe Proposal
  - Recipe Selection
- Server
  - Pending Recipes Handler
  - Recipe Filter
  - Shops Suggester
  - Recipe Scraper
  - Ingredient Scraper
  - Recipe by Ingredients Handler
  - ML based recipe evaluation



### 3.3 Full BPMN

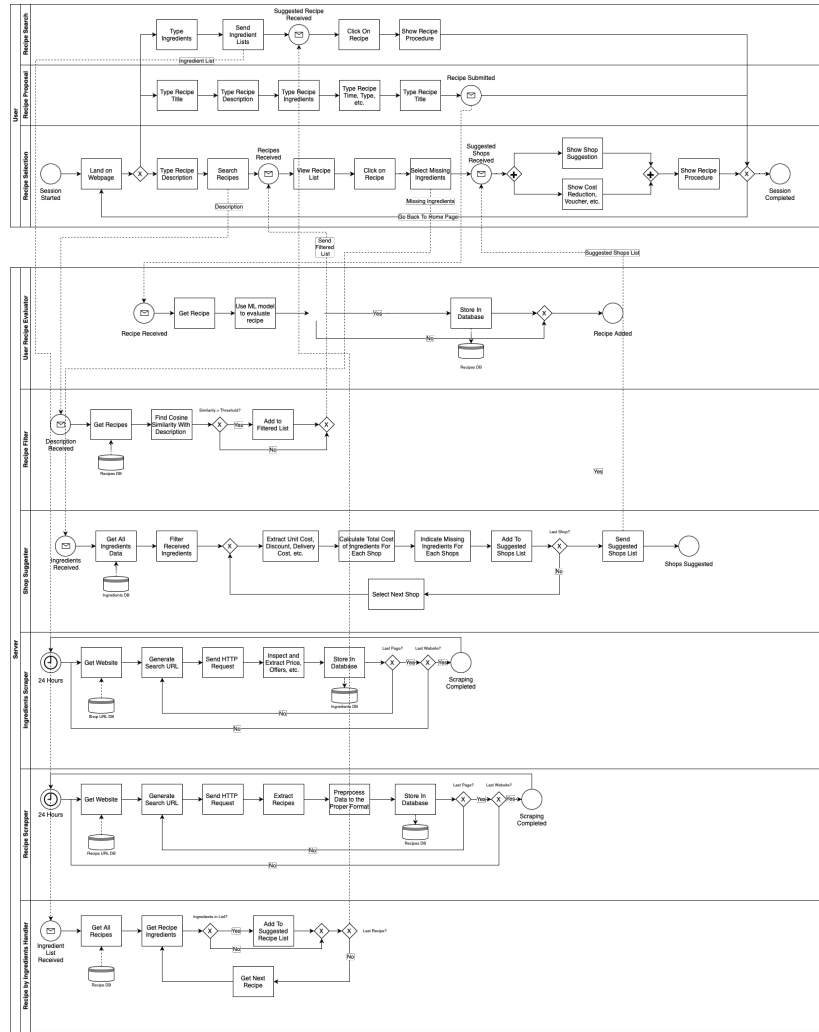


Figure 3.1: Full BPMN Diagram

## 3.4 User Pool

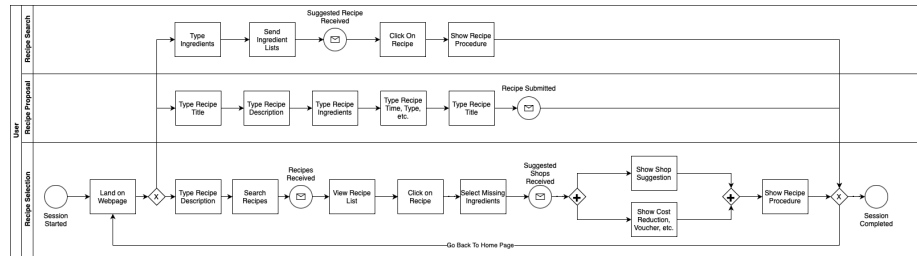


Figure 3.2: User Pool of BPMN

### 3.5 Server Pool

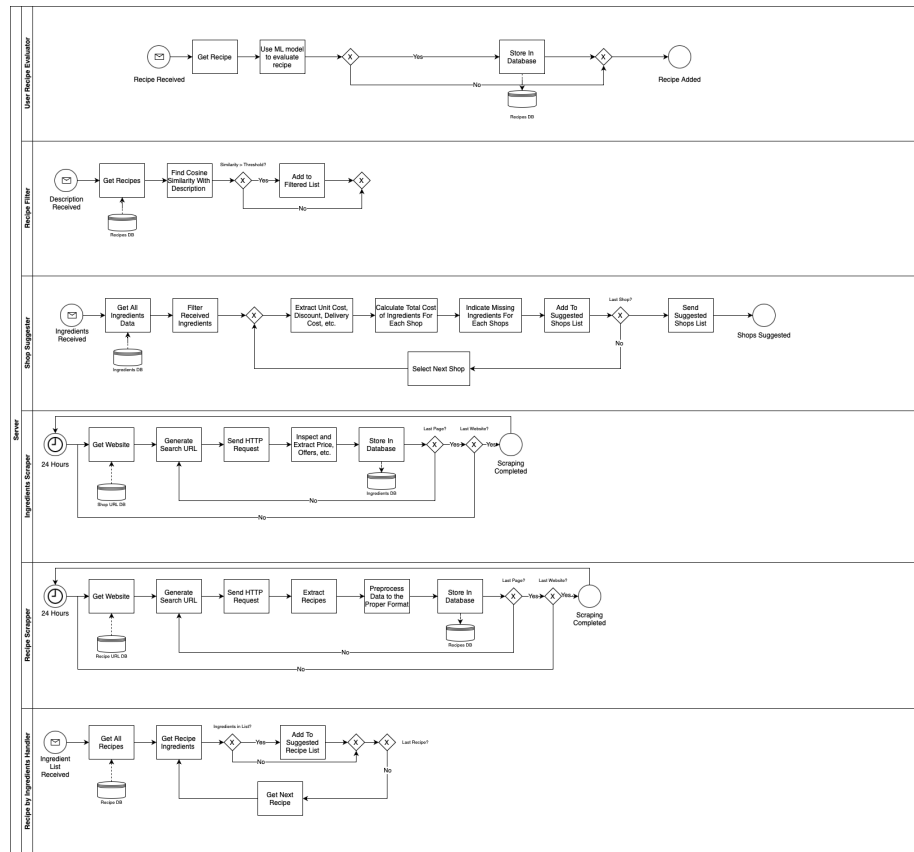


Figure 3.3: Server Pool of BPMN

## 3.6 Lanes of User Pool

### 3.6.1 Recipe Search

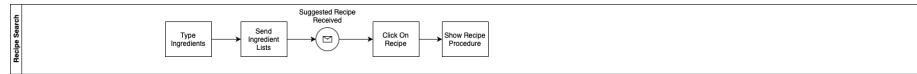


Figure 3.4: Recipe Search By User

### 3.6.2 Recipe Selection

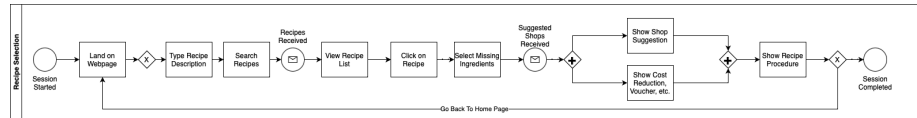


Figure 3.5: Recipe Selection by User

### 3.6.3 Recipe Proposal

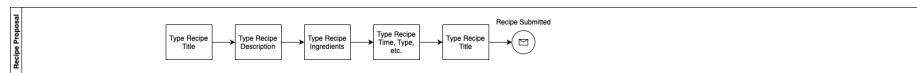


Figure 3.6: Recipe Proposal by User

## 3.7 Lanes of Server Pool

### 3.7.1 Ingredient Scraper

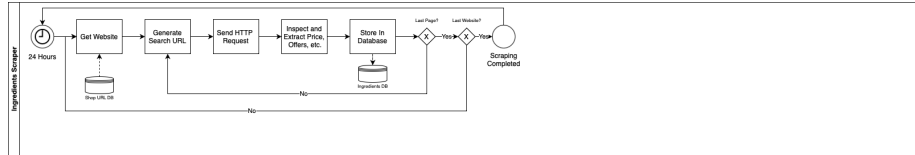


Figure 3.7: Ingredient Scraper

### 3.7.2 Recipe Scraper

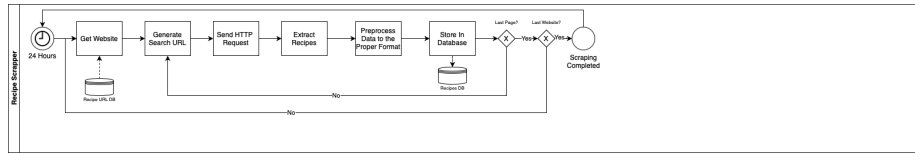


Figure 3.8: Recipe Scraper

### 3.7.3 Recipe By Ingredients Handler



Figure 3.9: Recipe By Ingredients Handler

### 3.7.4 User Recipe Evaluator

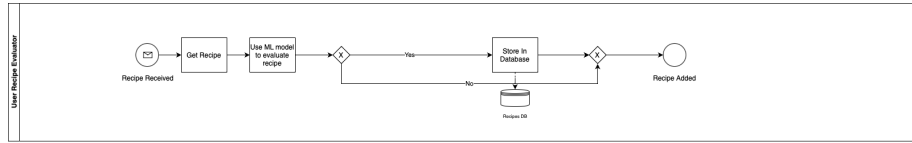


Figure 3.10: Recipe Evaluation

### 3.7.5 Recipe Filter



Figure 3.11: Recipe Filter

### 3.7.6 Shop Suggester

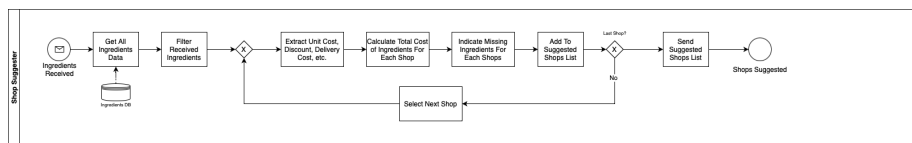


Figure 3.12: Shop Suggester

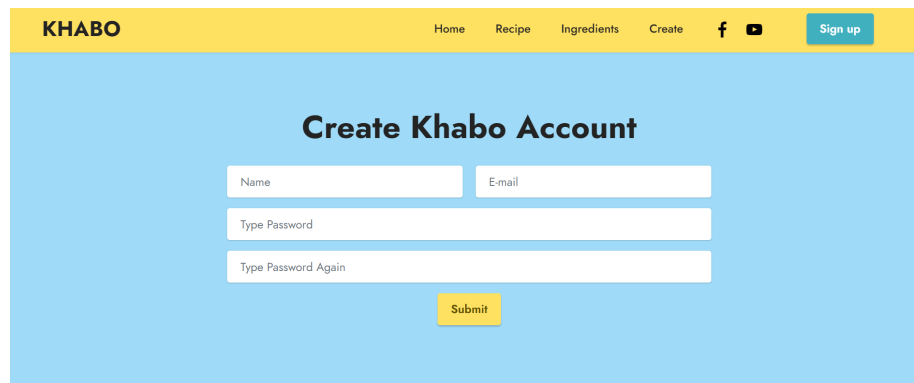
## Chapter 4

# MOCK UI

### 4.1 Feedback Acknowledged

- User Feedback feature has been added in the implemented modules.
- Detailed recipe steps have been introduced in the implemented modules.

### 4.2 Sign Up Page



The image shows a mock UI for a sign-up page. At the top, there is a yellow navigation bar with the text "KHABO" on the left. To its right are links for "Home", "Recipe", "Ingredients", and "Create". Further right are social media icons for Facebook and YouTube, and a blue "Sign up" button. Below the navigation bar is a light blue background area. In the center of this area, the text "Create Khabo Account" is displayed in bold. Below this text are four input fields: "Name", "E-mail", "Type Password", and "Type Password Again". Each input field is a white rectangle with a thin grey border. Below these input fields is a yellow "Submit" button.

Figure 4.1: MOCK UI for Sign Up

## 4.3 Home Page

### 4.3.1 Header and Menu



Figure 4.2: MOCK UI for Home page (Part 1)

### 4.3.2 Features

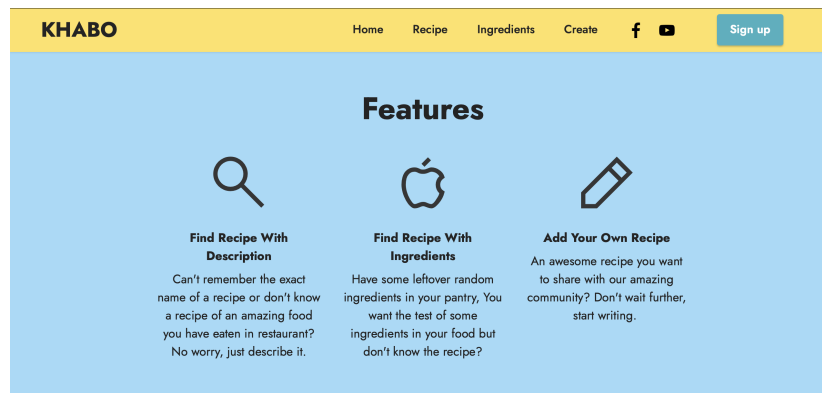


Figure 4.3: MOCK UI for Home page (Part 2)



### 4.3.3 Popular Recipes

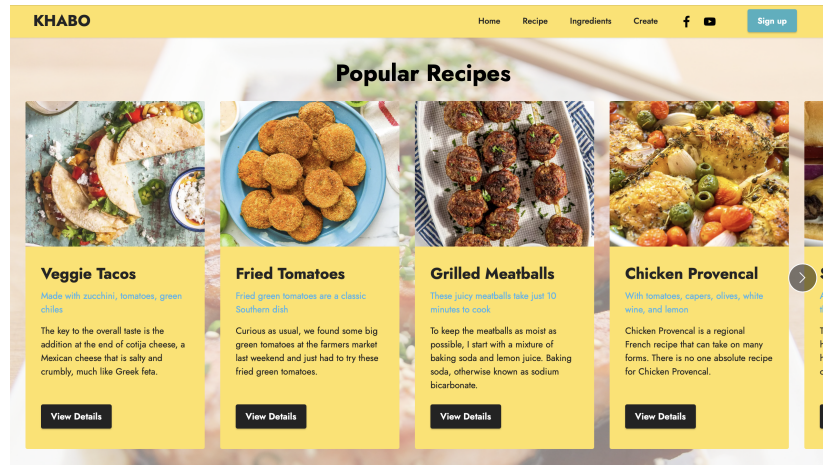


Figure 4.4: MOCK UI for Home page (Part 3)

### 4.3.4 Stats and Footer

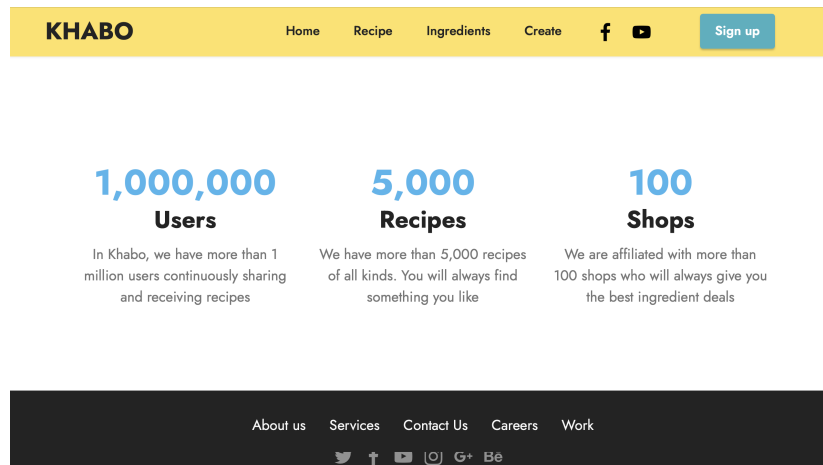
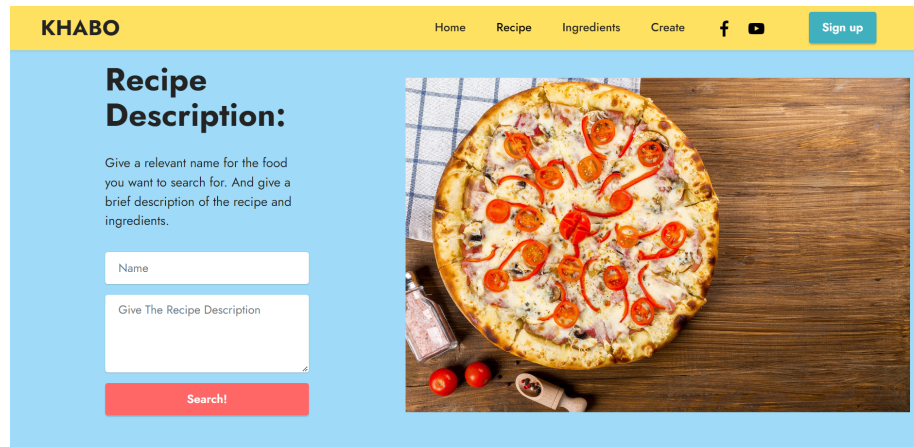


Figure 4.5: MOCK UI for Home page (Part 4)

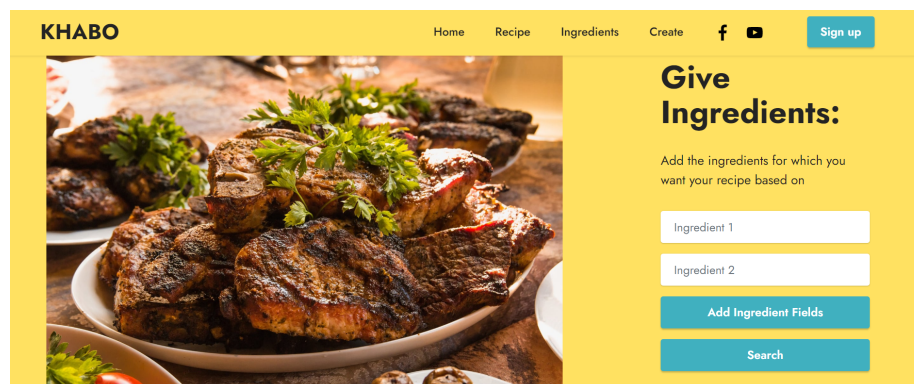
## 4.4 Search By Recipe Details



The mock UI for searching by recipe details features a yellow header with the 'KHABO' logo and navigation links for Home, Recipe, Ingredients, and Create. Social media icons for Facebook and YouTube are also present, along with a 'Sign up' button. The main content area has a light blue background. On the left, under the heading 'Recipe Description:', there is a text prompt: 'Give a relevant name for the food you want to search for. And give a brief description of the recipe and ingredients.' Below this are two input fields: 'Name' and 'Give The Recipe Description'. A red 'Search!' button is at the bottom of the form. On the right, there is a large image of a pizza topped with tomatoes and peppers on a wooden surface.

Figure 4.6: MOCK UI for Searching By Recipe Details

## 4.5 Search By Ingredients




The mock UI for searching by ingredients features a yellow header with the 'KHABO' logo and navigation links for Home, Recipe, Ingredients, and Create. Social media icons for Facebook and YouTube are also present, along with a 'Sign up' button. The main content area has a yellow background. On the left, there is a large image of a plate of grilled fish with herbs. On the right, under the heading 'Give Ingredients:', there is a text prompt: 'Add the ingredients for which you want your recipe based on'. Below this are two input fields: 'Ingredient 1' and 'Ingredient 2'. There are two buttons: a blue 'Add Ingredient Fields' button and a blue 'Search' button.

Figure 4.7: MOCK UI for Searching By Ingredients

## 4.6 Search Results


### Found Recipes

Here is all the recipes we have found with your description:




**Chicken Provencal**

Chicken Provencal is a regional French recipe that can take on many forms. There is no one absolute recipe for Chicken Provencal. [Read more..](#)




**Fried Tomatoes**

Curious as usual, we found some big green tomatoes at the farmers market last weekend and just had to try these fried green tomatoes. [Read more..](#)




**Meat Balls**

To keep the meatballs as moist as possible, I start with a mixture of baking soda and lemon juice. [Read more..](#)



**Veggie Tacos**

The key to the overall taste is the addition at the end of cotija cheese, a Mexican cheese that is salty and crumbly, much like Greek feta. [Read more..](#)



**Smashburger**

The Smashburger is cooked over high heat with a lot of pressure, which helps the beef develop a deep, rich crust. [Read more..](#)

Figure 4.8: MOCK UI for Viewing Search Results

## 4.7 Recipe Page

### 4.7.1 When Searched By Details

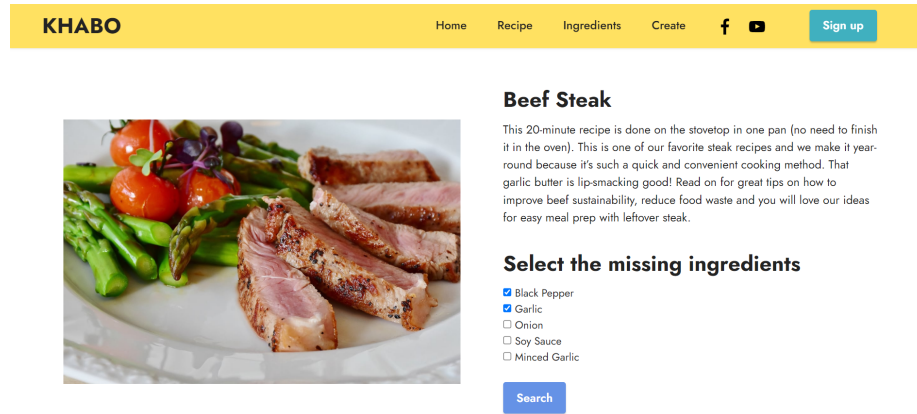


Figure 4.9: MOCK UI for Viewing a Recipe When User Search by Details

### 4.7.2 When Searched By Ingredients

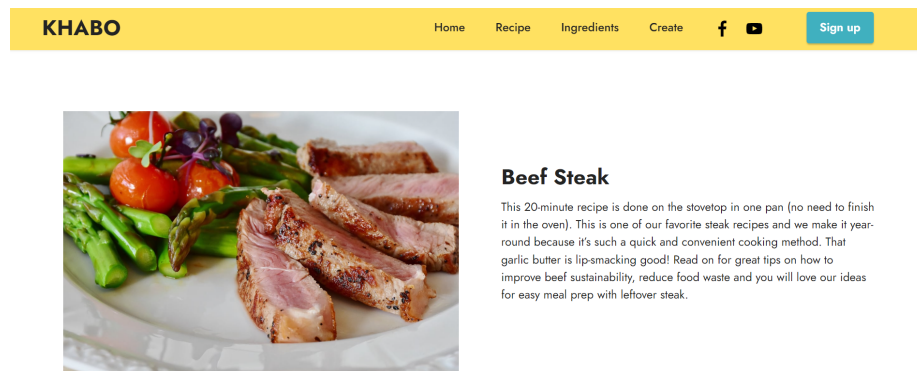


Figure 4.10: MOCK UI for Viewing a Recipe When User Search by Ingredients

## 4.8 Intelligent Shop Suggestion

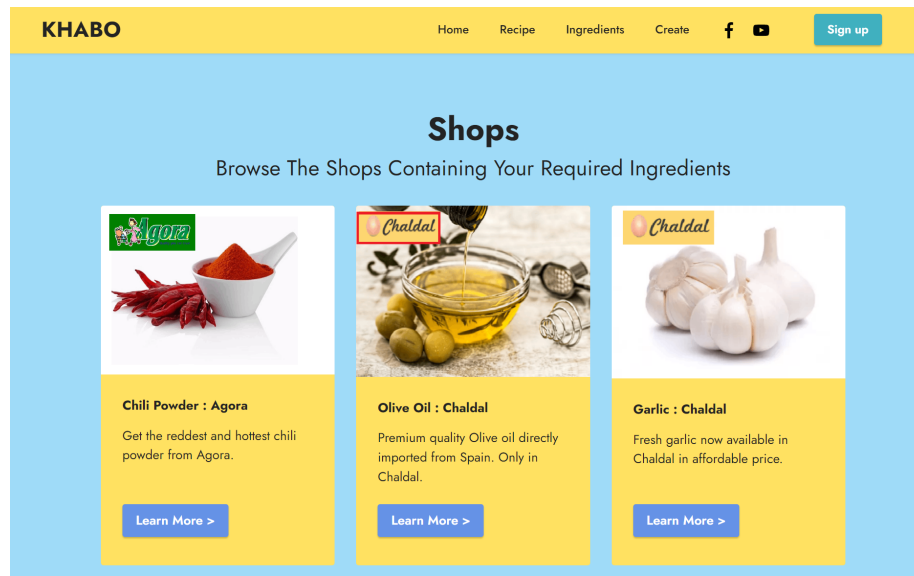


Figure 4.11: MOCK UI for Viewing Shops

## 4.9 Show Available Vouchers

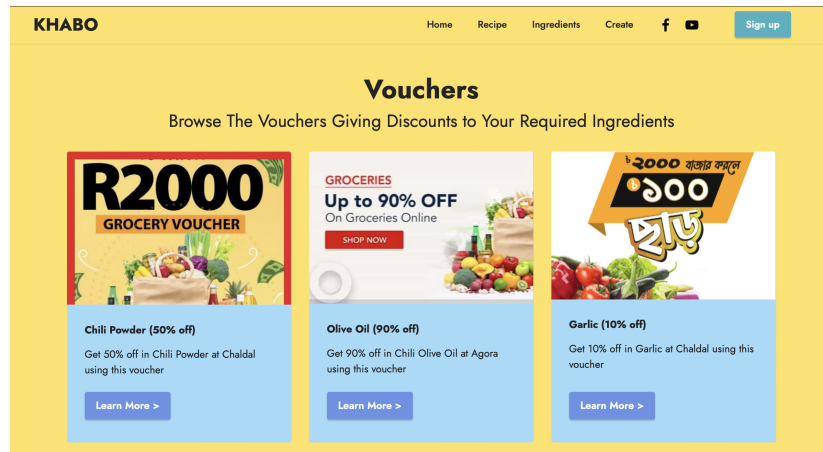


Figure 4.12: MOCK UI for Showing Available Vouchers

## 4.10 Creating New Recipe By User

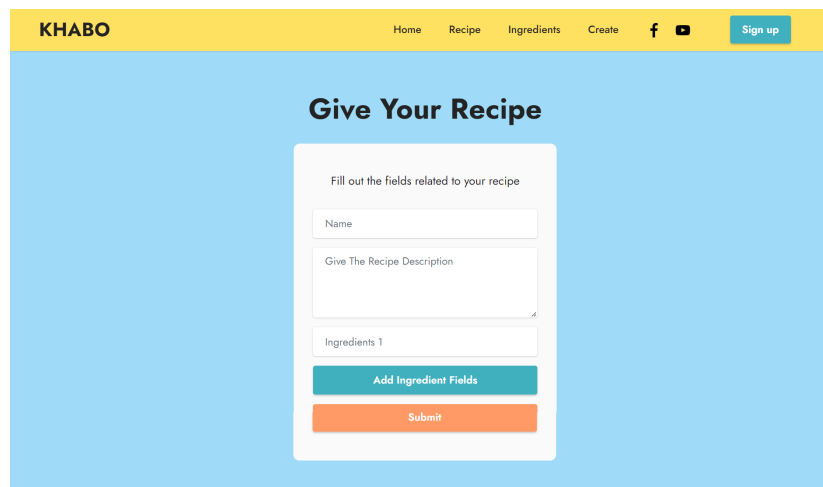


Figure 4.13: MOCK UI for Adding New Recipe By User

# Class Diagram

## 5.1 Feedback Acknowledged

1. Class diagram related to creating recipe by user added.
2. Undeclared attribute 'info' replaced by declared attributes in the class diagram of user profile.

## 5.2 Full Class Diagram

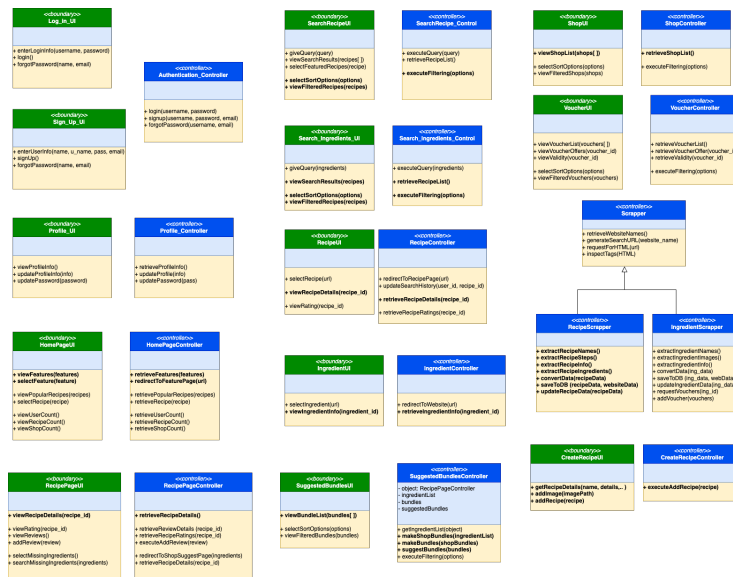


Figure 5.1: Full Class Diagram (Part 1)

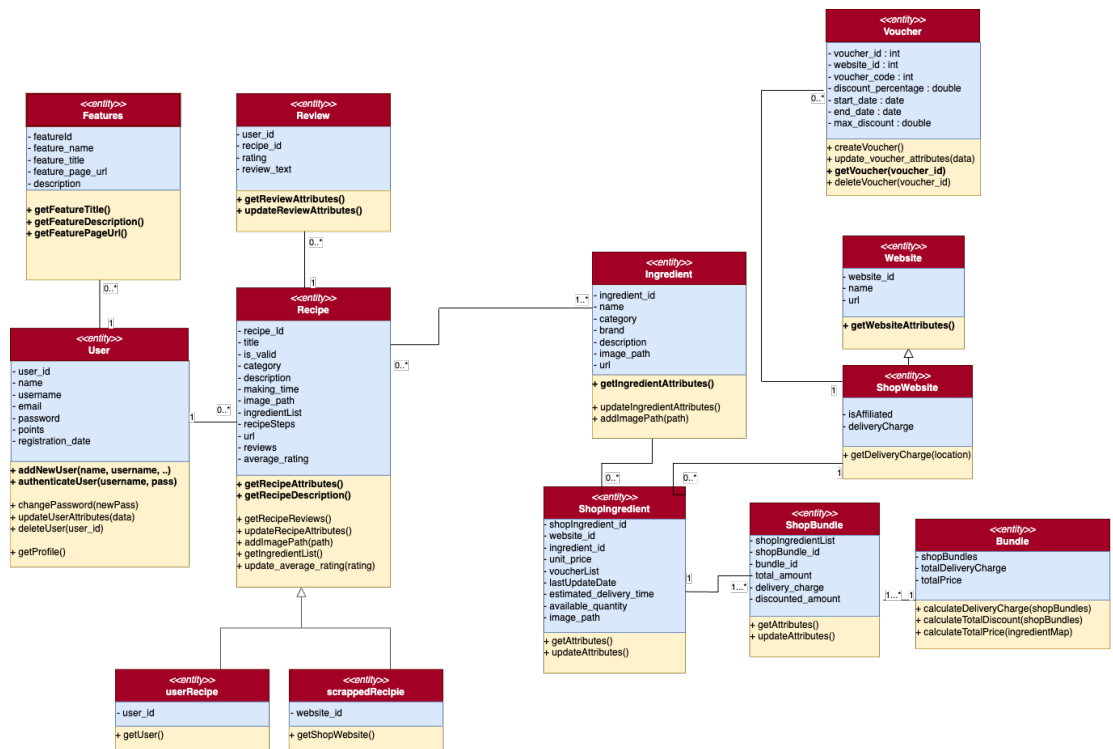


Figure 5.2: Full Class Diagram (Part 2)



## 5.3 Home Page

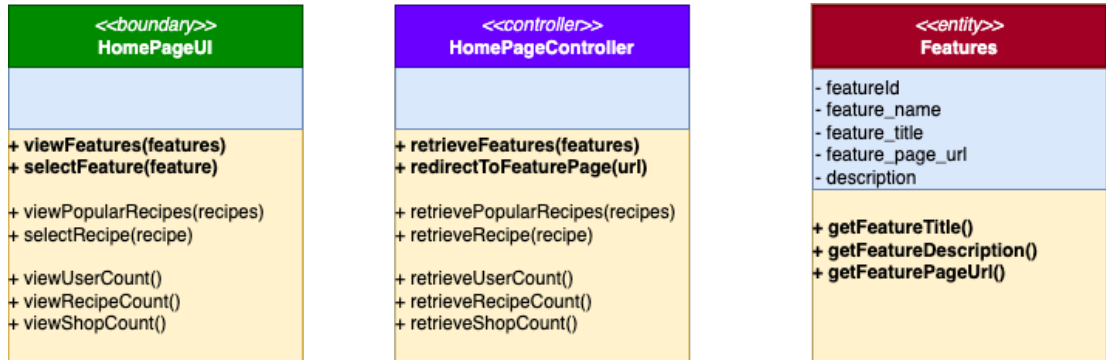


Figure 5.3: Class diagram related to Home Page (Part 1)

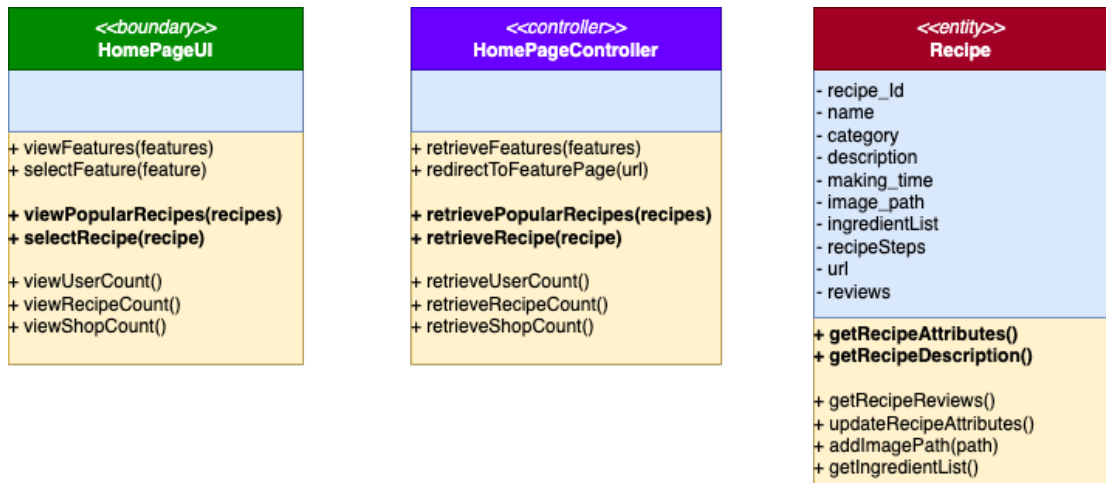


Figure 5.4: Class diagram related to Home Page (Part 2)

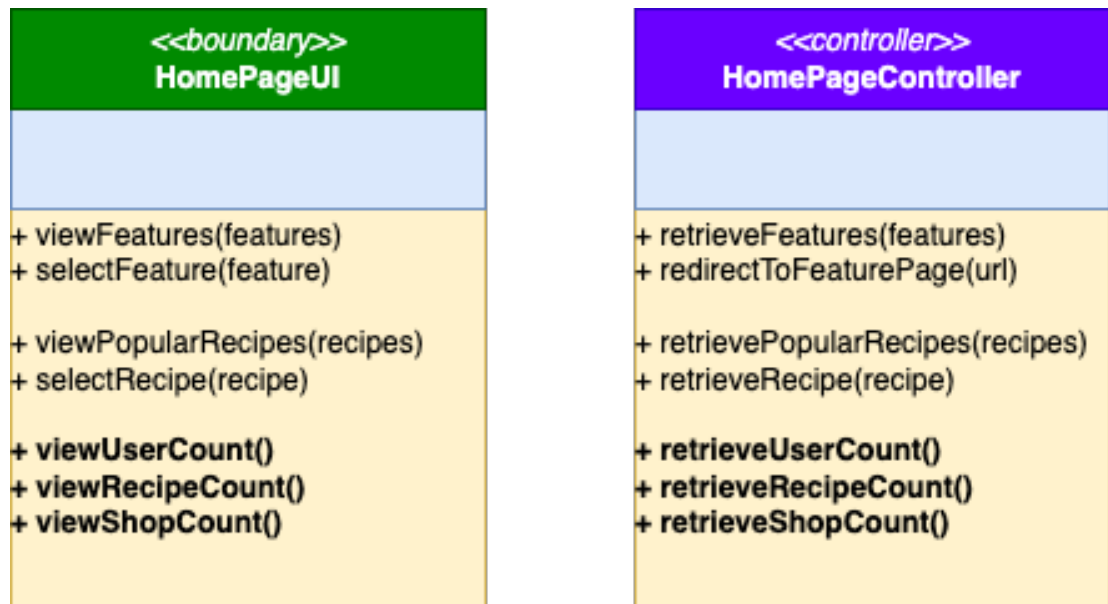


Figure 5.5: Class diagram related to Home Page (Part 3)

## 5.4 Authenticate User

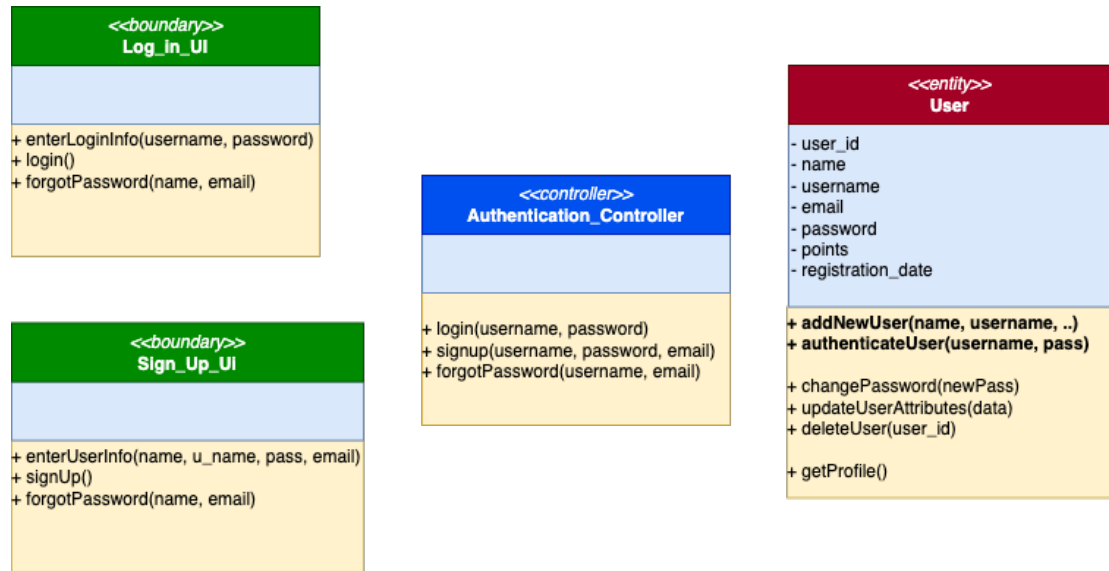


Figure 5.6: Class diagram related to Authentication of User

## 5.5 User Profile

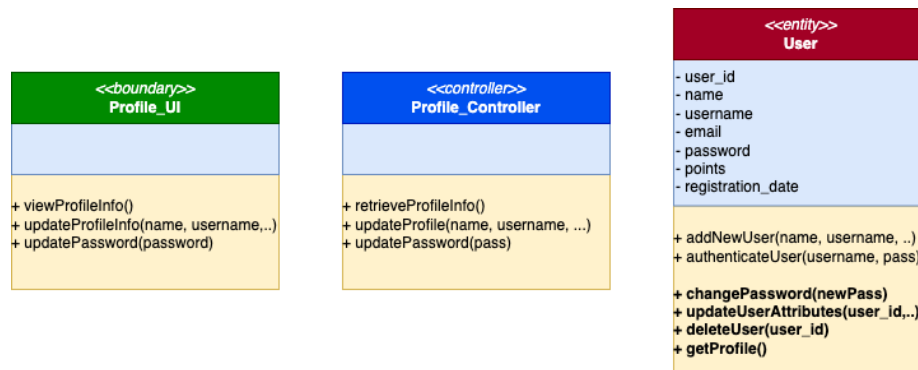


Figure 5.7: Class diagram related to User Profile

## 5.6 Search by Ingredients Module

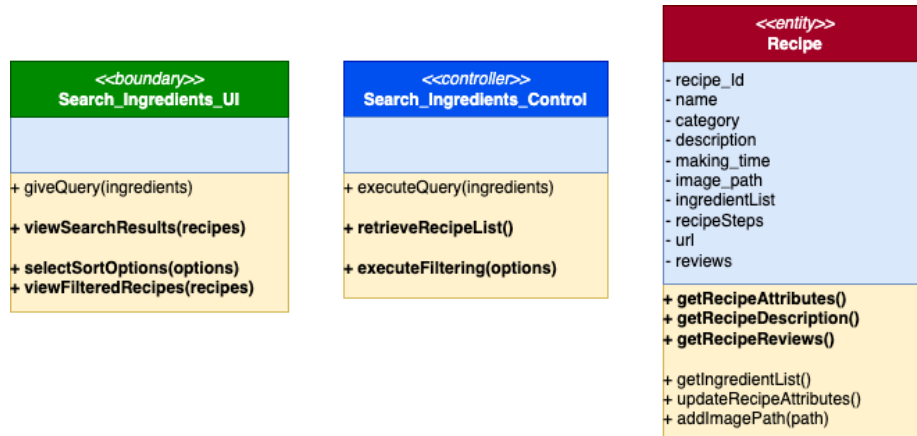


Figure 5.8: Class diagram related to search recipe by ingredients module

## 5.7 Search by Recipe details Module

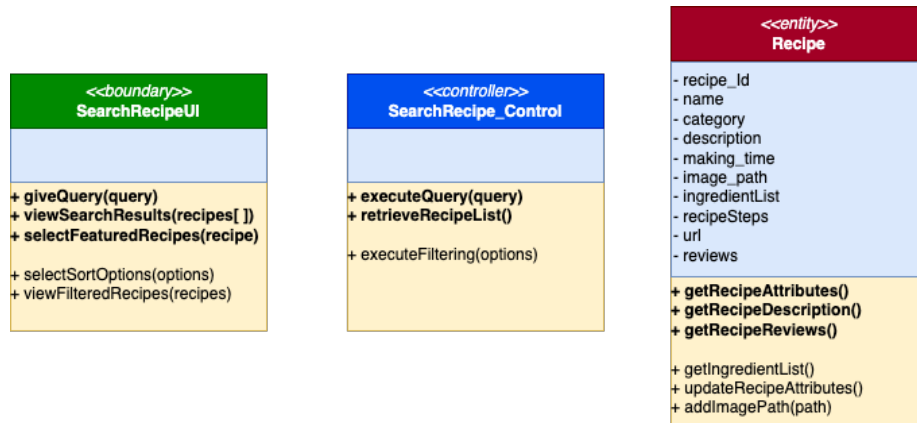


Figure 5.9: Class diagram related to search recipe by recipe details module

## 5.8 Show Recipe List

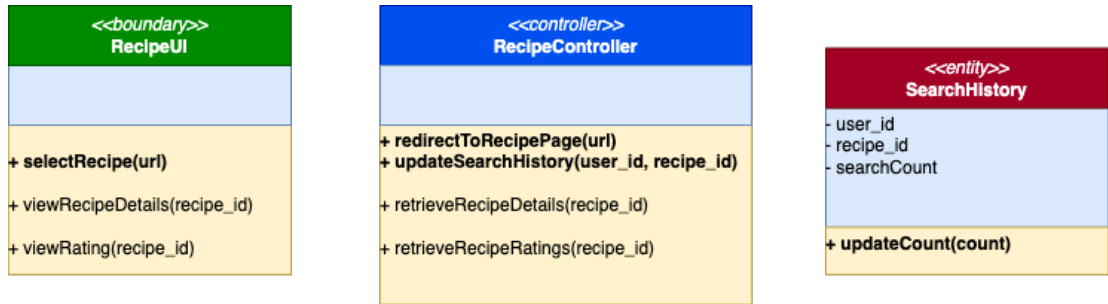


Figure 5.10: Class diagram related to viewing recipe list (Part 1)

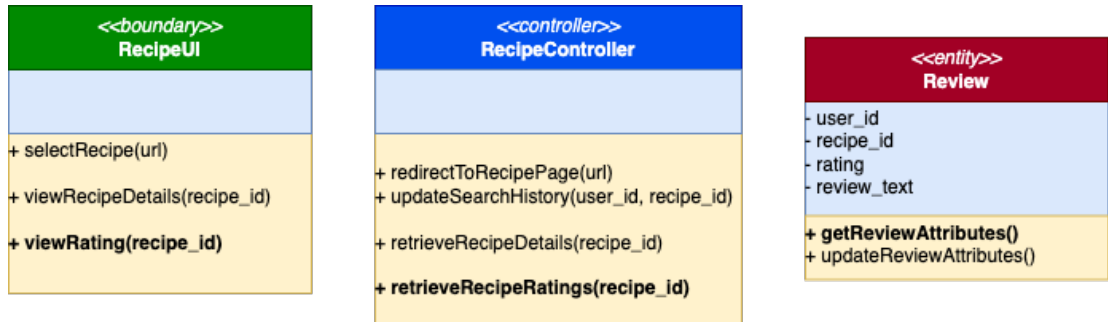


Figure 5.11: Class diagram related to viewing recipe list (Part 2)

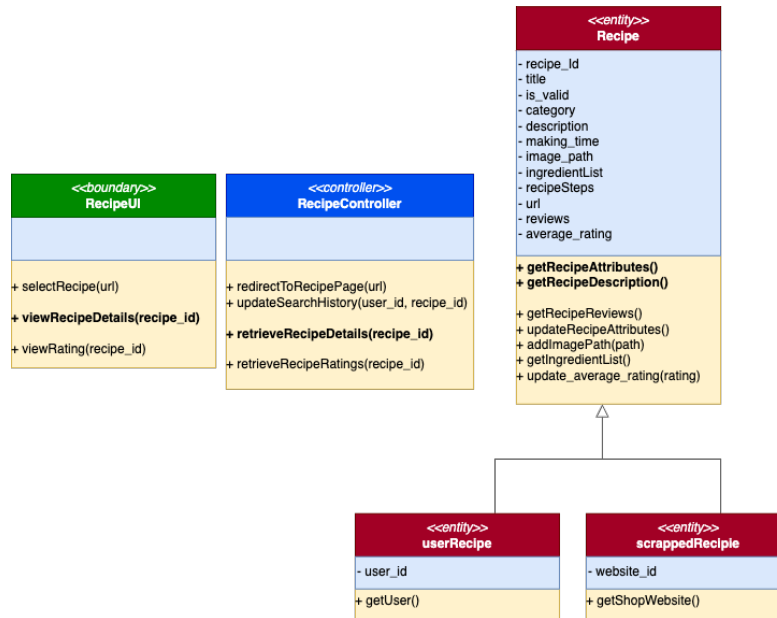


Figure 5.12: Class diagram related to viewing recipe list (Part 3)

## 5.9 Ingredient viewing



Figure 5.13: Class diagram related to viewing ingredient details

## 5.10 Scraper

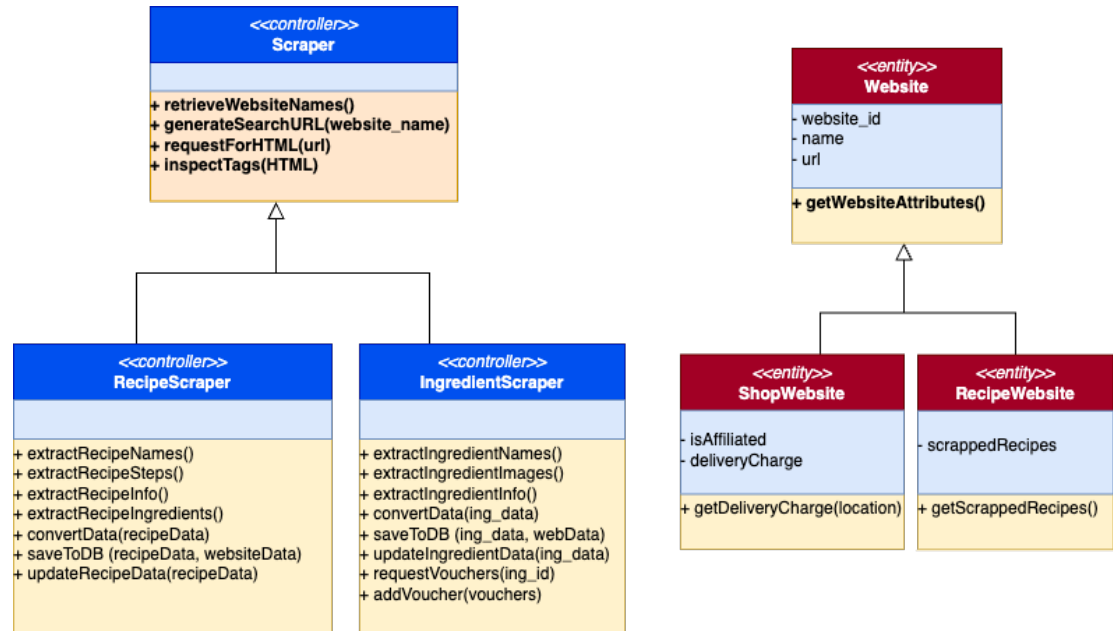


Figure 5.14: Class diagram related to website scraper

### 5.10.1 Recipe Scrapper

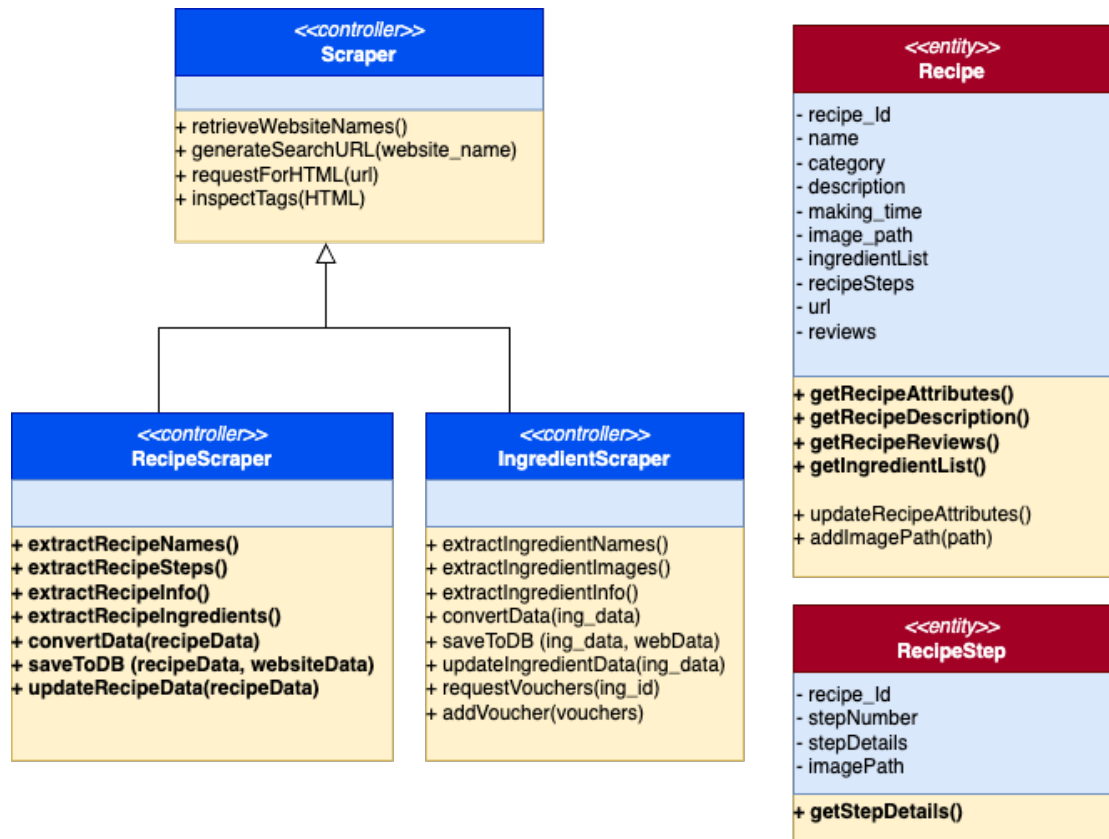


Figure 5.15: Class diagram related to recipe scraper



### 5.10.2 Ingredient Scrapper

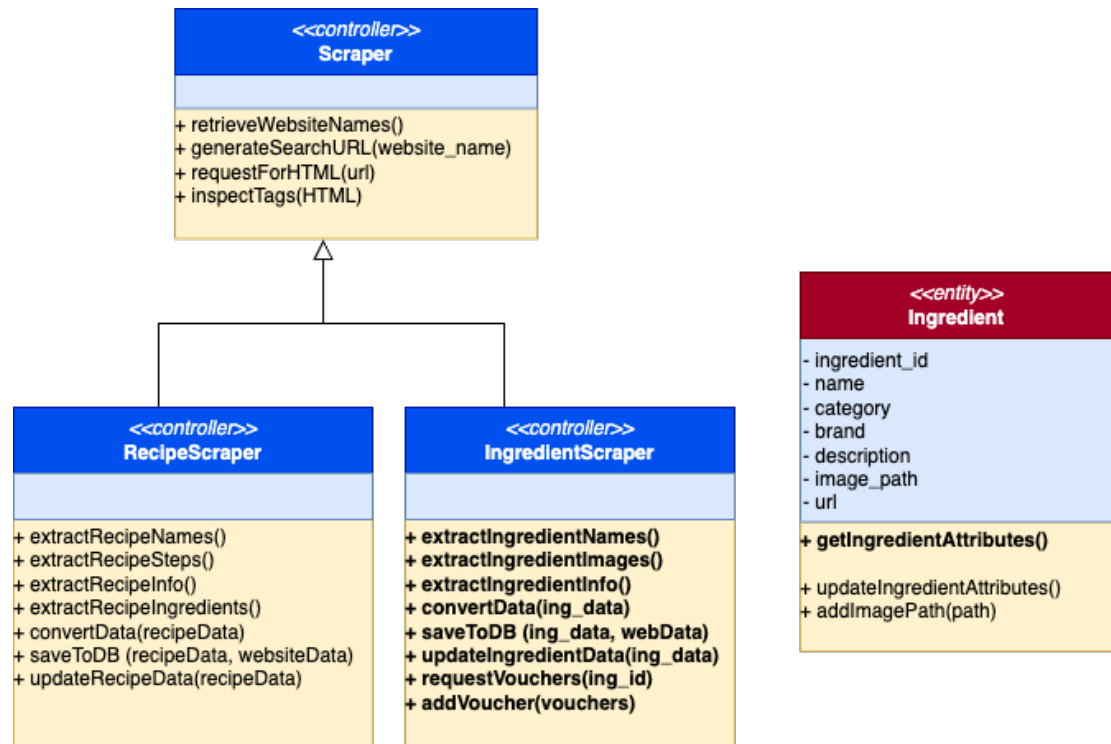


Figure 5.16: Class diagram related to ingredient scraper

## 5.11 Show Suggested Shops

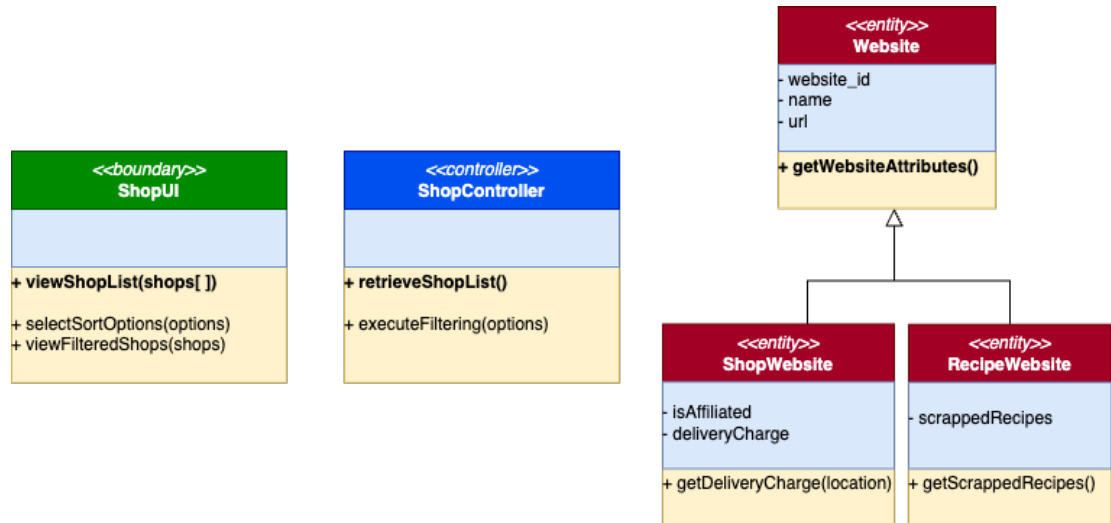


Figure 5.17: Class diagram related to viewing suggested shops

## 5.12 Show Available Vouchers

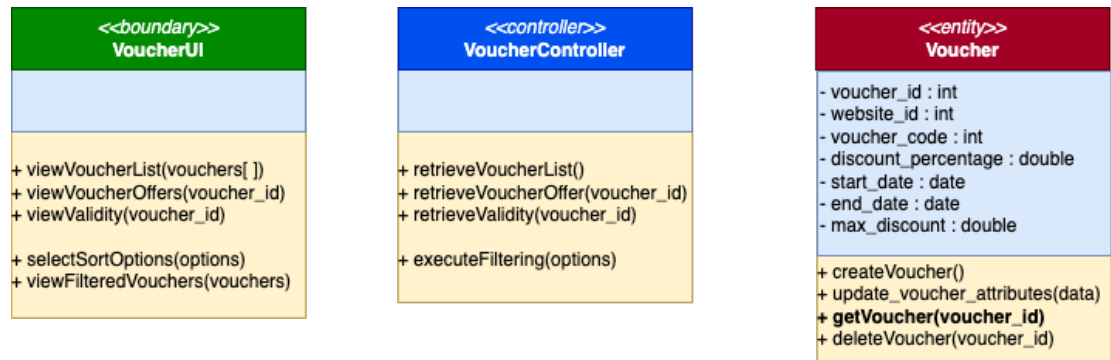


Figure 5.18: Class diagram related to viewing vouchers

## 5.13 Show Recipe Details

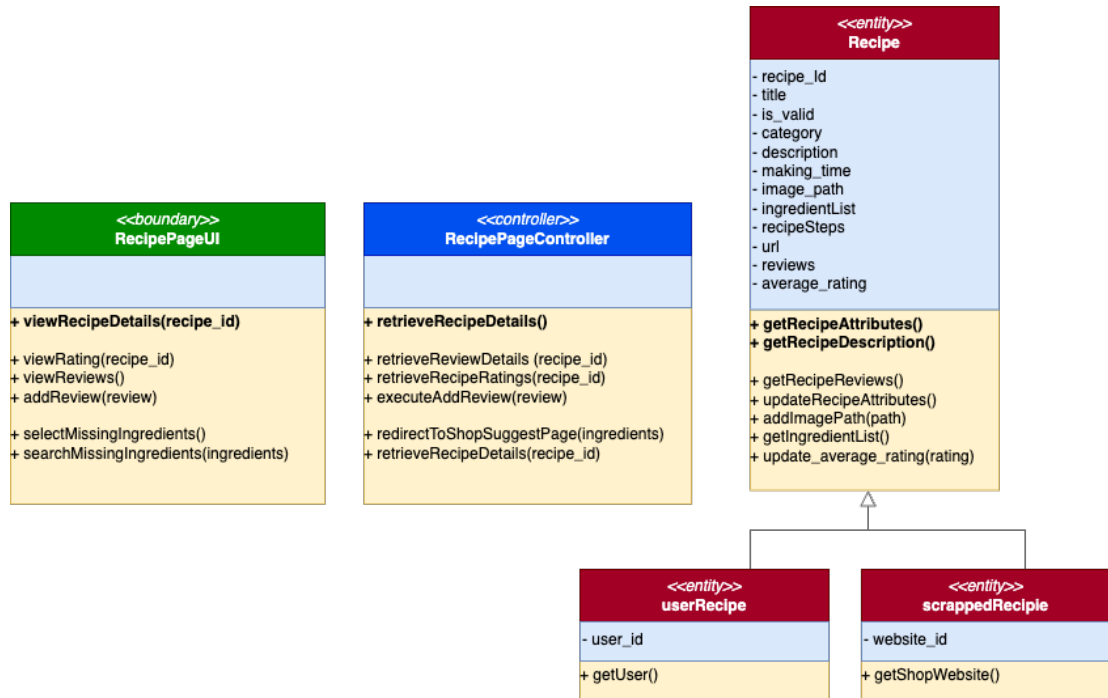


Figure 5.19: Class diagram related to viewing Recipe Details (Part 1)

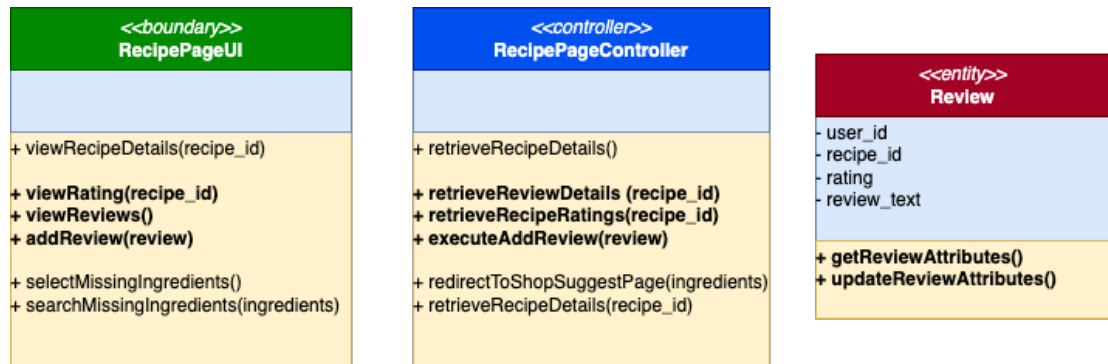


Figure 5.20: Class diagram related to viewing Recipe Details (Part 2)

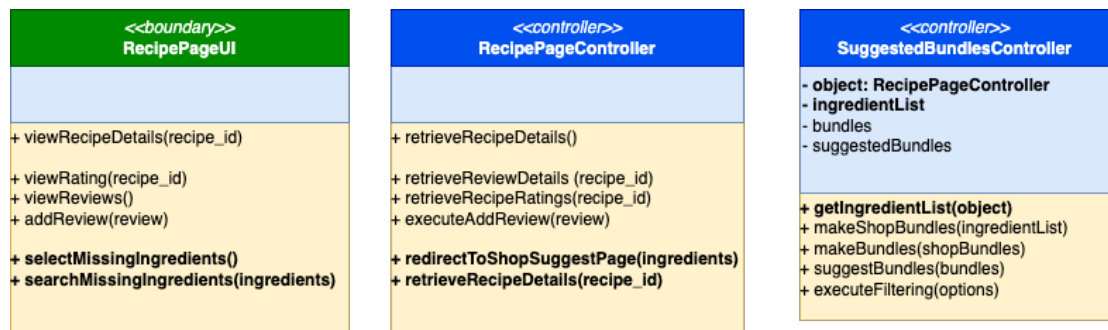


Figure 5.21: Class diagram related to viewing Recipe Details (Part 3)

## 5.14 Create Recipe by User

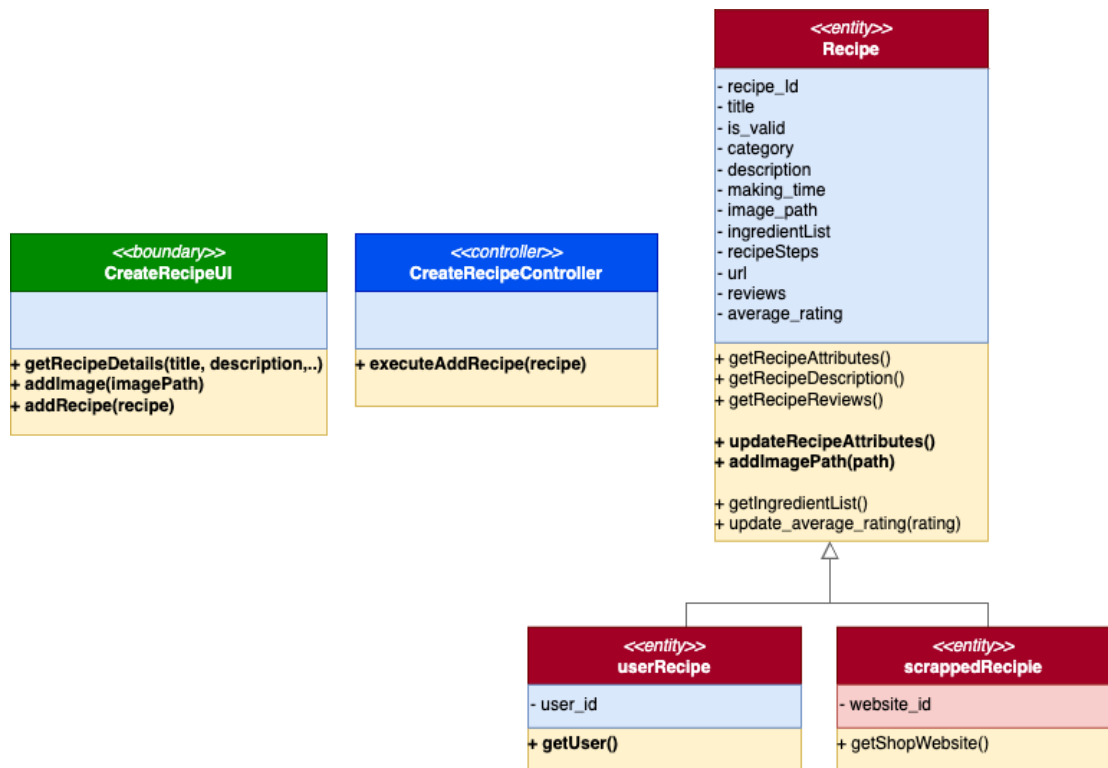


Figure 5.22: Class diagram related to Create Recipe by User Module

## 5.15 Intelligent Shop Suggestion

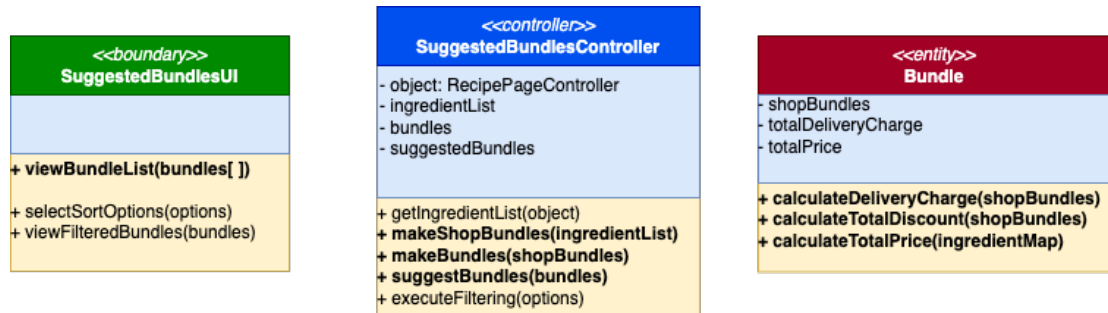


Figure 5.23: Class diagram related to Intelligent Shop Suggestion Module

## 5.16 Bundle Hierarchy

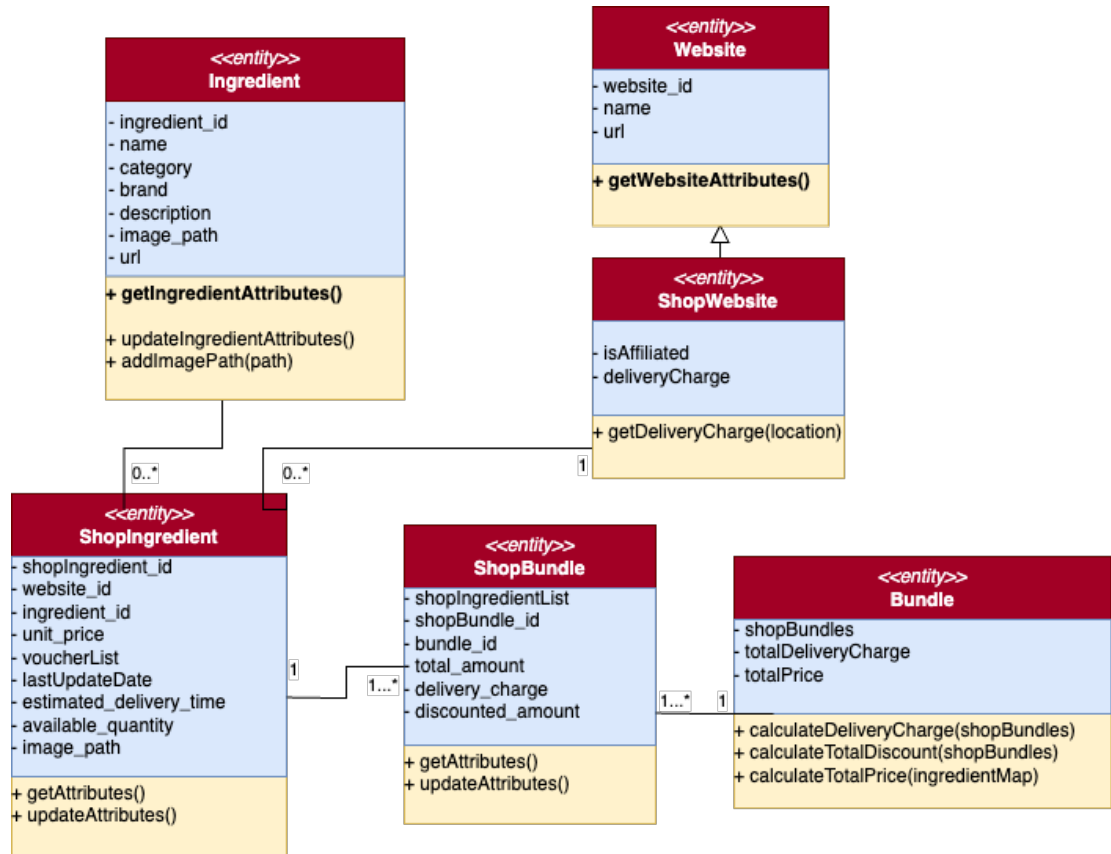


Figure 5.24: Class diagram related to suggested Bundle

## Chapter 6

# ER Diagram

### 6.1 Feedback Acknowledged

ER Diagram related to pictorial view of recipe steps added.



## 6.2 Full ER Diagram

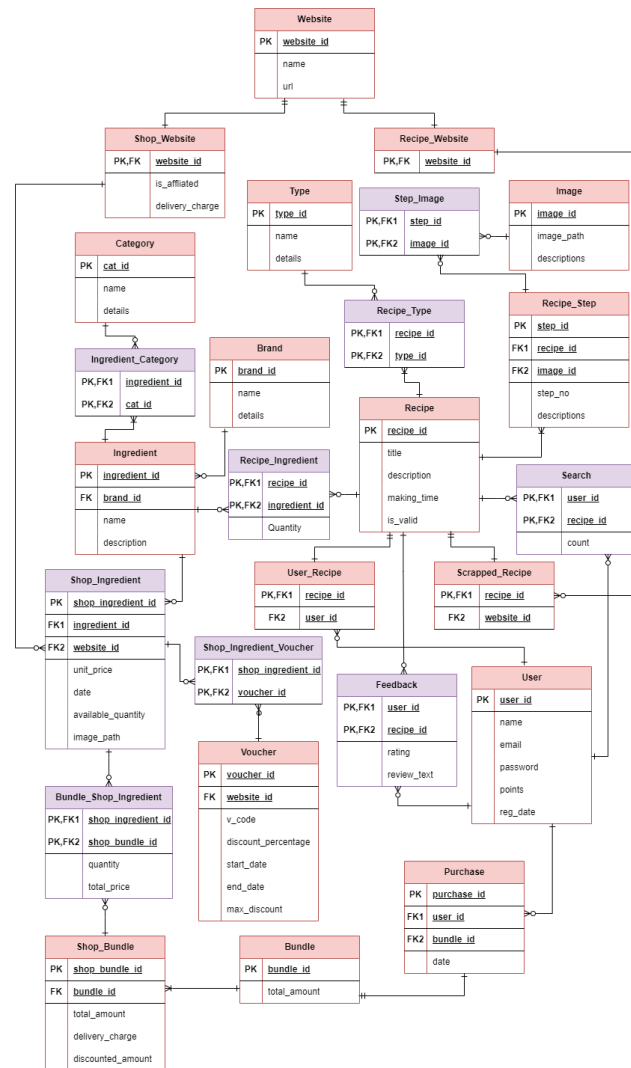


Figure 6.1: Full ER Diagram

## 6.3 Ingredient Scraper

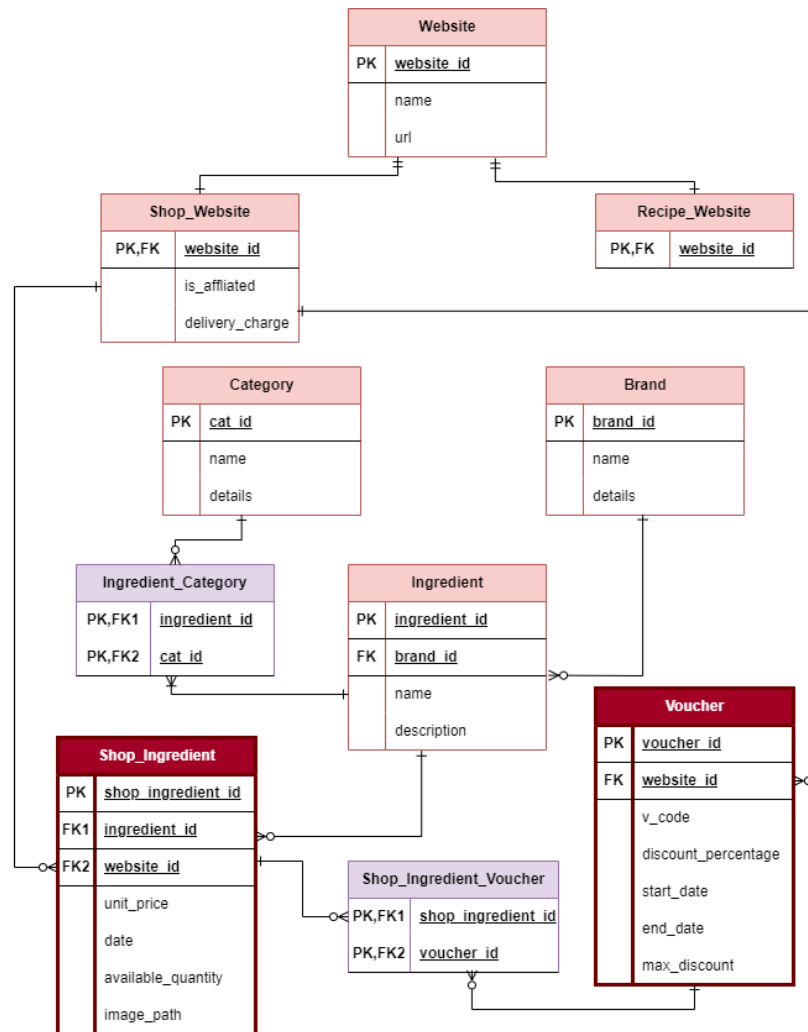


Figure 6.2: ER diagram related to Ingredient Scraper

## 6.4 Recipe Scraper

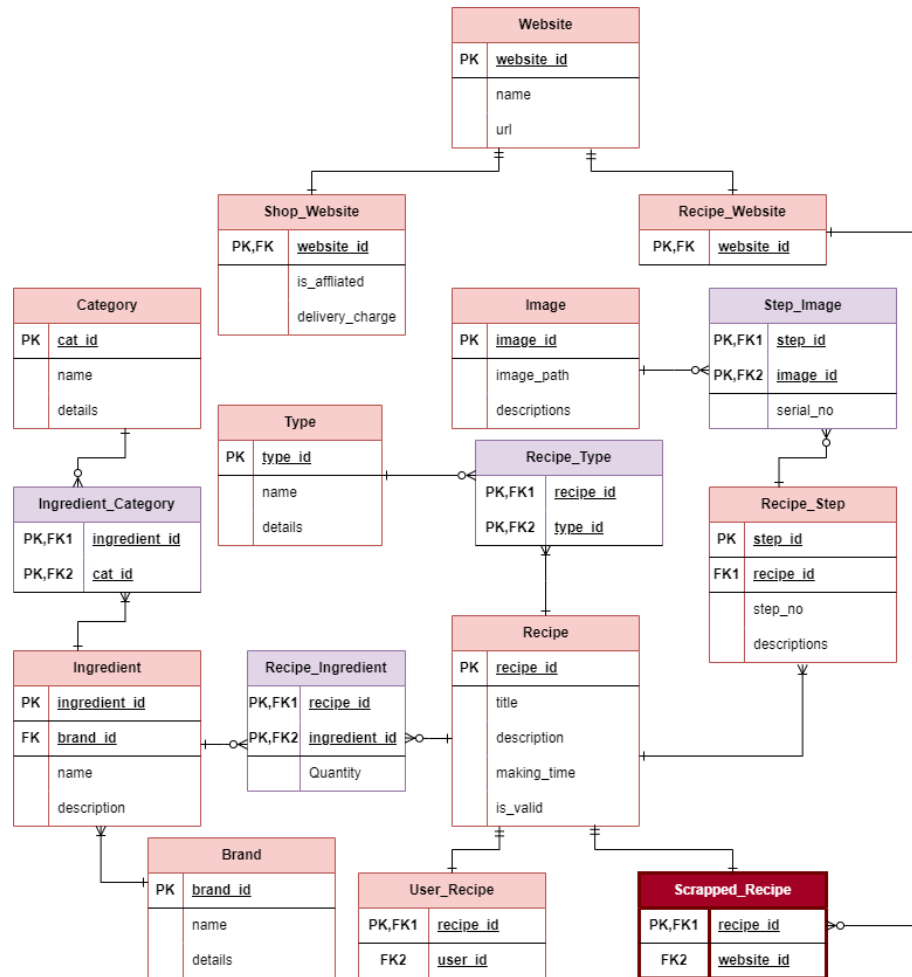


Figure 6.3: ER diagram related to Recipe Scraper

## 6.5 User-Provided Recipe Addition

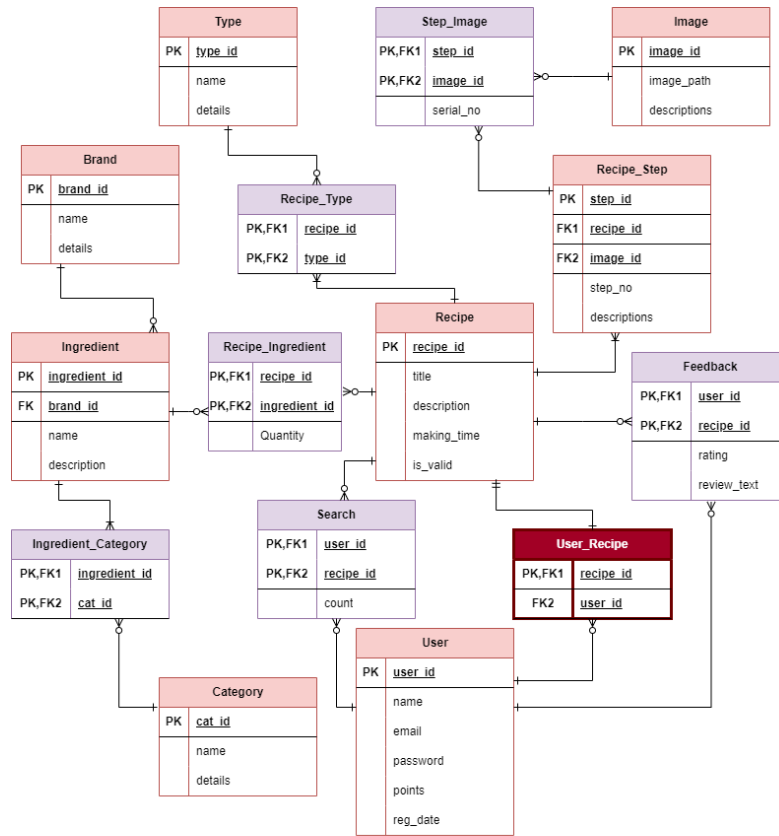


Figure 6.4: ER diagram related to adding new Recipe by User

## 6.6 Recipe Search by Details

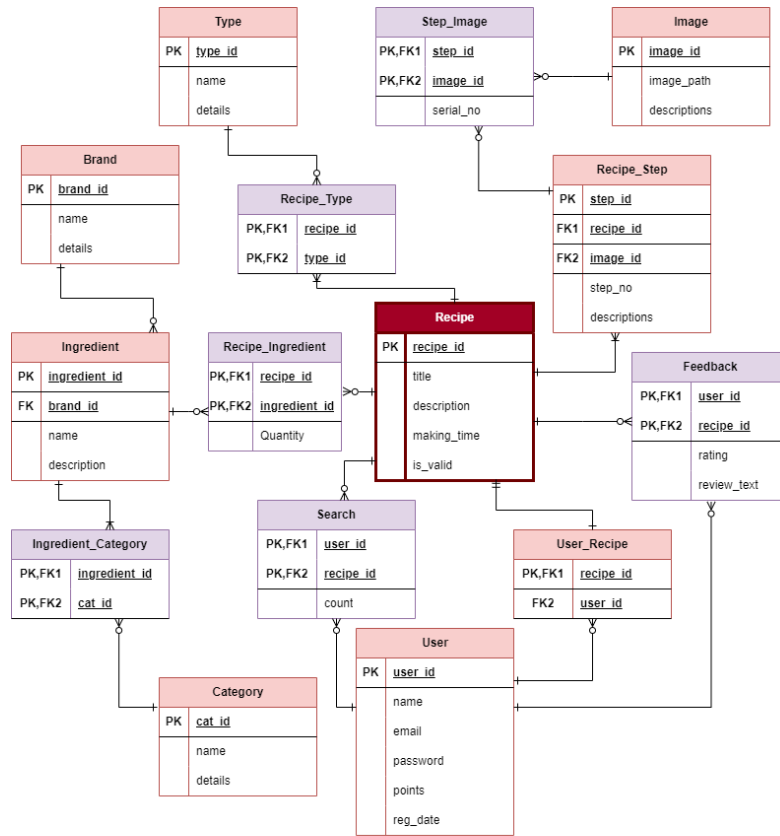


Figure 6.5: ER diagram related to Recipe search by details

## 6.7 Ingredient-Based Recipe Search

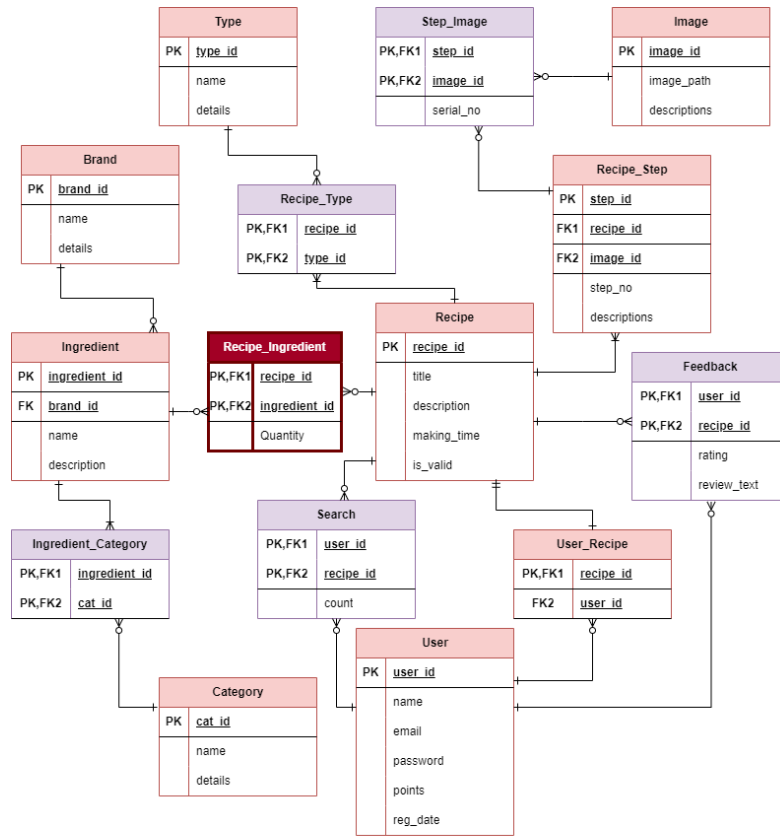


Figure 6.6: ER diagram related to Ingredient-Based Recipe Search

## 6.8 User feedback

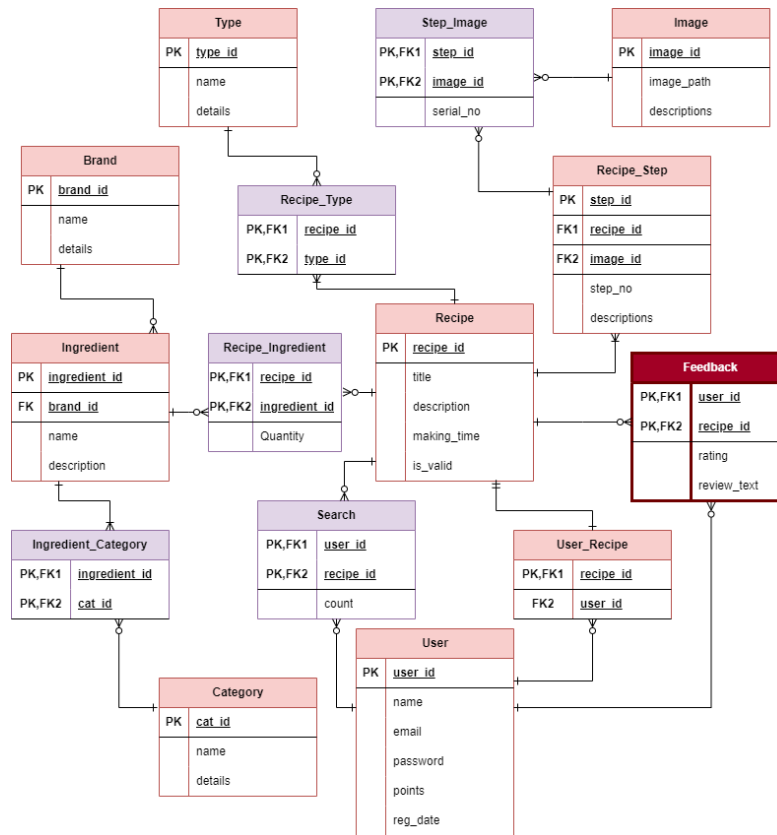


Figure 6.7: ER diagram related to User feedback

## 6.9 User Search History

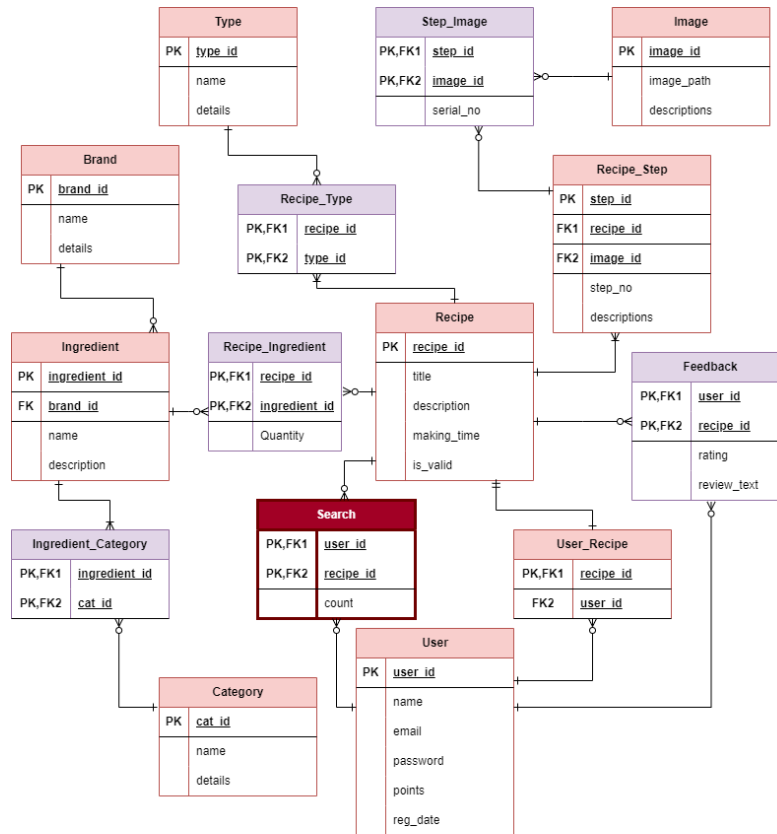


Figure 6.8: ER diagram related to User's search history



## 6.10 Intelligent Shop Suggester

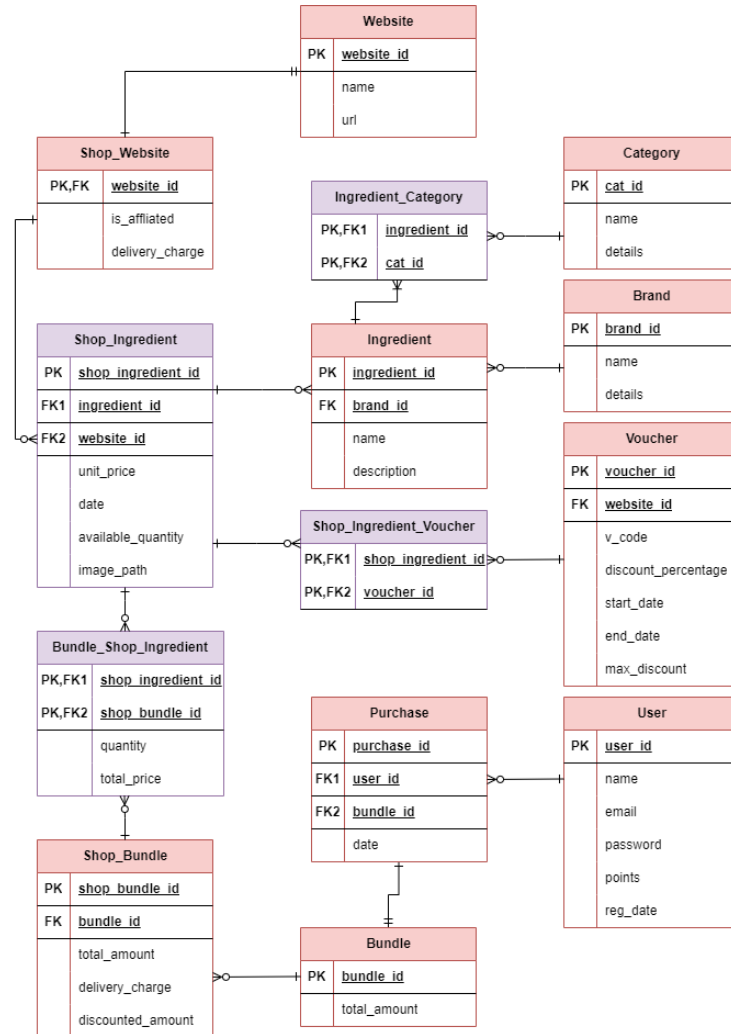


Figure 6.9: ER diagram related to Intelligent Shop Suggester

## Chapter 7

# Sequence Diagram

### 7.1 Feedback Acknowledged

1. Features of the home page have been split and individually shown.
2. Human feedback is introduced in Add Recipe as suggested.
3. "Ingredients" is added in Search By Ingredient.

## 7.2 Login Page

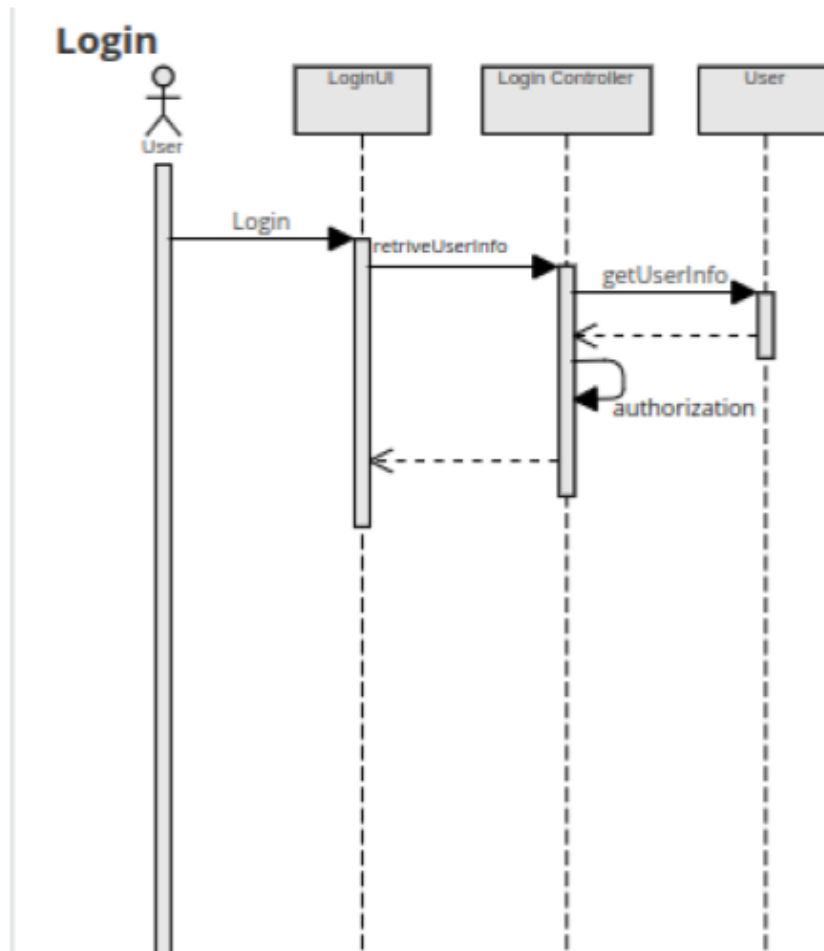


Figure 7.1: Sequence Diagram related to Login

### 7.3 Update User Profile

#### UpdateUser:

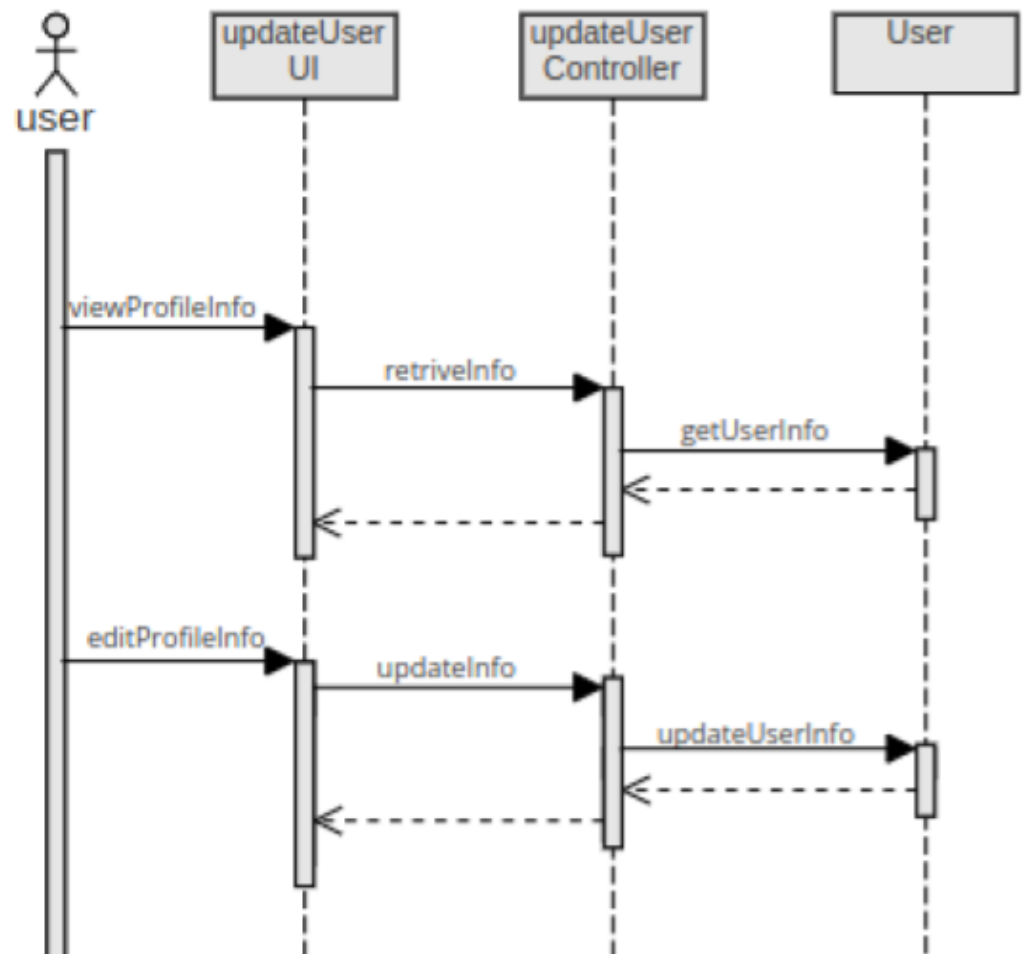


Figure 7.2: Sequence Diagram related to Updating User

## 7.4 Home Page

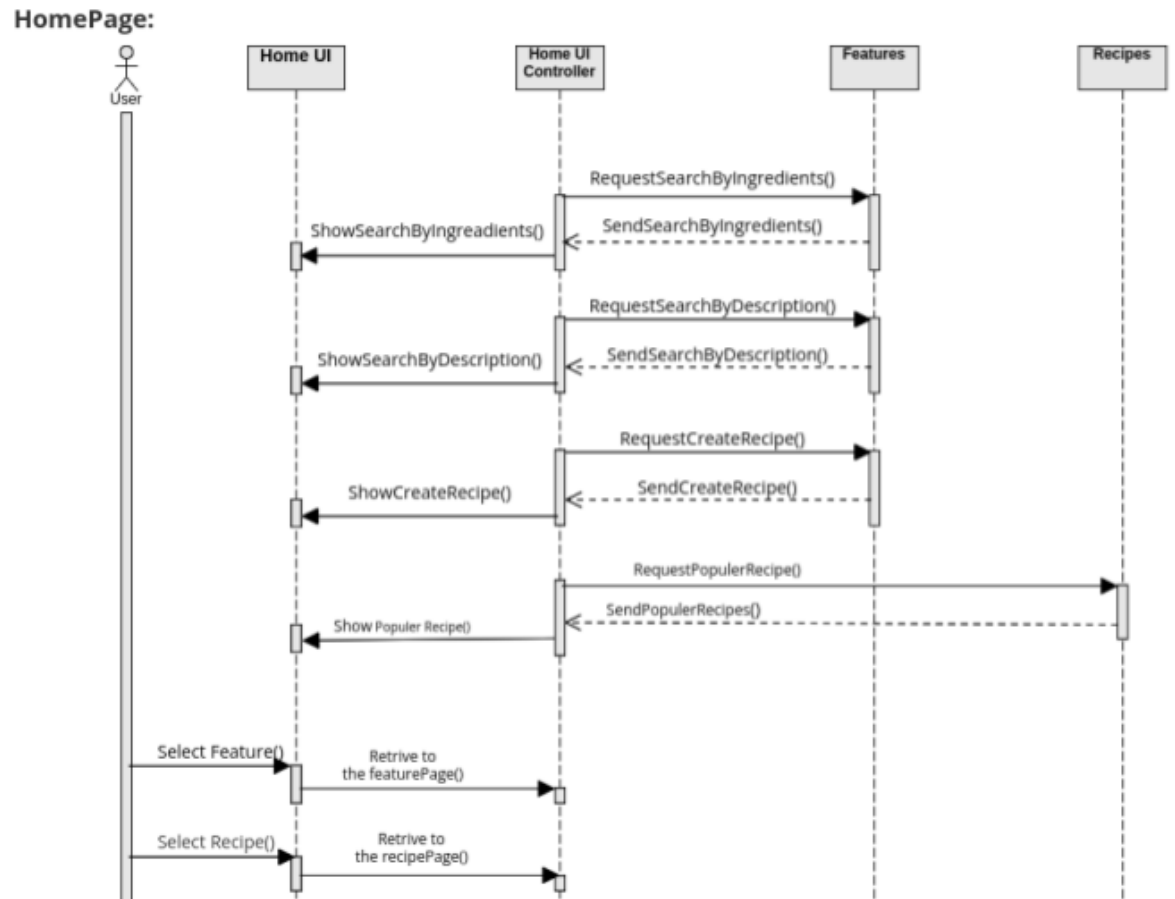


Figure 7.3: Sequence Diagram related to Home Page

## 7.5 Search By Ingredient

Search By Ingredient :

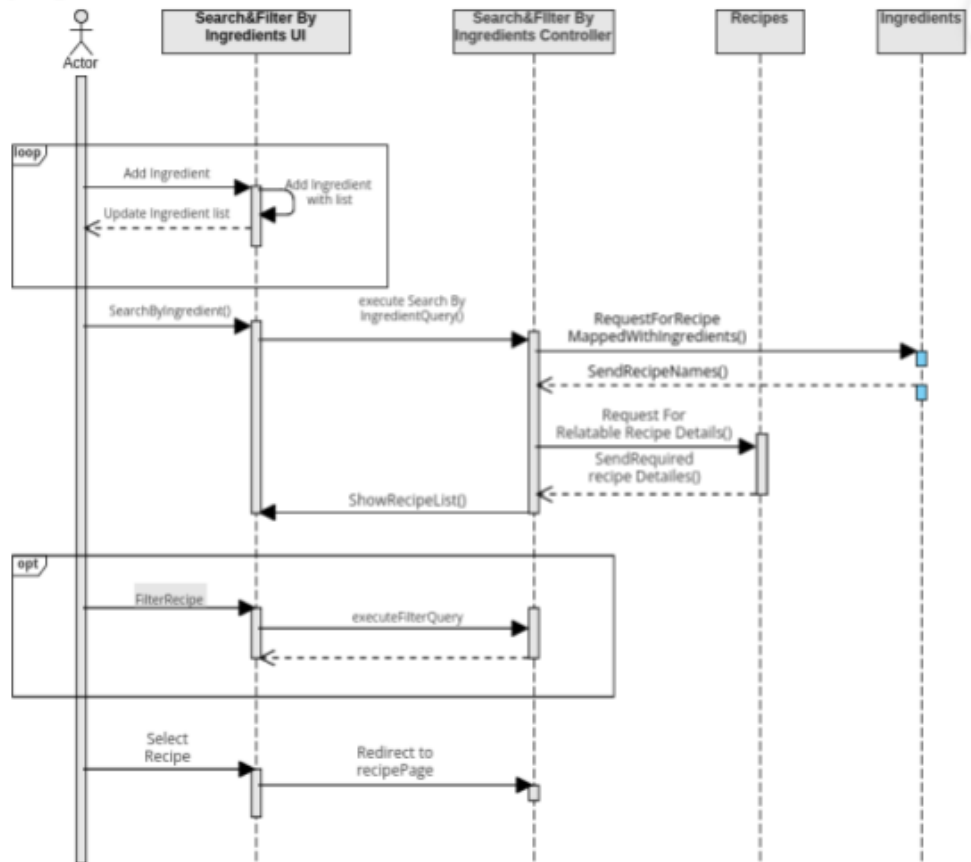


Figure 7.4: Sequence Diagram related to Search by Ingredient

## 7.6 Search By Recipe Details

### Search By Description:

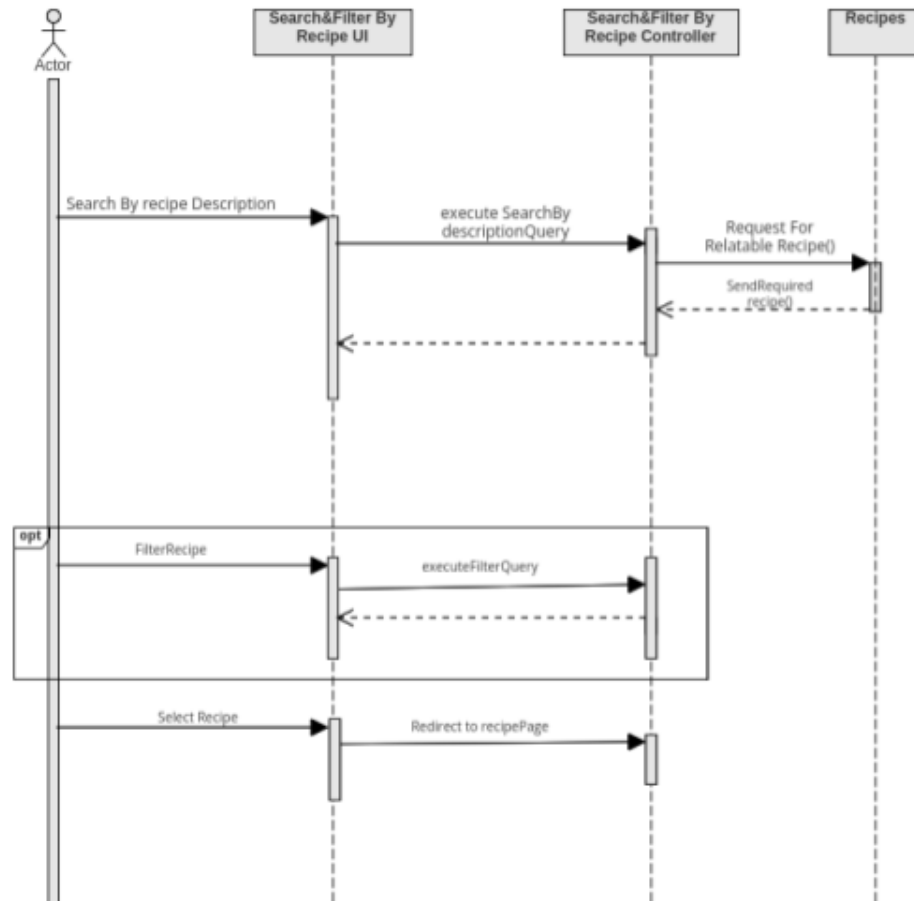


Figure 7.5: Sequence Diagram for Searching By Description

## 7.7 Add Recipe By User

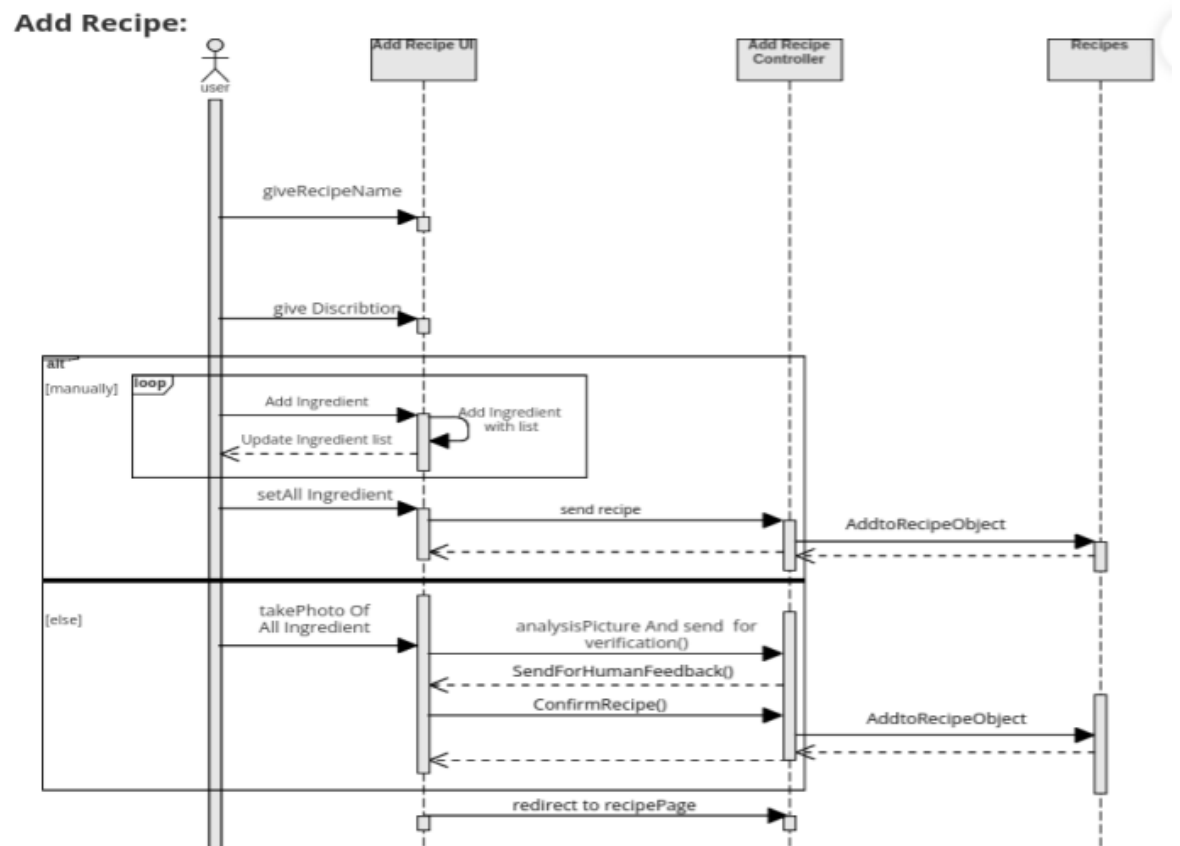


Figure 7.6: Sequence Diagram for Adding New Recipe By User



## 7.8 Recipe Page

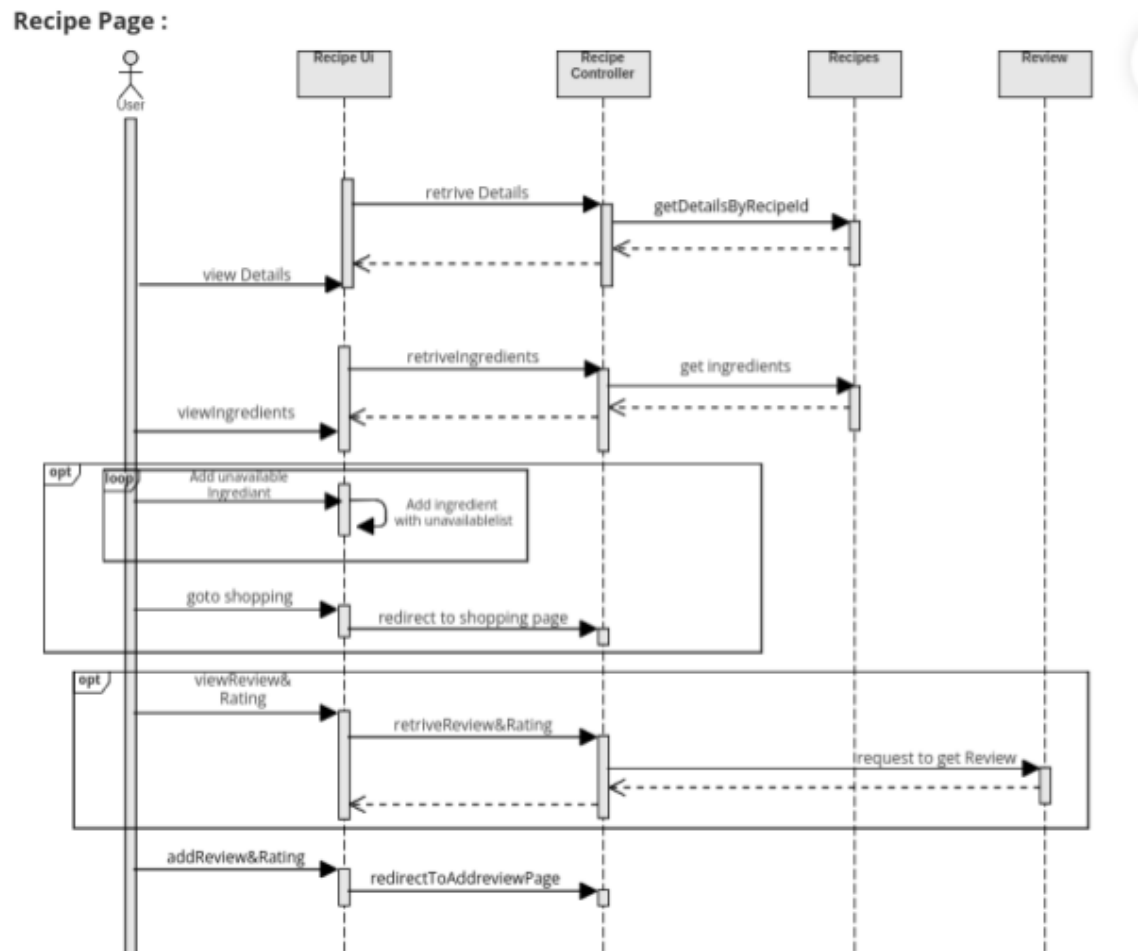


Figure 7.7: Sequence Diagram for Viewing a Recipe

## 7.9 Shopping Page

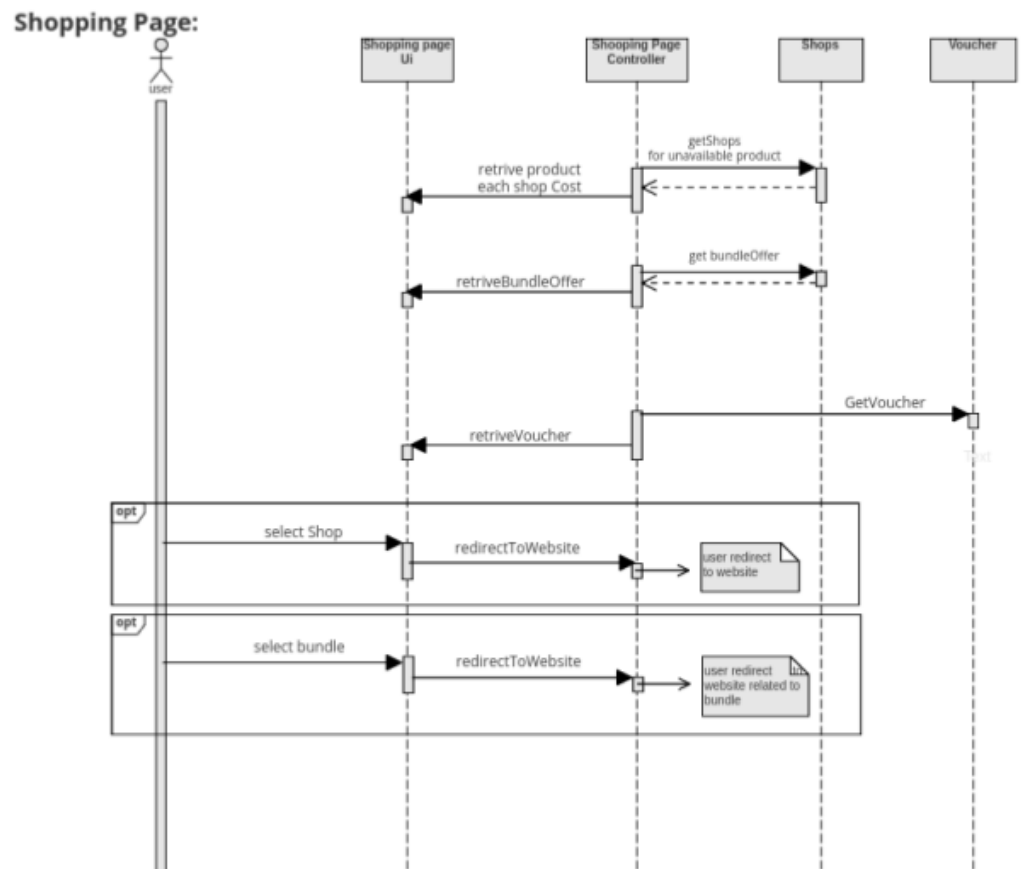


Figure 7.8: Sequence Diagram related to Shopping Page

## 7.10 Add Review

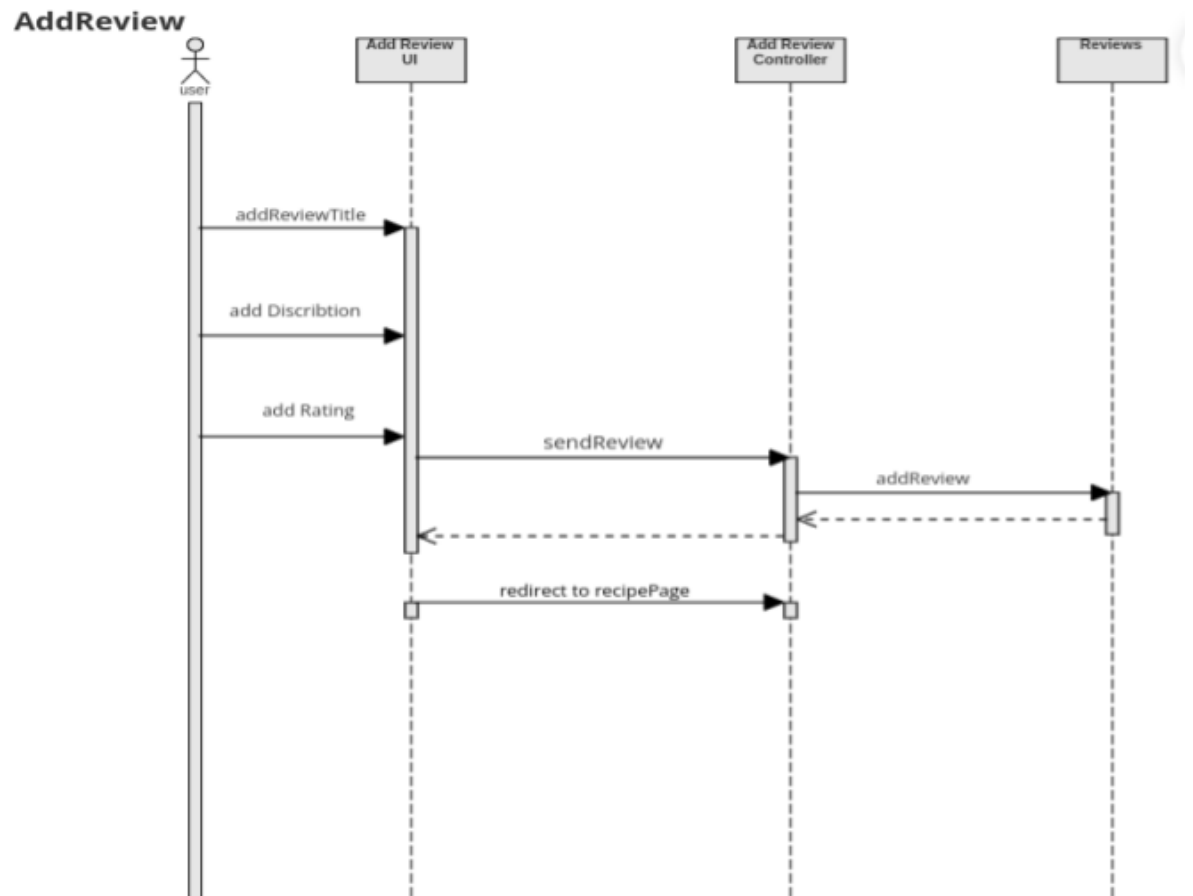


Figure 7.9: Sequence Diagram for Adding Review

## Chapter 8

# Collaboration Diagram

### 8.1 Feedback Acknowledged

- The field, "Ingredients" has been added to Collaboration diagram related to "Search By Ingredients" and "Add Recipe", which was missing in the previous version.

## 8.2 Home Page

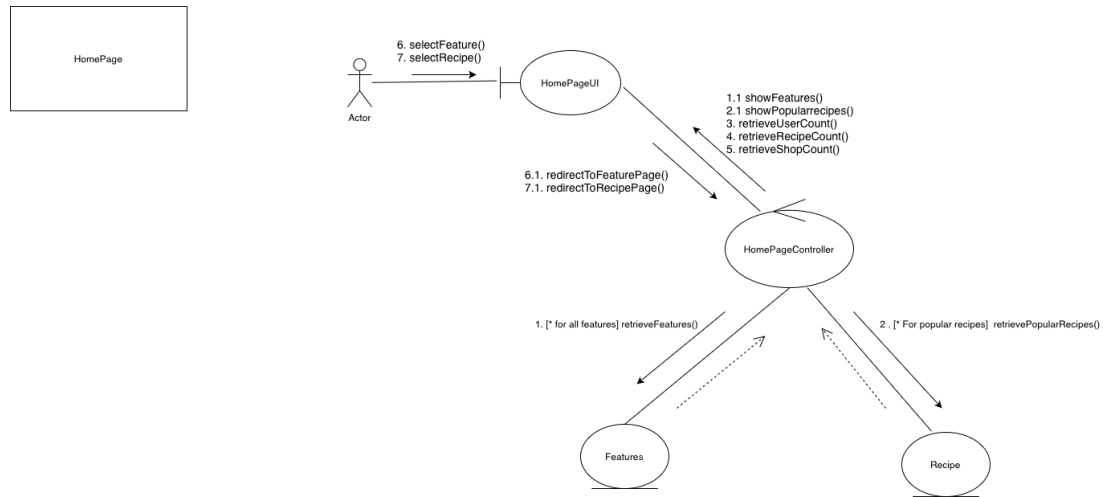


Figure 8.1: Collaboration Diagram for Home Page

## 8.3 Search and Filter By Ingredients

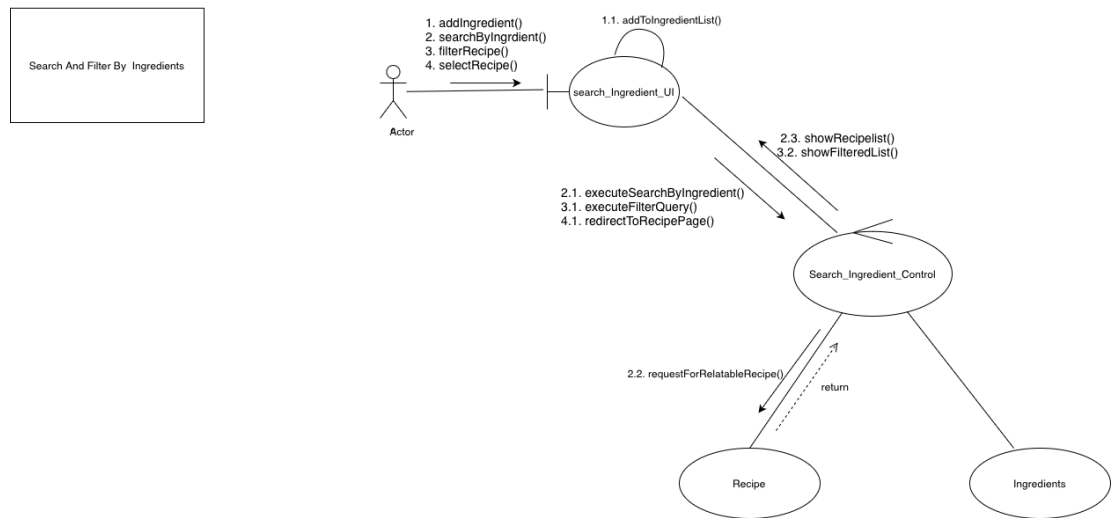


Figure 8.2: Collaboration Diagram for Searching and Filtering By Ingredients

## 8.4 Search and Filter By Recipe Description

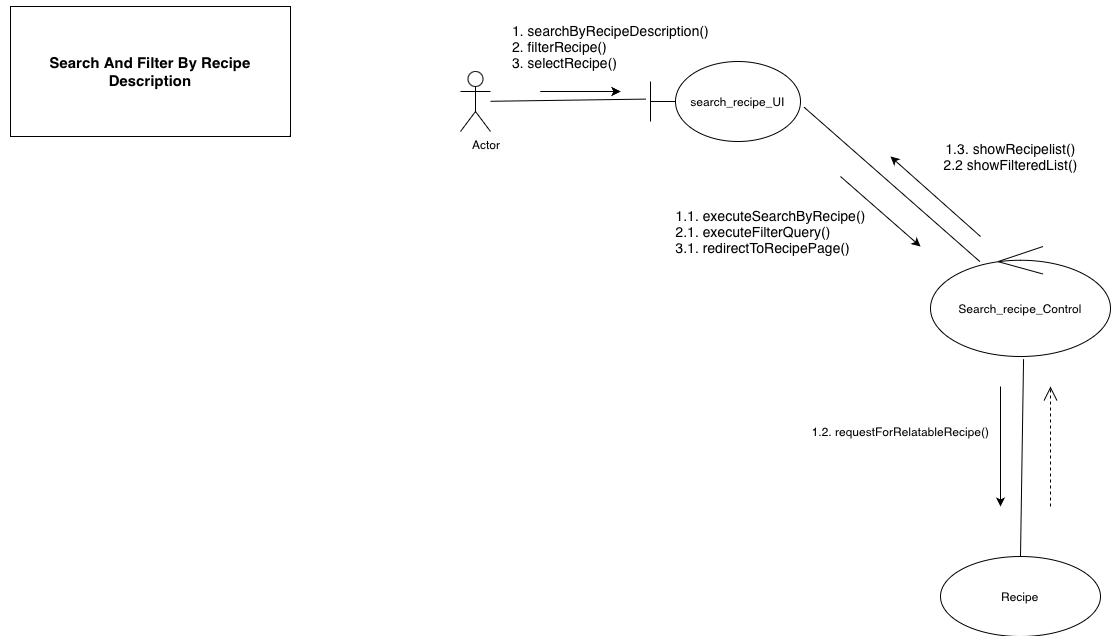


Figure 8.3: Collaboration Diagram related to Search and Filter By Recipe Description

## 8.5 Recipe Page

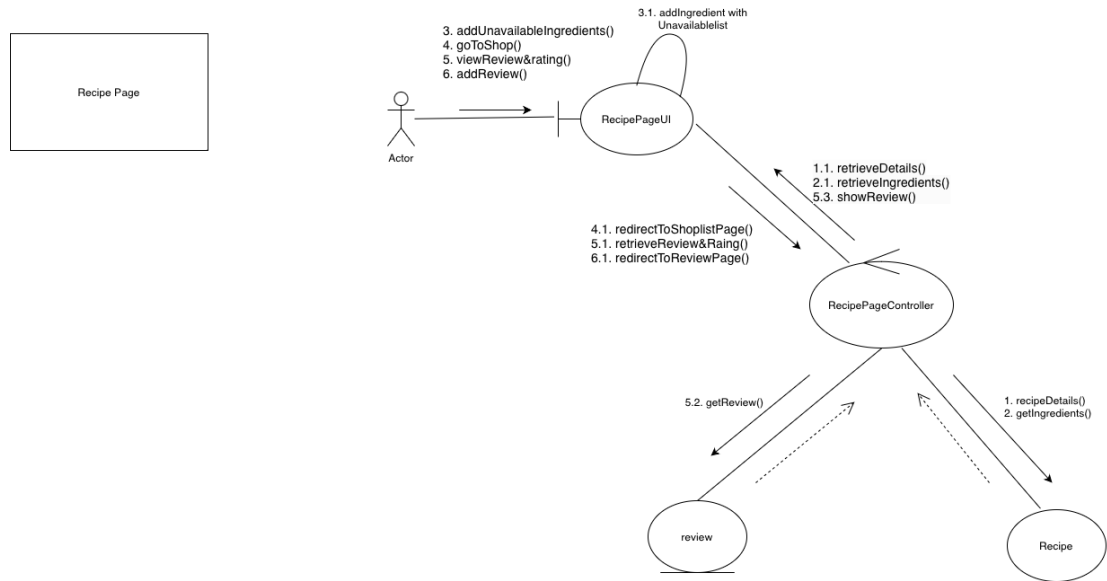


Figure 8.4: Collaboration Diagram for Recipe Page



## 8.6 Shop Suggester

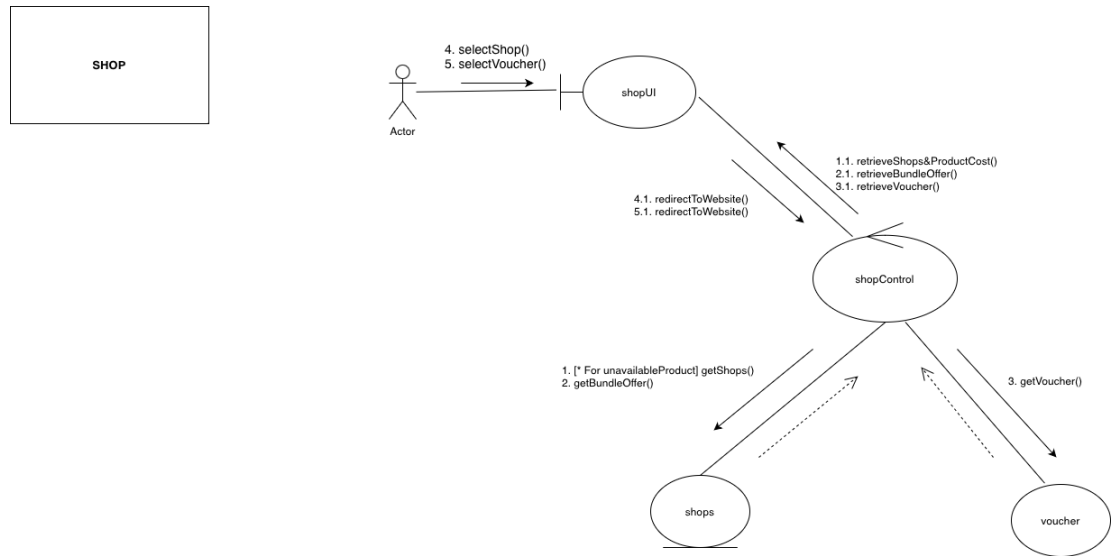


Figure 8.5: Collaboration Diagram for Shop Suggestion

## 8.7 Add Recipe by User

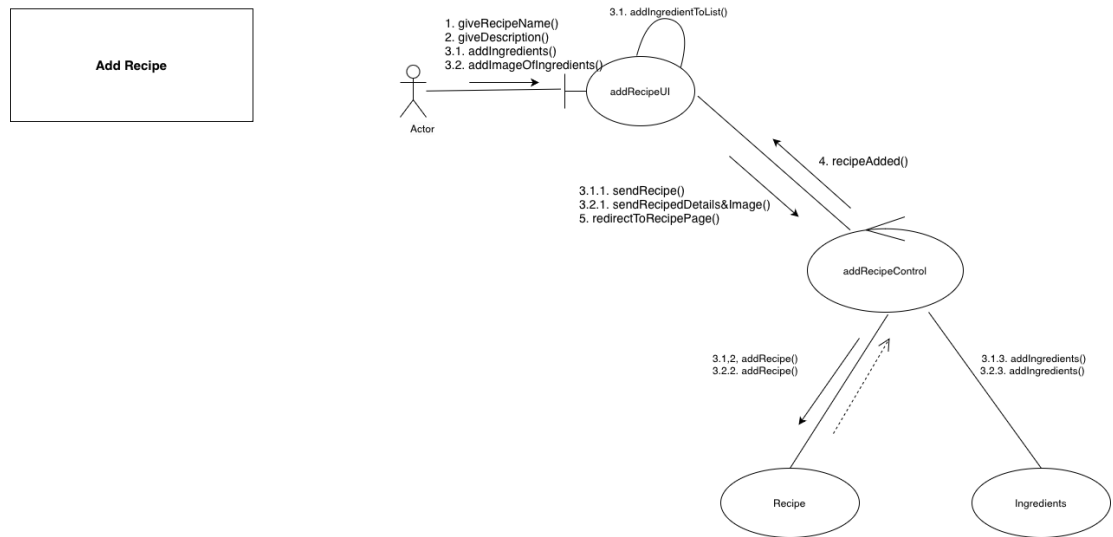


Figure 8.6: Collaboration Diagram for Adding New Recipe By User

## 8.8 Review Page

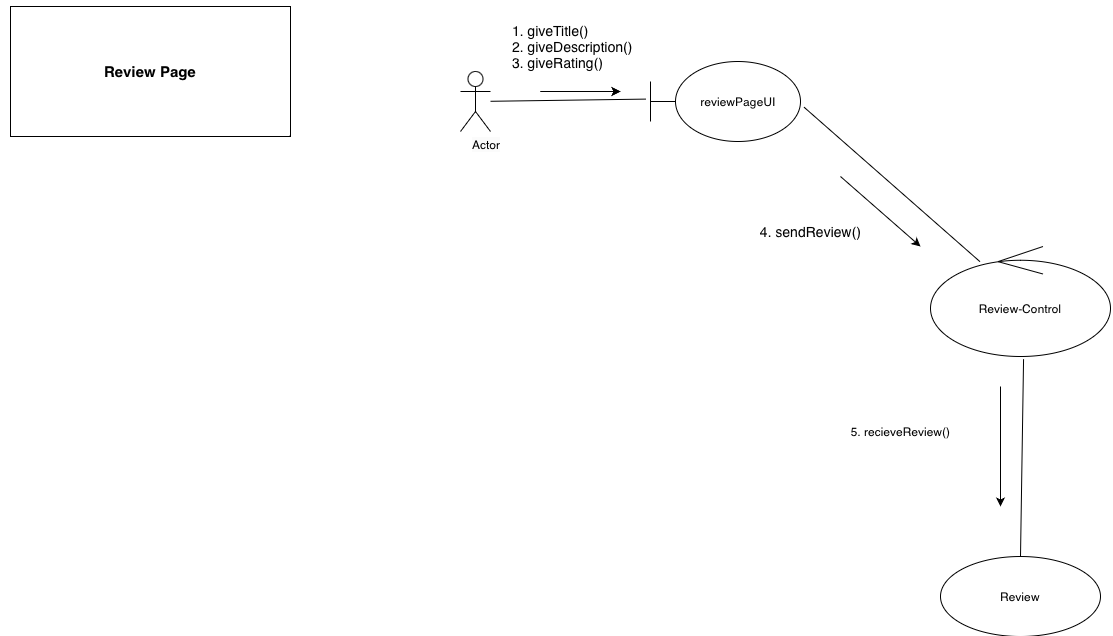


Figure 8.7: Collaboration Diagram related to Review Page

## Chapter 9

# State Diagram

### 9.1 User Recipe State

#### UserRecipeState

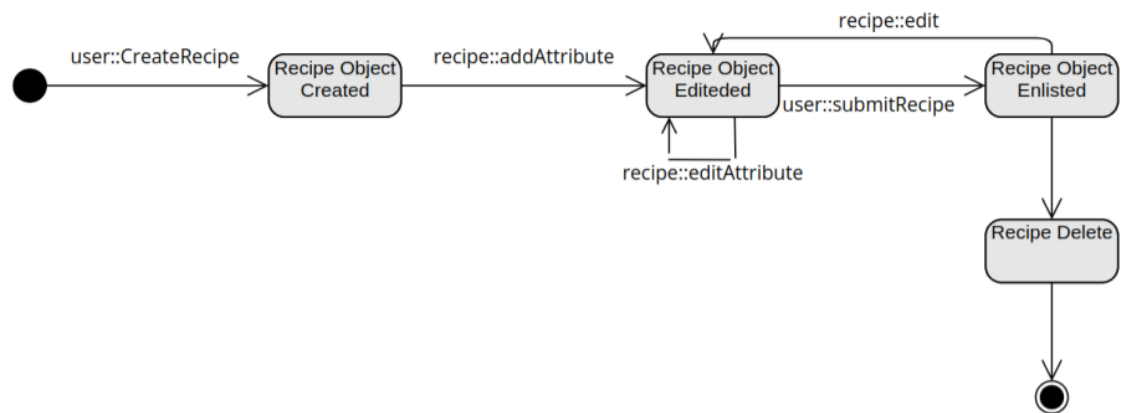


Figure 9.1: State Diagram for User Recipe State

## Chapter 10

# Implementation of Modules

### 10.1 Implemented Modules

We have implemented 2 modules.

1. Recipe Search Module
  - Search By Ingredients
  - Search By Recipe Details
2. Recipe Visualizer Module

### 10.2 Home Page

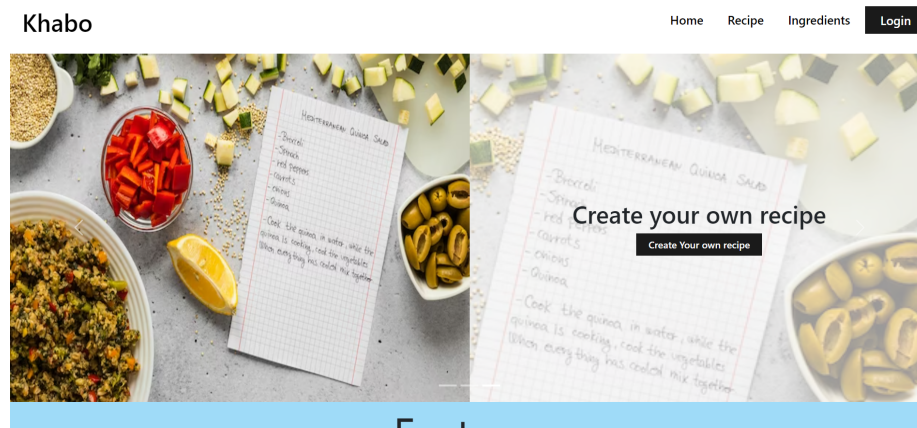


Figure 10.1: Home Page

## 10.3 Authenticate User

- At first users have to register through the sign up page.
- Then they can login.
- Logged in users can view profile page.
- Only when logged in, users can give feedback of the recipes.

### 10.3.1 Sign Up Page

---

# Khabo

## Sign Up

Username:

saif

Email:

sksaifullahhafiz@gmail.com

First Name:

saifFirst

Last Name:

saifLast

Password:

....

Confirm Password:

....

Sign Up

---

Figure 10.2: Sign Up Page

### 10.3.2 Login Page

# Khabo

## Login

Username:

saif

Password:

....

Sign In

Sign Up

[About u](#)

© Copyr

Figure 10.3: Login Page

### 10.3.3 Profile Page

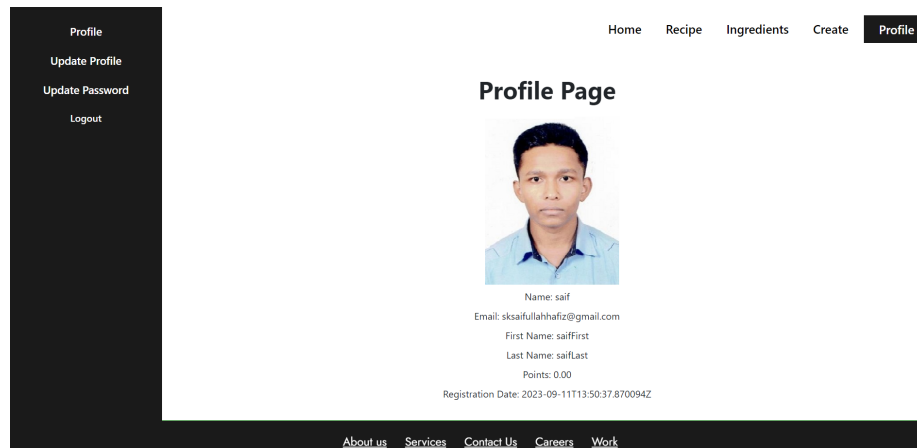


Figure 10.4: Profile Viewer Page



## 10.4 Search By Description

- An User can write the details of a recipe in the search box.
- He/she gets a recipe list which are matched best with his description.
- Then he/she can select and explore a specific recipe.

### 10.4.1 Search Example 1 (Beef Rice)

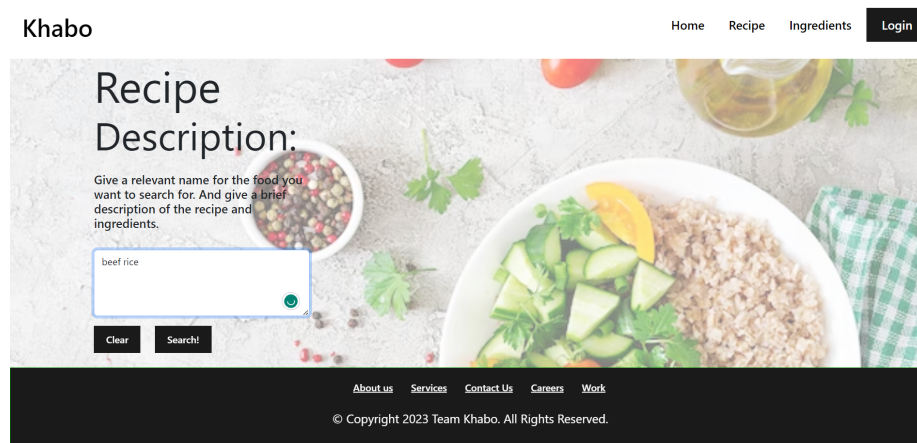


Figure 10.5: Search By Description (Beef Rice)

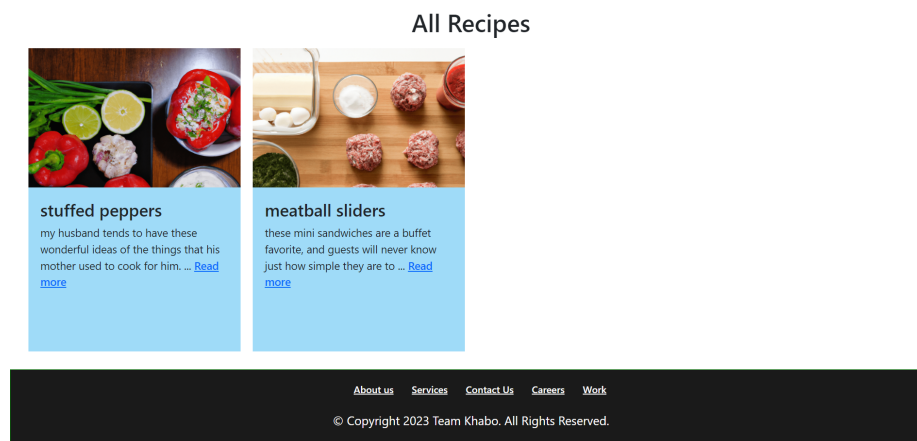


Figure 10.6: Result of Search By Description (Beef Rice)

## 10.4.2 Search Example 2 (Easy to make)

Khabo Home Recipe Ingredients Login

### Recipe Description:

Give a relevant name for the food you want to search for. And give a brief description of the recipe and ingredients.

Clear Search!




Figure 10.7: Search By Description (Easy to make)

All Recipes



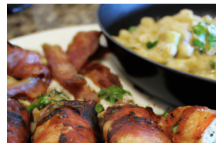





 <p><b>homemade vanilla extract</b> after getting a very poor bottle of vanilla extract from the "fine goods" grocery store a couple yea... <a href="#">Read more</a></p>	 <p><b>stuffed peppers</b> my husband tends to have these wonderful ideas of the things that his mother used to cook for him. ... <a href="#">Read more</a></p>	 <p><b>bacon wrapped stuffed chicken</b> i saw this recipe and new i had to try it. i am not "certain" about the sauce, but i will reply onc... <a href="#">Read more</a></p>	 <p><b>marshmallow fudge</b> my daughter loves this fast fudge recipe!... <a href="#">Read more</a></p>
			

Figure 10.8: Result of Search By Description (Easy to make)

## 10.5 Search By Ingredients

- An User can give list of ingredients.
- He/she will get the recipe list that can be made with those ingredients.
- He/she can select a specific recipe.
- User will get the same type of recipe page as before (Search by Description)
- Note that, our original "Search By Description" had an extra feature of searching shops for missing ingredients. This feature will be implemented in upcoming phases.



Figure 10.9: Search By Ingredients (Step 1)

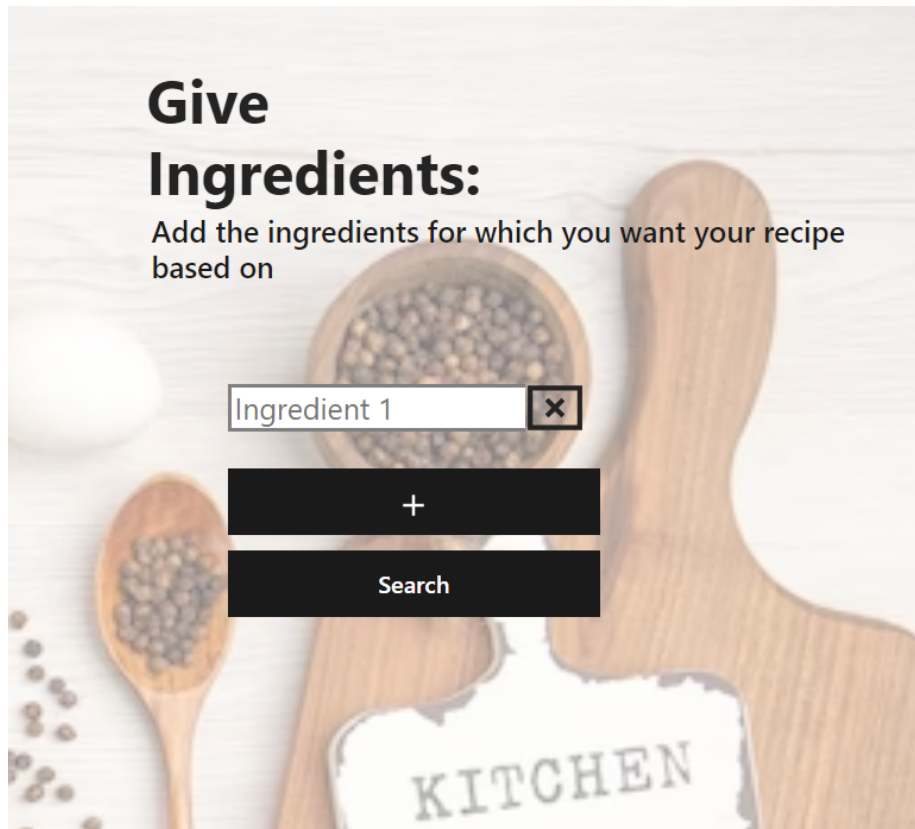


Figure 10.10: Search By Ingredients (Step 2)

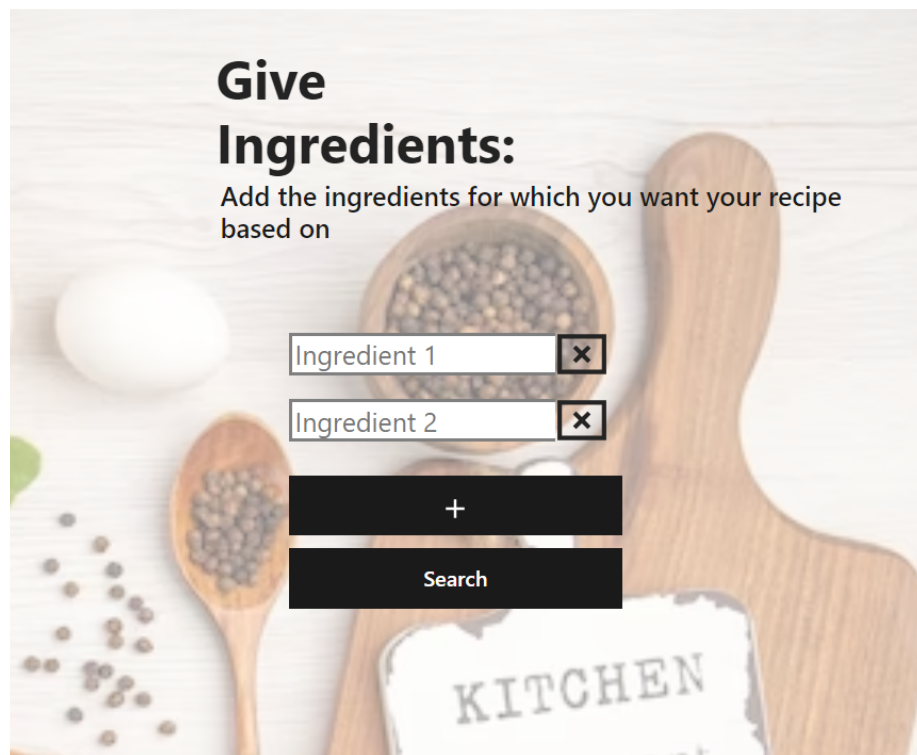


Figure 10.11: Search By Ingredients (Step 3)

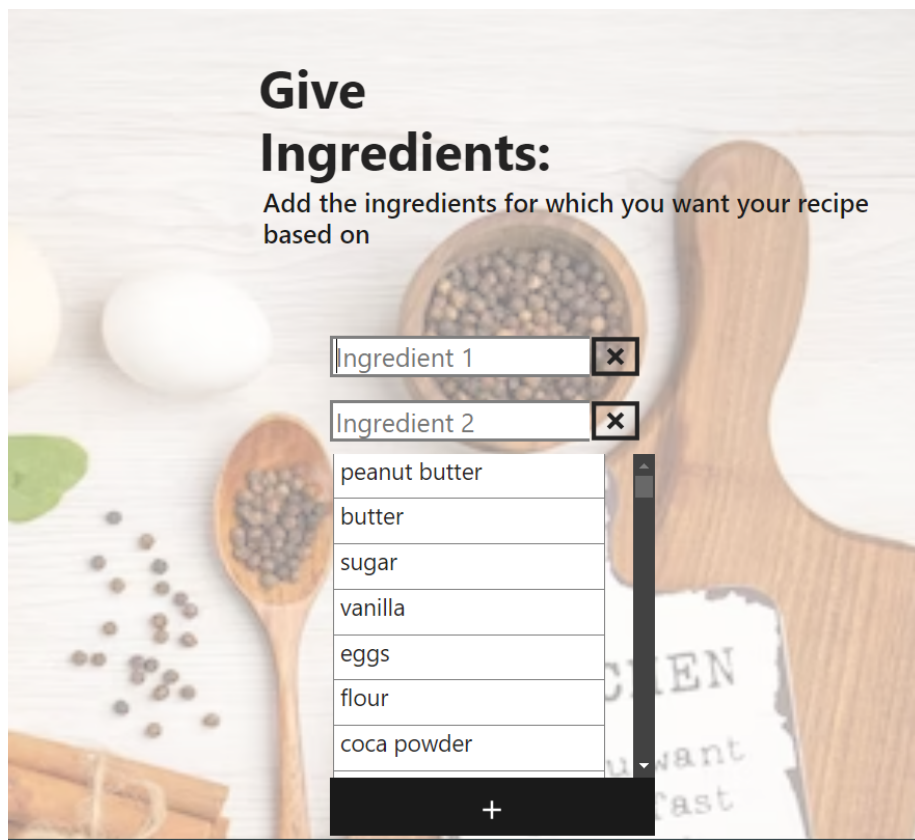


Figure 10.12: Search By Ingredients (Step 4)

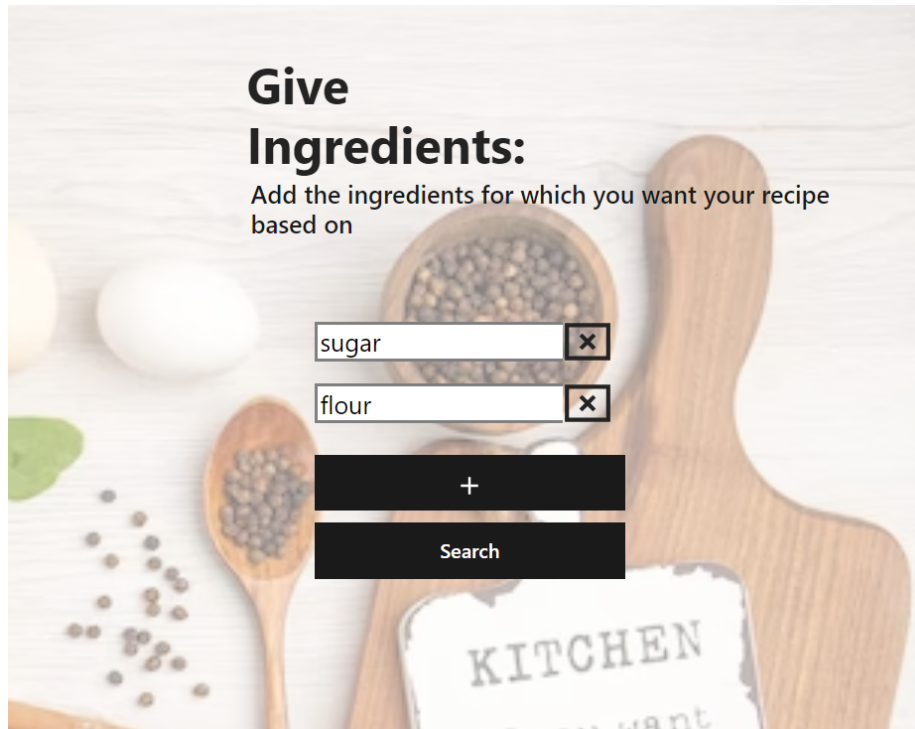


Figure 10.13: Search By Ingredients (Step 5)

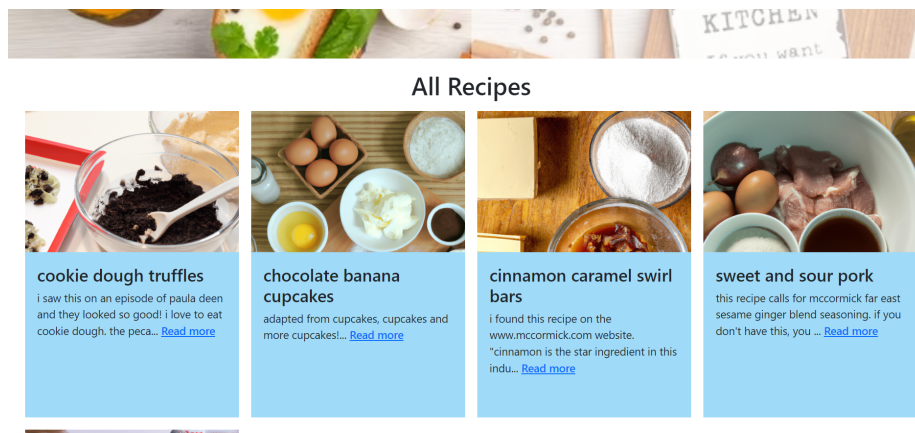


Figure 10.14: Result of Search By Ingredients



## 10.6 Recipe Page

### 10.6.1 Showing a Recipe

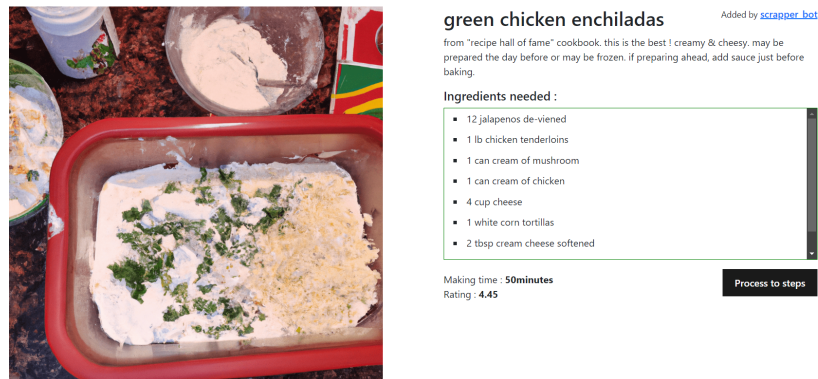


Figure 10.15: Viewing a Recipe

### 10.6.2 Step by Step Guidelines

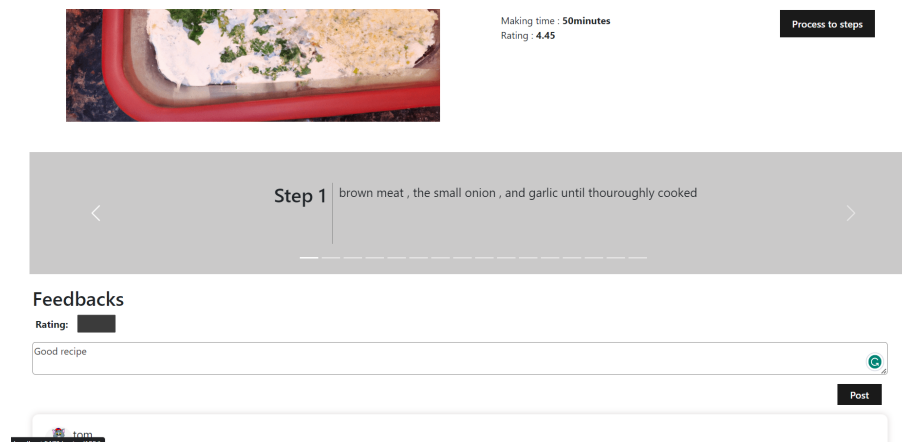



Figure 10.16: Steps of Recipe (Step 1)





Making time : 50minutes  
 Rating : 4.45

Process to steps

<

Step 2


>

add chili powder , salt , and pepper and set aside

Feedbacks
 

Rating:

Good recipe
 



Post




tom

Figure 10.17: Steps of Recipe (Step 2)



Making time : 50minutes  
 Rating : 4.45

Process to steps

<

Step 3


>

soften tortillas by frying in 1 / 2 inch of oil for only a few seconds each

Feedbacks
 

Rating:

Good recipe
 



Post



tom

Figure 10.18: Steps of Recipe (Step 3)


### 10.6.3 User Feedback

#### Feedbacks

Rating:

Good recipe

Post

tom

tom@example.com

I've made this countless times; it never disappoints

jerry

jerry@example.com

My friends loved it. I'm sharing this recipe for sure.

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Figure 10.19: User Feedback

## Chapter 11

# Project Summary

### 11.1 Our Progress

At the current stage of development, we have successfully implemented the "Recipe Visualizer Module" and "Search Module (By ingredients and By Recipe Details)". These modules are designed to bring recipes to life, making the cooking process enjoyable and accessible to everyone. With step-by-step instructions, vivid visuals, and user-friendly presentation, it simplifies cooking while maintaining the essence of culinary creativity.

### 11.2 Future Prospects

While the "Recipe Visualizer Module" marks our initial milestone, we are committed to the continued growth and evolution of KHABO. Our vision is to integrate all modules seamlessly, creating a comprehensive platform that empowers individuals to embark on a journey of culinary exploration and healthier living.

### 11.3 Upcoming Phases

In the upcoming phases, we will roll out the remaining modules, including the Ingredient Scraper, Recipe Storage, Cheapest Ingredient, Ingredients to Recipe, and Smart Ingredient Replacement Modules. These modules will transform KHABO into a one-stop destination for recipe discovery, ingredient sourcing, cost-effective cooking, and culinary inspiration.

## 11.4 Conclusion

In summary, KHABO represents a transformative shift towards promoting home cooking, addressing health, financial, and environmental concerns while nurturing the love for culinary creativity. We invite you to join us on this gastronomic adventure as we endeavor to make cooking at home a delightful and enriching experience for all.