



Faculty of Science and Information Technology  
Department of Software Engineering

**Project Report on  
“NutriPal”**

<https://nutripal-six.vercel.app/>

Submitted By

**ABIR AZIM BADHON**

**ID: 162-35-1713**

Department of Software Engineering,  
Daffodil International University

Supervised By

**Ms. NUSRAT JAHAN**

Assistant Professor,  
Department of Software Engineering,  
Daffodil International University

This Project Report has been submitted to the Department of Software Engineering (SWE) at Daffodil International University in the fulfillment of the requirements for The degree of Bachelor of Science in Software Engineering

© All rights reserved by Daffodil International University

# APPROVAL

This thesis titled on “NutriPal”, submitted by **Abir Azim Badhon (ID: 162-35-1713)** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

## BOARD OF EXAMINERS



---

**Dr. Imran Mahmud**  
**Associate Professor & Head**  
Department of Software Engineering  
Faculty of Science and Information Technology  
Daffodil International University

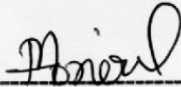
**Chairman**



---

**Nuruzzaman Faruqi**  
**Assistant Professor**  
Department of Software Engineering  
Faculty of Science and Information Technology  
Daffodil International University

**Internal Examiner 1**



---

**Md. Monirul Islam**  
**Assistant Professor**  
Department of Software Engineering  
Faculty of Science and Information Technology  
Daffodil International University

**Internal Examiner 2**



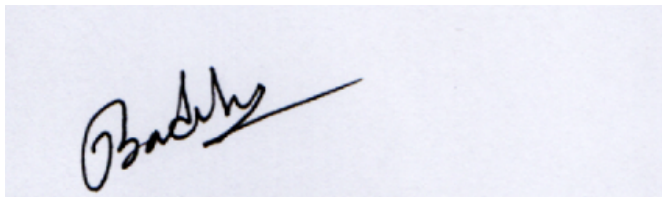
---

**Dr. Md. Sazzadur Rahman**  
**Associate Professor**  
Institute of Information Technology  
Jahangirnagar University

**External Examiner**

## DECLARATION

I hereby declare that I have done this project under the supervision of **Ms. Nusrat Jahan, Assistant Professor**, Department of Software Engineering, Daffodil International University. I also declare that this project is my original work for the degree of B.Sc. in Software Engineering and neither the whole work nor any part of this project has been submitted for another degree in this or any other university.

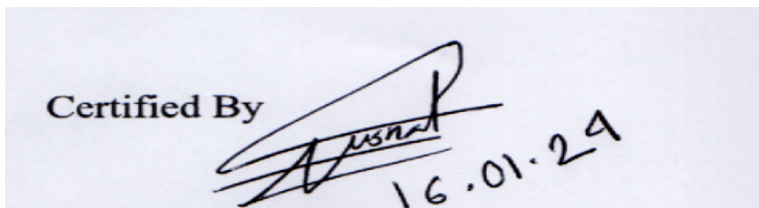


-----  
Abir Azim Badhon

ID: 162-35-1713

Department of Software Engineering,

Daffodil International University



-----  
Ms. Nusrat Jahan

Assistant Professor, Department of Software Engineering,

Daffodil International University

## ACKNOWLEDGEMENT

I would like to express my sincere gratitude to everyone who has contributed directly or indirectly to the successful completion of my final project named, “**NutriPal**”- A personalized nutrition assistant.

First of all, I am deeply indebted and thankful to my respected supervisor, **Ms. Nusrat Jahan**, for her priceless guidance and support throughout the project. Her insightful feedback, constant encouragement, and tireless dedication have been highly effective and crucial in shaping this project into its final form. I am grateful for her patience, expertise, and willingness to assist in ensuring my success in this project completion.

Secondly, I would like to thank the Head of the Department of Software Engineering, **Prof. Dr. Imran Mahmud**, for providing the resources, environment, and infrastructure necessary for learning and growing as a human being and successful person. His leadership and commitment to the academic sector have created an environment where each student can thrive and chase their dreams efficiently.

I am also grateful to my fellow students and the faculty members of the Daffodil International University for their enormous support and encouragement. The discussions, feedback, and collaborative ambiance have been invaluable in refining my thoughts and this project's goals.

Finally, I would like to express my deepest gratitude to my parents for their unwavering support throughout this journey. Their constant encouragement and belief in my abilities have been the driving force behind my achievements.

This project would not have been possible without the irreplaceable support and contributions of all the individuals mentioned above. I am very thankful for their guidance, support, and encouragement.



## ABSTRACT

**NutriPal** is a web-based application designed to address the present-day challenge of managing dietary health and tracking the food habits of any individual. With a focus on promoting healthy and resilient eating habits, the project aims to empower users to easily track nutritional intake, monitor progress data, and access personalized food and nutrition recommendations. By providing an extensive platform of data, NutriPal constructs a community of like-minded individuals who share a passion for nutritious and healthy lifestyles.

The primary focus of this application is to bridge the gap between knowledge, data, and personalized guidance, nurturing informed choices and up-to-date well-being. With stakeholders ranging from general users to healthcare providers, athletes, research institutions, nutritionists, dietitians, and food and beverage companies, NutriPal evolves as a versatile tool with the potential to impact various stages of health and nutrition.

The project's significance is ensured by its potential to contribute to valuable research in nutrition and food for personalized medicine and the healthcare system. It also offers practical benefits to individuals, including mothers seeking to ensure their children's necessary nutrition. **NutriPal** contribution is more than just software; it visualizes to become a supportive and engaging platform that motivates users to use this application for their health and wellness goals.

# Table of Contents

<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Project Overview.....	2
1.2 Project Purpose.....	2
1.3 Background.....	3
1.4 Goals.....	3
1.6 Stakeholders.....	4
1.6 Proposed System Model.....	5
1.7 Modules of NutriPal.....	6
1.8 Project Schedule.....	8
1.8.1 Gantt Chart:.....	10
1.9 Objective.....	10
<b>REQUIREMENT ENGINEERING.....</b>	<b>11</b>
2.1 Functional Requirements.....	12
2.2 Non-functional Requirements:.....	13
2.3 Data Requirements:.....	13
<b>SYSTEM ANALYSIS, DESIGN &amp; SPECIFICATION.....</b>	<b>14</b>
3.1 Development Model.....	15
3.2 Use Case Diagram.....	17
3.3 Use Case Description.....	18
3.3.1 Registration.....	18
3.3.2 Login.....	18
3.3.3 Create/Update Profile.....	18
3.3.4 Create Recipe.....	19
3.3.5 Create Collection:.....	19
3.3.6 Add Recipe to A Collection:.....	19
3.3.7 Add Recipe to The Compare List:.....	20
3.3.8 Add Version to a Recipe/ Modify Original Version:.....	20
3.3.9 Add Comment to a Recipe:.....	20
3.3.10 Add Note to a Recipe:.....	21
3.3.11 Add Rating to A Recipe:.....	21
3.3.12 Share Recipe:.....	21
3.3.13 Search Recipe:.....	22
3.3.14 Share a Recipe Collection:.....	22
3.3.15 Create Challenge:.....	23
3.3.16 Share Challenge:.....	23
3.3.17 View Wiki:.....	24

3.3.18 View User List (Admin):.....	24
3.3.19 Manage Food Data (Admin):.....	25
3.3.20 Manage Nutrition Data (Admin):.....	25
3.3.21 Manage Health Data (Admin).....	25
3.3.22 Manage Daily Recommendation Data (Admin).....	26
3.3.23 Manage Recipe Category And Brand.....	26
3.4 Activity Diagram.....	27
3.4.1 Registration Activity.....	27
3.4.2 Login Activity.....	28
3.4.3 Create/ Update Profile.....	29
3.4.4 Create Recipe.....	30
3.4.5 Collection Create.....	31
3.4.6 Add Recipe to a Collection.....	32
3.4.7 Add Recipe to The Compare List.....	33
3.4.8 Add Version to a Recipe/ Modify an Original Version.....	34
3.4.9 Add Comment to a Recipe.....	35
3.4.10 Add Note On a Recipe.....	36
3.4.11 Add Rating to a Recipe.....	37
3.4.12 Share a Recipe.....	38
3.4.13 Search Recipes.....	39
3.4.14 Share a collection.....	40
3.4.15 Create Challenge.....	41
3.4.16 Create Challenge Post.....	42
3.4.17 Share Challenge.....	43
3.4.18 View Wiki.....	44
3.4.19 View User List (Admin).....	45
3.4.20 Add Ingredient Form Source (Admin).....	46
3.4.21 Remove Ingredient (Admin).....	47
3.4.22 Edit Food (Admin).....	48
3.4.23 Add Nutrient From Source (Admin).....	49
3.4.24 Add Health Data (Admin).....	50
3.4.25 Add DRI Data (Admin).....	51
3.4.26 Create New Recipe Category (Admin).....	52
3.5 Sequence Diagram.....	53
3.5.1 Sign Up.....	53
3.5.2 Login.....	54
3.5.3 Update Profile.....	55
3.5.4 Create Recipe.....	56

3.5.5 Create Collection.....	57
3.5.6 Add Recipe to a Collection.....	58
3.5.7 Add Recipe to The Compare List.....	59
3.5.8 Add Version to a Recipe.....	60
3.5.9 Add Comment to a Recipe.....	61
3.5.10 Add Note to Recipe.....	62
3.5.11 Add Rating to Recipe.....	63
3.5.12 Share a Recipe.....	64
3.5.13 Search Recipe.....	65
3.5.14 Share a Recipe Collection.....	66
3.5.15 Create Challenge.....	67
3.5.16 Create Challenge Post.....	68
3.5.17 Share Challenge.....	69
3.5.18 Upload Image.....	70
3.5.19 View Wiki Item.....	71
3.5.20 View User List (Admin).....	71
3.5.21 Add Ingredient from Source (Admin).....	72
3.5.22 Add Nutrient from Source (Admin).....	73
3.5.23 Add Health Data (Admin).....	74
3.5.24 Add DRI Data.....	75
3.5.25 Add Recipe Category.....	76
3.6 ER (Entity Relationship Diagram).....	77
3.7 ER Diagram (Simplified).....	78
<b>DEVELOPMENT TOOLS &amp; TECHNOLOGY.....</b>	<b>79</b>
4.1 Integrated Development Environment (IDE):.....	80
4.2 Programming Language:.....	80
4.3 User Interface Design:.....	80
4.4 Database:.....	81
4.5 Deploy and Hosting:.....	81
4.6 Security and Authentication:.....	81
4.7 Image Storage:.....	81
4.8 Continuous Integration and Continuous Delivery (CI/CD):.....	81
<b>SYSTEM TESTING.....</b>	<b>83</b>
5.1 Feature Testing.....	84
5.1.1 Features to be tested.....	84
5.2 Test Strategies.....	86
5.2.1 Test Approach.....	86
5.2.2 Test Schedule.....	86

<b>USER MANUAL.....</b>	<b>87</b>
6.1 NutriPal Registration.....	88
6.2 Login.....	88
6.3 Create Profile.....	89
6.4 Home Page.....	90
6.5 Recipe Home Page.....	91
6.6 Profile Section.....	92
6.6.1 About Section.....	93
6.6.2 Personalization Section.....	94
6.7 Add New Recipe and View a Recipe.....	96
6.8 Recipe Card Options.....	97
6.9 Recipe Collection.....	98
6.10 Recipe Notes Comments and Rating.....	99
6.11 Recipe Compare.....	100
6.12 Filter Recipe.....	100
6.13 Challenge.....	102
6.13.1 Select Challenge.....	102
6.13.2 My Thirty Days Challenge List.....	103
6.14 Wiki.....	103
6.15 Wiki My Facts.....	105
<b>CONCLUSION.....</b>	<b>106</b>
7.1 Project Summary.....	107
7.2 Limitations.....	108
7.3 Future Scope.....	108
7.4 Project Link.....	109
7.5 References:.....	110
Plagiarism Report.....	111
Library Clearance.....	115
Account Clearance.....	115

## List Of Figures

1.1 Proposed System Model.....	5
3.1 Agile SDLC Model.....	15
3.2: User case Diagram for NutriPal.....	17
3.3 Sign up activity diagram.....	26
3.4 Login Activity Diagram.....	27
3.5 Update Profile Activity Diagram.....	28
3.6 Recipe Create Activity Diagram.....	29
3.7 Create Collection Activity Diagram.....	30
3.8 Recipe Add to Collection Activity Diagram.....	31
3.9 Add Recipe to Compare List Activity Diagram.....	32
3.10 Add Recipe Version Activity Diagram.....	33
3.11 Add Comment Activity Diagram.....	34
3.12 Add Note Activity Diagram.....	35
3.13 Add Recipe Rating Activity Diagram.....	36
3.14 Share Recipe Activity Diagram.....	37
3.15 Search Recipes Activity Diagram.....	38
3.16 Share Recipe Collection Activity Diagram.....	39
3.17 Create Challenge Activity Diagram.....	40
3.18 Create Challenge Post Activity Diagram.....	41
3.19 Share Challenge Activity Diagram.....	42
3.20 View Wiki Activity Diagram.....	43
3.21 View User List Activity Diagram.....	44
3.22 Add Ingredient From Source Activity Diagram.....	45
3.23 Remove Ingredient Activity Diagram.....	46
3.24 Edit Ingredient Activity Diagram.....	47
3.25 Add Nutrient From Source Activity Diagram.....	48
3.26 Add Health Activity Diagram.....	49
3.27 Add DRI Activity Diagram.....	50
3.28 Add Recipe Category Activity Diagram.....	51
3.29 Sign Up Sequence Diagram.....	52
3.30 Login Sequence Diagram.....	53
3.31 Update Profile Sequence Diagram.....	54
3.32 Create Recipe Sequence Diagram.....	55
3.33 Create Collection Sequence Diagram.....	56
3.34 Add Recipe to a Collection Sequence Diagram.....	57
3.35 Add Recipe to The Compare List Sequence Diagram.....	58

3.36 Add Version Sequence Diagram.....	59
3.37 Add Comment Sequence Diagram.....	60
3.38 Add Note Sequence Diagram.....	61
3.39 Add Rating Sequence Diagram.....	62
3.40 Share a Recipe Sequence Diagram.....	63
3.41 Search Recipe Sequence Diagram.....	64
3.42 Share Collection Sequence Diagram.....	65
3.43 Create Challenge Sequence Diagram.....	66
3.44 Create Challenge Post Sequence Diagram.....	67
3.45 Share Challenge Sequence Diagram.....	68
3.46 Upload Image Sequence Diagram.....	69
3.47 View Wiki Item Sequence Diagram.....	70
3.48 View User List Sequence Diagram.....	71
3.49 Add Ingredient Sequence Diagram.....	71
3.50 Add Nutrient Sequence Diagram.....	72
3.51 Add Health Data Sequence Diagram.....	73
3.52 Add DRI Sequence Diagram.....	74
3.52 Add Recipe Category Sequence Diagram.....	75
3.53 Entity Relation Diagram For NutriPal.....	76
3.7 ER Diagram (Simplified).....	77
6.1 Nutripal Signup Process.....	88
6.2 Nutripal Login Process.....	89
6.3 Create Profile Process.....	90
6.4 Home Page View.....	90
6.5 Recipe Home Page (Understanding Different Options).....	91
6.6 Profile Option.....	92
6.6.1 Update profile (About Section).....	93
6.6.2 Update profile (Personalization Section).....	94
6.6.3 Update profile DRI data and Goal.....	95
6.7 Recipe creation process.....	96
6.8 Understanding Recipe Card.....	97
6.9 Recipe Collection Options.....	98
6.10 Recipe Notes, comments, and Rating Panel.....	99
6.11 Recipe Compare Process.....	100
6.12 Recipe Filter Process.....	101
6.13.1 Selecting Default Challenge.....	102
6.13.2 Thirty Days Challenge List View.....	103
6.14: Wiki Item View.....	104

6.15 Wiki My Facts View.....105

## List Of Tables

1.1 Gantt Chart.....10  
5.1 Features to be Tested.....85  
5.2 Test Schedule.....86



CHAPTER - 1

**INTRODUCTION**

## **1.1 Project Overview**

“**NutriPal**” is a web-based application, it has been designed to provide users a platform to discover, save, and organize their daily food habits and engage with food exploration. It allows users to track their nutritional intake, monitor their progress, and access data-driven food recommendations for their daily dietary needs. The software offers a community-based health and culinary solution that allows users to share their meal plans and engage with others in a social setting via a unique challenge feature.

It’s a community-based health and culinary solution that offers a foundation of data-driven food discovery and engagement. The software will provide users with access to a comprehensive database of nutritional information for different food items, as well as a dashboard that displays a summary of the user's nutritional intake and progress toward their goals. NutriPal will also enable users to create and share their meal plans and engage with others in the community.

## **1.2 Project Purpose**

The purpose of this project is to create a web-based application called "**NutriPal**" that enables users to discover, save, and organize their day-to-day food habits. NutriPal aims to provide a comprehensive platform that enables users to track their nutritional intake, monitor their progress, and access data-driven recommendations for their daily dietary needs.

## 1.3 Background

“**NutriPal**” tackles the modern dilemma of managing dietary health and lifestyle. This modern world has contemporary problems, such as a lack of awareness about food choices, ineffective tracking methods, and generic advice on food on social media or from unauthorized sources, and many of us struggle to achieve our dietary goals. NutriPal's innovative web app empowers users to discover diverse, healthy options in food, track nutrition intake, monitor progress, give personalized recommendations, and ultimately, take control of their health journey. By bridging the gap between knowledge, data, and personalized guidance, “**NutriPal**” tiles the way for informed choices and upgraded well-being.

Bangladesh is a developing country, and malnutrition is a major public health issue here. First of all, we don't have any food database. The “World Food Program” reports that - in Bangladesh, 21 percent of children under the age of five are malnourished, with 5 percent suffering from acute malnutrition. The global scenario is much more dangerous.

Though there is a growing awareness of the importance of healthy food habits and nutritious food's impact on our body and soul, many of us struggle to maintain a healthy diet due to a lack of trustworthy sources of food information, and a lack of popular or practical solutions. “**NutriPal**” aims to address these problems by providing a space that enables individuals will be able to keep track of their daily nutritional goals, get access to data-driven food recommendations according to their daily dietary needs, and engage with a vast community of individuals who will share a similar passion for a healthy dietary lifestyle.

## 1.4 Goals

The goal of **NutriPal** is to encourage healthy and sustainable eating habits and facilitate a community of like-minded individuals who share a passion for healthy and delicious food. NutriPal aims to make it easy for users to track their nutritional intake and access data-driven recommendations for their daily dietary needs. By providing access to social features and a

community of users who share similar goals, NutriPal hopes to create a supportive and engaging platform that helps users stay motivated and committed to their health and wellness goals.

## 1.6 Stakeholders

**General Users:** These are the primary stakeholders of NutriPal, who will use the application to track their nutritional intake in day-to-day life, monitor their health progress, and food habits, and access data-driven food and nutrition recommendations for their daily dietary needs. Users will also be able to engage with other users in the community, share their meal plans, and access other features of the application.

**Healthcare Providers:** Doctors, nurses, and other healthcare providers and professionals can recommend NutriPal to their patients as a tool for managing their day-to-day food habits, weight management, calorie tracking, and overall health improvement. It will be very useful to them as they have to suggest medicine and diagnose.

**Athletes:** The athletes, who need to remain fit will find a valuable companion in **NutriPal**. The app's personalized recommendations and calorie tracking from the food will also empower them to fuel their bodies for optimal training and tracking.

**Research Institutions:** NutriPal can collaborate with research institutions to collect and analyze user data on dietary habits, and food nutrition data from the root level. This data can contribute to valuable research in the field of nutrition and personalized health tracking.

**Nutritionists and dietitians:** These professionals can be considered secondary stakeholders of **NutriPal**, as they can use the application to recommend dietary plans and food suggestions to their clients. **NutriPal** can provide nutritionists and dietitians with a huge database of nutritional information such as WIKI for different food items and nutrition.

**Food and beverage companies:** These stakeholders can use NutriPal to promote their products and services. **NutriPal** can offer opportunities for food and beverage companies to advertise their products, and to provide users with access to nutritional information for their products by using its APIs and spread awareness all over the world.

Finally, A mother of a child can also benefit from NutriPal in several ways, as the application can help to ensure that her child is receiving the accurate nutrition required.

### 1.6 Proposed System Model

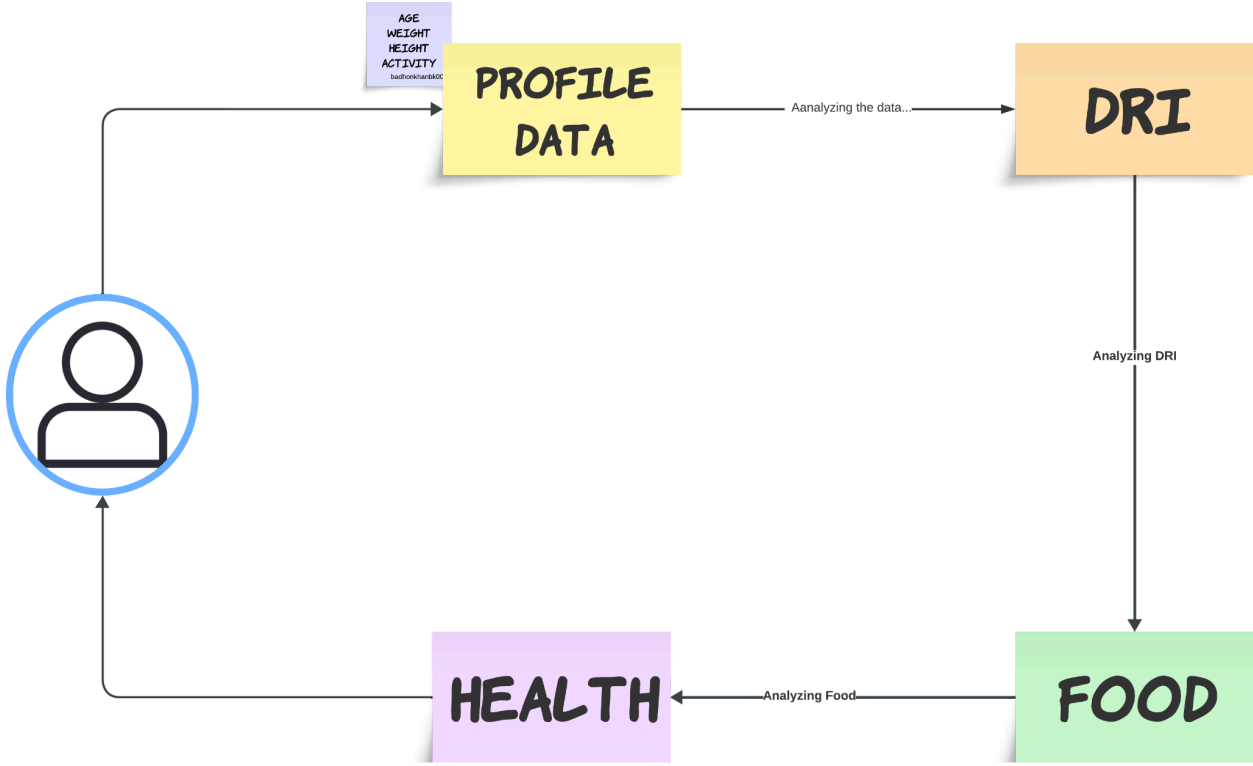


Figure 1.1 Proposed System Model

Think of NutriPal as a smart friend who listens to your body and tells you what to eat. By simply sharing basic info like age, height, weight, and activity level, you unlock personalized daily recommendations. It's like having a miniature dietitian in your pocket!

Here's how it works (simplified):

1. **You share your info:** Age, height, weight, and how active you are.
2. **NutriPal analyzes:** It uses this data to understand your daily calorie needs, considering **Dietary Reference Intakes (DRIs)** for essential nutrients.
3. **Food suggestions appear:** Based on your needs, NutriPal recommends a variety of delicious and healthy food options that fit your calorie and nutrient requirements.
4. **Health benefits unveiled:** Beyond just food, NutriPal tells you what health benefits each option offers, helping you choose the best fit for your goals.

## 1.7 Modules of NutriPal

### For Users:

#### 1. Login/Registration:

- Securely access your NutriPal account with email/password or Google login.
- New users can easily register and embark on their personalized food journey.

#### 2. Profile Creation:

- Personalize your experience by sharing your age, weight, height, and activity level.
- This unlocks tailored recommendations, challenges, and insights for optimal health.

#### 3. Recipe Creator:

- Unleash your inner chef and craft delicious, healthy recipes.
- Add ingredients, instructions, and pictures, and share your culinary creations with the world.

#### 4. Compare & Collections:

- Discover a vast recipe library and compare options based on your needs and preferences.
- Find the perfect fit for your taste and dietary goals.
- Curate collections of your favorite recipes for future inspiration and easy access.

### **5. Share Collections:**

- Spread the food culture and inspire others by sharing your recipe collections.
- Share your culinary expertise through challenge features and help others on their health journeys.

### **6. Recipe Versioning/Notes:**

- Continuously improve your recipes according to your taste by creating new versions and adding personal notes.

### **7. Challenge Creation/Sharing:**

- Set personalized food goals, choose a start and end date, and track your progress.
- Motivate yourself and others by sharing your challenges and celebrating milestones.

### **8. Food Tracking:**

- Simplify your life with effortless meal logging and intake monitoring.
- Scan barcodes, add recipes, and track your calorie, nutrient, and macronutrient consumption.
- Gain valuable insights into your food habits and nutritional impact and make informed choices for a healthy lifestyle.

## **For Admin:**

### **1. User Management:**

- Ensure a smooth experience for all users of this application.
- Monitor user activity, address issues, and promote a health solution.

## **2. Ingredient & Nutrient Data:**

- Maintain a vast and accurate database of ingredients and their nutritional information.
- Delegate users with reliable data to make informed food choices.

## **3. Health & DRI Data:**

- Provide users with access to reliable health insights and dietary guidelines through health and DRI management.
- Manage data related to health conditions, allergies, and Dietary Reference Intakes (DRIs) by adopting trusted sources.

## **4. Recipe Category & Brand Management:**

- Organize the recipe prospect by categories and brands for user convenience.
- Ensure easy navigation, brand visibility, and a diverse range of culinary options.

# **1.8 Project Schedule**

In the dynamic world of software development, a well-defined project schedule acts as a supervisor, orchestrating the tangled ball of features, resources, and deadlines. With time being a precious material, crafting a robust schedule becomes foremost to ensuring timely completion.

This schedule serves as a roadmap, clearly outlining which features need to be prioritized, what resources must be allocated first, the planning, and collecting of the resources, and when each milestone should be reached. It ensures transparency and accountability, enabling all stakeholders to understand the project's meaning and ensure the primary goals.



By meticulously mapping out tasks and dependencies, the schedule becomes a powerful tool for:

- **Efficient Resource Allocation:** Matching the right resources to the right tasks and timing ensures optimal utilization and avoids obstruction.
- **Clear Communication:** The schedule serves as a primary point of reference, facilitating transparent communication between the project and stakeholders, especially for building this app.
- **Risk Mitigation:** Proactive identification of potential delays and dependencies allows for informed decision-making agile adjustments to the plan and constant support from the supervisor to meet the project objective.
- **Motivational Force:** Clearly defined milestones and achievable goals provide a sense of direction and accomplishment, boosting morale and driving progress for the completion of this project.

In a time-constrained environment, a carefully crafted schedule becomes even more than a crucial task. It acts as a vital ingredient, ensuring that every resource is optimized, every primary task is prioritized, and every deadline should be met. By embracing the power of a well-defined schedule, we can transform the development process into building this app's functionality, efficiency, and success.

### 1.8.1 Gantt Chart:

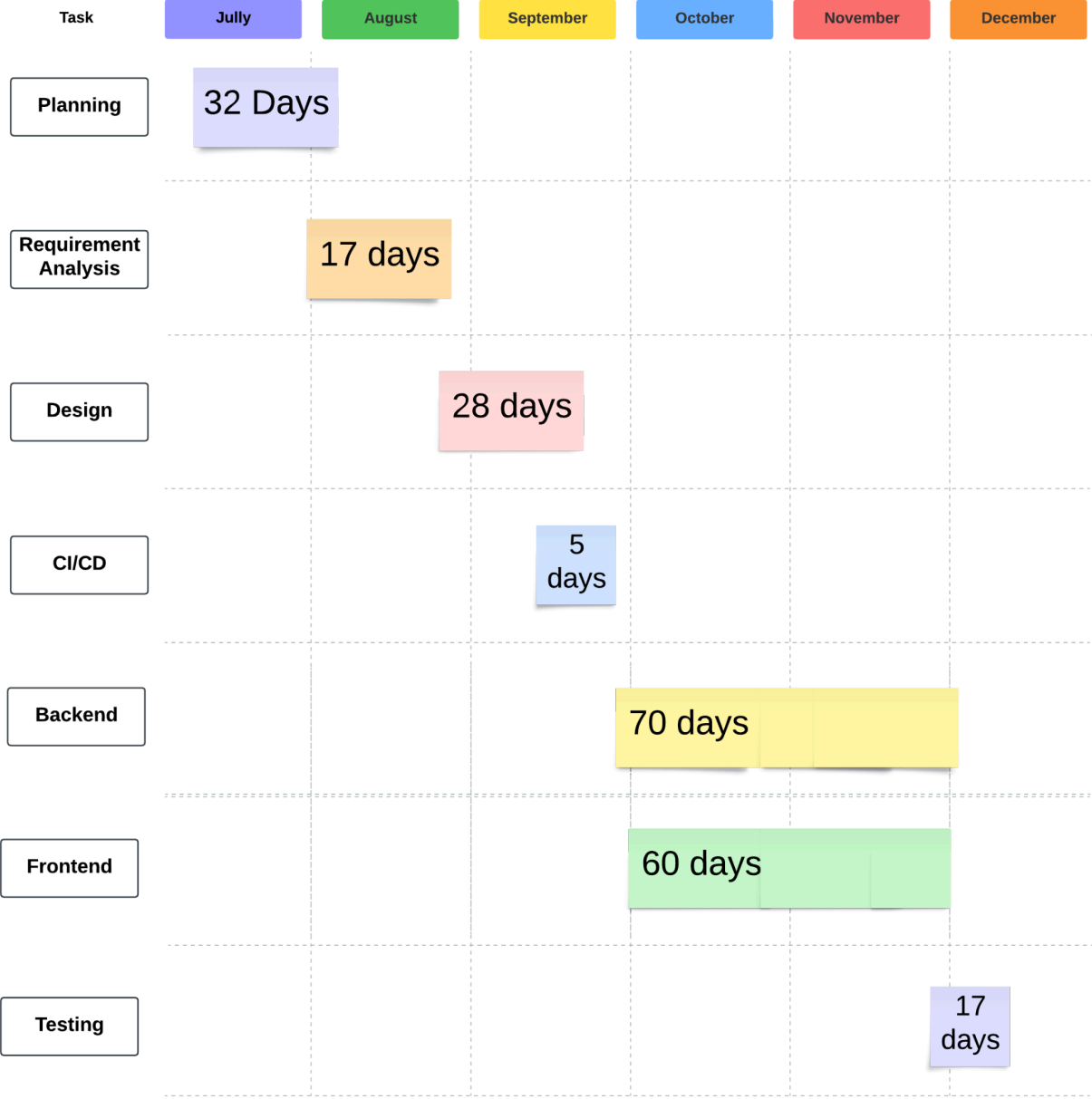


Table 1.1 Gantt Chart

### 1.9 Objective

To develop a health solution where users can keep track of their food habits.

## CHAPTER - 2

# **REQUIREMENT ENGINEERING**

## 2.1 Functional Requirements

In software development, a functional requirement (FR) defines what a system must do, what features it must have, and how it should behave from a user's perspective. It focuses on the actual functionalities and deliverables that the system needs to provide to fulfill its intended purpose.

The functional requirements of “NutriPal” are –

**FR 01** - Login

**FR 02** - Registration

**FR 03** - Create/Update profile

**FR 04** - Create recipe

**FR 05** - Create collection

**FR 06** - Add recipe to a collection

**FR 07** - Add recipe to compare list

**FR 08** - Add version to a recipe/ Modify original version

**FR 09** - Add comment to a recipe

**FR 10** - Add note to a recipe

**FR 11** - Add rating to a recipe

**FR 12** - Share a recipe

**FR 13** - Search recipe

**FR 14** - Share a collection

**FR 15** - Create Challenge

**FR 16** - Share Challenge

**FR 17** - View Wiki

**FR 18** - View user list (admin)

**FR 19** - Manage food data (admin)

**FR 20** - Manage nutrition data (admin)

**FR 21** - Manage health data (admin)

**FR 22** - Manage daily data (admin)

**FR 23** - Manage recipe category and brand (admin)

## **2.2 Non-functional Requirements:**

Non-functional requirements (NFRs) define how well a system does what it's supposed to do.

They focus on the qualities and characteristics of the system, its usability, performance, security, and other attributes. Imagine them as the ingredients that make a cake delicious beyond its basic functions (ingredients and baking!).

The non-functional requirements of “NutriPal” are –

**NFR01** - Privacy

**NFR02** - Reliability

**NFR03** - Accuracy

**NFR04** - Performance

## **2.3 Data Requirements:**

USDA data like nutrients and ingredients will be the first source of data for this application. The USDA National Nutrient Database for Standard Reference contains a vast amount of information on the nutrient content of foods, including macronutrients (carbohydrates, fats, and proteins), micronutrients (vitamins and minerals), calorie value, and other food components. This data has been used to provide users with accurate information about the nutrient content of the foods, as well as to help them track their nutrient intake and make informed decisions about their diet.

These USDA data on food ingredients can be used to help users identify potential triggers of concern and provide them with accurate information about the composition of the foods they consume. This data has been used to create a database of food items and their corresponding nutritional information by giving them structure and making relationships among food, nutrition, and health, which users can use to arrange their meals and track their nutrient intake.

In summary, USDA data has been a critical source of data for this application, as it provides the foundational information needed to support accurate and effective dietary tracking and food information.

## CHAPTER - 3

# **SYSTEM ANALYSIS, DESIGN & SPECIFICATION**

### 3.1 Development Model

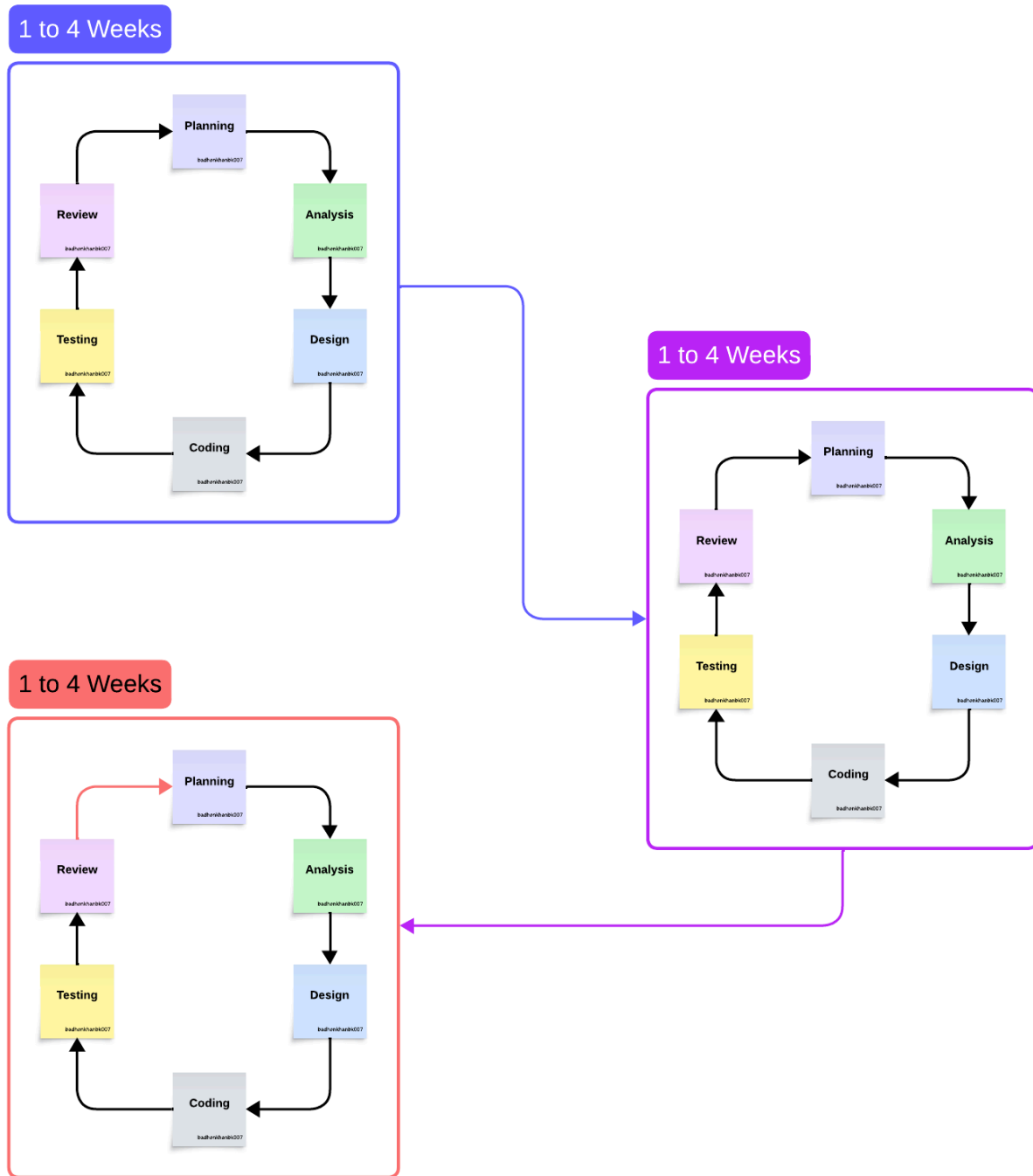


Figure 3.1 Agile SDLC Model

To develop this project “**NutriPal**”, an AGILE SDLC model has been followed. As The Agile SDLC model is a combination of iterative and incremental progress for a successful project, it helped me to break the whole project into some small incremental parts making the whole journey easier to implement. These parts are implemented in iterations throughout the project journey. Here, One iteration lasted from one week to one month. After every iteration, some of the features of the project were implemented, tested, and reviewed by my supervisor, and some of the tasks were backlogged. Every iteration works concurrently on various steps – Planning, Requirements Engineering, Designing, Coding, Testing, and Continuous Integration and Deployment.



## 3.2 Use Case Diagram

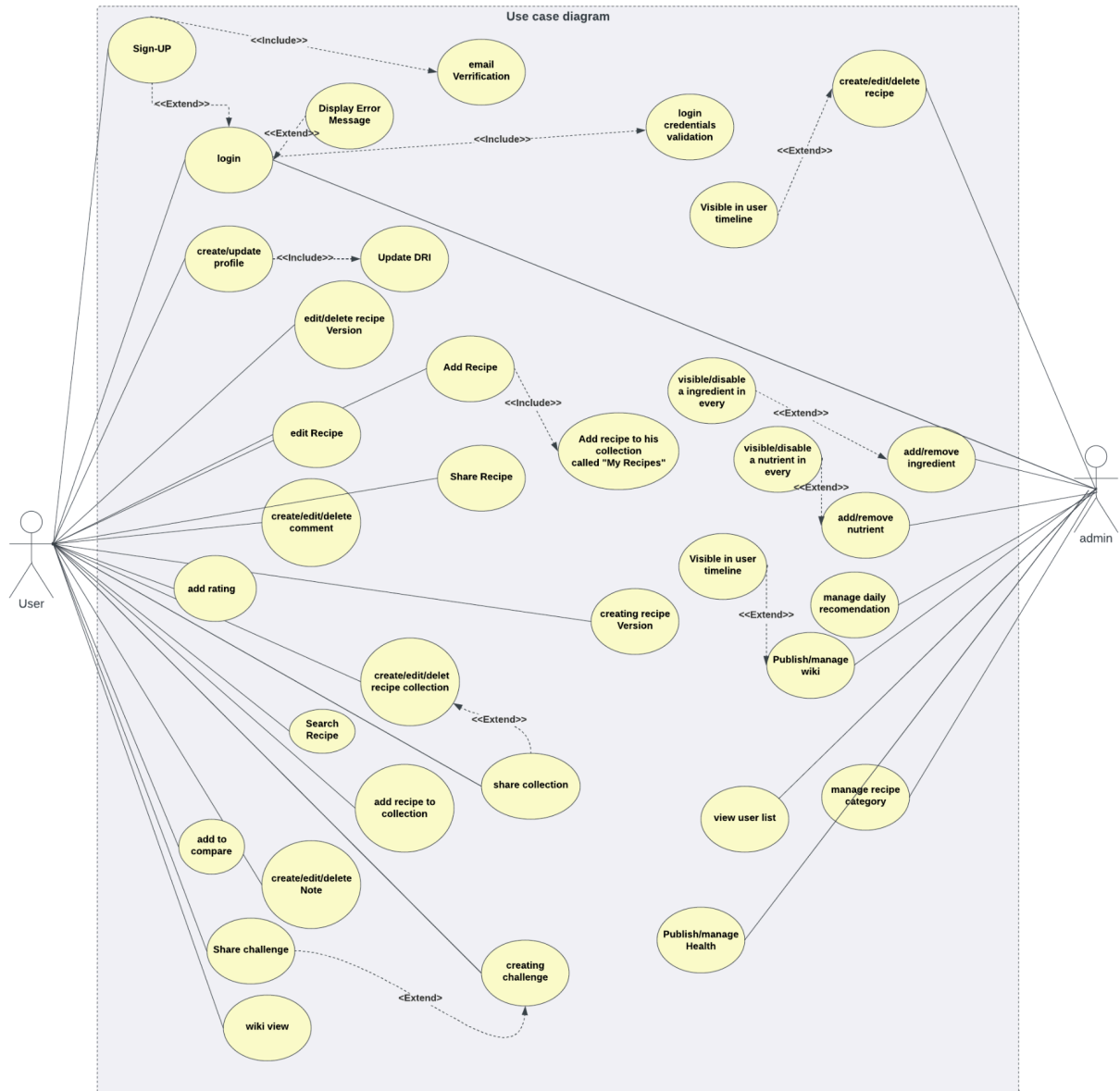


Figure 3.2: User case Diagram for NutriPal

### 3.3 Use Case Description

#### 3.3.1 Registration

ID: FR-01
Requirement Name: Register
Description: The software shall allow users to register using their email password or Google signup. The user will receive a verification email msg through an email with a six-digit PIN. After pin verification, the user will become a registered user.
Stockholders: user

#### 3.3.2 Login

ID: FR-02
Requirement Name: Login
Description: The software shall allow users to log in using their email and password as well as Google login. However, the admin can only log in via a predefined email and password.
Stockholders: user, admin

#### 3.3.3 Create/Update Profile

ID: FR-03
Requirement Name: Create/Update Profile
Description: After Login into the system successfully. The user can create his profile with necessary information like age, weight, height, activity, medication, and other information.

Stockholders: user
--------------------

### 3.3.4 Create Recipe

ID: FR-04
Requirement Name: Create Recipe
Description: The user can create a recipe, and the system will show the Nutritional panel automatically as he adds ingredients to the recipe accordingly.
Stockholders: User

### 3.3.5 Create Collection:

ID: FR-05
Requirement Name: Create Collection
Description: The user can create a recipe collection from any recipe page.
Stockholders: User

### 3.3.6 Add Recipe to A Collection:

ID: FR-06
Requirement Name: Register and Login
Description: After Becoming a user the user will get a default recipe collection named "My Favorite". The user can select a recipe and add that recipe to a particular collection. After selecting the "add to collection" button the system will prompt with a message written "add to last modified collection", the user can select to add last modified collection or user can change the default selection by choosing the "change" button from the prompt and the collection panel will open then the user can choose one

or more collections from the recipe collection panel.
Stockholders: User

### 3.3.7 Add Recipe to The Compare List:

<b>ID: FR-07</b>
Requirement Name: Add Recipe to The Compare List
Description: The user can choose a recipe to add to the compare list. From there, users can compare recipes and formulate new recipes by dragging and dropping ingredients from the recipe list.
Stockholders: User

### 3.3.8 Add Version to a Recipe/ Modify Original Version:

<b>ID: FR-08</b>
Requirement Name: Add Version to a Recipe/ Modify Original Version
Description: The user can add a new version to a particular recipe. Users can directly modify a recipe. If the recipe is his own created recipe the recipe will simply be modified but if it is not his own then the system will create a new version from the source version.
Stockholders: User

### 3.3.9 Add Comment to a Recipe:

<b>ID: FR-09</b>
Requirement Name: Add Comment to a Recipe
Description: The user can add one or more comments to a particular recipe. The created

comments will be visible to all the users who have access to that recipe.
Stockholders: User

### 3.3.10 Add Note to a Recipe:

<b>ID: FR-10</b>
Requirement Name: Add Note to a Recipe
Description: The user can add one or more notes to a particular recipe. The created notes will not be visible to users even if the user has access to that recipe.
Stockholders: User

### 3.3.11 Add Rating to A Recipe:

<b>ID: FR-11</b>
Requirement Name: Add Rating to a Recipe
Description: The user can give a rating from 1 to 5 to a particular recipe. The overall rating for that recipe will also be updated according to the given rating.
Stockholders: User

### 3.3.12 Share Recipe:

<b>ID: FR-12</b>
Requirement Name: Share a Recipe
Description: The user can share a recipe and can select versions that will also be shared

alongside the original recipe.
Stockholders: User

### 3.3.13 Search Recipe:

<b>ID: FR-13</b>
Requirement Name: Search Recipe
Description: The user can search recipes from any recipe list by filtering components of recipes like recipe types, ingredients, nutrition amount, and more and the user will receive a filtered list of recipes.
Stockholders: User

### 3.3.14 Share a Recipe Collection:

<b>ID: FR-14</b>
Requirement Name: Share a Recipe Collection
Description: The user can share a recipe collection with multiple users by mentioning their email. The user can only share a collection only when the collection is created by himself.
Stockholders: User

### 3.3.15 Create Challenge:

ID: FR-15
Requirement Name: Create Challenge
Description: The user can create a future challenge by giving it a starting date and end date, after the challenge starts on the starting date the user can create a challenge post meaning the food he is taking on that date. The system will automatically track his food habits according to his input, like the current streak, longest streak, days remaining, his score, and many more.
Stockholders: User

### 3.3.16 Share Challenge:

ID: FR-16
Requirement Name: Share Challenge
Description: The user will be able to share a challenge before the challenge has already been started. To share a challenge the challenge should be created by that user only otherwise he will not be able to share. The users whose challenge has been shared will accept the challenge if they choose the challenge as their default challenge. Then every user who has access to the challenge can see the leaderboard and check the list where he belongs on that list.
Stockholders: User

### 3.3.17 View Wiki:

ID: FR-17
Requirement Name: View Wiki
Description: The user can get more information about ingredients or nutrition and the health impact for every wiki as well as the nutrition list for an ingredient and health impact. The top ingredient list for a nutrition and health impact. For a health wiki, the user can check the top nutrients and ingredients. And for every wiki data user can check his facts and how much he has taken that ingredient, and nutrient over the week, month, year, and year-to-date data.
Stockholders: User

### 3.3.18 View User List (Admin):

ID: FR-18
Requirement Name: View User List
Description: The admins of the system can check the user list as well as how many recipes each individual has created.
Stockholders: Admin



### 3.3.19 Manage Food Data (Admin):

<b>ID: FR-19</b>
Requirement Name: Manage Food Data
Description: The admin can add, edit, and remove food from the Ingredient section. The admin can create an ingredient from scratch or add an ingredient from the source. The adding or removing ingredients can directly impact any recipe on the user's side.
Stockholders: Admin

### 3.3.20 Manage Nutrition Data (Admin):

<b>ID: FR-20</b>
Requirement Name: Manage Nutrition Data
Description: The admin can add, edit, and remove a nutrient from the nutrient section. The admin can create a nutrient from scratch or add a nutrient from the source. The adding or removing of nutrients can directly impact any recipe on the user's side.
Stockholders: Admin

### 3.3.21 Manage Health Data (Admin)

<b>ID: FR-21</b>
Requirement Name: Manage Health Data
Description: The admin can add/edit/remove health data. The admin will add the best ingredient and nutrient associated with that health data.
Stockholders: Admin

### 3.3.22 Manage Daily Recommendation Data (Admin)

<b>ID: FR-22</b>
Requirement Name: Manage Daily Recommendation Data
Description: The admin can manage daily recommendation data according to different ages and set the nutrition level he/she needs on a day-to-day basis.
Stockholders: Admin

### 3.3.23 Manage Recipe Category And Brand

<b>ID: FR-23</b>
Requirement Name: Manage Recipe Category and Brand
Description: The admin can add, edit and remove any recipe category and brand.
Stockholders: Admin

## 3.4 Activity Diagram

### 3.4.1 Registration Activity

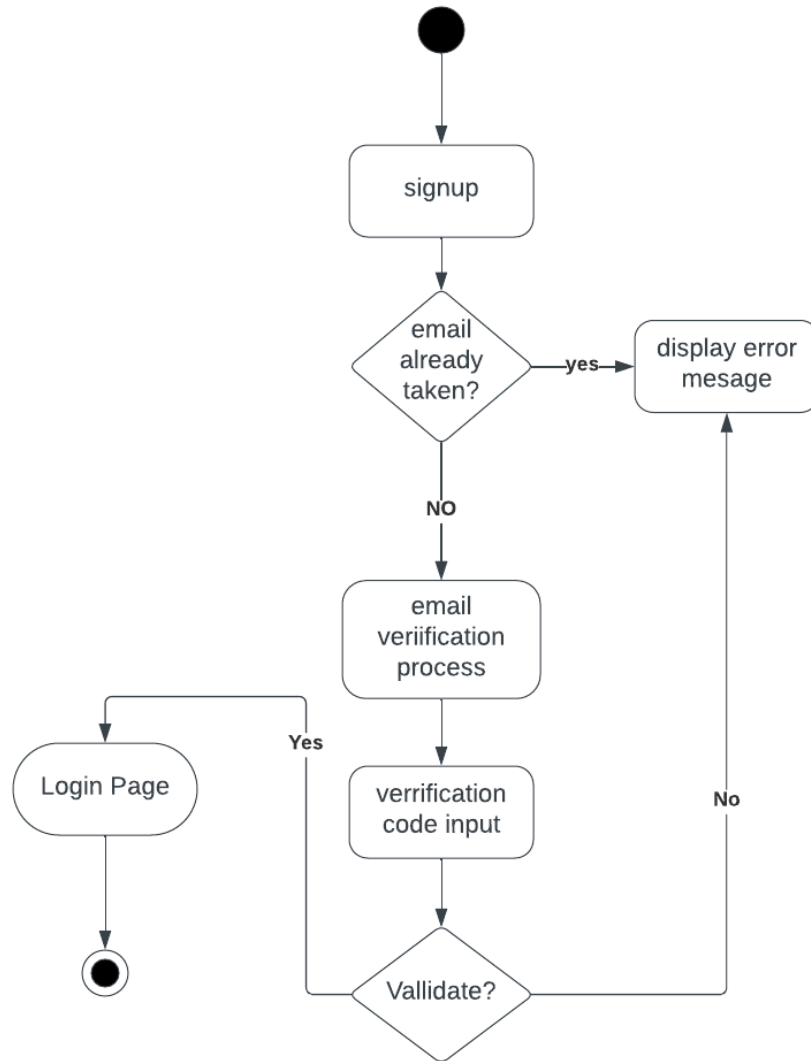


Figure 3.3 Sign up activity diagram

### 3.4.2 Login Activity

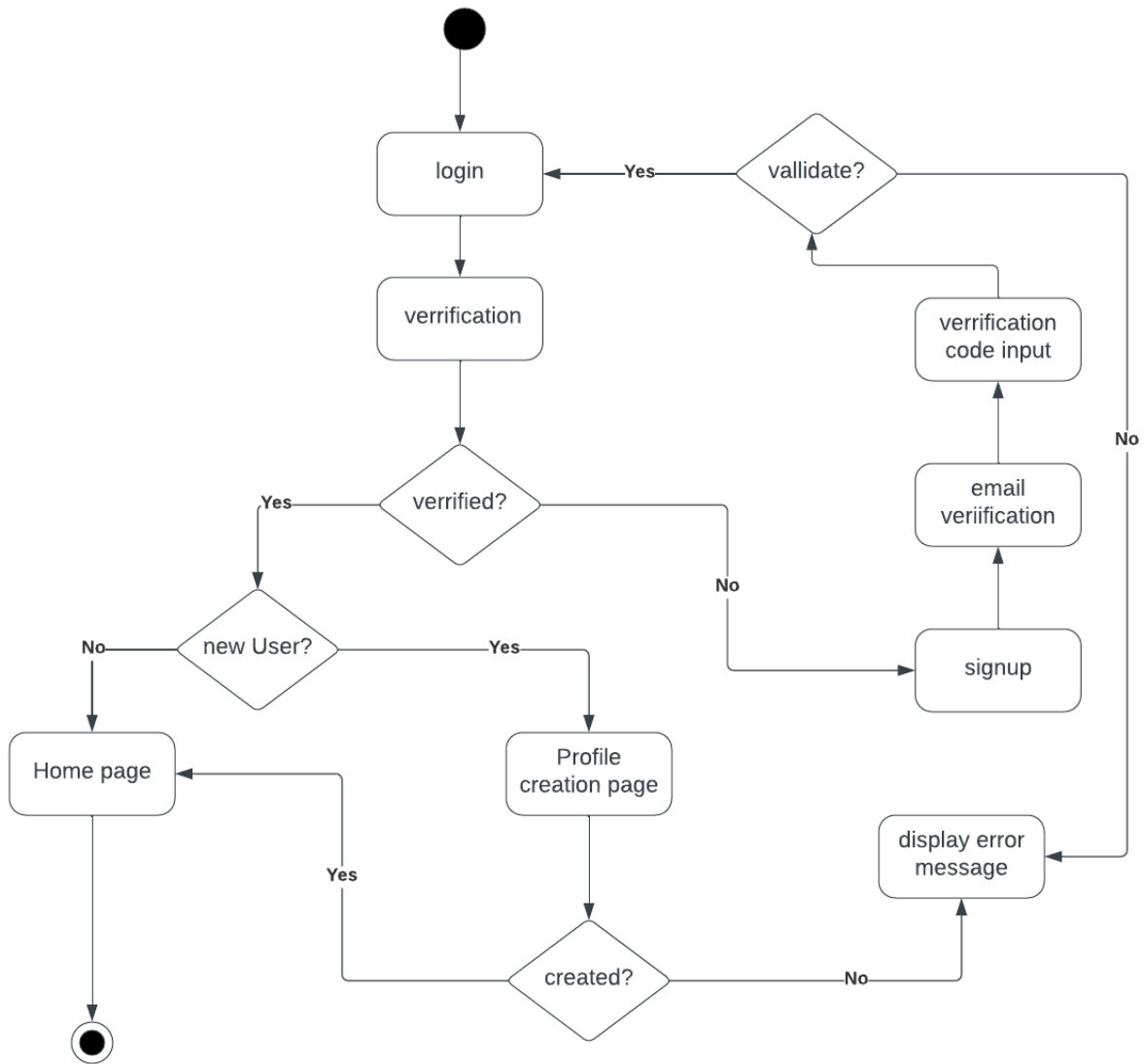


Figure 3.4 Login Activity Diagram

### 3.4.3 Create/ Update Profile

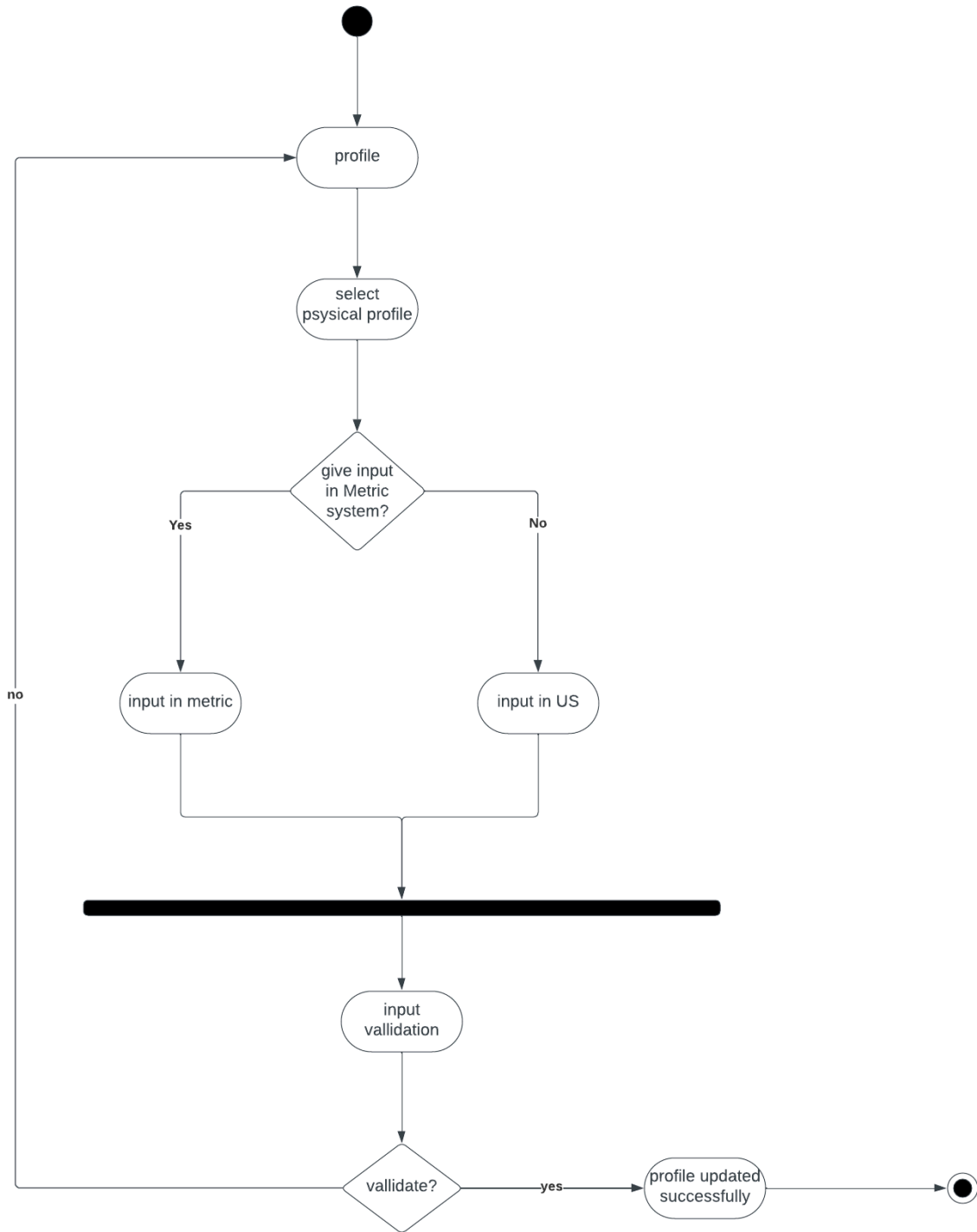


Figure 3.5 Update Profile Activity Diagram

### 3.4.4 Create Recipe

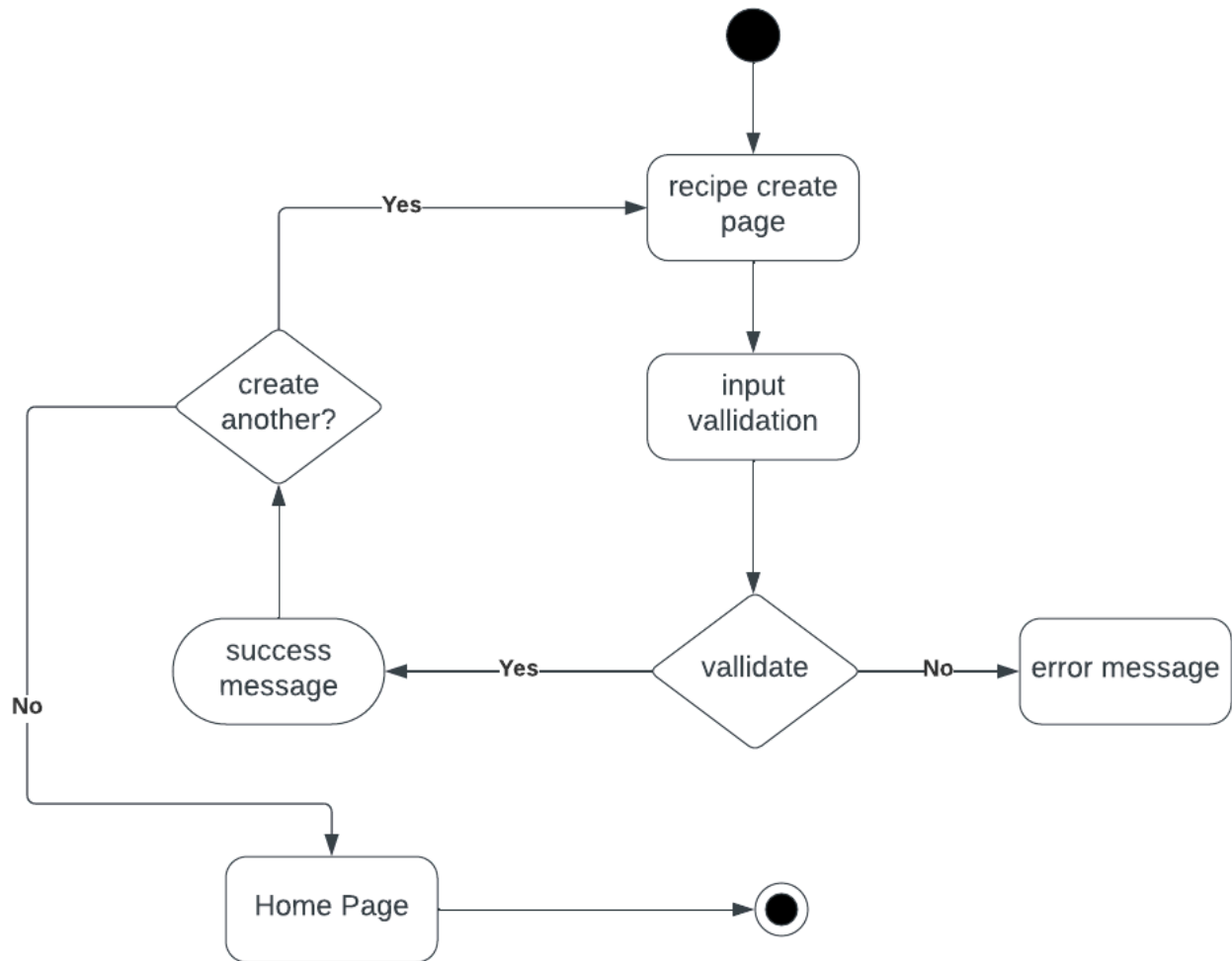


Figure 3.6 Recipe Create Activity Diagram

### 3.4.5 Collection Create



**Figure 3.7 Create Collection Activity Diagram**

### 3.4.6 Add Recipe to a Collection

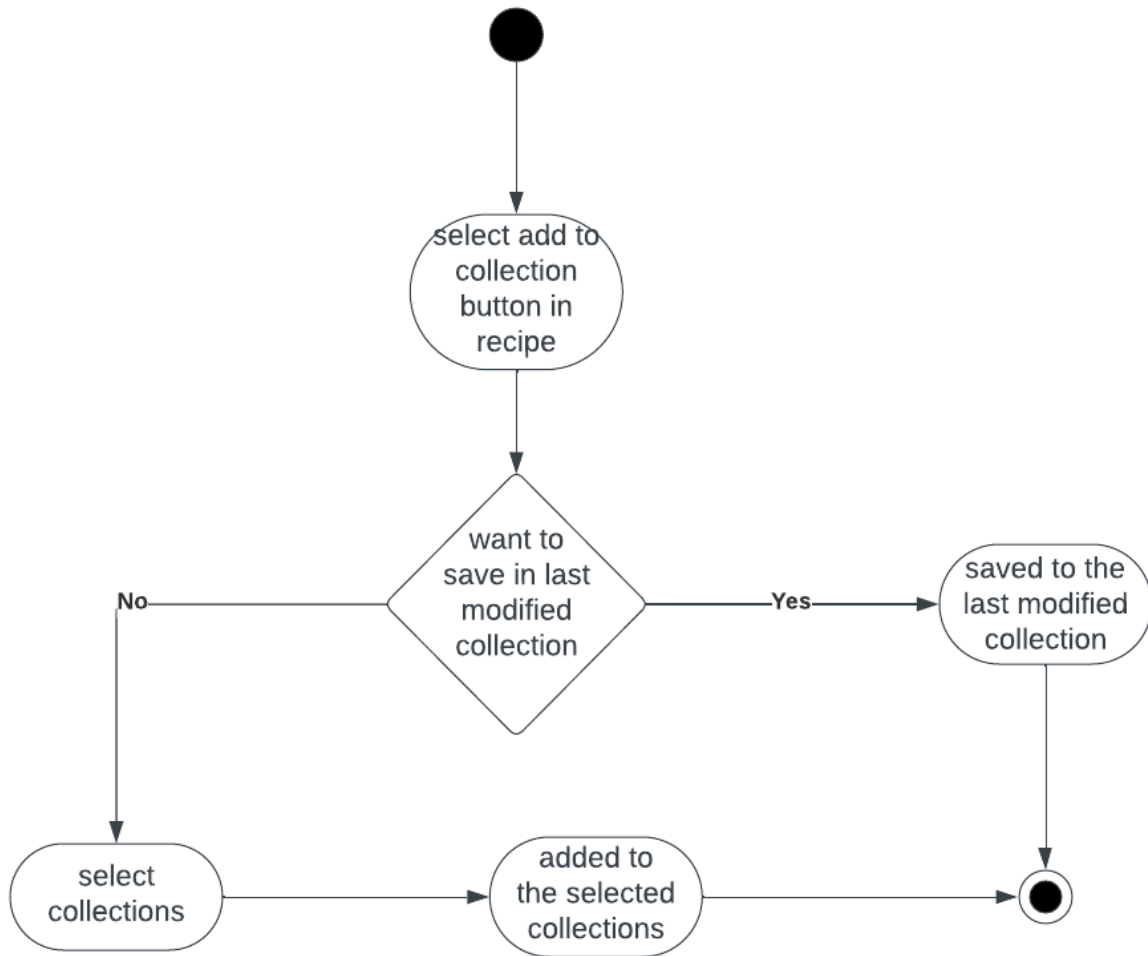


Figure 3.8 Recipe Add to Collection Activity Diagram



### 3.4.7 Add Recipe to The Compare List

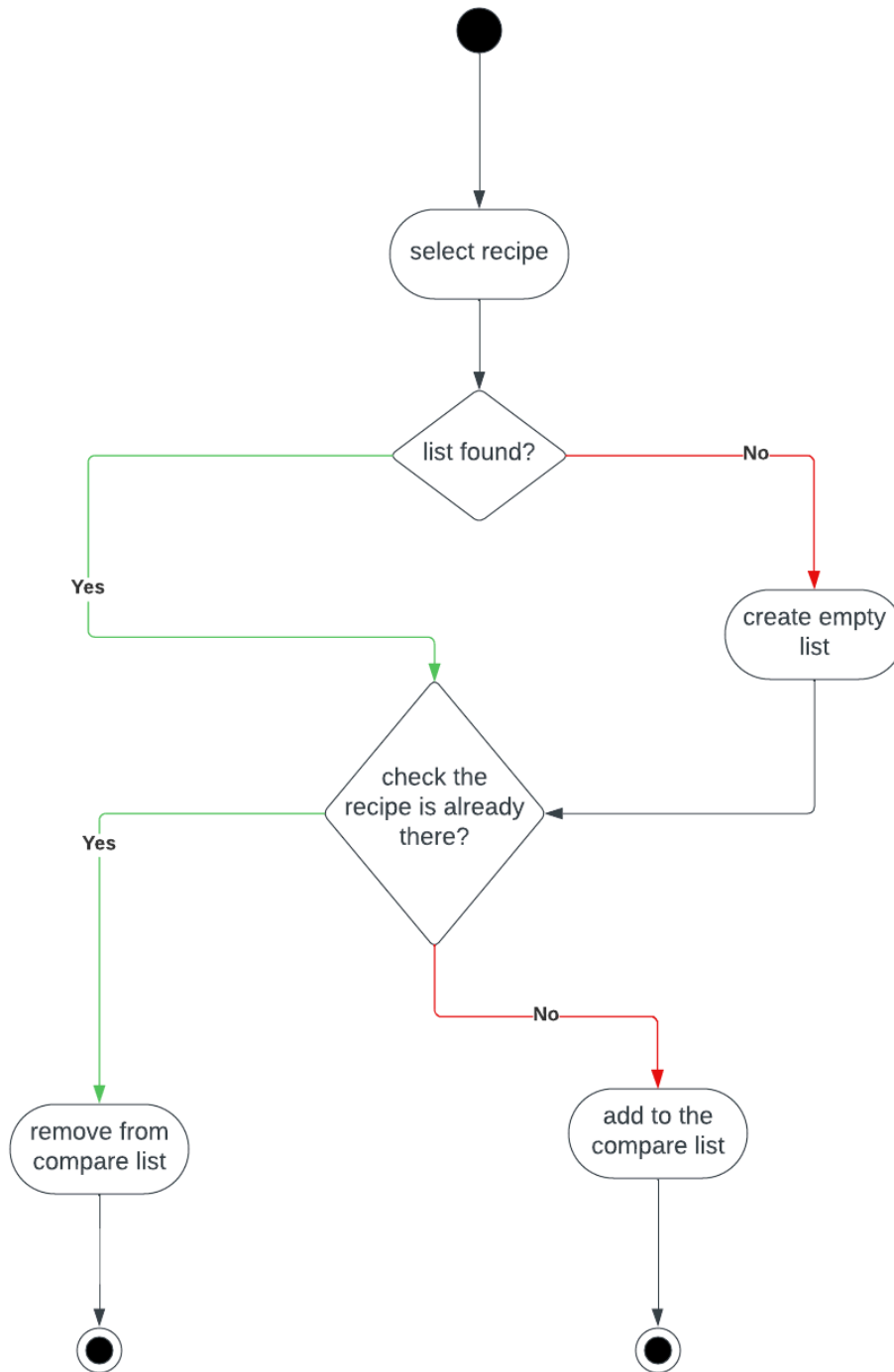


Figure 3.9 Add Recipe to Compare List Activity Diagram

### 3.4.8 Add Version to a Recipe/ Modify an Original Version

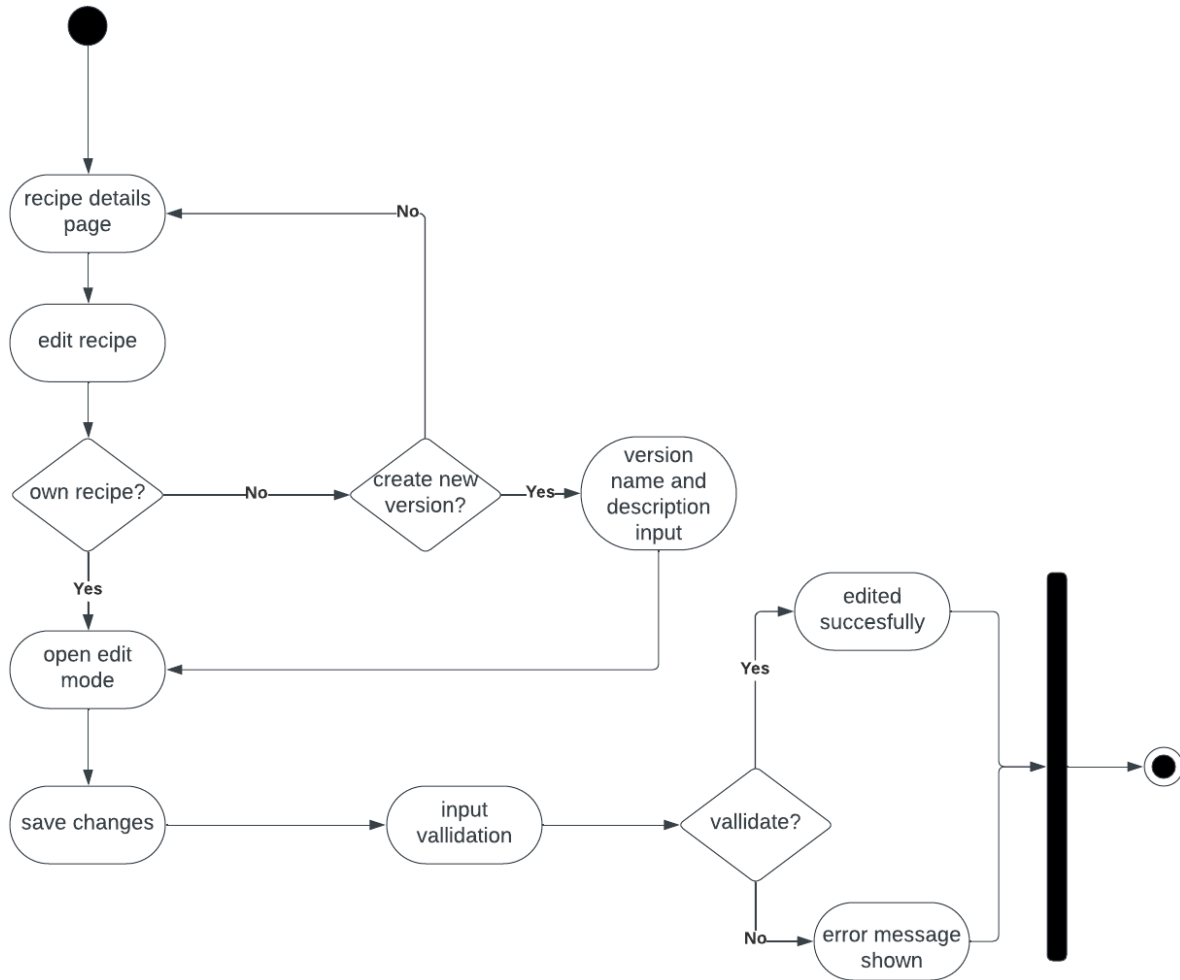


Figure 3.10 Add Recipe Version Activity Diagram

### 3.4.9 Add Comment to a Recipe



Figure 3.11 Add Comment Activity Diagram

### 3.4.10 Add Note On a Recipe

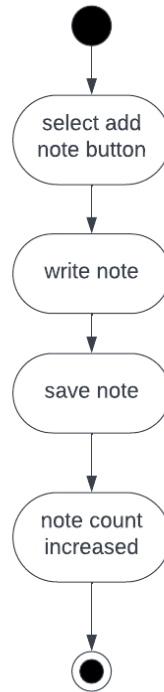
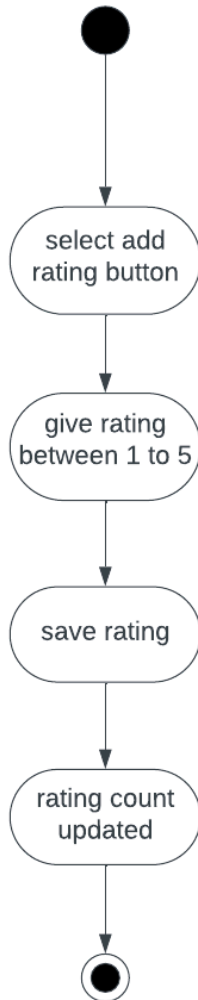


Figure 3.12 Add Note Activity Diagram

### 3.4.11 Add Rating to a Recipe



**Figure 3.13 Add Recipe Rating Activity Diagram**

### 3.4.12 Share a Recipe

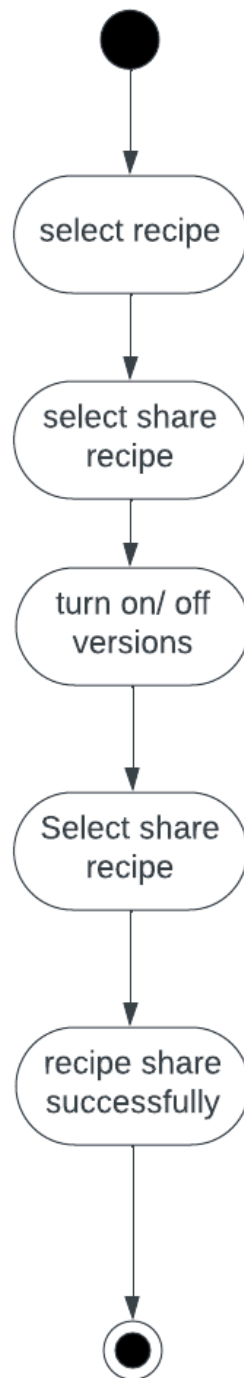


Figure 3.14 Share Recipe Activity Diagram

### 3.4.13 Search Recipes



Figure 3.15 Search Recipes Activity Diagram

### 3.4.14 Share a collection

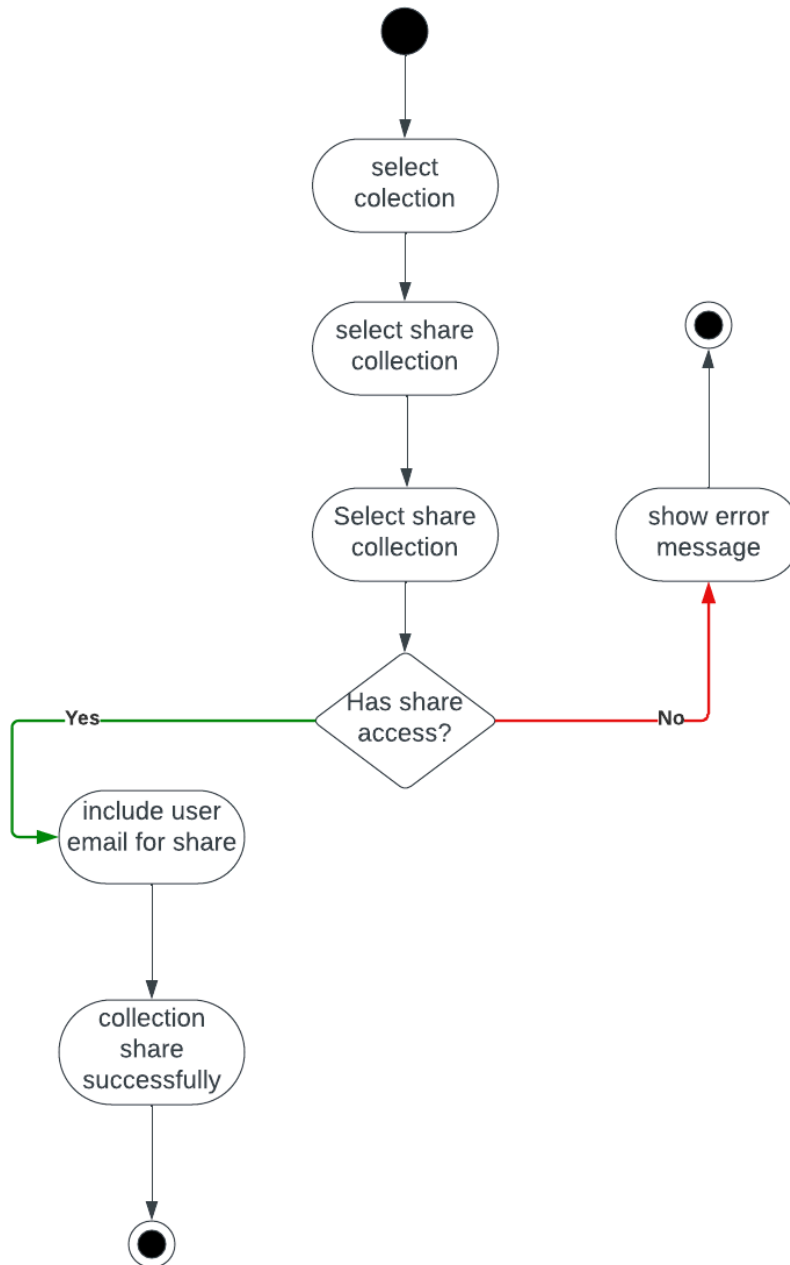


Figure 3.16 Share Recipe Collection Activity Diagram



### 3.4.15 Create Challenge

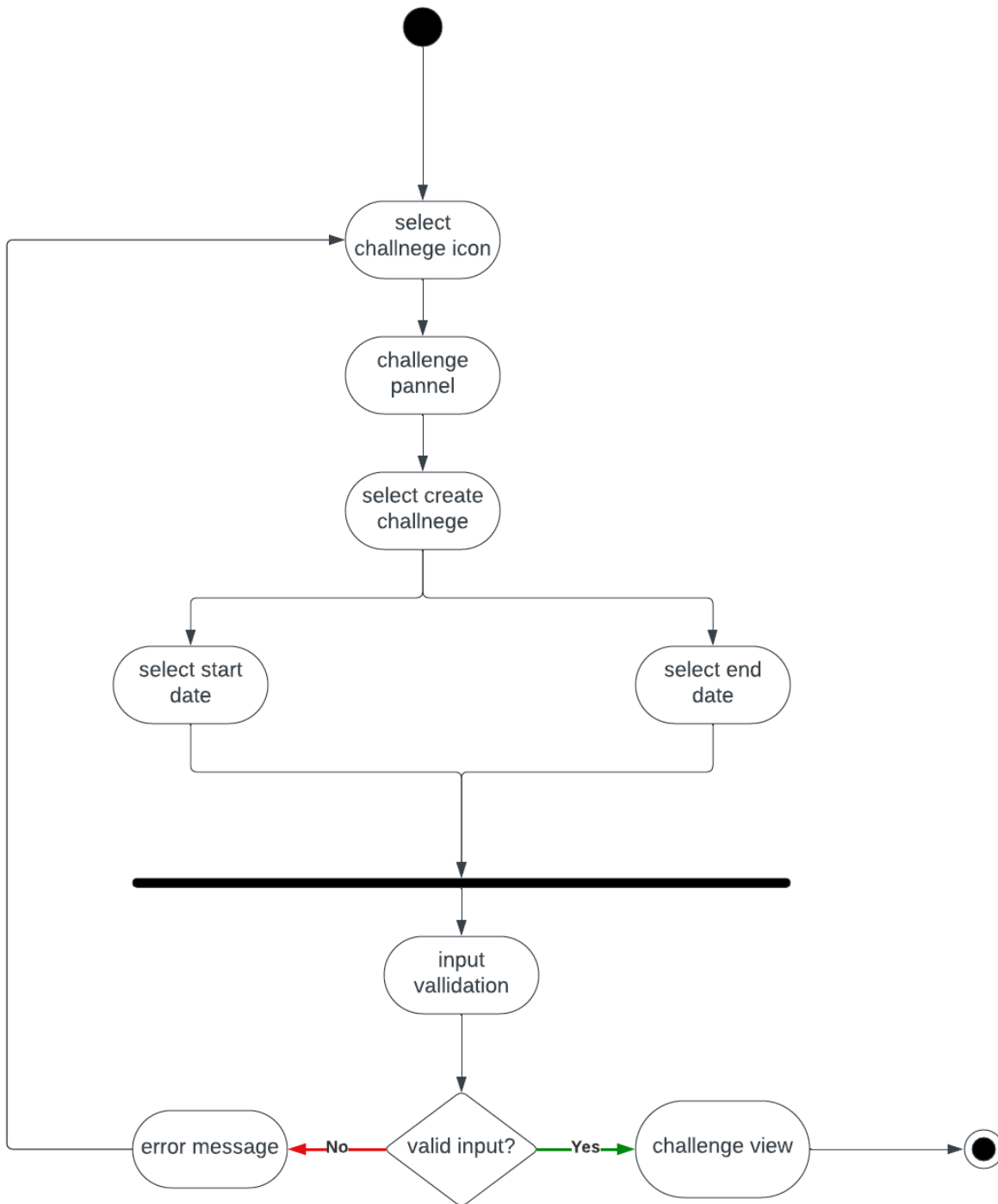


Figure 3.17 Create Challenge Activity Diagram

### 3.4.16 Create Challenge Post

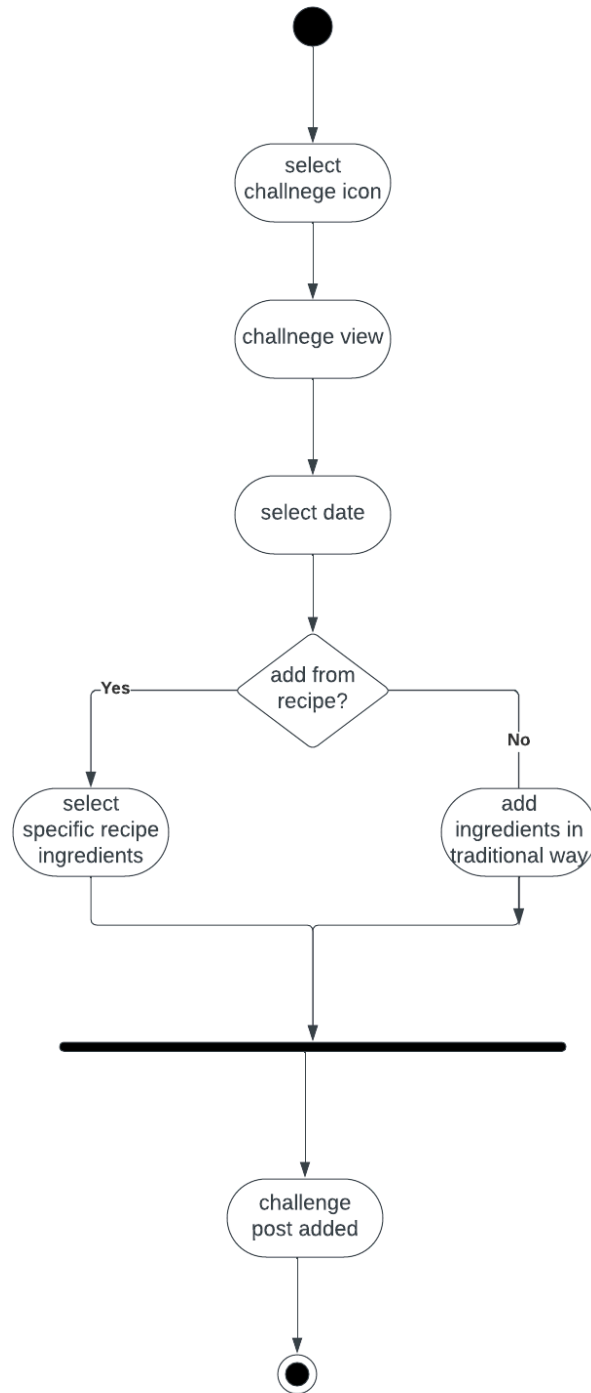


Figure 3.18 Create Challenge Post Activity Diagram

### 3.4.17 Share Challenge

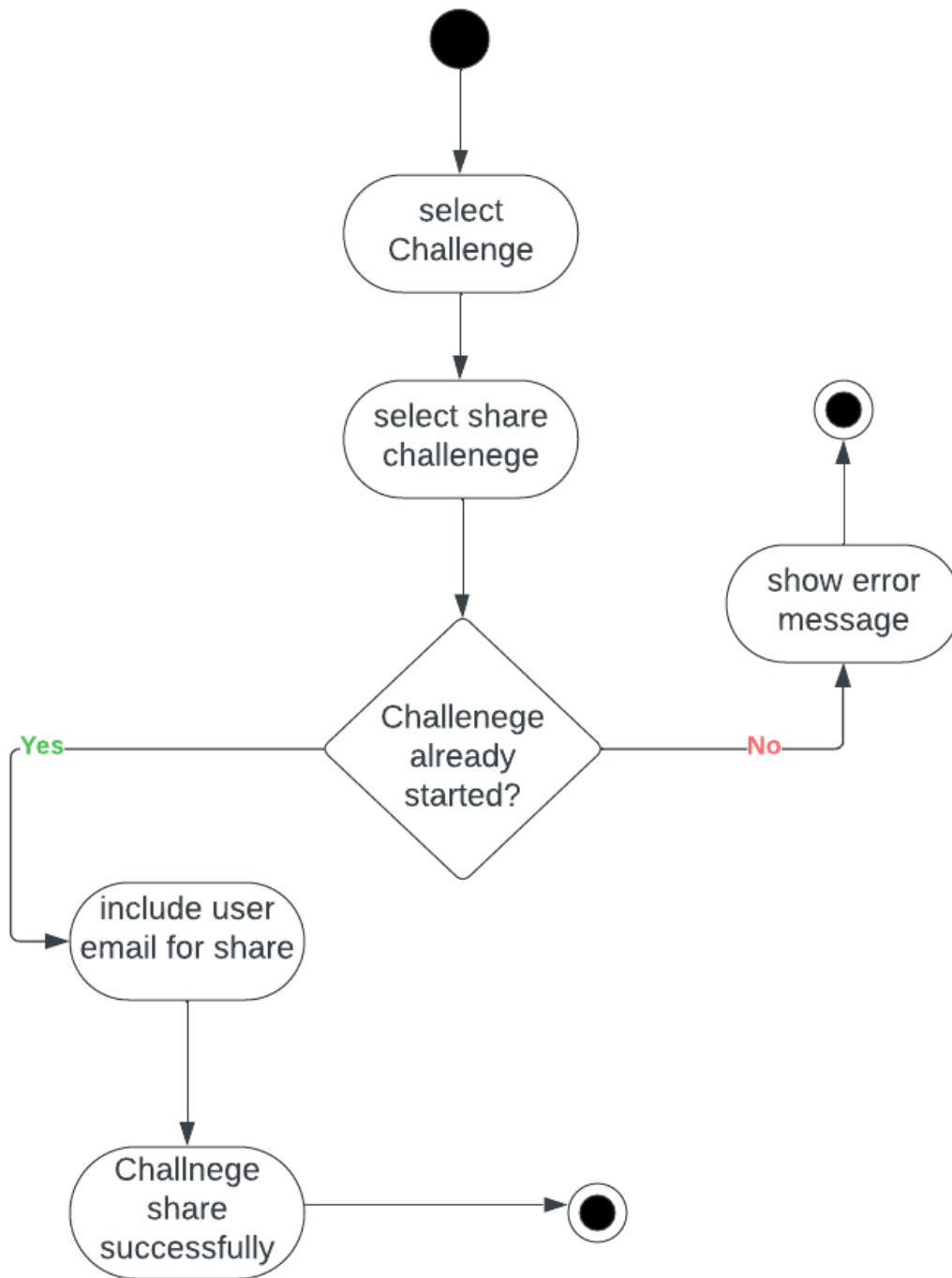


Figure 3.19 Share Challenge Activity Diagram

### 3.4.18 View Wiki



**Figure 3.20 View Wiki Activity Diagram**

### 3.4.19 View User List (Admin)

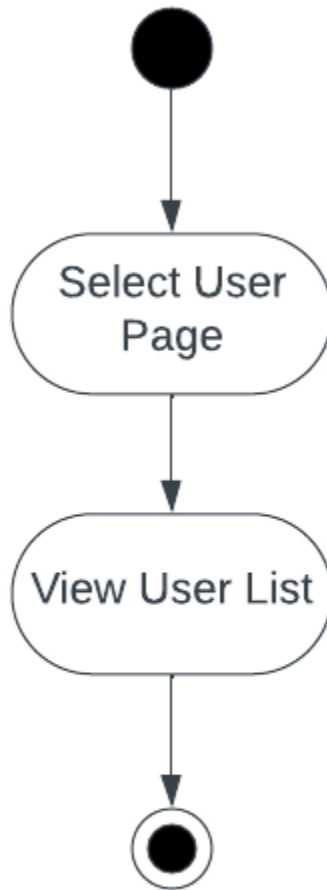


Figure 3.21 View User List Activity Diagram

### 3.4.20 Add Ingredient Form Source (Admin)

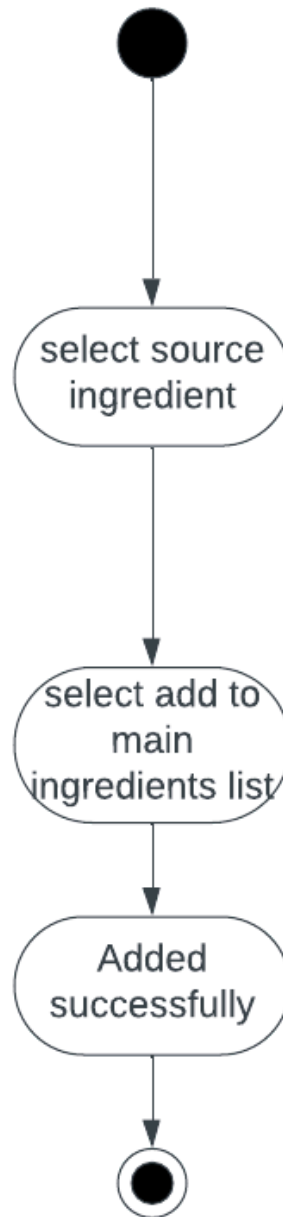


Figure 3.22 Add Ingredient From Source Activity Diagram

### 3.4.21 Remove Ingredient (Admin)

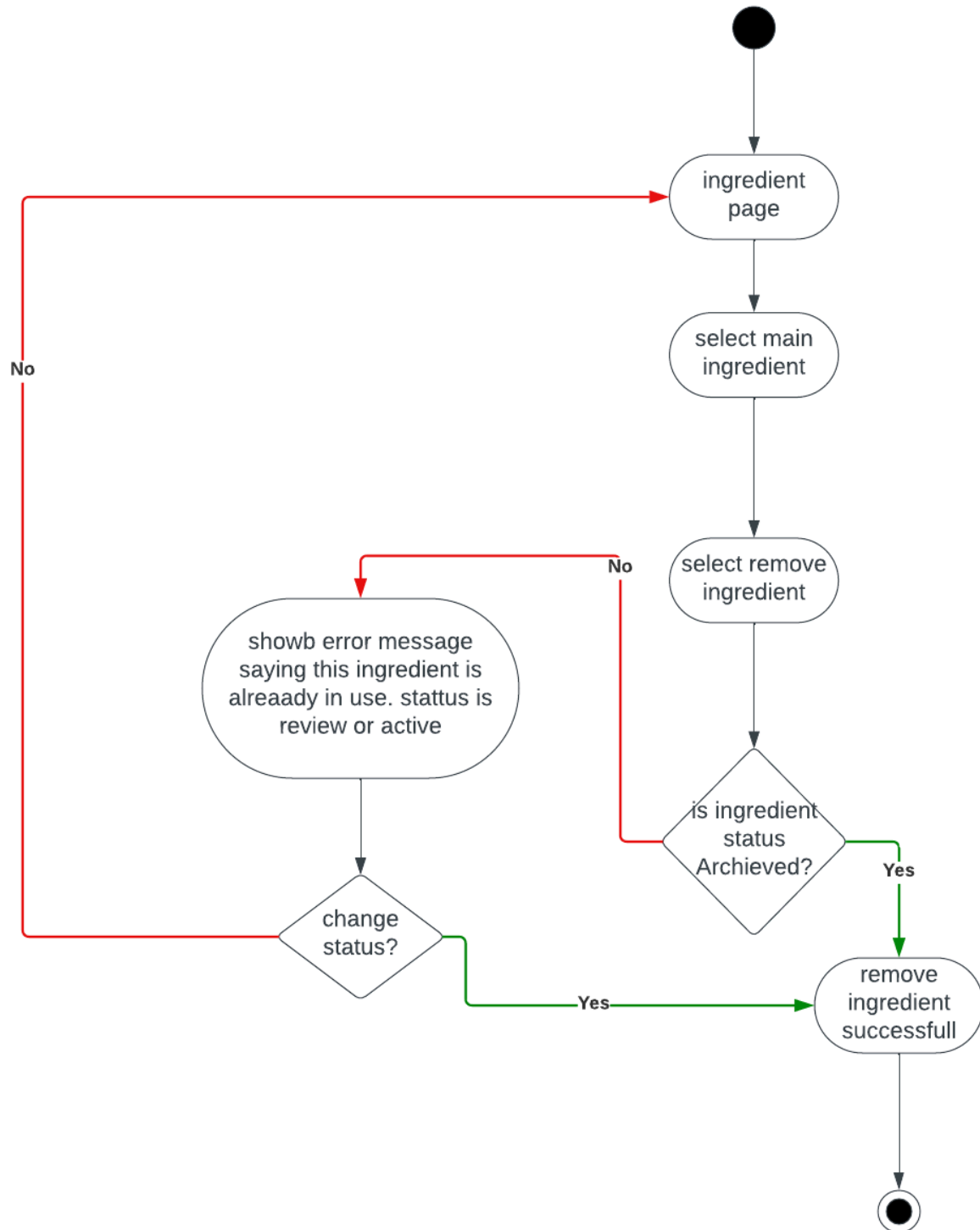


Figure 3.23 Remove Ingredient Activity Diagram

### 3.4.22 Edit Food (Admin)

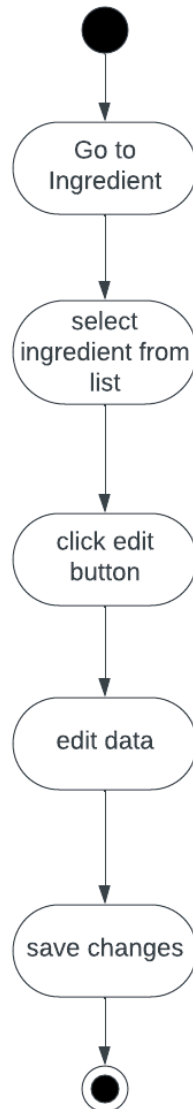


Figure 3.24 Edit Ingredient Activity Diagram



### 3.4.23 Add Nutrient From Source (Admin)



Figure 3.25 Add Nutrient From Source Activity Diagram

### 3.4.24 Add Health Data (Admin)

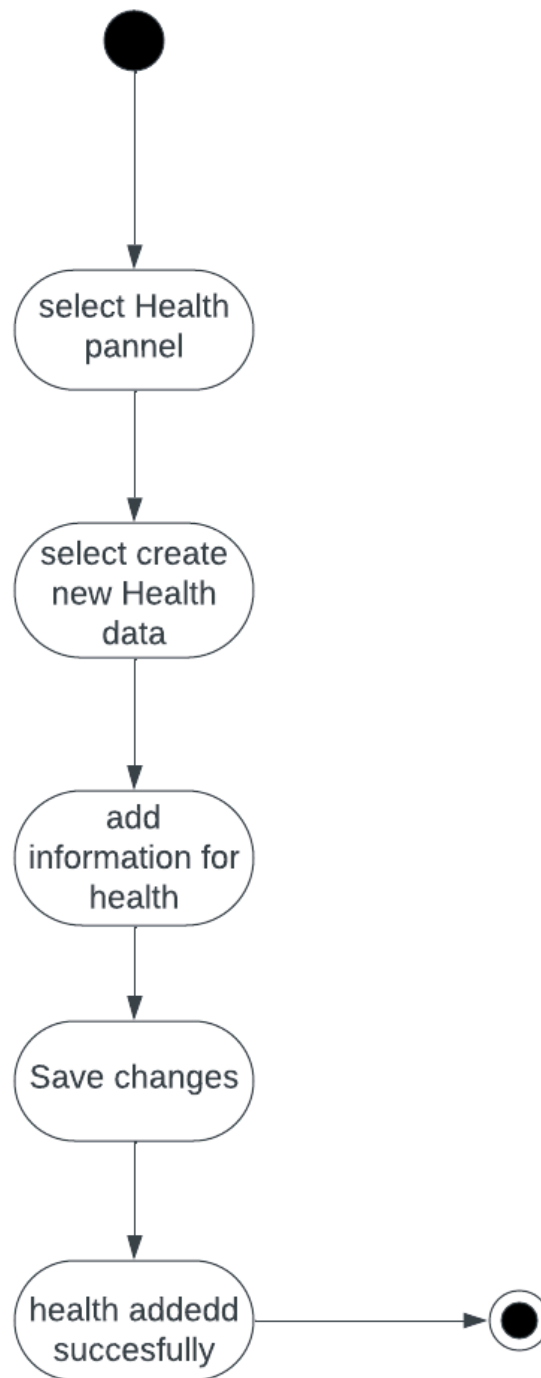


Figure 3.26 Add Health Activity Diagram

### 3.4.25 Add DRI Data (Admin)

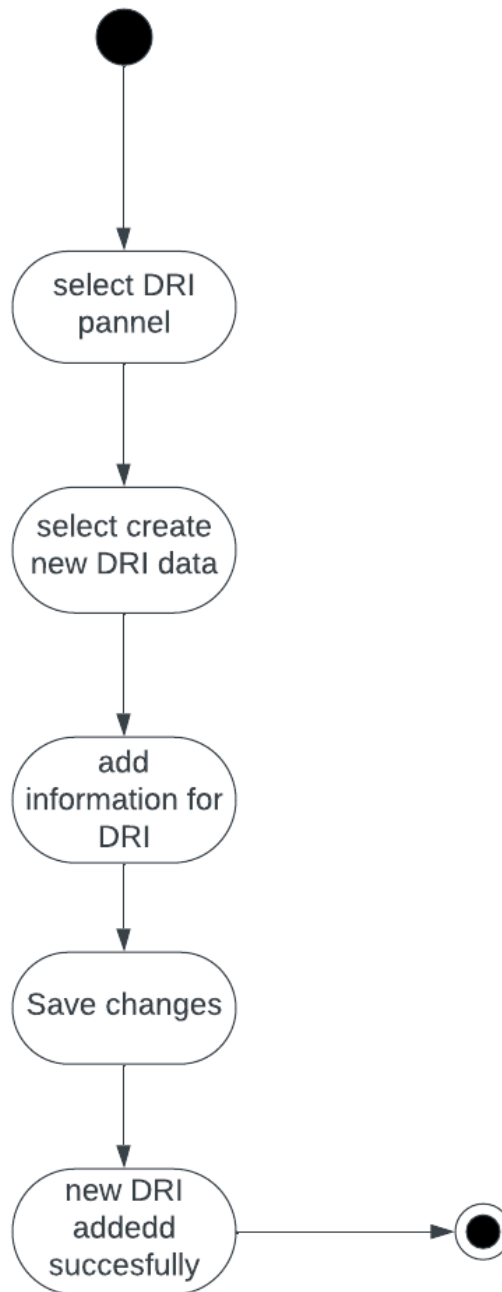


Figure 3.27 Add DRI Activity Diagram

### 3.4.26 Create New Recipe Category (Admin)

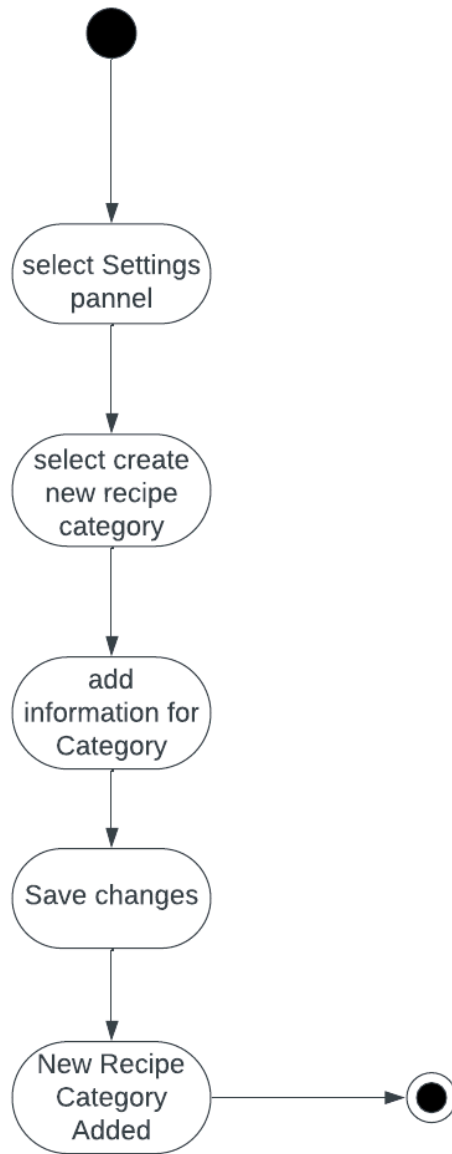


Figure 3.28 Add Recipe Category Activity Diagram

## 3.5 Sequence Diagram

### 3.5.1 Sign Up

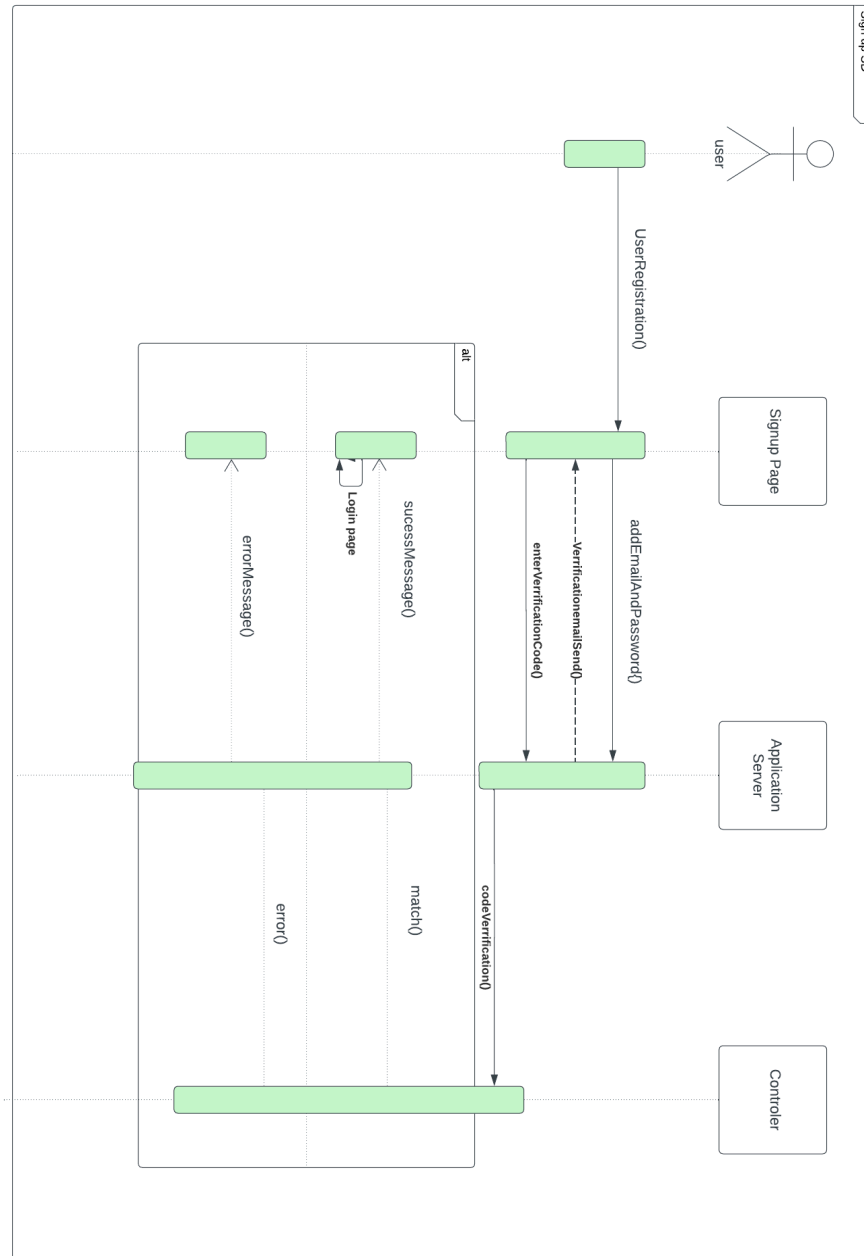


Figure 3.29 Sign Up Sequence Diagram

### 3.5.2 Login

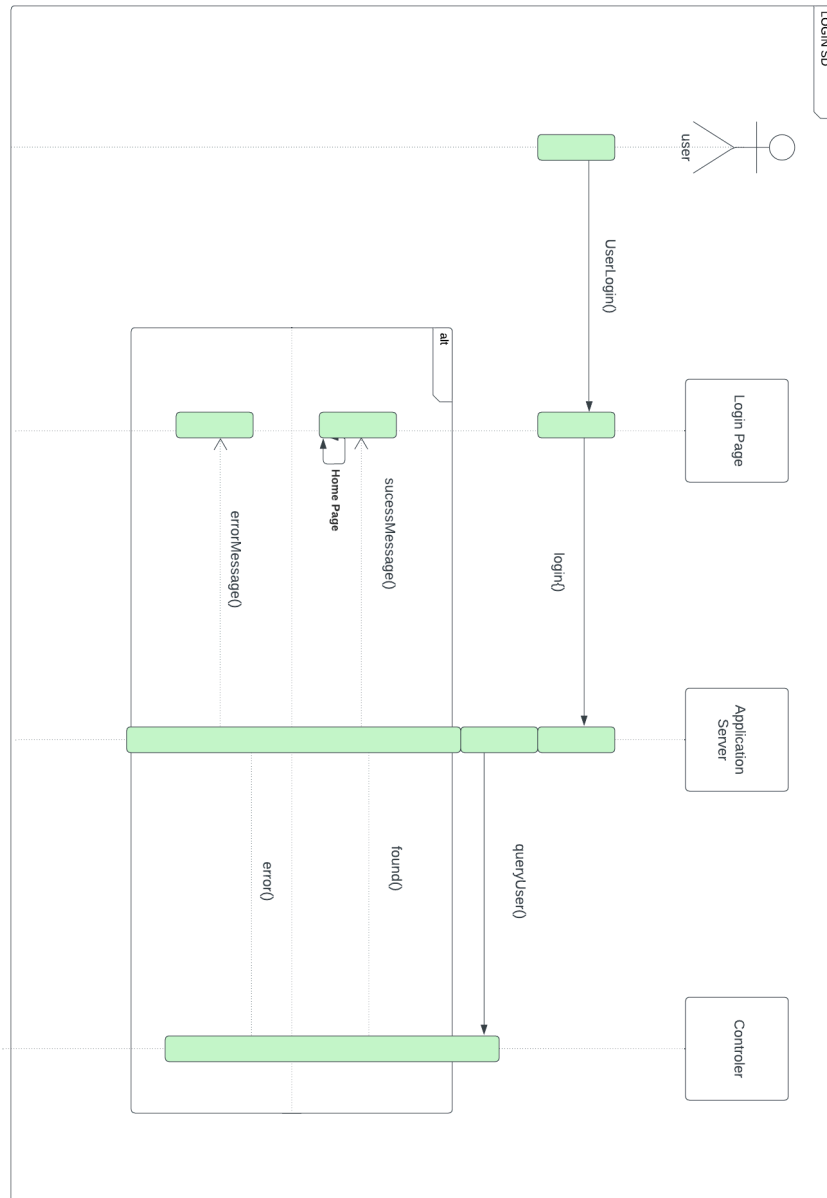


Figure 3.30 Login Sequence Diagram

### 3.5.3 Update Profile

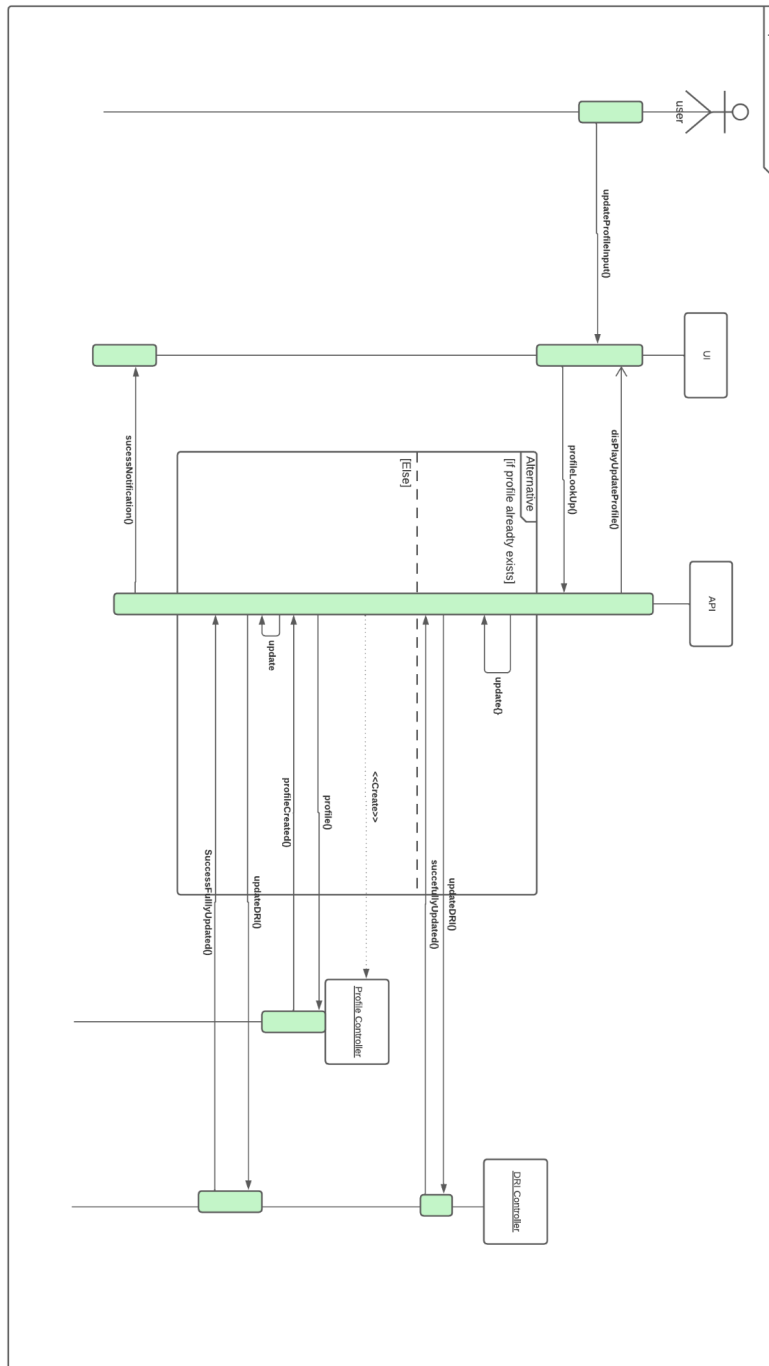


Figure 3.31 Update Profile Sequence Diagram

### 3.5.4 Create Recipe

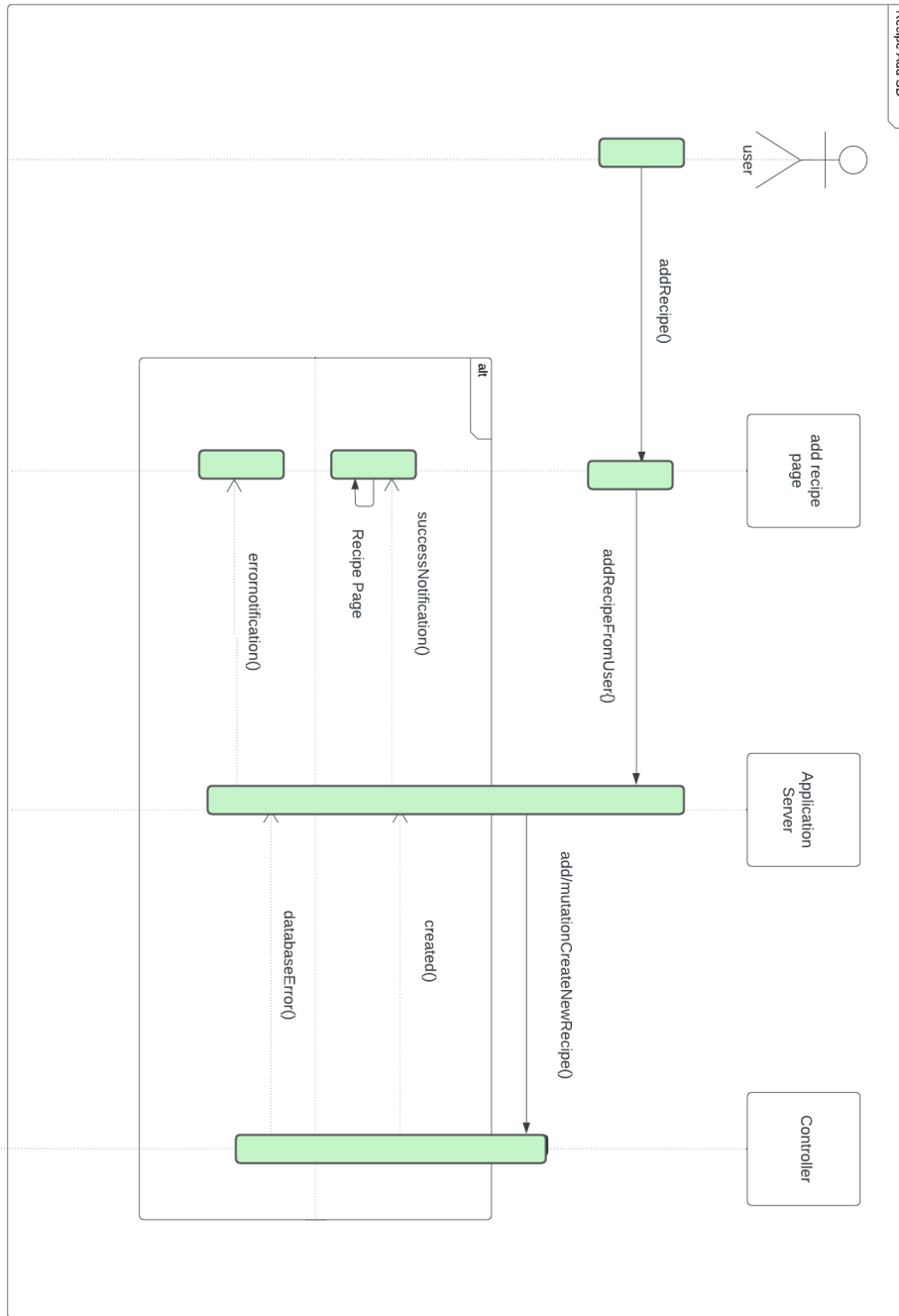


Figure 3.32 Create Recipe Sequence Diagram



### 3.5.5 Create Collection

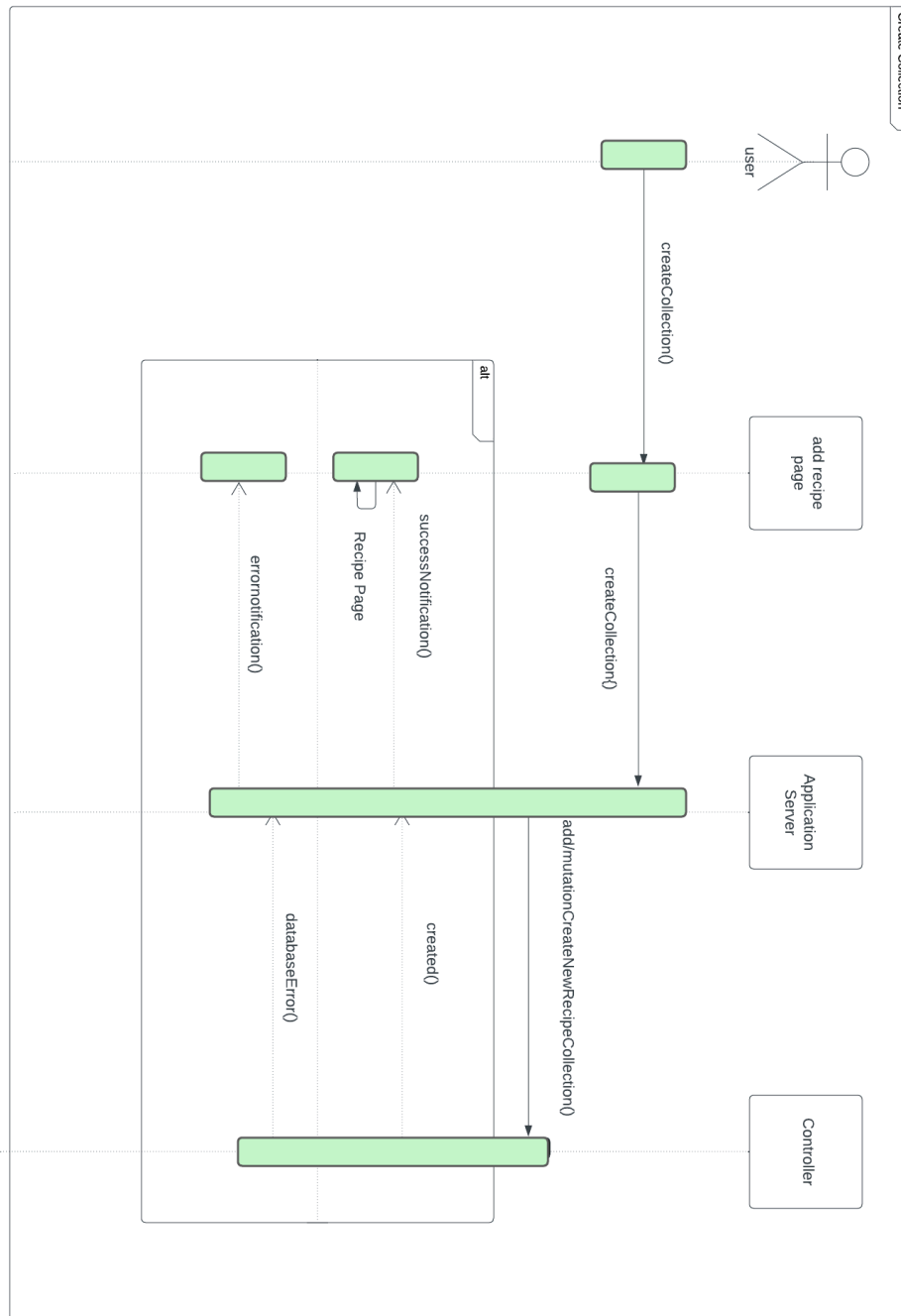


Figure 3.33 Create Collection Sequence Diagram

### 3.5.6 Add Recipe to a Collection

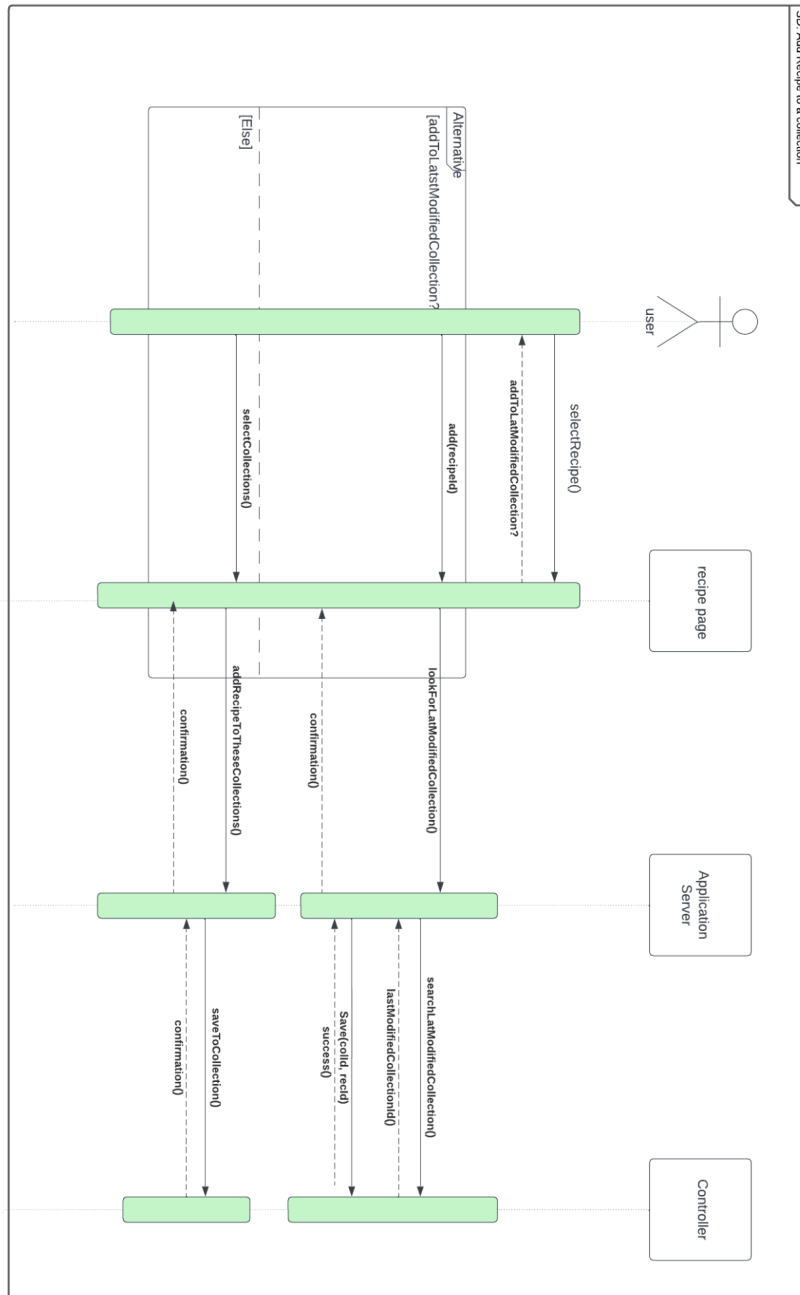


Figure 3.34 Add Recipe to a Collection Sequence Diagram

### 3.5.7 Add Recipe to The Compare List

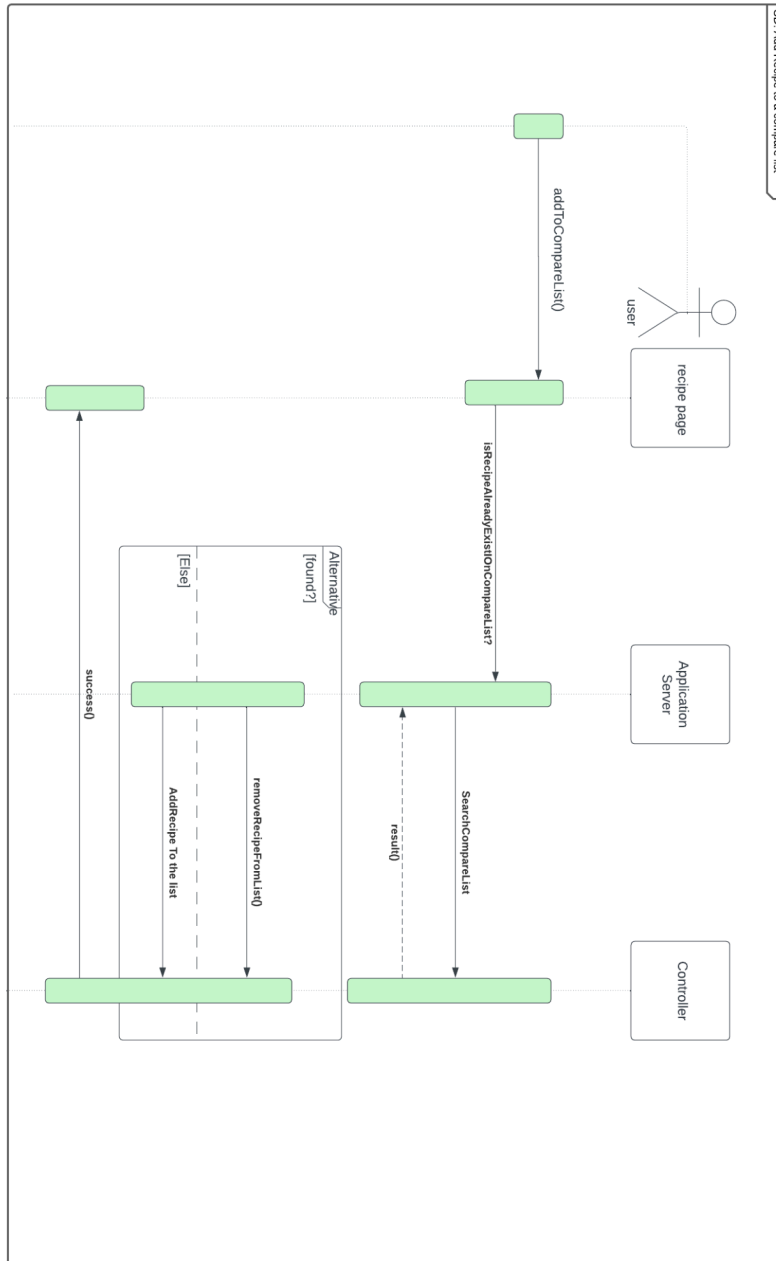


Figure 3.35 Add Recipe to The Compare List Sequence Diagram

### 3.5.8 Add Version to a Recipe

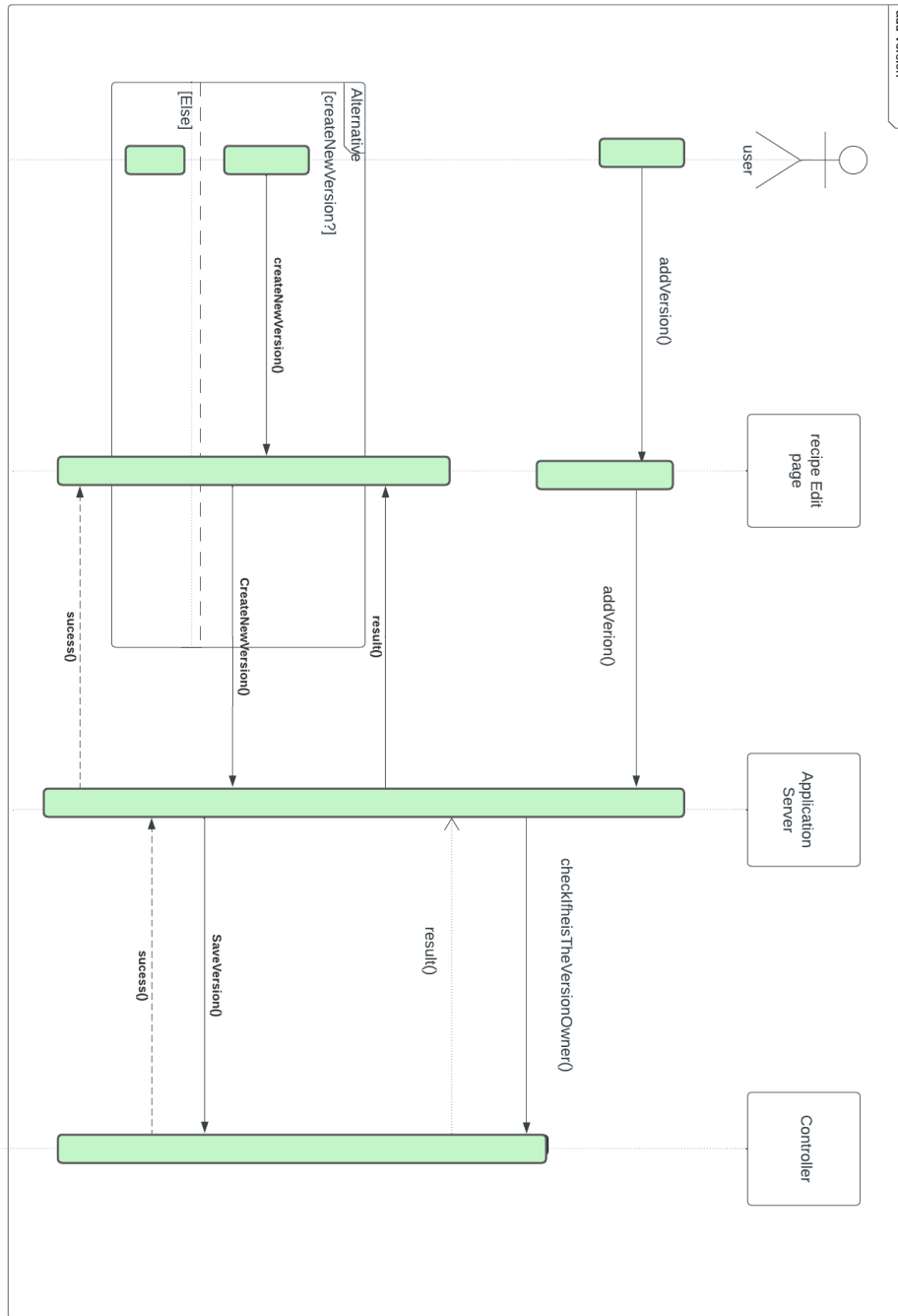


Figure 3.36 Add Version Sequence Diagram

### 3.5.9 Add Comment to a Recipe

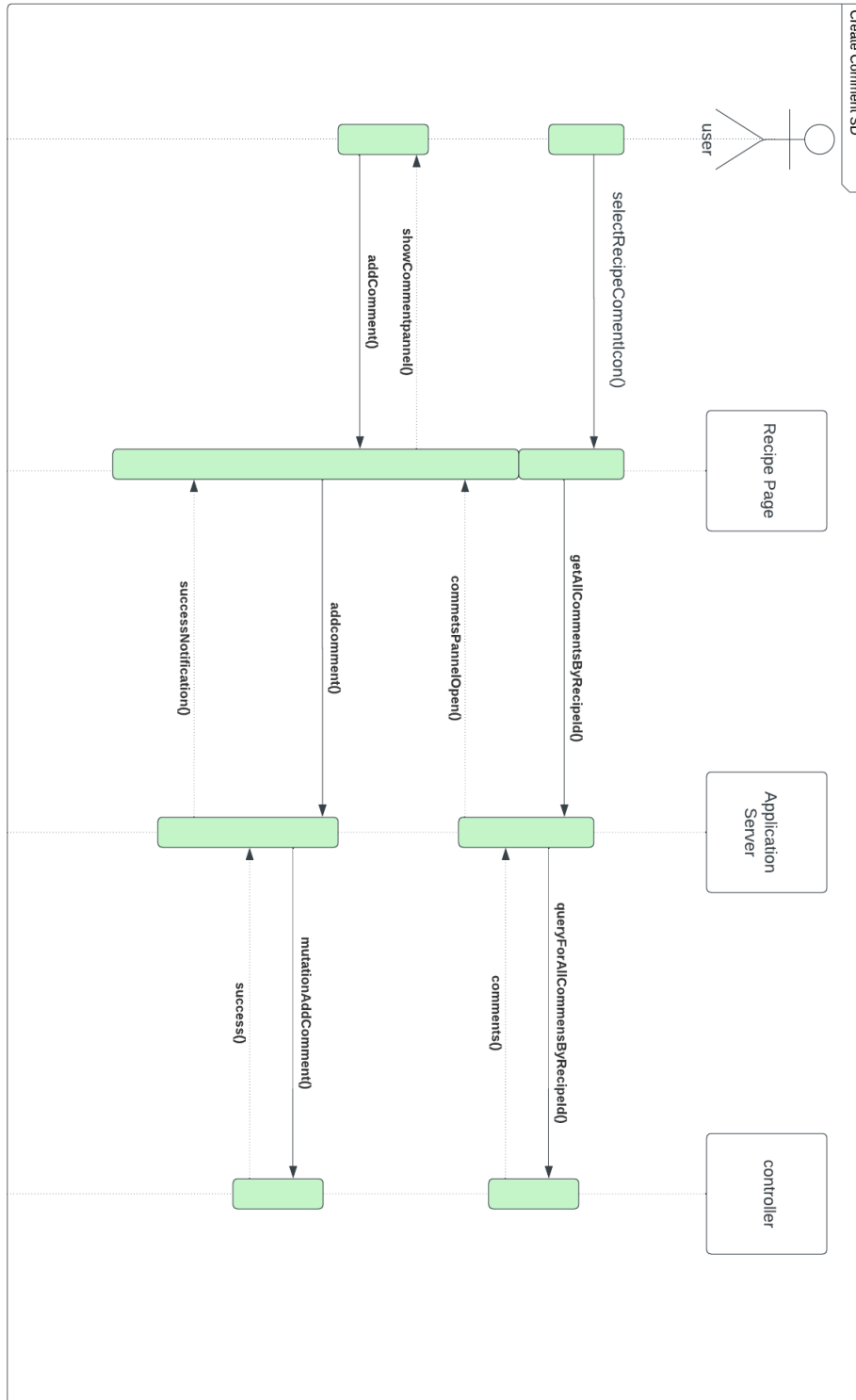


Figure 3.37 Add Comment Sequence Diagram

### 3.5.10 Add Note to Recipe

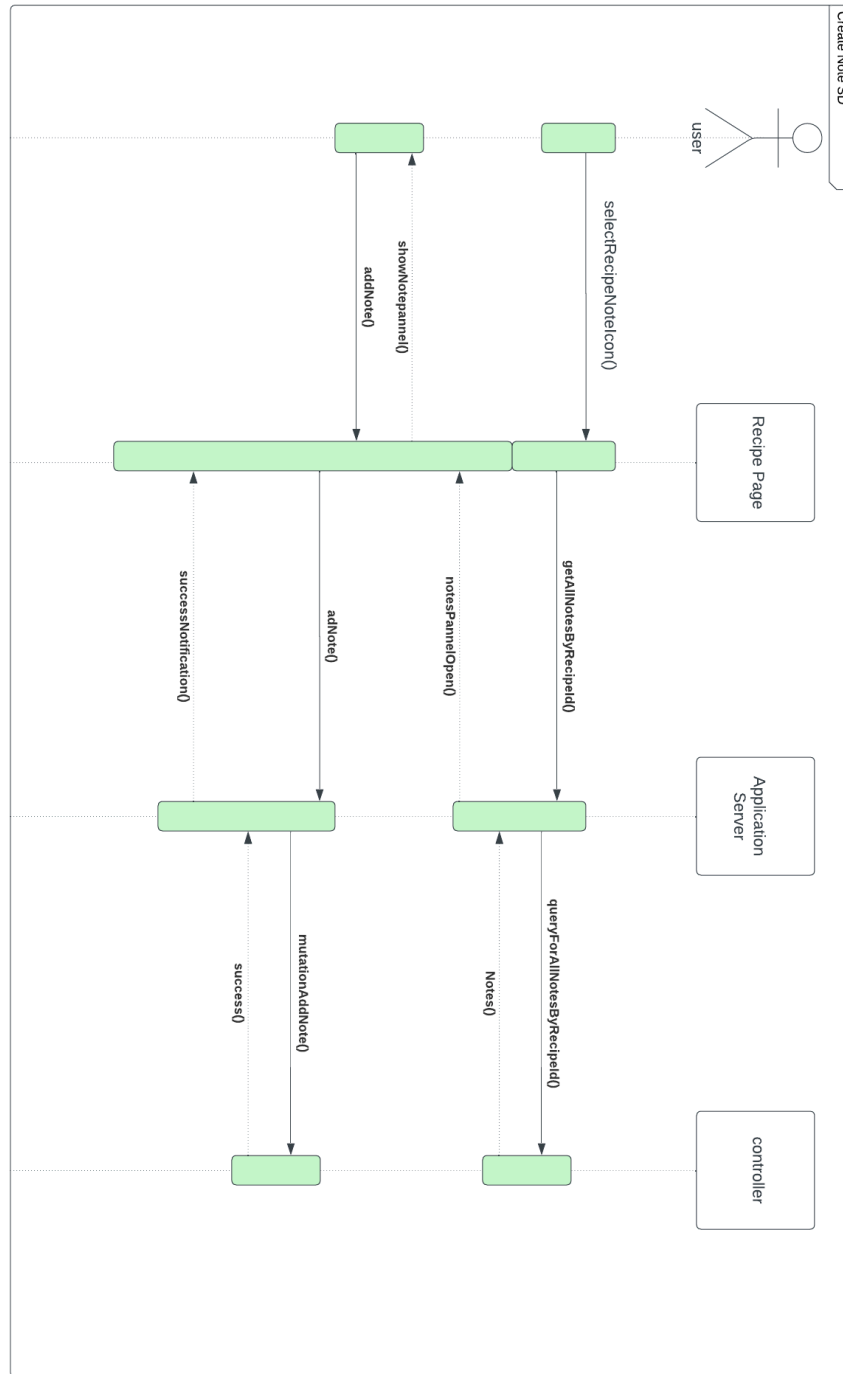


Figure 3.38 Add Note Sequence Diagram

### 3.5.11 Add Rating to Recipe

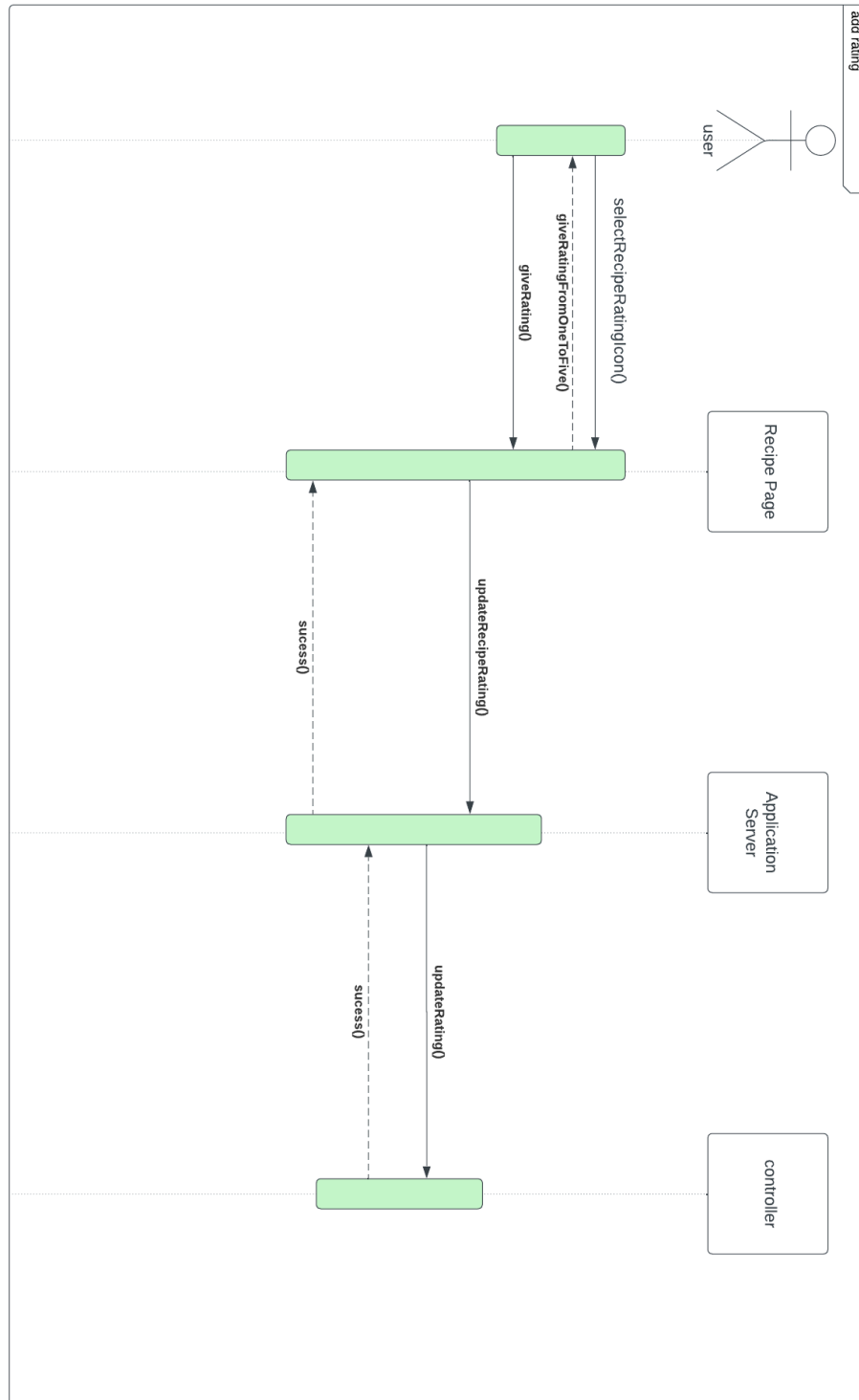


Figure 3.39 Add Rating Sequence Diagram

### 3.5.12 Share a Recipe

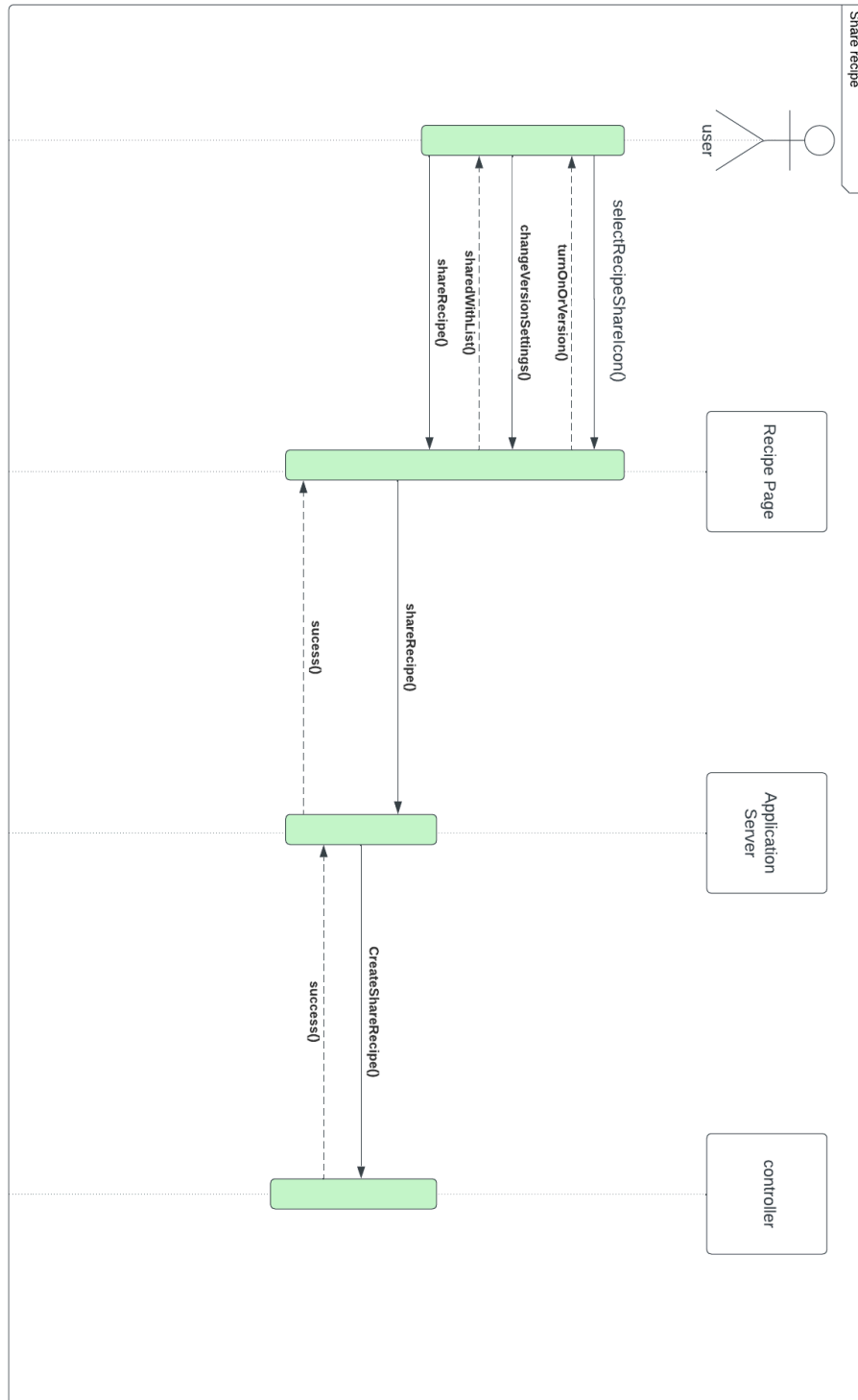


Figure 3.40 Share a Recipe Sequence Diagram



### 3.5.13 Search Recipe

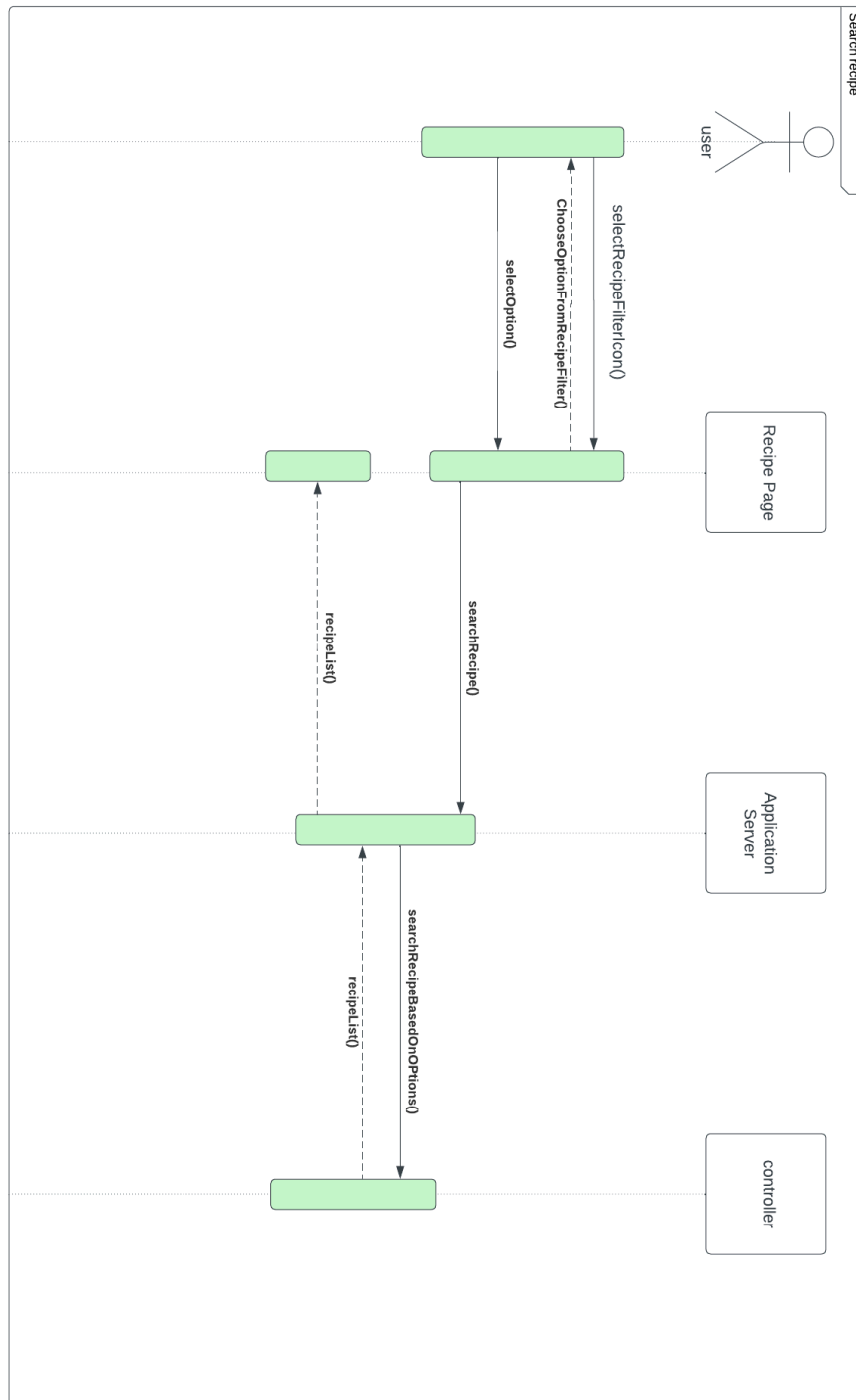


Figure 3.41 Search Recipe Sequence Diagram

### 3.5.14 Share a Recipe Collection

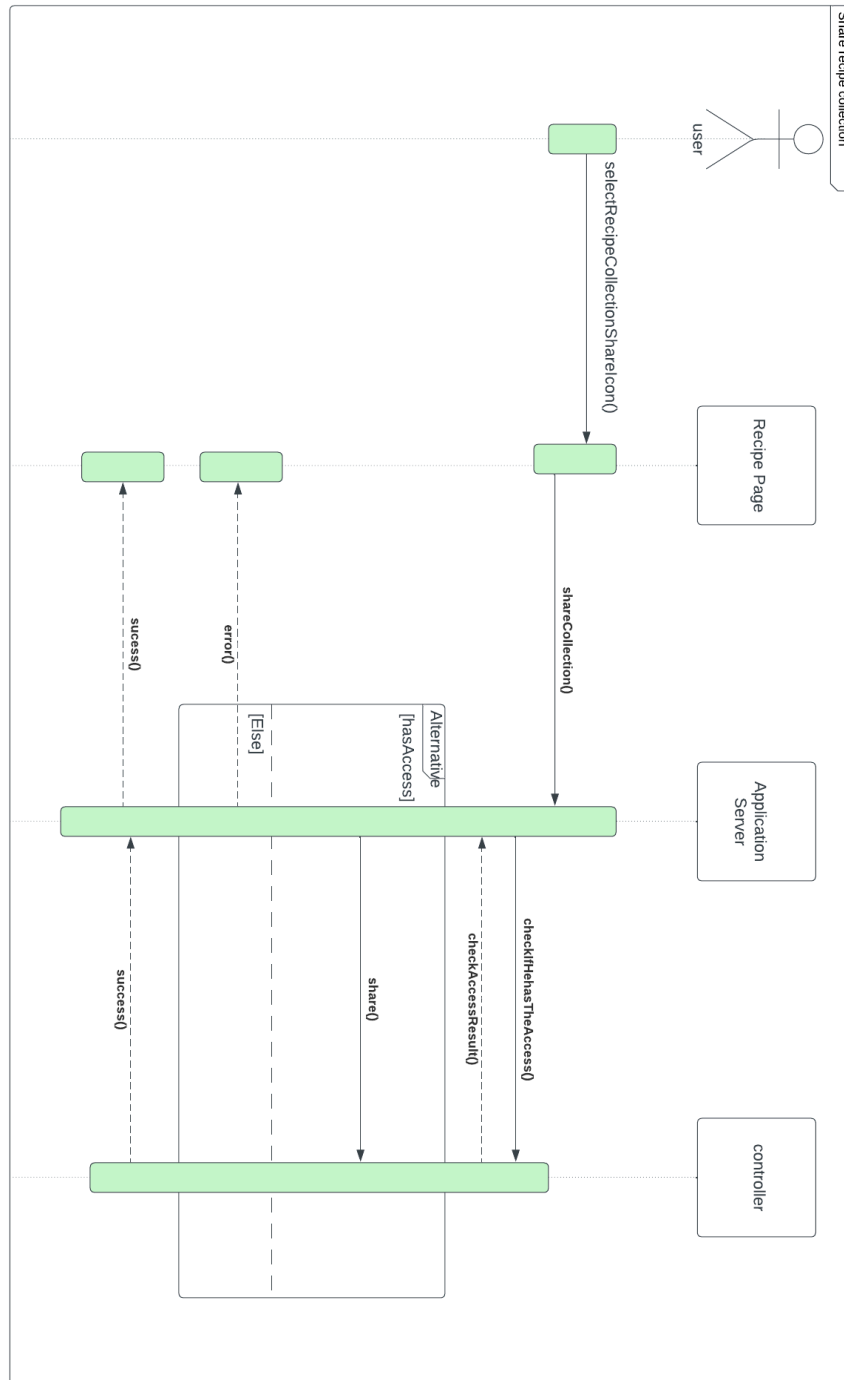


Figure 3.42 Share Collection Sequence Diagram

### 3.5.15 Create Challenge

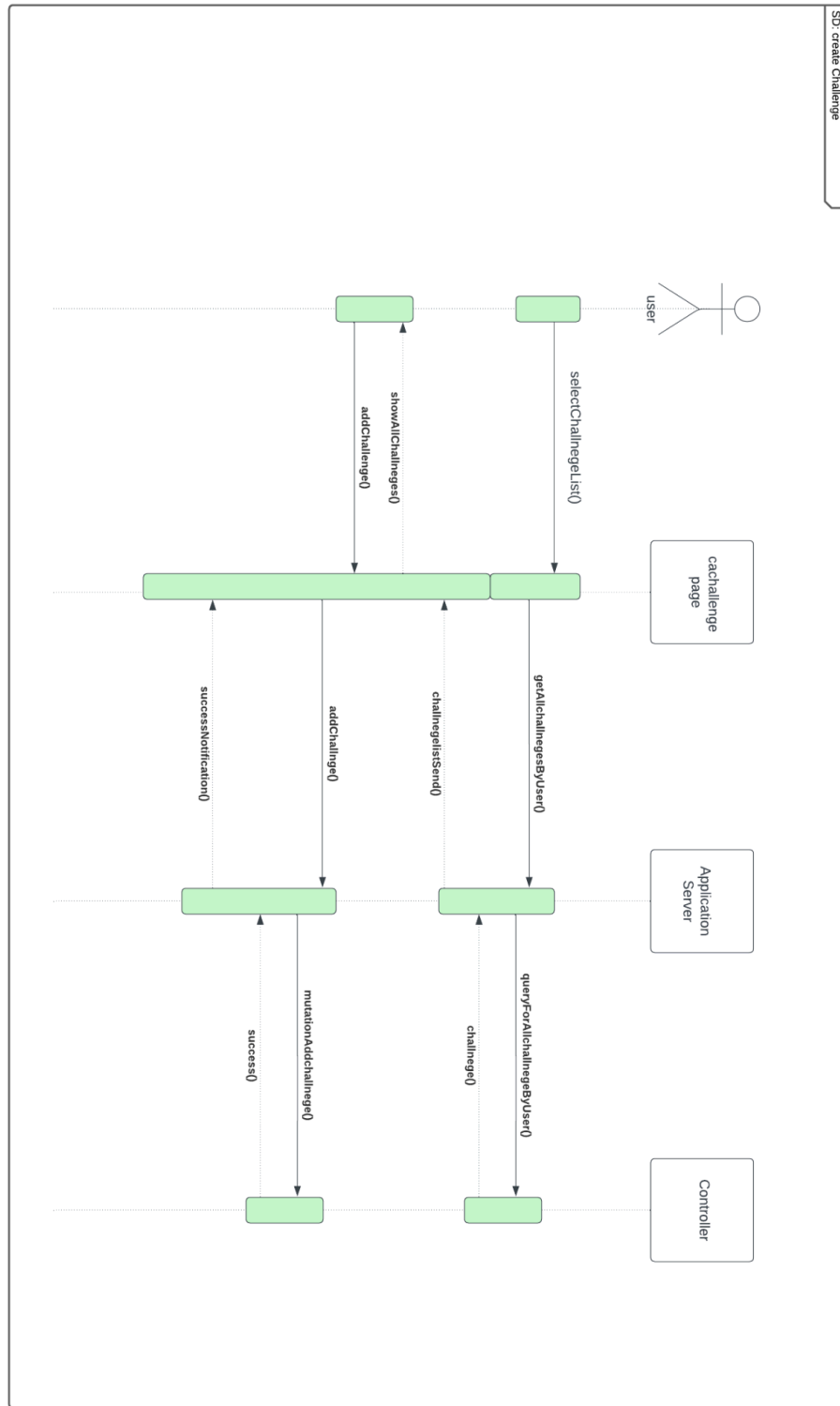


Figure 3.43 Create Challenge Sequence Diagram

### 3.5.16 Create Challenge Post

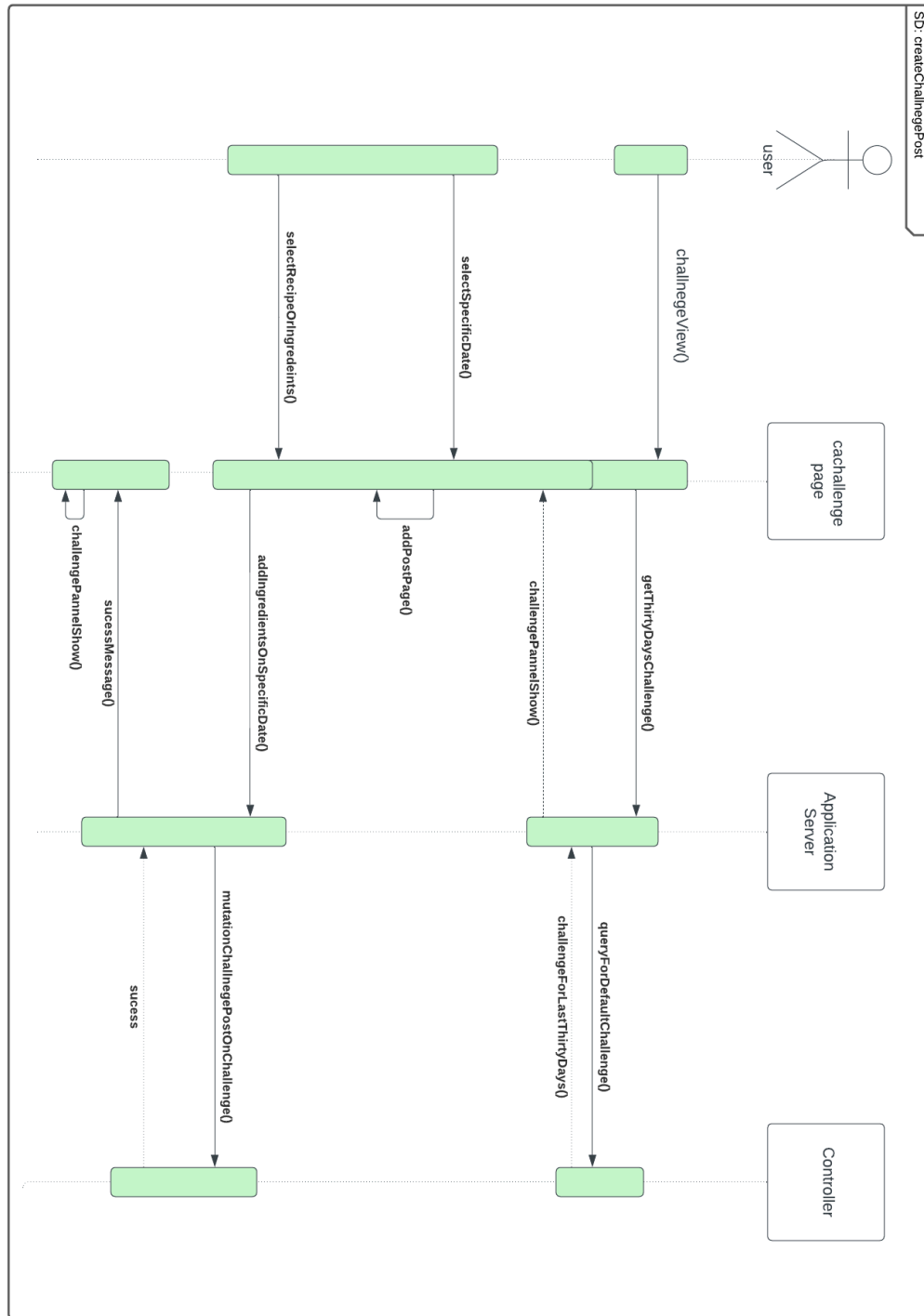


Figure 3.44 Create Challenge Post Sequence Diagram

### 3.5.17 Share Challenge

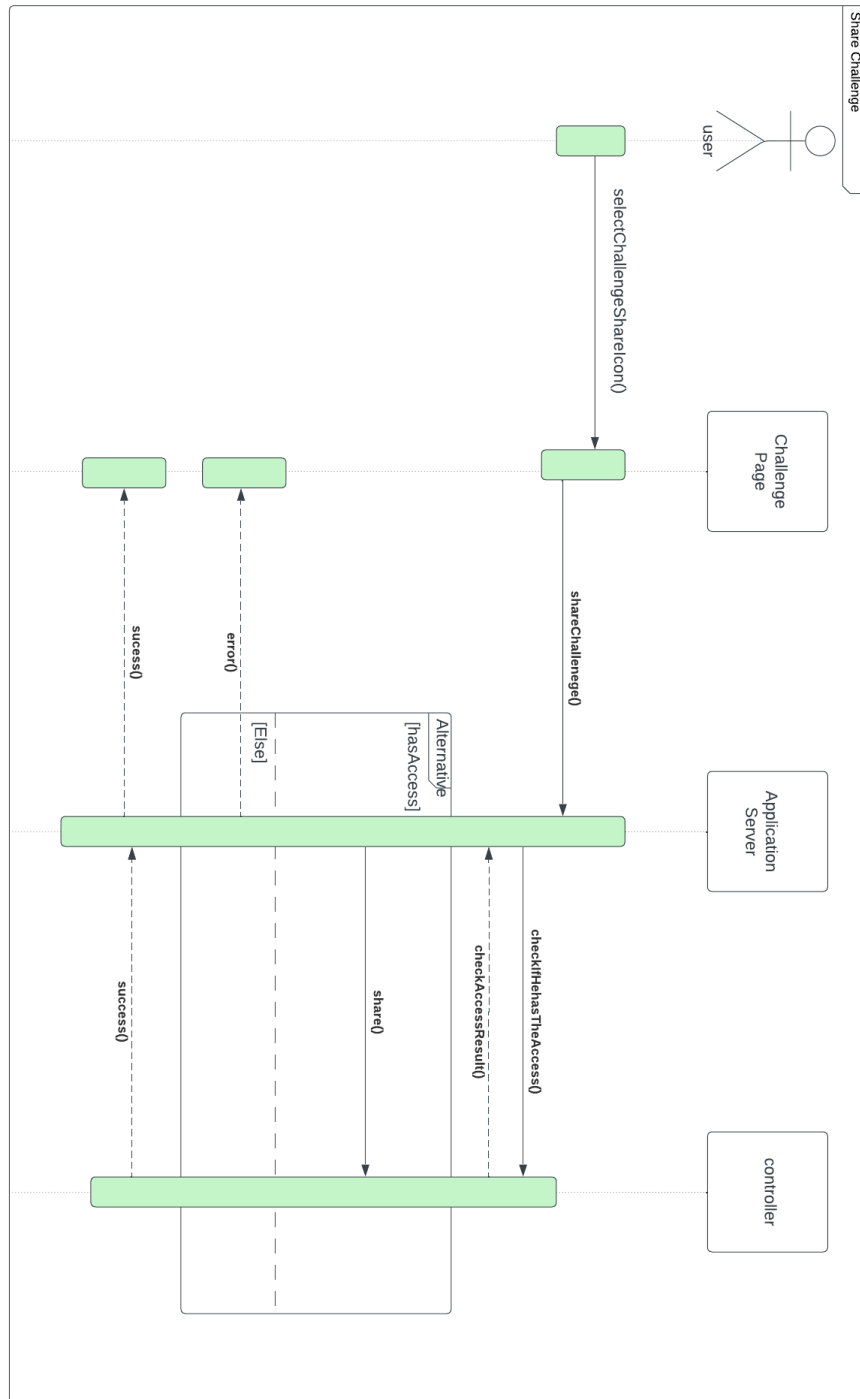


Figure 3.45 Share Challenge Sequence Diagram

### 3.5.18 Upload Image

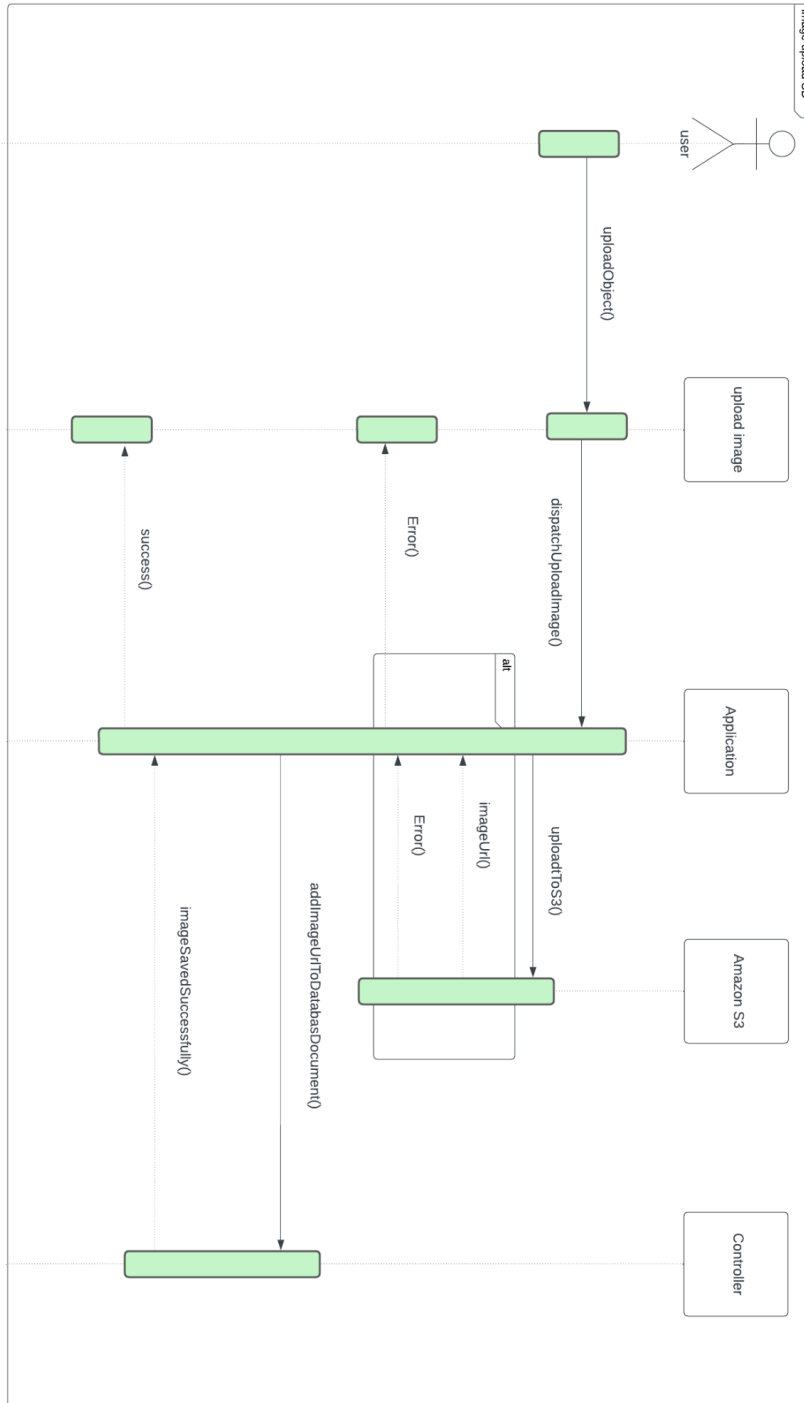


Figure 3.46 Upload Image Sequence Diagram

### 3.5.19 View Wiki Item

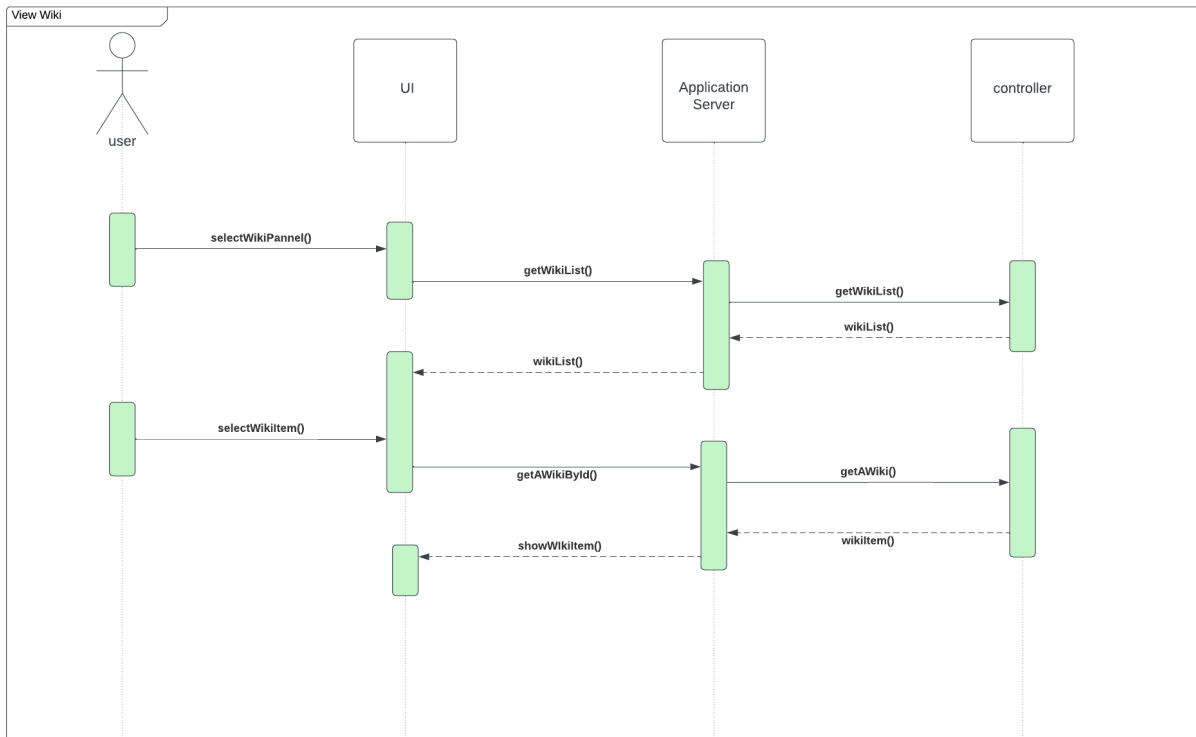


Figure 3.47 View Wiki Item Sequence Diagram

### 3.5.20 View User List (Admin)

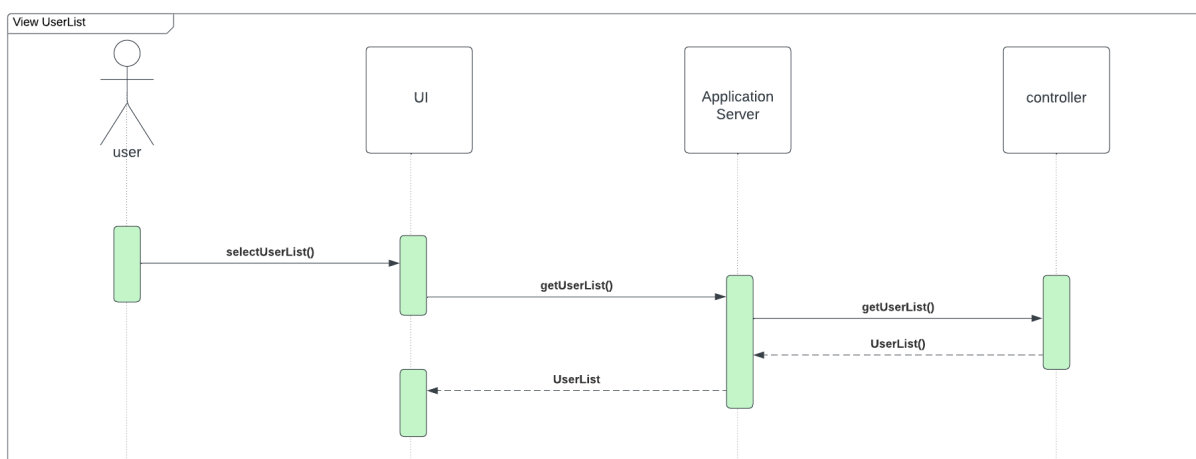


Figure 3.48 View User List Sequence Diagram

### 3.5.21 Add Ingredient from Source (Admin)

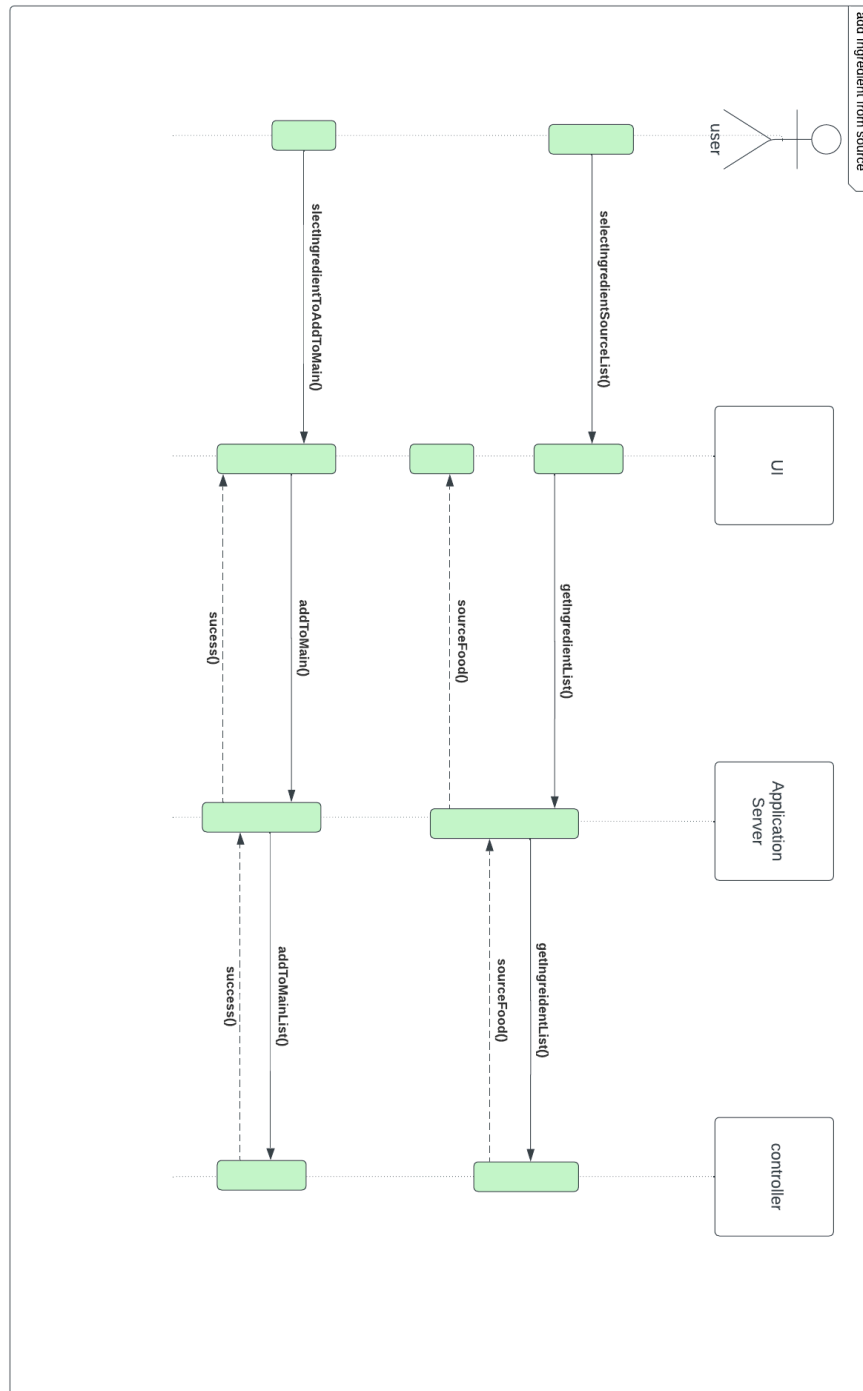


Figure 3.49 Add Ingredient Sequence Diagram



### 3.5.22 Add Nutrient from Source (Admin)

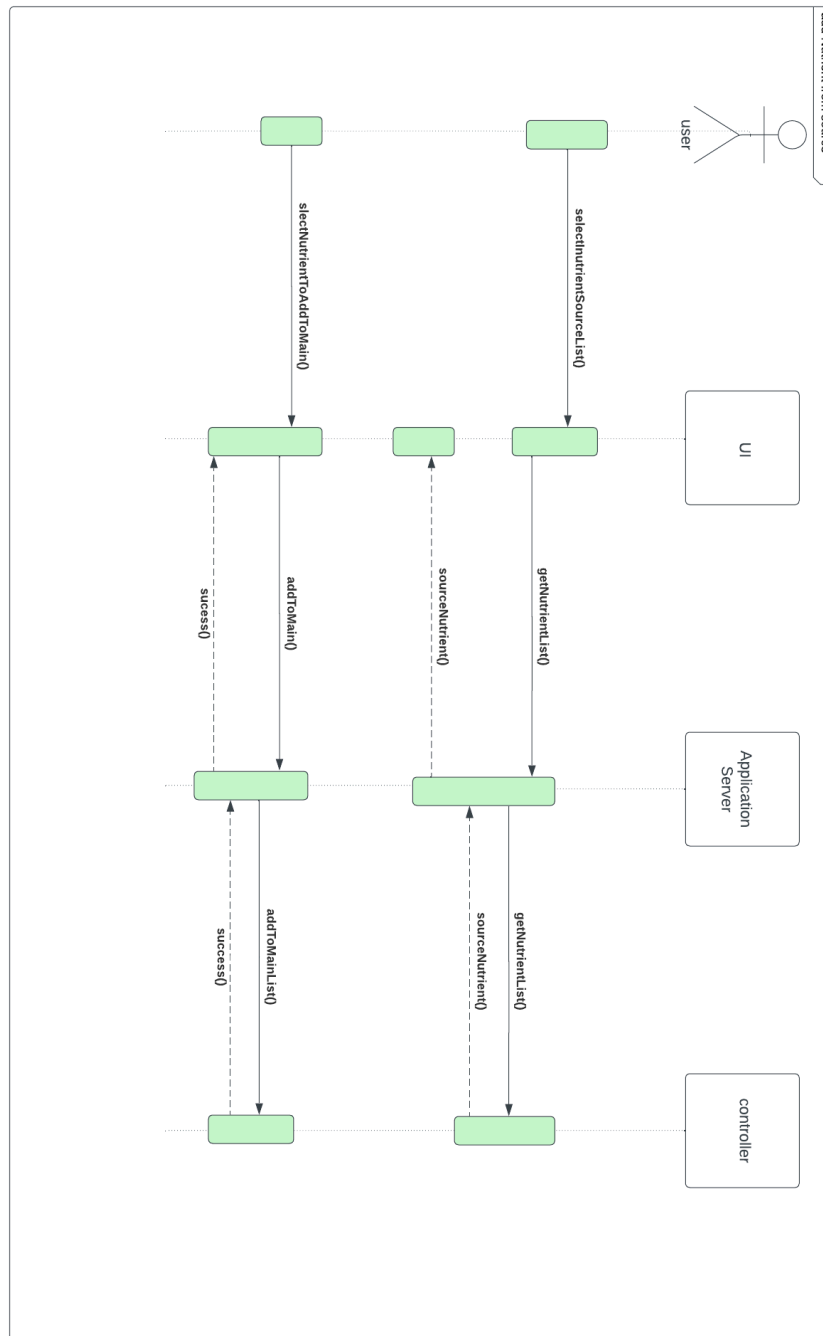


Figure 3.50 Add Nutrient Sequence Diagram

### 3.5.23 Add Health Data (Admin)

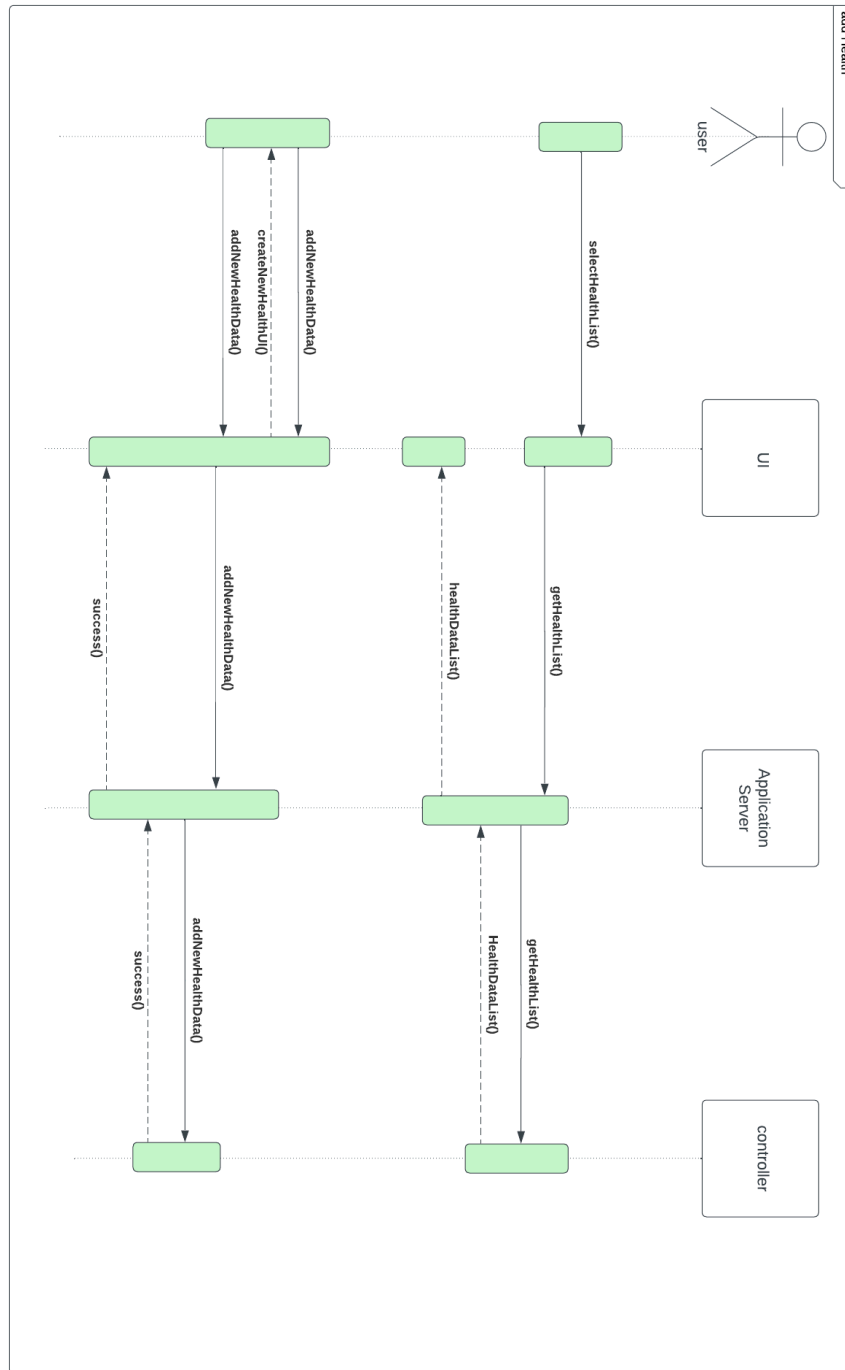


Figure 3.51 Add Health Data Sequence Diagram

### 3.5.24 Add DRI Data

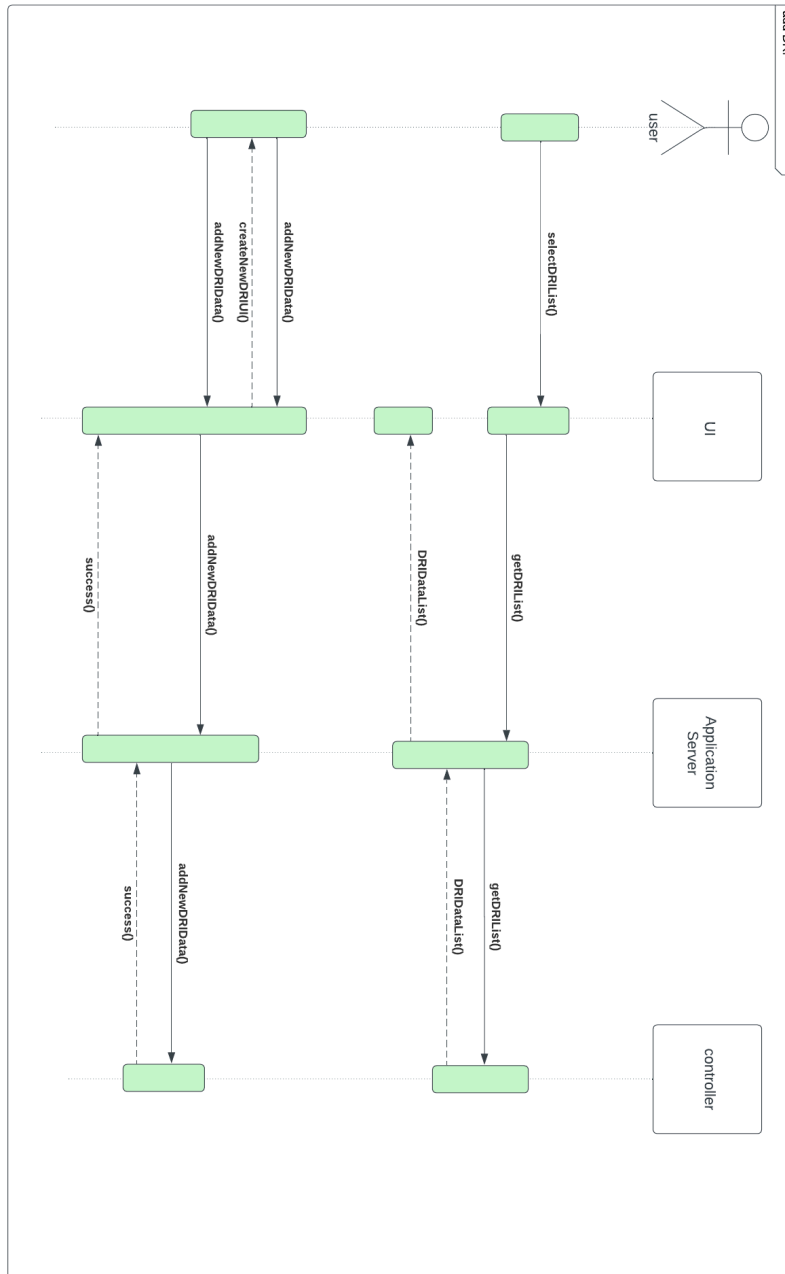


Figure 3.52 Add DRI Sequence Diagram

### 3.5.25 Add Recipe Category

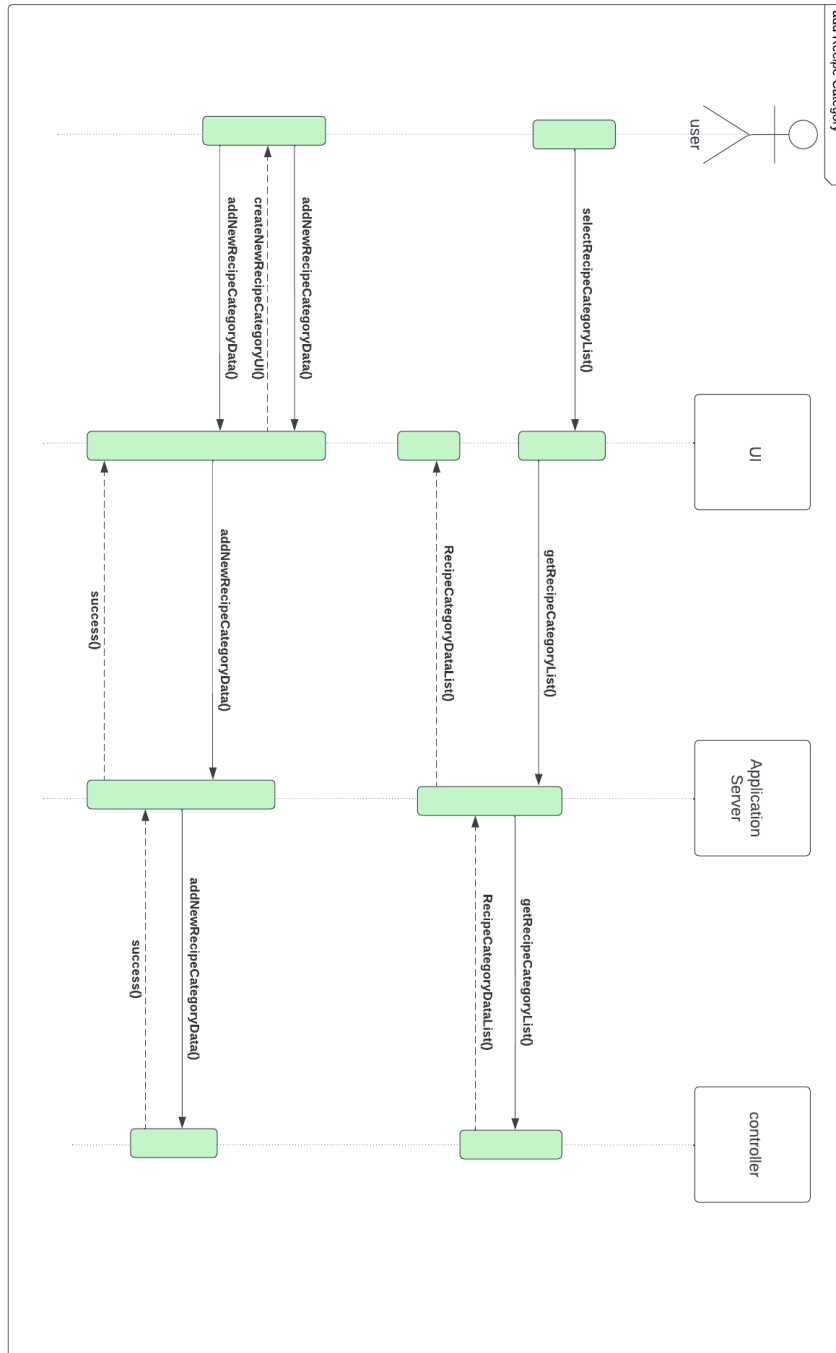


Figure 3.52 Add Recipe Category Sequence Diagram

### 3.6 ER (Entity Relationship Diagram)

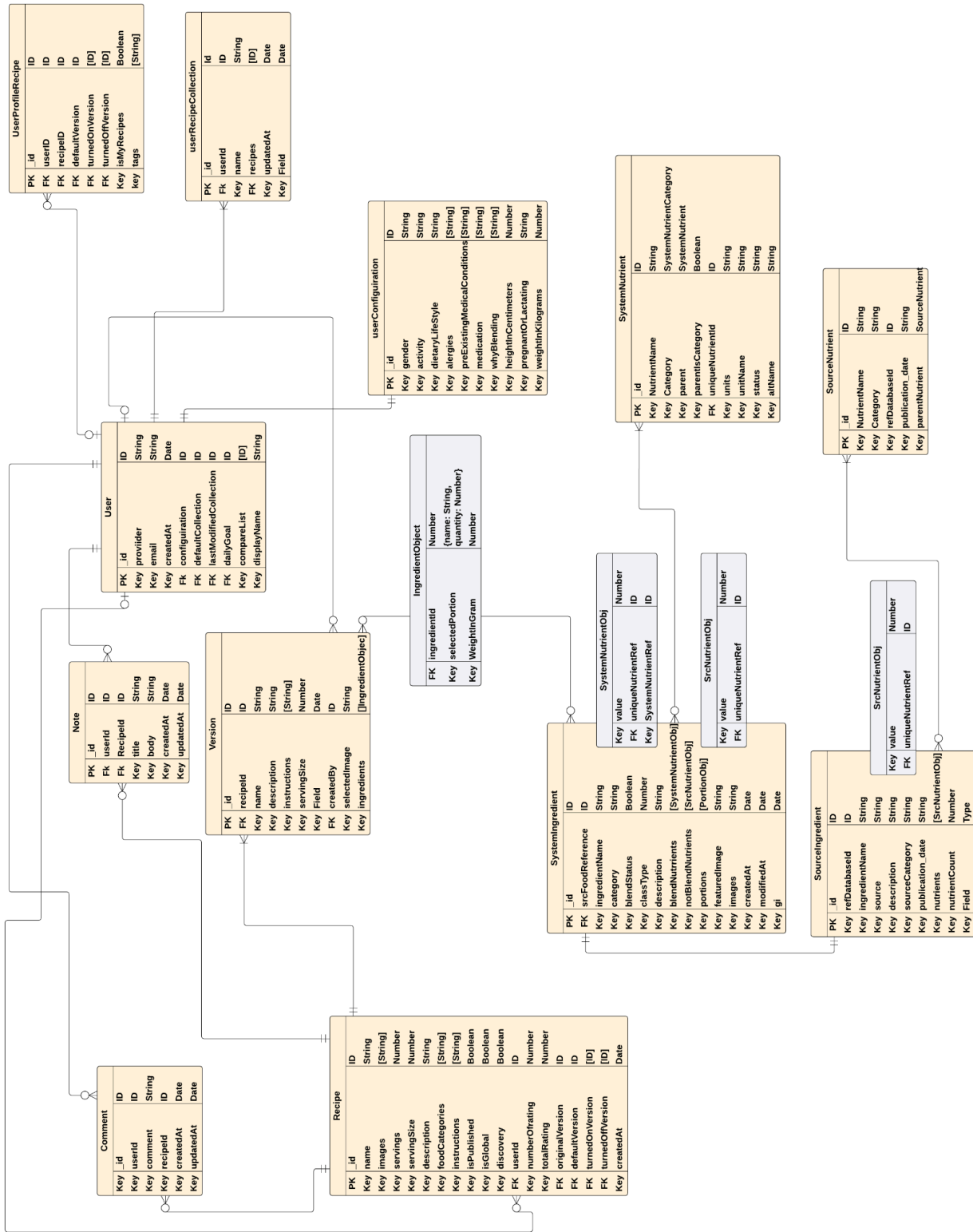


Figure 3.53 Entity Relation Diagram For NutriPal

### 3.7 ER Diagram (Simplified)

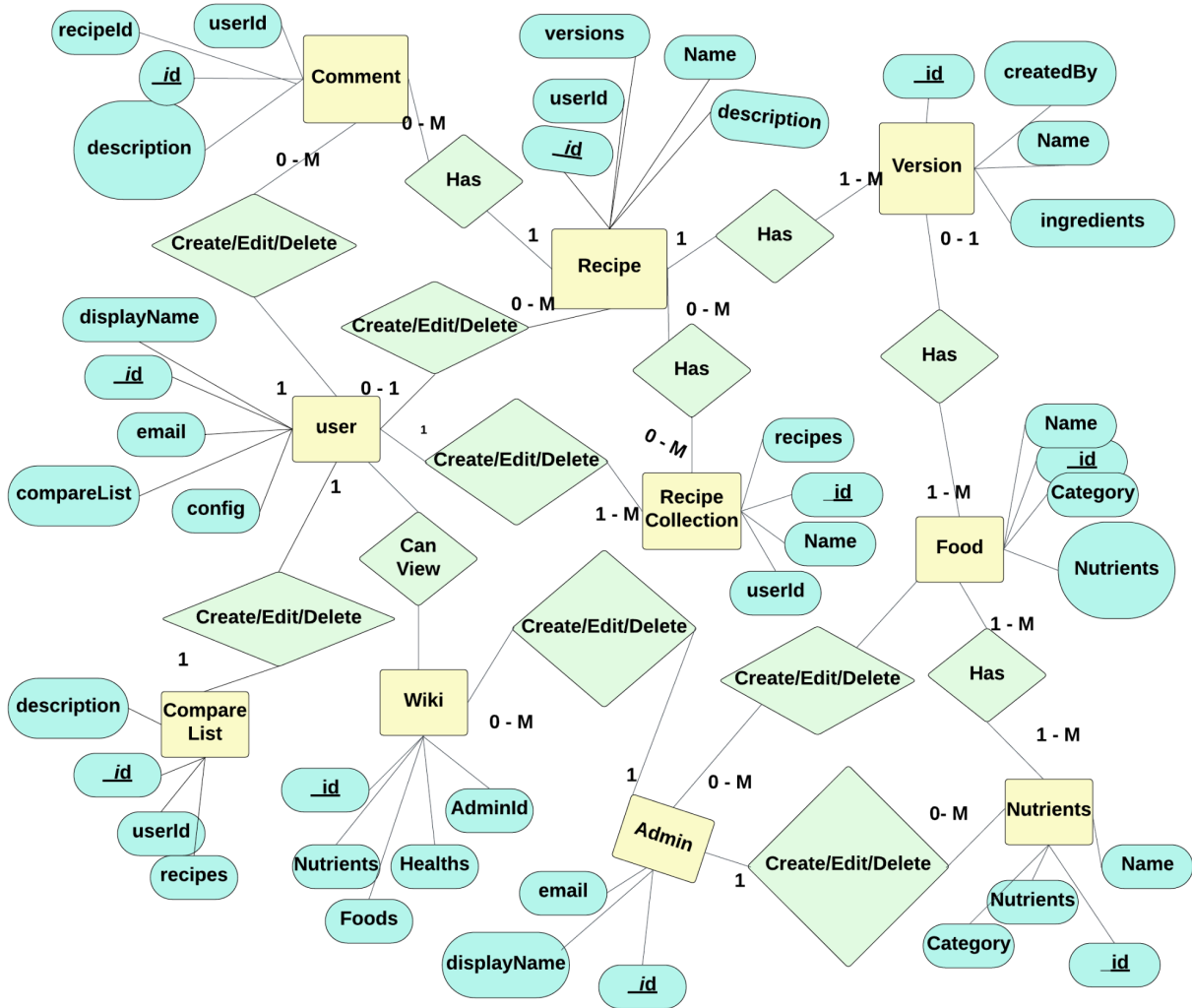


Figure 3.54 ER Diagram (Simplified)

## CHAPTER - 4

# **DEVELOPMENT TOOLS & TECHNOLOGY**

The primary goal of **NutriPal** wasn't only insightful recipes and food advice; it was a virtuosic technology to orchestrate the user experience and project scalability. Let's dive into the instruments:

## **4.1 Integrated Development Environment (IDE):**

I have used VS Code as my code editor, a customizable and lightweight IDE. Its extensibility and plugin ecosystem allowed me to adapt the environment to my specific needs, streamlining development and boosting productivity.

## **4.2 Programming Language:**

**On the front end**, I used Typescript, a typed version of Javascript, to ensure code correctness and prevent errors before the code goes for production which helped me to save enormous time. This meant fewer bugs and a smoother development experience as a developer. I utilized Next.js, a powerful React framework, to build a dynamic and modular user interface. Its server-side rendering will ensure properties like optimal performance and SEO. To interact with the backend seamlessly, we employed Apollo-Client for a GraphQL data fetching approach rather than using rest APIs, allowing me to access and manage data efficiently. Finally, I have dotted in some Redux-toolkit and Redux-Persist magic for state management, ensuring consistency and smooth navigation across the platform.

**On the backend**, we relied on the robust Typescript and NodeJS combination. Typescript's type safety kept us safe from unexpected errors during development as usual, while NodeJs's scalability and event-driven architecture allowed me to handle large amounts of data with ease. For data communication, we embraced TypeGraphQL, a type-safe version of GraphQL, guaranteeing accurate and efficient data exchange between the front end and the back end.

## **4.3 User Interface Design:**

NutriPal's user interface needed to be both visually appealing and spontaneously functional. I have followed a design-driven approach, utilizing tools like Figma to create high-fidelity mockups and prototypes. This ensured a user-friendly experience that was both aesthetically pleasing and easy to navigate.



## **4.4 Database:**

The heart of NutriPal lies in its vast database of recipes, nutritional information, and user data. We entrusted this vital task to MongoDB Atlas, a cloud-based NoSQL database. Its scalability, flexibility, and document-oriented structure are perfectly suited for this application's dynamic data needs, allowing us to store and manage diverse information efficiently and as per my needs.

## **4.5 Deploy and Hosting:**

To bring NutriPal to life, we relied on reliable hosting and deployment solutions. For the front end, I have used Vercel, a serverless hosting solution, that offers lightning-fast deployments and automatic scaling as well as free deployment.

On the backend, I have chosen Railway, a serverless deployment platform specifically designed for Node.js applications. Its ease of use and affordability made it ideal for our needs, allowing us to deploy and manage backend infrastructure seamlessly, faster deployment, integration, and changes.

## **4.6 Security and Authentication:**

User data security and authentication were essential considerations. I have integrated AWS Cognito, a robust and cost-effective service, to handle user authentication and authorization fluently. This secured user data and access, ensuring a safe and reliable platform experience.

## **4.7 Image Storage:**

NutriPal's recipe library wouldn't be complete without the recipe images and visuals. I have used AWS S3, a highly scalable and cost-effective object storage service, with the task of storing and serving images to the application. This ensured efficient image delivery and minimized hosting costs.

## **4.8 Continuous Integration and Continuous Delivery (CI/CD):**

To maintain a dynamic and efficient development process, I have to choose a GitHub CI/CD solution. This automated pipeline ensured efficient code testing, building, and deployment, minimizing manual intervention and allowing us to focus on development.

By carefully selecting and utilizing these technologies, I have created a resourceful tech ecosystem that powers NutriPal and its experience. Each tool played a crucial role in improving the user experience, ensuring performance, scalability, and security.

CHAPTER - 5

**SYSTEM TESTING**

## 5.1 Feature Testing

Feature testing is the software development process where multiple variations of a feature are tested to find out the best user experience of that feature. Using feature testing we can validate if a new feature for a web page or app is a good fit and at the same time it is possible to determine which variation of the feature will be more successful.

Feature Testing helps us to develop an efficient, reliable, useful, effective, and secure web application.

### 5.1.1 Features to be tested

Features	Priority	Description
Log in (User)	High	The user has to be authenticated before using the system
Log out	Low	The session must be killed after logging out
Sign-Up	High	The user must be able to sign up using email and setting up a password through email verification.
Create/Update Profile	High	The user must be able to update their profile after successfully logging in to the system.
Create Recipe	Medium	The User must be able to create a recipe.
Create Recipe Collection	Medium	The User must be able to create a Recipe collection.
Add Recipe to a Collection	Medium	The User must be able to add recipes to his desired collection.
Add Recipe to the compare list	Medium	The user must be able to add recipes to the compare list.
Add Version to a Recipe	High	The user must be able to create versions of a recipe or modify an original version.

Add comment to a recipe	Medium	The user must be able to add comments to recipes.
Add note to a recipe	Medium	The user must be able to create notes to recipes
Add rating to a recipe	Medium	The user must be able to give ratings to recipes. The overall rating of that recipe will be modified after giving the rating.
Share Recipe	Low	The user must be able to share recipes with the registered users.
Search Recipe	High	The user must be able to search recipes by filtering some recipe options.
Share a recipe collection	Low	The user must be able to share a recipe collection with the registered users.
Create Challenge	High	The user must be able to create challenges and add challenge posts so that one can track his food habits.
Share Challenge	Low	The user must be able to share challenges with the registered users.
View wiki	High	The user must be able to view any wiki data and see the results of his own.
Manage Food Data	High	The admin must be able to manage food data so that he can add/edit/delete food items from the system.
Manage Nutrient Data	High	The admin must be able to manage nutrient data so that he can add/edit/delete nutrient items from the system.
Manage Daily Data	High	The admin must be able to manage DRI data.

**Table 5.1 Features to be Tested**

## 5.2 Test Strategies

### 5.2.1 Test Approach

To ensure the quality of the system, two different sorts of testing have been used. Mainly, it is focused on Black Box Testing and White Box Testing.

1. Black Box Testing: Black Box Testing is also called functional testing. It is a testing strategy where internal mechanisms are ignored and only focus on the output. For some specific inputs, some outputs are generated. Then these outputs are compared with the expected output. If it matches, the function is accepted.
2. White Box Testing: White Box Testing is called structural testing. In this testing strategy, the internal mechanism of the system is considered.

### 5.2.2 Test Schedule

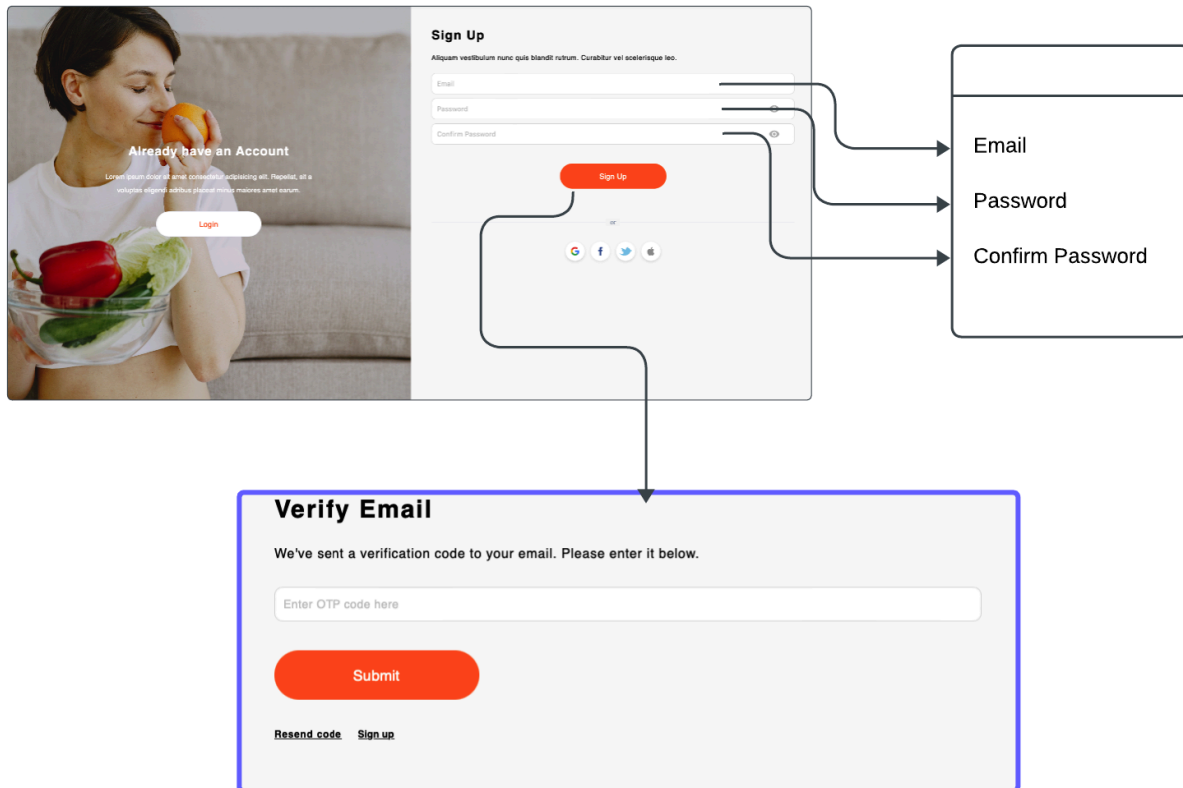
Test Phase	Time
Testing plan creating	1 Week
Unit test	During Development
Component testing	During Development
Testing user interfaces	During Development
Performance test	1 Week
Accessibility test	1 Week

Table 5.2 Test Schedule

## CHAPTER - 6

# **USER MANUAL**

## 6.1 NutriPal Registration



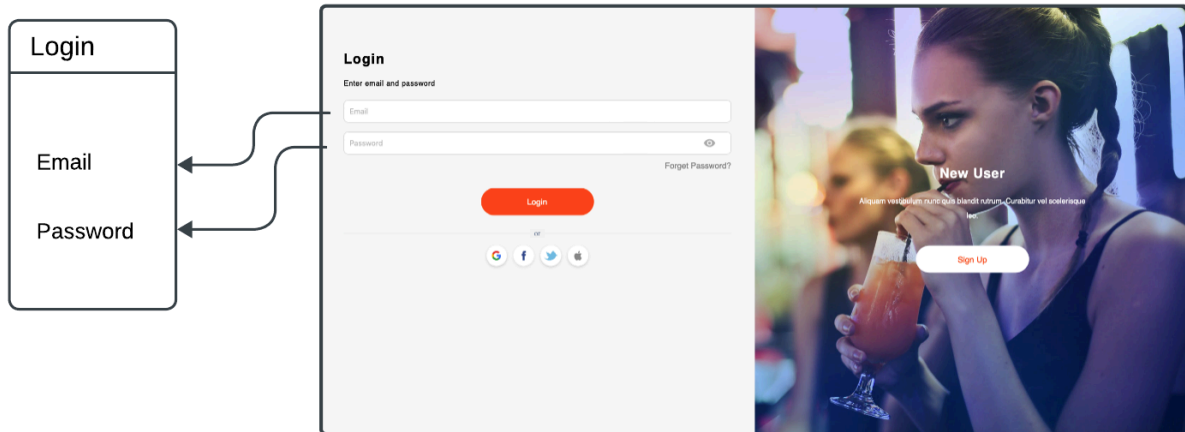
**Figure 6.1 Nutripal Signup Process**

For Registration you must give it a valid user email and password as suggested by the system. After Doing that successfully you will get a verification email with 6 digit code. To be a valid user user must have to verify your email address. After giving the OTP. You are now a user of “NutriPal”.

## 6.2 Login

For Login the user must be a registered user. After successful Registration, the user will be able to log into the system Providing his email and password.





**Figure 6.2 Nutripal Login Process**

### **6.3 Create Profile**

If you are a new user who did not complete the profile section he must complete the profile to use the system as this data will be used to generate user profile as well as DRI (Daily Recommendation Intake) value.

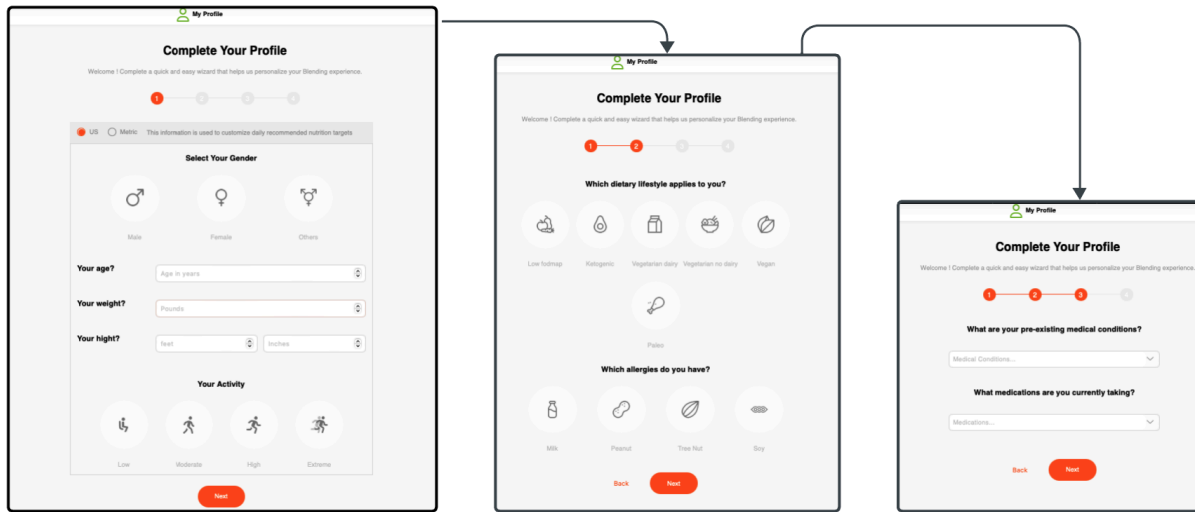


Figure 6.3 Create Profile Process

## 6.4 Home Page

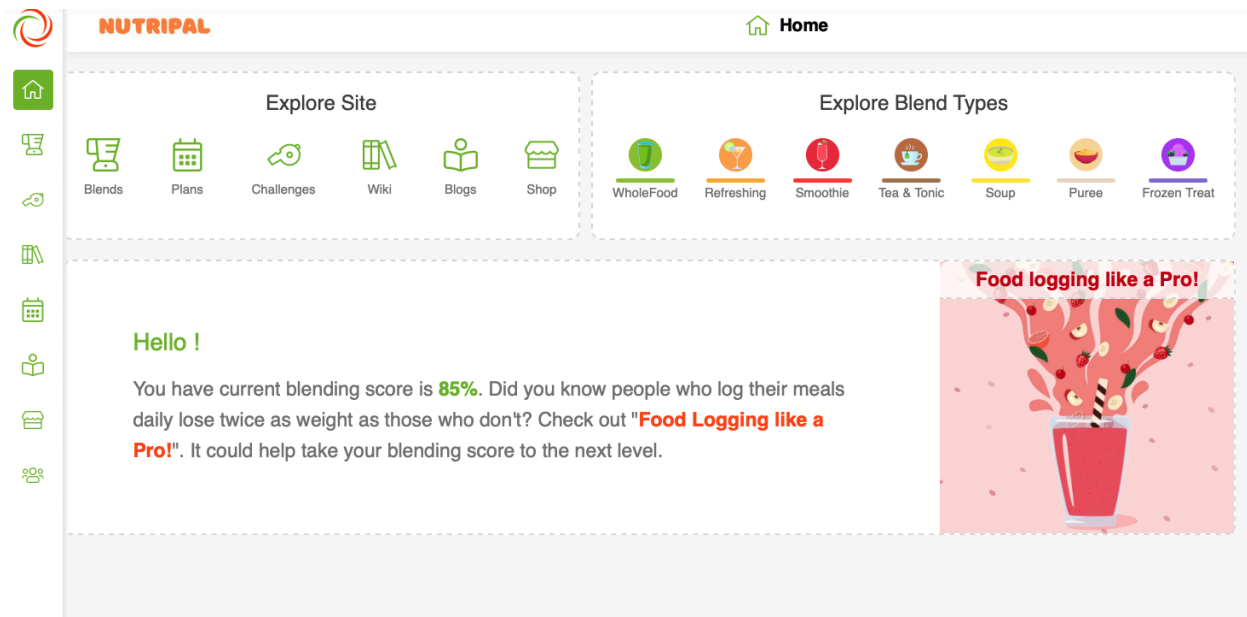


Figure 6.4 Home Page View

## 6.5 Recipe Home Page

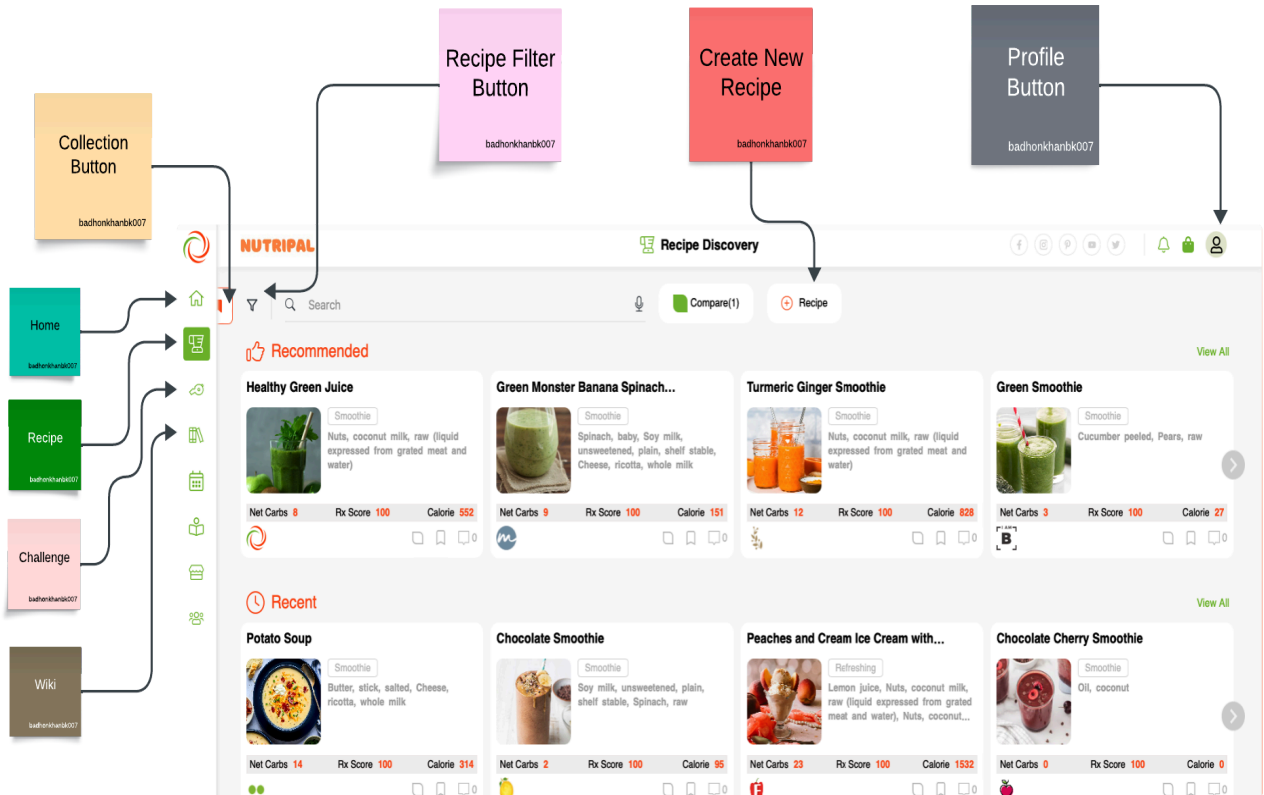
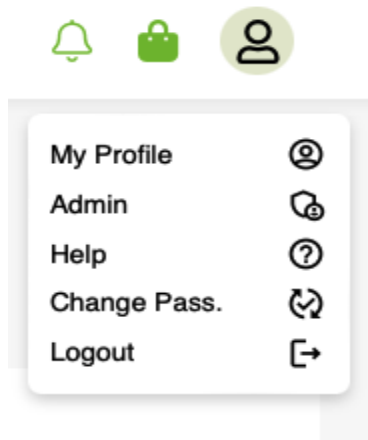


Figure 6.5 Recipe Home Page (Understanding Different Options)

## 6.6 Profile Section



This panel will be opened by clicking the profile button you can change your password, log out, and look into your profile from here. Let's select the My Profile section first. Let's explore my profile.

Figure 6.6 Profile Option

## 6.6.1 About Section

The image shows a user profile update interface. On the left, there's a profile card with a placeholder for a profile picture, the email address 'gidepi2360@astegol.com', and an 'About me' section with a text input field. The main form on the right is titled 'About' and 'Personalization'. It contains input fields for 'First name' (Badhon) and 'Last name' (Khan), a 'Display name' field (bk007), and an 'Email\*' field (gidepi2360@astegol.com). There are also dropdown menus for 'Your Blender' (Select blender) and 'Location' (Select timezone). An orange 'Update Profile' button is at the bottom right.

**Figure 6.6.1 Update profile (About Section)**

From here users can update their basic information like image, bio, and name. However, users can not update their email.

## 6.6.2 Personalization Section

About **Personalization**

Physical Medical Dietary Goals

Profile Daily Intake

US  Metric This information is used to customize daily recommended nutrition targets

Your Gender

Male  Female  Others

Your age

26 Years

Your weight ?

140 lbs.

Your Height

5 ft. 5 in.

Your Activity

Low  Moderate  High  Extreme

Update Profile

Figure 6.6.2 Update profile (Personalization Section)

From here users can update their user data which will be used to analyze their profile and calculate the nutritional value they will need according to their profile.

[About](#)
[Personalization](#)

---

Physical
Medical
Dietary
Goals

Profile
Daily Intake

⚠️ Your daily recommended intake based on your profile settings

Source	DRI	Goal
<b>BMI</b>	21	<input type="text" value="21"/>
<b>Calories</b>	2218	<input type="text"/>
<b>Macros</b>		
Total Carbs	<input type="text" value="40"/> % 330g	<input type="text"/>
Dietary Fiber	38g	<input type="text"/>
Total Fats	<input type="text" value="20"/> % 48g	<input type="text"/>
Protein	<input type="text" value="10"/> % 110g	<input type="text"/>
<b>Minerals</b>		
Calcium	1000mg	<input type="text"/>
Magnesium	350mg	<input type="text"/>
Manganese	11mg	<input type="text"/>
Molybdenum	2000µg	<input type="text"/>
Copper	1mg	<input type="text"/>
Fluoride	4000µg	<input type="text"/>
Iodine	150µg	<input type="text"/>
Iron	8mg	<input type="text"/>
Phosphorus, P	700mg	<input type="text"/>
Zinc	11mg	<input type="text"/>
Potassium	4700mg	<input type="text"/>
<b>Vitamins</b>		
Vitamin A	770µg	<input type="text"/>
Vitamin C	65mg	<input type="text"/>
Vitamin D	15µ	<input type="text"/>
Vitamin E	15mg	<input type="text"/>
Vitamin K	120µg	<input type="text"/>
Thiamin	1mg	<input type="text"/>
Riboflavin	1mg	<input type="text"/>
Niacin	16mg	<input type="text"/>
Vitamin B-6	1mg	<input type="text"/>
Folate	400µg	<input type="text"/>
Vitamin B-12	2µg	<input type="text"/>
Pantothenic acid	5mg	<input type="text"/>

Update Goals

With the personalization data, the system will automatically create DRI values like BMI, Calories, Macro information, and many more as we can see in the picture at the left. The user has the option to set the goal if he desires to do so.

**Figure 6.6.3 Update profile DRI data and Goal**

## 6.7 Add New Recipe and View a Recipe

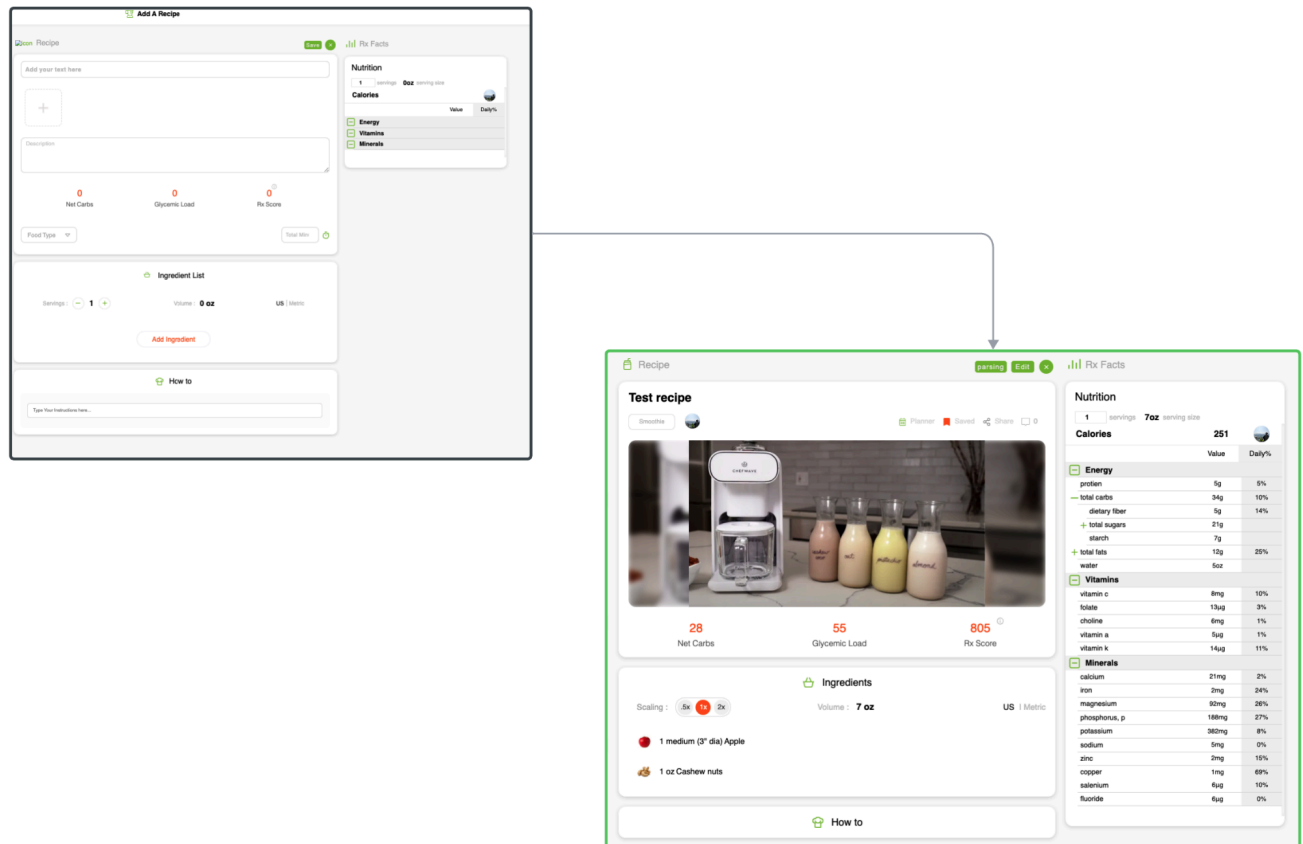


Figure 6.7 Recipe creation process

The user can create a new recipe by selecting the add new recipe option and then he has to fill up the form to create a new recipe. He must fill in all necessary information to create a recipe. One can also view a new recipe after creating it. While creating a recipe the user can also the nutritional value he will consume if he takes this recipe. On the go by adding an ingredient the nutrition panel also will be updated accordingly.



## 6.8 Recipe Card Options

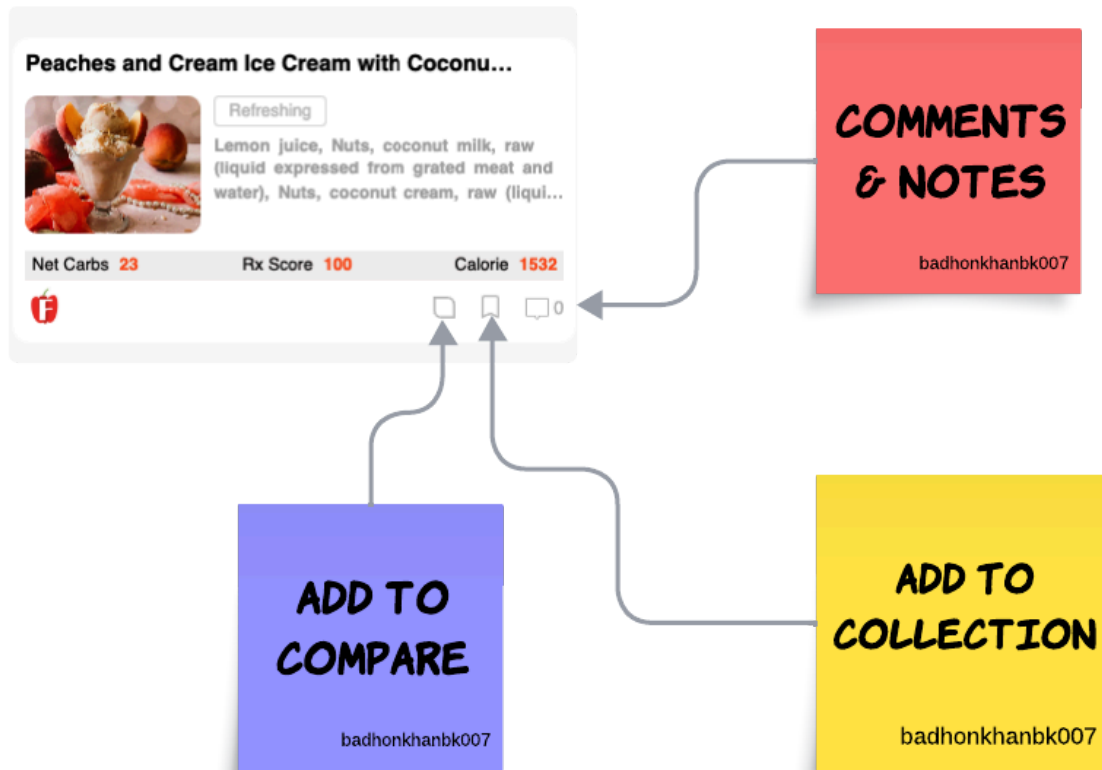
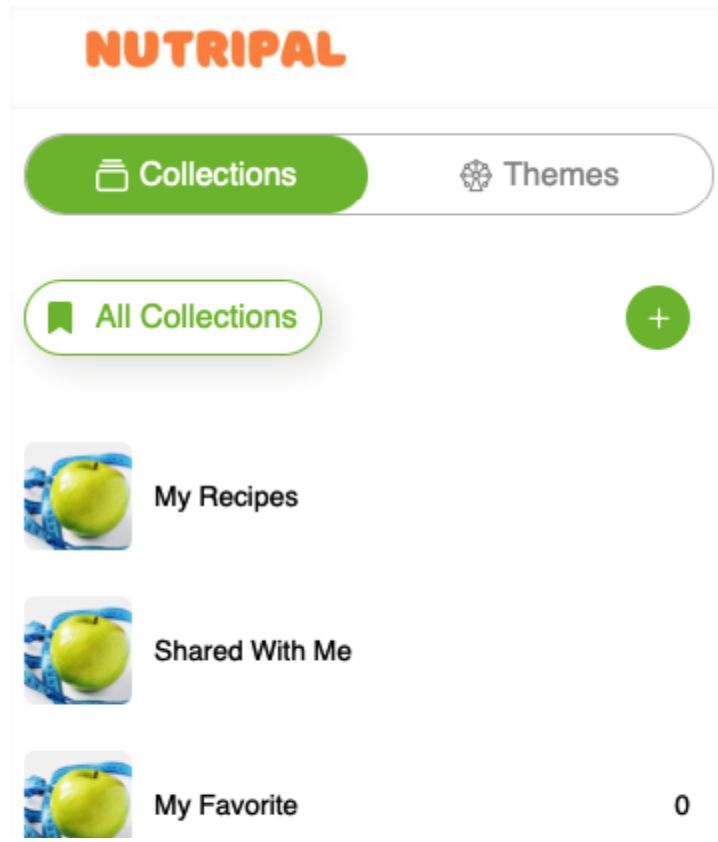


Figure 6.8 Understanding Recipe Card

## 6.9 Recipe Collection



The user can create a new recipe collection. “My Recipe” is a default collection where all your created recipes will be automatically saved.

My Favorite is also a default collection. This collection will be assigned to you once you are a valid Nutripal User.

“Shared With Me” as the name suggests it is a collection where all the shared collections and recipes will belong.

Figure 6.9 Recipe Collection Options

## 6.10 Recipe Notes Comments and Rating

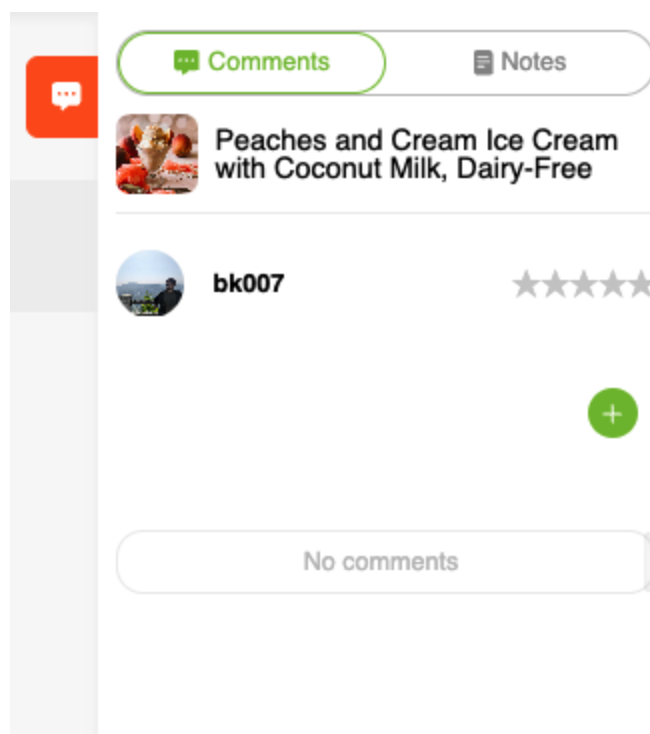


Figure 6.10 Recipe Notes, comments, and Ratings Panel

The user can add “Comments” or “Notes” separately. The main difference between a note and a comment is that the comment will be visible to all the users who can view this recipe. But Note is for personal use only. Only you can see this comment.

Besides notes and comments, you can also give any recipe a rating. If the recipe has more rating average the recipe will fall into the popular category.

## 6.11 Recipe Compare

The screenshot shows a recipe comparison tool. At the top, there's a 'Recipe Discovery' link and a 'Compare' button. Below, two recipe cards are shown: 'Green Monster Banana Spinach Avocado Smoothie' and 'Green Smoothie'. The interface includes a form to add a new recipe with fields for title, whole food selection, and description. It also displays nutritional information for the selected recipes, including net carbs, Rx score, and calories. The 'Green Monster Banana Spinach Avocado Smoothie' has 9 net carbs, an Rx score of 100, and 151 calories. The 'Green Smoothie' has 3 net carbs, an Rx score of 100, and 27 calories. Each recipe card lists ingredients and a nutrition table.

Calories 151		
	Value	Daily%
<b>Energy</b>		
proten	11g	10%
- total carbs	12g	4%
dietary fiber	3g	8%
+ total fats	8g	16%
water	9oz	
<b>Vitamins</b>		

Calories 27		
	Value	Daily%
<b>Energy</b>		
proten	3g	3%
- total carbs	86g	28%
dietary fiber	18g	47%
+ total sugars	55g	
+ total fats	1g	2%
water	23oz	

Figure 6.11 Recipe Compare Process

Users can add multiple recipes to their compare list and check the nutritional value and compare them. The user can also drag and drop ingredients from each recipe and formulate a new one according to his choice or interest.

## 6.12 Filter Recipe

Based on the recipe filter option, the user can search his desired recipes. The user just has to select the recipe filter button and choose the options he wants. The system will filter the recipes based on user choices.

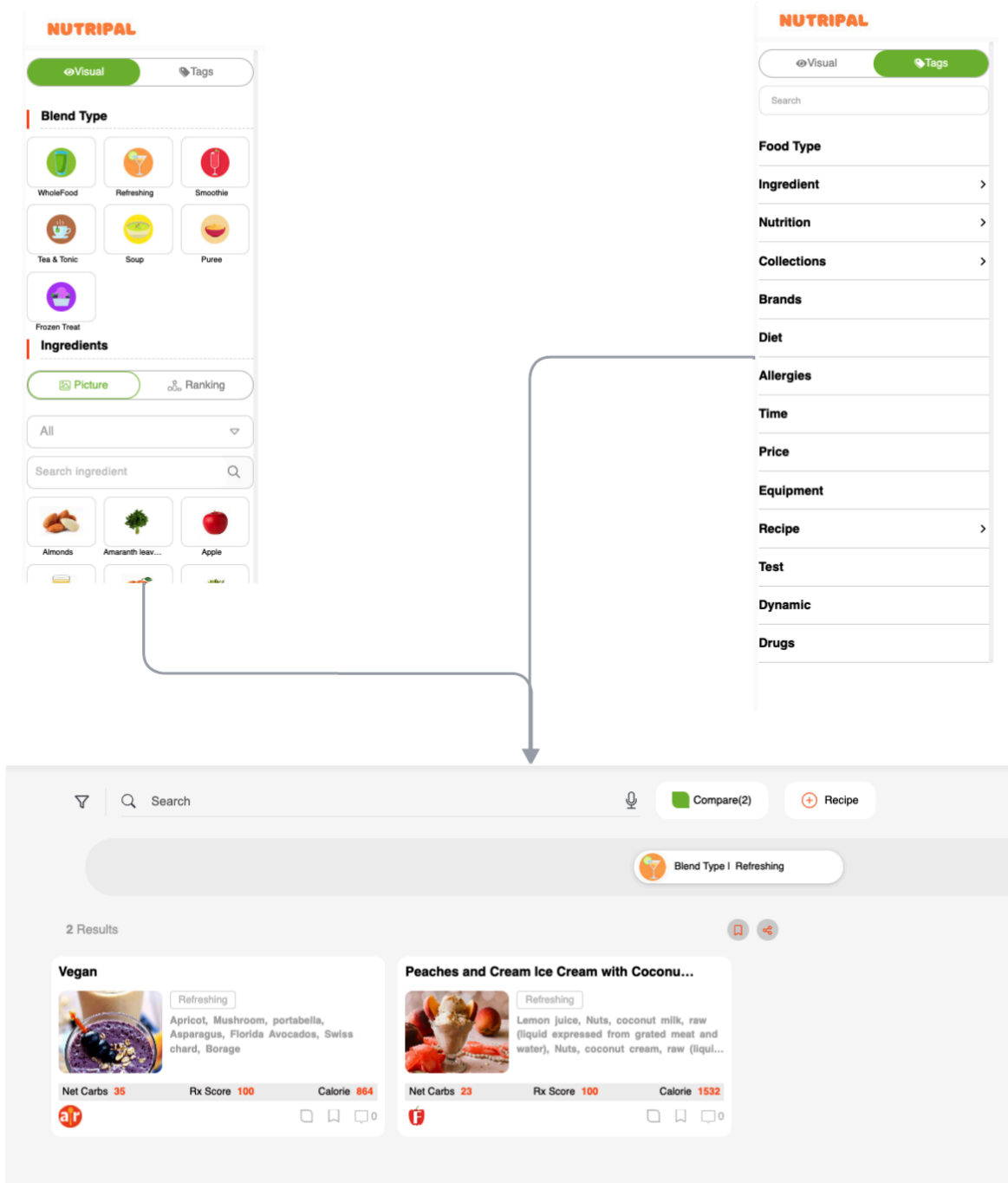
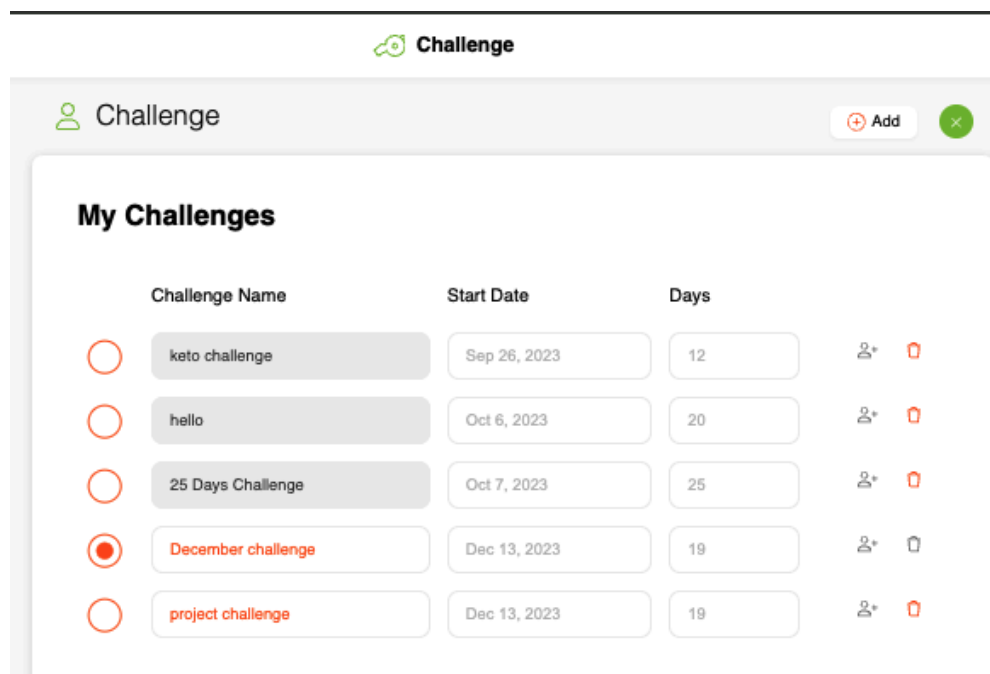


Figure 6.12 Recipe Filter Process

## 6.13 Challenge

The user can create a future challenge by giving it a starting date and end date, after the challenge starts on the starting date the user can create a challenge post meaning the food he is taking on that date. The system will automatically track his food habit according to his input, like the current streak, longest streak, days remaining, his score and many more.

### 6.13.1 Select Challenge



The user can only choose one challenge at a time.

Figure 6.13.1 Selecting Default Challenge

## 6.13.2 My Thirty Days Challenge List

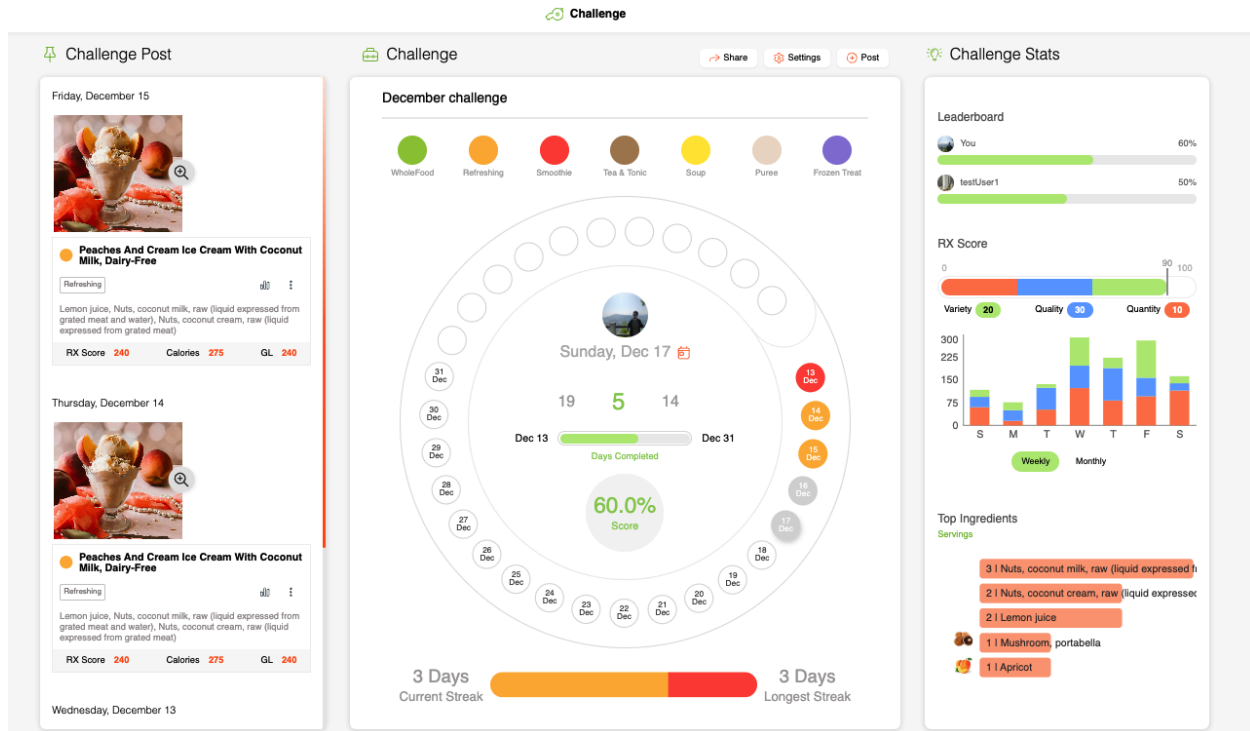


Figure 6.13.2 Thirty Days Challenge List View

The user will see this page after selecting a challenge. He can check the food item he is taking. Which type of food he is interested in. His top ingredients from this thirty-day data. If the challenge is a shared one then one can check the leaderboard to see his position there. The user can also create challenge posts for the current date only.

## 6.14 Wiki

The user can get more information about ingredients or nutrition and the health impact for every wiki and the nutrition list for an ingredient and health impact. The top ingredient list for a nutrition and health impact. For a health wiki, the user can check the top nutrients and ingredients. For every wiki data, the user can check his facts and how much he has taken that ingredient, or nutrient over the week, month, year, and year-to-date data.

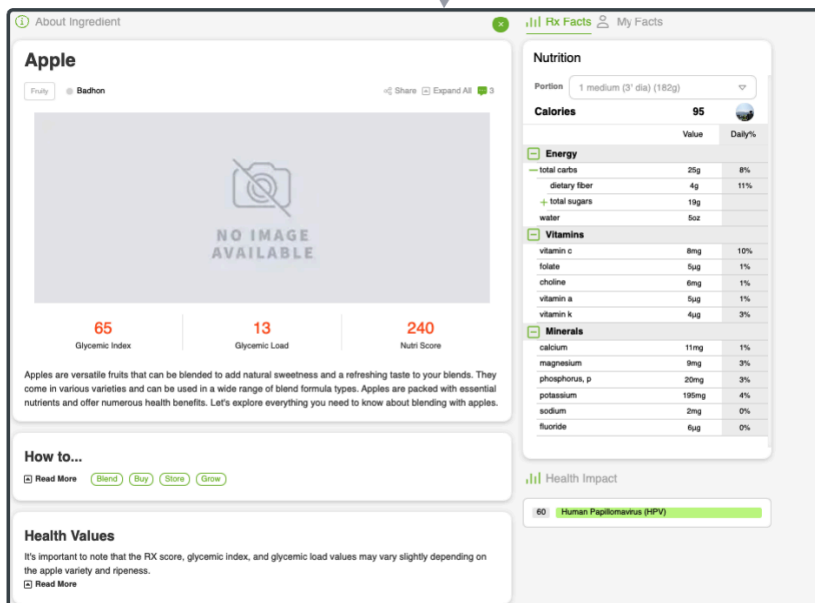
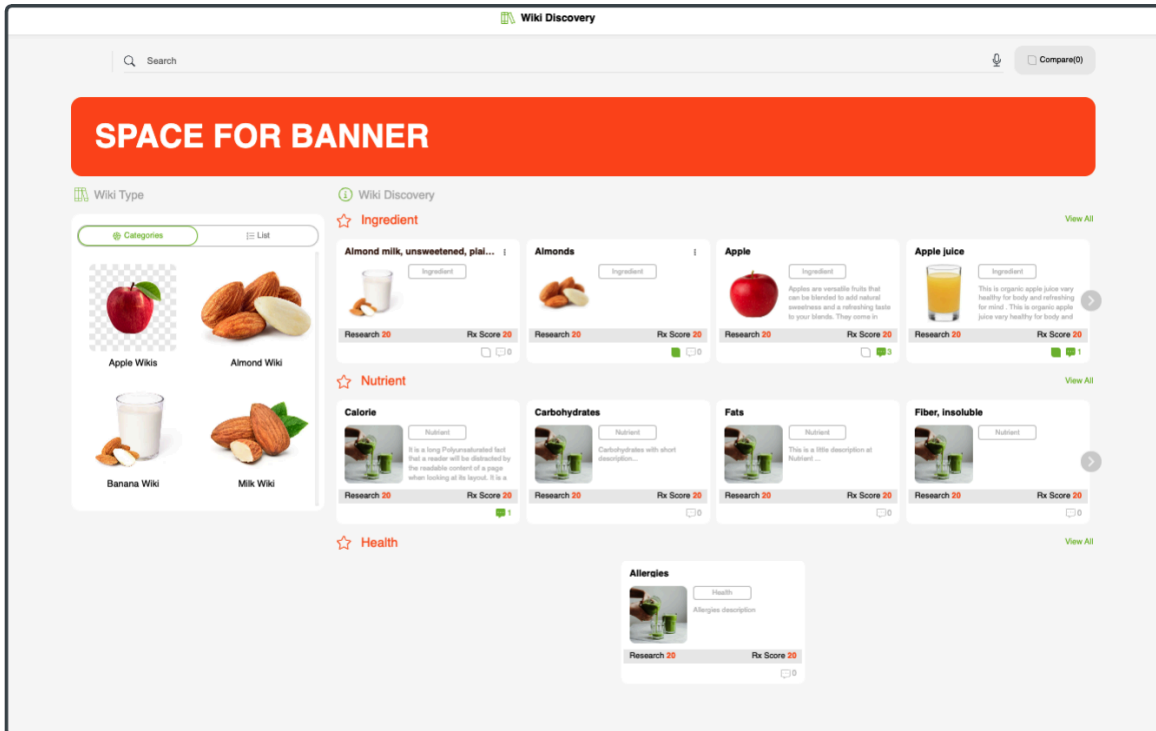
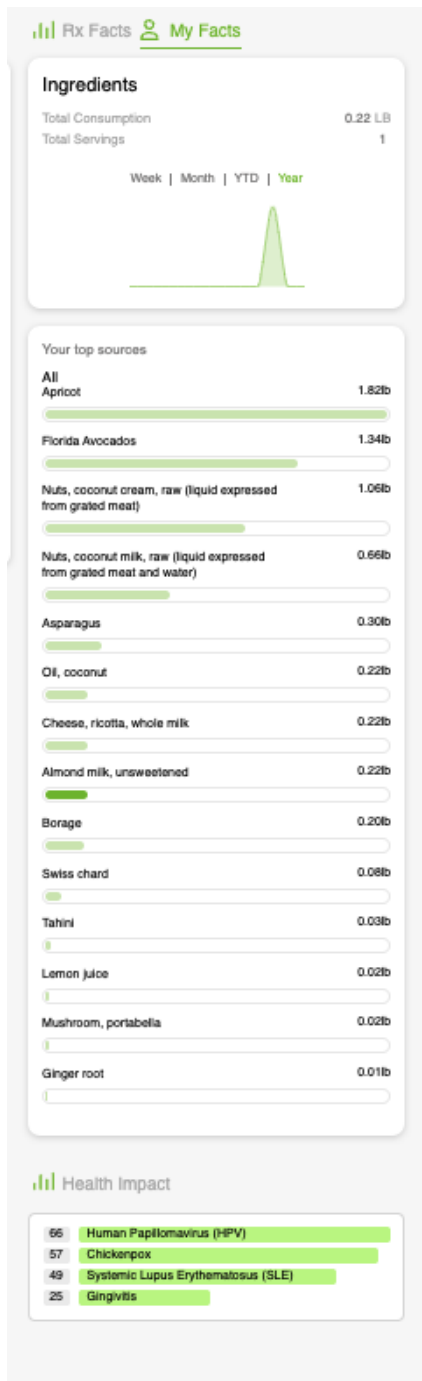


Figure 6.14: Wiki Item View



## 6.15 Wiki My Facts



The user will be able to see the statistics about how much he is consuming a particular ingredient or even a nutrient. The ingredients I have taken the most weekly, monthly, yearly, and Year-to-date reports will automatically be generated according to my challenge post I have added to the challenge section I have mentioned before.

Figure 6.15 Wiki My Facts View

CHAPTER - 7

**CONCLUSION**

## 7.1 Project Summary

In today's fast-paced world, navigating the vastness of food choices can feel overwhelming. We juggle conflicting information, grapple with conflicting desires, and often settle for convenience over health. Enter NutriPal, not just a calorie counter, but a perfect health companion that enables you to discover, track, and transform your relationship with food.

NutriPal transcends the limitations of conventional health apps. It's not just about numbers on a screen; it's about personalized journeys toward conscious, and healthy eating habits. Imagine a digital culinary partner, whispering secrets of a healthy living road map through knowledge, and support.

**Unveiling a Food antidote:** NutriPal welcomes you to an abundance of culinary possibilities, curated to your unique preferences and dietary needs. NutriPal presents a vibrant storage of recipes, individual food items, collections, and cultural cuisines, all assessed through the lens of your health goals. It's like having a world-traveling nutritionist, suggesting hidden gems within every culinary corner, mentoring every bite to your well-being.

**Effortless Tracking, Empowering Insights:** Tracking your intake becomes a seamless process with NutriPal. Intuitive logging and clear visuals transform the chore into a game of self-discovery. Witness your journey unfold in compelling dashboards and personalized reports, unveiling nutritional patterns and empowering you to make informed choices with each meal.

**Beyond Numbers, a health coach:** NutriPal's power lies not just in data, but in understanding your body and fitness. It dives deeper than calories, analyzing nutrient intake, tracking progress toward your goals, and offering data-driven food and nutrition recommendations according to your body's needs. It's like having a resident biochemist, deciphering the code of your well-being and suggesting adjustments.

**A Supportive Culinary Community:** NutriPal understands that health is a shared journey. It connects you to a thriving online community of like-minded individuals, where you can share meal plans, share recipes, and find inspiration in each other's progress. Imagine a virtual dinner party of health enthusiasts, cheering each other on, sharing kitchen wisdom, and building a supportive environment that amplifies your motivation and keeps you on track.

NutriPal's impact extends far beyond individual well-being. It will make way for a cultural shift towards conscious eating, inspiring individuals to make informed choices that benefit their health. It promotes food diversity and sustainability, encouraging responsible consumption and celebrating the cultural food habits of culinary traditions.

NutriPal is not just an app; it's a revolution. It's a personal chef, a health advisor, a supportive community, and a catalyst for change. It's your food journey redefined, one delicious bite at a time.

## 7.2 Limitations

- Wanted to make a separate module for a planner or meal plan for a week or so. It is under development.
- Place for a group chatting. Live workout through video call and get calorie burn information.
- NLP or parsing the data, so that users don't have to search for a particular ingredient every time while making a recipe as well as give input as a challenge post.
- Live data update of source data.
- Limitations of available data, especially local data on ingredients or foods.
- Admin Role Management.

## 7.3 Future Scope

The future scope of NutriPal encompasses several exciting possibilities for expansion and enhancement. Moving forward, the project aims to:

**Enhance User Experience:** Continuously improve the user interface and experience based on feedback and technological advancements, ensuring NutriPal remains intuitive and accessible to a wide audience.

**Introduce Advanced Analytics:** Implement advanced analytics features to offer users deeper insights into their nutritional habits, trends, and health progress, leveraging machine learning and data analysis techniques.

**Integration with Wearable Devices:** Explore integration with wearable devices to enable real-time tracking of physical activity, sleep patterns, and other health-related metrics, providing a more holistic view of users' well-being.

**Personalized Meal Plans:** Develop sophisticated algorithms to generate personalized meal plans based on individual preferences, dietary restrictions, and health goals, making NutriPal an even more tailored and indispensable tool.

**Community Engagement Features:** Expand community features to foster more interaction among users, such as forums, challenges, and collaborative meal planning, creating a vibrant and supportive ecosystem.

**Global Nutritional Database:** Collaborate with international partners to expand the nutritional database, accommodating diverse cuisines and regional food items, making NutriPal globally relevant.

**Integration with Healthcare Systems:** Collaborate with healthcare systems to enable seamless sharing of nutritional data between NutriPal users and their healthcare providers, enhancing the app's role in healthcare management.

**7.4 Project Link:** <https://nutripal-six.vercel.app/>

## 7.5 References:

1. **USDA Food Data Central,**  
Website: U.S. Department of Agriculture, Agricultural Research Service.  
"Food Data Central." USDA, <https://fdc.nal.usda.gov/>.
2. **“Nutrition Programming” book on Rokomari,**  
Website: Rokomari. Nutrition Programming,  
<https://www.rokomari.com/book/157929/nutrition-programming>.
3. **Fooducate,**  
Website: Fooducate Ltd.  
"Fooducate." Fooducate, <https://www.fooducate.com/>.
4. **Cookpad,**  
Website: Cookpad Inc.  
"Cookpad." Cookpad, <https://cookpad.com/>.
5. **Allrecipes,**  
Website: Meredith Corporation.  
"Allrecipes." Allrecipes, <https://www.allrecipes.com/>.
6. **Samsung Food,**  
Website: Samsung Electronics Co., Ltd.  
"Samsung Food." Samsung Food, <https://samsungfood.com/>.
7. **Epicurious,**  
Website: Condé Nast.  
"Epicurious." Epicurious, <https://www.epicurious.com/>.
8. **BBC Good Food,**  
Website: Immediate Media Co.  
"BBC Good Food." BBC Good Food, <https://www.bbcgoodfood.com/>.
9. **Eat This, Not That!,**  
Website: Galvanized Media.  
"Eat This, Not That!." Eat This, Not That!, <https://www.eatthis.com/>.

# Plagiarism Report

162-35-1713

## ORIGINALITY REPORT

<b>15%</b>	<b>13%</b>	<b>2%</b>	<b>9%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

## PRIMARY SOURCES

<b>1</b>	<b>dspace.daffodilvarsity.edu.bd:8080</b> Internet Source	<b>7%</b>
<b>2</b>	<b>Submitted to Daffodil International University</b> Student Paper	<b>4%</b>
<b>3</b>	<b>Submitted to Kuala Lumpur Infrastructure University College</b> Student Paper	<b>1%</b>
<b>4</b>	<b>Submitted to University of Warwick</b> Student Paper	<b>&lt;1%</b>
<b>5</b>	<b>Submitted to i-CATS University College</b> Student Paper	<b>&lt;1%</b>
<b>6</b>	<b>Submitted to Kingston University</b> Student Paper	<b>&lt;1%</b>
<b>7</b>	<b>louis.uah.edu</b> Internet Source	<b>&lt;1%</b>
<b>8</b>	<b>link.springer.com</b> Internet Source	<b>&lt;1%</b>
<b>9</b>	<b>Submitted to British University in Egypt</b> Student Paper	<b>&lt;1%</b>

10	Ashley Bond, Kevin Mccay, Simon Lal. "Artificial Intelligence & Clinical Nutrition: what the future might have in store", Clinical Nutrition ESPEN, 2023 Publication	<1 %
11	Submitted to Asia Pacific Institute of Information Technology Student Paper	<1 %
12	Albert Rego Máñez. "Intelligent multimedia flow transmission through heterogeneous networks using cognitive software defined networks", Universitat Politecnica de Valencia, 2020 Publication	<1 %
13	Sanjaya Yapa. "Getting Started with Dynamics 365 Portals", Springer Science and Business Media LLC, 2019 Publication	<1 %
14	Submitted to University of Teesside Student Paper	<1 %
15	medium.com Internet Source	<1 %
16	Submitted to INTI University College Student Paper	<1 %
17	Submitted to Visvesvaraya Technological University Student Paper	<1 %



18	<a href="http://www.medichecks.com">www.medichecks.com</a> Internet Source	<1 %
19	Submitted to Birzeit University Main Library Student Paper	<1 %
20	<a href="http://feelhappiness.com">feelhappiness.com</a> Internet Source	<1 %
21	DongHyeon Seo, Abigail Horn, Andrés Abeliuk, Keith Burghardt. "What's On the Menu? Towards Predicting Nutritional Quality of Food Environments", Cold Spring Harbor Laboratory, 2023 Publication	<1 %
22	Submitted to Higher Education Commission Pakistan Student Paper	<1 %
23	<a href="http://dhhs.ne.gov">dhhs.ne.gov</a> Internet Source	<1 %
24	<a href="http://erepository.uonbi.ac.ke">erepository.uonbi.ac.ke</a> Internet Source	<1 %
25	<a href="http://lib.buet.ac.bd:8080">lib.buet.ac.bd:8080</a> Internet Source	<1 %
26	Manuel B. Garcia. "ChatGPT as a Virtual Dietitian: Exploring Its Potential as a Tool for Improving Nutrition Knowledge", Applied System Innovation, 2023 Publication	<1 %

---

Exclude quotes      Off

Exclude matches      Off

Exclude bibliography      Off

# Library Clearance

The section is left blank for library clearance

# Account Clearance

