

RECIPATH

UCS 503 Software Engineering Project Report

End Semester Evaluation

Submitted by:

Roll No.	Name
102116114	Pulkit Saraf
102116122	Ansh Midha
102116125	Vaibhav Kapoor

BE Second Year, CSE

Group No: 2CS12

Submitted to: Dr. Shruti Aggarwal



Computer Science and Engineering Department
TIET, Patiala
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Software Bid

Dear User,

We are pleased to submit our proposal for the development of a recipe generator website for your business. Our team at Recipath is confident that we have the skills, experience, and technology to deliver a high-quality product that meets your needs.

Scope of Work:

Our team will develop a web-based recipe generator platform that allows users to generate personalized recipes based on ingredients available. The software will generate recipe suggestions accordingly. The website will have a user-friendly interface and will be easy to navigate.

Technologies:

Our team will develop the website using the latest web development technologies, including like React.js framework for frontend interface. We will use Express.js library of Node.js framework for the back-end development and MongoDB for the database management. We will also integrate a responsive design to ensure that the website functions correctly on all devices, including desktops, tablets, and mobile devices.

Project Management:

We will use the Agile project management methodology to ensure that the project is completed on time. Our team will provide regular progress reports to keep you informed of the project's status.

Testing and Quality Assurance:

Our team will follow a rigorous testing and quality assurance process to ensure that the website is free of errors and meets all requirements. We will use automated testing tools to ensure that the website functions correctly on different devices and browsers. Our team will also conduct manual testing to ensure that the website is easy to use and meets all functional requirements.

Deliverables:

Our team will deliver a fully functional recipe generator website that meets all requirements outlined in this proposal. We will also provide documentation and

training materials to ensure that you are fully equipped to manage and maintain the website after delivery.

Timeline:

Our team estimates that the project will take approximately 12-15 weeks to complete, including testing. We will provide regular progress reports and updates throughout the development process.

Cost:

The total cost for the development of the recipe generator website is . This includes all development, testing, and quality assurance activities, as well as documentation and training materials.

Conclusion:

We are confident that our team has the skills, experience, and technology to deliver a high-quality recipe generator website that meets your needs. We are committed to delivering the project on time and within budget, and we look forward to the opportunity to work with you on this exciting project.

Thank you for considering our proposal. If you have any questions or would like to discuss this proposal further, please don't hesitate to contact us.

Sincerely,
Team Recipath

Software Bid/ Project Teams

UCS 503- Software Engineering Lab

Group : 2CS12

Dated:28April,2023

Team Name: RECIPATH

Please enter the names of your Preferred Team Members.

- You are required to form **a three to four person** teams
- Choose your team members wisely. You will not be allowed to change teams.

Name	Roll No	Project Experience	Programming Language used
Pulkit Saraf	102116114	Front End Developer	Html,CSS,React
Ansh Midha	102116122	Backend Developer,	Node-js,Express-js , MongoDB
Vaibhav Kapoor	102116125	Front End Developer	React,Figma, MongoDB

Programming Language / Environment Experience

List the languages you are most comfortable developing in, **as a team**, in your order of preference. Many of the projects involve Java or C/C++ programming.

1. FrontEnd:-React
- 2.Backend:- Node-js,Express-js
3. Database:-MongoDb
- 4.MI Model:-Python

Additional Remarks/ Inputs

Please tell us about any other factors that we should take into consideration (e.g., if you really would like to work on a project for some particularly convincing reason).

The AI-powered recipe generator website is a cutting-edge platform that enables users to explore and unearth novel recipes that cater to their personal preferences, dietary limitations, and available ingredients.

Project Overview

Recipath is a web-based food recommendation and recipe generation application. The primary objective of this project is to create a user-friendly interface that recommends food and generates a recipe based on the user's input ingredients. Additionally, the website offers a subscription feature to inform users about new updates related to the website.

Recipath offers a unique feature where users can input the ingredients they have on hand, and the website suggests different food options that can be made with those ingredients. The recipe generation algorithm suggests a recipe based on the selected ingredients and provides a complete list of additional ingredients required to make the recipe.

This software engineering project requires a team of experts, including a project manager, software engineers, a database administrator, and a user interface designer. The team is responsible for developing and testing the application while integrating it with a database to store user subscriptions and recipe recommendations.

The project timeline involves two weeks of planning and requirements gathering and twelve weeks of development and testing. The goal is to create a web-based application using modern web development technologies that meet the project requirements and offer a seamless user experience.

Recipath also offers users the ability to send feedback and suggestions for new features. Users can send their recommendations to a designated email address, and the development team can review and consider implementing those suggestions in future updates to the website. This feature allows for continuous improvement and ensures that Recipath stays up-to-date with the latest trends and user needs.

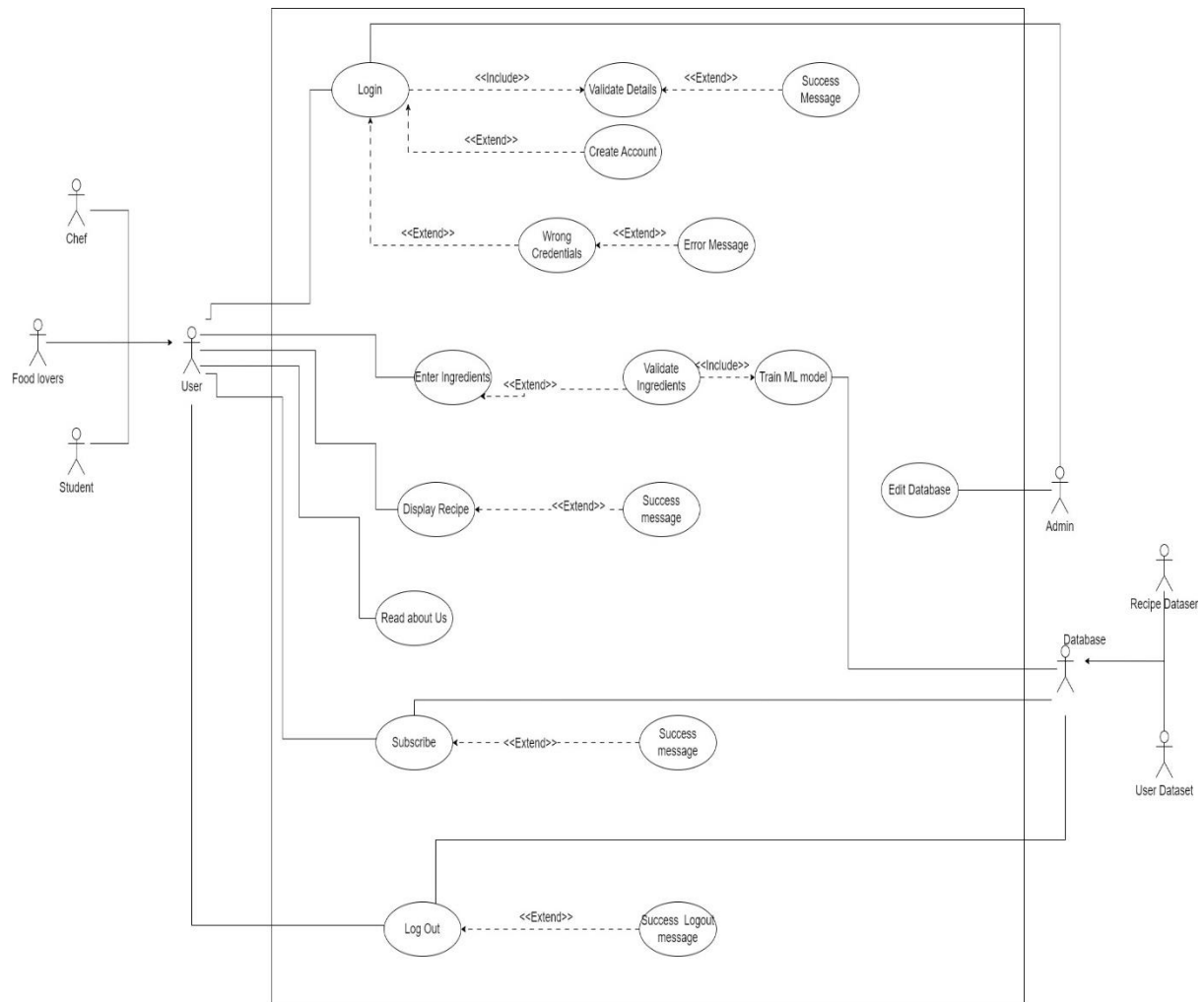
Recipath also includes an "About Us" page, where the users can learn more about Recipath's creators and how Recipath came to be. The page provides a brief overview of the project, including its objectives and how it works. It also offers information about the team behind the website, including their expertise and experience in the field. This page provides transparency and allows users to learn more about the website before using its features.

The graphical user interface (GUI) of ReciPath is designed with a user-centric approach, ensuring that users can easily access and use the website. The development team has created an intuitive and user-friendly interface that allows users to input ingredients quickly and easily. The website's design is visually appealing and straightforward, making it easy for users to navigate through the different sections and features of the website.

The team has taken into account the different needs and preferences of the users, making sure that the website is accessible to everyone. The GUI is designed in such a way that users can easily find what they are looking for, and the different features of the website are clearly visible and understandable.

In summary, the GUI of ReciPath is designed with the end-user in mind, ensuring that the website is easy to use and accessible to everyone. The development team has taken great care to make sure that the website's design is visually appealing and intuitive, providing an excellent user experience.

USE CASE DIAGRAM



USE CASE TEMPLATES

1. Use Case Title	Login
2. Abbreviated Title	Login
3. Use Case Id	1
4. Actors	User
5. Description With this facility, the user is able to log into the service.	
6. Pre-Conditions The user knows valid username and password.	
7. Task Sequence a. Enter Username b. Enter Password c. Press login button	
8. Post-Conditions a. The user is able to access the service. b. User can access all the recipes available.	
9. Modification History	Date: 26 april'23
10. Authors	Ansh Midha, Vaibhav Kapoor, Pulkit Saraf

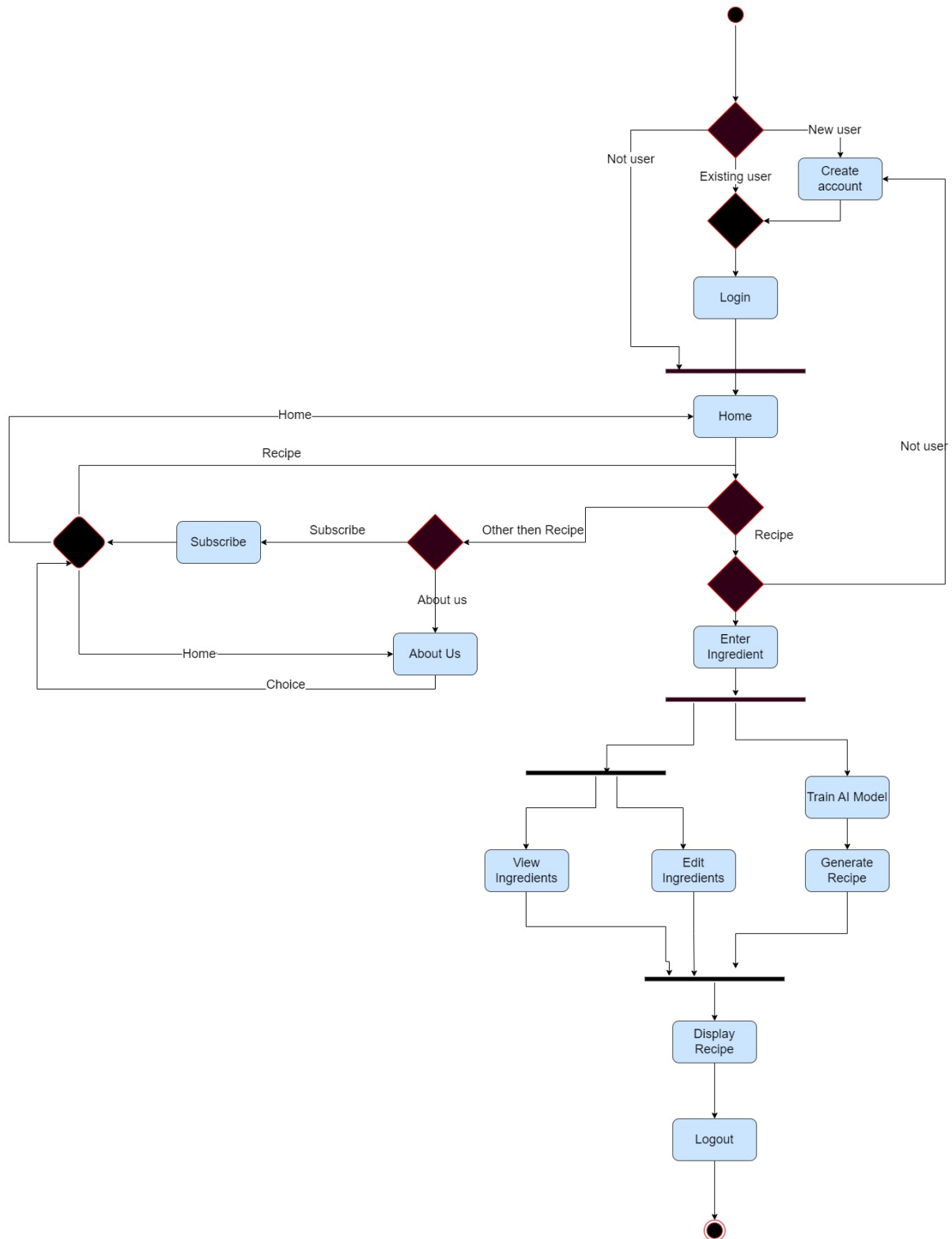
1. Use Case Title	Generate Recipe
2. Abbreviated Title	Generate Recipe
3. Use Case Id	7
4. Actors	User, System
5. Description With this facility, the user can enter the ingredients available to them at that particular time and recipe will be generated .	
6. Pre-Conditions a. The user is logged in.	
7. Task Sequence a. Input prompt b. User enters recipe ingredient c. System stores data	
8. Post-Conditions a. The recipe can now be displayed.	
9. Modification History	Date: 26 april'23
10. Authors	Ansh Midha, Vaibhav Kapoor, Pulkit Saraf

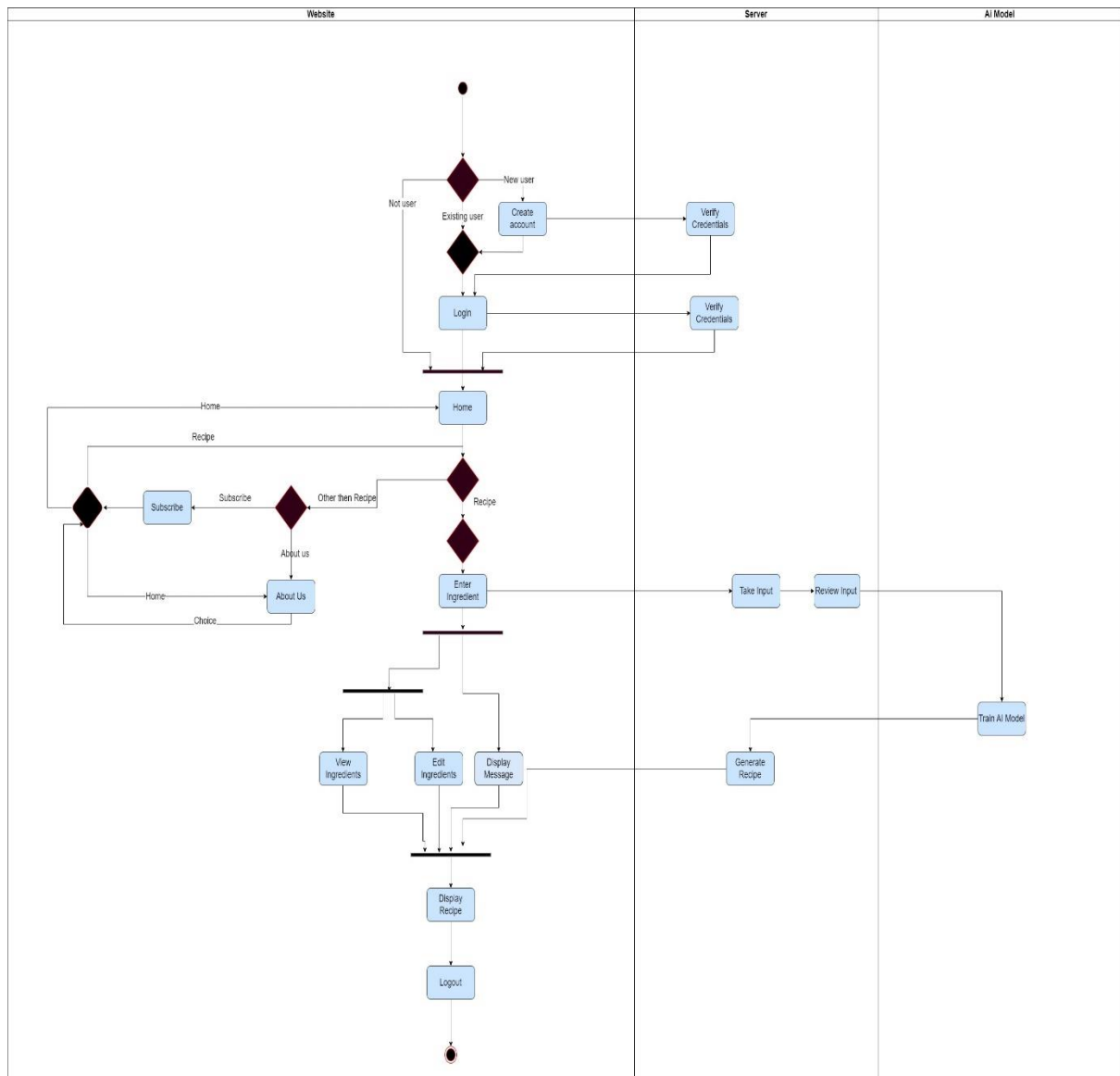
1. Use Case Title	Subscribe
2. Abbreviated Title	Subscribe
3. Use Case Id	9
4. Actors	User, System
5. Description With this facility, the user can subscribe to our newsletter.	
6. Pre-Conditions a. The user is logged in. b. User have a valid email address.	
7. Task Sequence a. User enter valid email address. b. Click on submit button.	
8. Post-Conditions a. User will be subscribed to our newsletter.	
9. Modification History	Date: 26 april'23
10. Authors	Ansh Midha, Vaibhav Kapoor, Pulkit Saraf

1. Use Case Title	Read about us
2. Abbreviated Title	Read about us
3. Use Case Id	12
4. Actors	User
5. Description User can read the information of developer of website	
6. Pre-Conditions a. The user is logged in.	
7. Task Sequence a. Press about us button.	
8. Modification History	Date: 26 april'23
9. Authors	Ansh Midha, Vaibhav Kapoor, Pulkit Saraf

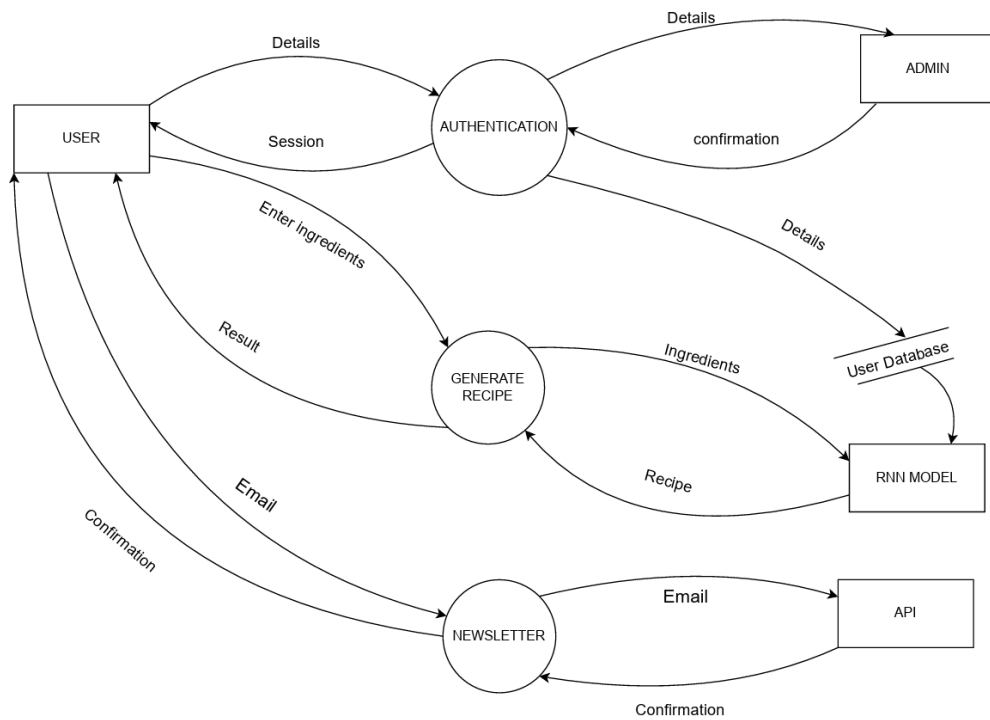
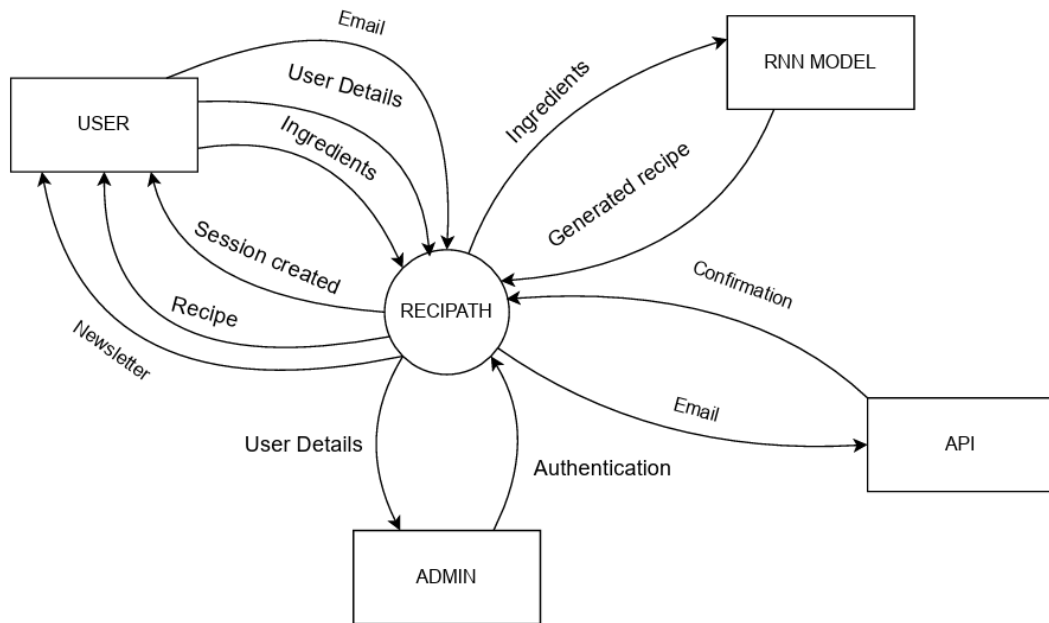
1. Use Case Title	Logout
2. Abbreviated Title	Logout
3. Use Case Id	11
4. Actors	User
5. Description With this facility, the user can logout of the service at their own convenience.	
6. Pre-Conditions b. The user is logged in.	
7. Task Sequence b. Press menu. c. Press logout button.	
8. Post-Conditions a. The user is now logged out of the service. b. New or existing user can now log in.	
9. Modification History	Date: 26 april'23
10. Authors	Ansh Midha, Vaibhav Kapoor, Pulkit Saraf

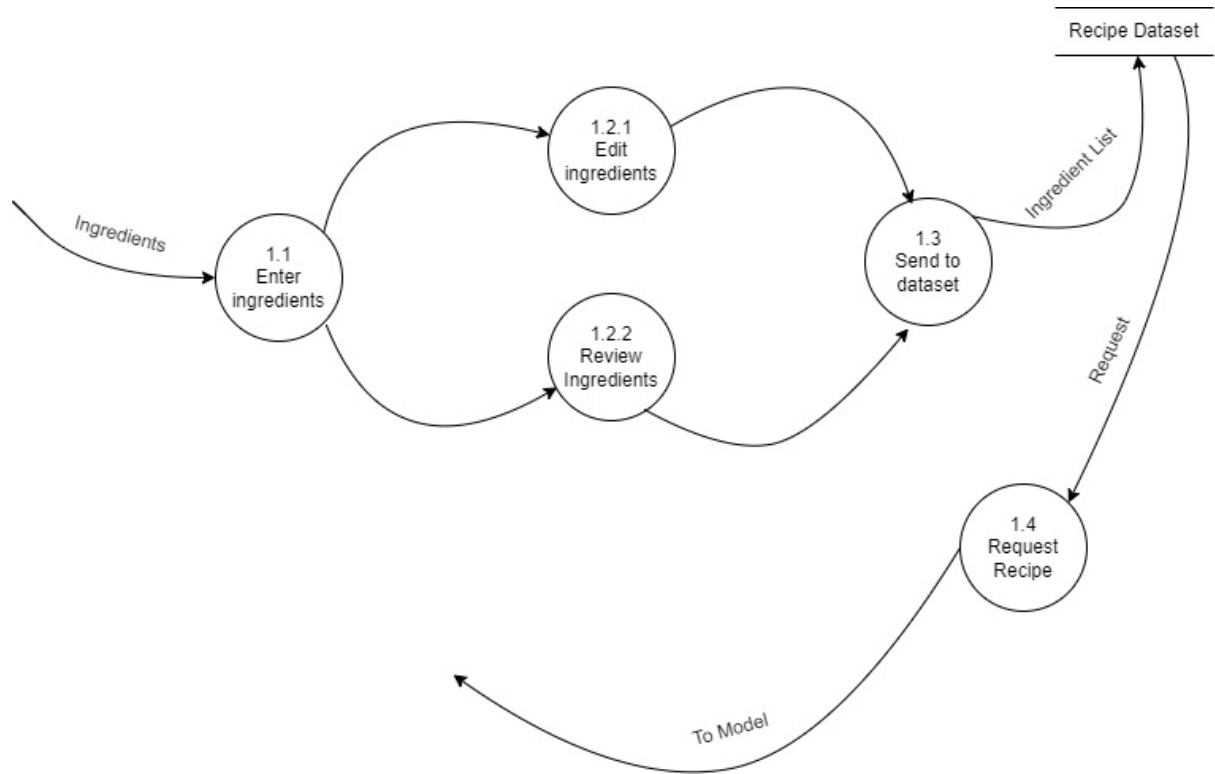
ACTIVITY AND SWIMLANE DIAGRAMS





DATA FLOW DIAGRAMS





Software Requirement Specification in IEEE Format

****1. Introduction****

1.1 Purpose

The purpose of this document is to provide a detailed software requirements specification for the ReciPath website, including its functional and non-functional requirements.

1.2 Scope

ReciPath is a website that allows users to search for recipes based on the ingredients they have available. The website also includes a subscription feature to provide users with updates on new features and recipes. This document outlines the requirements for the ReciPath website, including its functional and non-functional requirements.

****2. Overall Description****

2.1 Product Perspective

ReciPath is a standalone website that operates independently of other software systems.

2.2 Product Features

- Ingredient search: Allows users to search for recipes based on the ingredients they have available.
- Recipe details: Provides users with detailed information on the selected recipe, including all required ingredients and step-by-step instructions.
- Subscription feature: Allows users to subscribe to the email notification service to receive updates on new features and recipes.

2.3 User Characteristics

The target users of ReciPath are individuals who are interested in finding recipes based on the ingredients they have available.

****3. Specific Requirements****

3.1 Functional Requirements

1. The website shall allow users to enter the ingredients they have available.
2. The website shall validate the entered ingredients and suggest recipes that can be made using those ingredients.
3. The website shall order the suggested recipes based on the number of matched ingredients, with recipes that use more of the entered ingredients listed first.
4. The website shall allow users to click on a recipe to view the full recipe details, including all required ingredients and step-by-step instructions.
5. The website shall provide a message to the user informing them that no recipes were found if no recipes can be found using the entered ingredients.
6. The website shall allow users to subscribe to the email notification service.
7. The website shall send email notifications to subscribed users about new features and recipes.

3.2 Non-Functional Requirements

1. Performance: The website shall respond to user input within short period of time.
2. Usability: The website GUI shall be user-friendly and intuitive.
3. Security: The website shall store user information securely and protect against unauthorized access.
4. Availability: The website shall have an uptime of at least 99% time.

****4. Other Requirements****

4.1 About Us Page

The website shall include an "About Us" page that provides users with information about the website and its creators.

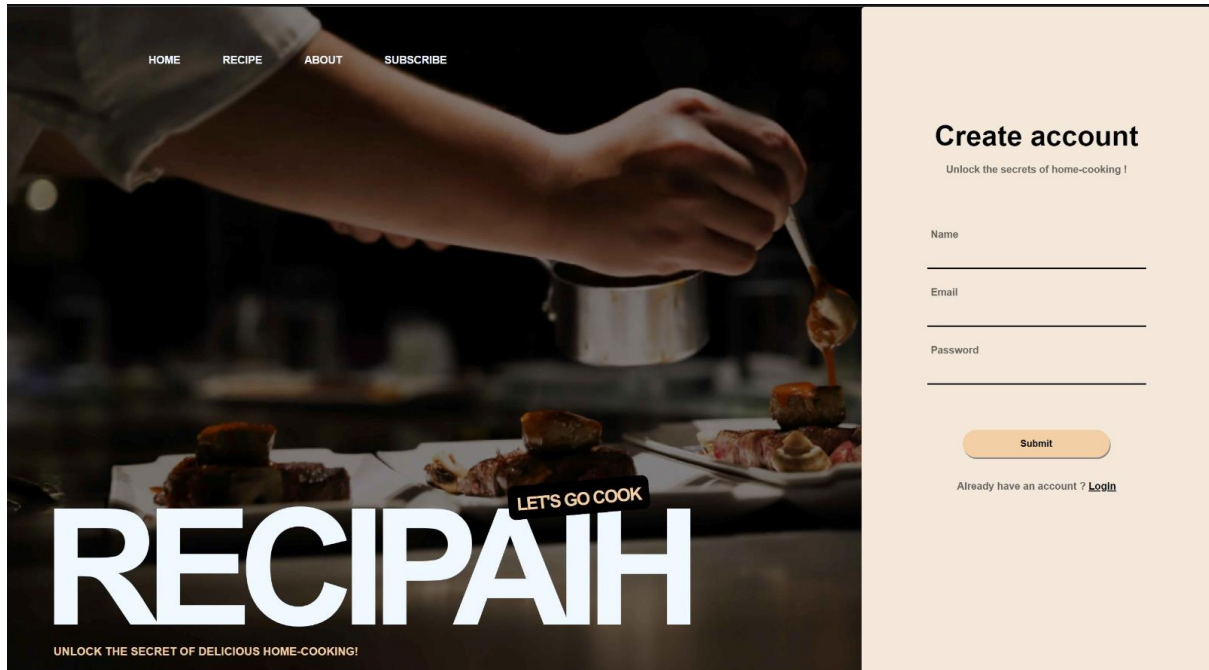
4.2 Recommendation Feature

The website shall include a recommendation feature that allows users to send recommendations about the website and its features to the website's email address.

This SRS outlines the functional and non-functional requirements for the ReciPath website, as well as the target user and product features. It also includes additional requirements for an "About Us" page and a recommendation feature.

User Story

Title: Create Account



As a user, I want to create an account on ReciPath so that I can access the website.

Acceptance Criteria:

- The user can access the "Submit" button from the home page.
- The user is prompted to enter their name, email, and password to create an account.
- The password field should be hidden for security reasons.
- The email must be in a valid format (e.g., name@example.com).
- If the email already exists in the database, the user should receive an error message stating that the email is already in use.
- Upon successful account creation, the user is redirected to the home page with a message confirming their account creation.

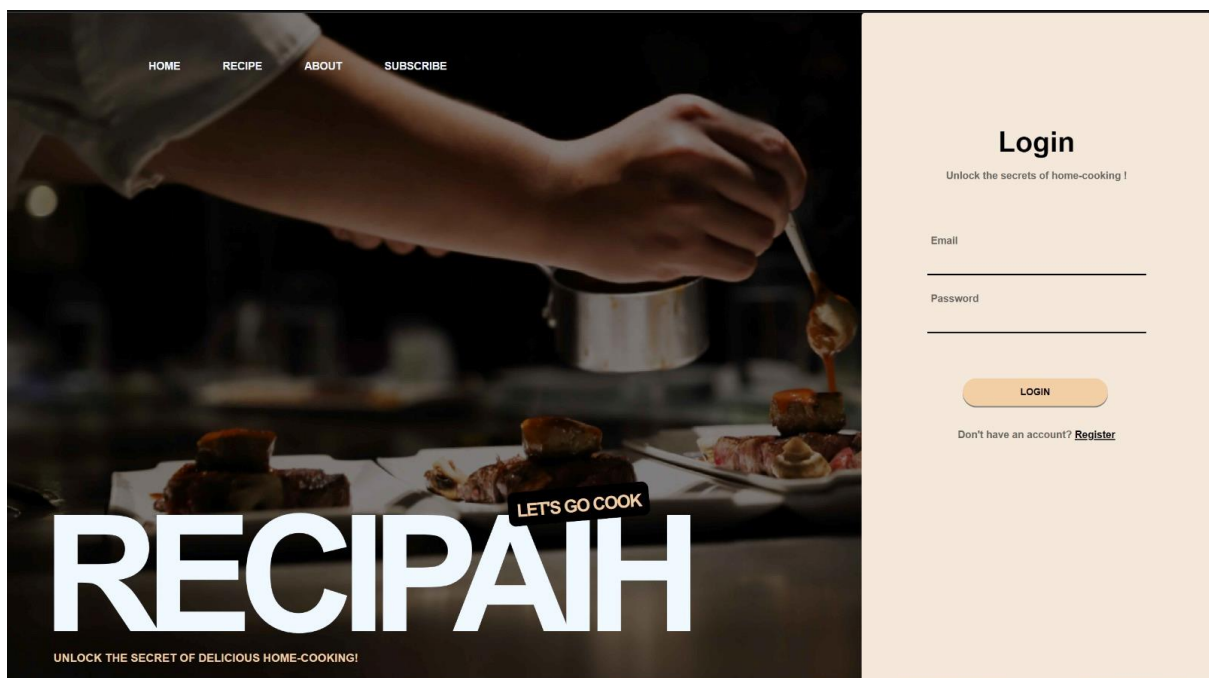
Additional Details:

- The user can create an account by clicking on the "Sign Up" button located on the home page.
- The user will be prompted to enter their name, email, and password.
- After entering their details, the user clicks the "Create Account" button to submit their information.
- If the email is not in the correct format or is already in use, the user will receive an error message.
- Upon successful account creation, the user will be redirected to the home page with a confirmation message displayed.

This user story allows users to create an account on ReciPath, giving them access to the features of the website. The acceptance criteria ensure that the user can create an account

easily and securely, with appropriate validation and error messages to help guide them through the process.

Title: Login Page



As a user, I want to be able to log in to ReciPath so that I can access my account as well as the features of Recipath.

Acceptance Criteria:

- The user can access the "Log In" button from the home page.
- The user is prompted to enter their email and password to log in.
- The password field should be hidden for security reasons.
- If the email or password is incorrect, the user should receive an error message.
- Upon successful login, the user is redirected to their account page with a message confirming their login.

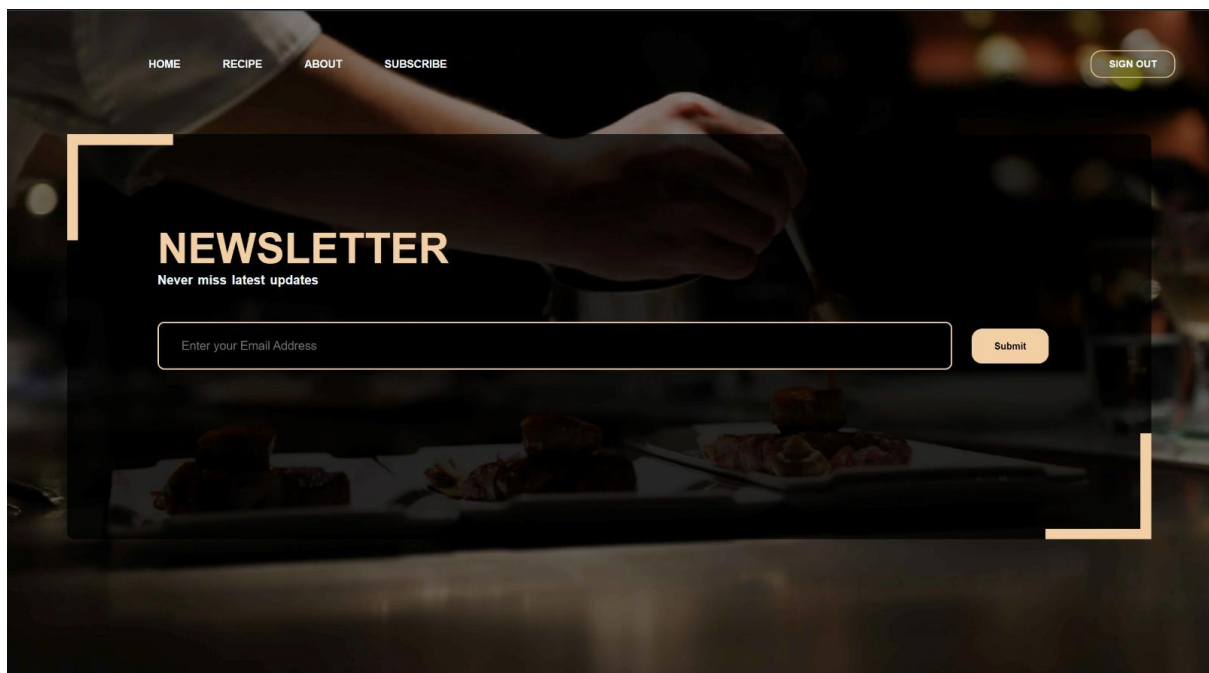
Additional Details:

- The user can access the "Log In" button located on the home page.
- The user will be prompted to enter their email and password.

- After entering their details, the user clicks the "Log In" button to submit their information.
- If the email or password is incorrect, the user will receive an error message.
- Upon successful login, the user will be redirected to their account page with a confirmation message displayed.

This user story allows users to log in to Recipath giving access to recipes and other account-related features. The acceptance criteria ensure that the user can log in easily and securely, with appropriate validation and error messages to help guide them through the process.

Title: Subscription Feature



As a user, I want to subscribe to Recipath's email notification service so that I can receive updates about new features, recipes, and other website-related news.

Acceptance Criteria:

- The user can access the subscription form from the Subscribe page.
- The user is prompted to enter their email address to subscribe to the email notification service.
- The email address must be in a valid format (e.g., name@example.com).

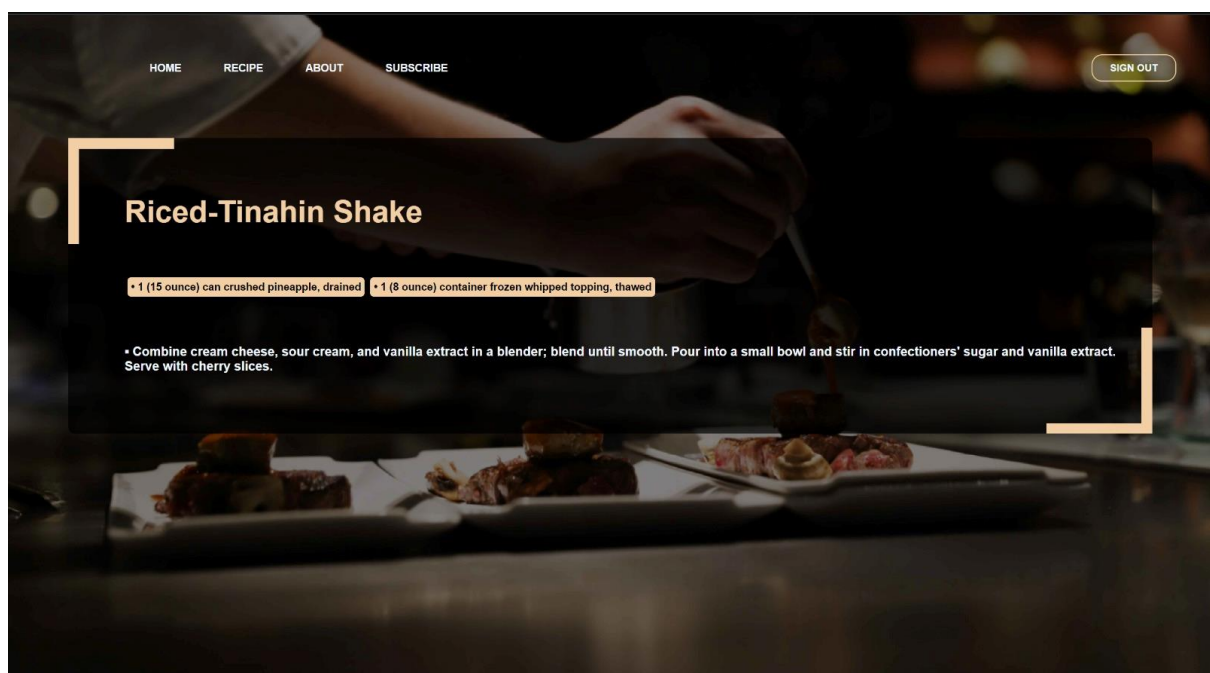
- If the email address is already subscribed, the user should receive a message stating that they are already subscribed.
- Upon successful subscription, the user should receive a confirmation message and be added to the email notification list.

Additional Details:

- The user can access the subscription form located on the home page.
- The user will be prompted to enter their email address.
- After entering their details, the user clicks the "Subscribe" button to submit their information.
- If the email address is already subscribed, the user will receive a message stating that they are already subscribed.
- Upon successful subscription, the user will receive a confirmation message and be added to the email notification list.
- Users can unsubscribe from the email notification service at any time by clicking on the unsubscribe link included in each email.

This user story allows users to subscribe to Recipath's email notification service, giving them access to updates about new features, recipes, and other website-related news. The acceptance criteria ensure that the user can subscribe easily and securely, with appropriate validation and error messages to help guide them through the process. Additionally, users have the option to unsubscribe from the email notification service at any time.

Title: Ingredient Enter Page



As a user, I want to be able to enter the ingredients I have available so that I can receive recipe suggestions based on those ingredients.

Acceptance Criteria:

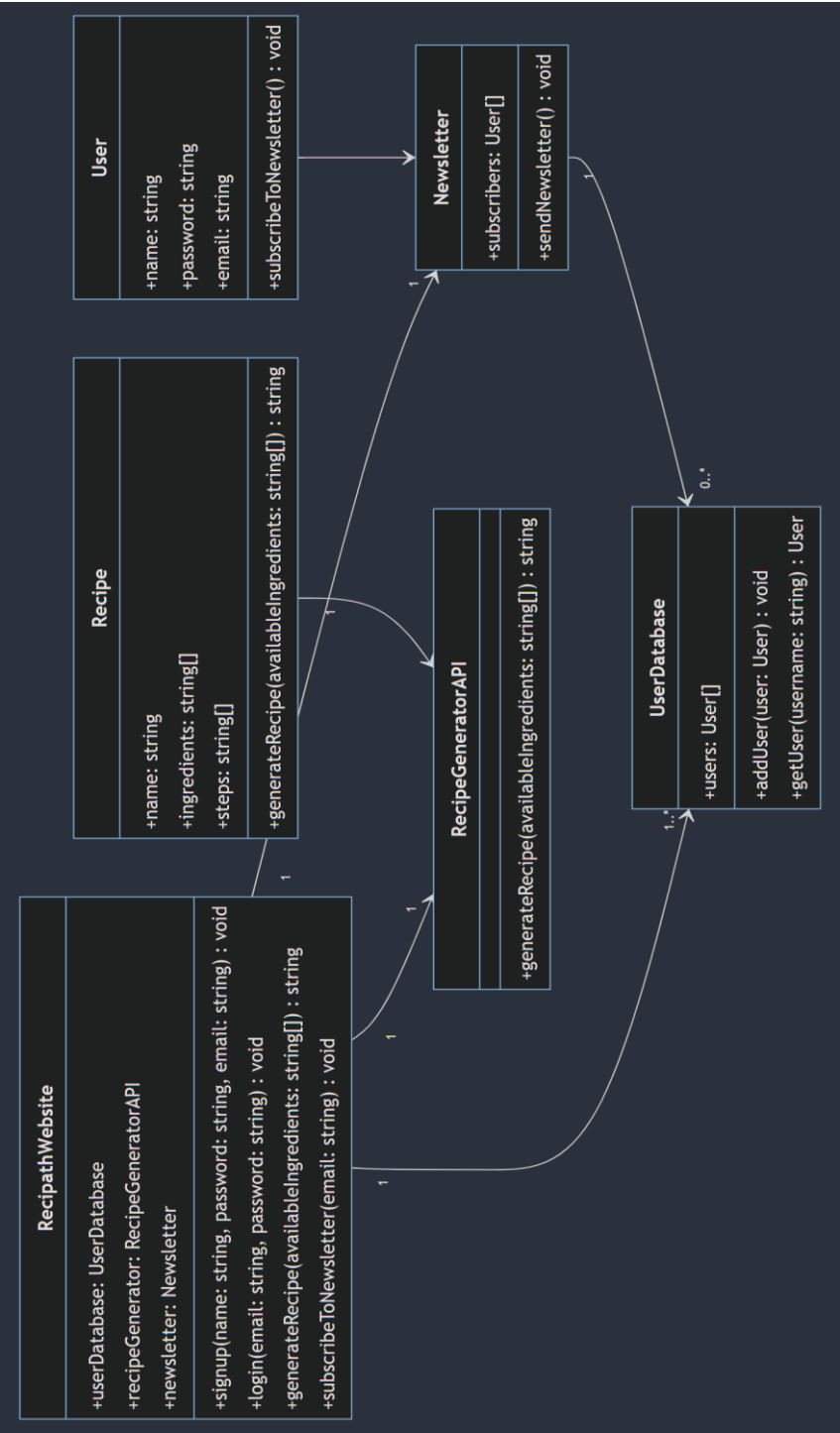
- The user can access the "Enter Ingredients" button from the recipe page.
- The user is prompted to enter the ingredients they have available.
- The user can enter multiple ingredients, with each ingredient separated by a comma or another specified delimiter.
- The system validates the entered ingredients and returns a list of suggested recipes that can be made using those ingredients.
- The suggested recipes should be ordered based on the number of matched ingredients.
- The user can click on a recipe to view the full recipe details.

Additional Details:

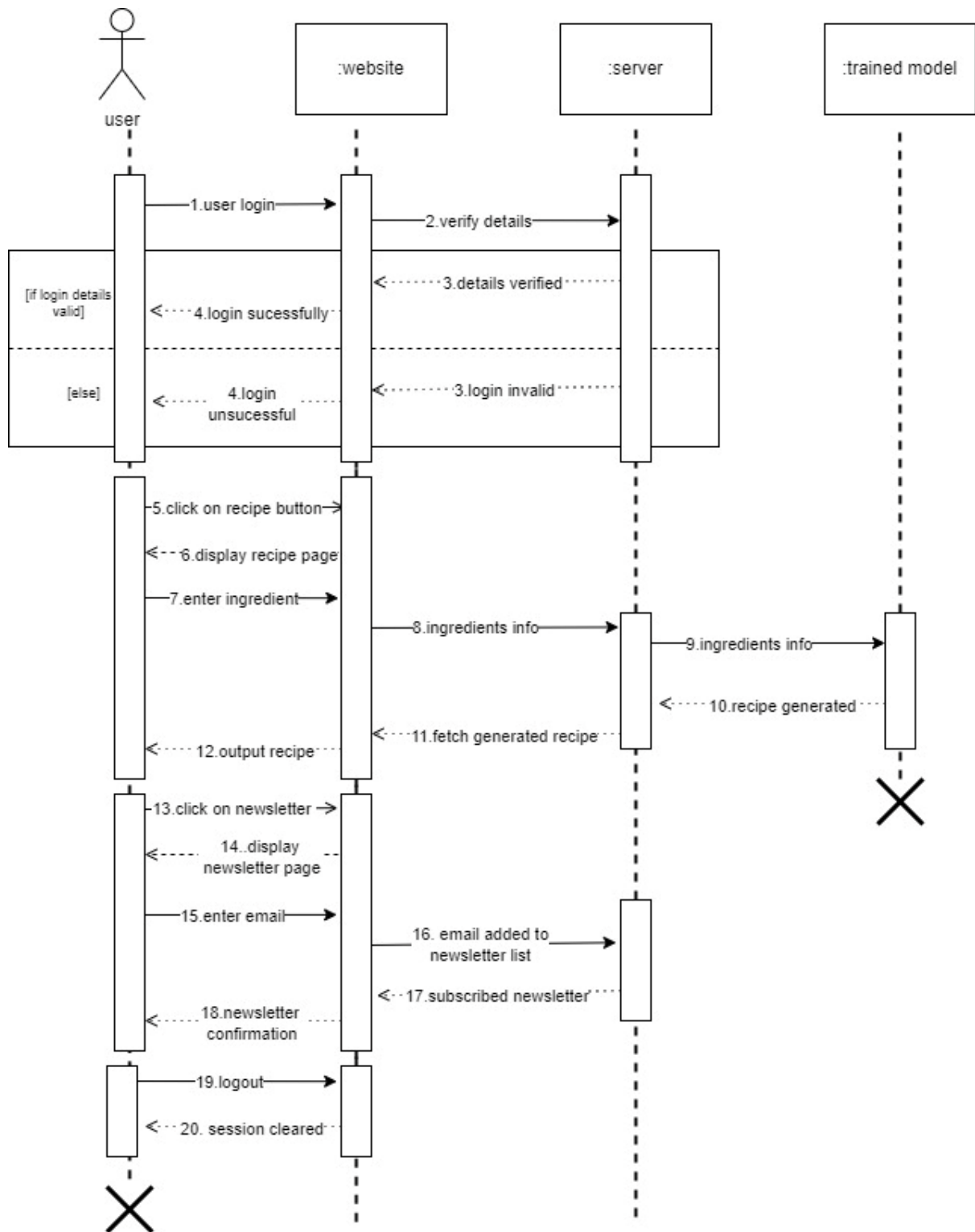
- The user can access the "Enter Ingredients" button located on the recipe page.
- The user will be prompted to enter the ingredients they have available.
- After entering their ingredients, the user clicks the "Submit" button to see recipe suggestions.
- The system validates the entered ingredients and returns a list of suggested recipes that can be made using those ingredients.
- The suggested recipes should be ordered based on the number of matched ingredients, with recipes that use more of the entered ingredients listed first.
- The user can click on a recipe to view the full recipe details, including a list of all required ingredients and step-by-step instructions.
- If no recipes can be found using the entered ingredients, the system should provide a message to the user informing them that no recipes were found.

This user story allows users to enter the ingredients they have available and receive recipe suggestions based on those ingredients. The acceptance criteria ensure that the user can enter ingredients easily, and the system validates those ingredients to provide relevant and ordered recipe suggestions. Additionally, users can click on a recipe to view full recipe details and instructions.

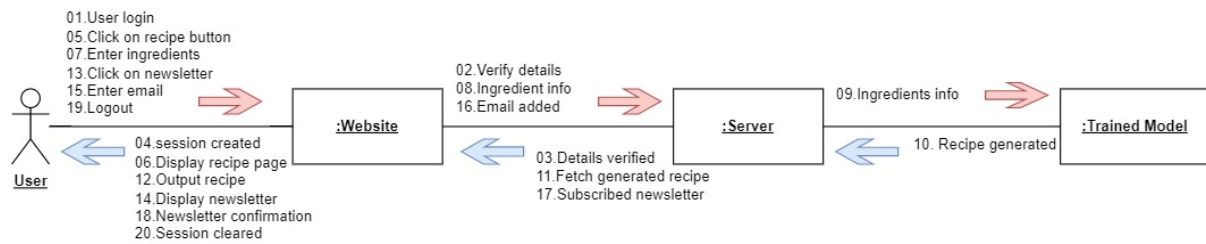
Class Diagram



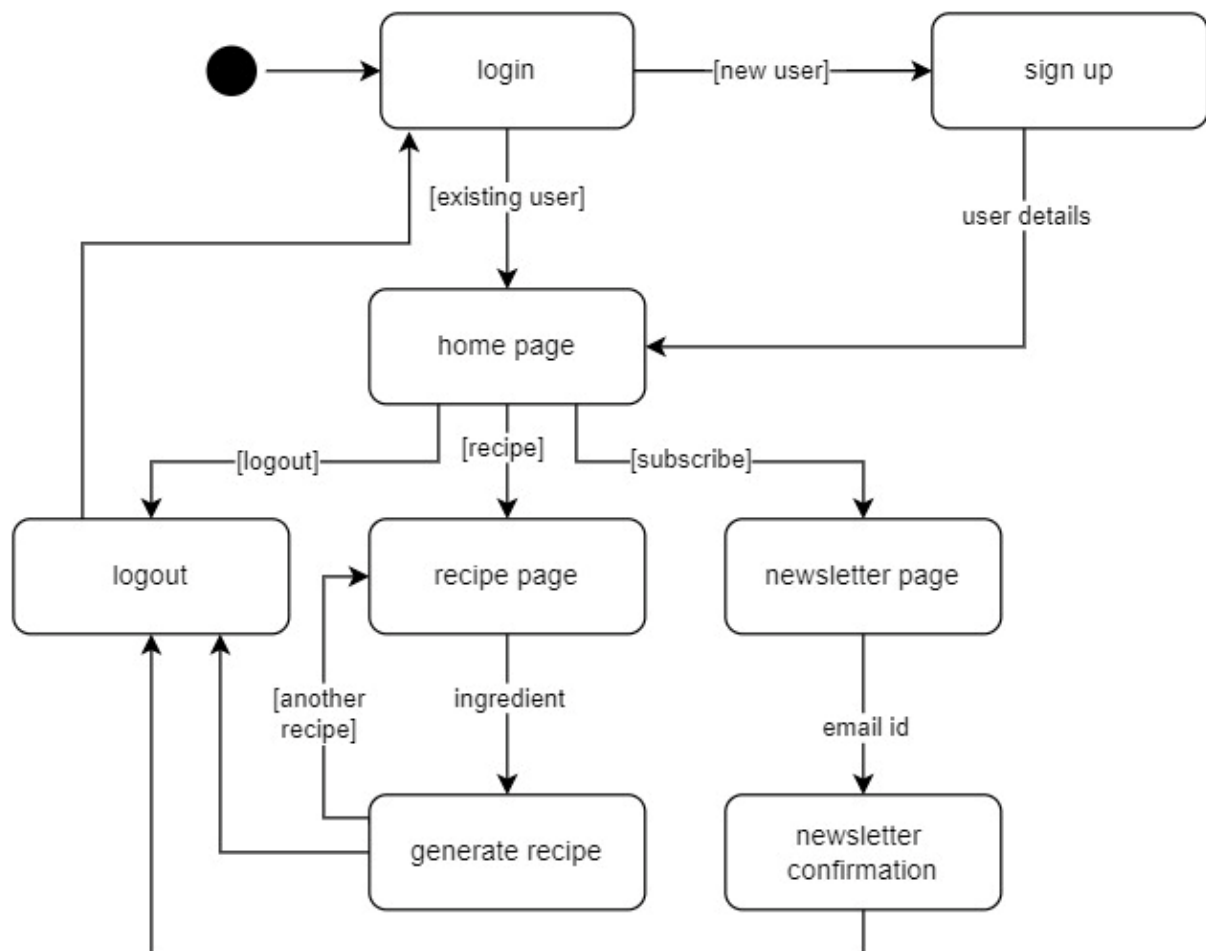
Sequence Diagram



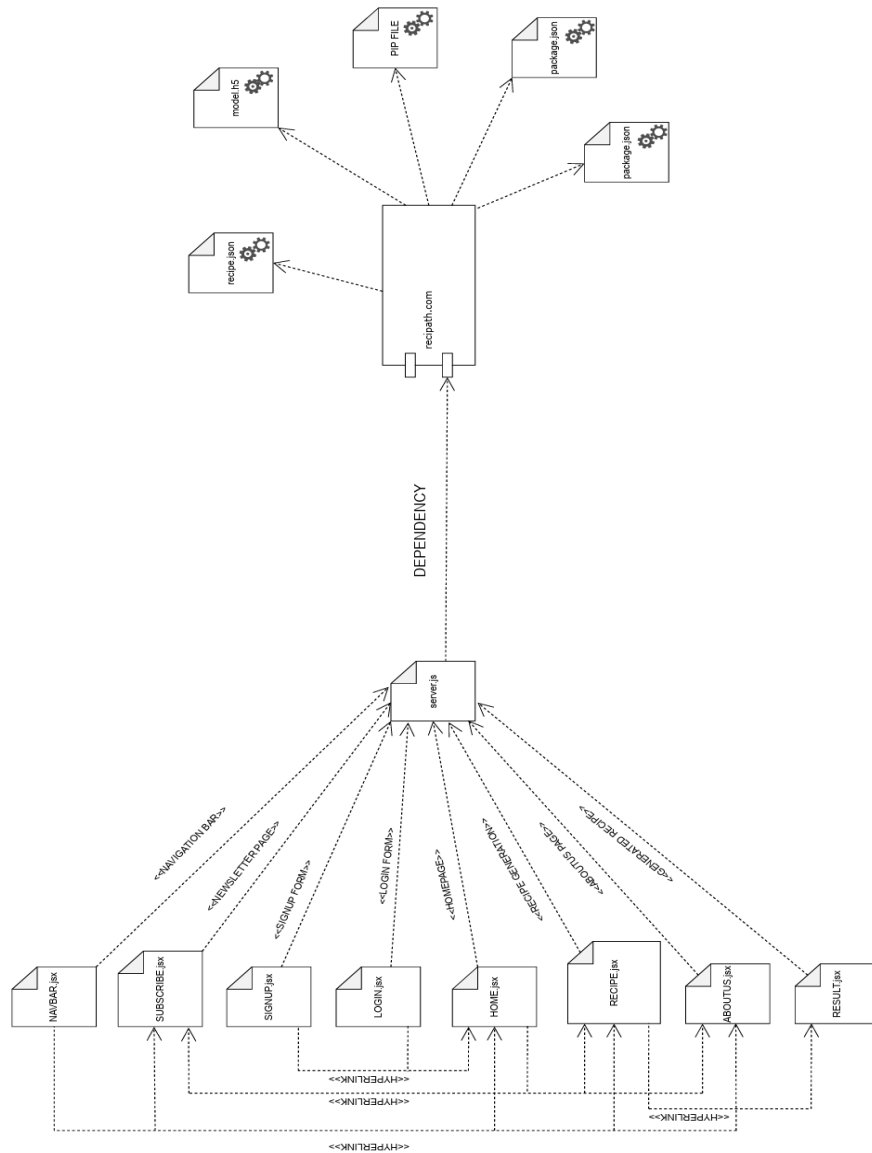
Collaboration Diagram



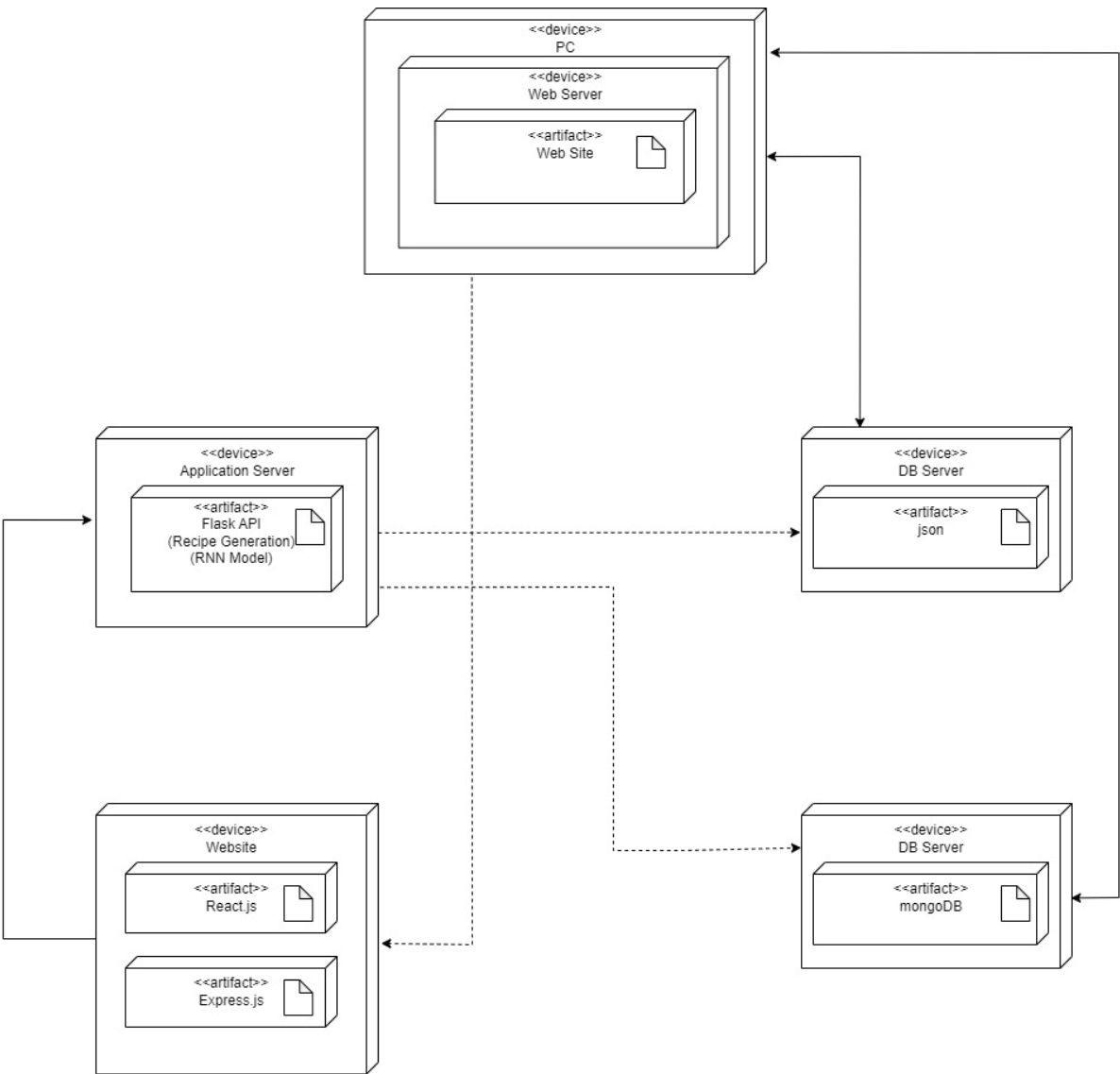
State Chart Diagram



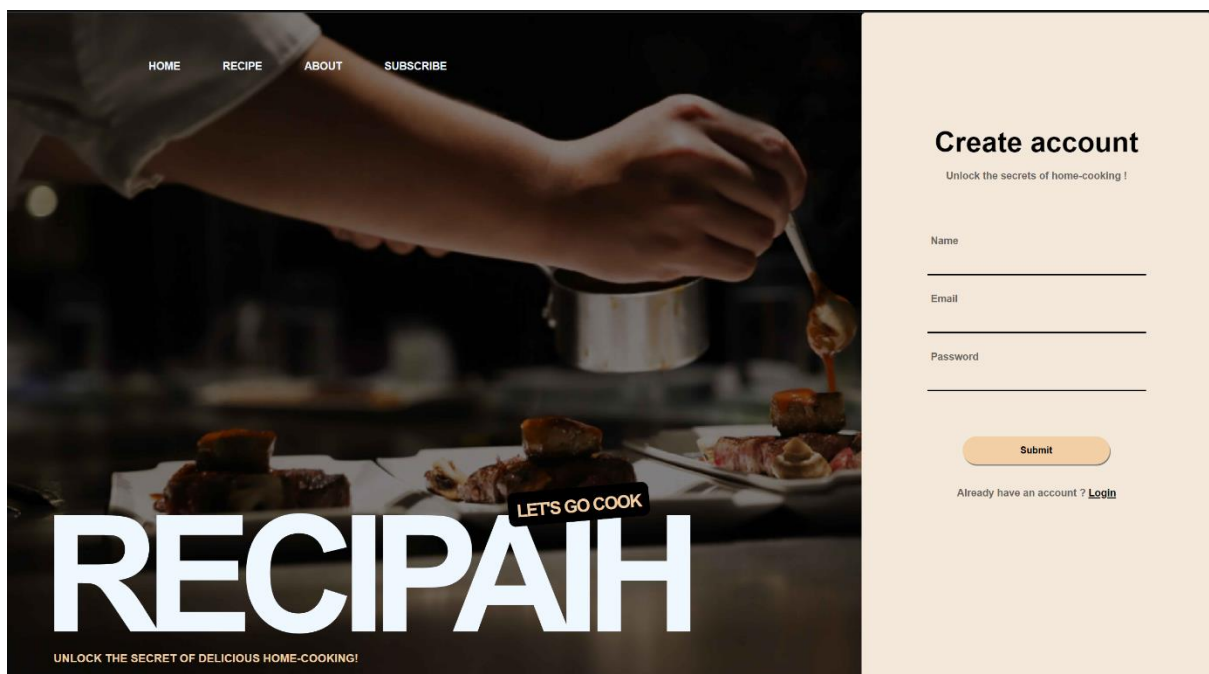
Component Diagram

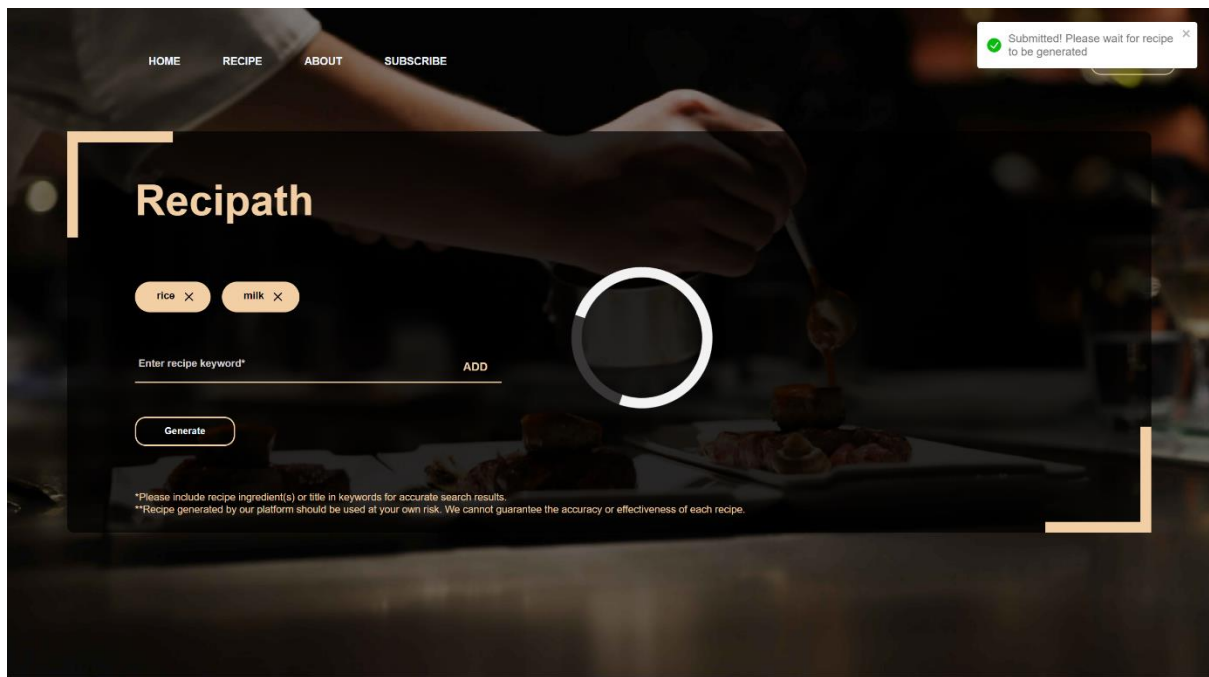
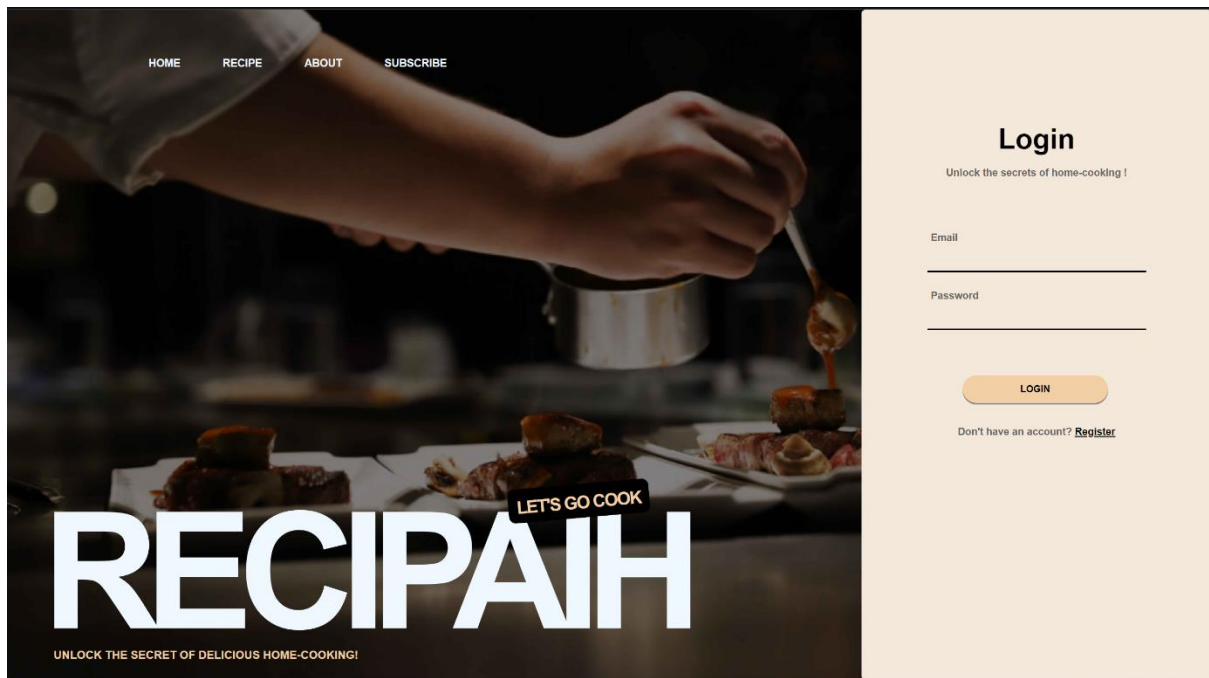


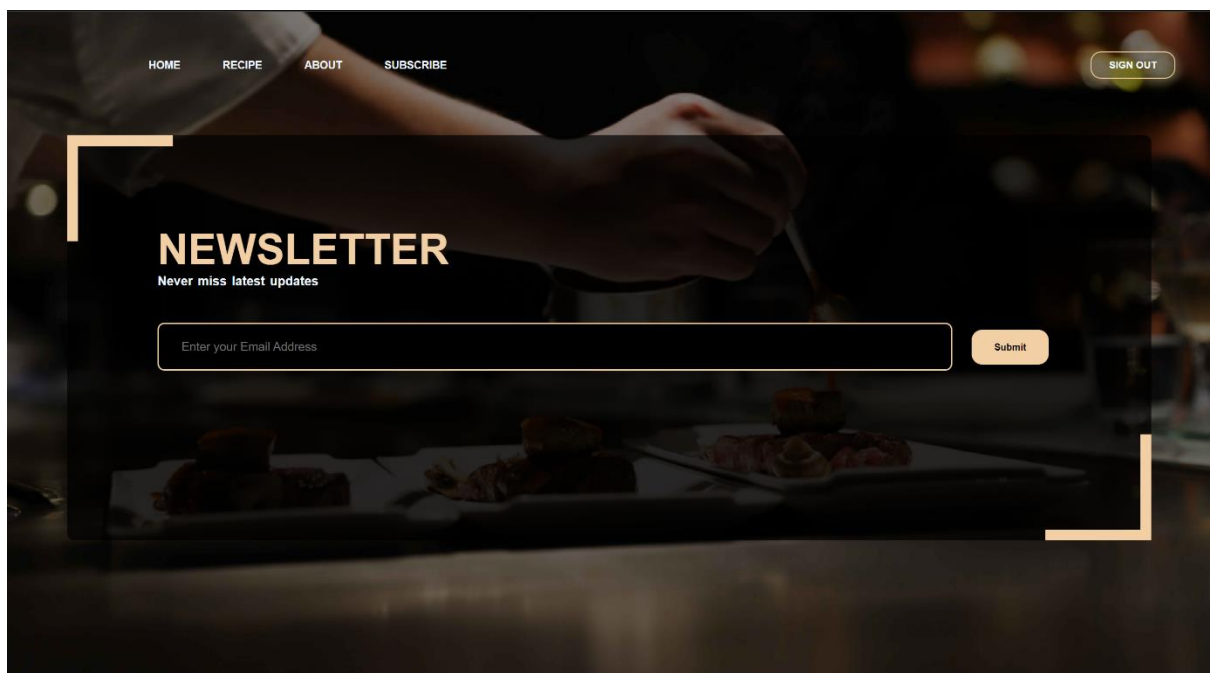
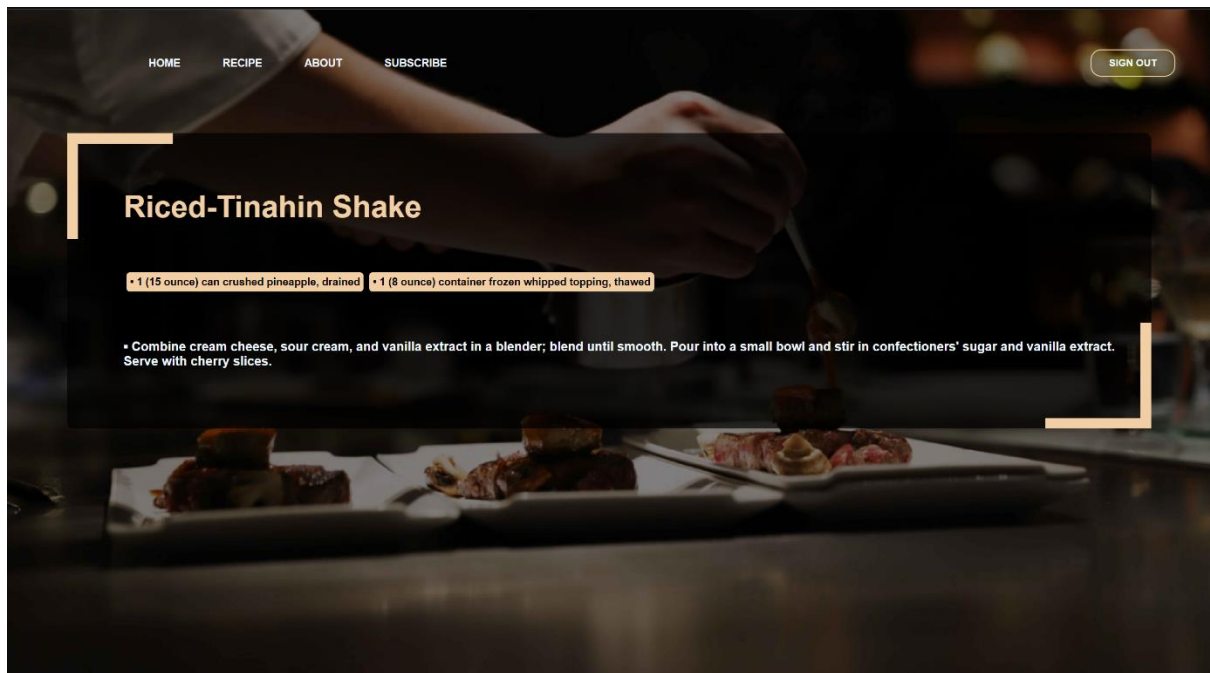
Deployment Diagram



Screenshots







ABOUT US



Vaibhav Kapoor
Designer & Frontend Developer



Ansh Midha
Backend Developer



Pulkit Saraf
Frontend Developer

Test Plan

Test Objective: To verify that the recipe generation feature of Recipath is able to correctly generate a recipe after taking ingredients input from user.

Test Environment: Recipath website, a computer with internet access, knowledge of available ingredients

Test Steps:

- Navigate to Recipath website.
- Login with correct credentials.
- Navigate to Recipe generation page.
- Enter ingredients available and click Generate.
- Wait for website to generate the recipe.
- Verify that the recipe generated is correct.

Test Data:

- Recipe dataset with ~125k recipes
- User database

Test Success Criteria:

- The login feature correctly accesses the user database.
- The enter ingredients feature correctly handles the entered ingredients.
- The generate feature correctly makes a request to the AI Model.
- The recipe generated is humanly understandable and is correct with respect to the ingredients.

Test Risks:

- The generation may be slow, causing frustration.
- The model may predict an incorrect recipe.
- The model may not predict an understandable recipe.
- The website may crash in case of high number of requests.
- The UI may not be responsive enough to work on all devices hampering user experience.

Test Mitigation Plan:

- Conduct load testing to check if the website can handle high number of concurrent requests.
- Conduct extensive testing with a variety of ingredients.
- Test on multiple devices and browsers to ensure compatibility.
- Implement error handling and mitigation.

Test Deliverables:

- Test Plan Document
- Test Results Document
- Bug reports for any issue faced during testing
- Recommendations for improvements

Test Schedule:

- Test Planning and preparation: 2 days
- Test Execution: 3 days
- Test Results and analysis reports: 1 day

TEST CASE-1

Test case #1

System: Recipath

Designed by: Ansh

Executed by: Ansh

Short Description: Check signup form

Test Case Name: Signup Form

Subsystem: Sign Up

Design Date: 17 April, 2023

Execution Date: 20 April, 2023

Pre-Conditions:

1. The user is not already registered.
2. Must have valid email id.

Step	Action	Expected Response	Pass/Fail
1	Open Website	Website loads home page.	Pass
2	Click on Signup	Opens signup form.	Pass
3	Enter details	Entered details are displayed correctly.	Pass
4	Click on submit	User details submitted	Pass
5	Check Post condition #1	Load home page but with sign-out options.	
6	Enter “abc” as email	Error message for invalid email displayed	Pass
7	Enter “abc@gmail.com” as email	Valid email id	Pass
8	Enter “abc123” as password	Valid password	Pass

Post-Conditions:

1. Load the “signed-in” version of the home page if email and password are valid.
2. Else show error.

TEST CASE-2

Test case #2

System: Recipath

Designed by: Ansh

Executed by: Vaibhav

Short Description: Check login form

Test Case Name: Login Form

Subsystem: Login Up

Design Date: 17 April, 2023

Execution Date: 22 April, 2023

Pre-Conditions:

1. The user is already registered.

Step	Action	Expected Response	Pass/Fail
1	Open Website	Website loads home page.	Pass
2	Click on Login	Opens signup form.	Pass
3	Enter details	Entered details are displayed correctly.	Pass
4	Click on submit	User details submitted	Pass
5	Check Post condition #1	Load home page but with sign-out options.	
6	Repeat step 3 until valid details entered		
7	Repeat till details entered exist in database.		
8	Enter "abc@gmail.com" as email	Valid email id	Pass
9	Enter "abc123" as password	Valid password	Pass

Post-Conditions:

1. Load the "signed-in" version of the home page if email and password exist in the database.
2. Else show error.

TEST CASE-3

Test case #3

System: Recipath

Designed by: Pulkit

Executed by: Ansh

Short Description: Check generate recipe feature

Test Case Name: Generate Recipe

Subsystem: Recipe

Design Date: 17 April, 2023

Execution Date: 22 April, 2023

Pre-Conditions:

1. The user is logged in.
2. Must have valid knowledge of available ingredients.

Step	Action	Expected Response	Pass/Fail
1	Click on recipe tab in navbar	Website loads recipe page.	Fail
2	Repeat step 1.	Correct the route handling to properly render the recipe page.	
3	Enter ingredients	Entered ingredients are displayed correctly.	Pass
4	Remove an incorrectly entered ingredient	Ingredient removed.	Fail
5	Repeat step 4.	Check the codebase for correctly react tree handling of DOM.	
6	Click Generate button.	System shows confirmation and loading spinner is rendered.	Pass
7	Check post condition 1		
8	Recipe is generated	The generated recipe is rendered on the screen.	Pass
9	Repeat with another set of ingredients.		

Post-Conditions:

1. Check if ingredients are enough to make a dish.
2. If ingredients are enough, they are sent to the RNN model for generation of the recipe.
3. Else show error.

TEST CASE-4

Test case #4

System: Recipath

Designed by: Pulkit

Executed by: Vaibhav

Short Description: Check newsletter service.

Test Case Name: Subscription

Subsystem: Newsletter

Design Date: 17 April, 2023

Execution Date: 24 April, 2023

Pre-Conditions:

1. The user is logged in.
2. Must have valid email id.

Step	Action	Expected Response	Pass/Fail
1	Click on newsletter tab in navbar	Website loads newsletter page.	Pass
2	Enter email address.	Email entered is displayed correctly.	Pass
3	Press Submit.	Email submitted to the server and pop-up confirmation showed.	Pass
4	Check Post Condition #1		
5	Repeat step 2 if error showed.		
6	Valid email is entered.	Success is showed and redirected to home page. Email for confirmation of subscription is sent to the email address.	Pass
7	Confirm subscription.	Receive first newsletter email.	Pass
8	Logout.	Logged out successfully and redirected to logged out version of home page.	Pass

Post-Conditions:

1. Valid email is entered.
2. Not already subscribed to the newsletter.
3. Else show error.

TEST REPORT

Overview:

The recipe generation website was tested for its functionality, usability, and performance. The website features home, login, register, recipe, newsletter and about us pages. The testing was performed on various browsers to test compatibility.

Test Environment:

The website was tested in the following environments-

1. Browsers: Google Chrome, Brave Browser
2. Devices: Desktop Computers, laptops
3. Operating systems: Windows, macOS, Linux

Test Cases:

- Login Page
 - a) Verified that the login page loads without any errors.
 - b) Tested login functionality with valid credentials.
 - c) Tested login functionality with invalid credentials.
 - d) Verified that password is hidden during input.
 - e) Checked for proper error messages in case of invalid inputs.
- Signup page
 - a) Verified that the sign-up page loads without any errors.
 - b) Tested sign-up functionality with valid inputs.
 - c) Tested sign-up functionality with invalid inputs.
 - d) Verified that password is hidden during input.
 - e) Checked for proper error messages in case of invalid inputs.
- Home Page
 - a) Verified that the home page loads without any errors.
 - b) Tested navigation to other pages from the home page.

- Recipe Page
 - a) Verified ingredients can be entered properly.
 - b) Verified ingredients can be removed.
 - c) Tested multiple submissions to the server.
 - d) Verified integrity of generated recipe.
 - e) Tested navigation to other pages.

- Newsletter Page
 - a) Verified email can be entered properly.
 - b) Verified correct email is submitted to server.
 - c) Tested that the submitted email is successfully added to mailing list.

- About us page
 - a) Verified that the about us page loads without any error s.
 - b) Tested display of information about the website and its creators.
 - c) Checked for proper formatting and readability of about us information.
 - d) Performance Testing.

The website was tested for its performance and responsiveness in different environments and devices. The following aspects were evaluated:

- (a) Loading time of pages and images
- (b) Responsiveness and adaptability to different screen sizes
- (c) Smooth navigation between pages
- (d) Defects Found

During the testing process, the following defects were identified and reported to the development team for resolution:

- (a) Ingredient removal failure
- (b) Recipe page inaccessible.

Conclusion

Overall, the recipe generation website was found to be functional and usable with minor defects that can be resolved to improve the user experience. The website performed well in terms of load time and responsiveness on different devices and browsers. The login, sign up, home, recipe, newsletter, and about us pages were tested thoroughly, and issues were reported for further resolution.