



**ADDIS ABABA UNIVERSITY
ADDIS ABABA INSTITUTE OF TECHNOLOGY**

**School of Information and Technology Engineering
Department of Software Engineering**

ቤት ያፈራው (bet yaferaw)

Software Requirement Specification

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Table of Contents

Document Approval	3
Definitions, Acronyms, And Abbreviations	7
Declaration	8
Introduction	9
Purpose	9
Scope	9
Overview	10
General Description	10
Product Perspective	10
Product Functions	12
User Roles and Characteristics	12
Table : Users roles and characteristics	12
General Constraints	13
Specific Requirements	13
External Interfaces	13
User Interfaces	13
Figure 1: UI for splash screen	14
Figure 2 : UI for home page	15
Figure 3: UI for recipe detail page	16
Figure 4: UI for Post recipe page	17
Figure 5: UI for Login page	18
Figure 6: UI for signup page	19
Figure 7 : UI for Profile page	20
Figure 8: UI for settings page	21
Hardware Interfaces	22
Software Interfaces	22
Communications Interfaces	22
Functional Requirements	22
Table FR-01-Create Profile	22
Table FR-02-Login	23
Table FR-03-Post Recipe	23
Table FR-04-Explore Recipe	24

Table FR-05-Search Recipe	24
Table FR-06-Image Scanning	25
Table FR-07-Edit Profile	25
Table FR-08-Engage	26
Use Cases	26
Table US-01-Signing up	26
Table US-02-Logging in	27
Table US-03-Add Recipe	28
Table US-04-Explore Recipe	29
Table US-05-Search Recipe	31
Table US-06-Camera Scanning	31
Table US-07-View Profile	32
Table US-08-Edit Profile	33
Table US-09-Delete Recipe	34
Table US-10-Like Recipe	35
Figure 9: Use case diagram	36
Non-Functional Requirements	37
Performance	37
Reliability	37
Availability	37
Security	37
Maintainability	37
Portability	37
Inverse Requirements	38
Design Constraints	38
Logical Database Requirements	38
Table: Logical Database requirement table	39
Other Requirements	39
Training Related Requirements	39
Packaging Related Requirements	39
Legal Requirements	39
Internationalization Requirements	39
Reuse Objectives	40
Change Management Process	40

Document Approval

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Date	Description	Author	Comments
12/05/2021	Version 1	All team members	Initial draft
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Document Approval

Signature	Printed Name	Title	Date
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List Of Tables

Document Approval	3
Table : Users roles and characteristics	14
Table FR-01-Create Profile	23
Table FR-02-Login	24
Table FR-03-Post Recipe	24
Table FR-04-Explore Recipe	25
Table FR-05-Search Recipe	25
Table FR-06-Image Scanning	26
Table FR-07-Edit Profile	26
Table FR-08-Engage	27
Table US-01-Signing up	27
Table US-02-Logging in	28
Table US-03-Add Recipe	29
Table US-04-Explore Recipe	30
Table US-05-Search Recipe	32
Table US-06-Camera Scanning	32
Table US-07-View Profile	33
Table US-08-Edit Profile	34
Table US-09-Delete Recipe	35
Table US-10-Like Recipe	36

List Of Figures

Figure 1: UI for splash screen	14
Figure 2 : UI for home page	15
Figure 3: UI for recipe detail page	16
Figure 4: UI for Post recipe page	17
Figure 5: UI for Login page	18
Figure 6: UI for signup page	19
Figure 7 : UI for Profile page	20
Figure 8: UI for settings page	21
Figure 9: Use case diagram	36

Definitions, Acronyms, And Abbreviations

UI: User Interface

MVVM : Model-View-ViewModel

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute.

Group 07

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Date: June 07 2021

1. Introduction

1.1. Purpose

The main objective of this document is to illustrate the system's software requirements, system intent, and features for the release 1.0 of ቤት ያፈራው. After reading this SRS document it is expected that the reader has a clear understanding of what the project is about as a whole.

In the General description section, the system's use case diagram is shown. In the Requirements Specification section, the use cases are explained step by step. It explains in detail what each actor does on the system.

1.2. Scope

The system will be a mobile application. The scope of the systems is as follows:

- This solution enables all users, registered or unregistered, to browse recipes that have previously been tried and shared by other users
- The system contains a database which provides lists of users, recipes, category of recipes, recipes' ingredients
- This database enables us to keep the information of recipes and users. Users can update this information. And also help users engage with the recipes
- The system allows searching of recipes by writing the ingredients on the search bar or using a camera scanner to scan specific ingredients the users have at hand

1.3. Overview

As mentioned above the purpose of the document is to give readers detailed information about the project structure, to achieve that the document is structured so that readers can go through the sections promptly.

The next section of this document is about the general description of the project which includes product perspective, product functions, user characteristics and general constraints. This is followed by the Specific Requirements section where external interface requirements, use cases, non-functional requirements and other sub-sections are discussed. Change management process of the project is also reflected. Readers can find References and Appendices at the end of the document.

A detailed structure of this document is also clearly stated on the table of contents, where readers can find any sections and subsections in this document with its respective page number. Readers can also use Appendices to find specific sections.

2. General Description

2.1. Product Perspective

ቤት ያፈራው is a software product that is going to curb the limitations on manual information transfer and previously built mobile application, current softwares and manual process of searching recipes. To illustrate more on what the application helps to solve, the team classified it into traditional and modern systems.

Traditional System

This system lacks a flexible method to disseminate recipe knowledge. Hence searching for recipes based on ingredients is impossible without having to go through every recipe thoroughly manually.

ቤት ያፈራው on the other hand, will look for recipes based on ingredients available with a search functionality that will provide users with quick search results.

Modern System

People nowadays use messaging applications or cooking applications like :

- **Allrecipes**

This application has the following feature:

- Allows exploring other people's recipes, adding new recipes, and searching for recipes.
- Save recipes within the application for later use.

What ቤት ያፈራው offers:

- The recipes found will correspond to the ingredients that customers have on hand.
- Based on the comments all recipes is full advertisement that will redirect users to different pages, ቤት ያፈራው doesn't have advertisements blocking the user experience.

- **Tasty**

- Allows exploring other people's recipes.
- Detailed recipes which are followed by clear steps to follow.
- Recipes are uploaded by professional cooks

What ቤት ያፈራው offers:

- Allows recipe posting.
- Recipes are uploaded by anyone who has the application.
- Allow search for ingredients using an image scanner.

- **Youtube videos or cooking blogs on the internet:**

- People will follow the steps to cook recipes by watching YouTube videos or searching the internet for the recipes they want.
- One issue that people face when they try to cook is that they have a lot of ingredients and don't know what sort of recipes they can make with them.
- Another difficulty people may encounter when cooking is following the cooking steps or directions since most recipes found online are usually written by professional chefs; as a result, the ingredients used in preparing the meal are not available or identified by those attempting to cook.ingredients, set out the cooking equipment, make notes or highlights, and begin cooking.

What ቤት ያፈራው offers:

- Recipes are uploaded by anyone who has the application making it easy to follow through.
- The recipes found will correspond to the ingredients that customers have on hand.

2.2. Product Functions

The main scope of this product is to facilitate searching for recipes using ingredients to customers of the system. The customers should be able to select a suitable recipe for cooking according to their ingredients. The product will give customers a list of ranked recipes that they can work with given the ingredients inserted by the customers. Customers are able to search using a camera scanner or search widget provided.

Furthermore, the customers should be able to engage with recipes, to rate, to give feedback and share recipes.

2.3. User Roles and Characteristics

User Roles	Characteristics
User	<ul style="list-style-type: none">- A registered user can post recipes on the application and they can search for recipes using a camera scanner or search using ingredients they have available at hand. They can also engage with other users' recipes.- An unregistered user can't post recipes. In addition to that they can browse through other people's recipes, but they can not engage with those recipes.

Table : Users roles and characteristics

2.4. General Constraints

The system's constraints are listed in this section. hardware, network, and software restrictions are among them. The system is a mobile application, and the phone must be a smart phone or have a camera in order for the ingredient scanning to work. The program requires an internet connection.

3. Specific Requirements

3.1. External Interfaces

3.1.1. User Interfaces

Splash Screen Page



Figure 1: UI for splash screen

Home Page

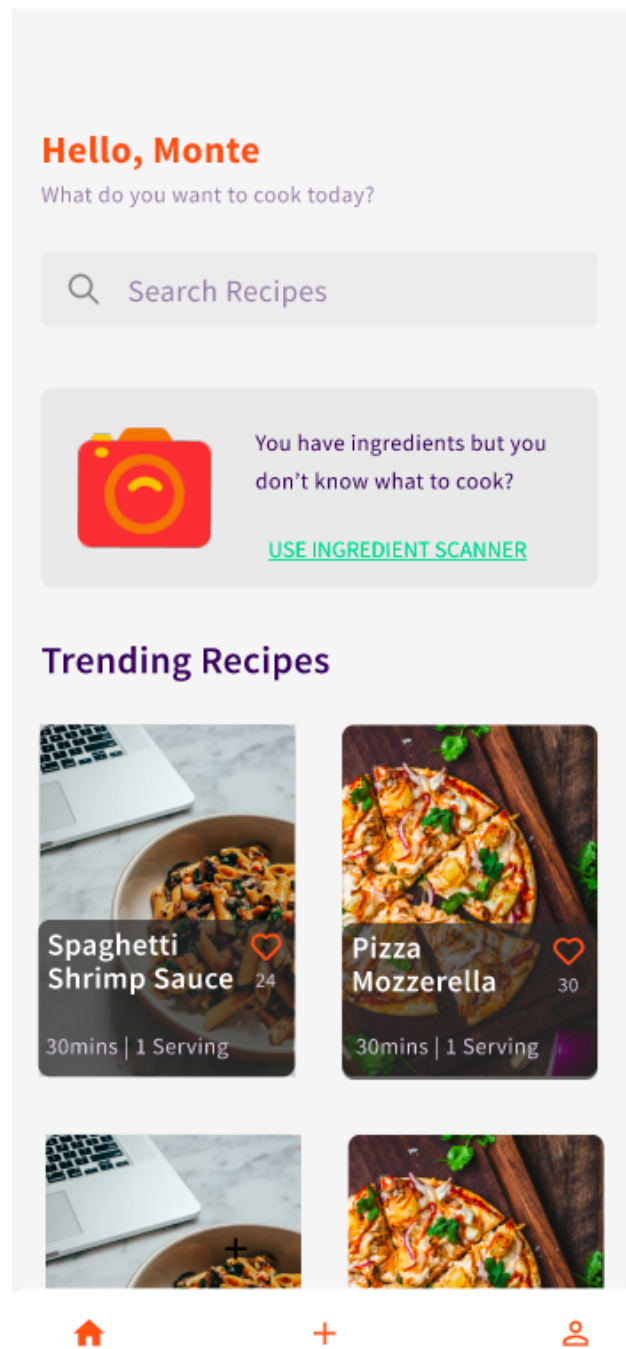


Figure 2 : UI for home page

Recipe Detail Page

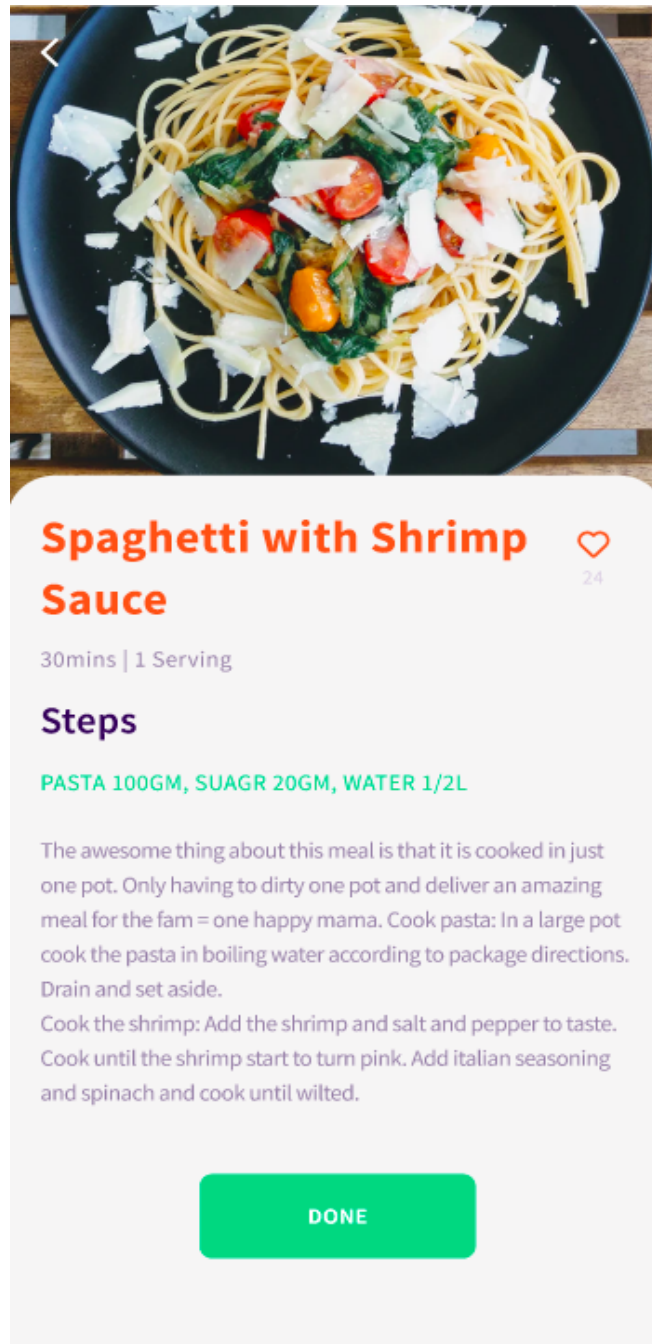
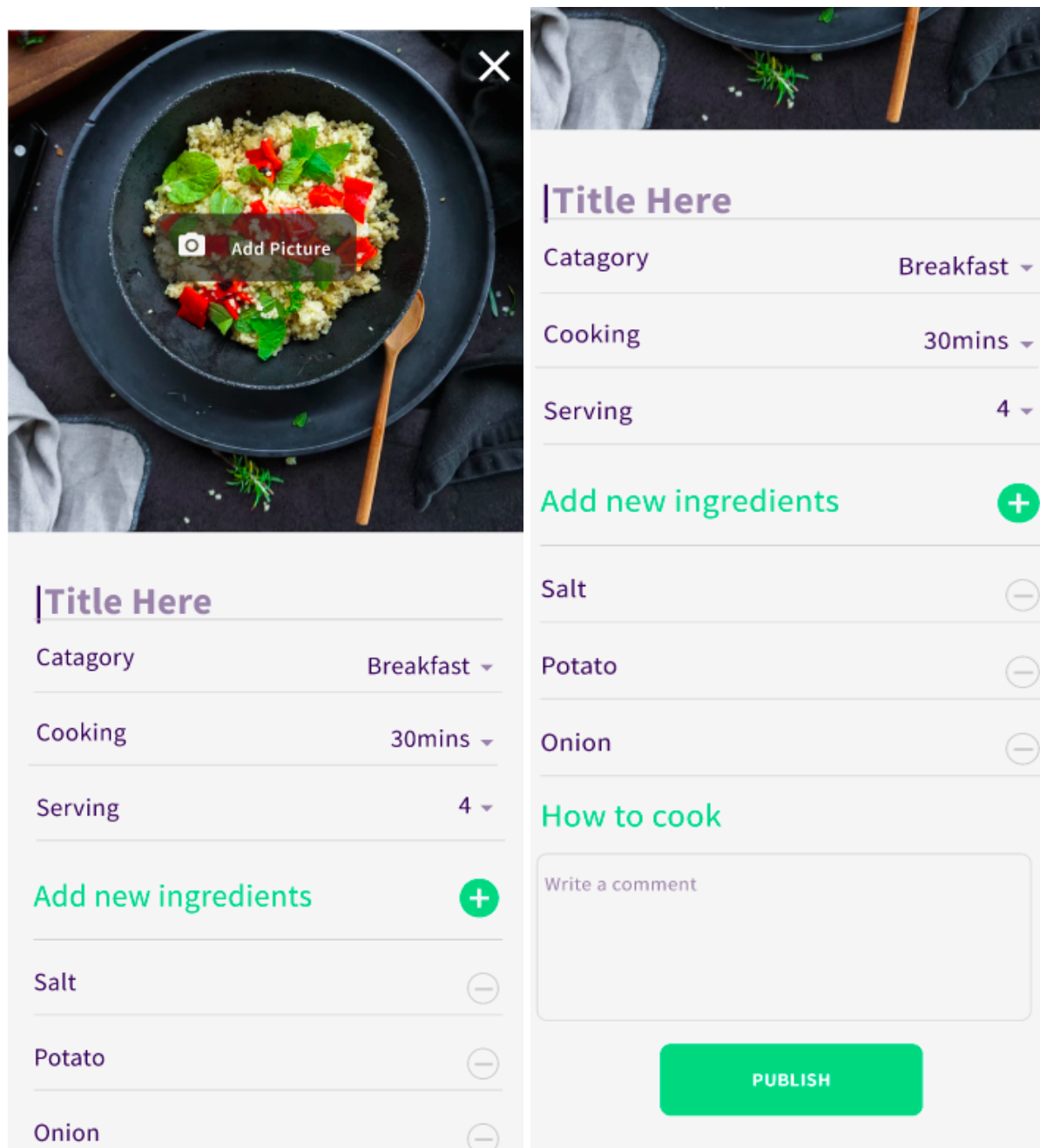


Figure 3: UI for recipe detail page

Post Recipe Page



The image displays a mobile application interface for posting a recipe. It is divided into two main vertical panels. The left panel features a large image of a dish (quinoa with vegetables) with an 'Add Picture' overlay. Below the image is a form with fields for 'Title Here', 'Category' (set to 'Breakfast'), 'Cooking' (set to '30mins'), and 'Serving' (set to '4'). There is a green '+ Add new ingredients' button, followed by a list of ingredients: 'Salt', 'Potato', and 'Onion', each with a minus sign icon. The right panel shows a similar form with the same fields, but with the 'Add new ingredients' button highlighted in green. Below this is a 'How to cook' section with a text input field labeled 'Write a comment' and a green 'PUBLISH' button at the bottom.

|Title Here

Category Breakfast ▾

Cooking 30mins ▾

Serving 4 ▾

Add new ingredients +

Salt −

Potato −

Onion −

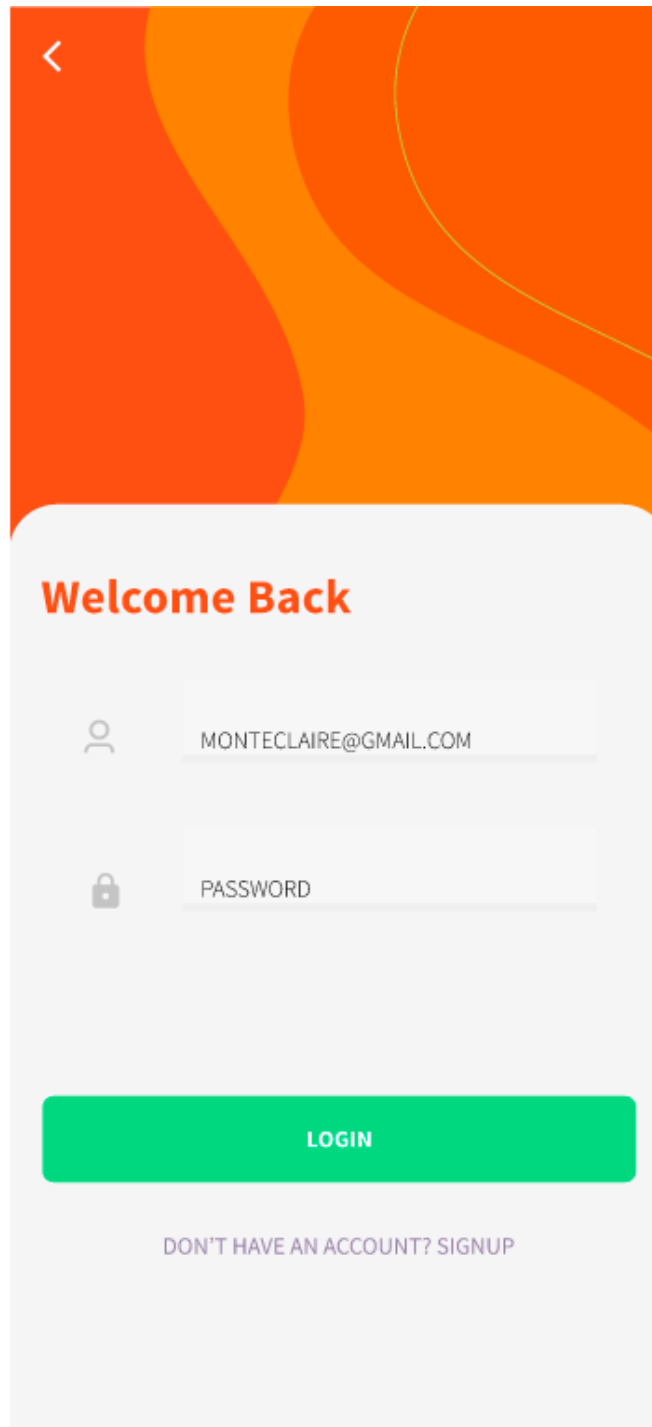
How to cook

Write a comment

PUBLISH


Figure 4: UI for Post recipe page


Login Page

The image shows a mobile app login screen. At the top left is a white back arrow on an orange background. Below the arrow is a white rounded rectangle containing the text 'Welcome Back' in orange. Underneath are two input fields: the first has a person icon and the text 'MONTECLAIRE@GMAIL.COM'; the second has a lock icon and the text 'PASSWORD'. Below these is a large green button with the text 'LOGIN' in white. At the bottom is a link that says 'DON'T HAVE AN ACCOUNT? SIGNUP' in purple.

<

Welcome Back

 MONTECLAIRE@GMAIL.COM

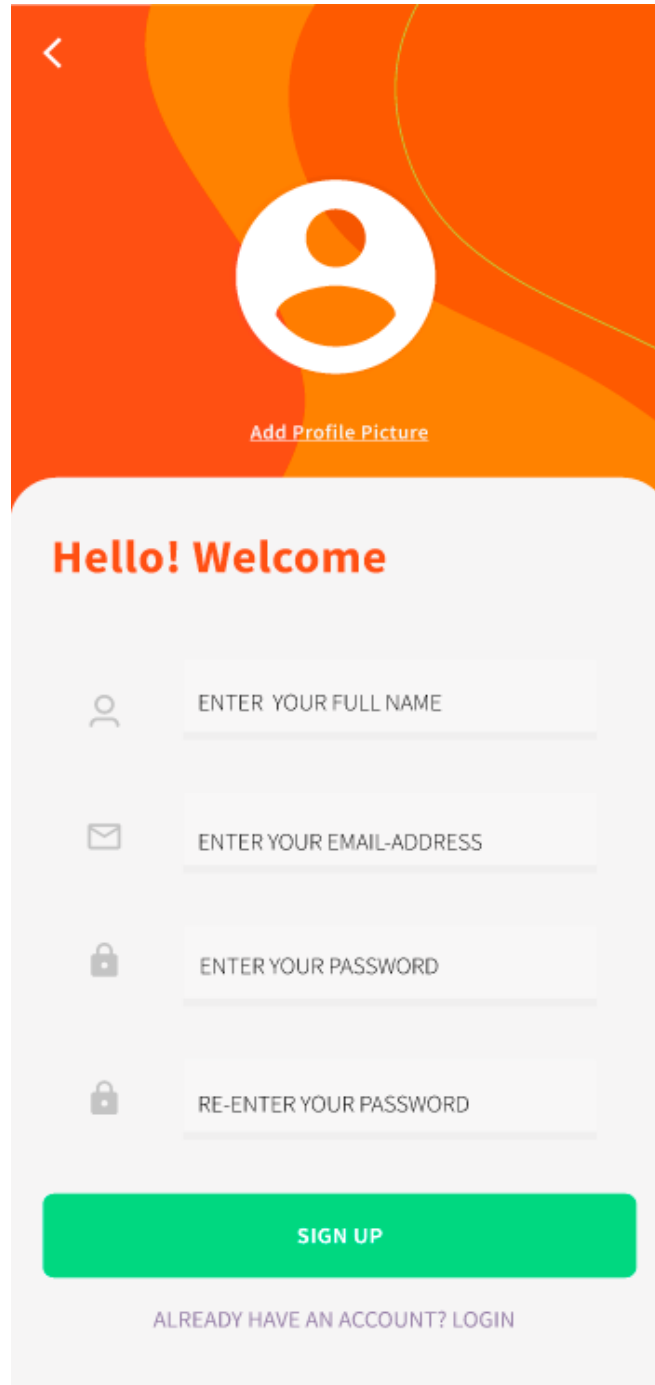
 PASSWORD

LOGIN

DON'T HAVE AN ACCOUNT? SIGNUP

Figure 5: UI for Login page

Sign up page



The image shows a mobile app sign-up page. At the top, there is a back arrow icon. Below it is a large white circular profile picture placeholder on an orange background, with the text "Add Profile Picture" underneath. The main content area is a light gray rounded rectangle. It starts with the text "Hello! Welcome" in orange. Below this are four input fields, each with an icon on the left: a person icon for "ENTER YOUR FULL NAME", an envelope icon for "ENTER YOUR EMAIL-ADDRESS", a lock icon for "ENTER YOUR PASSWORD", and another lock icon for "RE-ENTER YOUR PASSWORD". At the bottom of the form is a large green button labeled "SIGN UP". Below the button is a link that says "ALREADY HAVE AN ACCOUNT? LOGIN".

Figure 6: UI for signup page

Profile Page

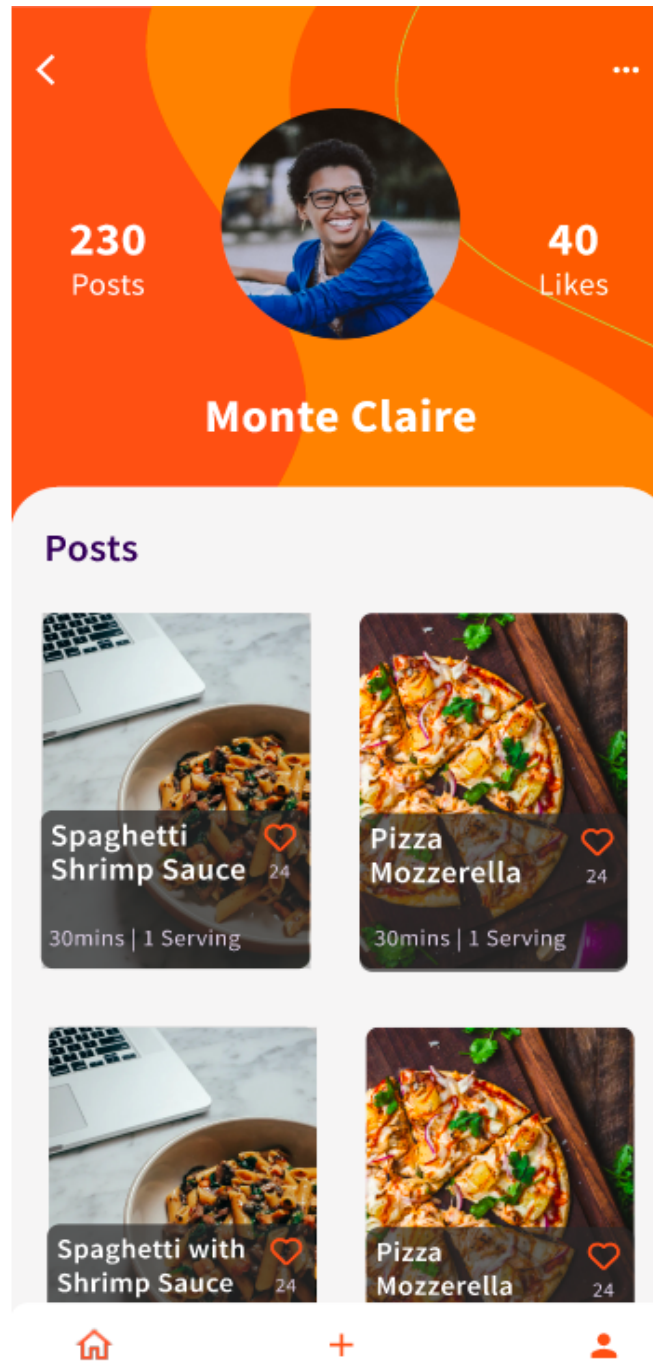


Figure 7 : UI for Profile page

Settings Page

**Settings****Account**




	Change Password	>
	Edit Name	>
	Sign Out	>

Figure 8: UI for settings page

3.1.2. Hardware Interfaces

The system has no hardware interface requirement.

3.1.3. Software Interfaces

The system requires a properly configured version of IOS 8 or higher and android version Jelly Bean 4.1 - 4.3.1 or higher to run the application. Mobile phones and tablets must have an 8 megapixels camera in resolution with the image capture size of 3264×2448 or more.

3.1.4. Communications Interfaces

All data transferred between the server, retail chain database and the individual devices shall use HTTPS protocols through secured connection.

3.2. Functional Requirements

3.2.1. Table FR-01-Create Profile

Functional Requirement Name	Create Profile
ID	FR-01-Create Profile
Description	The system shall register an unregistered user to enable the user to access registered user privileges, such as, posting recipe, engaging with recipe, and editing profile.
Summary	The System should register new users in to its database
Dependency	None
References	None

3.2.2. Table FR-02-Login

Functional Requirement Name	Login
ID	FR-02-Login
Description	The system shall enable a user who has his/her account registered on the system to login to the app, so that the user can exercise features an unregistered user can't.
Summary	The System should login already registered users
Dependency	FR-01-Create Profile
References	None

3.2.3. Table FR-03-Post Recipe

Functional Requirement Name	Post Recipe
ID	FR-03-Post Recipe
Description	The system shall let a user who has his/her account registered on the application to post recipes on the application. Posting a recipe is the process of sharing one's own recipe to the application so that other users can access the posted recipe.
Summary	The System shall let a logged in user post recipe.
Dependency	FR-02-Login
References	None

3.2.4. Table FR-04-Explore Recipe

Functional Requirement Name	Explore Recipe
ID	FR-04-Explore Recipe
Description	The system shall display trending recipes available on the system. It should list recipes based on ranked engagements from other users
Summary	The System shall display recipes with high engagements
Dependency	None
References	None

3.2.5. Table FR-05-Search Recipe

Functional Requirement Name	Search Recipe
ID	FR-05-Search Recipe
Description	The system shall search for recipes and display search results, using ingredients users have available at hand.
Summary	The System shall allow recipe search using ingredients
Dependency	None
References	None

3.2.6. Table FR-06-Image Scanning

Functional Requirement Name	Image Scanning
ID	FR-06-Image Scanning
Description	The system shall scan ingredients from a user mobile phone and display recipes user can make based on the search result
Summary	The System shall allow recipe search using camera scanned ingredients
Dependency	None
References	None

3.2.7. Table FR-07-Edit Profile

Functional Requirement Name	Edit Profile
ID	FR-07-Edit Profile
Description	The system should change the user profile and show an updated profile when a user edits his/her profile. A user can edit his/ her personal information or delete their posted recipe.
Summary	The System shall allow users to edit their profile.
Dependency	FR-02-Login
References	None

3.2.8. Table FR-08-Engage

Functional Requirement Name	Engage
ID	FR-08-Engage
Description	After logging in and exploring recipes, a registered user is able to engage with recipes in the form of likes.
Summary	The system shall allow users to engage with recipe
Dependency	FR-02-Login
References	None

3.3. Use Cases

3.3.1. Table US-01-Signing up

Use Case Name	Signing up
ID	US-01-Signing up
Actors	Unregistered user
Triggers	I don't have an account link on the login page.
Precondition	- Have access to internet - Install the application
Post Condition	- User will be able to login
Main Course	- Presence of an I don't have an account link - Clicking on the link - Filling out the forms provided - Click on the Sign up button

Alternative Course	None
Exceptions	EX1: <User Already Exists> 1. Notify the user that the account already exists. EX2: <Use Correct Email> 1. Notify user that the email used should be of standard

3.3.2. Table US-02-Logging in

Use Case Name	Logging in
ID	US-02-Logging in
Actors	Registered user
Triggers	- Add Recipe Button - Profile Icon
Precondition	- Have access to internet - Install the application
Post Condition	- User can post Recipe - A user can engage with other people's recipes in forms of likes. - User will be able to edit profile page
Main Course	- Presence of an I don't have an account link - Clicking on the link - Filling out the forms provided - Click on the Sign up button
Alternative Course	None
	EX1: <User Doesn't Exists>

Exceptions	<ol style="list-style-type: none"> 1. Notify the user that the account doesn't exist and the user should sign up instead. <p>EX2: <Use Correct Email></p> <ol style="list-style-type: none"> 1. Notify user that the email used should be of standard <p>EX3: <Use Correct Password></p> <ol style="list-style-type: none"> 1. Notify User that the password length is not correct and to fill it out correctly.
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3.3.3. Table US-03-Add Recipe

Use Case Name	Add Recipe
ID	US-03-Add Recipe
Actors	Registered user
Triggers	- Add Recipe Button
Precondition	<ul style="list-style-type: none"> - Have access to internet - Install the application - User needs an account on the application - User has to login using their registered account
Post Condition	<ul style="list-style-type: none"> - User's Posted Recipe will be available on the application - Posted Recipe will be available on user's profile page
Main Course	<ul style="list-style-type: none"> - Presence of an Add Icon on the bottom navigation on the main screen - Clicking on the add icon - Filling out the forms provided - Scroll down and fill additional

	forms - Presence of a publish Button. - Click on the publish button.
Alternative Course	None
Exceptions	EX1: <User Hasn't Logged In> 1. When the user clicks on the Publish Button, take the user to the login page instead of the posting Recipe. EX2: <Fill Out Required Field> 1. Notify the user that the required field should be completely filled out.

3.3.4. Table US-04-Explore Recipe

Use Case Name	Explore Recipe
ID	US-04-Explore Recipe
Actors	- Registered User - Unregistered User
Triggers	- Opening the installed application - Searching for recipe using ingredients - Image Scanning ingredients
Precondition	- Have access to internet - Install the application
Post Condition	- User is able to view recipes they are interested in and have high engagements from other users
Main Course	- Open the installed application - Presence of List of ranked Recipes based on engagements on the home page

Alternative Course	<p>AC1: <Searching by Ingredients></p> <ul style="list-style-type: none"> - Presence of Search on the main screen - Click on the search icon - Input ingredients available at hand - Presence of Search Button - Click on the search button to search for recipes available using ingredients input. - Presence of Ranked Recipes based on engagements <p>AC2: <Searching by Image Scanner></p> <ul style="list-style-type: none"> - Presence of a camera scanner - Scan on Ingredients - Presence of a scan button. - Click on Scan Button - Presence of Ranked Recipes based on engagements
Exceptions	<p>EX1: <Unrecognized Scanned Ingredient></p> <ol style="list-style-type: none"> 1. Notify the user that the scanned ingredient is unrecognizable. 2. Prompt the user to try again using appropriate images to scan

3.3.5. Table US-05-Search Recipe

Use Case Name	Search Recipe
ID	US-05-Search Recipe
Actors	- Registered User - Unregistered User
Triggers	- Clicking on the Search icon available on the bottom navigation
Precondition	- Have access to internet - Install the application
Post Condition	- User is able to view recipes they are interested in and have high engagements from other users
Main Course	- Presence of a bottom navigation tab - Presence of search icon - Click on search icon - Input ingredients that are available at hand - Presence of Search Button - Click on the Search Button
Alternative Course	None
Exceptions	

3.3.6. Table US-06-Camera Scanning

Use Case Name	Camera Scanning
ID	US-06-Camera Scanning
Actors	- Registered User - Unregistered User
Triggers	- Clicking on the camera scanner

	icon available on the bottom navigation
Precondition	- Have access to internet - Install the application
Post Condition	- User is able to view recipes they are interested in and have high engagements from other users
Main Course	- Presence of a bottom navigation tab - Presence of camera scanner icon - Click on search icon - Scan ingredients that are available at hand - Presence of Scan Button - Click on the Scan Button
Alternative Course	None
Exceptions	EX1: <Unrecognized Scanned Ingredient> Notify the user that the scanned ingredient is unrecognizable. Prompt the user to try again using appropriate images to scan

3.3.7. Table US-07-View Profile

Use Case Name	View Profile
ID	US-07-View Profile
Actors	- Registered User
Triggers	- Clicking on the profile icon on the bottom navigation
Precondition	- Have access to internet - Install the application

	<ul style="list-style-type: none"> - Have an account on the application - Login using registered account
Post Condition	<ul style="list-style-type: none"> - User is able to view profile - User can edit person information - User can delete created Recipe
Main Course	<ul style="list-style-type: none"> - Presence of a bottom navigation tab - Presence of profile icon - Click on profile icon
Alternative Course	None
Exceptions	<p>EX1: <Unable to click on profile icon></p> <ol style="list-style-type: none"> 1. Notify user that user has to login to be able to access this/ her profile

3.3.8. Table US-08-Edit Profile

Use Case Name	Edit Profile
ID	US-08-Edit Profile
Actors	- Registered User
Triggers	- Clicking on the Edit Profile Button on the Profile Page
Precondition	<ul style="list-style-type: none"> - Have access to internet - Install the application - Have an account on the application - Login using registered account
Post Condition	- User is able to see change on his/her profile
Main Course	<ul style="list-style-type: none"> - Presence of Edit Profile Button - Click on Edit Profile button

	<ul style="list-style-type: none"> - Presence of edit button - Click and Edit - Presence of SAVE and CANCEL Button - Click Save to save changes - Cancel to ignore changes
Alternative Course	None
Exceptions	

3.3.9. Table US-09-Delete Recipe

Use Case Name	Delete Recipe
ID	US-09-Delete Recipe
Actors	- Registered User
Triggers	- Clicking on the Recipe
Precondition	<ul style="list-style-type: none"> - Have access to internet - Install the application - Have an account on the application - Login using registered account
Post Condition	- User is able to see that their recipe has been deleted
Main Course	<ul style="list-style-type: none"> - Presence of Listed Recipes User has created - Click on a Recipe - Presence of a Delete Button - Click on delete button
Alternative Course	None
Exceptions	

3.3.10. Table US-10-Like Recipe

Use Case Name	Like Recipe
ID	US-10-Like Recipe
Actors	- Registered User
Triggers	- Clicking on the favorite/heart icon
Precondition	- Have access to internet - Install the application - Have an account on the application - Login using registered account
Post Condition	- The clicked on favorite/heart icon will look different.
Main Course	- Presence of Listed Trending Recipes available - Click on a single recipe - Presence of a heart/favorite icon - Click on the heart/favorite icon
Alternative Course	None
Exceptions	EX1: <Unable to click on heart icon> 1. Notify user that user has to login to be able to engage with recipes

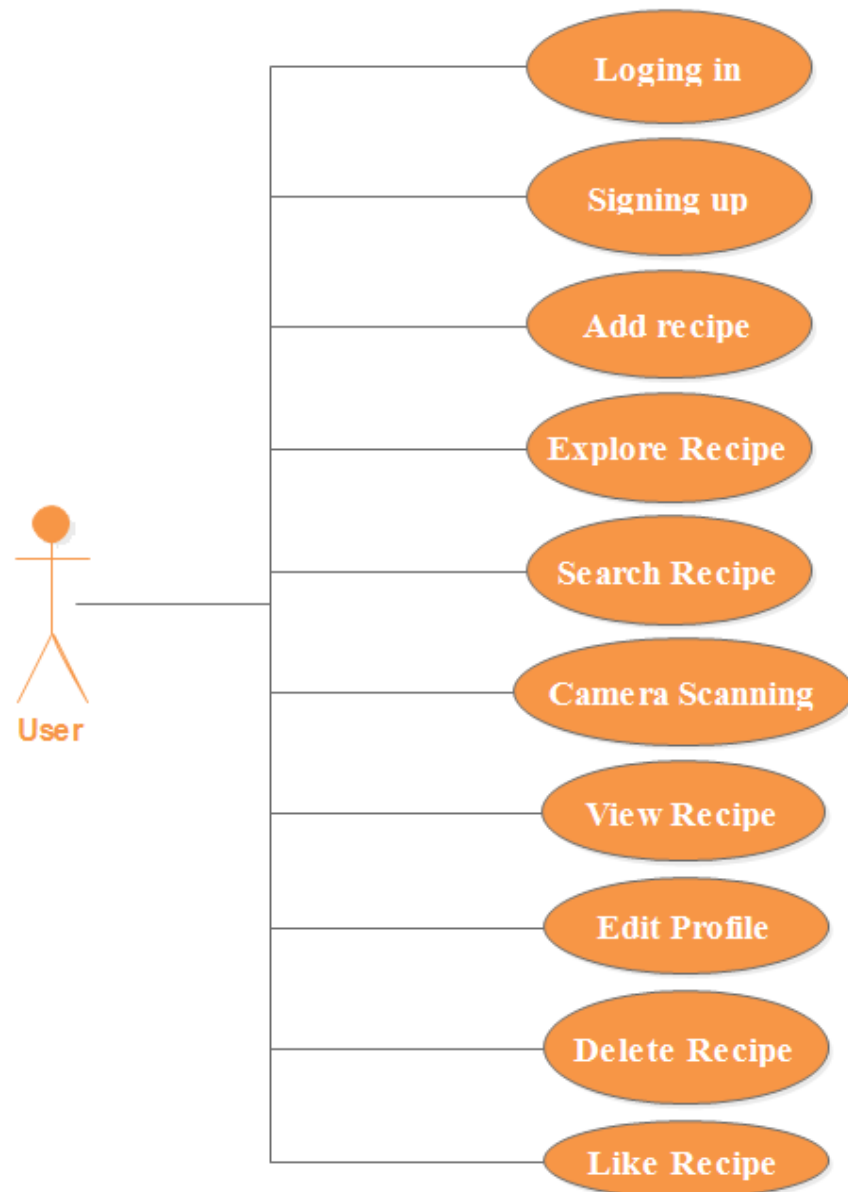


Figure 9: Use case diagram

3.4. Non-Functional Requirements

3.4.1. Performance

Accessible content provided by the system functionality shall be displayed completely within 10 seconds from the time the user requests it over a 3G or faster internet connection. Application must run on recommended devices or higher, tap response should not exceed 20ms.

3.4.2. Reliability

User data will be saved on the backend; therefore, the user will be able to utilize the application even after logging out. If the connection between the user and the system is broken prior to a new recipe being uploaded or recieved, the system shall enable the user to recover an incomplete action and continue working on it.

3.4.3. Availability

The system should be available at all times without maintenance breaks. All critical updates shall be deployed between 4:00 AM - 5:00 AM.

3.4.4. Security

Passwords shall be encrypted to protect user information when logging in. The application will use HTTPS service on the backend to secure the server it is running on.

3.4.5. Maintainability

Object Oriented Programming will be used because it helps in troubleshooting, find what needs to be changed, make changes and check that the changes have not introduced any bugs. It will also be regularly reviewed to improve its quality

3.4.6. Portability

The system is designed to run on Android and iOS. The system can be installed on Android and iOS devices with versions 8.0 or higher for iOS and version 5.0 or higher for android.

3.5. Inverse Requirements

ቤት ያፈራው's goal is to make cooking and learning recipes convenient while sharing their work with others to enjoy. With that being said, the system does not achieve the following :

- Does not show price
- Does not generate new recipes that are not posted by users
- Does not show where to buy recipes
- Does not show where to buy ingredients
- Does not allow ingredient or recipe delivery

3.6. Design Constraints

The first challenge would be to finish the system on time since the team has limited time given the vastness of the system. The image processing feature will be used to identify only limited ingredients that are specified in the scope. Flutter is used for front end development hence the designs should appear the same in both Android and iOS platforms.

3.7. Logical Database Requirements

To ensure the safety and security of the system's data, all dynamic information will be stored in a well-organized database. Good logical database is also important for future maintenance. The database used by the system will have the following structure.

Database Table	Attributes	Description
User	<ul style="list-style-type: none"> • userId • image • firstName • lastName • password • email • createdAt 	This table holds information about users to be registered.
Recipe	<ul style="list-style-type: none"> • recipeId 	This table holds information

	<ul style="list-style-type: none"> ● image ● categories ● name ● directions ● ingredients ● serves ● time ● createdAt 	a of recipe to be posted
Engagements	<ul style="list-style-type: none"> ● engagementId ● recipeId ● userId ● likes ● createdAt 	This table holds information of a user who engaged with a recipe.

Table: Logical Database requirement table

3.8. Other Requirements

3.8.1. Training Related Requirements

Users are not required to participate in any training since the user experience is intuitive.

3.8.2. Packaging Related Requirements

The system will be downloaded and installed into mobile phone packages by PlayStore and AppStore.

3.8.3. Legal Requirements

All submitted texts and images will be owned by the company and the company has the right to utilize them.

3.8.4. Internationalization Requirements

Personal information should be protected and also the system should comply with quality assurance standards.

3.8.5. Reuse Objectives

The design pattern used for the system should aim for achieving reusable software. Accordingly, the chosen design pattern is Model-View-ViewModel. (MVVM) is a structural design pattern that separates objects into three distinct groups:

- **Models** hold application data. They're usually structs or simple classes.
- **Views** display visual elements and controls on the screen.
- **View models** transform model information into values that can be displayed on a view. They're usually classes, so they can be passed around as references.

4. Change Management Process

When a change is expected to occur, all team members will convey this new modification by phone call, Telegram, Slack, or a meeting and propose the modification to the adviser. The modification can only be proposed to the adviser if all the team members are in an agreement. At the same time, the change can only be made if all the team members and the advisors are in an agreement.

The modifications made will then be documented in a formal manner, outlining the change, why it is required, and how to implement those changes.

References

- Previous SRS documents prepared by our seniors
- Previous SRS document prepared by the team for the Software engineering course
- Template provided to us by Dr. Sunkari

Appendices