



User Manual

| Project Title |
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| Demeter Food App |

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Table of Contents

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|---|----------|
| User Manual | 1 |
| Table of Contents | 2 |
| 1. Abstract | 3 |
| 2. System Overview | 3 |
| 2.1 User Authentication and Authorisation: | 3 |
| 2.2 Staple Ingredients: | 3 |
| 2.3 Search for Recipes: | 4 |
| 2.4 Entering and Deletion of Pantry Items: | 4 |
| 2.5 User Profile Page: | 4 |
| 3. Dependencies | 4 |
| 3.1 User Dependencies: | 4 |
| 3.2. In order to run the application from command line to test and run: | 5 |
| 4. Installation | 5 |
| 4.2. User Installation: | 6 |
| 5. User Functionalities / End User Guide | 6 |
| 5.1 Landing Page | 6 |
| 5.2 Sign Up Page | 7 |
| 5.3 Login Page | 7 |
| 5.4 Profile Completion | 8 |
| 5.5 Dashboard Page | 8 |
| 5.6 Recipe Popup | 9 |
| 5.7 Favouriting Items | 9 |
| 5.8 Recipe Recommendation / Favourite bar | 10 |
| 5.9 Recipe Search Filtering | 10 |
| 5.10 Ingredient filtering | 11 |
| 5.11 Computer Vision Food Detection | 12 |
| 5.11.1 Food detected example | 12 |
| 5.12 Pantry View | 13 |
| 5.13 Manual Ingredient Addition | 13 |
| 5.14 Barcode Scanning | 14 |
| 5.15 Profile Page | 15 |
| 5.15.1 Profile Edit Examples | 16 |
| 5.16 Cuisine Change/Selection | 17 |

1. Abstract

This document aims to provide users with an easy to follow walkthrough the major features of the Demeter Mobile Food Application. Using screenshots of the application we will show how users can use the application properly. Below we will go through the features available to the user in order to find recipes based on their preferences and what food ingredients they have available to them. Subsequently, we will go over what users need in order to run Demeter. We will also go over what a user needs in order to develop on Demeter. Finally, we will use screenshots to demonstrate the application's features.

2. System Overview

Demeter is an Android mobile application built on Flutter and Dart as a programming language, also utilising various Google technologies such as Firebase that aims to provide users with food recipes that are catered to their favourite foods and types of cuisines. It searches from 500+ recipes ranging from different cuisines from over 20 different countries. This app also serves to keep track of what ingredients are available in a user's kitchen which we will refer to as the **Pantry**. Listed below is a more detailed description of Demeter's functionality.

2.1 User Authentication and Authorisation:

Users must register with an email and login in order to use the application and have a valid password. Users are added to our database which is using Firebase Authentication and Firestore after they register and they can use those details to login afterwards. This is so their food preferences (favourite foods) and pantry ingredients can be recorded and retrieved once they log out of the app and log back in. These details can be changed at a later time (see section 2.5 User Profile Page).

2.2 Staple Ingredients:

These are ingredients that are most popularly used in a type of cuisine. For example, Italian staple cuisine would be ingredients like spaghetti, parmesan, and mozzarella. Each cuisine could have different **Staple Ingredients** and will populate a user's Pantry and is decided based on the cuisine a user picks when they first sign up or when they change their "Selected Cuisines" in their profile page. These **Staple Ingredients** do not run out if they are in the user's **Pantry**.

2.3 Search for Recipes:

Demeter offers a recommendation system that gives users recipes that they may find interesting or appetising. This allows users to search for recipes by their preference of cuisines. Users can also search for recipes by their **category** as well, so this could limit the foods to vegan/vegetarian if the user has any dietary restrictions. It is also possible to search

for recipes using ingredients in their pantry as well (also available independent of what a user has in the **Pantry**).

2.4 Entering and Deletion of Pantry Items:

Another major aspect of the Demeter application is the **Pantry** feature. This feature keeps track of what ingredients a user has in their home and what recipes they can make with the ingredients they have. Users can enter or remove ingredients into their pantry. If a user selects the “Use This Recipe” option while browsing for recipes, Demeter will remove the items selected from the recipe in your **Pantry**. (**NOTE:** Ingredients will **not** be removed from the pantry if they are **Staple Ingredients**).

There are three ways to enter ingredients into the Pantry:

1. Using the barcode scan feature
2. Using the camera (computer vision) feature
3. Manually typing the ingredients using the search feature

2.5 User Profile Page:

Users can edit their name, age, email and profile picture in this page. They can also change their favourite cuisines by toggling the “Your Selected Cuisines” cuisine option buttons. Changing the “Your Selected Cuisines” option will change the **Staple Ingredients** in the Pantry section of the application. The user can also change their password in this section.

3. Dependencies

3.1 User Dependencies:

- The user must have a stable WiFi connection.
- Have an Android device which has Android 10 to Android 14 software updates installed.
- A working camera on their phone (in order to scan ingredients).

3.2. In order to run the application from command line to test and run:

```
-- Make sure you are in the Demeter directory , pwd
../../2024-ca400-borromk-2-linr-2/src/Demeter

-- Execute flutter clean to clean cache and to fix build problems
flutter clean

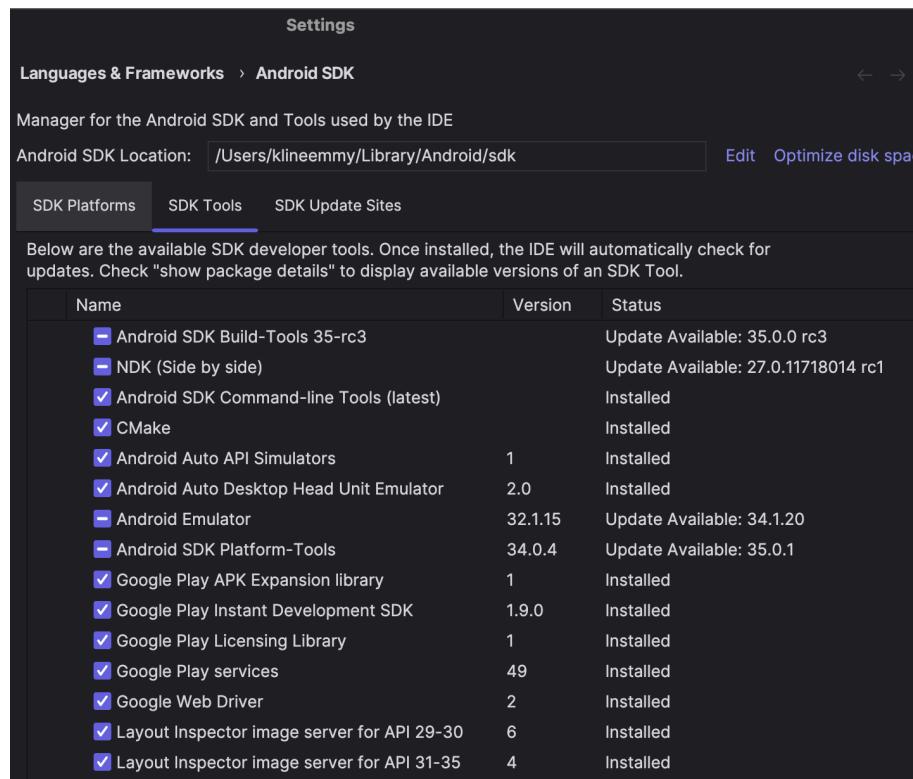
-- Execute flutter pub get to build Demeter's dependencies from pubspec.yaml
flutter pub get

-- Execute flutter run to build Demeter in debug mode
flutter run
```

4. Installation

4.1. General Prerequisites (if looking to develop on app or debug app):

- Demeter was developed using Android Studio Iguana | 2023.2.1
 - <https://developer.android.com/studio/releases>



- These are the SDK tools used on Android Studio
- VSCode also has excellent Android development tools.

- The appropriate flutter version for your laptop/PC can be found here
 - <https://flutter-ko.dev/get-started/install>

****The application was mainly built and tested for optimum performance from Android devices ranging from **Android 10 (API 29)** to **Android 14 (API 34)**. While it may be possible to run on lower versions of android, we cannot guarantee compatibility.****

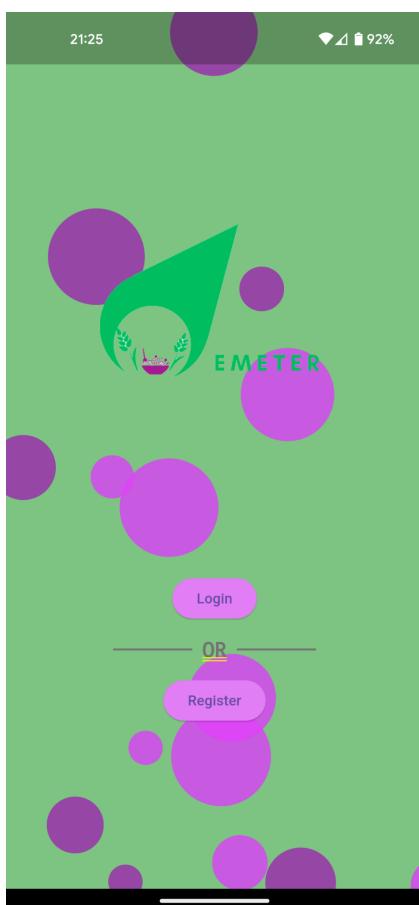
4.2. User Installation:

- After running flutter run -> flutter pub get, we can install the app as an apk to our laptop / PC

```
flutter install
```

- The Demeter.apk file will be available for download to the user and they will have to allow camera access when using the application.
- A **separate** completed .APK will be available for download if users do not wish to compile and build their own from downloading the source code, which users can just download onto their android phone and install with ease.

5. User Functionalities / End User Guide

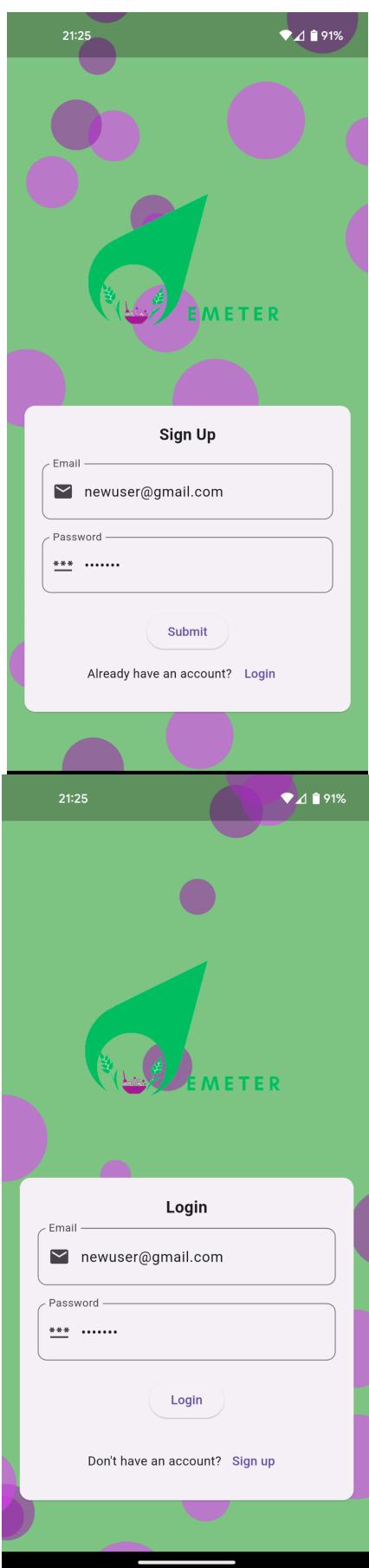


Here we will go through each part of our application and how the user can interact with each part.

5.1 Landing Page

Landing Page, here we have our logo and floating bubbles as the background in our chosen colour scheme, you can also click the login or register button to move to their respective pages.

In this guide we will begin from the register page.



5.2 Sign Up Page

This page is the Sign up or registration page, you can input your email address and password.

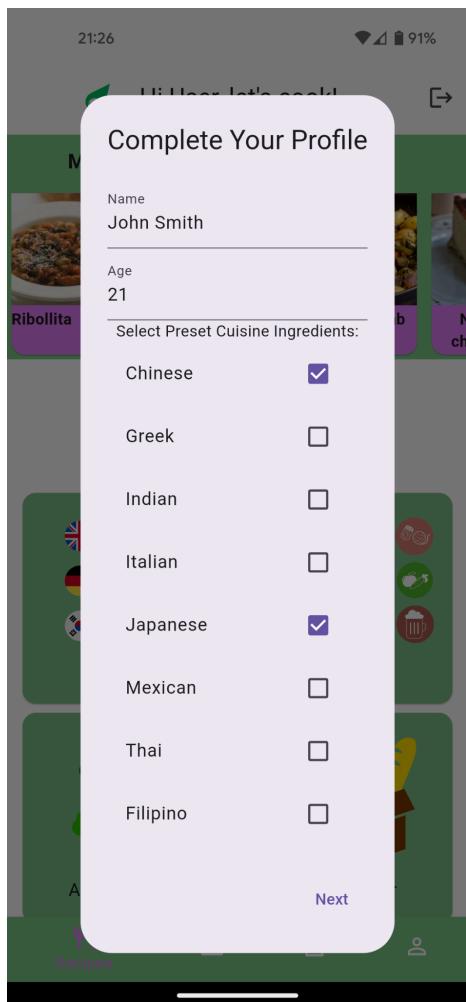
There are some validation checks to check it's a valid email as well as a valid password, if not there will be a pop up or small hints showing you what you're missing.

In this case, we will use be using new email address to create a new account

5.3 Login Page

After submitting your details, you will be automatically redirected to our login page where you can input your email and password.

There are also validation checks here and it will not tell you specifically if you got the email or password wrong due to security best practices, it will only show a generic incorrect information warning.



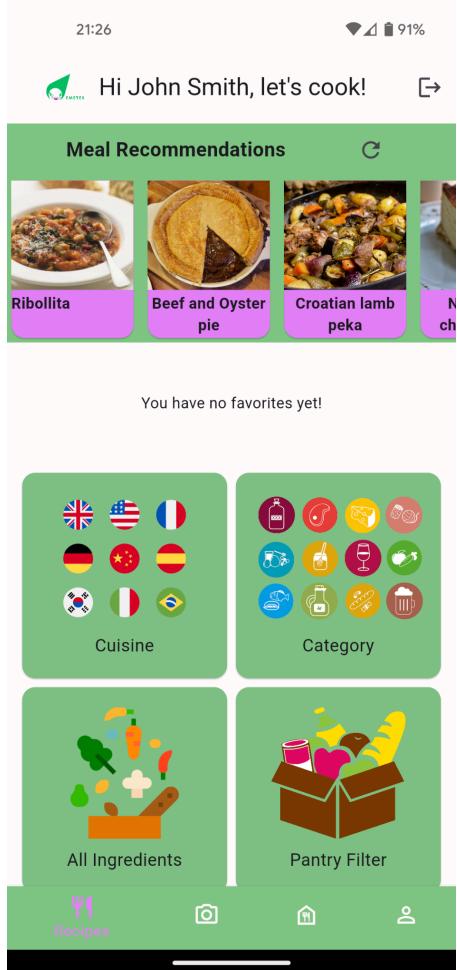
5.4 Profile Completion

After signing in, you will be shown a profile completion screen and this is mandatory.

You will not be able to tap out of the UI or use android back in order to bypass it.

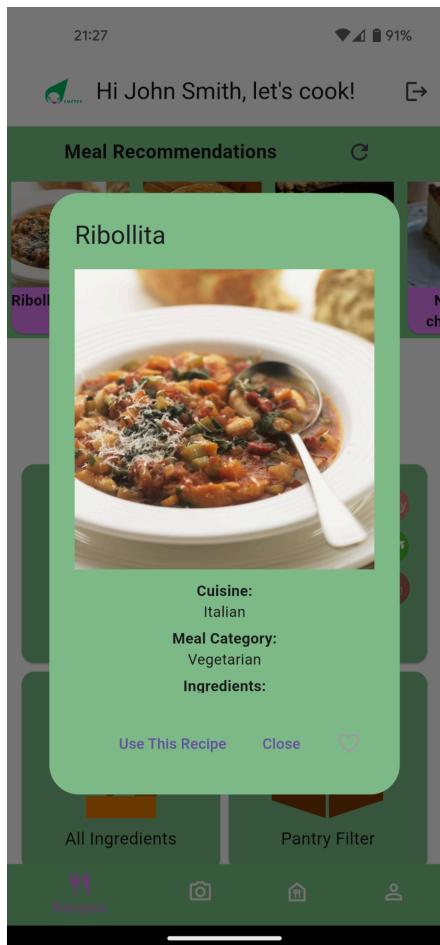
If you log out, it will come up again on your next login. We will be using a generic name and age and select 2 preset cuisines, you can select all or none if you would like.

The preset cuisines will automatically add its associated staple ingredients to your pantry.



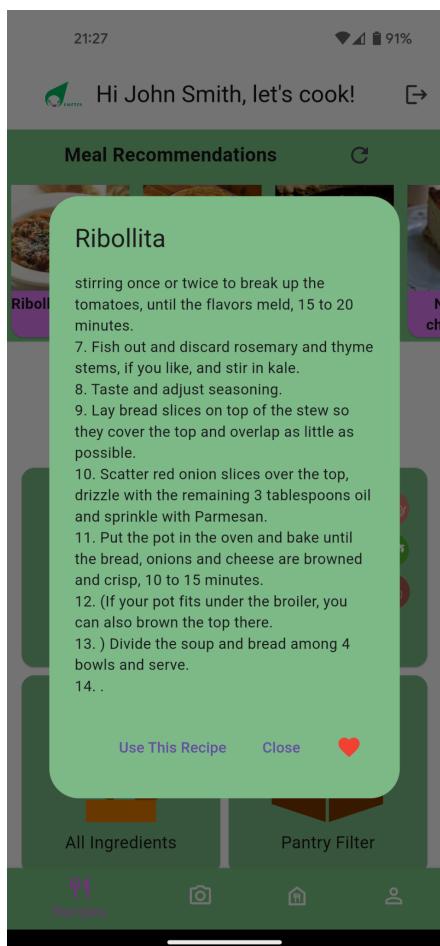
5.5 Dashboard Page

Now we are on the dashboard page where you are greeted by multiple meal recommendations which you can swipe to view more, as well as a warning that you do not have any favourites, we will be showing you how to add favourites on the next step.



5.6 Recipe Popup

Once you tap any of the recipe cards, you will be shown this pop up, with all the details about the recipe, including ingredients and instructions when you scroll down on the card.



5.7 Favouriting Items

Then on the bottom right, you can see a heart icon which is the favourites button. Once you press it it will turn red and then the recipe will appear on a favourites bar.



5.8 Recipe Recommendation / Favourite bar

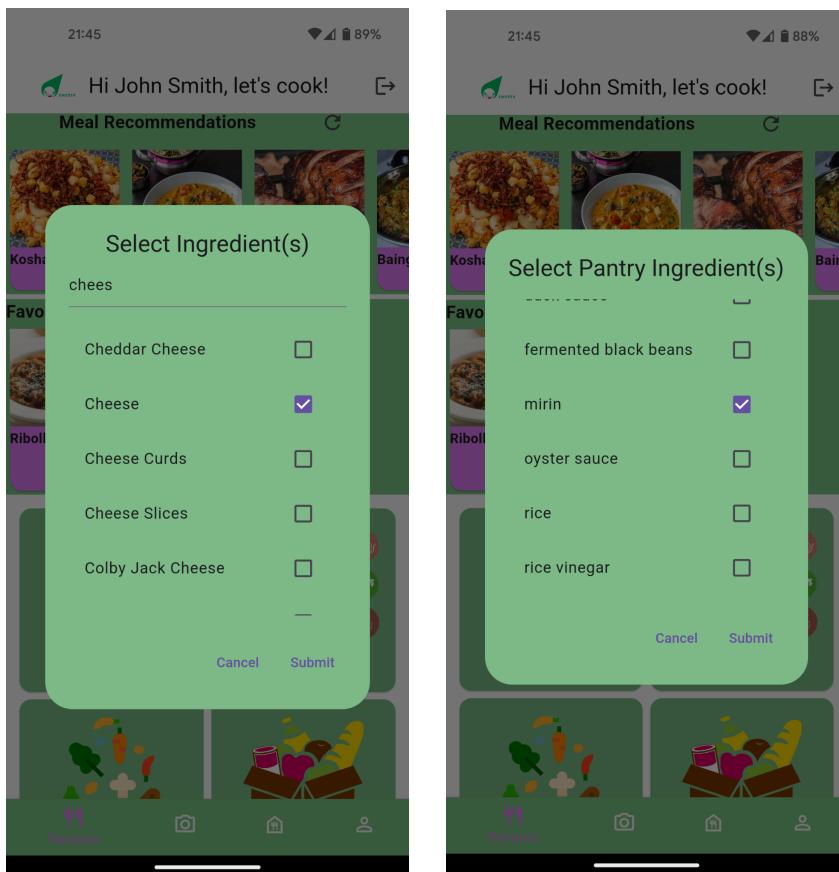
Then as you could see, it appears on your favourites bar and as well as that, your meal recommendations have changed, as our recommendation system uses an algorithm to suggest recipes based on the ingredients of your favourited recipes.

The first screenshot shows a 'Select Cuisine' modal with five options: American (radio button selected), British, Canadian, Chinese, and Croatian. Buttons for 'Cancel' and 'Submit' are at the bottom. The second screenshot shows a list of recipes from American cuisine, including '15 minute chicken & hamburgers', 'Banana Pancakes', 'BBQ Pork Sloppy Joes', 'Beef Brisket Pot Roast', 'Big Mac', and 'Chick-Fil-A Sandwich'. It also shows the 'Cuisine' and 'Category' buttons at the bottom.

5.9 Recipe Search Filtering

Moving on below, there are 4 other buttons you can press, ranging from Cuisine, Category, Ingredients and Pantry Ingredients.

Selecting Cuisine and Category are similar as they are just a broad category which shows you the recipes associated with that specific cuisine or category of food.

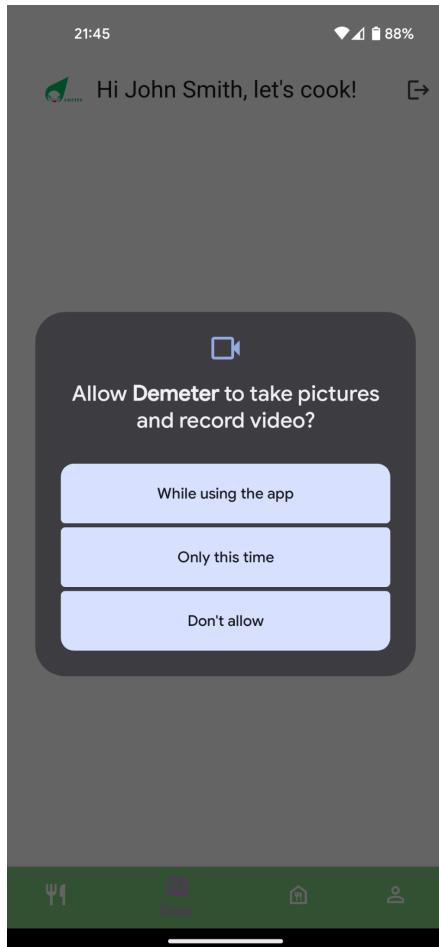


5.10 Ingredient filtering

These are our way of filtering the recipes to be shown to you, for ingredients, it gives you a checkbox and search box so you can select multiple ingredients to filter though.

However as our recipe database is on the smaller side of about 303, there are some combinations which will return no recipes, so just be aware.





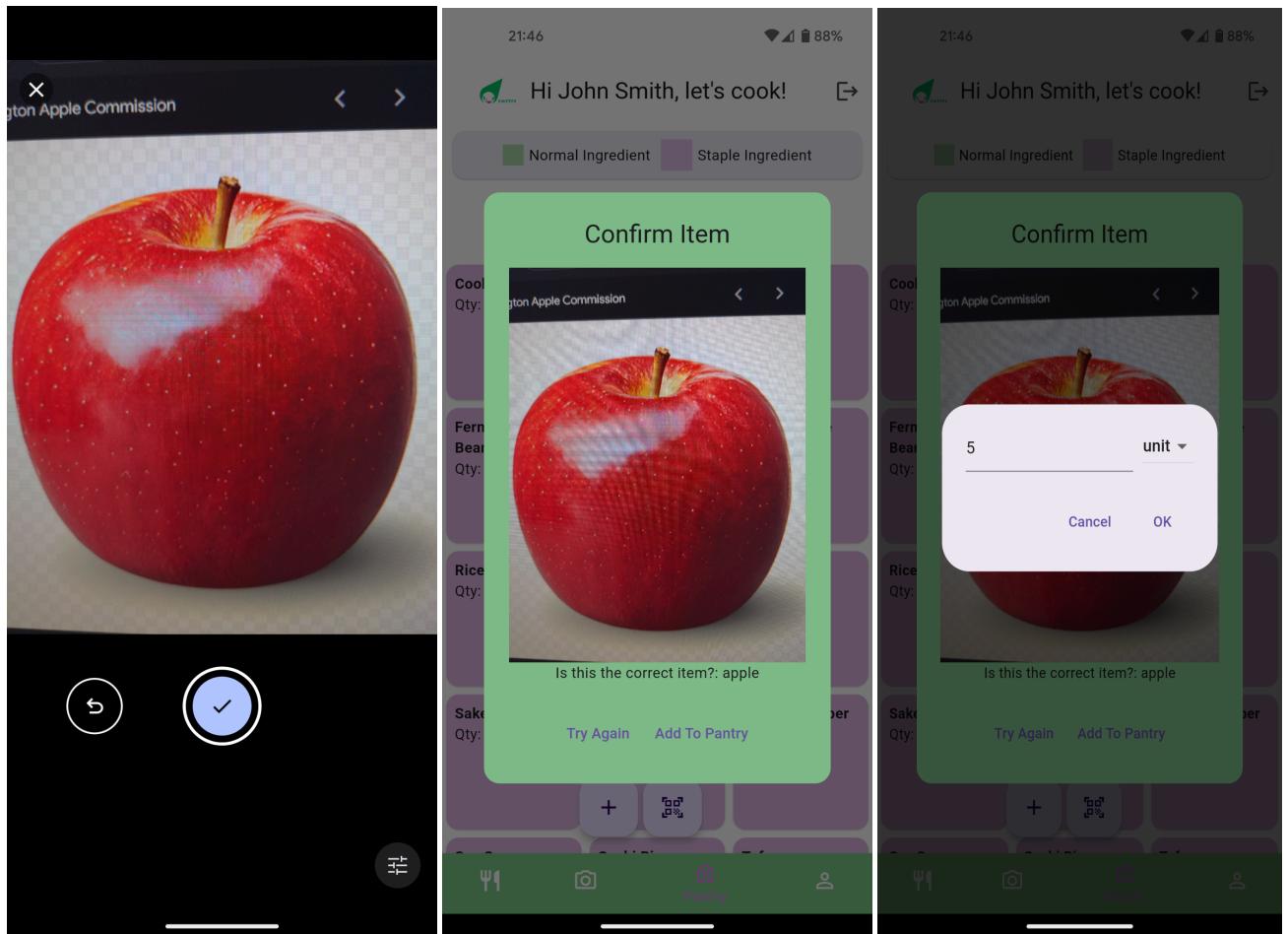
5.11 Computer Vision Food Detection

Then onto our next function, if you press the camera button on the navigation bar or swipe the screen, you will end up on our computer vision module.

If you give it permissions to access your camera, you can take a picture of any ingredient or food item, where it will be uploaded to our microservice which attempts to identify what it is through computer vision.

5.11.1 Food detected example

An example is shown below of how an apple is being detected and added to your pantry. It will also prompt you for a quantity if you confirm that the item detected is correct.





5.12 Pantry View

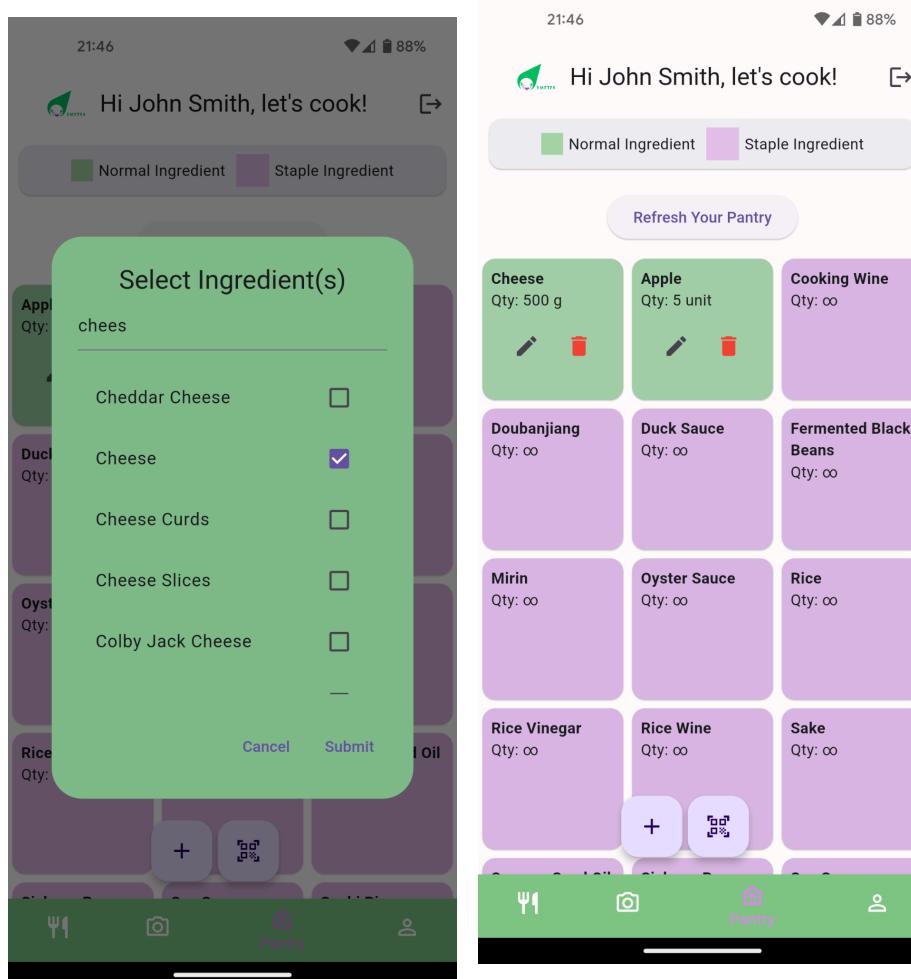
Here you can see our implementation of a pantry. You are able to see which ingredients are normal which have a quantity and which ingredients are a staple ingredient which are permanent and will never be used up unless you opt out of that cuisine later.

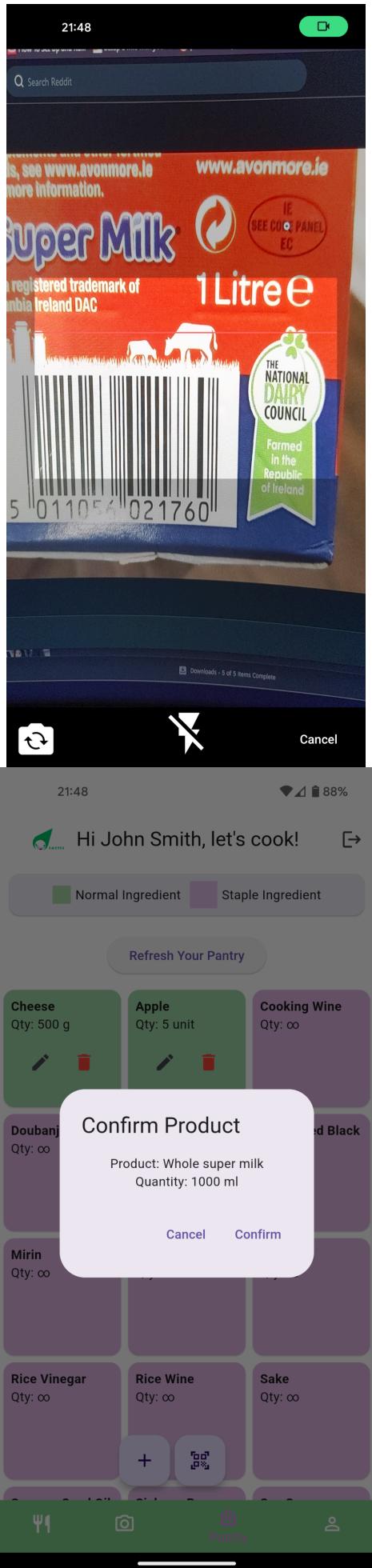
Then at the bottom there are 2 floating widgets, which are shown by the “+” icon and a scanner icon.

5.13 Manual Ingredient Addition

The “+” icon serves as our back up option, where you can select ingredients to add to your pantry manually if no other options work for you.

As you can see below, adding Cheese to the pantry was successful as its added as a normal ingredient.





5.14 Barcode Scanning

The other option is our Barcode scanning feature, using this feature you can scan almost any barcode related to food or ingredients and using OpenFoodFacts, we can use your barcode to grab its name and quantity if available.

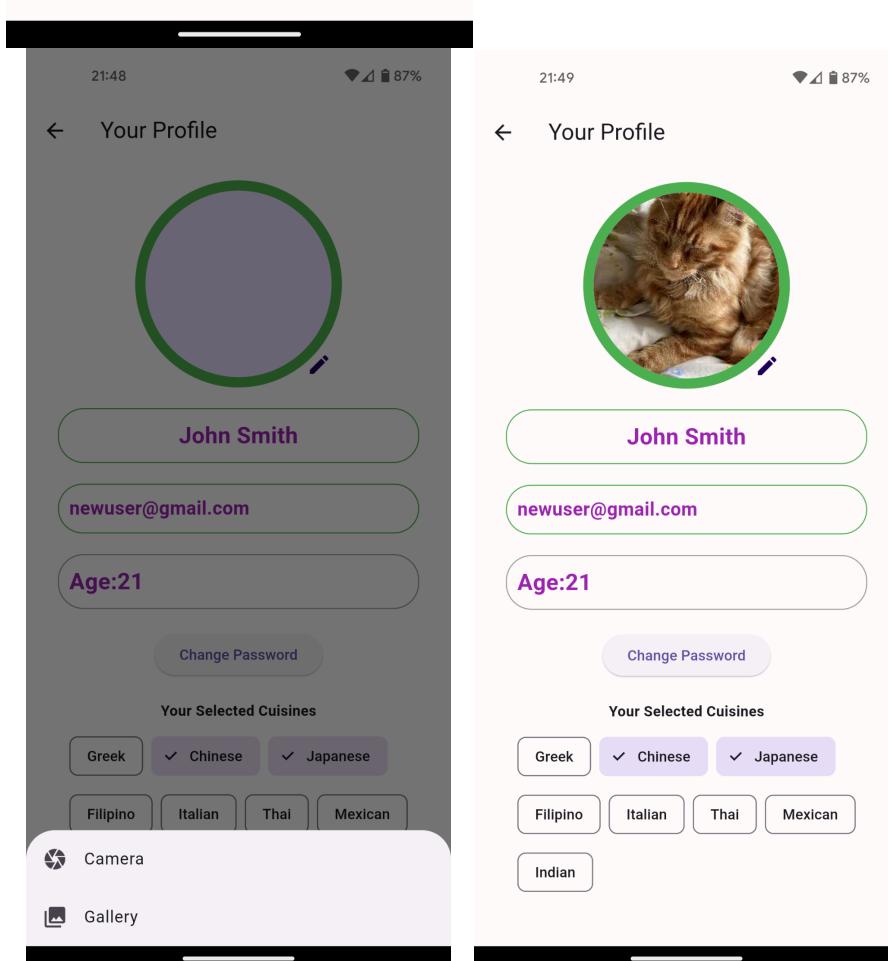
You will see below that after scanning you will be prompted to confirm the product and its amounts before it is added to the pantry.

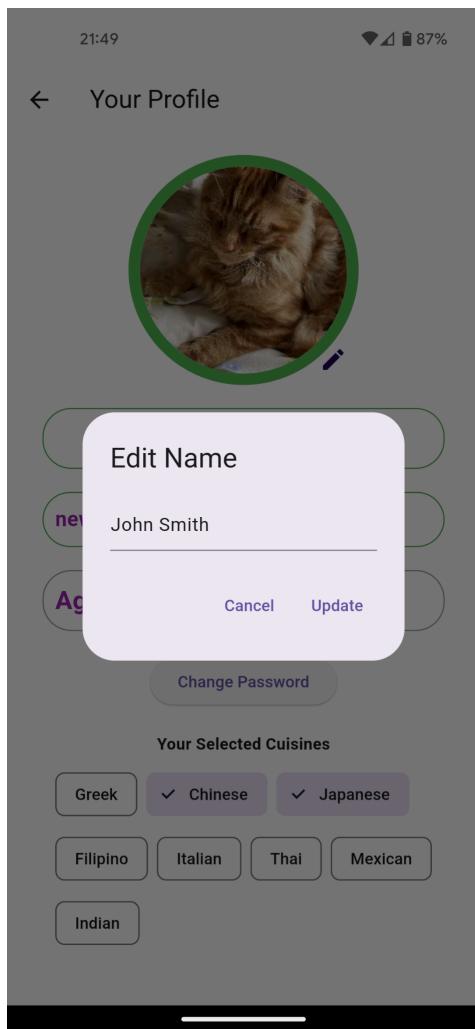




5.15 Profile Page

Next is our Profile page,
Here you will be able to view information about yourself
and have the opportunity to change it.
You can add a profile picture by via or gallery,

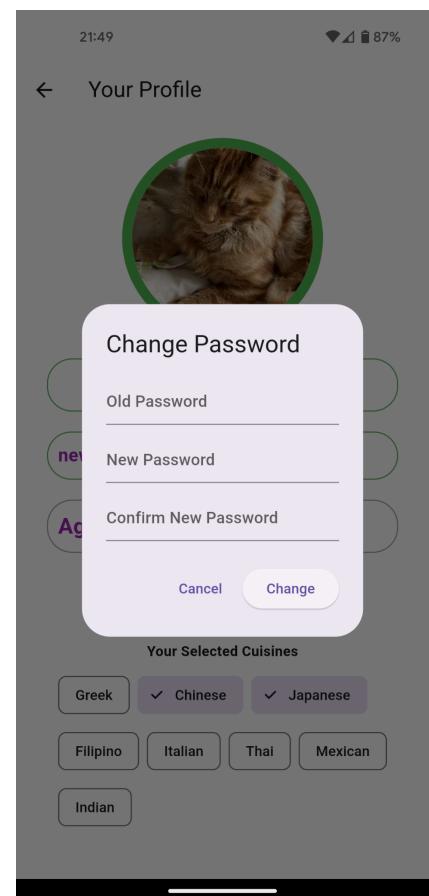
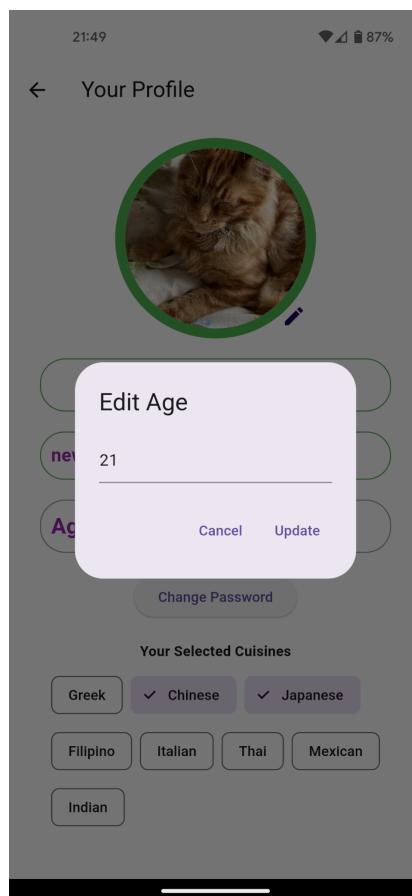
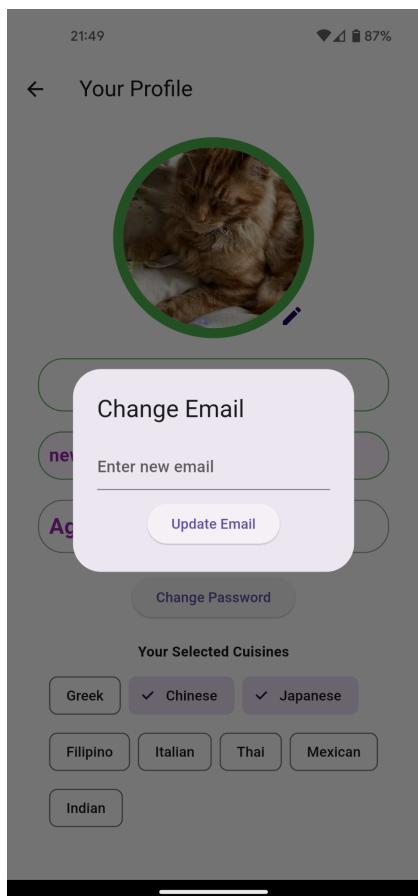




5.15.1 Profile Edit Examples

You are also able to tap any of the fields like your name, email or age in order to change it. You are also able to change your password from here, however changing email or password is a sensitive matter so you will be prompted to verify your password or login again.

It will also send a verification email to your new email as well as the old email which can revert the change.



5.16 Cuisine Change/Selection

As discussed at the beginning, you are also able to change your selected cuisines which affect your staple ingredients in your pantry. We will be changing to Mexican cuisine to demonstrate.

As you can see in the pantry image below, our staple ingredients have been updated to include staple ingredients from the Mexican cuisine that's available from our recipes.

