

Nutrition App Design Document

1.0 App Objective

The objective of the Nutrition App is to help users create meals with the ingredients at home while giving users the ability to set ingredient reminders to complete said meals.

2.0 App Requirements

2.1 App API/OS requirement

The app runs strictly on Android OS and requires an API level of 19.

2.2 Permission requirements:

- Foreground location (Fine location is required)
- Background location
- Internet
- Network state
- Wake Lock

3.0 App Functionality

3.1 Data Collection

- Since the app uses geofencing, the user's location needs to be tracked in the foreground and background.
- User's email address will be used to sign in using Firebase API
- App uses FusedLocationProvider API, which may use GPS in addition to WiFi to track location

3.2 Data Storage

- Data will be stored using the Room library, which is an overlay of SQLite.
- In accordance with best practice, a repository will be used as an intermediate between the database and UI/ViewModel.

3.3 User Input

The app will facilitate user input of the following data

- User login using Firebase API
 - Email and password
- Ingredient items
 - Grocery products to be searched
- Locations on Google maps
 - Select point/point of interest on map

3.4 Network Request

- Data is sourced from Spoonacular API, which is available through RapidApi.
- GET request: Uses 2 endpoints from the Spoonacular API to retrieve grocery products and recipes
- POST request: Uses post request to identify ingredients in a grocery product
- Note that network request are limited to 50 requests per day as part of RapidApi's "freemium" APIs
- Network requests are made using coroutines to prevent hanging

4.0 Milestones

4.1 Functionality

- User's data is saved based on login credentials
- User can search for grocery products and receive products with their full description
- User can mix and match grocery products to find recipes containing said products.
- The user can set reminders for missing ingredients using geolocation with or without a recipe selected.
- The app will make saving ingredient reminders easier by auto filling missing ingredients from recipes.
- The user will be able to edit the auto filled text to make reminders more accurate.
- The edit text then becomes the data source and not the autogenerated texts when saving reminders
- Notification is sent when user enters geofence

4.2 User Interface

- User interaction with the app is simple and intuitive. Warning toast messages are displayed when the user is incorrectly using app functions.
- App should have consistent styling and use Material Design as recommended by Google
- Location permission is requested before using geolocation and Google Maps.
- Logout button is always available minus Login Screen
- Images contain descriptions for visually impaired users
- Resource taxing operations like network requests are done in a background thread to prevent hanging

4.3 Data Storage

- Data survives configuration changes
- A single database and repository are used to minimize memory use

5.0 Limitations

- The Google Maps API does not currently mark groceries as point of interest, so I was not able to highlight groceries in my Google Maps.
- Identification of ingredients in a grocery product often leads to identification of incorrect ingredients such as inputting lemon cake produces two ingredients: lemon and cake. There is no uniform pattern in grocery products that would allow me to generalize their description.

6.0 Snippets of App Use with Descriptions

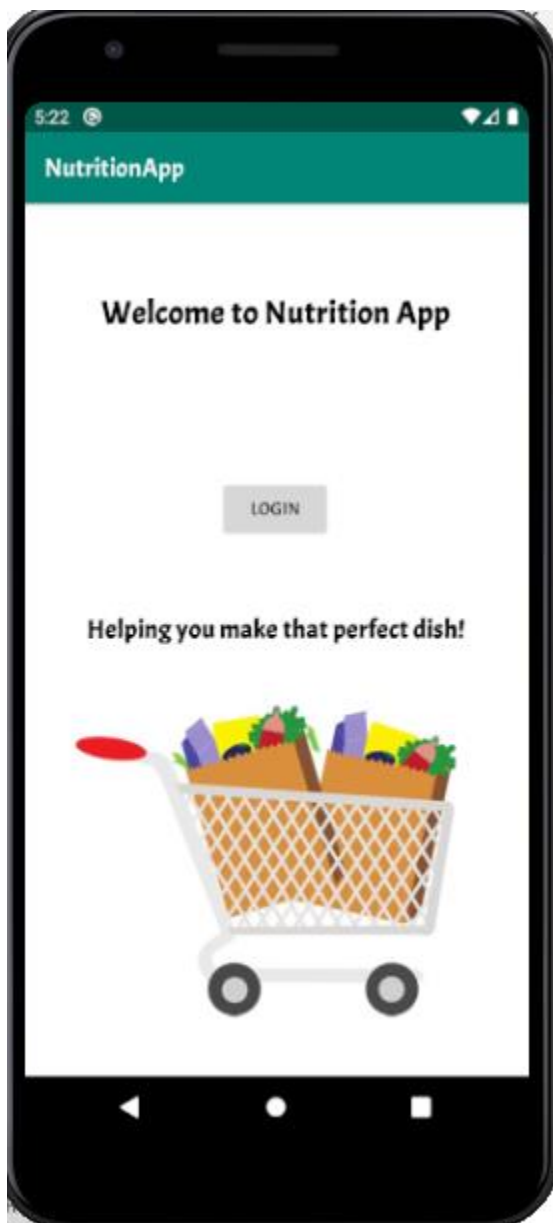


Fig 1. Login screen, uses Firebase to verify login credentials

Fig 2. Main screen for user interaction



Fig. 3 User searches for a grocery product i.e “Apple” and a list of results from Spoonacular API is presented

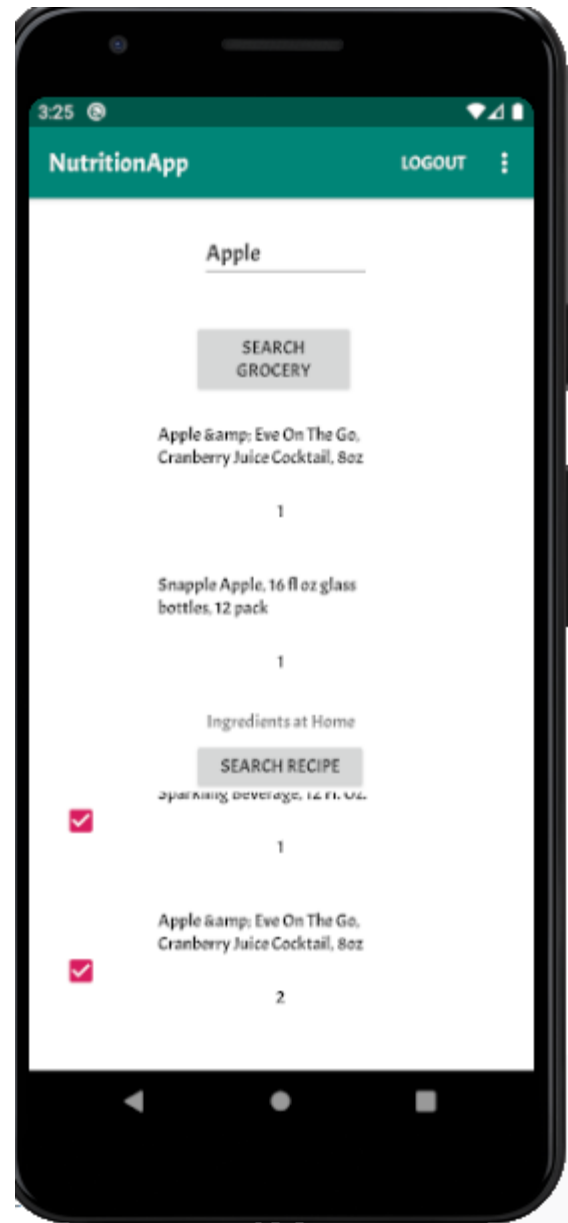


Fig 4. User selects multiple grocery products

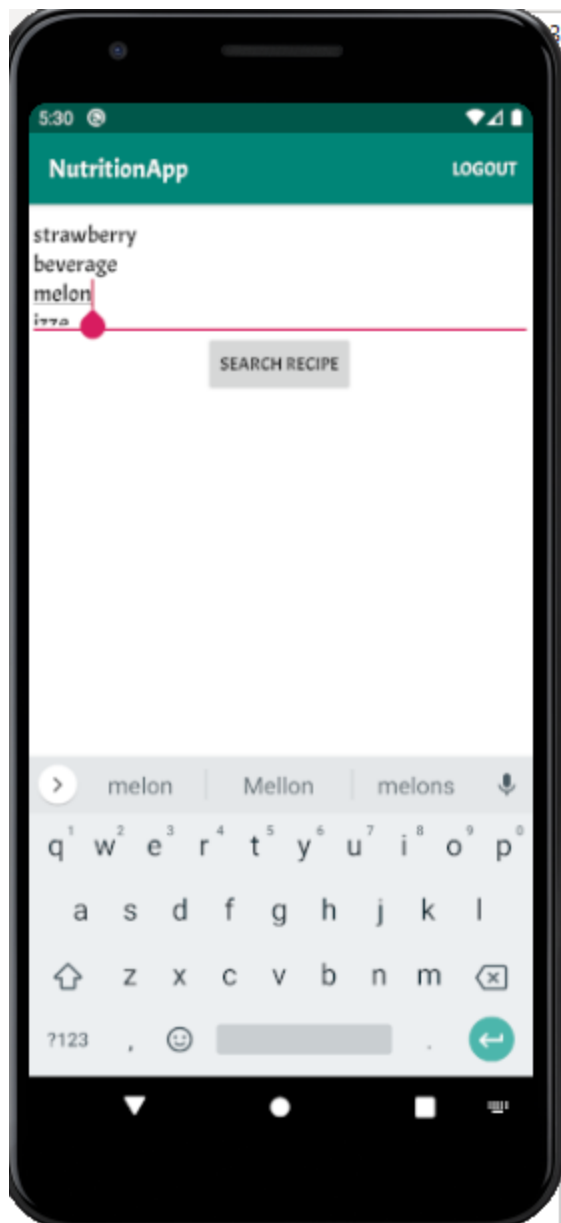


Fig 5. Clicking on “Search Recipe” from previous figure brings you to a new fragment with the ingredients listed. Ingredients can be edited before searching for a recipe

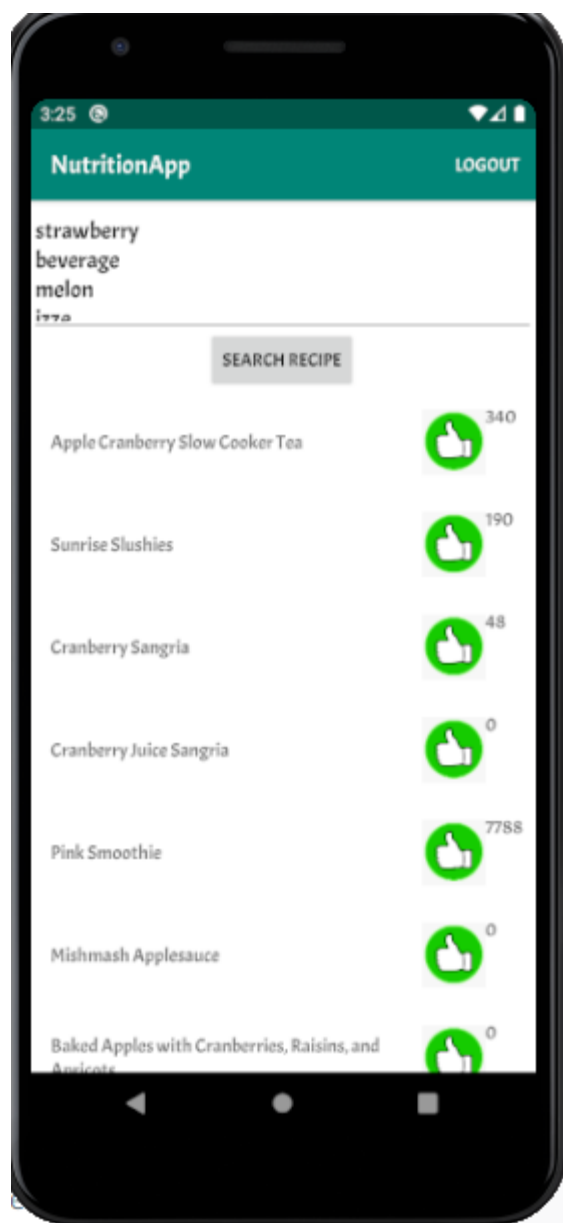


Fig 6. Clicking “Search Recipe” produces a list of recipes with a number of likes next to each recipe name



Fig 7. Clicking on a recipe brings you to a new fragment that has recipe instructions as well as a list of missing ingredients. Scrolling down triggers motion layout



Fig 8. Clicking "Find Groceries" from figure 7 brings you to the current screen. The list of missing ingredients can be edited.

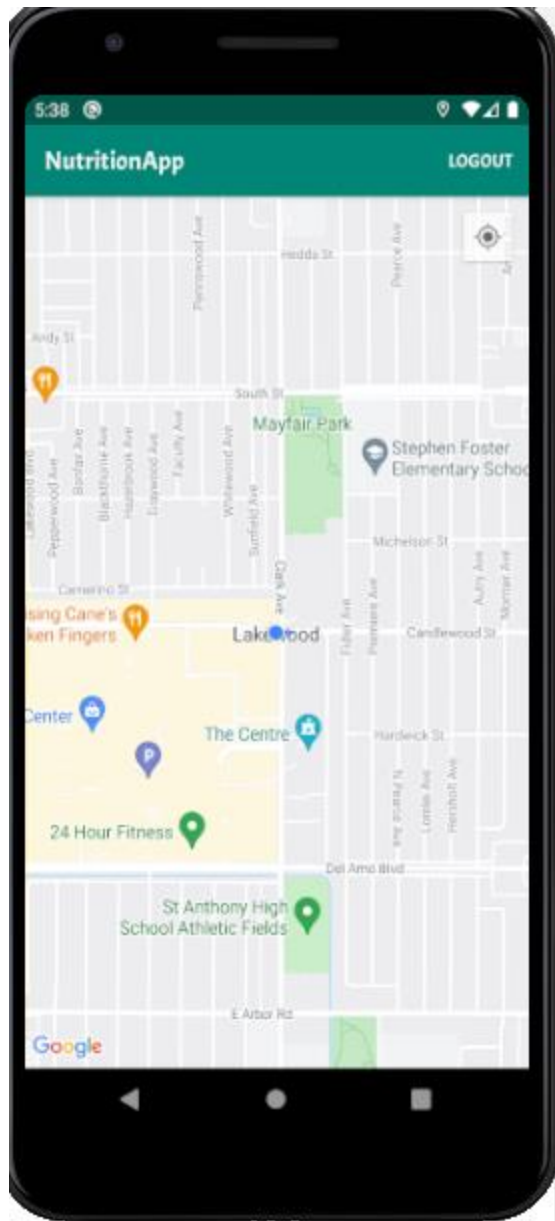


Fig. 9 Clicking on “Find Grocery” from the previous figure brings you to the current fragment. Clicking on a point or point of interest brings you back to previous fragment/screen.



Fig 10. Clicking “Save Reminder” will bring you back to the Main screen (Fig. 2). Clicking the “Save Reminder” button triggers a background request before navigating to the Main screen.

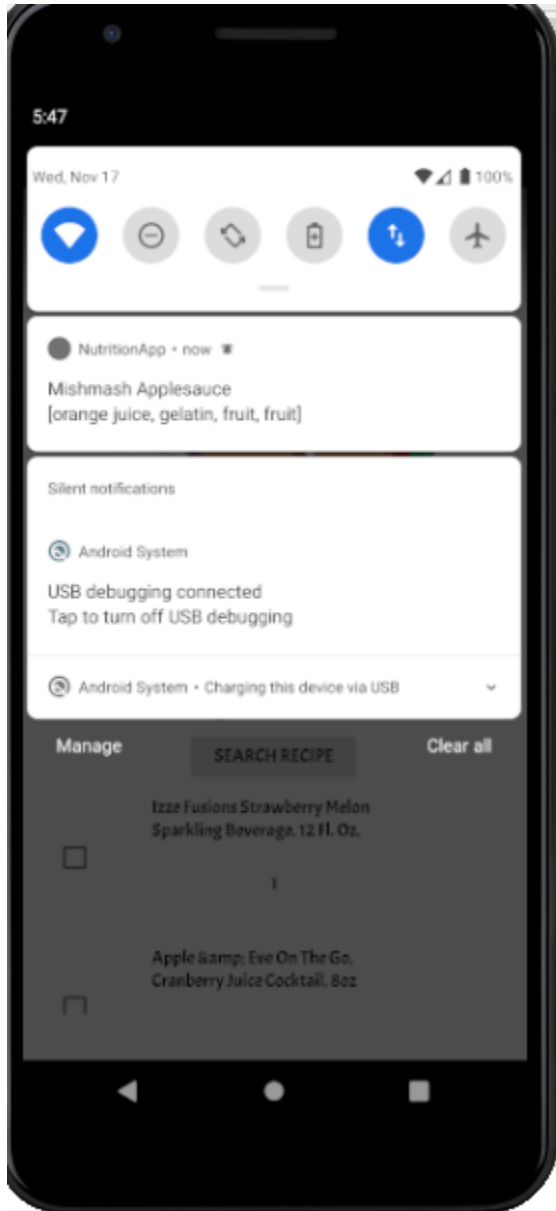


Fig 11. Notification is sent when user is within the geofence radius

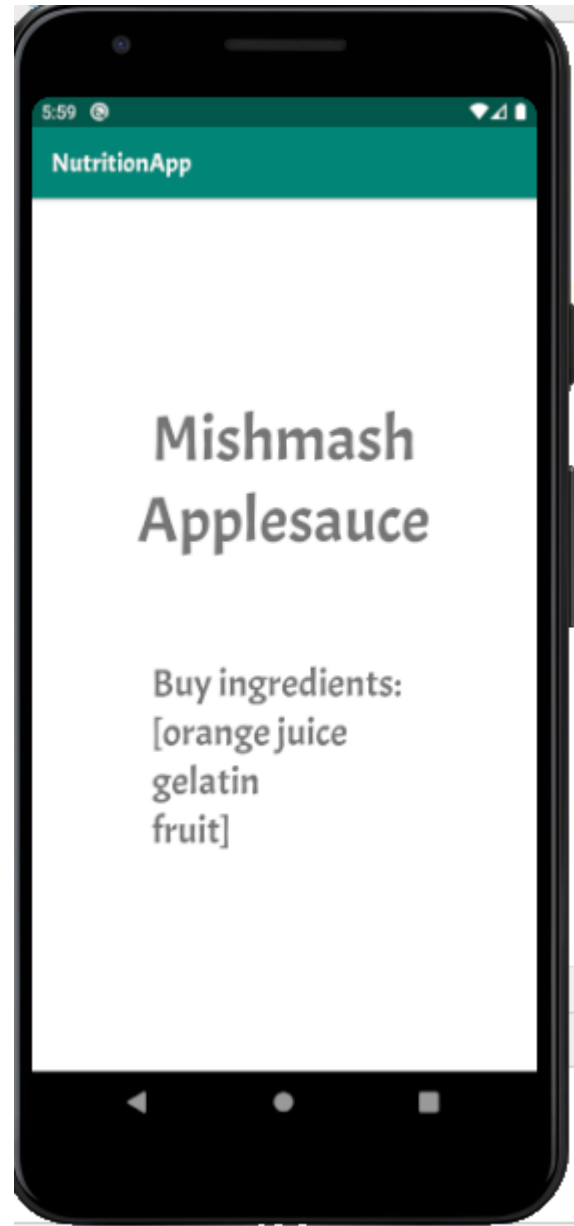


Fig 12. Clicking on notification sends user to an activity with the reminder

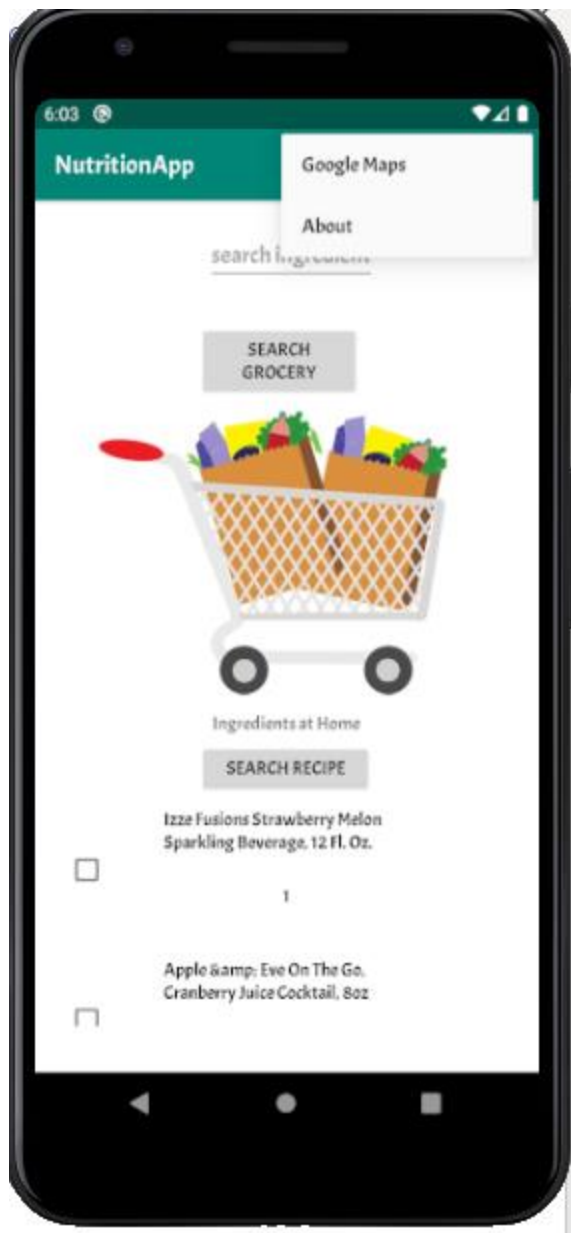


Fig 13. Clicking on overflow menu gives two menu items. Clicking on "Google Maps" brings you to Fig. 10



Fig 14. About fragment describes App's functionality

7.0 Workflow of Nutrition App

