FIT5046 - Assignment 3

Android Application Implementation

HealthPlus: Manage your calories intake at the fingertips

Group 3

Semester 1,2024

REPRESENTATIVE

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1. Proposed Functionalities and Screens

1.1. Comparison with Initial Proposal

Table 1. Main Functionalities Comparison Table

Functionalities in Proposal	Changes	Justification	Status
Home Screen	Remove the three buttons and replace it with the randomly suggested meal recipe functionality.	To introduce meaningful information using retrofit and reduce redundancy (i.e., the three buttons have a similar functionality with the bottom navigation bar).	Fully Implemented
Navigation drawer	Implemented as Bottom Navigation Bar instead of Navigation Drawer.	The application only has 3 main functionalities.	Fully Implemented
Feature 1: Energy Calculation	Remained as stated in the proposal with proper redesign in user interface and workflow.		Fully Implemented
Feature 2: Food's Nutrient Comparison	Omitted	Judging from a practical aspect, this feature is considerably unbeneficial to the end users in long term usage.	Not Implemented
Feature 3: Food Scanning Feature	Omitted	Based on the feasibility and client expectation, this feature has been removed from the scope due to time constraint.	Not Implemented

Table 2. Advanced Functionalities Comparison Table

Advanced Functionalities in Proposal	Changes	Status
Google Authentication	Remained as stated in the proposal, added with an extension feature of sending verification email for new users.	Fully Implemented
Firebase Database	Remained as stated in the proposal. An additional feature of utilising Firebase Authentication is also implemented instead of using traditional local database approach.	Fully Implemented

Table 3. Additional Feature Table

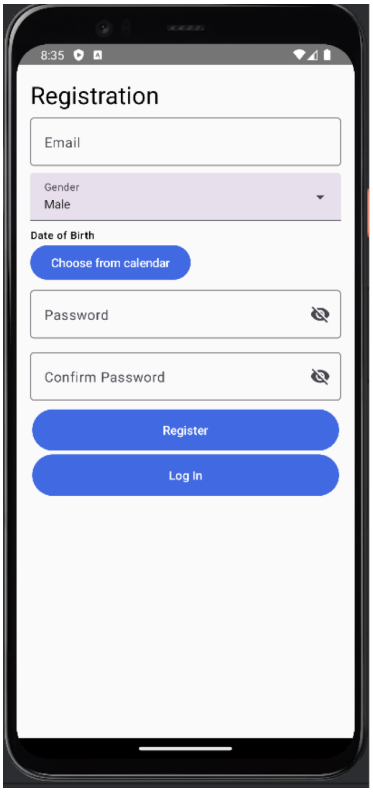
Additional Feature	Justification	Status
Added Feature: Randomly suggest a meal recipe	This feature will enhance the user retention factor to the android application as the suggested meal recipe will always unique (i.e., the public meal API contains thousands of data).	Fully Implemented
Added Feature: Storing Recipes in form of Notes	With regards to daily usage, taking regular recipe notes promotes app usage and interaction.	Fully Implemented

1.2. Implemented Functionalities and Screens

Table 4. Main Screens Table

Screen Number and Name	Components	Implementation Status
#1. Registration Screen: Upon first usage, new users are required to complete a registration form consisting of basic personal health information such as email, password, gender, and date of birth. Password guidelines followed: 1. The password must be at least 8 characters long. 2. The password must contain uppercase letters, lowercase letters, numbers, and symbols. (Microsoft Support, 2024) Form design guidelines followed: 1. Keep forms concise. 2. Employ contrast for better visibility. 3. Use a single column layout. 4. Use clear labels and instructions. (Soegaard, 2024)	**Required Android Key Components** • Date Picker for Date of Birth entry. • Drop down box for Gender selection. **Advanced Feature:** • Online real-time database: Saving registration data to online real-time database (Firestore). • Firebase Authentication with Email/Password.	Fully implemented

Figure 1. Registration Screen with its Completed Registration Form



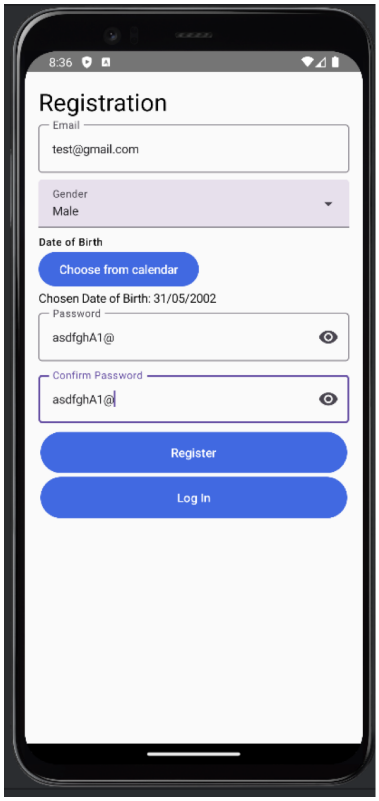


Figure 2. Date Picker before Selection

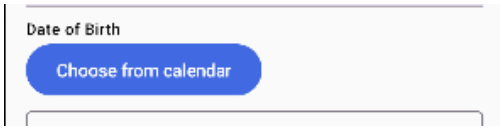


Figure 3. Date Picker during Selection

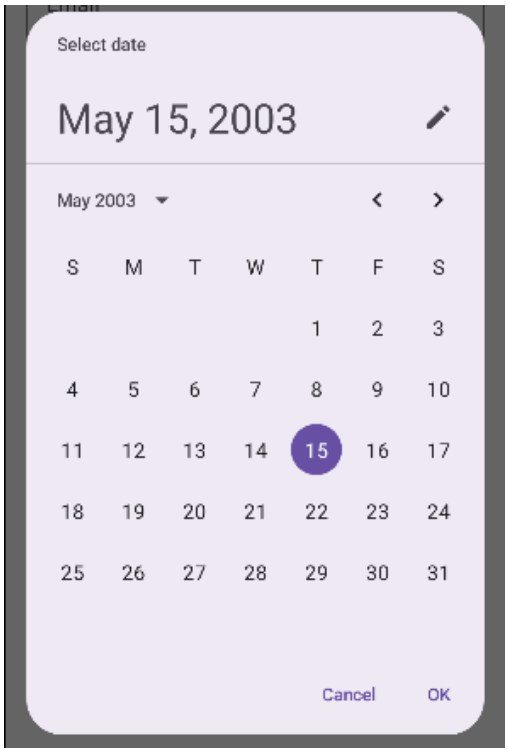
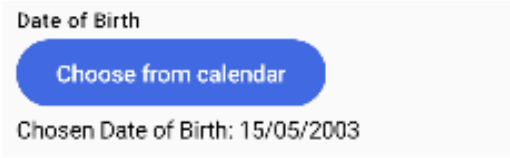


Figure 4. Date Picker after Selection



Screen Number and Name	Components	Implementation Status
#2. Login Screen: Once completed the registration process, users can navigate to the main login page to resume their login journey for the second time and so on.	**Advanced Feature:** • Google Authentication promotes an incredibly convenient signing on alternative, hence enabling effortless login for future usage.	Fully Implemented

Figure 5. Login Screen

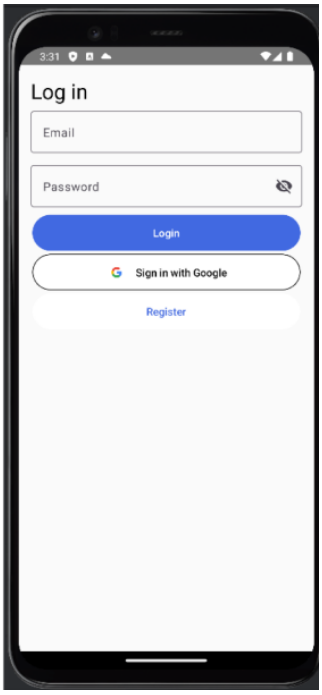


Figure 6. Completed Login Form

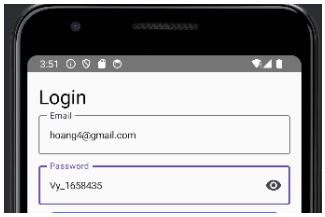
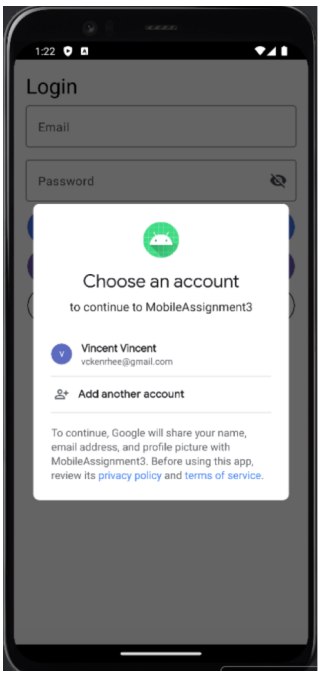
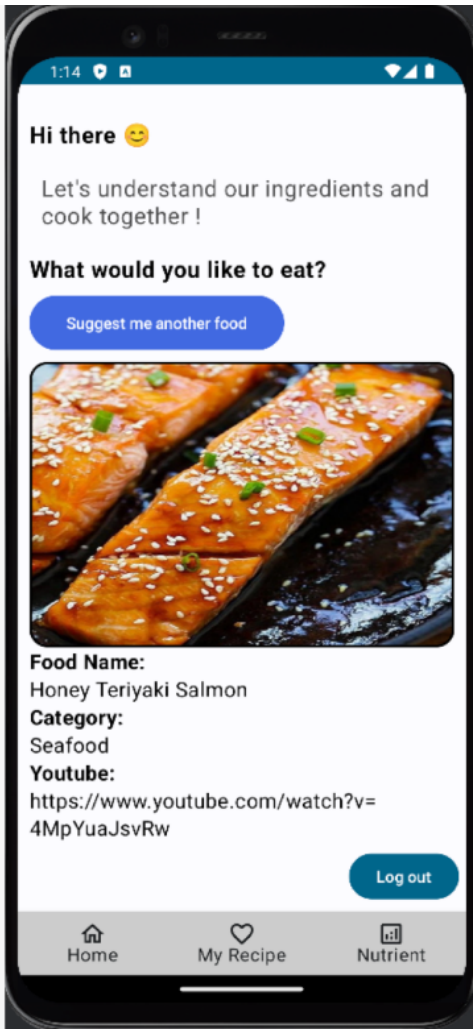


Figure 7. Google Authentication Popup



Screen Number and Name	Components	Implementation Status
#3. Home Screen: Randomises a particular food recipe and its ingredients from a public API, change the image after a few seconds through another API.	**Required Android Key Components:** • Retrofit: Requesting a different food image for each request. • Bottom Navigation Bar: provides access points for all main functionalities in the application.	Fully Implemented

Figure 8. Home Screen



Screen Number and Name	Components	Implementation Status
#4. Nutrient Selection Screen: Allows users to select two types of food items and add their amount.	**Required Android Key Components:** • Dropdown Box	Fully Implemented

Figure 9. Nutrient Selection Screen

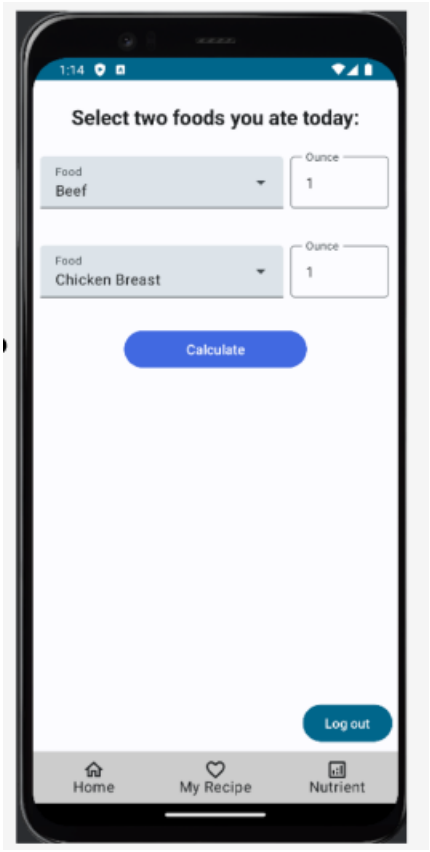
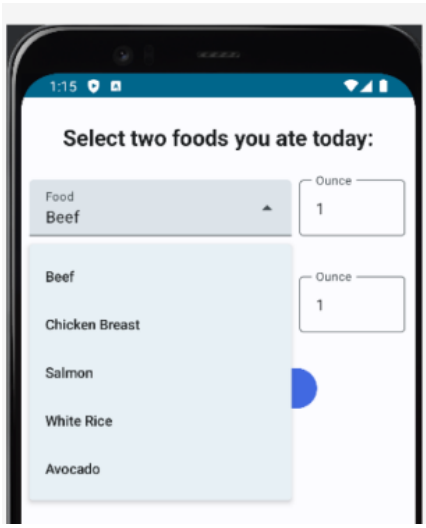
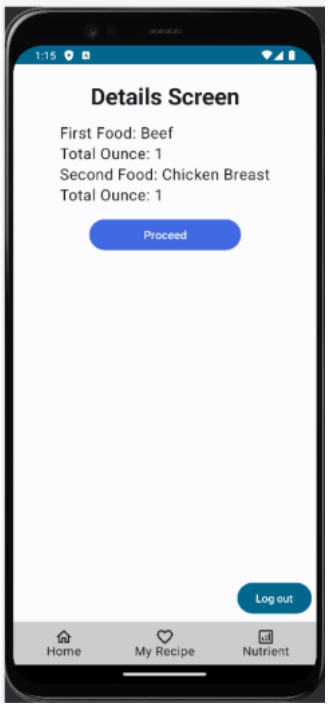


Figure 10. Drop-down Box Component



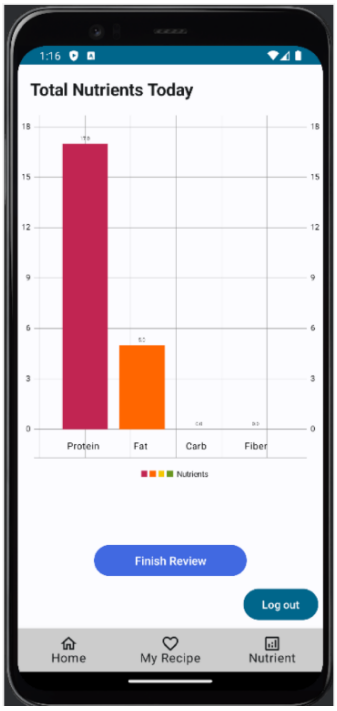
Screen Number and Name	Components	Implementation Status
#5. Nutrient Confirmation Screen: Allows users to confirm the food details following a summary of the food they've chosen.	**Required Android Key Components:** • N/A	Fully Implemented

Figure 11. Nutrient Confirmation Screen



Screen Number and Name	Components	Implementation Status
#6. Nutrient Calculation Result Screen: Breaks down the total nutritional value into 4 main basic nutrients (protein, fat, fibre, and carbohydrate) in a form of a bar chart.	**Required Android Key Components:** • Bar Graph: Visualizes nutritional value into 4 main nutrient types.	Fully Implemented

Figure 12. Nutrient Calculation Result Screen



Screen Number and Name	Components	Implementation Status
#7. Recipe Notes Screen: Allows users to add and store their recipes in the form of note cards.	**Required Android Key Components:** • Lazy column: To make the app more interactive, a scrollable, expandable list is built on top of the lazy column, offering more control over content editing. • Room database: All recipe notes are stored and retrieved directly from the Room database.	Fully Implemented

Figure 13. Recipe Notes Screens

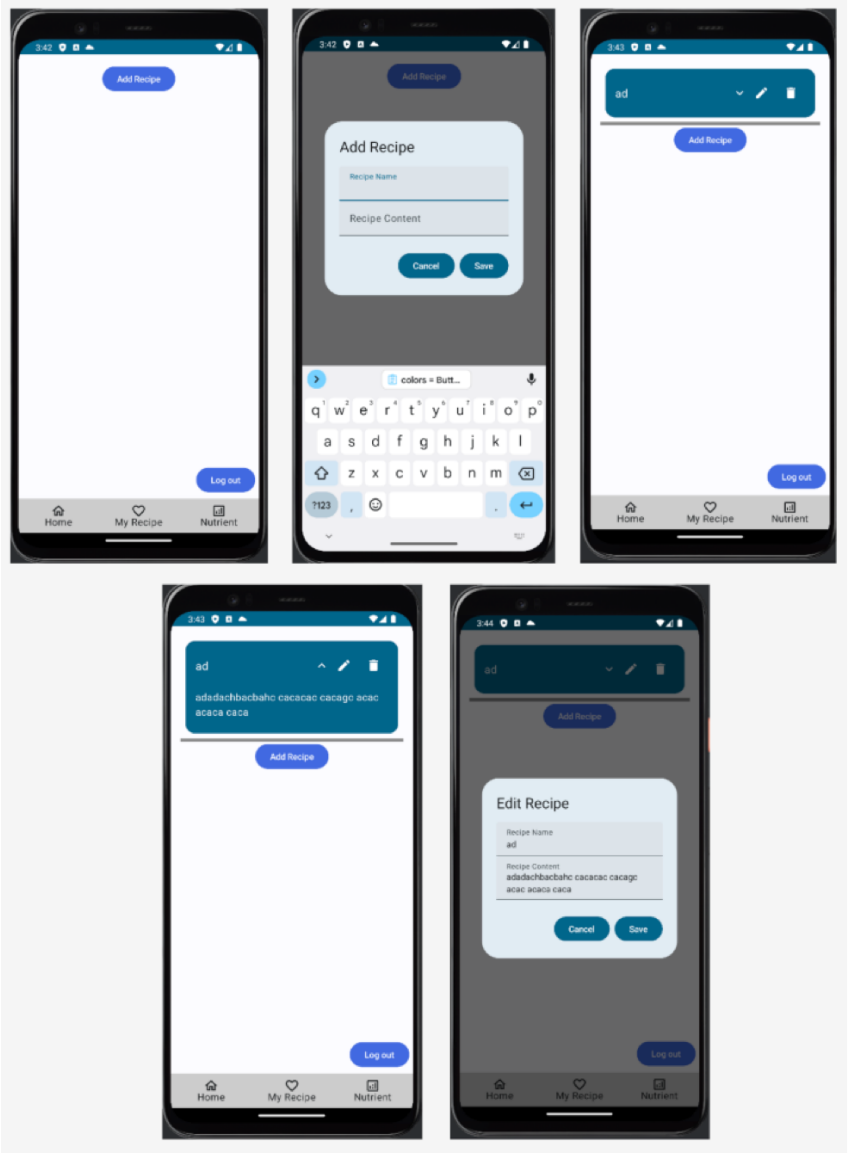


Figure 14. Adding Recipe

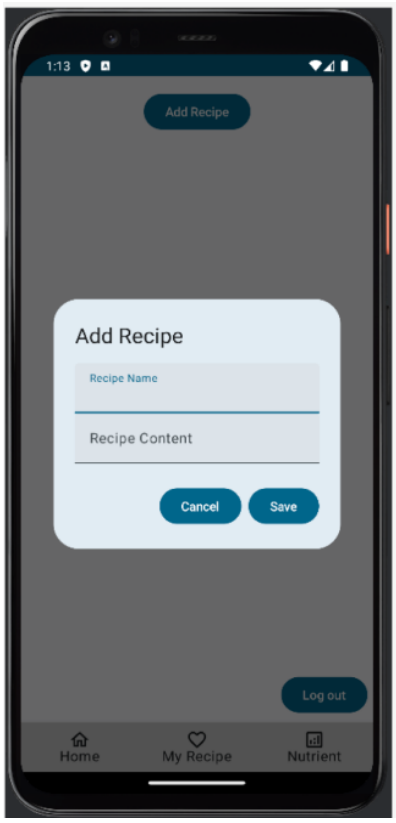


Figure 15. Recipe Note Page after Adding One Record

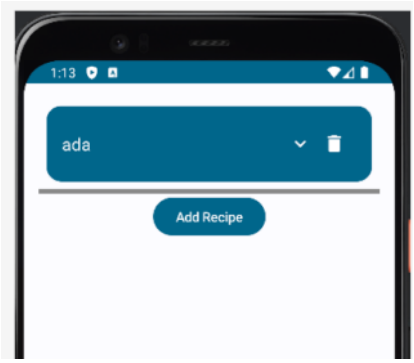


Figure 16. Expandable Note Item

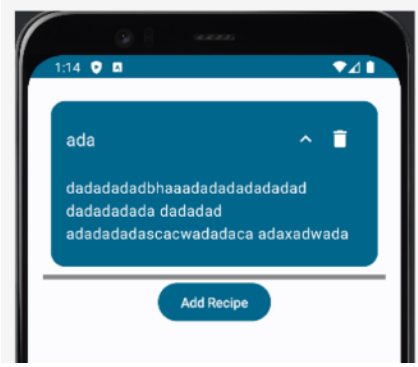


Figure 17. Edit/Update Recipe

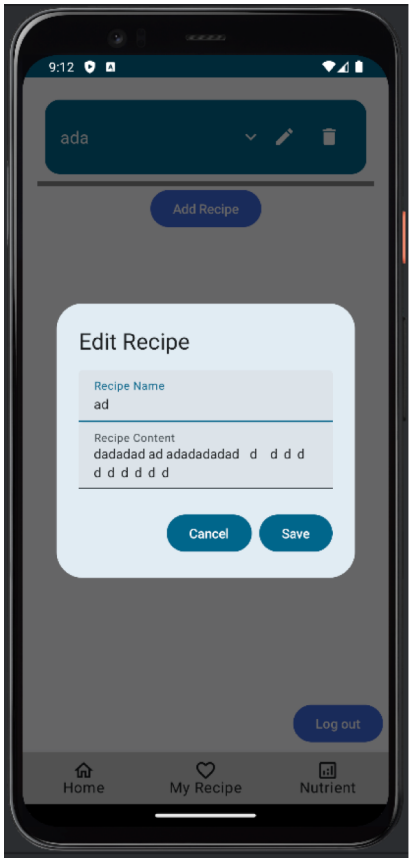
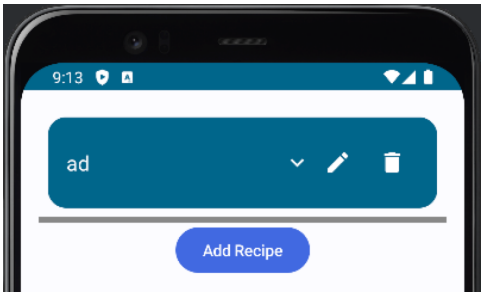


Figure 18. Recipe Note Page after Editing One Record



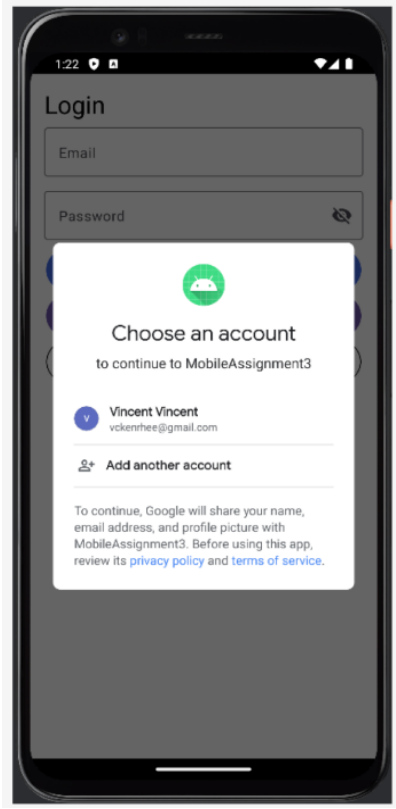
HealthPlus Entire Screens in Figma Link:
https://www.figma.com/file/n1xHTKslutAJbwR4sqw7dT/FIT5046-Android-Prototype?type=design&node-id=0%3A1&mode=design&t=9ynRm4Q3kbuAjuCk-1

2. Proposed Advanced Features and its Extension Functionality

2.1. Google Authentication to Manage the Login to the App

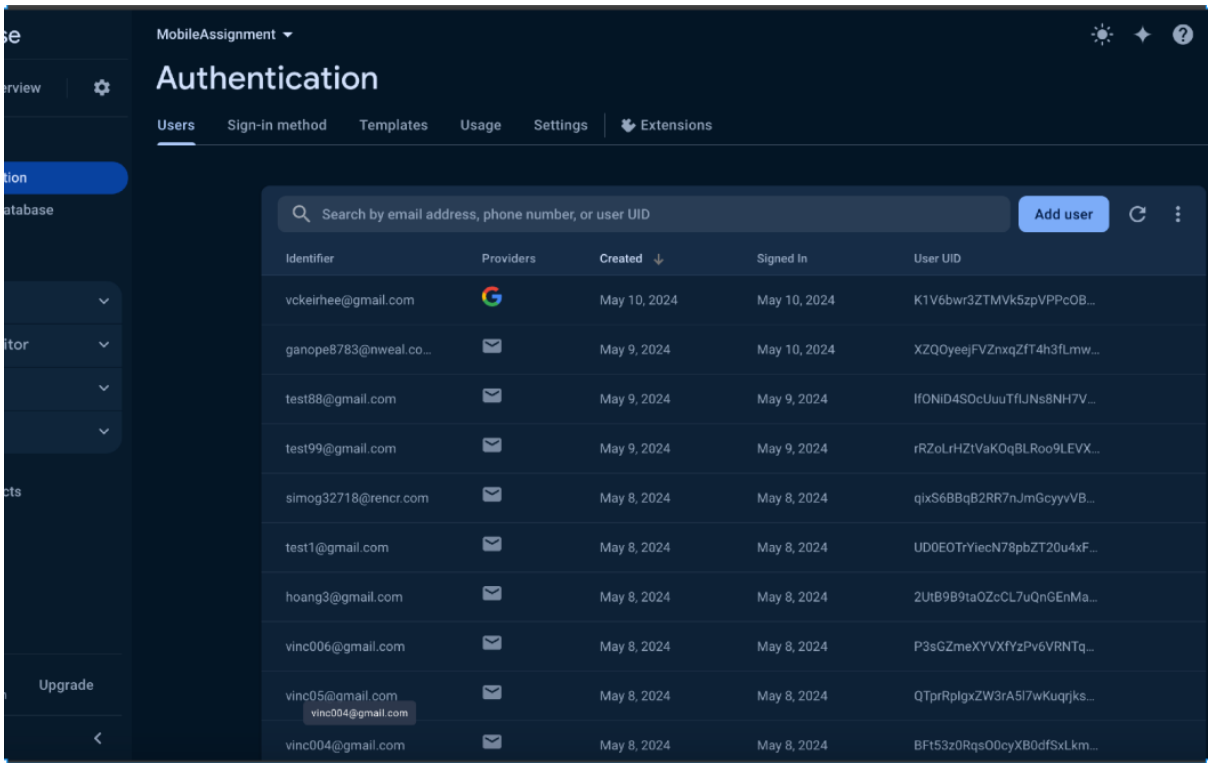
With one click Sign-in, the user's Google credential data will be passed to Firebase to successfully authenticate the user upon entry to our app.

Figure 19. Google Authentication Suggestion Pop-up Box



Extension: We have also implemented Firebase authentication (Email/Password) for the ease of data validation, password verification, and password storage security.

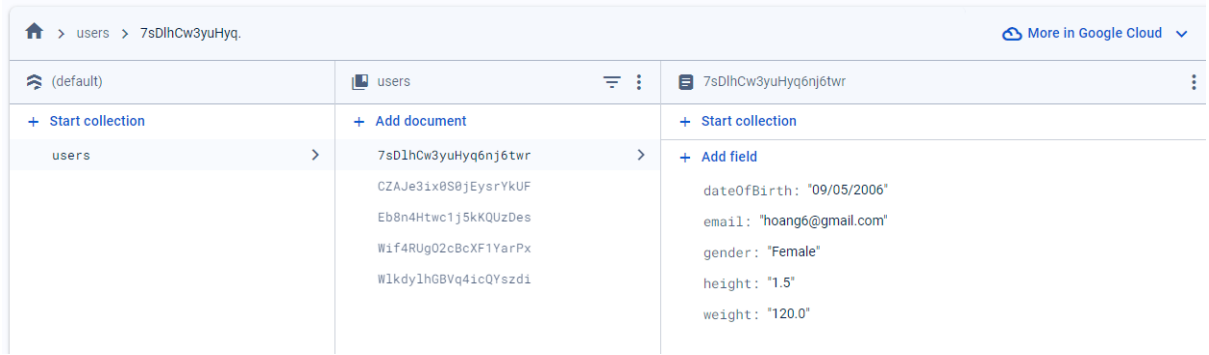
Figure 20. Snapshot of Firebase Authentication Records for both Google and Email/Password Category



2.2. Google Firebase Database to Store Important Data

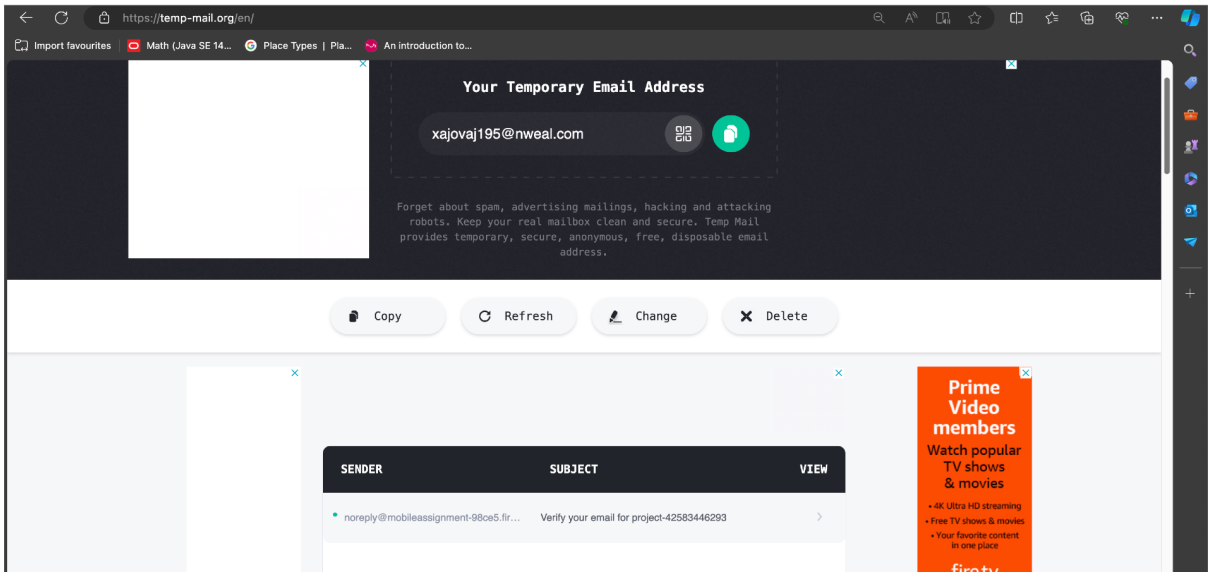
In Mobile HealthPlus application, all registration data will be stored after users' first registration in a real-time manner into a real-time online Firebase database called Firestore. Compared to the traditional realtime database, Firestore offers offline access which provides higher availability even during poor internet connection.

Figure 21. Snapshot of "Users" Table from Firestore



Extension: From a security perspective, all first-time users will get an automatic confirmation email after completing the registration form. This secure method can prevent fake bots and spam users in the long run.

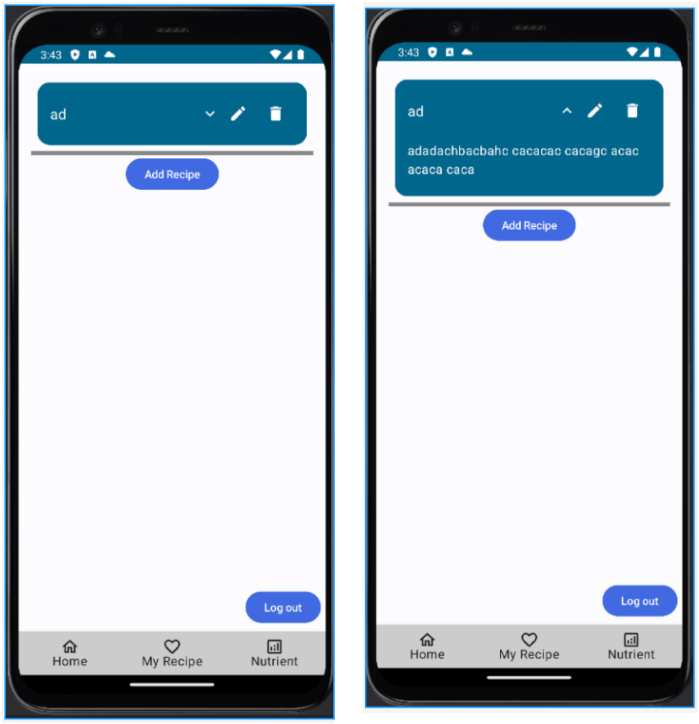
Figure 22. Snapshot of the Verification Email



2.3. Lazy Column Upgrade

The lazy column is integrated with additional plug-in to make it scrollable, and extendable for storing all long note recipes in **Screen #7** above.

Figure 23. Extendable, Scrollable List of Recipe Notes



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4. Appendix

4.1. Appendix A

Retrofit API	Link
Free Meal API	https://www.themealdb.com/api.php