Assignment 1:
Android App Design Proposal

FIT5046, Lab 02, Group 2

Gia Bao Hoang – 33801355

Abbishek Kamak Ramesh – 33526559

Peichun Shih - 33475881

1. Introduction

1.1. An Overview

The domain that our team has decided to go with is a health app which helps users to track their health and help with living a healthier lifestyle. The app can be used to track calories consumed and burnt and provide the user with a health track which will allow them to stay on top of their health.

1.2. User group

There is no specific user group for this app as it is suitable for people of all ages. The app can be used by people who are fitness enthusiasts, people who are health conscious, people who want to go on a fitness challenge and people who have health conditions to name a few.

1.3. Scope and Limitations

The scope of the app will include but is not limited to the following:

1) User profile management:

Users can create customized accounts where they can enter their metrics and goals which the app will use to track and set goals:

2) Fitness and activity tracking:

The app will be able to track or take input from users for their diet, workouts, resting calorie consumption to set goals. It will not be able to read the data directly as that will require an external wearable device which will track and sync the user data.

3) Nutrition tracking:

The app uses data sets for different foods and allows the user to enter the calories consumed. The app will not be able to automatically detect or scan meals. A feature can be worked on where packaged food can be tracked using the barcode.

4) Insights and analytics:

Insights and analytics will be provided to the user based on their activity and nutrition. Using predictive analytics, the app can estimate and recalculate goals.

5) Workout and nutrition recommendations

Based on the user's age, gender, weight, goals etc., the app can provide recommendations and workout suggestions. The app will not be able to fully customize recommendations but will suggest from a preset list.

6) Social sharing for a fitness community

Users will be able to share their progress so others can view it. Users will not be able to track or see other users' personal data. There can be a feature which helps users compete.

Limitations:

1) The app tracking will not be accurate as it requires manual input.
2) Data privacy can become an issue if not done well.
3) Advanced features require more technical implementations.
4) Lack of professional feedback (Example: Nutritionist, Coach etc.)

2. Proposed Functionalities and Screens

2.1. Proposed Functionalities

2.1.1. User profile management

- Users can edit their personal information.
- Users can enter their weight, height, desired weight.

2.1.2. Food Tracker

- Users can enter the food they eat during the day to calculate the calorie intake.

2.1.3. Exercise Tracker

- Users can enter the exercise they take during the day to calculate the calories consumed.

2.1.4. Goals and data management

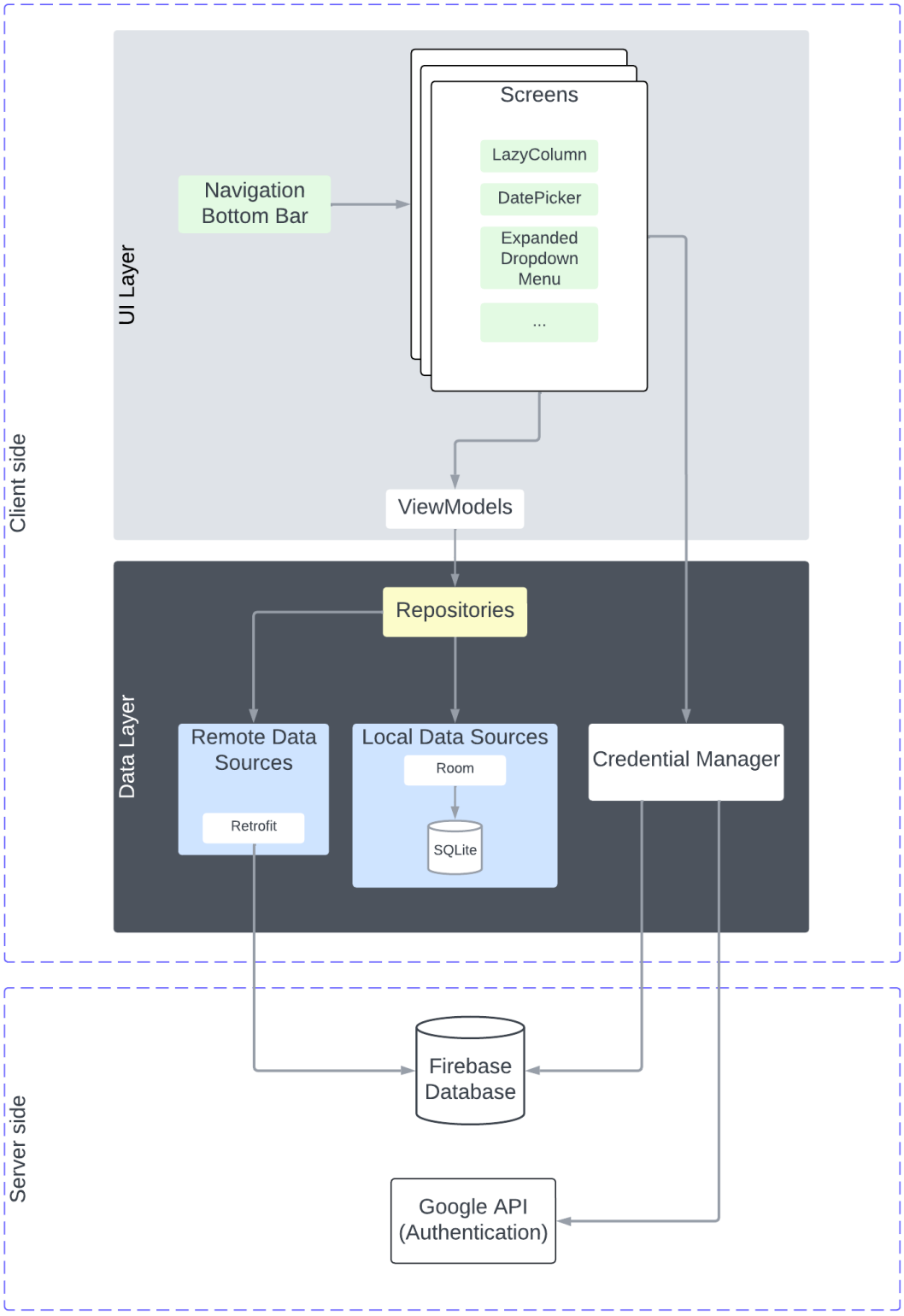
- Users can check their estimated weight and see the trend of their diet and workout from the graphs or reports provided.

2.2. Screens

The following table includes the key screens and key components used in each screen in this application (minor components like TextField are not listed).

Key Screens	Key Components
Welcome Screen	Navigation Bottom Bar
Login Screen	-
Register Screen	Date picker
Profile Screen	Expanded Dropdown Menu
Home Screen	-
Date Selection Screen	Date picker
Calorie input Screen	Room, LazyColumn
View Activity Screen	Graphs, Report
Goal Screen	Graphs, Report
Food Recommendation Screen	LazyColumn, Retrofit
Workout Recommendation Screen	LazyColumn, Retrofit
Competition Screen	LazyColumn, Retrofit

3. The system architecture



3.1 System Components

This app system will consist of a server side and a client side.

In the UI layer, the navigation bottom bar enables navigation between different screens. Each screen can contain UI elements like LazyColumn, DatePicker, and Dropdown Menu. ViewModels handle the data from the data layer and expose UI states to these screens. The screens, in turn, notify the ViewModels of events that update the states (*UI Layer*, n.d.).

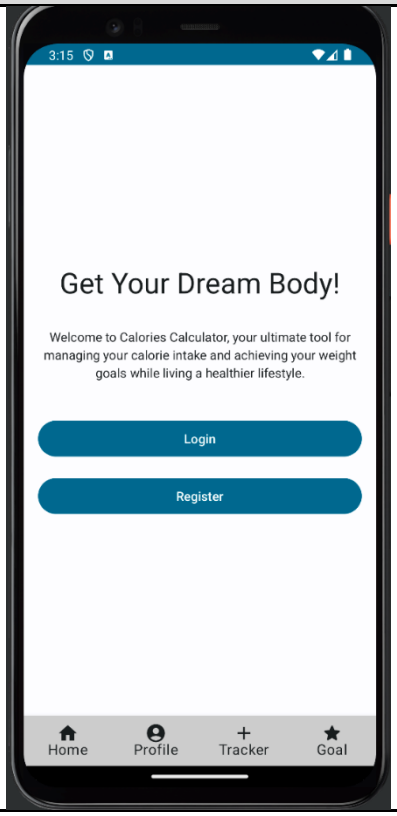
The data layer handles application data and business logic. It contains repositories, which manage data from data sources, and the credential manager, a Jetpack API that supports most major authentication methods (*Sign in Your User with Credential Manager*, n.d.).

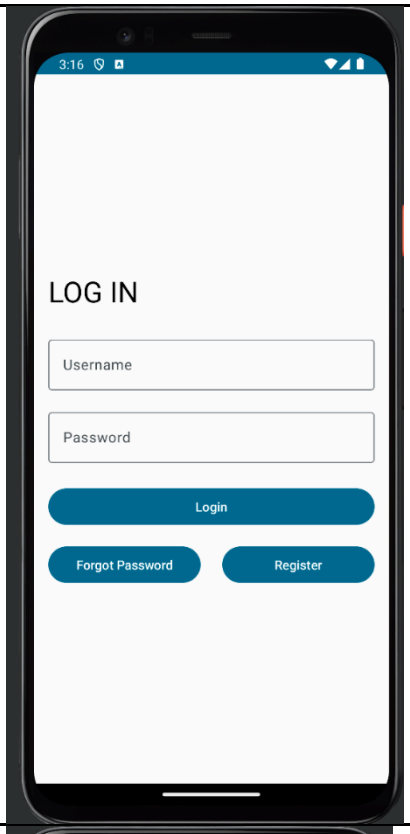
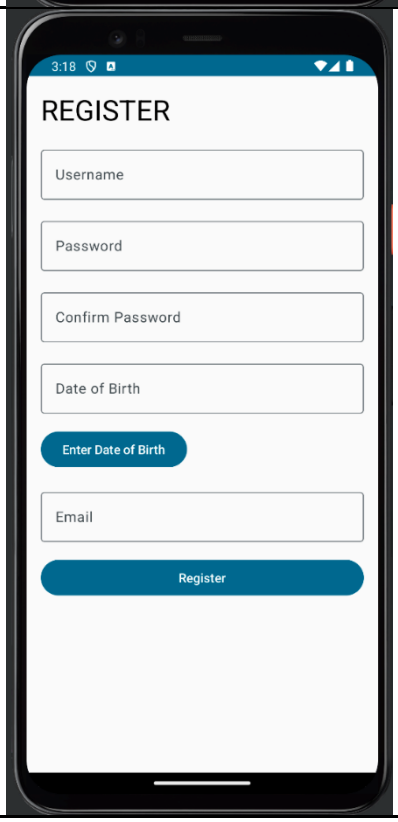
A local database will be implemented using Room, which provides an abstraction layer to access SQLite database. Retrofit will be used to connect to a remote Firebase Database, which holds business data like user credentials, weight history, food items, and exercises.

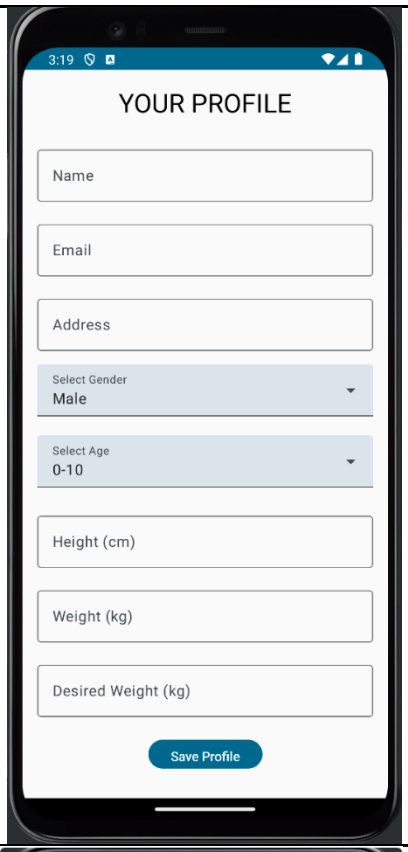
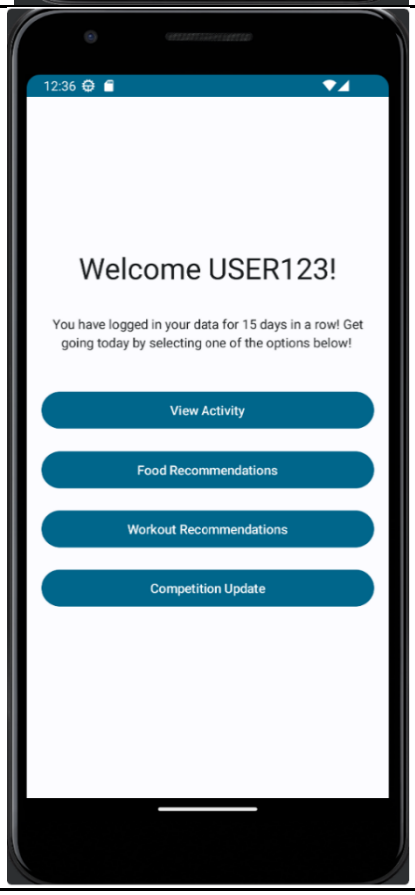
The Google API will be used with the credentials manager to implement the advanced Google sign-in feature.

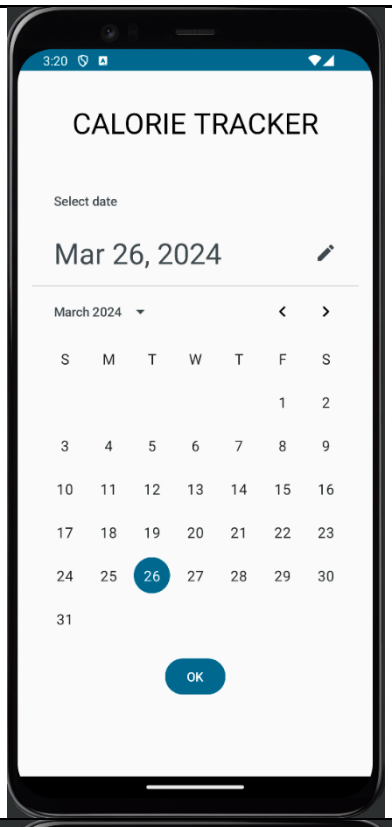
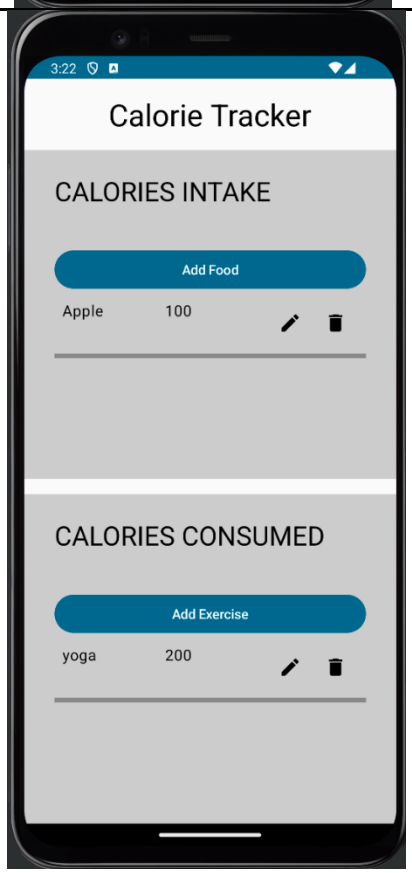
4. The UI Design and Android Prototypes

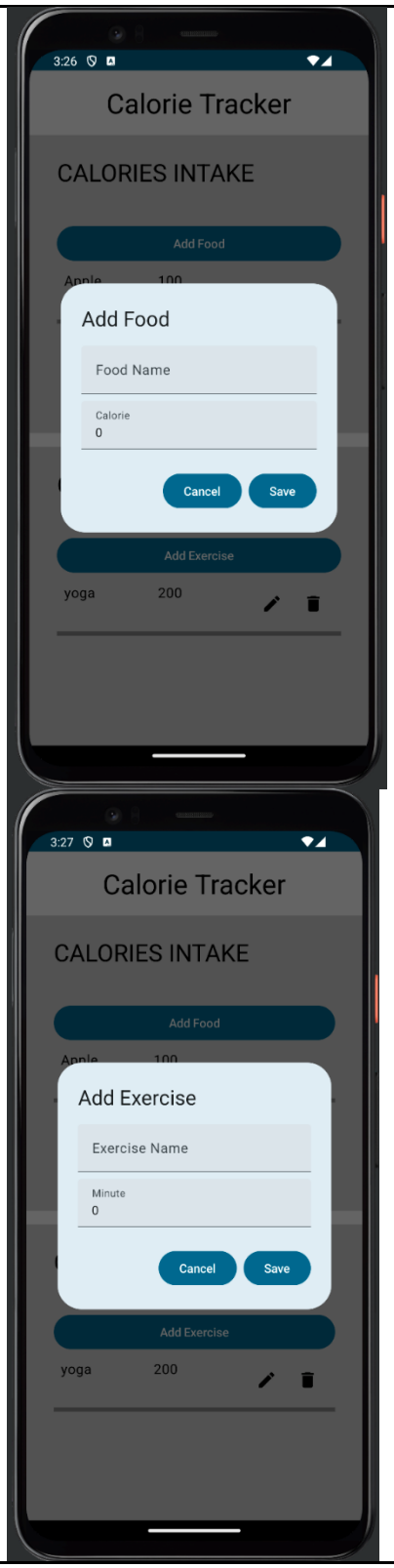
4.1. The UI Design

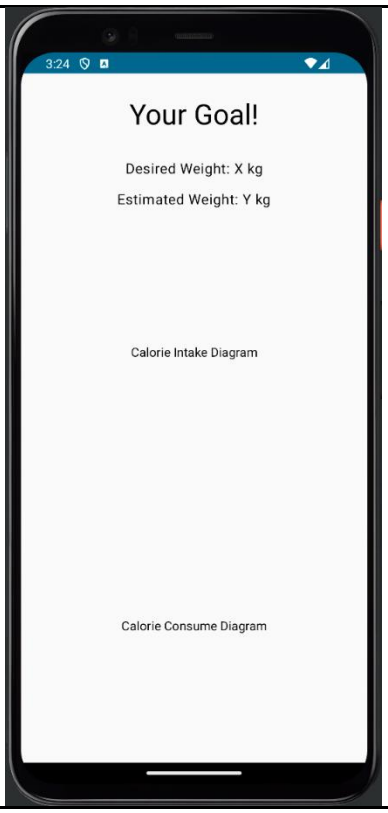
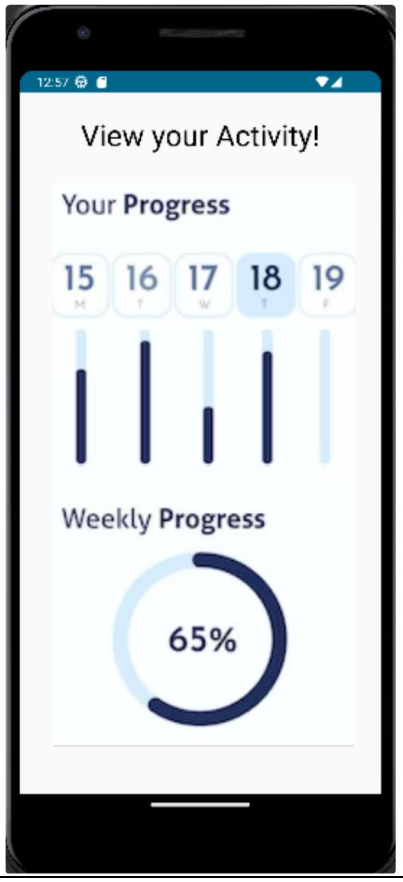
Key Screens and Components	Prototype
Welcome Screen: Navigation Bottom Bar	

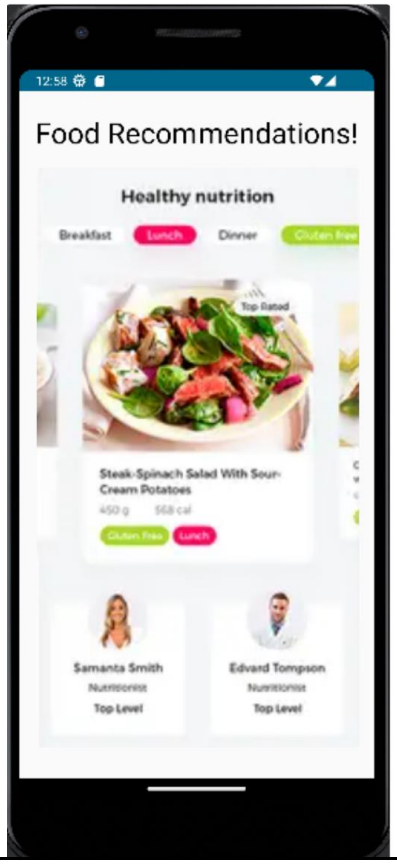
Login Screen		
Register Screen: Date picker		

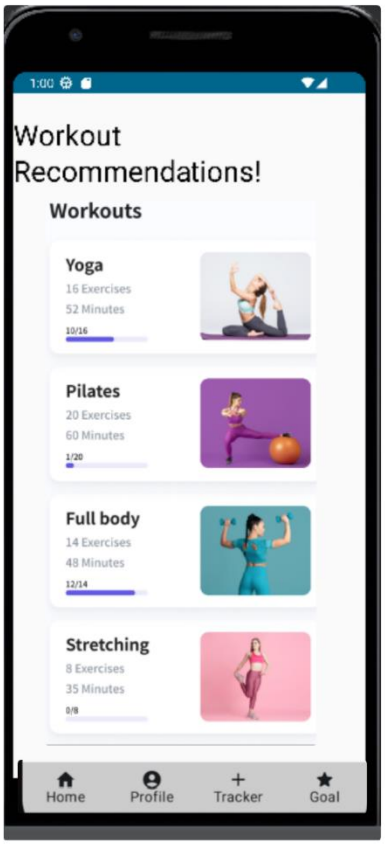
Profile Screen: Expanded Dropdown Menu	
Home Screen	

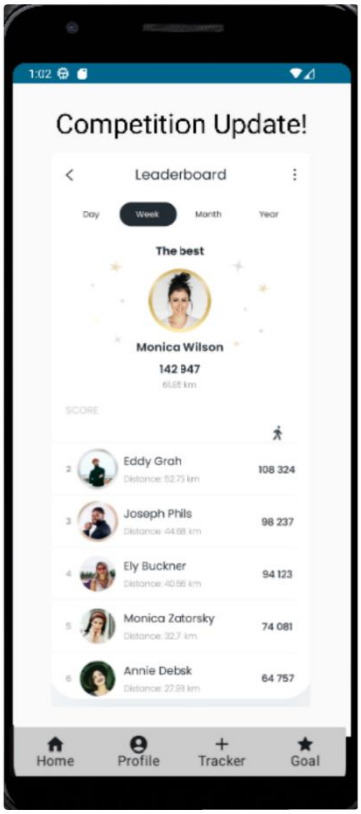
Date Selection Screen: Date picker	
Calorie input screen: Room, LazyColumn	


3:26
Calorie Tracker
CALORIES INTAKE
Add Food
Apple 100
Add Food
Food Name
Calorie
0
Cancel
Save
Add Exercise
yoga 200
3:27
Calorie Tracker
CALORIES INTAKE
Add Food
Apple 100
Add Exercise
Exercise Name
Minute
0
Cancel
Save
Add Exercise
yoga 200

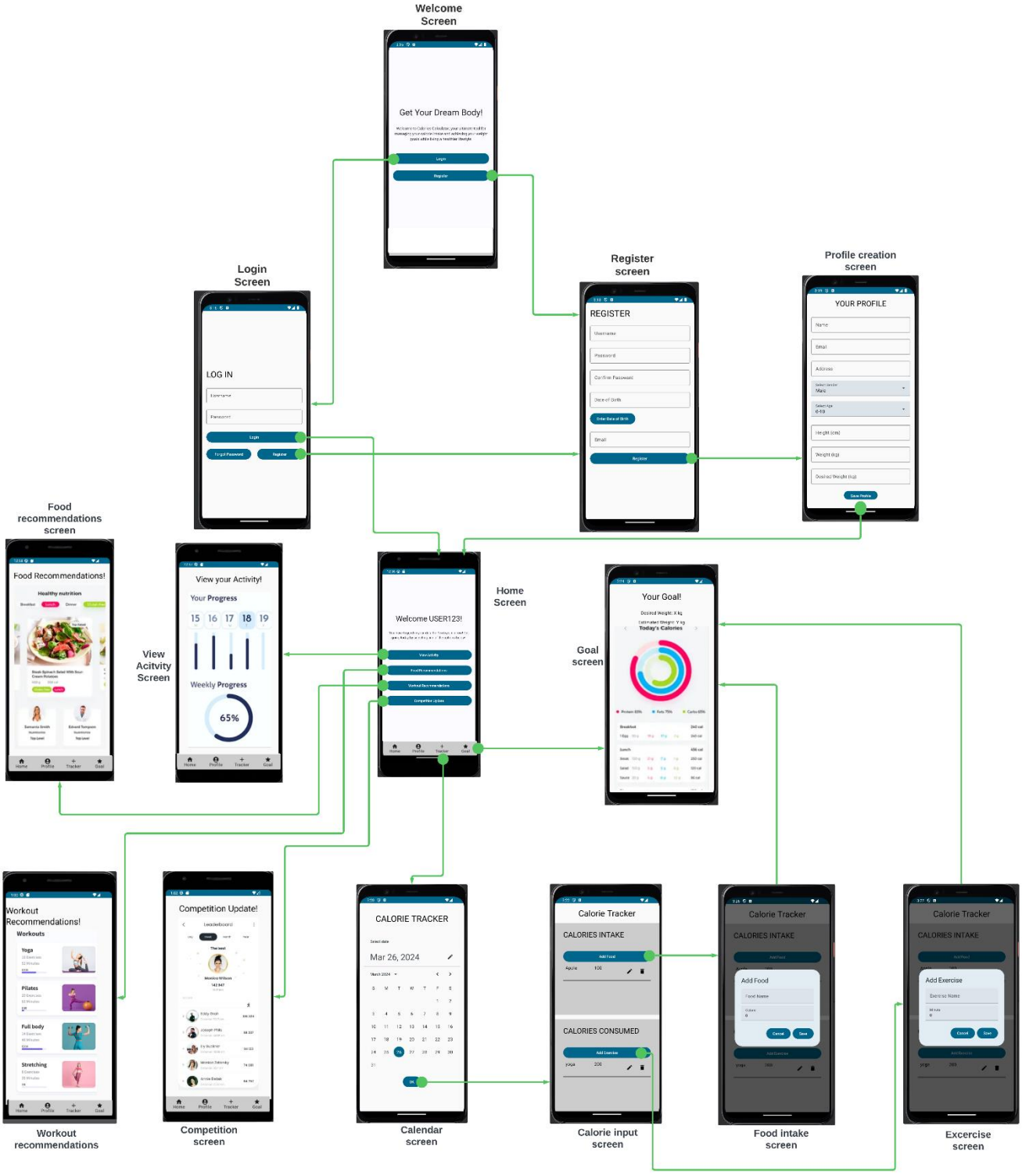
Goal Screen: Graphs or report	
View Activity Screen	

Food Recommendation Screen	

Workout Recommendation Screen	

Competition Screen	

4.2. Flow Diagram



Welcome Screen – Will be the first screen of the app. Will have the login and register screen

Login Screen – Used for users who already have an account on the app

Register Screen – Used to create a new user account on the app.

Profile creation screen – Used to create a new profile in the app.

Home Screen – Will be the main landing page of the app and will be the central screen for all controls.

View Activity screen – This screen shows the activity of the user in a summary.

Workout recommendations screen – This screen allows the user to view workouts recommended based on the user's body type, and requirements.

Competition screen – Compares the scores with friends on the app.

Calendar screen – Used to select a particular date to enter calorie intake.

Calorie input screen – Used to select between food intake and exercise input.

Food intake screen – Used to select food intake for the day.

Exercise screen – Used to select exercise done for the day.

5. Advanced features (Only 1 feature):

For this project the advanced feature we will be using is Google Authentication.

Using google authentication can offered advantages such as:

- Convenient login for user
- Security and multifactor authentication
- Access to profile information (Name, email address, etc.)
- Server-side security.

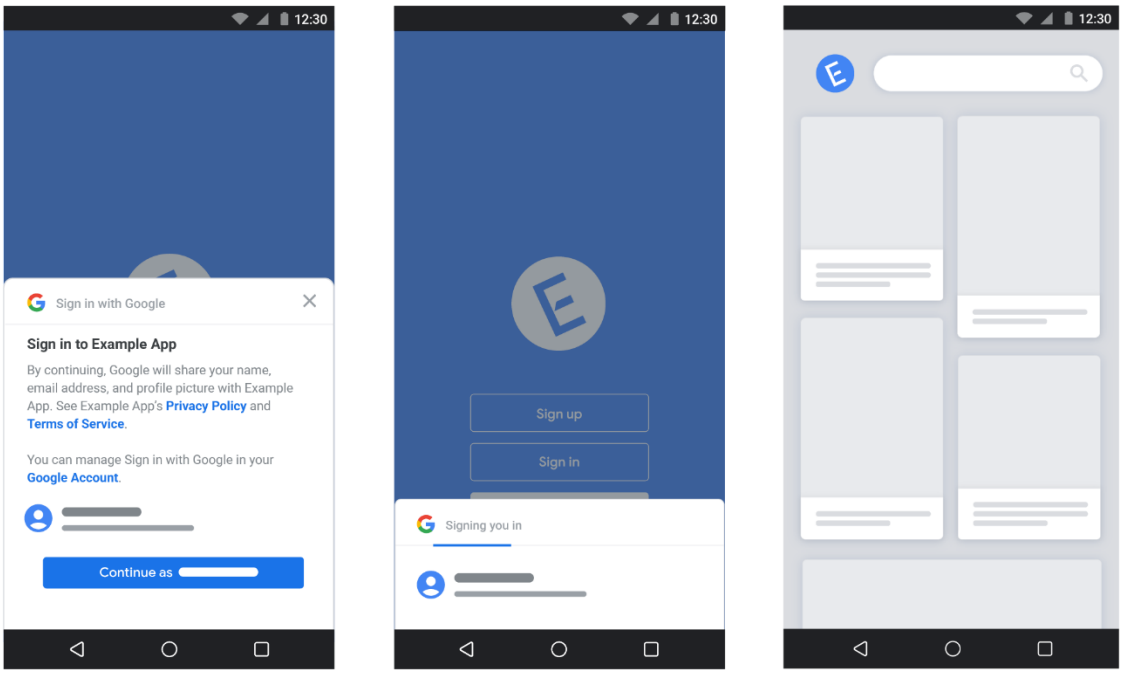
(*Secure Sign-In & Authentication Tools – Google Safety Centre*, n.d.)

For this implementation we will use the guide from the google android developers page (*Sign in Your User with Credential Manager*, n.d.). This guide gives step by step guidance to implement google authentication.

The steps in brief are as follows:

1. Add dependencies to the module.
2. Enable passkey support.
3. Configure credential manager.
4. Design layout and sign in screen
5. Handle flow of events including errors and exception handling
6. Handle passkeys for authentication
7. Extra features: Credential recovery, save password.

Design plan:



The UI for this feature will look similar to the official Google sign-in prompt.

6. References

Secure Sign-In & Authentication Tools – Google Safety Centre. (n.d.). Retrieved March 28, 2024, from https://safety.google/authentication/

Sign in your user with Credential Manager. (n.d.). Android Developers. Retrieved March 27, 2024, from https://developer.android.com/training/sign-in/passkeys

UI layer. (n.d.). Android Developers. Retrieved March 27, 2024, from https://developer.android.com/topic/architecture/ui-layer

6.1 Photo references

Diet photo in Lucid:

https://cdn.sanity.io/images/ordgikwe/production/1253a9de8d2c34ae7c129e633368ff5fcf970b42-700x525.png?w=700&h=525&auto=format

Workout photo in lucid:

https://perpet.io/blog/content/images/2021/05/home2x.png

Activity photo:

https://img.freepik.com/free-vector/workout-tracker-app-interface_52683-46943.jpg

Leaderboard photo:

https://cdn.dribbble.com/users/7774953/screenshots/17072438/media/2c93f915d0141507abc3a0d90174f9de.png

Google sign-in UI:
https://storage.googleapis.com/support-kms-prod/vTnPzkyVEiL4gKfJF3WyMdzDqyAKoPFF2EZQ