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At the Heart of South Leinster

Design Manual

Diet Track

Diet Tracker Application

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Abstract

In today's lifestyle, society is changing, and people are more dedicated towards achieving a fit and healthy body. This drastic shift has changed the way of living in almost every household, most people now crave healthy and nutritious meals. This why healthy eating, nutritious meals and diet tracking have become an essential element in everyone's lifestyle in order to accomplish a healthy life and balanced diet in such a busy and strenuous environment. The purpose of this project is to develop an application that is used to monitor and track the user's diet. The application will track nutritional intake and manage diets for healthy eating, weight loss, weight maintenance, weight gain, and fitness.

Table of Contents

Table of Tables

Introduction

The documentation that follows will detail the design of the Diet Tracker Application. This documentation will go into great depth on the design of the Diet Track application. The design manual follows the research manual and the requirements specification and is intended to provide a better understanding of the application's design in conjunction with the functional specification.

The sections that follow will first go through the technical toolchain, which will include a flowchart showing how all the interconnecting elements work together to construct this application. This section will also provide a brief description of each of the technologies utilised.

The database Schema from the implemented database will be discussed in the next section. This section will provide a JSON-formatted representation of the database structure, as well as an overview of the column names and what they represent in the database. The Class & Sequence Diagram portion follows the database schema, and it contains the relevant diagrams that make up the system's structure.
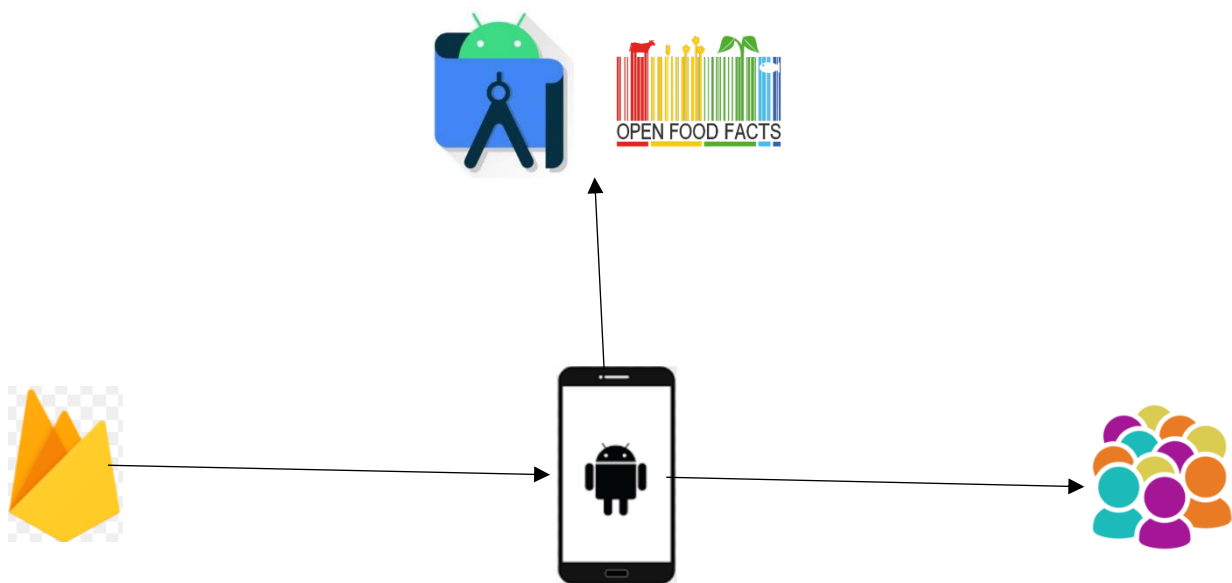

Figure 1 – Technology Toolchain

Technology Toolchain

The technology toolchain will describe how all the chosen technologies incorporate in order to create the diet tracker application. The application will be developed using Android Studios and the back-end database will be developed and hosted by the Firebase Realtime Database.

Android Studios

The development environment I have chosen to utilise is Android Studio. I have chosen this IDE as it provides very simple navigation built on top of a minimal user interface which allows greater proficiency while developing this application. It also provides the necessary software development kit's (SDK) in its software which is essential while developing mobile applications, so that developers will not have to obtain it from third parties. It is also very stable when compared to other IDE's such as Eclipse as the hardware requirements to run Android Studio are significantly low so it will not always crash or become unresponsive. Finally, the features and functions included in Android Studio are extensive which is exactly what is needed to develop this application.

Firebase Realtime Database

The firebase Realtime database was selected for its accessible and simplistic nature. The firebase database is a cloud-hosted NoSQL database that displays all data in a neat JSON format. Firebase will store and sync all data entered by the applications users in Realtime, it will also store user accounts and their credentials which will be used to access their personal accounts. Firebase provides a safe and secure authentication tool that enables passwords and other sensitive credentials to be encrypted. It also offers users with a free account with up to 1GB of storage which will prove very useful when developing this application.

Open Food Facts API

Open Food Facts is a free eating product database that can help you make better food decisions. At the time of writing, the database had about 1.3 million goods, including food information such as ingredients, allergies, nutrition statistics, and other miscellaneous information found on product labels. The barcode scanner will get all the food/product data from this API and show it to the user for the food diary option of the application.

Edamam API

The Edamam Food and Grocery Database API is a REST-based API service that allows you to seek up nutrition and diet data for food goods. The API provides nutrition and diet data for generic foods, packaged foods, and restaurant meals to its customers. It allows you to look for a food item by keyword, name, or UPC/Barcode. The API gives the end user nutritional information for the input food item, such as macro and micronutrients, as well as labels such as allergy, lifestyle, and health. It also

allows you to search for food goods under a certain brand name. This API is used by the recipe recommendations feature in order to search and display recipe ingredients and calories to the user.

Database and Authentication

This section will show the database structure used by the diet tracker application, as well as the authentication mechanism in place, which records diet tracker application's users.

Firebase Realtime Database Structure

The JSON format is utilized by the firebase realtime database, which was used for the Diet Tracker application. As a result, the arrangement will be depicted in a similar manner in the diagram below.

Diet Tracker
Application

-Users

<$UID>
- Age
- Email
- Gender
- Height
- Username
- Weight
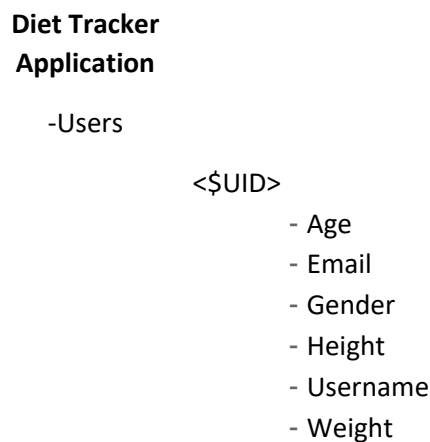
The architecture depicted above is the primary structure used to hold the User details. The database contains all of the information that professional users require.

This section will explain all of the items required to create a user account; all of the elements are of the type string.

- **Age:** This information is used to deteremine body mass index (BMI) of a user which will then determine the amount of calories that someone can consume daily.

- **Email:** This is used to send information to the user and also log in to the application.

- **Gender:** This is used to determine whether a user is a male or female.

- **Height:** This information is used to deteremine body mass index (BMI) of a user which will then determine the amount of calories that someone can consume daily.

- **Username:** This information is used to create an account and also used to log into an account.

- **Weight:** This information is used to determine the weight log (lose weight, add weight, maintain weight).

OSJxQ7sMHzg4OcNMUTwCIroqrLR2

    age:
    email:
    gender:
    height:
    uid:
   username:
    weight:

Authentication

The authentication system, which was also created using Firebase, provides a secure and robust approach for storing system users. The authentication has no specific structure and is dependent on the information necessary to register a user and the place where the users are kept. This graphic was created to depict the authentication storage system.

Diet Tracker Application

-Users

<$UID>
- Age
- Email
- Gender
- Height
- Username
- Weight
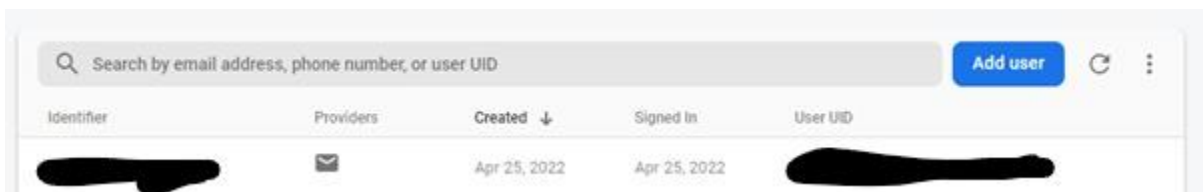
System Design and Overview

System Design

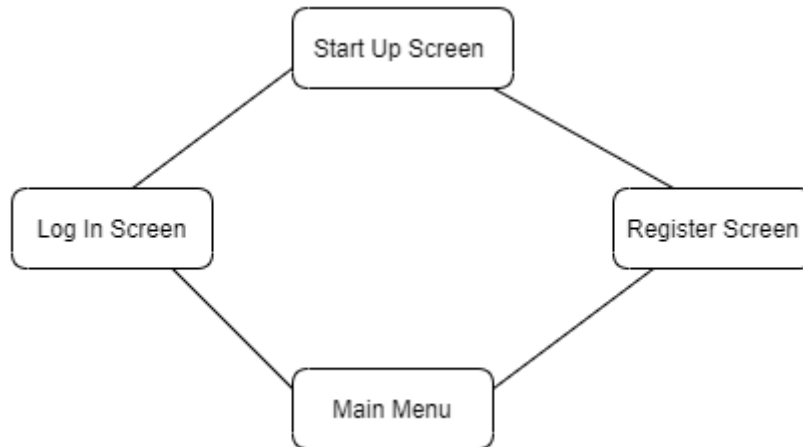### Start-up Screen Block Diagram

Figure 2 – The Start-up screen block diagram.
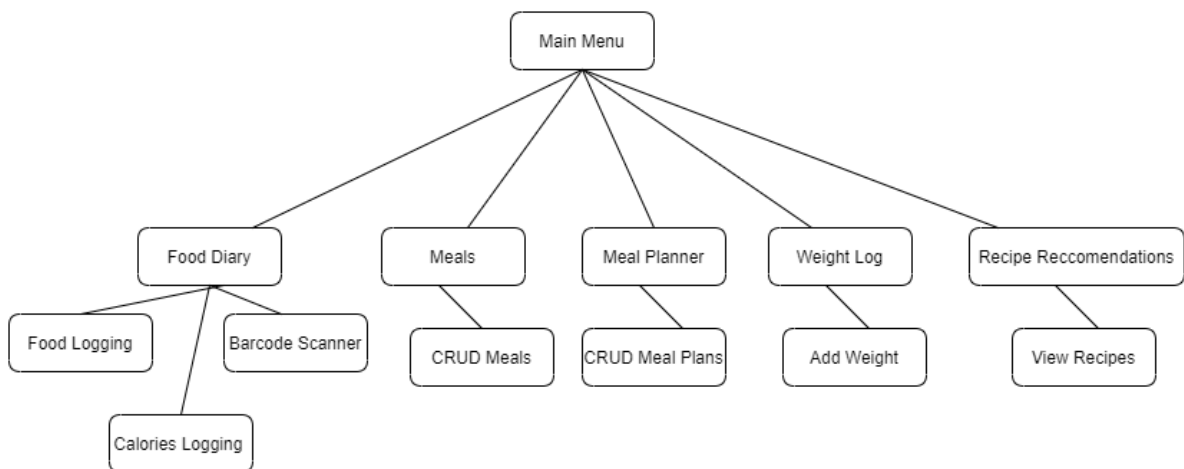
Main Menu Block Diagram

Figure 3 - The Main Menu block diagram

Figure 2 depicts the starting screen block diagram, which includes the login and sign-up screens. After checking in through the login page, registered users can go to the main menu, whilst new users must create new accounts before they can access the app's other modules. Figure 3 above, is the main menu block diagram, which shows the app's four key modules as separate folders, ready for user to select from. Before proceeding to the other modules, visitors must go through the main menu in order to navigate to their desired module. Diet Tracks main menu has the following functions: 'Food Diary,'

'Meals,' 'Meals Planner,' 'Calorie Counting,' 'Weight Log,' 'Recipe Recommendations,' 'Goals Planner,' 'Integrated Barcode Scanner' and User Profile.'

The food diary feature is used to log meals and any food item consumed daily, the application will store the number of calories, carbs, protein and fats that has been consumed. The information obtained can be viewed by the user in order to track their diet. The food information is obtained from a nutrition database called Open Food Facts which is searchable and includes a wide variety of food. This feature also has an integrated barcode scanner which makes it easier for you to view and log the nutritional facts in packaged foods. The Meals feature enables user to add their own meals into the application in order to be used by the meal planner. The meal planning feature enables the user to add their own meals and plan what they will eat for breakfast, lunch, dinner and snacks. This will help the user alleviate the stress of looking for what to eat by following a strict plan. The calorie counter feature is vital and works with the food diary as it keeps track of the number of calories you have consumed daily so that you don't eat too many calories as a high calorie count will have a negative impact on your diet.

The weight log feature enables users to input their weight every week for them to view their progress. They will be able compare their weight across several weeks to see if they are gaining, losing or maintaining their weight. The integrated barcode scanner feature works with the food diary and will enable users to scan a food item in order to show them all the nutritional facts, which makes it easier to view and log food items consumed daily. The goal planner feature enables the user can to set goals and try and beat the goals by the selected timeframe. Finally, the recipe recommendations feature enables users to search for recipes to inspire a healthy meal option. The recipe and all its nutritional facts will be saved onto the database, which is helpful as if the user needs to prepare the same meal again all the facts will be available to the user without them having to search the recipe again.

Project Plan

Diet Track Application Project Plan
Project Start: Mon, 17-Jan-2022

Task	Start	End
Connect Android Studio to Firebase	17-Jan-22	20-Jan-22
Develop Registration Screen	20-Jan-22	27-Jan-22
Develop Login Screen	27-Jan-22	03-Feb-22
Develop Main Menu	03-Feb-22	10-Feb-22
Develop Weight Log	10-Feb-22	20-Feb-22
Develop Food Diary	20-Feb-22	01-Mar-22
Implement Barcode Scanner	01-Mar-22	14-Mar-22
Implement Calorie Counter	14-Mar-22	20-Mar-22
Develop Profile Screen	20-Mar-22	23-Mar-22
Develop Recipe Screen	24-Mar-22	31-Mar-22
Develop Meal Planner Screen	31-Mar-22	05-Apr-22
Develop Meals Screen	05-Apr-22	10-Apr-22
Testing	10-Apr-22	17-Apr-22
Completion of All Documentation	17-Apr-22	29-Apr-22

Figure 4 – Project Plan

UI/UX Design

This section of the design handbook contains mock-up drawings that may be used as a guidance during the user interface development process (UI). The final output may differ.
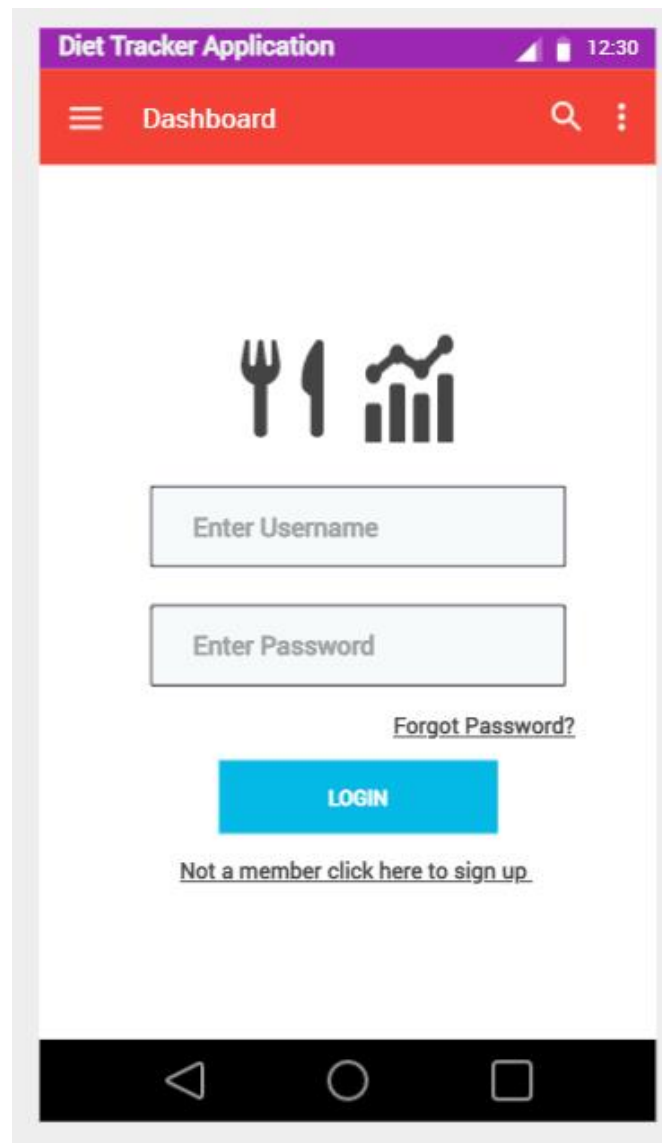

Figure 5 – Login Screen

This screen serves as the application's login screen. To gain access to the program, the user must provide their email address and password. This screen will also provide a link to the password reset and registration pages.
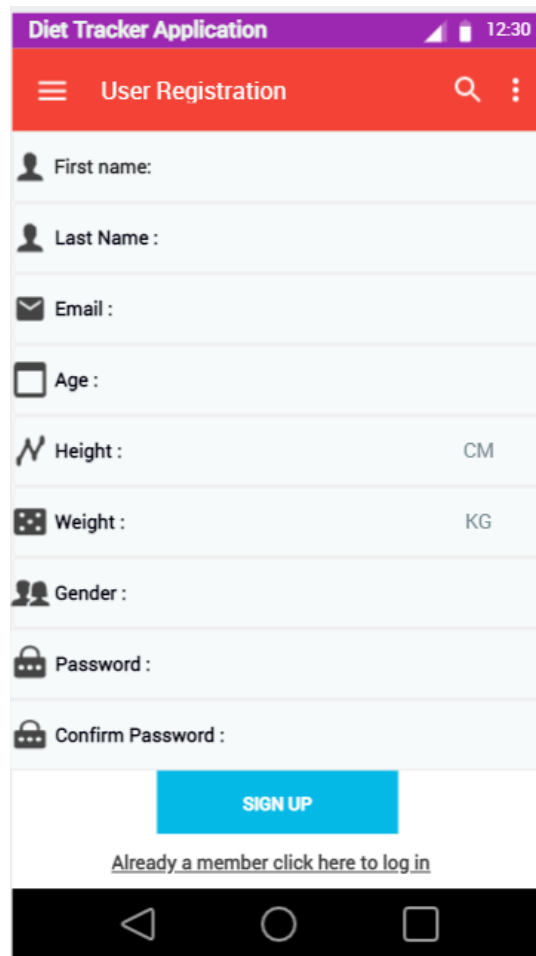
Figure 6 – Registration Screen

This screen is the application's general registration screen. I've decided to require gender information for calorie counting purposes. The user is asked to submit their name, email address, a password, password confirmation, age, height, weight and gender in order to successfully register an account.
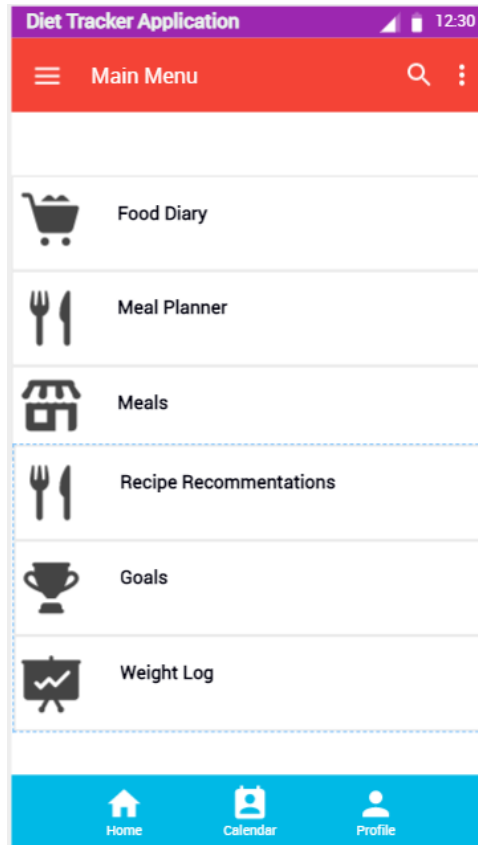
Figure 7 – Main Menu

Once the user has succesfully logged in they will be directed to the main menu. The main menu has many different options for the user to choose from. The user can access the Food Diary, Meal Planner, Meals, Recipe Recommendations, Goals, Weight Log and user profile from the main menu.
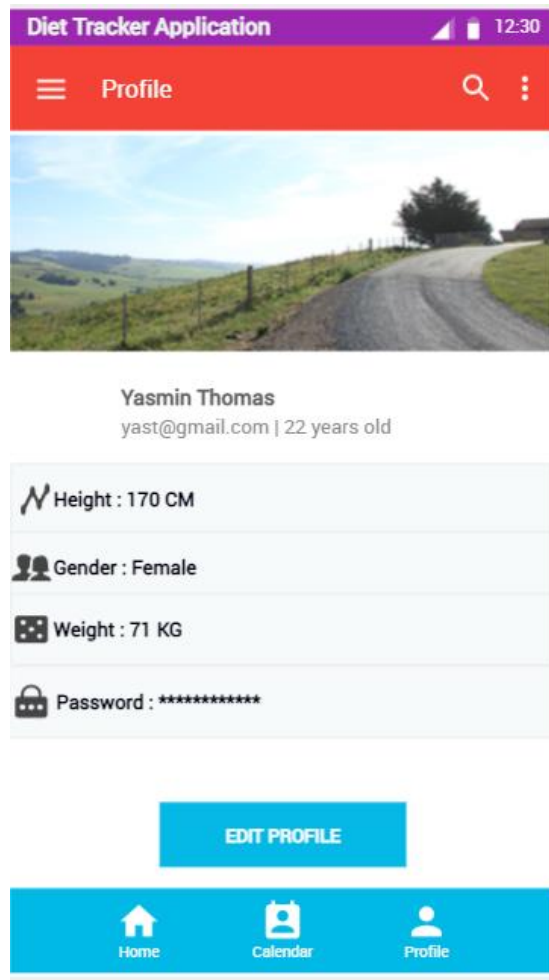
Figure 8 – User Profile Screen

This is the User Profile screen; the user can only access this page once they have successfully registered and logged in. Here the user can edit their details (email, password, and height), the user can only view the following details (weight, gender and age/date of birth).
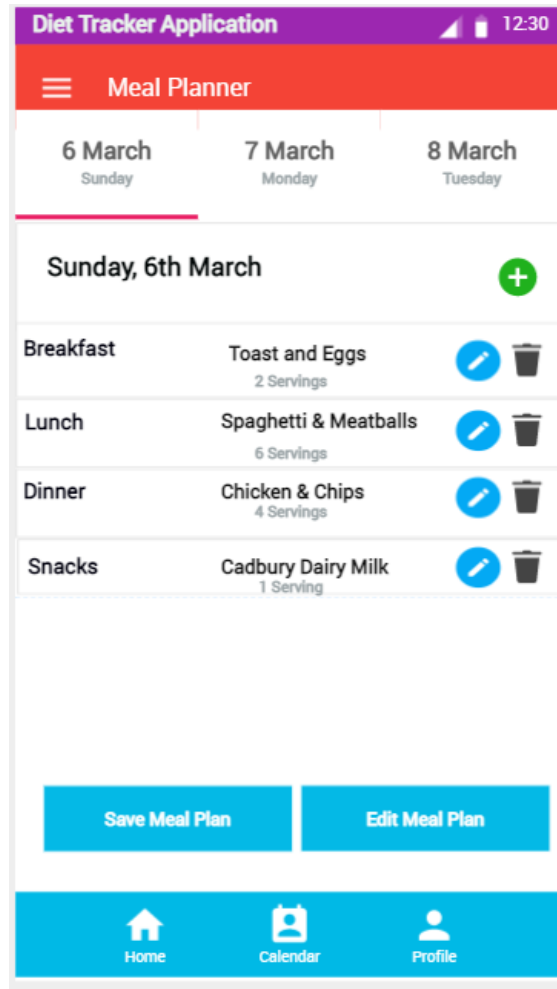
Figure 9 – Meal Planner Screen

This is the Meal Planner screen; the user can only access this page once they have successfully registered and logged in. Here the user can plan their breakfast, lunch, dinner and snacks daily. This will keep the user to a routine and help them in their weight journey as they have planned their meals for the week. The data entered on this page is then stored locally on the user's device for them to access it again.
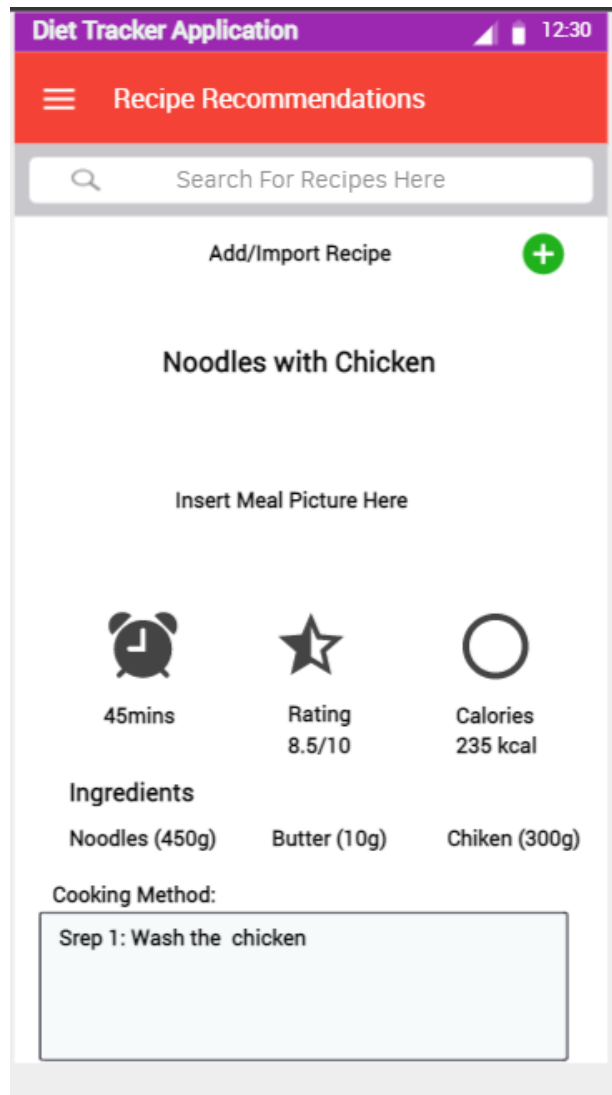
Figure 10 – Recipe Recommendations Screen

This is the Recipe Recommendations screen; the user can only access this page once they have successfully registered and logged in. Here users can view any recipe, they can also filter to view specific diet recipes in order to support them with their weight journey. Users can also import any recipe from online and create their own recipes. Once viewing a recipe users will have access to the calories in the meal, the ingredients needed, the cooking method and the rating of the meal. They can also add the recipe to the food diary if they have consumed the meal.
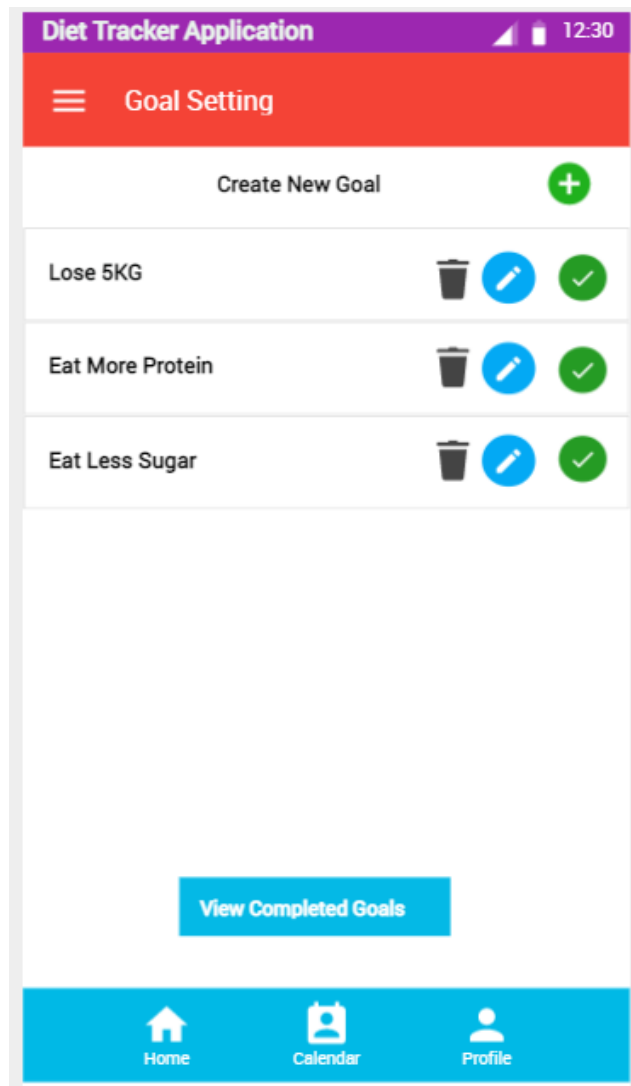
Figure 11 – Goals Setting Screen

This is the Goals screen; the user can only access this page once they have successfully registered and logged in. Users can input a goal and select the timeframe they wish to complete the goal by, users can use this to lose weight, eat more protein meals etc. The data entered on this page is then stored locally on the user's device for them to access it again.
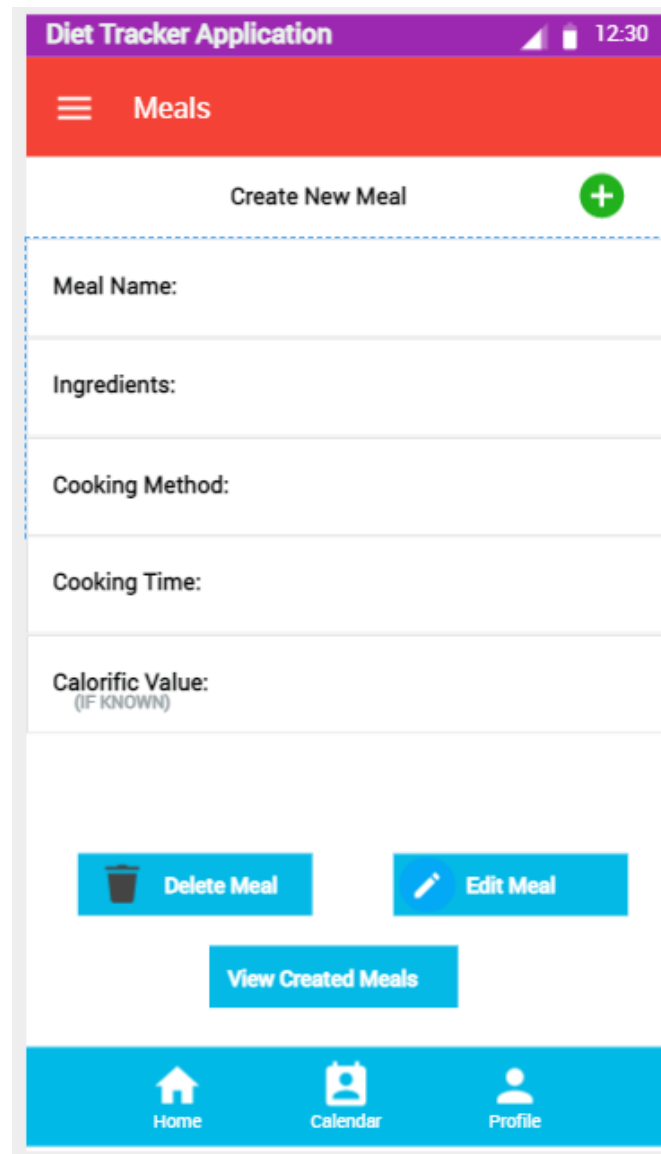
Figure 12 – Meals Screen

This is the Meals screen; the user can only access this page once they have successfully registered and logged in. Users can create a meal by adding its name, the ingredients, cooking method, cooking time and calorific value. Once a meal is created users can then go on and add this to their meal plan if needs be. The data entered on this page is then stored locally on the user's device for them to access it again.
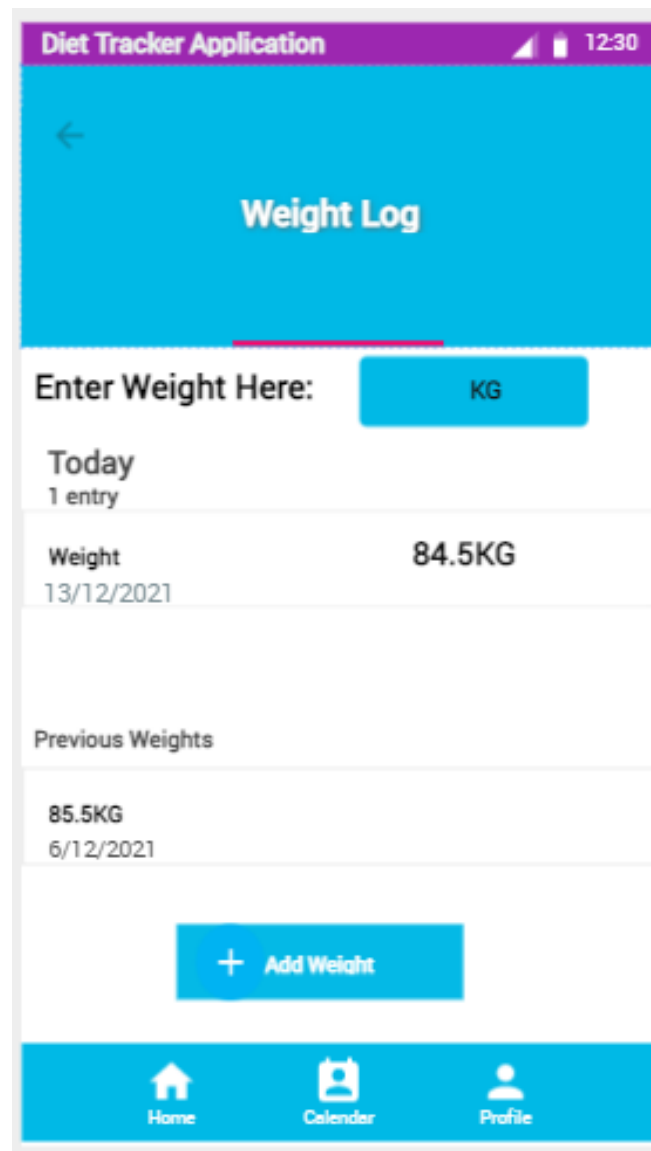
Figure 13 – Weight Log

This is the Weight Log screen; the user can only access this page once they have successfully registered and logged in. Here the user can enter their weight every week to view their progress their weight from sign up is matched with the new weight entered and the app will inform them if they are losing or gaining weight. The data entered on this page is then stored locally on the user's device for them to access it again.