Requirements Document

CMPT 276

Group 5

App: Mealify

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Introduction

Mealify is a healthy eating app that takes a new intuitive approach. Users of Mealify can input the food they have eaten, and Mealify will analyse the food they ate for number of calories, carbohydrates, fats, and protein. Aside from the keeping track of your daily food content, Mealify users can also compete with their friends or other users with the same meal plan. Daily digestion of food content will be compared with the other user to determine which user ate healthier. This aspires a competitive motivation to healthy eating. Dietitians can be reached by users through the app with a messaging system. For users struggling to create a meal plan, Mealify allows users to create their plan intuitively. Users of Mealify are able to keep track of their plan with the Mealify calendar and seek healthy food locations via the Mealify food asset map. Mealify is the ultimate all in one healthy eating app for individuals who want to become healthier.

Intended Audience

Dietitians whose goal is to:

a. Give advice to people about healthy eating
b. Collect data on the eating habits of people in their area

Users whose goal is to:

a. Lose weight - individuals want to lose weight to have a slim figure that is attractive
b. Improve their health – individuals might easily get sick, get tired easily, etc., so they want to improve their health to reduce theses factors through healthy eating
c. Start a diet plan with friends – one of the best ways to keep up a meal plan is to have a friend doing the plan with you

Mealify targets teenagers and adults. This is because children are unaware of food content, and is less likely to use a healthy eating app. Although possible, seniors are less likely to use the Mealify app because:

a. seniors generally do not know how to use a smartphone
b. they already have an eating plan
c. the competitive aspect of Mealify is not suited for seniors

Features/Functional Requirements

User story 1: As an individual on a diet, I want to keep track of my daily food content intake so that I can improve my meal plan.

1. User can input meals eaten at restaurants to track calories, carbohydrates, fats, and proteins.
    a. The Canadian Nutrient File (CNF) provides an extensive database of vegetables, fruits, baby foods, canned foods, and meals at different temperatures and intakes in grams.[1] This API of the database will be used to compare the user's input to a food in the database to display the resulting calories, carbohydrates, fats, and proteins to the user.

User story 2: As two individuals seeking for ways to improve their health together, we want to motivate each other to eat healthier so that both of us have more energy through the day.

2. Users can compete with a friend's food content intake (protein, fat, carbohydrates, and calories) to motivate each other to eat healthier.
    a. A free to use iOS server, Firebase, must be used to connect users via the app. User credentials will be uploaded to the server for verification.[2]
    b. Tutorialspoint has an Firebase tutorial.[3]
    c. A search engine must be created to search for other users, and the users can add each other to become friends. Once users are friends, information of both users will be linked through the server, and users can access each other's food content information.
3. A weekly or monthly report of the food content intake will be graphed to give a visual representation for user to reflect on.
    a. *a.* The food content information found in 1-a will be graphed with charts API for iOS.[4]
    b. *b.* Joyce Echessa has a tutorial for charts API for iOS.[5]

User story 3: As an individual without a diet plan, I want to easily create and access a meal plan so that I can fulfill my diet.

4. A test to determine user's eating habit, daily calories and how much nutrition the user should take each day. This will be used to recommend meal plans.
    a. Test questions include:

i. What is your age?
ii. What is your gender?
iii. What food culture attracts you?
iv. Do you have a special diet?

Age and gender helps determine the daily calorie income for the individual.[6] Recognizing food culture and special diets updates the information of the user for their convenience. E.g. Asian food, vegetarian

5. Users can choose to improve their meal plan through built-in meal recommendations. This is culturally relevant so different cultures can be recommended food based on their preference.
    a. Meals must be recommended based on the information collected from 4-a. This will take the contributing factors: daily calories intake, age, gender, cultural food attraction, special diet and generate 3 meals from the CNF database for a daily meal.

6. A calendar will display the user's meal plan.
    a. The calendar must use Google Calendar API and is updated by the user through 5-a.[7] When the 3 meals have been chosen, the user will select a date, and then the meals will be shown onto the calendar.

7. Users can choose to improve their meal plan through messaging dietitians directly through Mealify. Dietitians can give feedback to users and suggest a meal plan.
    a. Sendbird API must be used to create a direct messaging system.[8]
    b. A messaging feature must be added to the system with Sendbird Chat API. Follow the tutorial through the reference.[9]

User story 4: As an individual with a ketogenic diet, I want to find restaurants in my local area so that I can fulfill my diet.

8. Users can find restaurants in their local area for places that are ketogenic, vegan, vegetarian, pescatarian, and gluten-free. The restaurants will display ratings, food menu and contact information.
    a. Google Maps API must be used to find these locations conveniently.
    b. Follow the Google Maps iOS API tutorial for instructions.[10]

User story 5: As an individual that eats very selectively, I want to see my food so that I can have a better understanding of whether I want to eat it.

9. Users can see their food in augmented reality in 3D to get an improved visualization of food from pictures.
    a. ARKit2 must be used to display 3D models of food and meals in AR.[11]
    b. Brian Advert gives a detailed tutorial of scanning 3D objects in ARKit2.[12]

Non-functional Requirements

Product Requirements:

1) Efficiency requirements
    a) The implemented code must use efficient algorithms to maximize performance so that the system does not crash while using the AR function.
    b) The application must not exceed 3 GB of space. The user might not want to use or have space have a application with a big size.

2) Usability requirements
    a) Children and seniors may not own an iPhone, so it is unlikely that children and seniors use Mealify.
    b) The general user must own an iPhone that is at least an iPhone 6 for the AR feature.
    c) Users must identify themselves as normal user, or dietitian, or restaurant owner, application feature will change depending on the identification.

3) Dependability requirements
    a) The system must be reliable, and must not crash 99% of the time during startup, AR feature, graph feature, map feature, and other features.
    b) The application must be available at all times, unless there is a application update. The user must be notified when the application is launched that there is a application update/maintenance.

4) Security requirements
    a) The system must be secure. Users must not be able to access other user's information unless they are friends in the application.
    b) The user information must be encrypted to prevent viruses and system infiltration.

Organizational Requirements:

1) Environmental requirements
    a) The app must not expose private information of the user in any way to the public.
    b) The programmers must not sell user information.

2) Operational requirements
    a) All features of the application must be able to function properly without bugs or crashes.
    b) The application must not take more than 8 seconds to launch for iPhone 6 at 100% phone battery with at least 10 GB RAM space.

3) Development requirement
    a) The developers must understand the user stories and functional requirements to make sure the programming steps is perfect.

External Requirements:

1) Legislative and Regulatory requirements
    a) The developers must not expose user information and ensure that practices follow regulations and law.

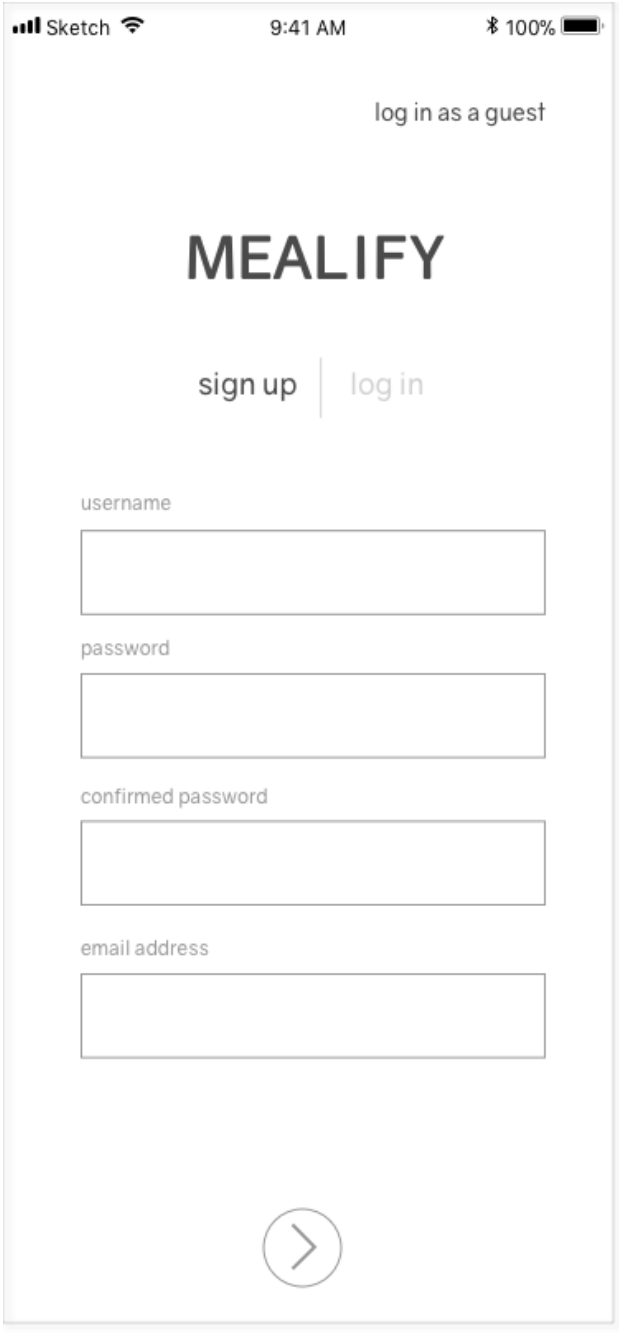
2) Ethical requirements
    a) The developers must not sell/expose user data for personal gain.
    b) The developers must not copy material from non open source code.

Example Tutorials/Scenarios

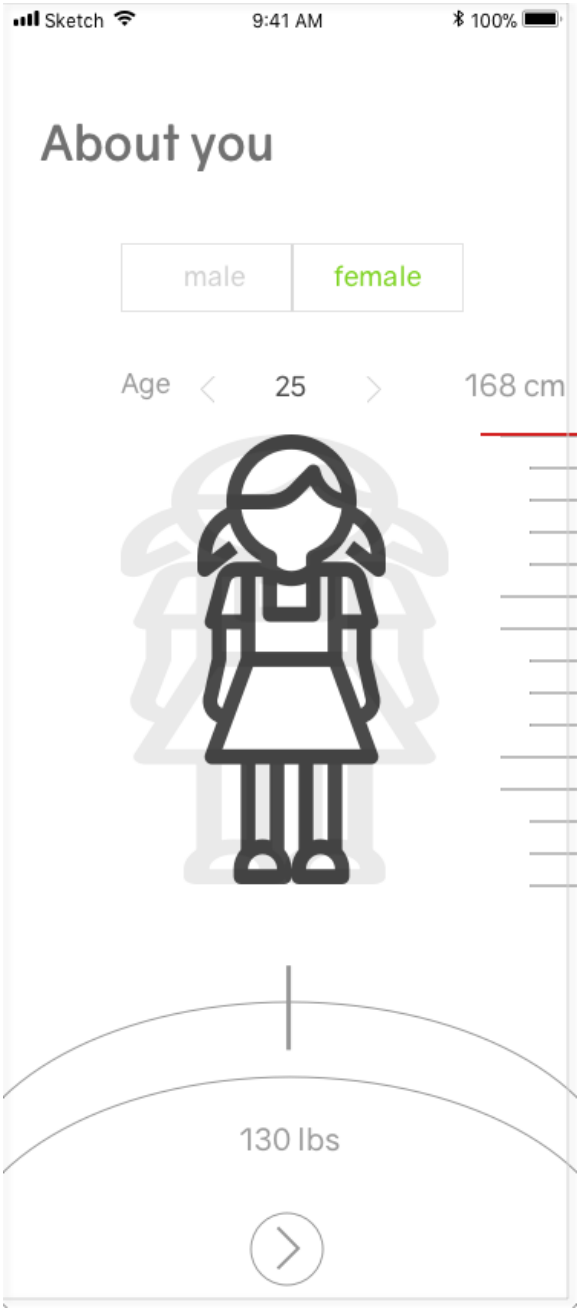
Example Tutorials / Scenarios: Provide 3 - 5 (or more, if necessary) examples of typical usage scenarios. These need to be highly detailed, step-by-step tutorial-like descriptions of how to use your system's major features. You should include screenshots of how your system will behave. There are many tools that you can use to do mock-up of the device.

Scenario 1: Meal tracker and Sign up

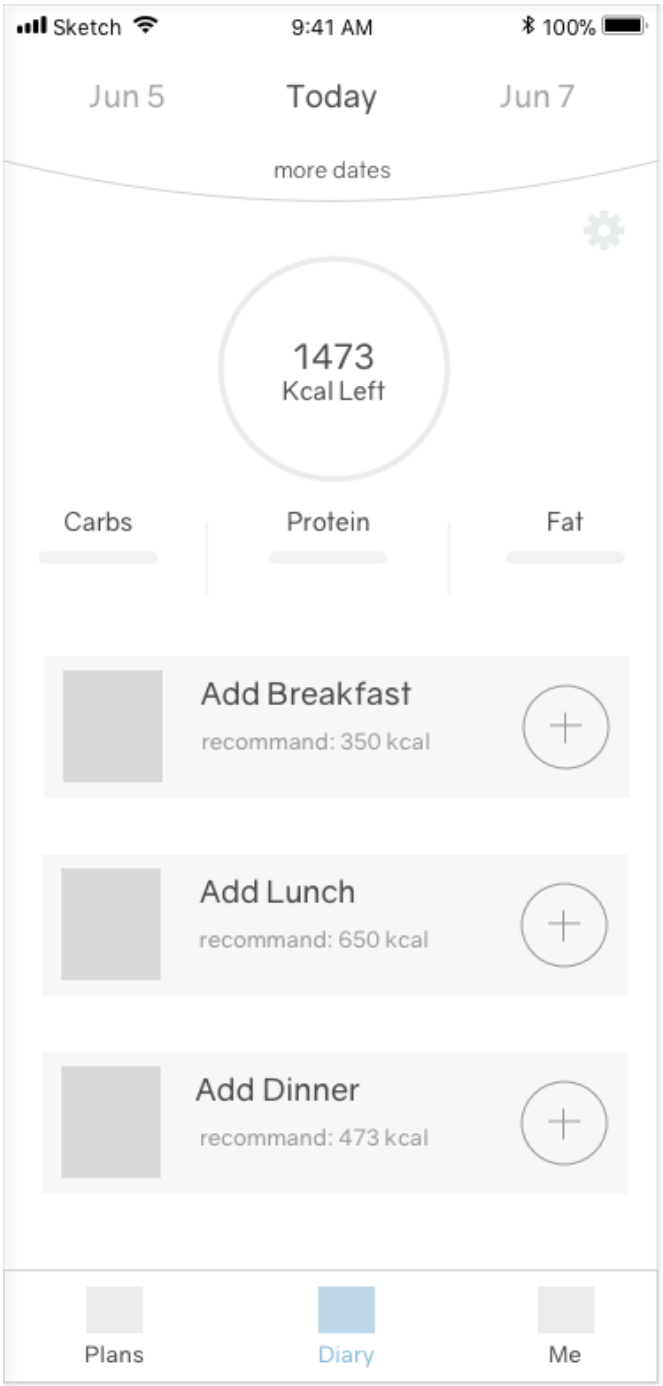
1) You want to gain weight by keeping track of your calorie intake. You can download the Mealify app on your iPhone to record your daily intake. Once downloaded, you can open the app to encounter a login/signup page. You will have some options. First, you can sign in using an existing account. Second, you can sign up for the app by tapping the sign-up button. Third, you can login as a guest. Logging in as a guest will not save any data but might be useful for the short term uses. If you don't have an account yet, it is recommended for you to sign up.



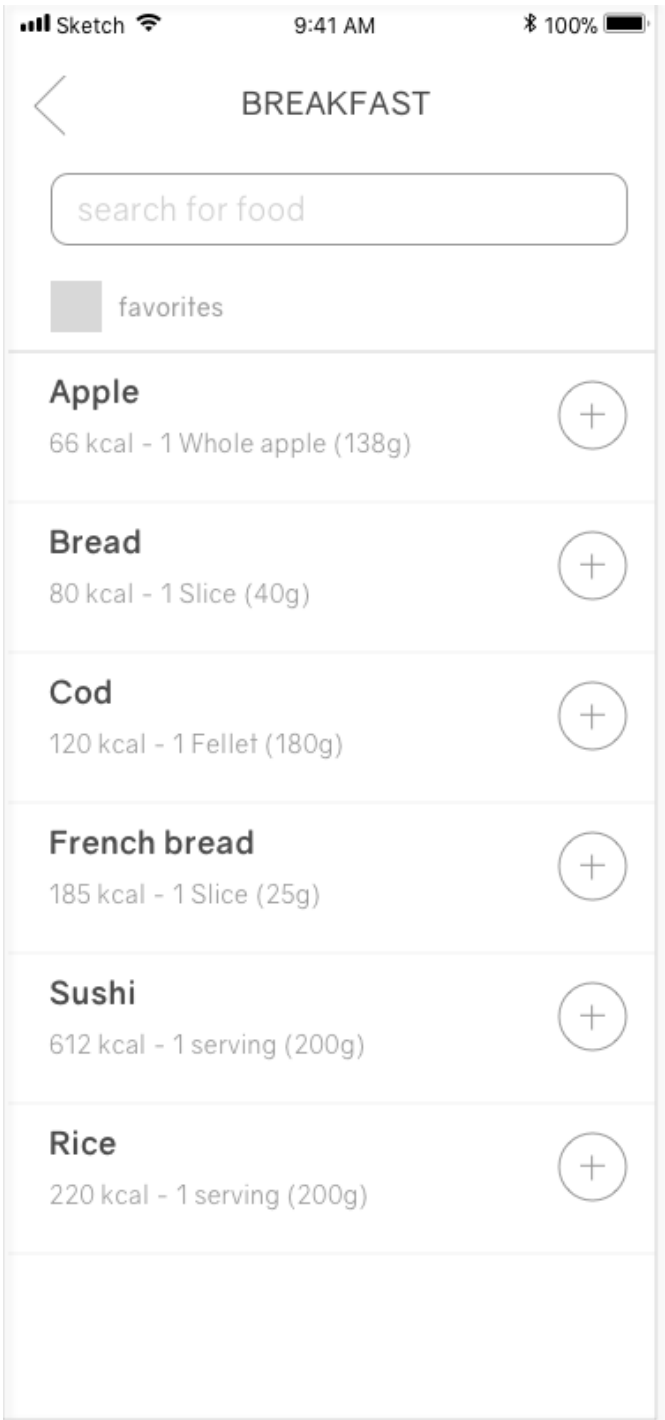
2) When you tap the sign-up button, you will be required to input your email, and the password you want to use. Afterwards, you can create your own profile. This part would ask for your weight, age, gender, etc.



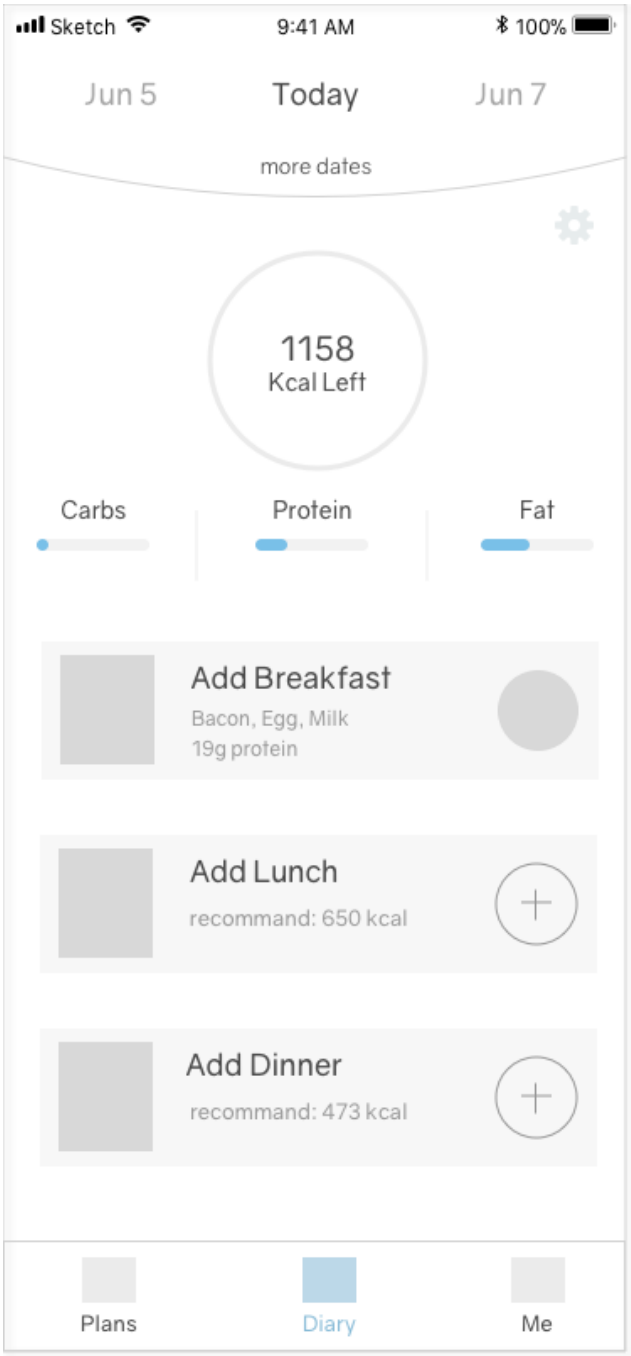
3) Once you sign up using your email and password, you can then log in to your new account. The first thing you will see is the home page of the app. This page will give the you several options. If you want to start record your calories, you can tap add breakfast option.



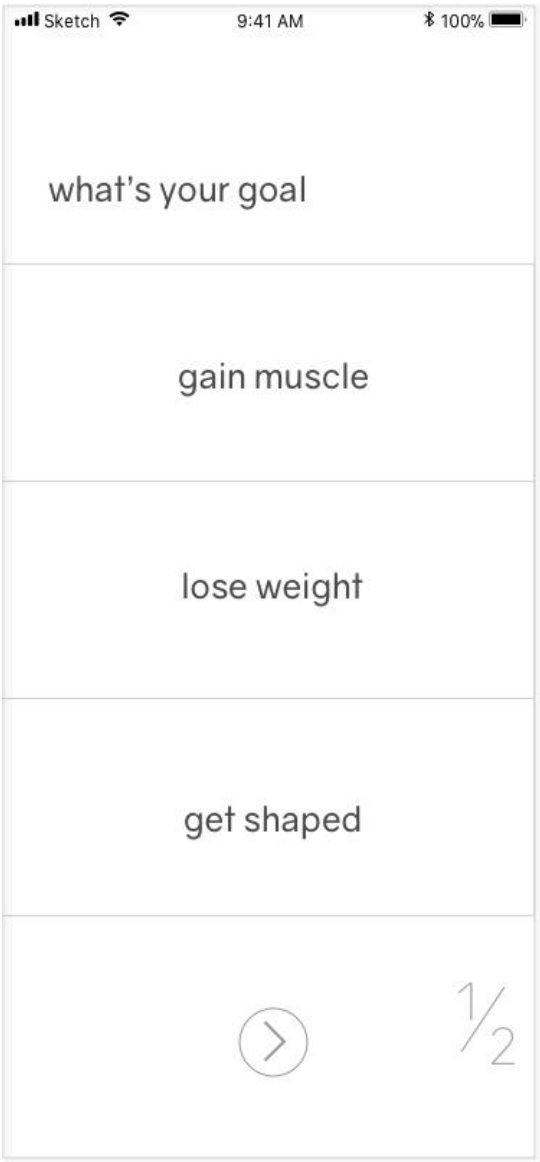
4) The page includes a search bar where you can search for the foods you ate. Let's say you had bacon, eggs, and a glass of milk. You can simply search for them or select from your favorite list to add into the meal.

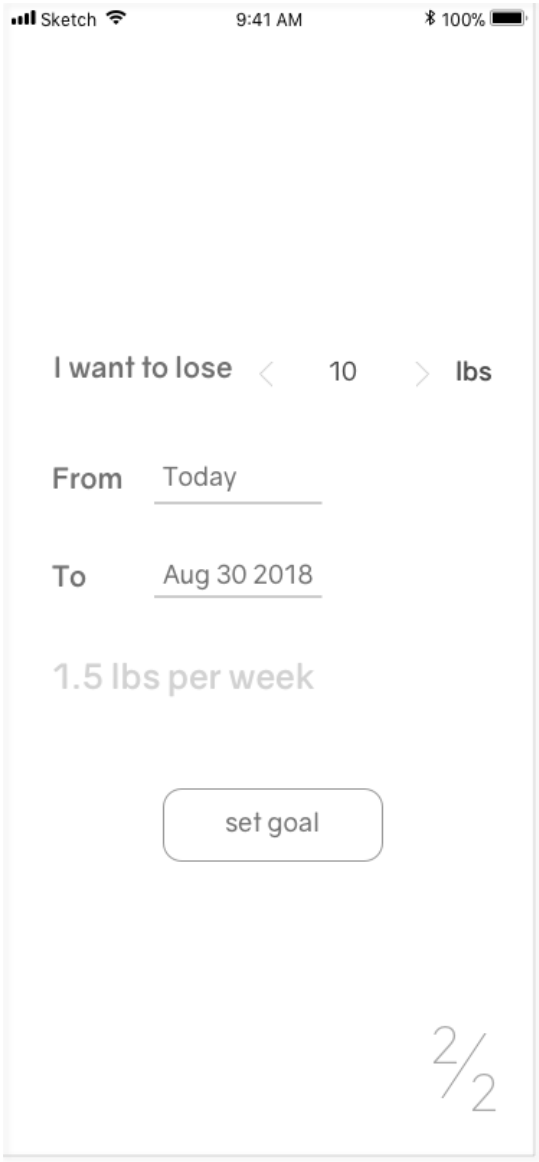


5) The system will then automatically update daily stats and nutrition intake on the homepage.



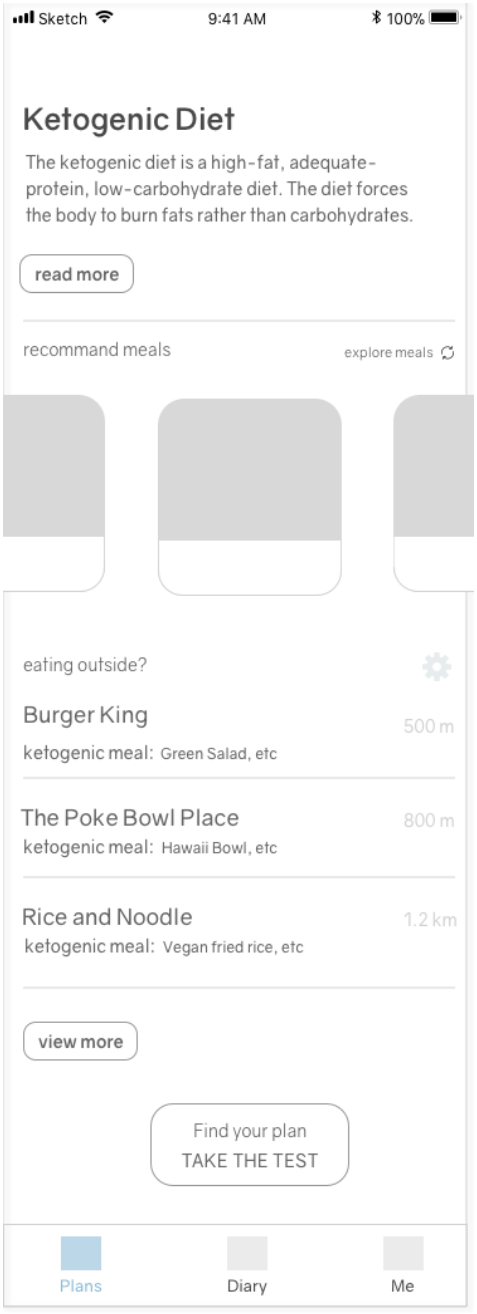
6) You can also set goals for yourself. You can do this by tap the gear icon on top of the diary feature. It will lead you to the goal setting process. For example, you can lose weight as part of your goal, and you can select how much you want to lose in any span of time.



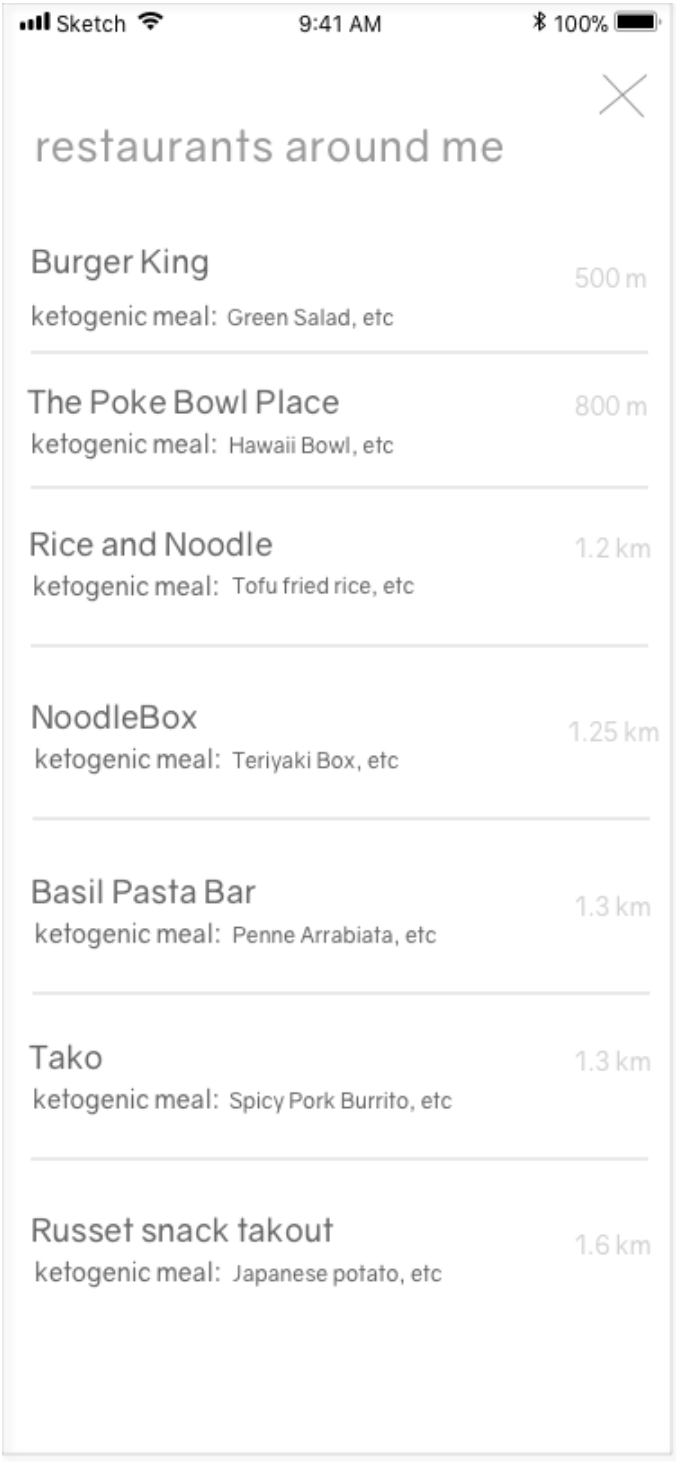


Scenario 2: Local Restaurants

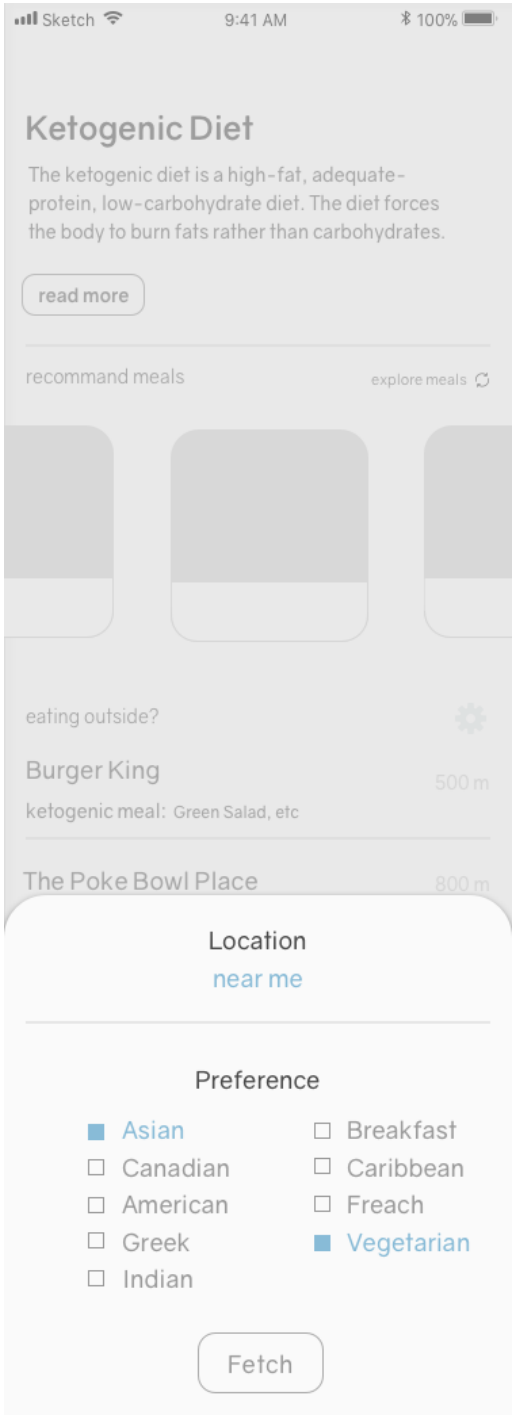
1) Let's say you have a restricted diet, perhaps a vegetarian. You want to find restaurants nearby that have vegetarian options. You have the Mealify app already to keep track of your diet but never had the opportunity to find restaurants with the app. You can start by opening the app to the plans feature and there will be a section on restaurants.



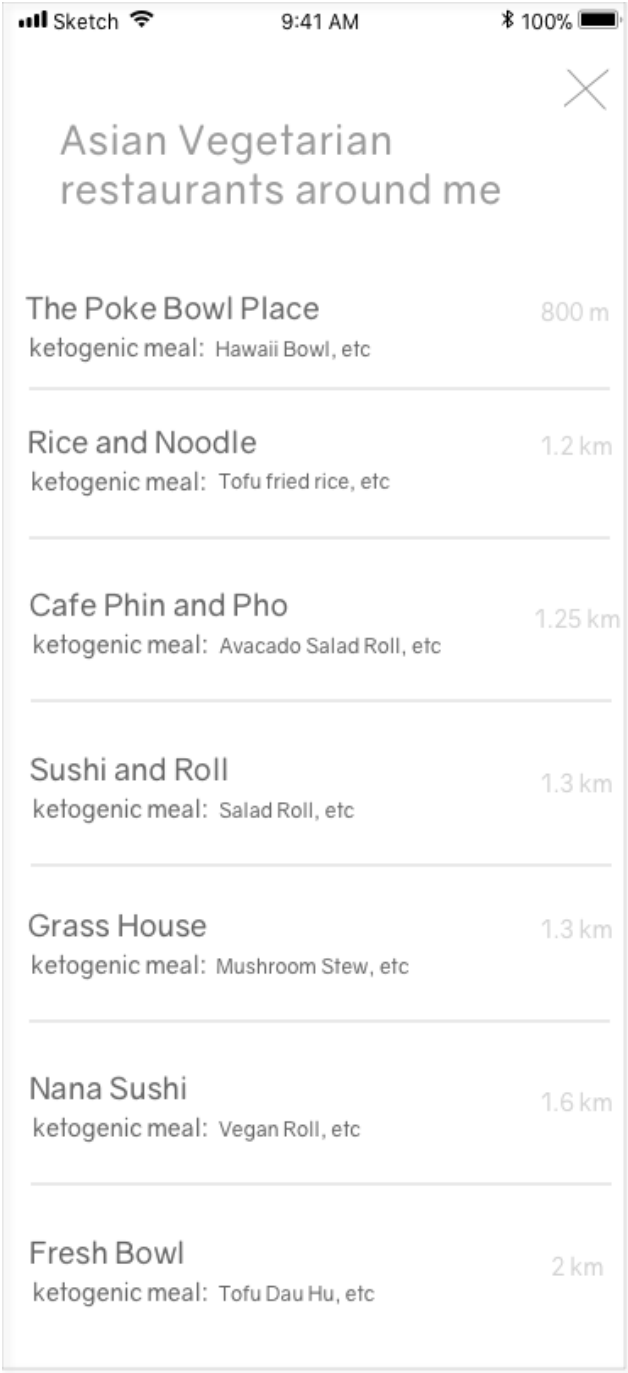
2) You can tap the View More option to be directed to a page with a list of restaurants centered around your location. At first, it will show all restaurants nearby. You can tap on any of these locations to find specifics. In particular, opening/closing times, and contact information.



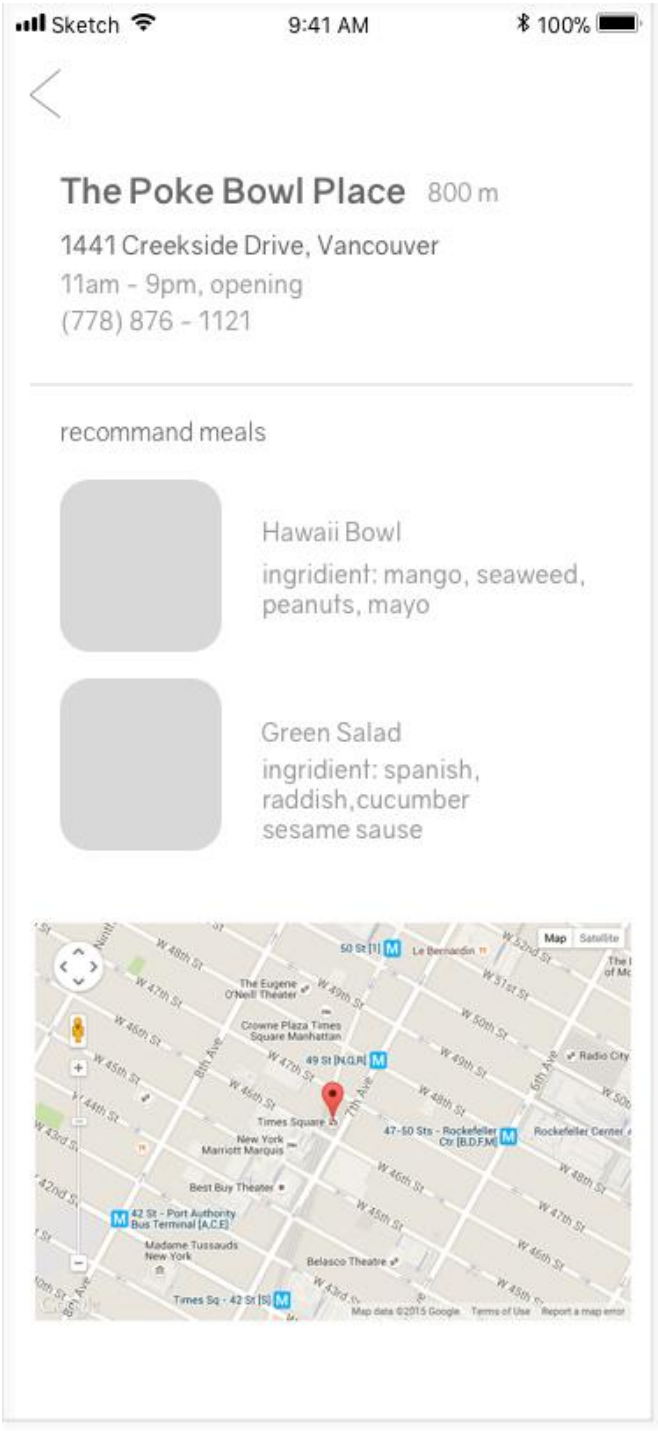
3) However, you can also find restaurants that only serves vegetarian foods. You can filter what you want to see on the list by tapping the gear icon. A filter will pop out for you to select location and preferred cuisines. You can select multiple preferences at a time. Let's say you also want to find Asian and vegetarian options.



4) After fetching, a list of restaurants that based on filter information will appear and will be sorted from closest distance to furthest distance.

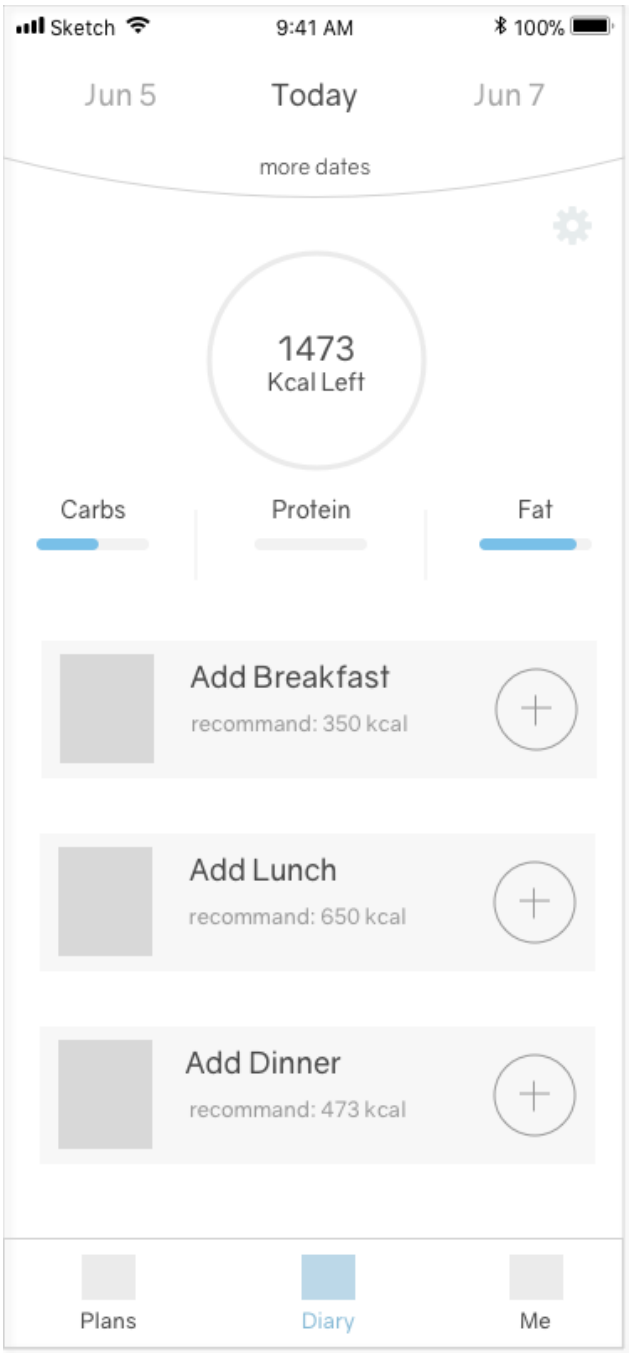


5) You can tap on any restaurant you want to get information regarding that restaurant along with the location on the map.

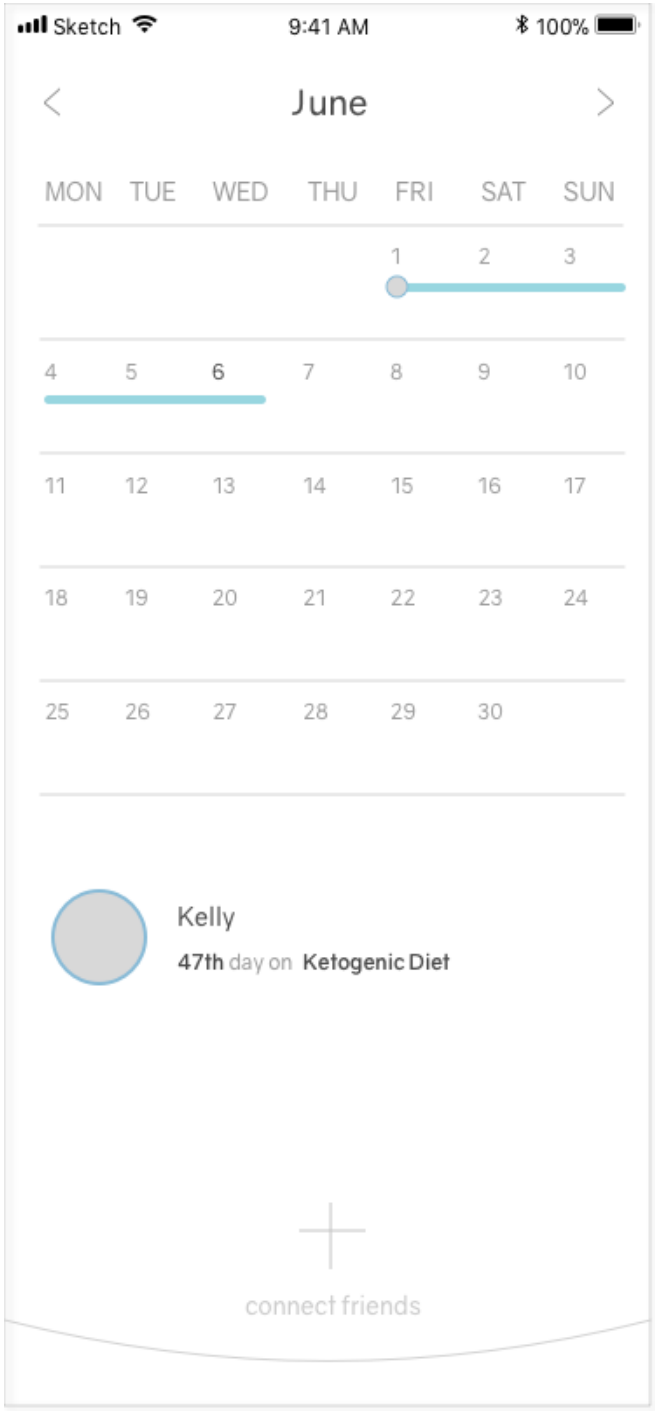


Scenario 3: Planning ahead

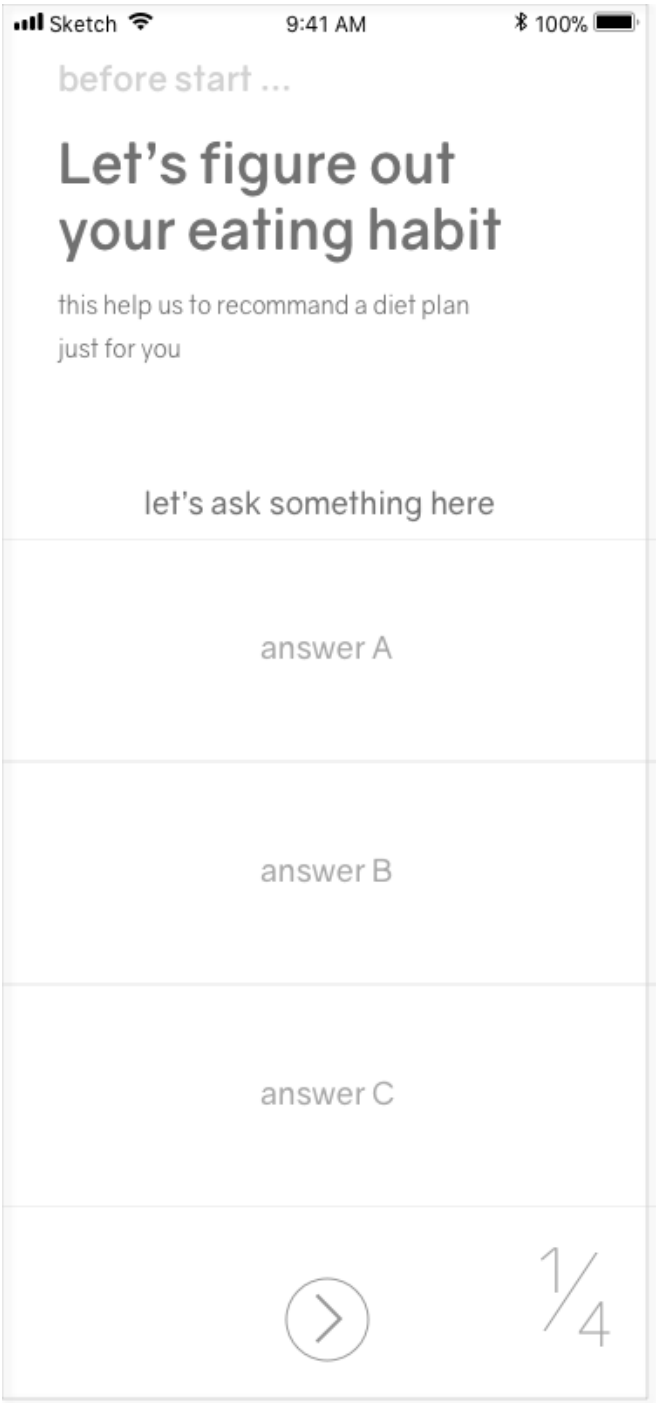
1) Let's say you have used the Meal Tracker app for a while. You inputted your meals for 4 weeks now and you decide to get some feedback on your intake. This app has some features that can give some feedback, and you can also display it on your calendar (on the app) for planning. You can start by opening the app to the home page.



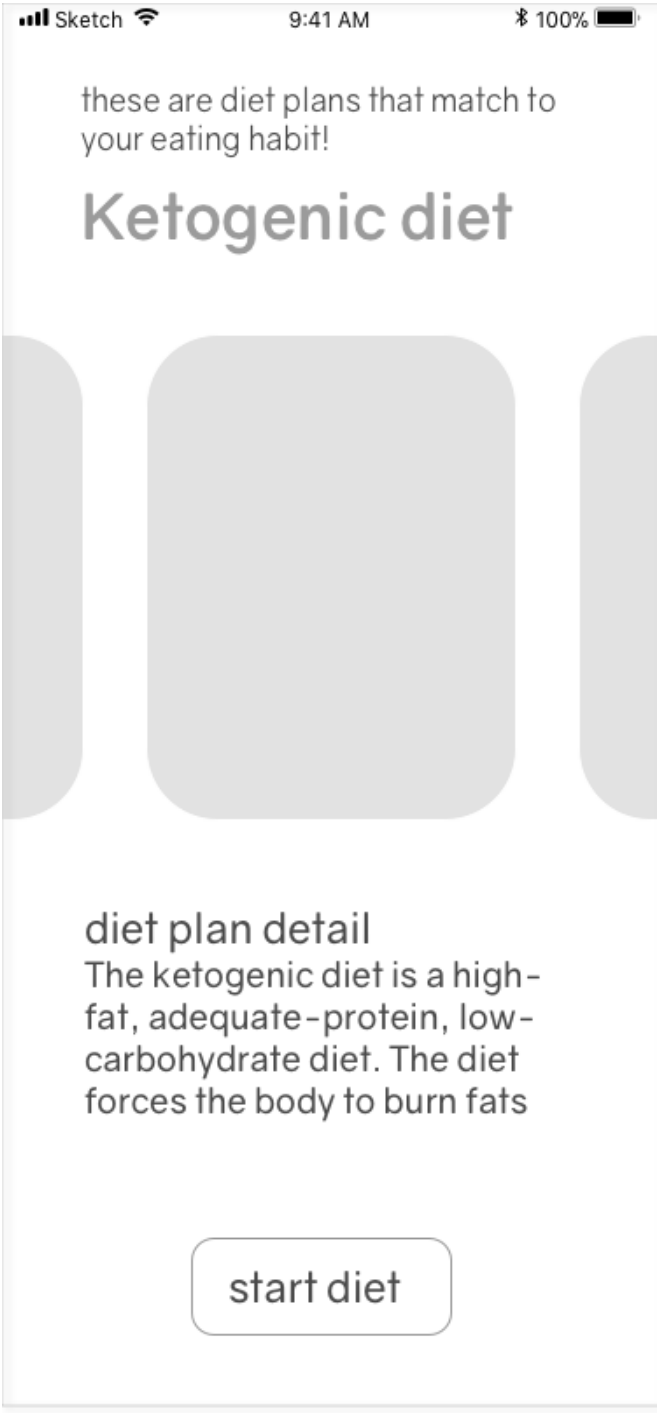
2) You can access your calendar on the homepage by swipe down from the top. This would redirect you to your calendar which has all your inputted meals from the past. You can flip through the months of the calendar by tapping the arrows, and you can get information from any day by tapping the date on your calendar.



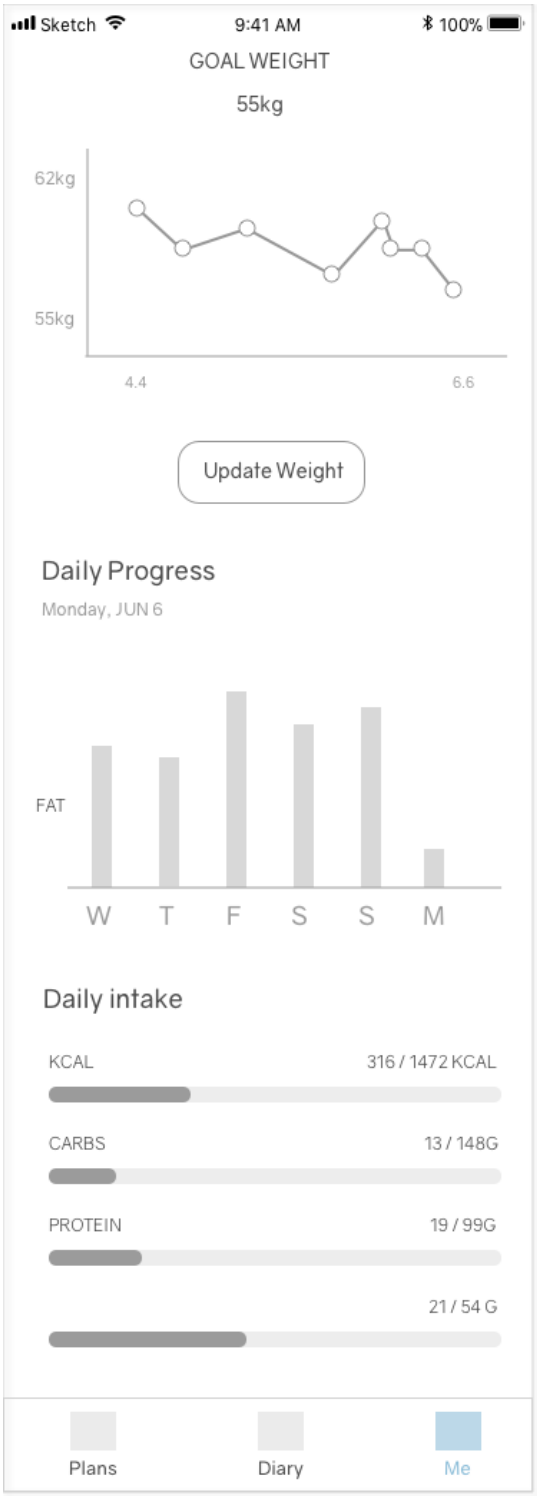
3) To take the eating habit test, go to home page and tap on Plan. Select the Test option by tapping it. This will redirect you to the test page where it will ask you a series of questions regarding your diet, eating habits, daily calories, cultural food preferences, etc.



4) Afterwards, you can create a meal plan by tapping the Recommendations option on the home page. you will then be redirected to another page where the app gives recommendations based on your test, and daily intake you've inputted over the past 4 weeks.

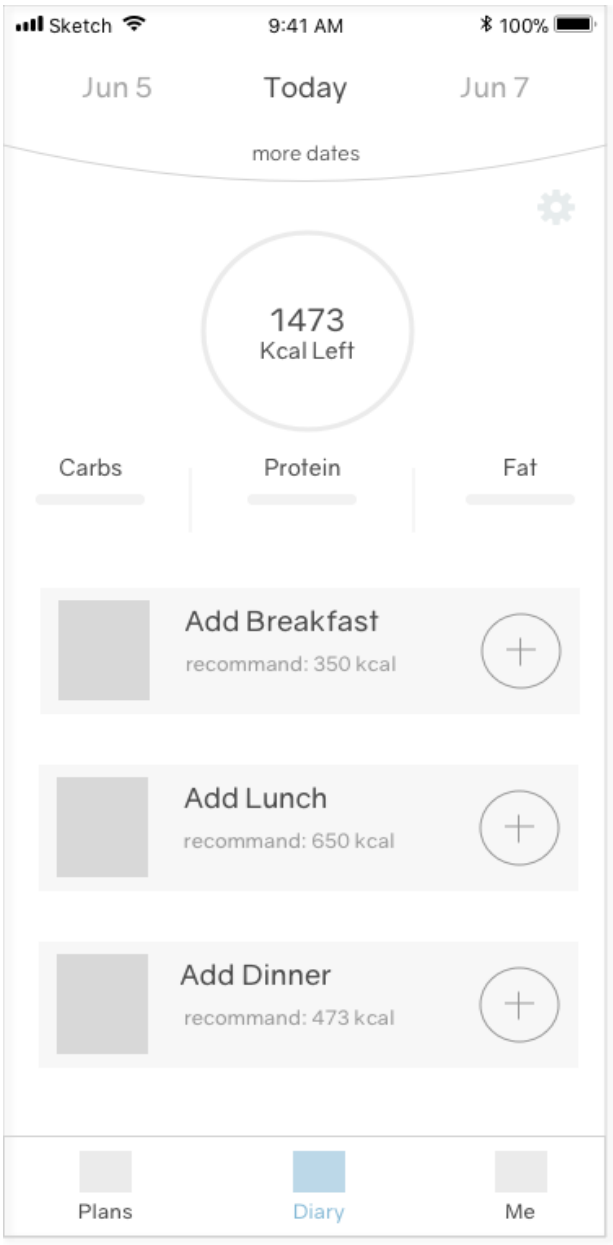


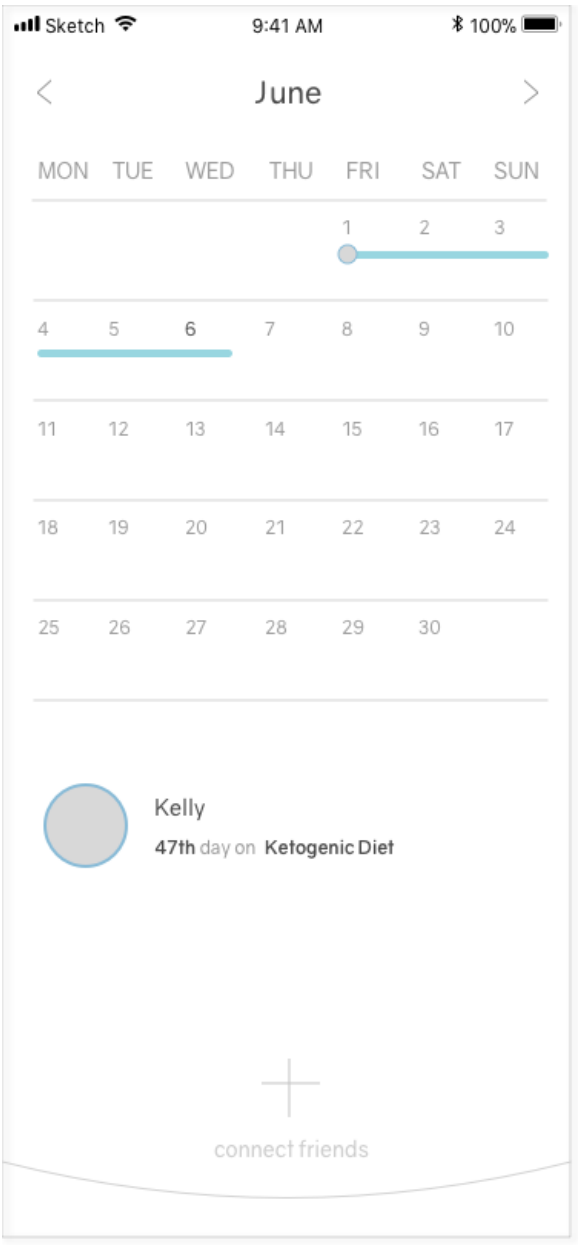
5) Finally, if you want to have a visual on your daily intakes, then you can tap the Statistics option on the home page to display a graph of your daily intakes.



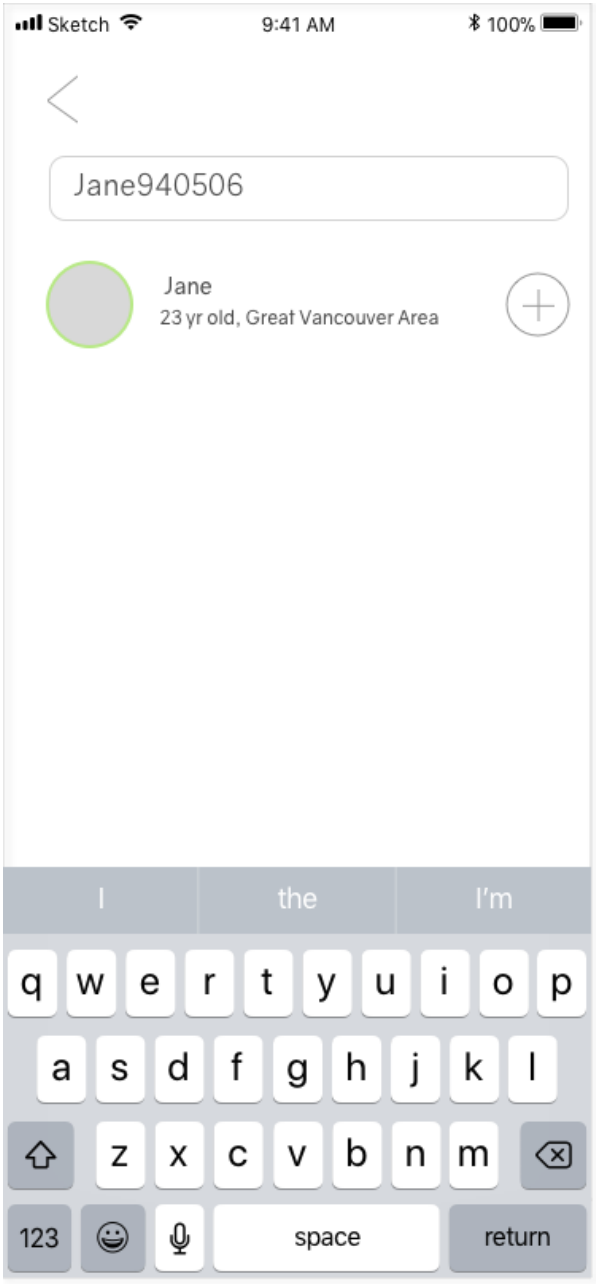
Scenario 4: Friends and Contacts

1) Let's say you know some friends who has the Mealify app and you want to start a diet plan together to keep each other motivated. You can start by opening the app to the home page, and swipe down on the top to open calendar.

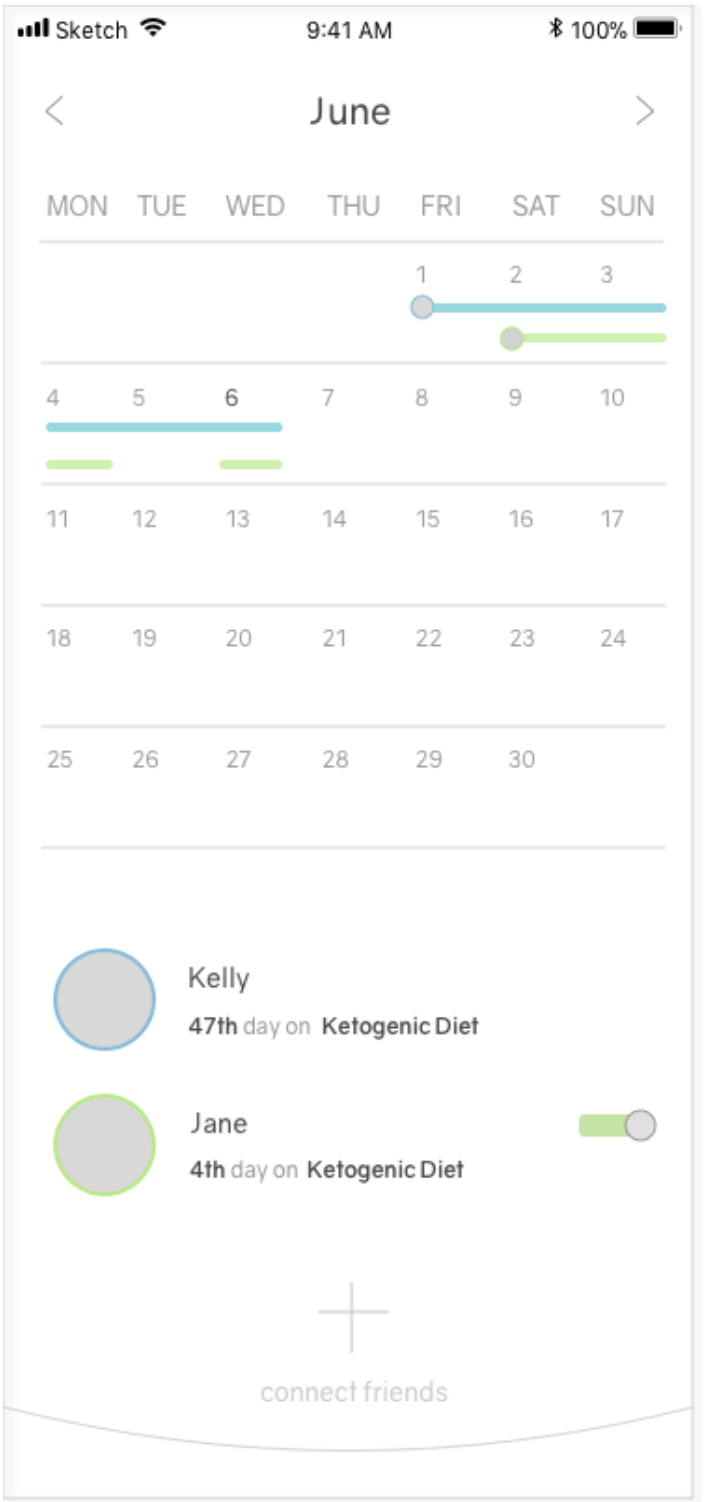




2) Next, you can tap the connect button to add a friend by searching her/ his username. This will send a invitation to that user.



3) Once the invitation got approved, you can see your friend's diet plans and information. You can choose whether you want to see this information or not by selecting your friend's name.



Glossary

API - Application Programming Interface. A set of definitions and tools used for making software.

AR - Augmented Reality. Interactive experience of real world features as part of the application.

RAM - Random Access Memory - computer storage that stores data and machine code.

Open source code - code released under a license that gives users the right to study, change, and distribute the software.

Ketogenic diet - diet that is high in fat, adequate in protein, and low in carbohydrates.

Vegan diet - diet which includes no animal products.

Vegetarian diet - diet that does not include meats.

Pescatarian diet - diet that does not include any animals besides fish and seafood.

Gluten-free diet - diet that excludes gluten, a mixture of proteins found in wheat and grains.

Reference

1. CNF Database: https://www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/nutrient-data/canadian-nutrient-file-2015-download-files.html
2. Google Firebase: https://firebase.google.com/
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4. Charts API: https://github.com/danielgindi/Charts
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9. Sendbird Chat Tutorial: https://blog.sendbird.com/how-to-build-an-ios-messaging-app
10. Google Maps API Tutorial: https://developers.google.com/maps/documentation/ios-sdk/intro
11. ARKit2 API: https://developer.apple.com/arkit/
12. Brian Advert's 3D scanning tutorial: https://www.youtube.com/watch?v=FEqBW3cKF2k