U-Fit

Portfolio

CPSC 481

Group 16

Tutorial Section: 03

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PART 1: LO-FI PROTOTYPE

PHASE 0: SETTING THE STAGE

1. Background environment

U-Fit has contacted our company Hyperion Software Inc., to develop them a new mobile application, specifically a fitness tracking app. This app must have all the expected features of a fitness tracking app combined with an intuitive and elegant user interface that would seamlessly allow users to record their fitness progress. The current system in place is cluttered and inconsistent, a new system is required to solve this issue so that U-Fit can provide a better experience for their clients or potentially gain new ones. Potential users are not obligated to use U-Fit (The old application), since there are plenty of similar systems in the market, so it is crucial that the new interface is very alluring to potential customers.

2. Use and General Expectations

This system is intended to be used by real people to make changes in health habits, this includes diet and nutrition. It is expected that our system gives the user the ability to monitor their current workout regimen and keep track of what they are eating in an intuitive and seamless user interface. We also plan on implementing a few more features such as a sleep tracker, weight tracker and water tracker. This system is expected to run on any modern mobile device that supports current or relatively new operating systems. It is expected that the system be very intuitive and uncluttered.

3. System constraints

There are a number of constraints that limit the design of our system, one of those being the time crunch that the group must cope with. This project must be completed before the end of the semester and this time limit may pose complications and may require us to compromise on certain features that we had originally thought of implementing differently. Another constraint we are faced with is the fact that our system must be designed for mobile users, this makes it more challenging to fit everything we want into a small screen. Our group must come up with clever solutions to display our system without losing its usability or sacrificing key components. Lastly, our project must be strictly implemented in C#, this could limit our imagination if there are possible features we cannot implement using this programming language that may be available in other languages.

PHASE 1: IDENTIFICATION

EXPECTED TYPES OF USERS

We expect a diverse group of users to explore the app and learn how to utilize its features in order to meet their health and fitness goals. In terms of age range, we expect to find people in the early twenties up to mid-sixties. Some users would have very specific goals in mind like losing weight or gaining muscle, while others may just want to become healthier overall. For our app we plan on creating a simple user-friendly interface that can be utilized by users of all experience levels:

Novice Users: Users that have little to no experience using fitness apps but would like to utilize an fitness app to help pursue their health and fitness goals. We can assume that these users have an idea of how they would like to use the app but they may not know how to fully utilize it to meet their health and fitness goals.

Intermediate Users: Users that have experience using fitness apps but are looking for an app that better fits their needs. We can assume that these users know how to utilize fitness apps in order to meet their health and fitness goals.

We also anticipate differing levels of general fitness knowledge - for example, metrics of energy expenditure and the formulas to calculate these metrics.

WORK CONTEXTS

Users will utilize the app whenever they wish to track data that is beneficial to their health and fitness. For example, if a user has just finished a workout they can then input the exercises they did and the duration they did those exercises. Another example would be if a user just ate a meal they could input what they ate and how many calories the meal contained. Users will be able to track data such as calorie intake, BMR, TDEE, diet/macros, exercise and exercise duration, weight, water intake, sleep, heart rate, and blood pressure. By tracking this information users can utilize it to meet their health and fitness goals. For example, if a user wishes to lose weight they can track their calories such that they will have a calorie intake less than their TDEE which will result in a calorie deficit, thus resulting in weight loss.

CONCRETE TASK EXAMPLES

Task 1. Margaret Castle

Margaret is 62 and uses the number of steps she has walked exclusively as the metric for her physical activity. When she wakes up in the morning, she puts on her wrist a watch (fitness tracker). Periodically throughout the day Margaret will look at her watch, and observe the number of steps she

has walked. At the end of the day Margaret will remove the watch and place it at her bedside table. Approximately once per week Margaret will plug her watch in to charge it.

Additional tasks user wants to do to do

1. Set up a daily step counting goal so she knows how close she is to meeting her goal each day (this may only happen once, but it does need to happen at least once)
2. Synchronize all data to a computer so she may analyze her physical activity and understand if she is meeting her long-term fitness goals

Discussion

Margaret has 2 primary goals regarding her fitness/fitness tracker: (1) get any amount of physical activity every day. (2) get a minimum amount of physical activity every day. Goal 1, getting some physical activity is more important than goal 2, getting "enough" physical activity every day. Many users may share this goal rather than having a regular exercise routine already. Margaret currently wears the fitness tracker on her wrist but would prefer something that could be worn on a belt or placed in a purse.

Task 2. N.H

Note: She asked for her name to be abbreviated for anonymity

N.H, a 20-year-old university student, is not currently using any fitness trackers. She does not exercise regularly but is conscious of her eating habits and would like to establish a routine as follows. When she wakes up, she wants to see how much sleep she got. Then throughout the day, she wants to track per meal caloric and macronutrient intake and the amount of water she drank. If she finds time to take a walk or walks or follow YouTube exercise routines at home, she wants to track the amount of time she spends on that physical activity. At the end of the week, she plans to weigh herself, compare that with past numbers and calculate her BMI. She would like to use the recommended BMI for her body type as a benchmark in reviewing records of her diet and physical exercise to make necessary lifestyle changes.

Discussion

N.H represents a potential novice user who currently does not track their fitness levels in any way. The only fitness tracker she had used is a step counting app on her phone which she would check every day to see if she had met the daily optimal number of steps. She also notes that while she thinks tracking her fitness goals everyday would be ideal, she may forget and spending some time on the weekends to input the information for the past week all at once is more realistic. This sentiment may be common among new users.

Task 3. Alan Million

Alan Million, a middle-aged man with very little fitness experience, is looking to slim down for the summer by increasing his daily activity and decreasing his caloric intake. Every time before Alan has a meal, he notes the total caloric value of said meal. Alan often has the same meal multiple times a day and has to record the same meal a given number of times. Also, Alan records the walks/stairs/bike rides he makes throughout the day. Alan lives a very sedentary lifestyle, the majority of his day is spent either in his office chair while at work, or in his car when commuting. Alan says he has made several attempts in the past to manage his weight, but has ended with little or no success.

Additional tasks user wants to do

1. Monitor body weight over an extended period of time

Discussion

Alan has many qualities a typical expected user. Many users are unfamiliar with health tracking apps and are relatively new to the health and fitness industry, inactive and busy with work or school. Also, like many potential users, his schedule doesn't allow much time to dedicate towards inputting his information on a day to day basis. Alan's scenario also points to an issue N.H. did not account for which is repetitive actions i.e. tracking multiple same meals per day.

Task 4. Shane Evans

Shane, a 36-year-old male, has a day job and goes to the gym 3 to 5 times a week. His goal is to gain muscle. To this end, he has tried using the app "My Fitness Pal" but stopped because he is too lazy to track all the data. He knows that his ideal diet should consist of 40% protein, 30% carbs, 30% fats and provide more than 2833 calories in Total Daily Energy Expenditure (TDEE) to ensure muscle growth. He calculated this recommended TDEE using his age, height, weight, and level of physical activity. Although he isn't doing it currently, he would like to track his caloric and macronutrients intake, as well as his Basal metabolic rate (BMR) and TDEE daily. Based on this input, he wants to receive calorie and macronutrient suggestions to meet his goal. As he progresses, he would need periodic recalculations of his new calorie and macronutrient goals.

Discussion

Shane reflects a non-insignificant group of potential users. Unlike N.H. and Alan, some users are already knowledgeable about fitness, have concrete goals and desire to track more information like BMR, and TDEE. It is also expected that some users might have prior negative experience using a fitness tracker. Alan mentioned that he has been reluctant to use such technology again, but would be interested in a fitness tracker that can simplify the process for him and does not require a lot of time to use every day.

Task 5. Bellamy Blake

Bellamy Blake, a 22-year-old 5’ 8” tall, 150lb male, has been running casually for a couple of months. He now wants to be more diligent in his training by tracking his times and distances to monitor his progress. After completing a run Bellamy wants to see a report of his distance, time, average pace, and calories burned. After reviewing this Bellamy wants to check some of his previous runs at this distance, including his personal best, and compare the stats of those runs to the run that he just did.

Additional tasks user wants to do

1. Look back at details of previous entries.
2. Find total distance over weekly, monthly, and yearly intervals.

Discussion

Bellamy is a similar user to Shane, but he desires to track his exercise routine rather than his diet. In addition to running Bellamy sometimes cross trains with swimming and biking, and would like to have the same functionalities for these two exercises as well. In general, users may do a wide variety of exercises outside these three activities and may want to track them individually as well.

TASK COLLECTION AND VALIDATION

We collected all of the tasks by interviewing real people. Margaret and Marcus were the parents of one of our group members. N.H. was the roommate of one of our group members. Alan was the brother of a group number. Shane, and Bellamy are both friends of group members. Some of the names are aliases, but all are interviews of real people.

Task validation was performed by Ryan Parent who is relatively experienced with being an end user of similar apps performing similar tasks in the past.

PHASE 2: LIST OF REQUIREMENTS

Must Include

1. Calorie Counter (Task 2, Task 3, Task 4)
    a. Calorie In
    b. Calorie Burn
2. Weight Tracker (Task 2, Task 3, Task 4)

Should Include

1. Step Tracker (Task 1, Task 2)
2. Activity/Workout Tracker (Task 1, Task 3, Task 5)
3. Macronutrients Tracker (Task 1, Task 4)

Could Include

1. Sleep Tracker (Task 2)
2. Specialized Stats (BMR, TDEE) tracker/calculator (Task 4)
3. Personal Bests (running times or weightlifting records) (Task 5)

Exclude

1. Recipes suggestions (Task 4)
2. Workout suggestions (Task 4)

PHASE 3: PROTOTYPING

After identifying the key requirements for our interface, we let each member create their own sketches. The idea was to allow for more creativity and diversity among our sketches which we could then merge into a final prototype. Below we will discuss each of the initial prototypes: their weaknesses, strengths, what we discarded, and what we retained. All the sketches, and final lo-fi prototype can be found in appendix 1.

Prototype 1. This sketch was very plain and only tackled the weight and calorie intake requirement. However, it accounted for the majority of the process from recording meals, viewing net calories, to setting and editing weight goals. The downside to this prototype was the inadequate use of whitespace and lack of visualization. We wanted our final prototype to also be this thorough with each tracked element, but to be more visually appealing.

Prototype 2. This design incorporated more functionalities that prototype 1, but each was less detailed. Each of the individual pages had a straightforward design that allowed users to add meals, add water consumption, and keep track of daily calories. From this design we kept the bottom navigation bar, which seemed to be more convenient than the sidebar from prototype 1 that required users an additional click. We also found the use of graphs more intuitive than prototype 1.

Prototype 3. Prototype 3 was similar to prototype 2 in that it had the same navigation menu at the bottom. Its strength is that it incorporated all the key functionalities that we had initially laid out. The design sketch also allowed the user to check their history, so a user could view their progression from months past. However, it is cluttered and heavy with text, which makes it more difficult to navigate each page. Our takeaway from this sketch was the general organization and functionality, but we needed to find a way to make usable and intuitive.

Prototype 4. This prototype, similar to the previous 2, has a navigation menu at the bottom that allows quick access to all the screens corresponding to key tasks. A feature of this design that we haven't seen yet is the main menu to display daily progress. The progress circles and bars reduced the amount of text and was visually intuitive, so we kept them in our final design. Another feature we took away was the quick add icon in the center of the navigation bar, which would allow users to access the “Add” functionality from any page without having to i.e. go to “Foods” to add food.

Prototype 5. Prototype 5 was our first fully thought-out design. We used Prototype 1 as the benchmark for ease of use and constantly referenced Prototype 2 to ensure this design was not missing key functionalities. It had bits and pieces of each of the previous iterations, but was more neatly organized and complete. Each key tracking requirement had its own progress page and an “add” page i.e. the activity page [5.4] and the “add activity” page [5.5]. This allowed for more information to be

displayed while minimizing clutter. We also kept the “quick add” button from Prototype 4 in the center of the page and the bottom navigation menu. Our group converged on this prototype after a lot of consideration and had chosen it as our final candidate because it was both relatively complete in terms of functionality and aesthetically pleasing. However, there was definitely still room for improvement.

Prototype 6 – Final Iteration. Upon completing the second group presentation, we received some feedback from both our peers and TA’s. The general consensus was that there was still too much information being displayed, which overloaded the interface and made some basic operations confusing to users. After reconsidering and modifying our example tasks / requirements, we created Prototype 6. This new design was similar to Prototype in its overall organization but introduced some new functionalities. For one, this design implements an automatic activity tracker for distance and time (a suggestion we received during the Q&A), but also keeps the manual add feature for users who forget/choose not to start a timer. We removed the water tracker and added a “step counting” feature which allowed users to set a daily goal for number of steps. Another feature that we realized had been neglected before was a welcome screen for first time users. This screen allows the user to input biometric information of themselves prior to using the app. All these small adjustments led to a design which despite having more screens, is overall cleaner and better serves our targeted users.

PHASE 4: WALKTHROUGHS

Headings for each table:

- **Step;** Step Number
- **Description;** Step Description
- **Knowledge:** Does the user have knowledge to do this step?
- **Motivation:** Is the user motivated to do this step?
- **Comment / Solution:** Comments and solutions for problems with this step

SCENARIO 1

Task 1. Margaret Castle

Margaret sets up a daily step goal when she first downloads the app. Some later day Margaret goes about her usual day, periodically checking her U-Fit app to observe the number of steps she has taken for the day. She also checks how well she has met her step count goal for the previous week.

Step	Description	Knowledge	Motivation	Comment / Solution
1	Open U-Fit application for the first time, bringing us to the welcome screen [6, 1]	Yes	Yes	
2	Margaret enters her age, sex, weight, height, and current activity level	Yes, the welcome screen is quite self-explanatory	Possibly, if she is not motivated she can leave these fields blank for now, she just won't be able to get a calorie burned calculation	A welcome banner might be good to make the app seem friendlier
3	Margaret does not have a weight goal, so leaves that blank, but puts in her	Yes, but does she know she can leave	Yes, the step goal is Margaret's main	Some sort of explanation to show that not all fields need

	daily step goal at 5,000 steps	weight goal blank?	reason for downloading the app	to be filled out could be useful
4	Margaret selects “Save” and maybe after browsing the app for a minute she closes the app	Yes	Yes	
5	Sometime later Margaret opens the app, bringing us to the home screen [6, 2] to check how many steps she has had today	Yes	Yes	The app should automatically open to the home screen
6	Observe step count on home screen	Yes, the step count is clearly labelled, and there is no need to navigate to other pages	Yes, she is curious about her current step count	The step count as well as the step goal will be labelled, with a bar showing the progress for the day
7	Margaret repeats steps 6 and 7 throughout the day as desired	Yes	Yes	
8	Margaret clicks on “>” next to the steps to bring us to [6, 5.1]	Maybe	Yes	Possible this button doesn’t obviously do something, we should be sure to make the user aware of what this button does some way
9	Margaret selects “Week”	Yes	Yes	

	to view her steps over the last 7 days, bringing us to [6, 5.2]			
10	Margaret observes her 7-day average and if she has not met her goal for any days so she can be more aware if she is missing out on her goal regularly	Yes	Yes	Will be able to swipe side to side on this page to view previous weeks. This is not entirely obvious as it is right now, though the dates at the top do suggest being able to see different weeks

Summary. Margaret's only concern is keeping track of her number of steps. The welcome screen asks for certain information, but does not make it clear that not all information is necessary. For example, it asks about a weight goal, even though Margaret does not have one. In addition to making this clearer, some sort of welcome message might make new users feel better about the app. Another major problem is navigating to the step count tracker page [6, 5.1]. The only way to access this page is by clicking on ">" next to steps on the home page [6, 2]. This might not be immediately obvious, and a user might think that to see the step count tracker page they would need to go click on the "Activity" button instead. The way that the steps for the current day are displayed along with the goal steps as a bar seems to be aesthetically pleasing, as well as practical as it is easily accessible on the home page.

SCENARIO 2

Task 2. N.H

Assumption. N.H. has already downloaded our app and has done the basic setup. But she does not yet have much experience with the app.

N.H. wakes up on a Saturday and sits down at the table to eat breakfast, she has waffles and orange juice. While she is eating she opens her phone and enters the meal into our app. After she goes for a walk and when she returns she opens the app and logs how far she went. For lunch she walks next-store to Chopped Leaf and has a salad (let's pretend Covid-19 doesn't exist). In the afternoon she

follows a "20-minute full body workout" YouTube exercise routine and once that finishes she opens the app again to log it. Since it is the end of the week she decides to weigh herself and see if she has made any progress towards her goal.

Step	Description	Knowledge	Motivation	Comment / Solution
1	Launch app for first time today, taken to main screen [6, 2]	Yes, she has opened the app before	Yes, she wants to track her info	
2	Click on the big plus button and then choose food. [6, 2] + [6, 7]	Yes, the button is large and centralized	Yes, it is obvious how to do it and only 2 quick button presses	An absolutely brand-new user might not know to press this. But this can be solved with a popup on first launch.
3	Add waffles and orange juice to the meal [6, 3.2] + [6, 3.1]		Yes, she is able to see frequent items to add and a form to add a new food item.	It is not immediately obvious how to add multiple food items to the meal, for example she isn't 100% clear if "Add item" will do something different from "Finish". She is also unsure why to put into the free text entry for "portion".
4	Goes for walk			
5	Upon returning opens app, clicks big plus icon, then activity, then Manual add	Yes, the button is large and centralized	Yes, it is obvious how to do it and only 3 quick button presses	

	[6, 7] + [6, 4.1]			
6	Enters walk information into activity form [6, 4.1.2]	Yes, but entering the calories burned is tedious	Mostly, she is able to enter the duration and distance with relative ease but she is confused by the calorie input.	When she enters duration and distance she sees that calories is automatically calculated for her so she understands that she wasn't actually expected to enter calories, in the future she will probably remember this. But it would be clearer if the calories burned wasn't an input.
7	Goes to Chopped Leaf for a salad			
8	Opens app, clicks big plus button and chooses food [6, 3.2] + [6, 3.1]	Yes, she is familiar with how to get to the "add food" page	Yes, it is just a few obvious button presses	
9	Enter salad into app [6, 3.1] + [6, 3.2]	Yes, Chopped Leaf has both portion sizing and calorie information published with their menu	Yes, since Chopped Leaf publishes portion sizing and calorie information with their salads she has no uncertainty about what to	This step is only easy because Chopped Leaf publishes the necessary info, this will not be a common event.

			do.	
10	Follows a "20-minute full body workout" routine on YouTube			
11	Opens app, clicks big plus icon, chooses activity [6, 7] + [6, 4.1]	Yes, the button is large and centralized	Yes, it is obvious how to do it and only 2 quick button presses	
12	Enter "full body workout" into app [6, 4.1] + [6, 4.1b]	Yes, except that "distance" doesn't make sense for a full body workout, it is listed as optional though so she is less confused.	Yes, she remembers from this morning that "calories burned" isn't something she needs to enter herself, so she enters duration.	This interaction worked alright, she was told that distance was optional and she remembered calories burned was a calculated value but it would have been smoother if distance wasn't there and calories wasn't an input box.
13	Weighs self			
14	Opens app, clicking plus button and selecting weight [6, 7]	Yes, the button is large and centralized	Yes, it is obvious how to do it and only 2 quick button presses	
15	Enters weight into app. When submitting app	Yes, it is one field and very obvious what to do	Yes, it is a simple form	

	takes user to the progress screen [5.10]			
16	Observes progress towards goal [6, 6]	Yes, N.H. wants to see if she is getting closer to her weight goal which is obvious based on the graph	Yes, there is nothing to "do" here, just read and interpret the graph, which is easy to do	

Summary. N.H.'s major problems centered around adding food and adding an exercise. These were her most common activities and, in both cases, there were fields or inputs that she either didn't need or didn't know what to put into them, causing her to stop and think. In future iterations we should continue to improve these pages and see if we can't ensure that N.H. never sees an input that she doesn't know how to deal with.

SCENARIO 3

Task Example 3. Alan Million

Assumptions. Alan has already used the app before so upon opening it he is not directed to the welcome page, rather he is at the home page.

Alan just got off work and is about to make his way home. He decided to ride his bicycle back to his apartment so that he can beat traffic, Alan would like to log this activity into the app. Alan checks the date and realizes It has been 30 days since his last weigh-in, his personal trainer has told Alan to record his weight every 30 days, so Alan decides it best to input his new weight into the App rather than on paper.

Step	Description	Knowledge	Motivation	Comment / Solution
1	Alan opens the app from his phone	Yes, Alan has opened the app before	Yes, so he can input information	

2	Alan taps the plus button in the center of the page and selects “Add Activity”. See figure [6.8]	Yes, he's done this before	Yes, so he can then go on to record his bike ride	To make it more intuitive we could add an Icon instead of having only text for the 3 options
3	Alan then selects “manual add” option from figure [6.4.1]	Yes, Alan kept track of the exercise himself and wants to manually insert	Yes, it makes sense to allow users to choose auto tracking or manual selection	
4	Alan inputs the information about the bike ride home, this includes duration, distance and exercise name from a drop-down list	Yes, Alan is familiar with drop down lists as they are very common among apps and websites	Yes	Distance covered can be an optional choice, this may cause a headache for the user to estimate and may lead to inaccuracies
5	After completing step 4, Alan hits the “save” button on the same page	Yes, intuitively this button will confirm the submission	Yes, this will finalize his submission so the motivation is highest here	
6	Alan is now redirected to the “finished tracking” page, see figure [6.4.2]	Yes, no action is required from Alan	Yes, here Alan can double check his input and see his daily recap for activity	It’s possible that users may make input mistakes, an edit feature to change previous activity may be a solution
7	Alan closes the app	Yes, Alan is familiar with	Yes, he is now done what he had set out	

		Mobile apps		
8	Alan weighs himself later that evening with his bathroom scale.			
9	Alan opens the app and is greeted with the home page	Yes, he's done this before	Yes, he wants to record his weight, as advised by his trainer.	
10	Alan selects the "plus button" from figure [6.8] and selects "Add weight"	Yes, this button intuitively adds/updates progress	Yes, he's getting closer to inputting his weight	Maybe we should have a scale icon to make it clearer
11	Alan is now taken to the "Weight" page, figure [6.7]. He enters his new weight in the text box	Yes, simply typing a number into a box is a simple enough task	Yes, he's nearing the end of the process	maybe we can include a drag option to adjust the current weight
12	Alan is redirected to the profile page where the graph is now updated with his new page, see figure [6.6]	Yes, action is required on Alan's part as this is an auto redirect	Yes, Alan's progress is now displayed via a line graph and his changes are clearly displayed	
13	Alan closes the app	Yes	Yes, he is now done updating his weight	

Summary. Alan's goal to record exercise and update his weight were both quite straight forward, the total number of steps to do both of these is also a reasonable amount. Although a user like Alan had no issues, it is understandable that some novice users or individuals that aren't as tech savvy may

find some features a little tricky to find at first. Although the learning curve for this is quite a small one as all the features are laid out quite intuitively. It may be helpful to add some icons for the “plus button” in figure [6.8] so users with poor eyesight or literacy can better identify what these buttons correspond to. Overall the design is quite clean and easy to use, some minor changes can make it friendlier to newer users.

SCENARIO 4

Task 4. Shane Evans:

Assumptions. Shane has downloaded the app and entered his information. Shane has used fitness apps before and is able to navigate the app with ease. Shane knows he must eat at calorie surplus in order to gain muscle. Shane knows that his ideal diet should consist of 40% protein, 30% carbs, 30% fats.

Shane wakes up on his day off and begins his day. The first thing Shane plans to do is eat breakfast. As he is cooking breakfast he enters his meal into the app. After he inputs the meal information he checks his macros and realizes his carb intake is high so he needs to eat more protein and fats to account for that, so he can reach his macro goals. Shane decides he is going to go to the gym. Shane does not feel it is necessary to track his workout but to account for the calorie burn he decides he will eat an extra meal after his workout. Once Shane gets home he is undecided on what to make for his post workout meal in order to reach his macro goals, so he inputs/removes items until he finds a combination that will increase his protein/fats and decrease his carbs. Shane then goes about his day and logs/monitors his meals until he has reached his calorie surplus goal and macro goals.

Step	Description	Knowledge	Motivation	Comment / Solution
1	Launches the app which takes him to the main screen [6,2].	Yes, starting the app is intuitive.	Yes, Shane wants to reach his goals.	
2	Clicks the + button to navigate to the add page [6,8].	Yes, the + symbol is visible and intuitive.	Yes	Some new users may not understand what this means but after exploration of the app it will become intuitive.

3	Clicks the add food button which brings him to the add meal page [6,3.1]	Yes, the add meal button is large and clearly labeled.	Yes	
4	For all meal items he inputs the item's info and presses the add item button.	Yes, the add item button is clearly visible and intuitive to use.	Yes, Shane wants to ensure all meals are tracked to reach his goals.	User may be unclear on how to add each item at first but after trying it the user should be able to understand how to use it.
5	Clicks the finish button and is redirected to the finish adding meal page [6,3.2].	Yes, the finish button is clearly visible and intuitive to use.	Yes	The function of the finish button may be unclear but once the user uses it once they will see it redirects them to the finishing adding meal page.
6	He then reviews items added and verifies the information is correct.	Yes	Yes, he wants to make sure the information is correct.	
7	Clicks the yes button that indicates he would like to add the meal. He is then redirected to the homepage [6,2].	Yes, the yes button is clearly labeled and there is a prompt indicating what it means.	Yes	
8	Clicks the food button and is redirected to the food page [6,3].	Yes	Yes, he wants to review his macros.	

9	He reviews his macros and realizes he needs more protein/fat. Then he exits the app.	Yes	Yes, the information displayed is a key indicator on how to plan his next meals.	
10	Repeat steps 1-8 for his post workout meal.	Yes	Yes	
11	He reviews his macros and his protein/fats intake is still not quite right, so he clicks on the > button of the meal he wishes to edit and is redirected finishing adding meal page [6,3.2]	Yes, his meals are displayed and the > intuitively means to edit.	Yes, he wants his macros to be correct.	The > button may not be clear to all users that it is to edit/options. This can be solved by changing the icon or providing a tutorial on how to add items. But overall if the user presses it they will understand its function.
12	He wants to remove the carbs from the meal so he clicks the > button and removes it.	Yes, his meal items are displayed and the > intuitively means to edit.	Yes	Same as the comment above in step 11.
13	Clicks the add more button and redirected to the add items page [6,3.1]	Yes	Yes	
14	He enters his items that are high in protein/fat. The clicks finish and then he is redirected to the finish adding meal page [6,3.2].	Yes	Yes	

15	Repeat steps 6-8	Yes	Yes	
16	He reviews his macros and they are now correct. He exits the app.	Yes	Yes	
17	Repeats all steps needed until he reaches his calorie goal and macro goal.	Yes	Yes	

Summary. Shane's main tasks were to monitor his calorie and macro intake. Overall this process was straightforward in the walkthrough. Shane was able to add his meals and then review his calorie/macro data which he then was able to use in order to achieve his goals. For users that are trying to do these tasks for the first time there may be a small learning curve but after they do it once they should be able to do the tasks again with no problems. One function that could be improved is to display calorie intake and macros on the finishing add meal page, so when the user is planning their meal they will be able to see if it is consistent with their goals.

SCENARIO 5

Task 5. Bellamy Blake:

Assumptions. Bellamy has downloaded the app and put in the necessary info required for a calorie-burned calculation. He has also done many runs previously which have been stored in the app.

Bellamy Blake is about to go on a run and wants to log his run on his U-Fit phone application. Before running he opens the app to start tracking his run. After completing the run he checks to see information about the run, and then checks previous runs to compare his progress.

Step	Description	Knowledge	Motivation	Comment / Solution
1	Open the app, bringing the user to the home screen [6, 2]	Yes, anyone can open an app	Yes, it is important to Bellamy that he logs his runs	Have a clear picture and name for the app

2	Clicks on the plus button at the bottom center of his screen, popping up a menu to add items [6, 8]	Yes, the add button is visible and intuitive	Yes	Also has the option to go to activities page and add an activity from there
3	Clicks on the activity button, bringing us to the add activity screen [6, 4.1]	Yes, activity add button is visible and intuitive	Yes	
4	Clicks start tracker bringing us to [6, 4.1.1a]	Yes	Yes	If Bellamy has already done his run he can manually add it afterwards if he wishes
5	Selects “Yes” for tracking distance	Yes	Maybe, extra step that is not always needed	This could be auto filled to last selected option
6	Selects “Start” and then does his run	Yes	Yes	Could have a countdown before the timer starts so Bellamy has time to put his phone in his pocket before starting to run. After the timer is started there should be a pause button on the timer. Distance could continuously be displayed while still in the middle of the run.
7	After completing his run clicks finish, bringing us to [6, 4.1.1b]	Yes	Yes	

8	Selects the drop down menu and chooses the activity type “Run”	Yes	Maybe, extra step that is not always needed	Since Bellamy mostly does runs this could autofill to his last used activity, with the ability to change it if he wishes
9	Bellamy can now observe the duration, distance, and calories burned as well as a map of his path. After observing this information Bellamy selects “Yes” to save the run, bringing us the activity saved screen [6, 4.2]	Yes	Yes	
10	Here Bellamy can look over the details of his run again and see a graph of his pace over the last few months, clicks “Done” bringing us to the home screen [6, 2]	Yes	Yes	Is this page necessary? Could just include pace on the previous page
11	Click on the “Activity” button to go activities page and observe previous runs [6, 4]	Yes	Yes	Maybe after adding an activity we are automatically brought to the activities page. If we do this, then this is another reason why page [6, 4.2] is not needed
12	Clicks on “Create Report” button to view	Because Bellamy has	Yes	We’re still not entirely sure how best to go about viewing

	previous runs, bringing us to page [6, 9]	done this before yes, but new users might not understand how to view previous activities		previous activities
13	Bellamy selects "Custom Period" and selects 3 months ago to today	Yes, this is quite self-explanatory	Yes	
14	Bellamy selects "Run" and distance about 5km	Yes, this is quite self-explanatory	Maybe, perhaps some sort of autofill could be nice here	The filter should be plus or minus the given distance, perhaps plus or minus 1km?
15	Bellamy views the report where he can see a graph of his pace over the given time period and distance, and he can scroll down to see all of the activities given by the filter parameters	Yes	Yes	What will the reports for other activities look like? What if Bellamy wants to view a wider range of distances? It's certainly not bad for now, but we will need to put more thought into how viewing previous activities will work on pages [6, 4] and [6, 9]
16	Close app	Yes	Yes	

New Prototype Notes. Steps 4-10 have changed from prototype 5 walkthrough, where he would have entered his running details manually instead. Also step 12 onwards are slightly different with the "Create Report" feature rather than just viewing all activities on page [6, 4].

Summary. The method to add an activity seems to work well, though we should note that auto filling certain fields could make the app easier to use, such as auto filling activity types and whether or not to track distance. We should make sure the timer can be paused, and the distance is continuously displayed during the course of a run. Also, page [6, 4.2] may not be necessary. The main problem for this walkthrough is how to access and view previous activities. One thing not addressed is how activities other than running will be displayed. Should the create a report page [6, 9] exist or should that just be merged with the activity page [6, 4]? Is there a better way to view activities than by filtering through the date and activity type? These are some questions we should concern ourselves with while continuing to work on the activity page [6, 4] of this application.

WALKTHROUGH FINAL SUMMARY

Completing walkthroughs gave us a better idea of the functionality required by our users. It also allowed us to pick up on details that we had overlooked. An example is that at first, it was not clear that users can choose different units of measurement i.e. pounds, kilograms... After noticing this in our first round of walkthroughs, we sketched out drop-down menus and added notes to clarify.

Another pattern that emerged was the lack of visual assistance. Navigating the app is easy for us as designers of the app. However, when we put ourselves in the mindset of users, it quickly became apparent that the interface was not so intuitive, especially for first-time users or perhaps users that are not as fluent in technology. This suggests we can include more images in place of text. For example, in the plus button shown in figure [6.8], you are given 3 options that are all plain text. These texts can be replaced by small icons that are representative of their corresponding action, such as a scale in the "Add weight button". Visual representations would also better accommodate those who are not literate or struggle to read small text, thus increasing our user base.

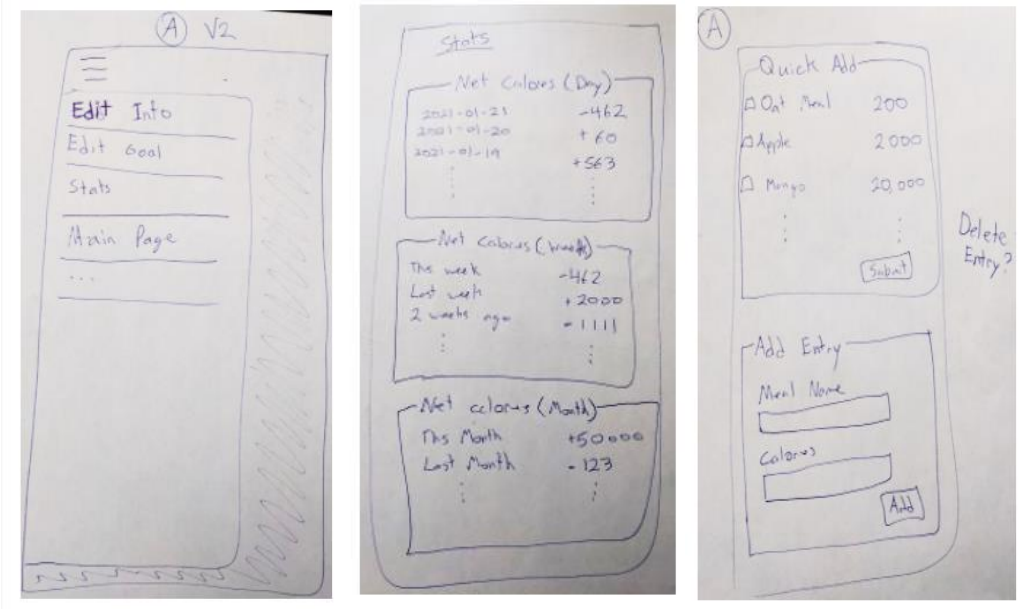
These walkthroughs also posed a lot of questions regarding user motivation during certain steps. Would a user really want to log in every time they access the app? Would a user enjoy recording the same meal multiple times a day? Several times during initial walkthroughs we failed to justify certain features or processes, and that in turn inspired new components like suggestions in the add food page as shown in figure [6.3.2]. It also allowed us to do away with unnecessary steps that users would not be motivated of performing.

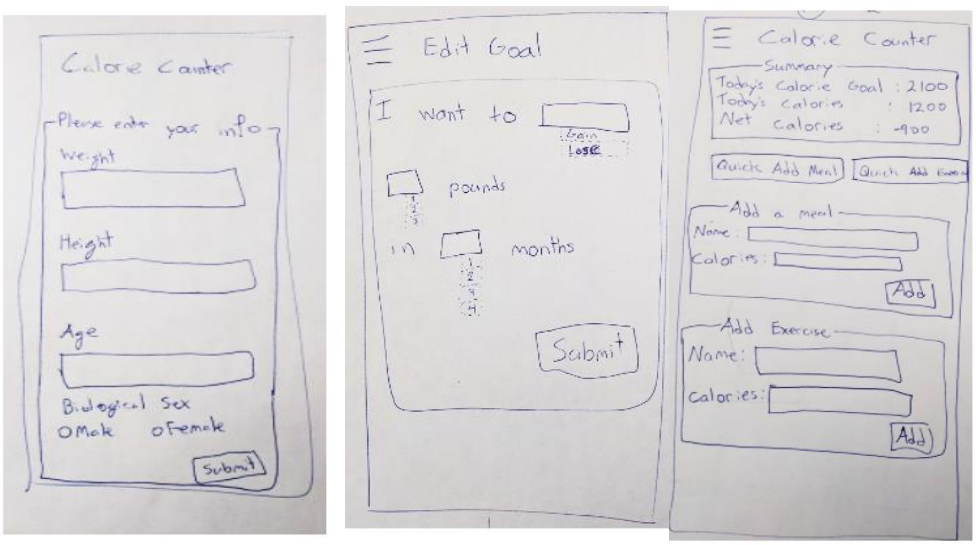
Apart from the flaws, we also recognized what he had done right. Namely, the layout of the system allowed for all of our task examples be achieved with a high level of simplicity. All in all, phase 4 required us to be critical and thus gave us a new perspective of our design. We plan on adopting these changes and carrying forward this task-centered mindset into future components of this project.

APPENDIX: INITIAL LO-FI PROTOTYPES

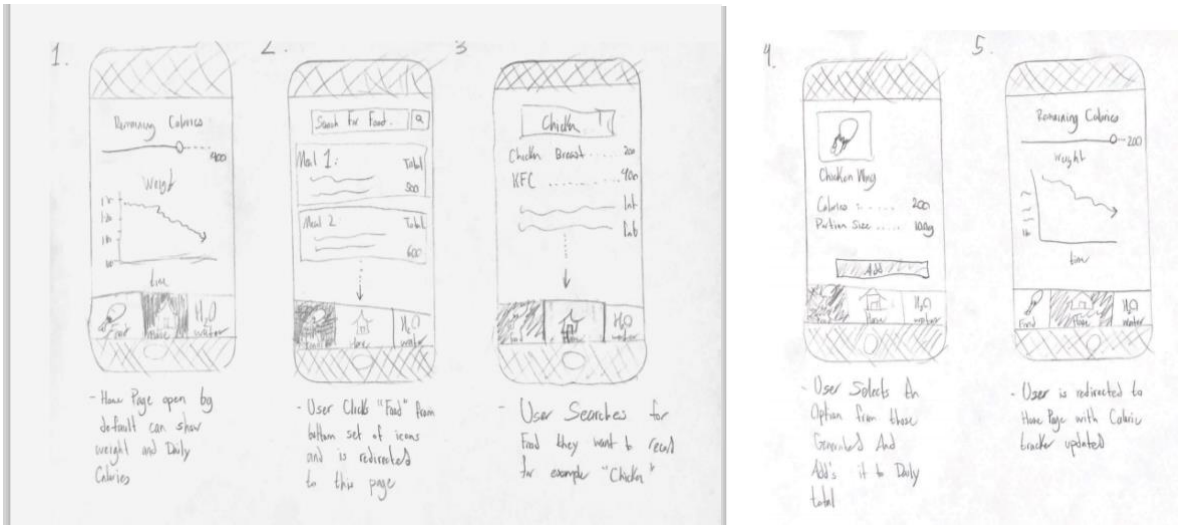
PROTOTYPES 1 - 5

1. **Prototype 1:**

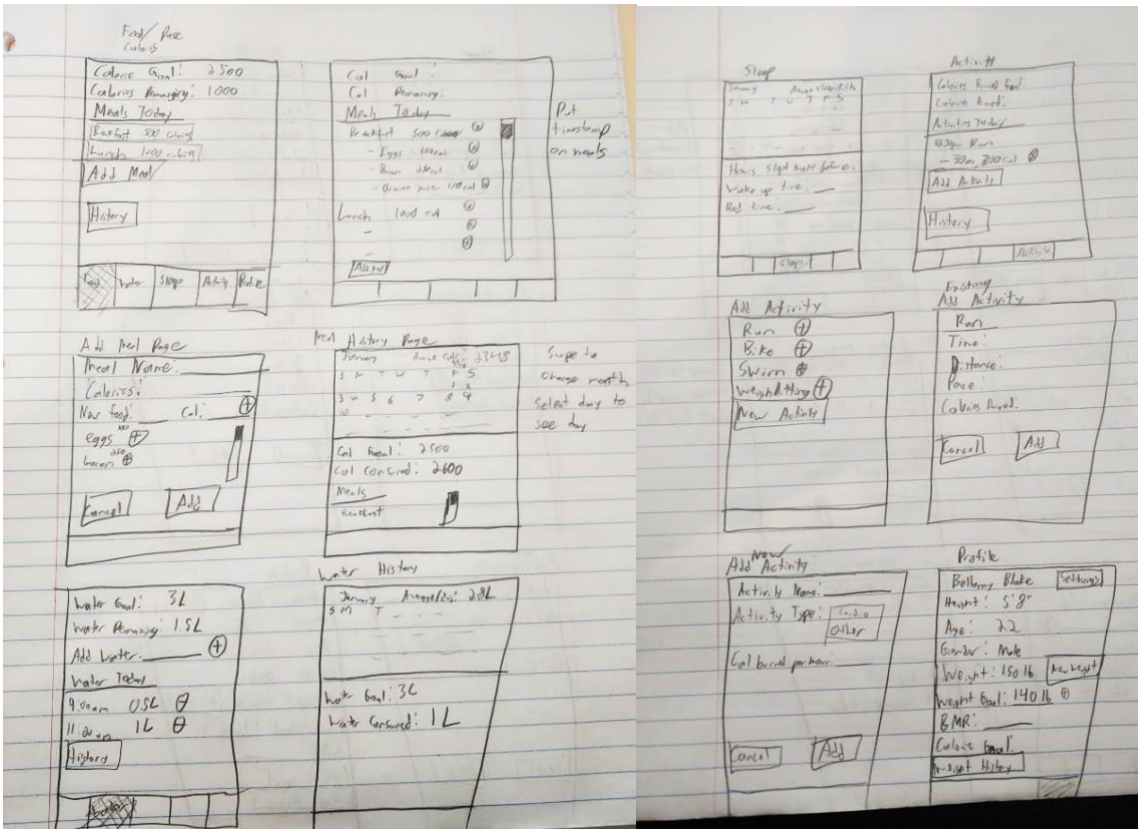




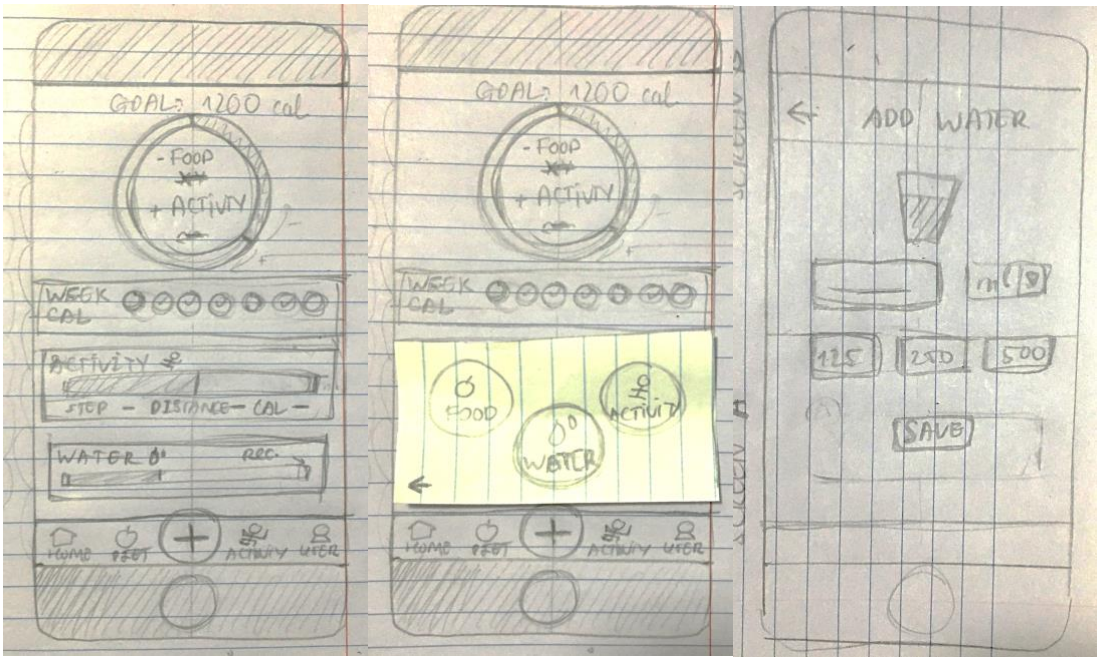
2. Prototype 2:



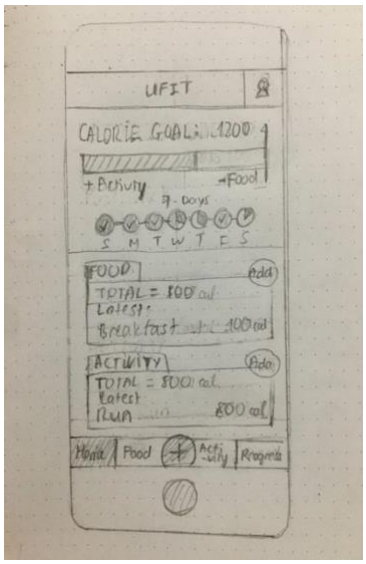
3. Prototype 3:



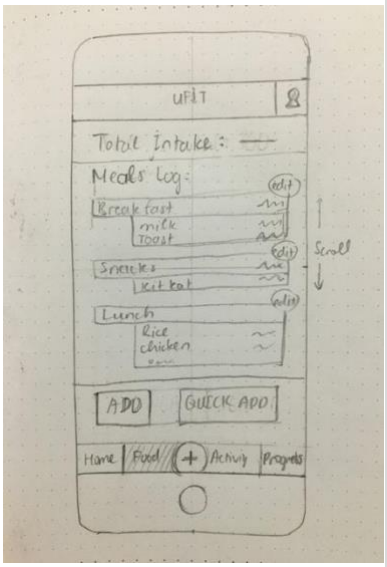
4. Prototype 4:



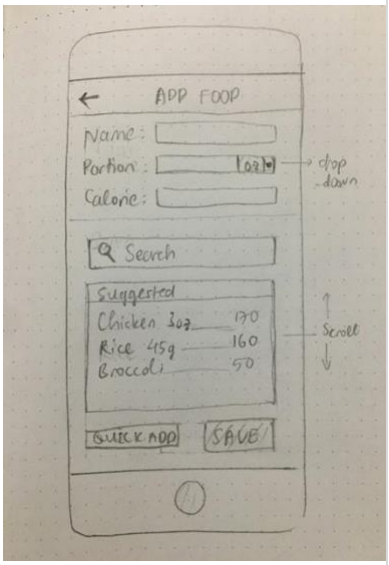
5. Prototype 5:



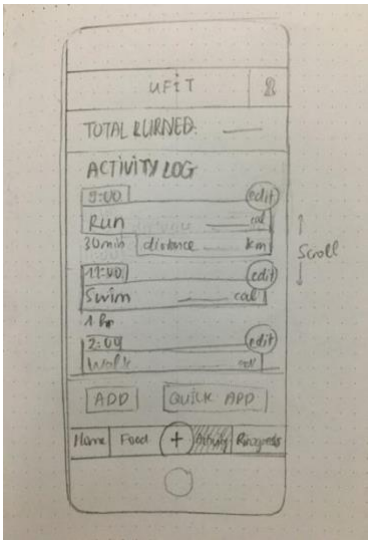
Home Page [5.1]



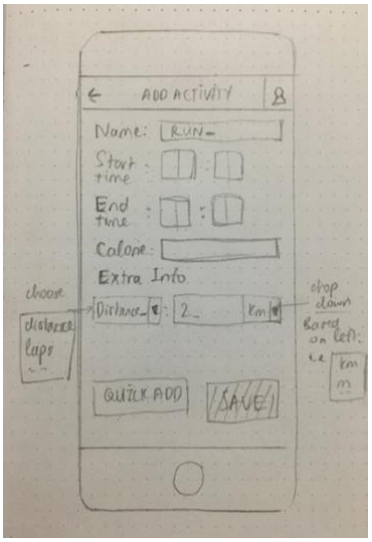
Food Page [5.2]



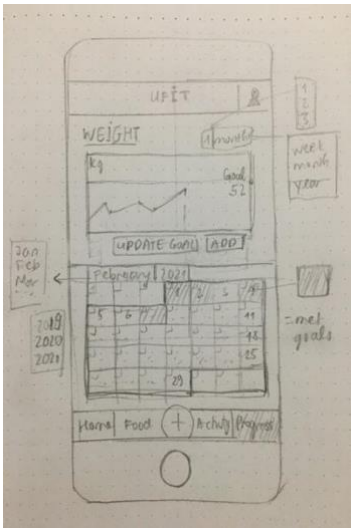
Add Food Item Page [5.3]



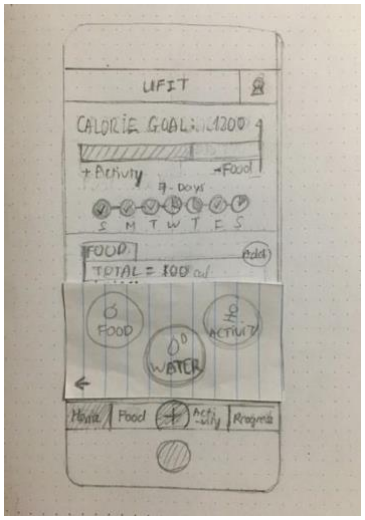
Activity Page [5.4]



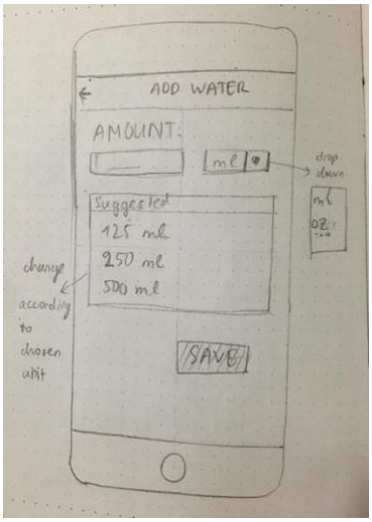
Add Activity Page [5.5]



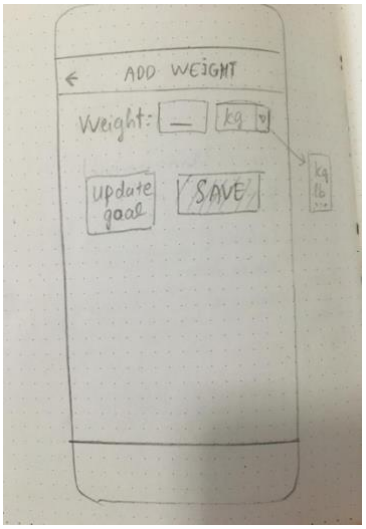
Progress Page [5.6]



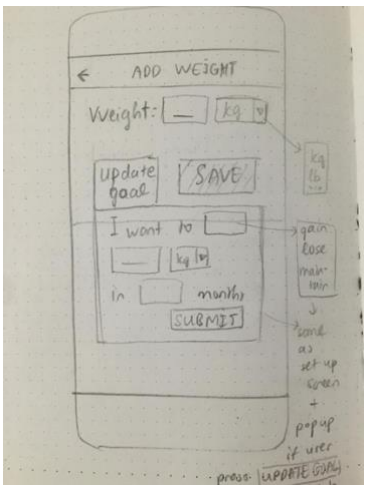
"+" Icon popup [5.7]



Add Water Page [5.8]

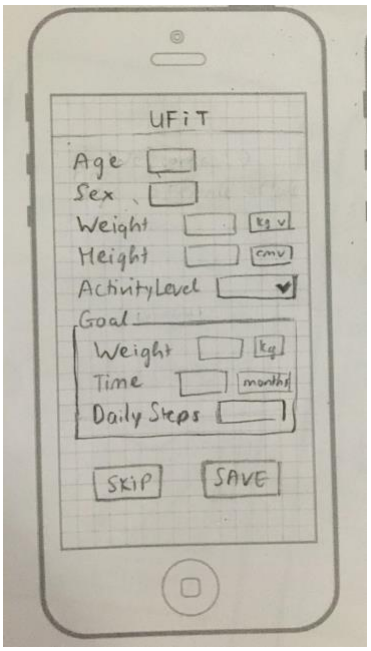


Weight Page [5.9]



Update Goal Page [5.10]

FINAL LO-FI PROTOTYPE

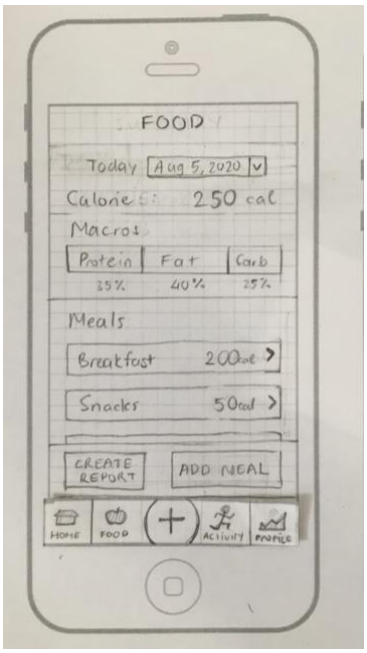


Welcome Page [6, 1]

- Click on drop-downs to choose unit of measurement. The ones chosen here will be used as preset for the app

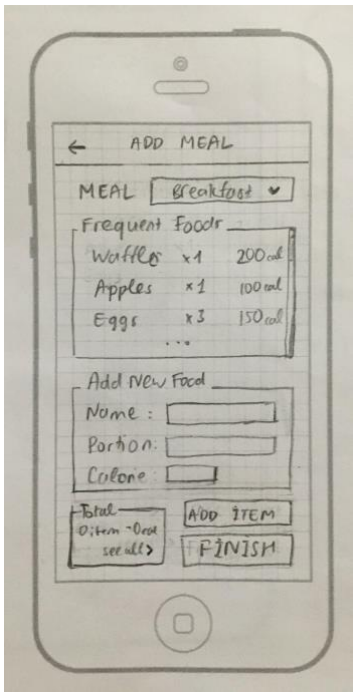
Home [6, 2]

- Pressing ">" next to steps take user to [6,5.1] by default

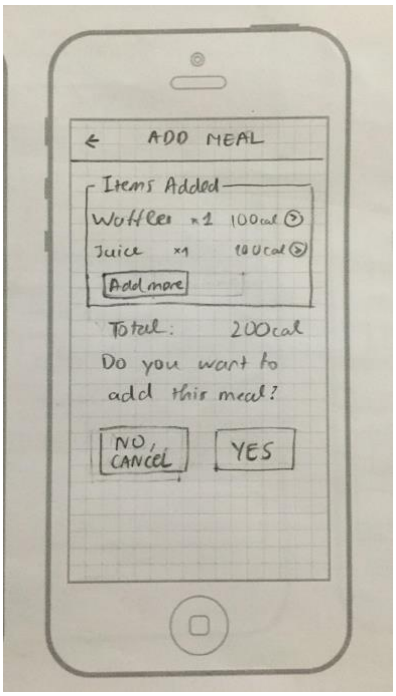


Foods [6, 3]

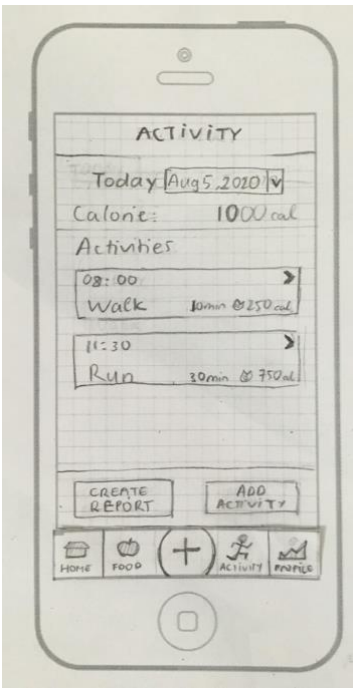
- Press ">" to see items in meal and edit



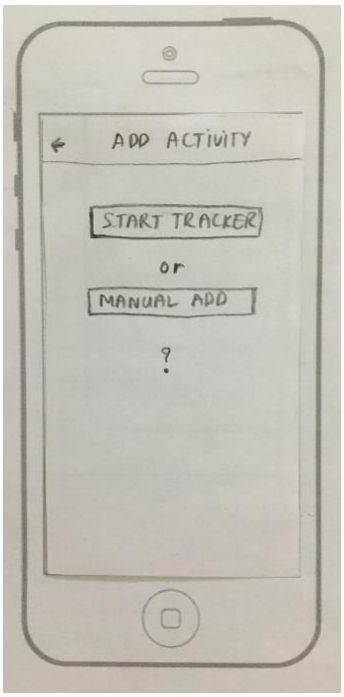
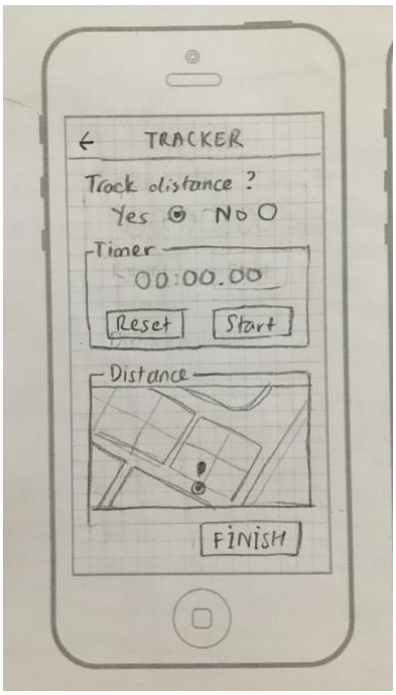
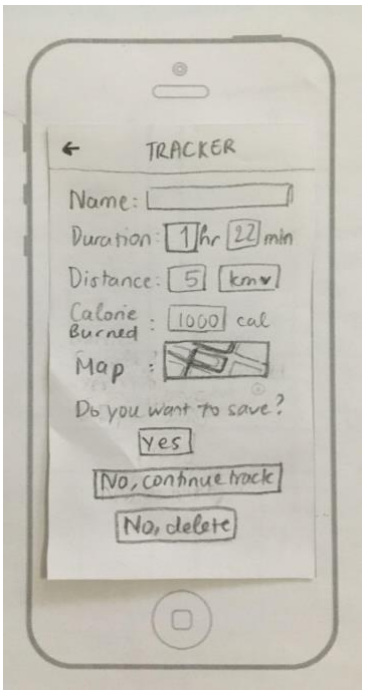
Add Meal 1: Adding individual item [6, 3.1]

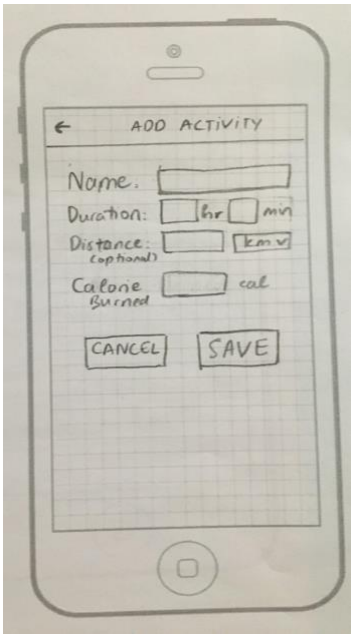


Add Meal 2: Finish adding meal [6, 3.2]



Activity [6, 4]

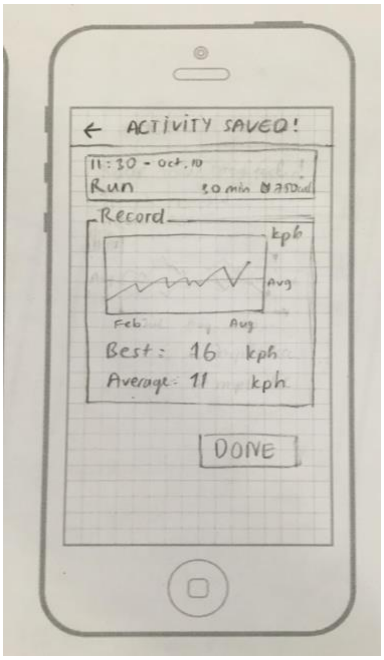
- Typing in "name" gives you suggestions - After filling name and portion, the calorie is auto-filled but user can edit		
 **Add Activity 1: Track or Manually add [6, 4.1]**	 **Add Activity 1.1a: Tracker Options [6, 4.1.1a]**	 **Add Activity 1.1b: Tracker Results [6, 4.1.1b]** - "Calorie burned" is auto-filled - Click on image to see full map



Add Activity 1.2: Manual Add

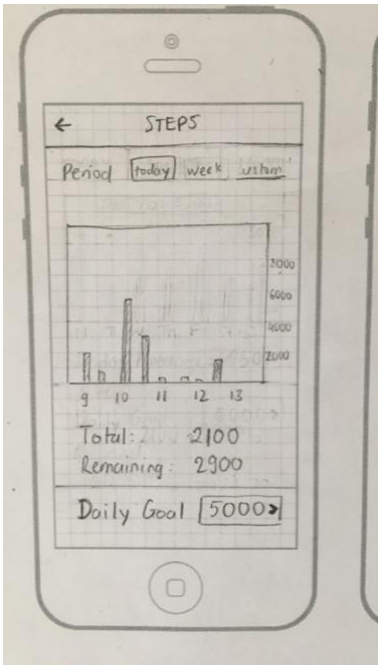
[6, 4.1.2]

- This is the default view. The "Distance" field can change depending on the activity chosen.
- Typing in "name" gives you suggestions from database
- If the activity is not in database, user can specify the additional field like in [5, 5]
- "Calorie burned" is auto-filled but user can edit also



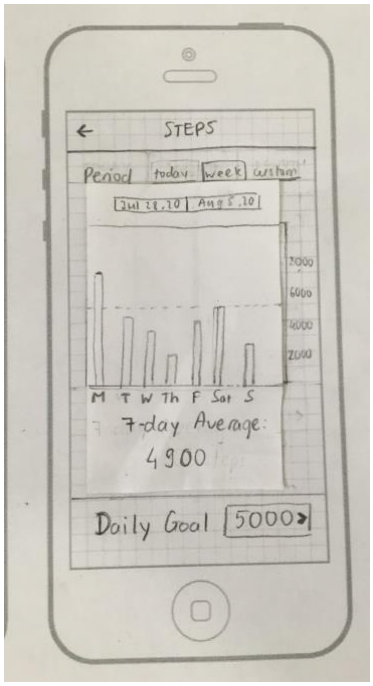
Add Activity 2: Finish tracking/manual [6. 4.2]

- Example displays a run. Different stats will be displayed according to the activity tracked / added



Steps 1: Today View [6, 5.1]

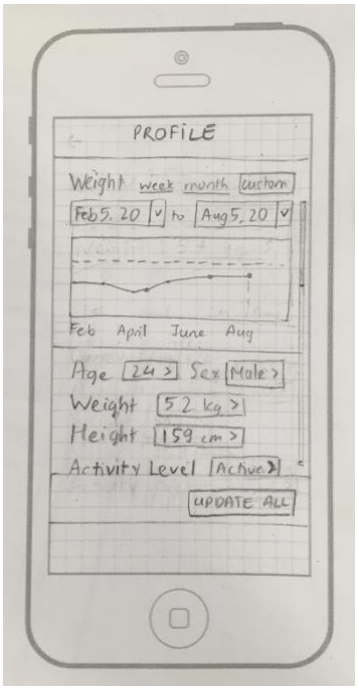
- Accessible from [6, 2] by pressing ">" from [6, 2]



Steps 2: Week View

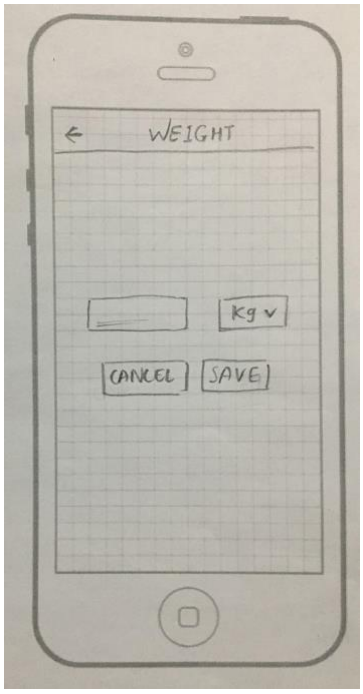
[6, 5.2]

- Users can also choose "custom" to specify end and start date. The date options are the same as [6, 6].
- If they choose 1 day, the display is similar to [6, 5.1]. If they choose multiple days, the display is similar to above [6, 5.2]



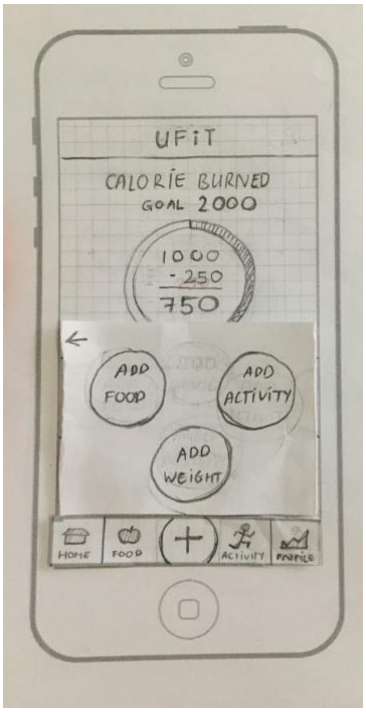
Profile [6, 6]

- For the weight graph, user can choose "week", "month" or "custom" to specify end and start date
- Press on the arrow next to any item to edit that individual field. Pop-up screen for each is similar to [6,7]
- Pressing "Update all" takes user to a page similar to [6,1] so they can edit multiple fields at once



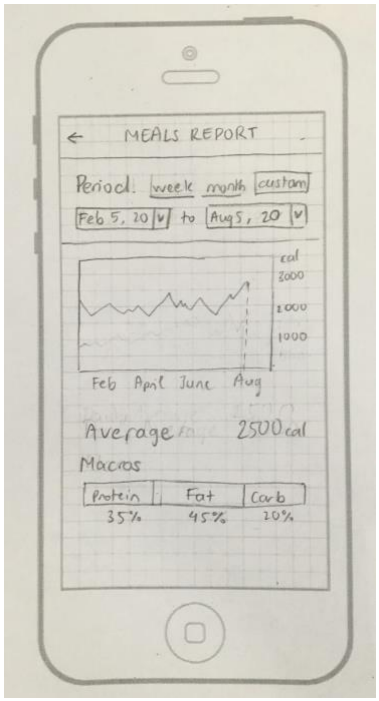
Add Weight [6, 7]

- Accessible by pressing "Add weight" from [6,8] or clicking the arrow next to weight from Profile Page [6,6]
- After saving, user is taken to Profile Page [6, 6] to see updated graph and user info

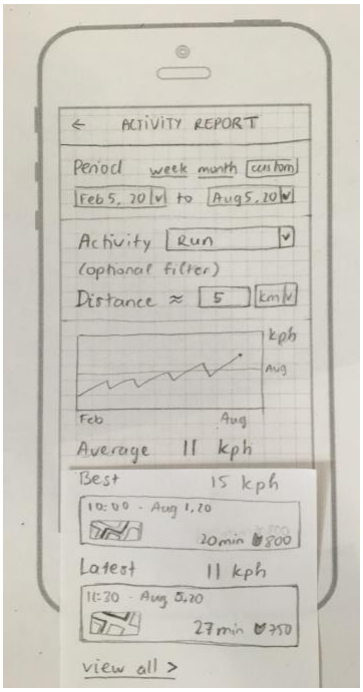


Misc.: Plus Button [6, 8]

- The (+) button can be pressed on any page that it appears on.



Create Meal Report [6, 9]



Create Activity Report [6, 9]

- The activity shown is “Run”. Different stats are displayed for different activity types i.e. reps per set.
- Click on item under “best” or “latest” to see further details
- Click on “view all” to see every matching activity

PART 2A: HORIZONTAL PROTOTYPE

REDESIGN RATIONALE

After the second presentation, we overhauled our lo-fi design to tackle the feedback we received as well as work out some issues found in the first walkthroughs. Lo-fi prototype number 6, the final version differs from number 5 in a few key aspects.

In terms of functionality, we reassessed the importance of user requirements and replaced the water tracker (see appendix 1, prototype 5, screen 5.8) with a steps tracker. To address the needs of users like Shane Evans, the food tracker now also tracks macronutrients in addition to calorie intake. We also agreed with feedback that some users might not remember the details of workouts like the duration and distance. Therefore, version 6 allows users two options when they choose to add an activity. If they have already completed their exercise, they can input the details in much the same way as version 5. If they are about to begin exercising, they can start a tracker and a distance tracker. The reason for this set-up is that users can sometimes forget to start the automatic tracker and thus would still want a post hoc option to add an activity. Lastly, a classmate pointed out that scrolling to see past meals/activities can be troublesome, so we added a function to create reports. Accessing the "Food" and "Activity" pages from the navigation bar now only shows details of the current day. To see longer-term summaries, users can press on "Create Report" and choose from the preset or specify the time frame. The app gives them back a quick graph and average stats from the period. This design has the dual benefit of better serving specialized users like Bellamy Blake while reducing clutter on screens that casual users mainly interact with.

In terms of the UX/UI, the focus of the redesign was on reducing the business of each screen and increasing ease of use. We tried to increase the amount of white space and also utilize graphs more sparingly to better communicate user progress. Version 6 also better accommodates hypothetical repeated users of the app by having preset for units of measurements and suggesting frequently added foods or activities. While some screens are still somewhat cluttered like the "Profile" and "Create Report" pages, our rationale was that most users would not interact with them very often. For example, most of the user information on the profile page would not change drastically from day to day, nor would most users have the time to i.e. check and update their height. In general, we figured that visual details like font size, margins … can be adjusted when implementing the high-fidelity prototypes and that would improve the busy screens. It was more important at that stage for the team to agree on the overall structure of the entire app and each page.

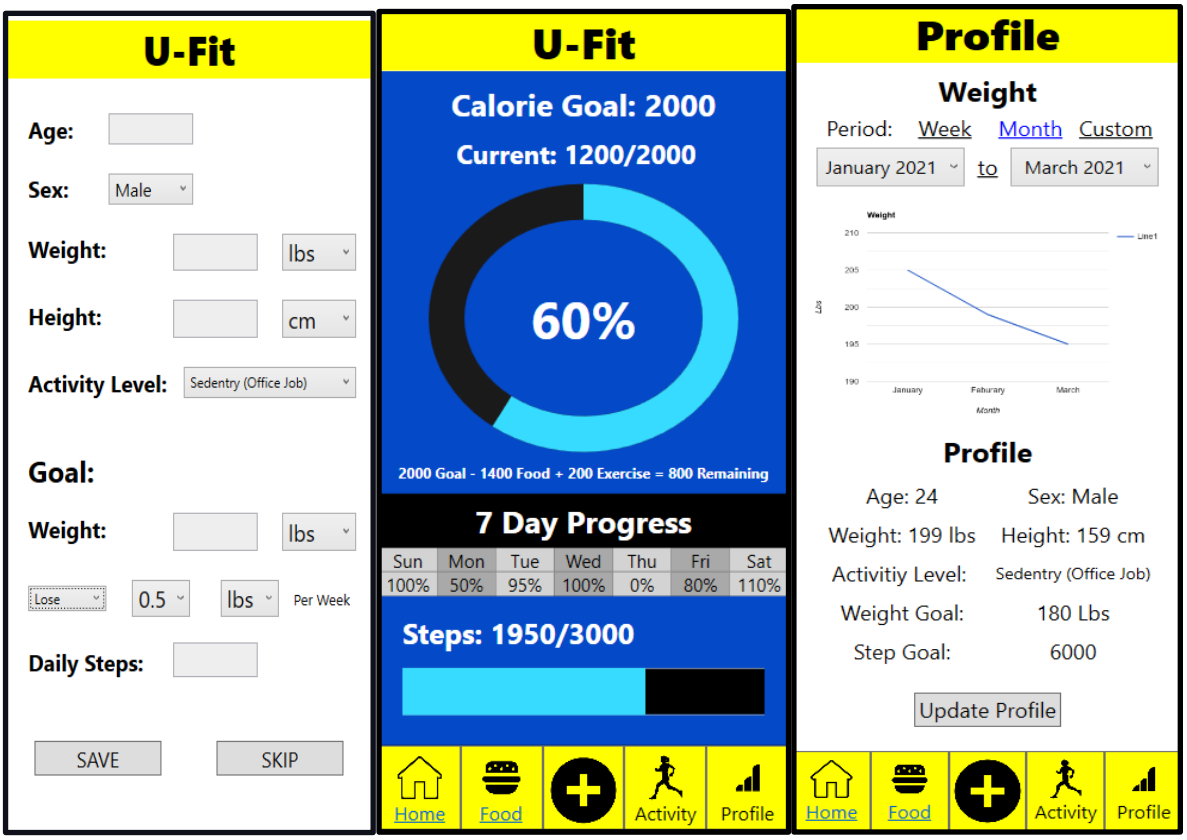
Our horizontal prototype closely follows the design of lo-fi version 6 with a few visual and interaction changes. For starters, we will address some of the more minor but still noticeable redesigns. We changed the wording for the goals to include "Gain", "Lose" and "Maintain" to capture a wider spectrum of users. On the home page, we chose to use numbers to represent the last 7-day progress

instead of circles as seen in the sketch as it was difficult to implement the original idea in XAML. The daily view in the “Steps” page in the horizontal prototype is a line instead of a bar graph. In general, where and what type of graphs to use are things we will review and adjust to achieve what best communicates information to the user.

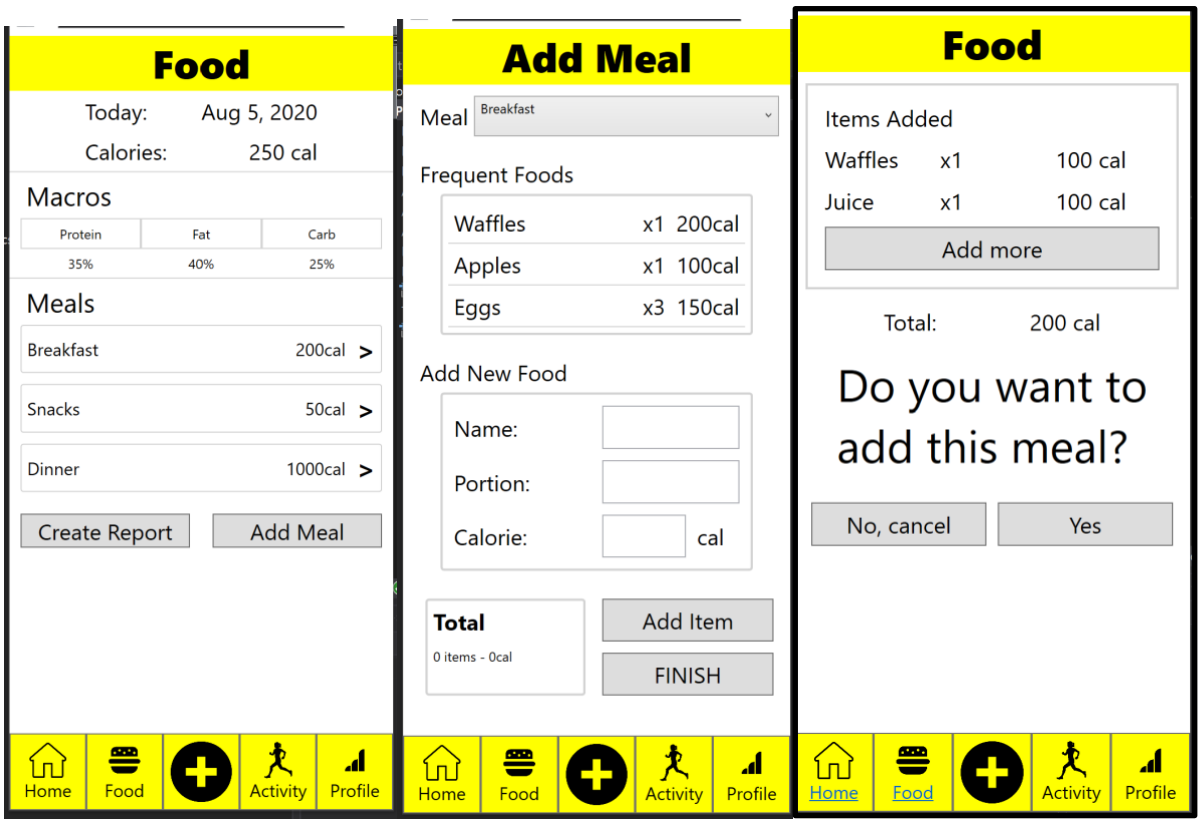
The most significantly altered element of the UI was the flow of adding an activity. Instead of differentiating manual and automatic tracking, the user is presented with the automatic tracker by default. They can then just skip past the tracker page if they want and input everything manually. If they use the automatic tracker page, the next page will be filled out with the tracking data and still have the option to edit. The rationale was that since the two options lead to similar confirmation screens, we can cut down the number of screens and simplify the flow by merging them into one process.

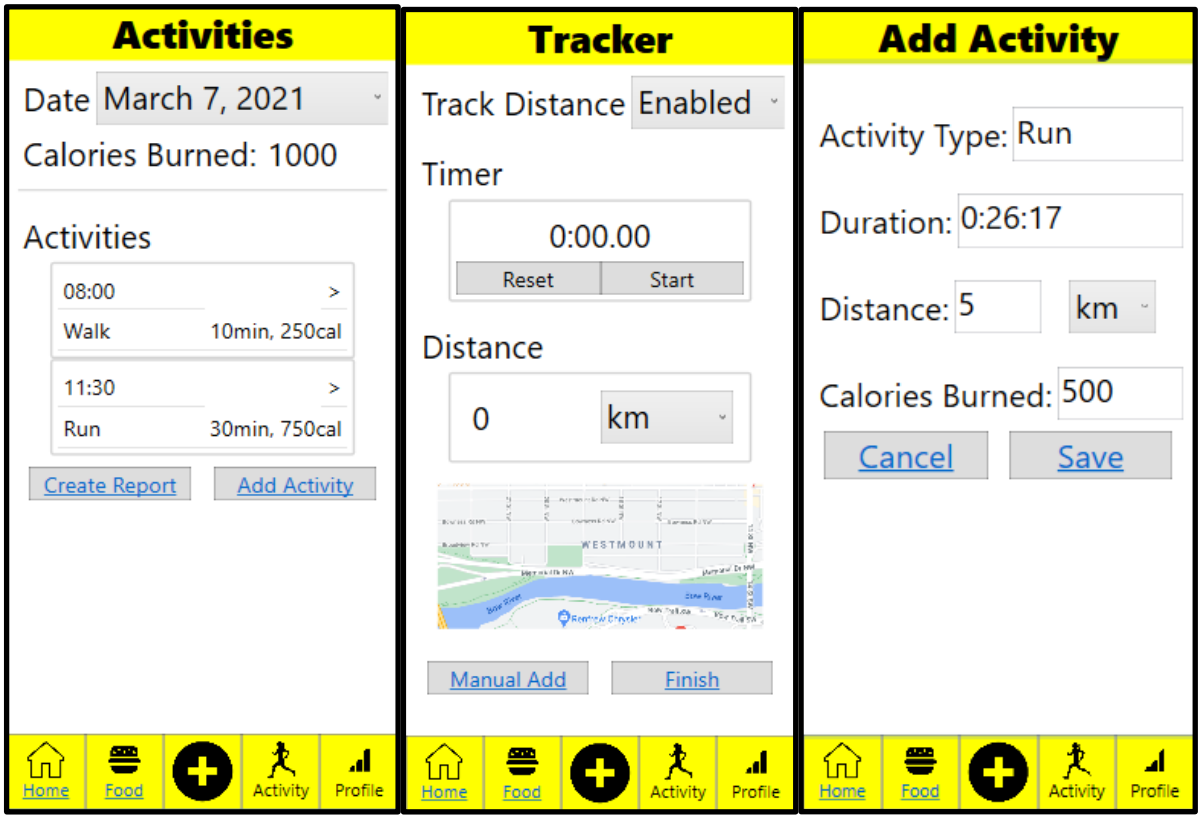
We do not discuss small cosmetic differences here because they are mainly due to the learning curve of a new language and can still be refined later on. The function and structure of the app remain largely the same, but the translation from sketch to horizontal prototype did allow us to streamline some interactions. This will also be the main motivating factor should we alter our design moving forward.

APPENDIX: HORIZONTAL PROTOTYPE


U-Fit
Age:
Sex: Male
Weight: lbs
Height: cm
Activity Level: Sedentry (Office Job)
Goal:
Weight: lbs
Lose 0.5 lbs Per Week
Daily Steps:
SAVE
SKIP
U-Fit
Calorie Goal: 2000
Current: 1200/2000
60%
2000 Goal - 1400 Food + 200 Exercise = 800 Remaining
7 Day Progress
Sun Mon Tue Wed Thu Fri Sat
100% 50% 95% 100% 0% 80% 110%
Steps: 1950/3000
Home Food Activity Profile
Profile
Weight
Period: Week Month Custom
January 2021 to March 2021
Weight
January Feburary March
Month
Profile
Age: 24 Sex: Male
Weight: 199 lbs Height: 159 cm
Activitiy Level: Sedentry (Office Job)
Weight Goal: 180 Lbs
Step Goal: 6000
Update Profile
Home Food Activity Profile


Daily Steps:
Add Food Add Exercise Add Sleep
Home Food Activity Profile
Steps
Period Today Weekly Monthly
M T W TH F S Su
Total 1337
Remaining 663
Daily Goal 2000
Home Food Activity Profile
Steps
Period Today Weekly Monthly
2500
2000
1500
1000
500
0
12:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00
Total 1337
Remaining 663
Daily Goal 2000
Home Food Activity Profile


Food
Today: Aug 5, 2020
Calories: 250 cal
Macros
Protein Fat Carb
35% 40% 25%
Meals
Breakfast 200cal >
Snacks 50cal >
Dinner 1000cal >
Create Report
Add Meal
Home Food Activity Profile
Add Meal
Meal Breakfast
Frequent Foods
Waffles x1 200cal
Apples x1 100cal
Eggs x3 150cal
Add New Food
Name:
Portion:
Calorie: cal
Total
0 items - 0cal
Add Item
FINISH
Home Food Activity Profile
Food
Items Added
Waffles x1 100 cal
Juice x1 100 cal
Add more
Total: 200 cal
Do you want to add this meal?
No, cancel
Yes
Home Food Activity Profile


Activities
Date March 7, 2021
Calories Burned: 1000
Activities
08:00 >
Walk 10min, 250cal
11:30 >
Run 30min, 750cal
Create Report
Add Activity
Home Food Activity Profile
Tracker
Track Distance Enabled
Timer
0:00.00
Reset Start
Distance
0 km
WESTMOUNT
Manual Add
Finish
Home Food Activity Profile
Add Activity
Activity Type: Run
Duration: 0:26:17
Distance: 5 km
Calories Burned: 500
Cancel
Save
Home Food Activity Profile


Activity Report
Period: Week Month Custom
January 2021
to
March 2021
Activity:
Run
Unit Measure:
Km
Activity
Km Average
Month
Jan
Feb
Mar
Line1
Latest Entry: 5 Km
Best Entry: 8 Km
View All Entries >
Home
Food
Activity
Profile
Meals Report
Calorie Intake
Period: Week Month Custom
January 2021
to
March 2021
Calorie Intake
Calorie Average
Month
Jan
Feb
Mar
Line1
Average Calorie Intake: 2267 cal
Macros
Protein: 35%
Fat: 45%
Carbs: 20%
Home
Food
Activity
Profile

PART 2B: FINAL PROTOTYPE

HEURISTIC EVALUATION

Design Heuristics Used

1. Visibility of System Status
2. Match Between System and the Real World
3. User Control and Freedom
4. Consistency and Standards
5. Error Prevention
6. Recognition Rather than Recall
7. Flexibility and Efficiency of Use
8. Aesthetic and Minimalist Design
9. Help Users Recognize, Diagnose, and Recover from Errors
10. Help and Documentation

Heuristic Evaluation Table

No.	Heuristic Violated	Location	Description	Suggested Fix	Severity (1-4)
1	1	Food Page	When there are no meals for a given day there is just a small empty box displayed. It isn't clear at all that this represents the list of meals and it is just empty.	Put a small message in there like "No meals added yet!" or "Click Add Meal to add a meal".	1
2	1	Add Meal Page	When the food items are empty it just displays a small empty box and it isn't clear what this represents.	Put a small message in there like "No foods added yet!" or "Search for food to add it".	1
3	1	Many Pages	Most if not all of the buttons and dropdown menus do not change the mouse pointer to a hand to signify this can be clicked on. The good thing is that they do light up to give some indication of system status.	Make it so the mouse pointer turns into a hand when on a clickable object.	2
4	1	Update Profile Page	No indication if updating the profile worked.	Have something to say that a new profile has been saved.	1
5	1	Update	After users updated their weekly weight	Have a confirmation dialog after users	3

		Profile Page	change goal, it isn't clear right away how the system is changed. In the back end, we actually redo the calorie goals and the front page is updated, but users may not notice it.	change this value to inform them that their daily calorie has been updated.	
6	1	Add Meal Page, Add Activity Page	No confirmation the activity or meal was added other than looking back at the activity or meal page.	A quick message that says activity/meal saved.	1
7	1	Meal Page, Create Food Report Page	The way the macros balance is displayed, it is not immediately clear that the info has been updated because the numbers change but the bars stay the same.	Make the macro bar like the progress bar, e.g. the length of each bar is changed to reflect changing percentages.	2
8	2	Home Page	People refer to it as "exercising" not "burning calorie" so I think the system language would line up better if we referred to it as "exercising".	Use "exercise" instead of "Calorie Burnt".	1
9	2	Food Page, Activity Page	We use the term "Create Report" to show users historical food and activity data. I don't believe this matches the language that most consumers use. Reports are associated with business and might be considered boring.	If we changed the language to "Historical Food" or "See past food"/"See page exercises" I think our language would align more with the general population's language.	1
10	2	Profile Page, Update Profile Page	If users want to enter their height in imperial they currently only have a "feet" option, we need to add an "inch's" option because only knowing if someone is "5 ft" or "6 ft" isn't remotely accurate enough for calorie counting. Even if we didn't need the height for our calculations it would upset users to see their height listed incorrectly as some people care deeply about their height.	If the user wants their height to be entered in ft/in we need to have 2 input boxes so they can enter each one.	3
11	2	Food	The user should be able to see the foods in the	Add the ability to click on a meal to	3

		Page	meals they create.	see more information about the meal.	
12	2, 3	Add Meal Page	Users should be able to add any type of food they want, with any amounts of calorie in each food.	Perhaps another text box under the search foods where the user can add new foods.	4
13	2	Add Meal Page	Users should be able to add meals of different names other than breakfast, lunch, dinner, or snack.	Perhaps an option at the bottom of the meal dropdown menu that allows typing in a new meal, which will then be saved to the dropdown menu.	2
14	2	Add Activity Page	Users should be able to add new activity types, and perhaps be able to specify a calorie burned calculator for this new type.	Perhaps an option at the bottom of the activity type dropdown menu to add a new activity type.	3
15	2	Add Activity Page, Activities Page	Not a lot of variety for the types of activities.	This would require a lot of changes to implement activity tracking for activities other than those focused on time and distance. Such as sports, weight lifting.	2
16	2	Add Activity Page	An accurate calorie burned calculator.	Implement a calorie burned calculator based on user information and activity information and the real-world data that is actually accurate.	3
17	2	Step View Page	The Steps view is only accessible from the home page, but it makes more sense for it to be in the activity page.	Include link to steps view page from activity page as well.	2
18	3	Update Profile Page	The user has no freedom to pick how much weight they want to gain or lose if it is not 0.5, 1, 1.5, or 2 lbs. Also, there is no option to use a different unit of measurement.	Make this a textbox that the user can enter whatever they want with, and add a dropdown menu to allow choosing lbs. or kgs. Or make the dropdown menu have more options such as 0.25 lb. intervals up to 5 lbs.	2
19	3, 6	Many Pages	The back button is heavily used on both Android and iOS so people may be used to it and expect to find it. If a user thinks "I want to go back a page" they shouldn't have to maintain a mental model of the layout of our pages and	Put a back button on every page	2

			realize that they can also get to the page with one click (by clicking the tab bar, for example), we should directly have a button that lets them "go back" because that's what they want to do.		
20	3	Tracker Page	On the Activity Tracker page if the user goes for a run and tracks their activity and then finishes they may want to tweak or correct the values (time and distance) but they aren't able to do that on the Activity Tracker page and it isn't at all obvious that they will be able to do that later. The button "finish" suggests the interaction will be complete as soon as they click it.	We may want to update this page so that the user doesn't need to go to the "Add Activity" page if they don't want to, for example if we had the "Finish" button simply add the activity and then we had another button for "Edit current activity" that then took the user to the "Add Activity" page it would be clearer. This would also save the user time if they just wanted to quickly "track activity and save activity".	3
21	3, 9	Activities Page, Food Page	Users should have the freedom to delete and edit meals and activities if they want to. If the user makes an error creating a meal or activity there is no way to recover from such an error.	Add buttons to let users both edit and delete a meal or activity.	4
22	3	Add Activity Page	When the user enters the duration and distance this page automatically fills in the calorie burned based off of that data, this is a nice feature but if the user decides to manually enter the calorie burned it will disable the automatic calorie calculator and there is no way to re-enable the automatic calorie calculator.	It would be nice if there was a small toggle that indicated it automated calorie calculation was on or off and when the user manually edits the calorie burned it switches itself off. This provides users with an animated indication that editing the calorie burned input ALSO did something else behind the scenes (since that is not an intuitive action) AND it gives them an easy way to enable it again if they want.	3
23	3, 5	Add Activity Page, Add Food	Cancelling an activity or meal doesn't ask for a confirmation, it just throws away the data. If the user manually entered this data then they probably remember it and can re-enter it right away BUT if the user used the activity tracker	If we had a confirmation dialog displayed before leaving that page that would minimize accidental cancelling.	3

		Page	then they might not have paid attention to their time/distance and just quickly hit "Finish" and then accidentally hit "Cancel". This would be incredibly frustrating because now you have to just guess how far and how long your activity was		
24	3, 4	Tracker Page	If a user accidentally clicks manual add they lose their information gathered by the tracker.	If there is data collected by the tracker and the user clicks manual add they should be given a message to confirm their actions.	3
25	4	Step View Page	The step view title is off center.	Center the header.	1
26	4	Quick Add Page	The light black layer we put overtop of the page upon clicking the quick add button extends beyond the size of the window.	Make the popup layer smaller to fit the screen.	1
27	4	Food Page, Activity Page	The buttons on the screen change location every time a user adds a new meal/exercise. This makes recall less likely to happen as a user has to find the buttons new position each time.	Give buttons a fixed position at the bottom of the page. This will create consistency among pages.	2
28	4	Add Meal Page	Button says "Add Meal". In other info update page, the wording "Save" is used.	Change wording to “Save” or make other pages' wording more specific.	1
29	5, 9	Many Pages	Not much error checking for when the user inputs into text fields. Also, the app just crashes if there is an invalid value inputted.	On a real mobile device (which almost all have software keyboards) it is possible to specify the type of input to "numeric" which brings up a different keyboard that only displays numbers. This would eliminate 99% of invalid character errors (a guess). Additionally, we could either manually prevent non-numeric characters from being inserted into those fields OR display an error right away if we detected a non-numeric	4

				character so the user had immediate feedback.	
30	6	Food Page	Users may forget exactly what items they put into their meal ("did I remember to add that coffee...?") so it would be beneficial if they could see the individual items in each meal without too much effort.	A few options: 1) Display the individual items smaller and inline in the list 2) If the user taps on the list entry show a dialog with the details of the meal 3) Rather than explicitly adding a feature to support this just use the previous fix of "let the user edit the meal" and if they want to see the items they can go to the edit page and not make any changes.	1
31	6	Home Page, Steps Page	No clear way to see how to change the steps goal. The user is forced to recall that it is done in the update profile page.	Perhaps in the view steps page there should be the option to change the goal.	2
32	6	Home Page	The 7-day calorie intake is confusing, makes user have to recall if they met goal or not (or in other words the info isn't clear).	A progress circle, check marks... visual displays of whether the goal met.	1
33	7	Add Activity Page	Miles and kilometers don't automatically convert for ease of use.	Make miles and kilometers convert automatically.	3
34	7	Add Activity Page	Users are taken to the tracking page by default. If they have a habit of not start the tracker they have no way to access the manual page in one click.	Present the manual add button somewhere more prominent (not end of page), or add a skip button.	2
35	8	Home Page	The progress bar has 2 decimal places, most people will care enough about it to need 2 decimal precision. It would look better with just one decimal place.	Change the precision of the progress to a single decimal place.	1
36	8	Home Page	The calorie intake for the previous seven days is gray, it would fit in better if it were a light blue (to match the theme).	Change the color of the week calorie view.	1

37	8	Most Pages	The back arrow is a slightly different color than the actual header for the pages with a back arrow, and the title is not centered.	Change the color of the back arrow to the new shade of yellow, center the titles.	1
38	8	Quick Add Page	The quick add buttons don't let the user know that they have been pressed, it's a clunky animation straight to the next page.	Add a small animation when hovering over the button or clicking it.	1
39	8	Quick Add Page	The design of the quick add icons differ from the design of the navigation icons.	Change the buttons in the quick-add menu so they have the same minimalist design.	1
40	8	Profile Page	The title beneath the profile seems unnecessary as the graph already has the labels on the axes.	Remove weight title or decrease font size.	1
41	8	Quick Add Page	When the quick add overlay is displayed above certain pages (like the Profile Page) the overlay text is displayed directly on top of other text and this can make it difficult to read	We could darken the bottom part of the overlay more so the page underneath it is less visible. Possibly a gradient that gets darker the lower you go so the user is still able to "see through" the overlay at the top but towards the bottom it doesn't affect readability.	1
43	10	Food Page	There is no explanation of what the "macros" are, what the numbers mean, or what the numbers should be targeting.	At minimum a small "info" or "help" circle could be beside the "macros" section that could bring up a dialog with a paragraph explaining the basics of what macros are and why people might want them to be at specific values. We could also possibly include an indicator (like coloring the words "protein", "fat", and "carbs" green if the user is in the correct range) but this would require knowing what the correct range is and probably giving the user a way to edit the range (for advanced users).	2
44	10	All Pages	There is no application help documentation anywhere.	Perhaps a help and FAQ page is in order.	2

Summary

Using Jakob Nielsen's ten usability, we have uncovered a large number of issues with our system. Many of these issues are minor and only cosmetic, which does mean not that this means they should not be fixed, simply that they aren't high priority issues. A few of the problems we uncovered were major system failures which should be addressed as soon as possible.

One of the biggest issues with our system is No. 29, a lack of error checking, which violates the error checking heuristic. There are several text boxes in our application where the user can input data, and at the moment there is very little limitation and error checking for the types of data users can input. In many cases entering unexpected data into these fields will cause a system crash. A quick way to fix most of these errors (if this system was running on a mobile device) would be to specify the fields to be numeric so that only the numeric keyboard pops up when a user selects the field, this will eliminate the majority of improper user input as it restricts any character or string values in fields which expect an integer.

Another big issue is No. 12 which addresses the lack of freedom to add any food the user wants in the Add Meal Page. This violates the match between system and the real world, as well as the user control and freedom heuristics. As it stands the user is forced to choose from a predetermined set of foods that is not at all comprehensive. In addition, the user cannot edit the number of calories each food contains nor can they change the macronutrient make-up of the foods. It is essential to add these functionalities in some way. Perhaps an entirely new page is in order that can add/edit the names, portions, calorie count, and macronutrient count of foods.

Finally, to comment on No. 21, users do not have the ability to edit or delete meals or activities previously added. This violates the user control and freedom heuristic as users are very restricted with their ability to manipulate the two most prominent features of our app. If a user were to ever accidentally enter a meal or activity incorrectly then they have to recourse to fix the mistake. There is a simple solution thankfully to this major problem. We just need to add edit buttons next to the added meals and activities that would bring them back to the add meal page and add activity page respectively. This seems to be something we have overlooked during the development of our vertical and horizontal prototypes as we had intended for this feature to exist originally.

That covers the major heuristic violations that we have classified as severity 4, but there are many others of severity 3 and below that are not to be ignored. These slightly less significant issues included are related to system visibility. For instance, upon submitting changes to the profile page there is no clear message to the user that changing weight goals affect the calorie goals. There are

“matching the real world” issues such as an inability to include inches when inputting the user's height. User control issues such as accidentally deleting tracker information. Efficiency issues such as no automatic conversion between miles and kilometers. There is also a considerable number of consistency and aesthetic issues.

Throughout this evaluation we have found at least two violations of each of Jakob Nielsen’s ten usability heuristics. It is clear that this heuristic evaluation has been invaluable for quickly and easily uncovering issues with our system as it currently stands.

DESIGN RATIONALE

Based on feedback from the TA as well as our own groups analysis, we made a number of changes within our application. For one, we refined the app's visual presentation for simplicity and consistency. We selected a color palette, implemented template design elements i.e. headings, and applied them throughout our application. We also enlarged our buttons to make them easier to click on a mobile interface. Our graphs were updated to mostly be line graphs so our users can become accustomed to looking at one type of graph. On the update profile page, our TA noted that the visual separation between user information and goal information was lacking, so we placed the goal information into its own box. Afterwards, we reviewed visual separation in the rest of the app and adjusted details like bolded text to better set apart different sections. Otherwise, we also eliminated certain elements to remove distractions and make the design more minimalist. For example, we removed some underlines that served no purpose from both the food and activity list pages and deleted "less than" icons that were intended to navigate to pages that no longer exist in the final design.

The process for adding a meal within our app was streamlined based on TA feedback indicating that it was confusing. This opinion was shared by our group. Previously, it had two different pages, one for "adding the meal" and another one for "adding specific items to a meal". This was originally done because we wanted to make space for both a "search for food" area and a "frequent foods" area. In the final design, we decided to remove the "frequent foods" section and just have a "search for food" feature. All of this information still looked crowded on the single page, so we put the "search for food" into its own dialog box on the "add meal page". This not only allowed users to stay on a single page and in the same mental context, but also provided the room necessary to properly implement the "search for food" functionality. If we had more time, we would have added back the "frequent foods" feature since we think this time-saving feature would be heavily used by our "power users". This "frequent foods" section could be put into its own dialog box, or perhaps we could sort the suggested foods in the search area by frequency and based on the type of meal. The second option is a subtler way to implement the feature but could save space.

Another change in user interaction is in the adding activity process. Because users might understandably not know how to nor want to spend the effort of calculating calorie burned, we implemented a feature on the "manual add activity" that automatically fills in the calorie input box when users enter a distance and a duration. Users can still manually change this calorie burned amount if they wish, and this amount they manually entered would not be overwritten or checked. However, this also means it is impossible to "go back" to the automatically calculated calorie if the user changed the amount by accident or simply wanted to undo. We have addressed this in our heuristic evaluation.

To increase user control, we have made sure that while adding food to a meal, users have the ability to delete a food item (if they added it by accident) as well as change the quantity of an item if they ate more than one. We have also added “back” buttons to any interaction that involves multiple pages where the user may want to go back to the previous step. These pages include the add meal page, the add activity pages, and the update profile page. However, we have not implemented a fully-functioning cache to save data between pages, meaning data user tracked or inputted while for example, adding activity could be permanently lost. With more time, we would definitely incorporate features like saving data between pages belonging to one process, requiring confirmation for major changes... We elaborate more on major flaws in the next section.

Prototype Limitations

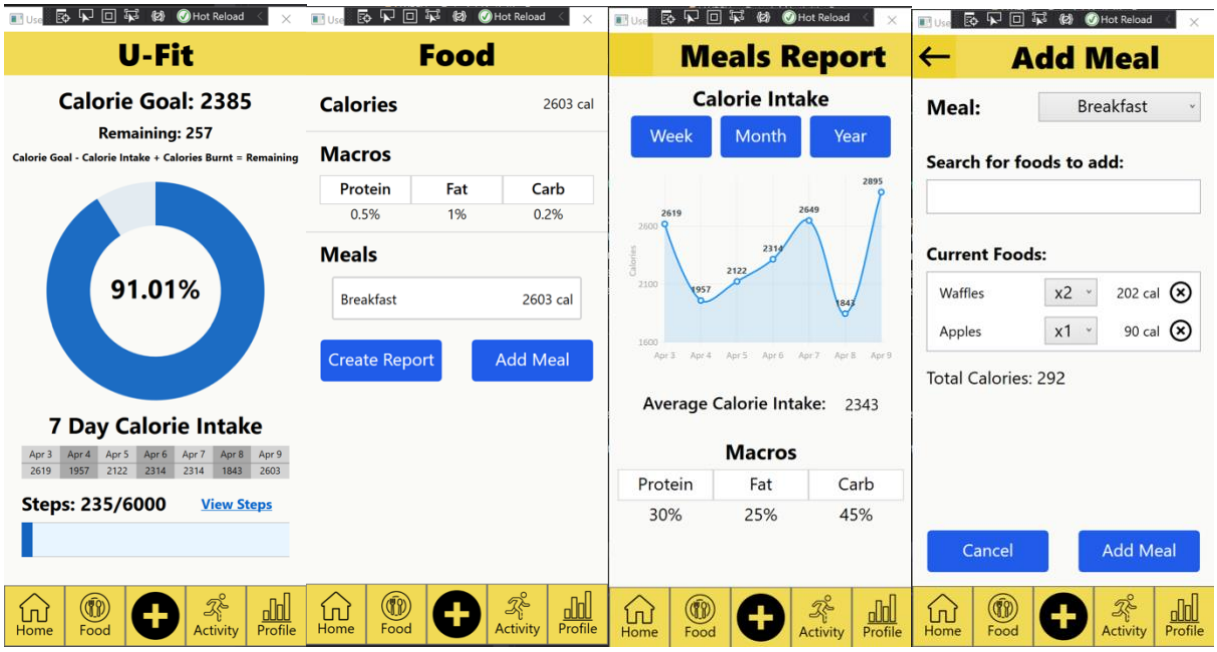
As it is, our final prototype can demonstrate the major functionalities our users cited. However, it falls short of simulating the full experience in several key ways.

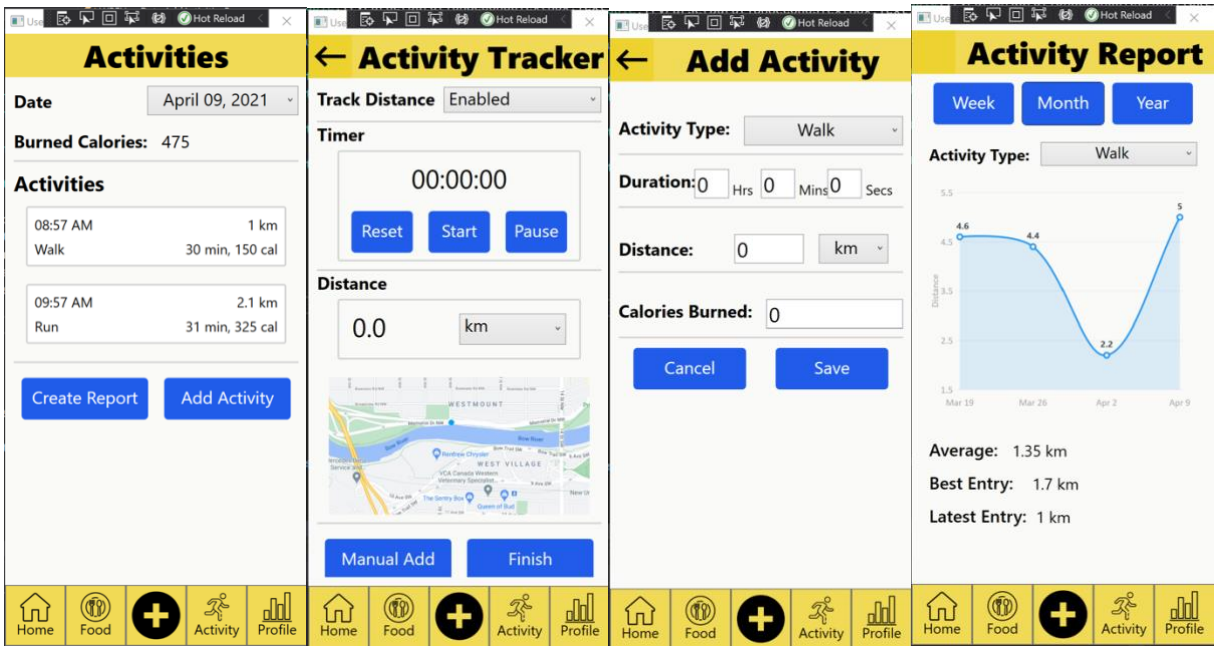
First is that we have filled our application with fake historical data so the final prototype is how the application would look to a typical user who has been using it for a few months. This allows us to demonstrate more features, i.e. graphs that show data from previous weeks and months in the “steps” and “create report” pages, but also limits our ability to assess how users might react to the app at its blank state. For example, our prototype “update profile page” has basically the same design as our hypothetical user sign-up page and shows basic input we need for a profile, but because it is prefilled with fake historic data, it cannot give us a feel for how filling out the entire form would be.

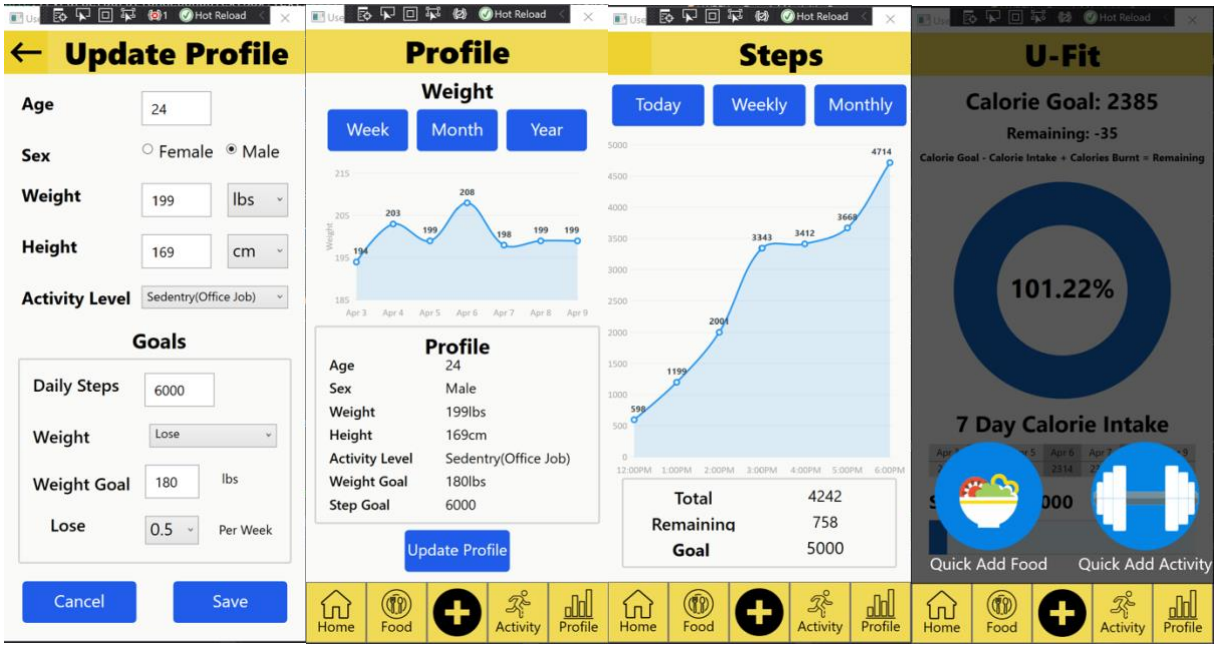
Secondly, we have not implemented any error handling like input type constraints on any of the pages that require data input. This is due to lack of experience with WPF and of time, but we know that reporting and guiding users through errors are important aspects of interaction design. As such, we have acknowledged this as a major heuristic violation in our evaluation.

Finally, our application assumes that we have a database of "all" foods and common physical activities. We have seen apps that have comprehensive databases of foods that have accurate calorie count and information on macronutrients (protein, fat, carbs), so we know this is possible to implement. Our prototype's food database is manually filled with about 20 items that have random values. Thus, these values and any calculations based on them all give inaccurate results. The same goes for the calorie burned data and steps data which are just randomly generated numbers to simulate a tracker. In general, our current system has decent visibility, meaning the numbers update to reflect what the user chose (for example, total calorie will update when you add a new food or activity), but the numbers are not realistic.

APPENDIX: FINAL PROTOTYPE






Update Profile
Age
24
Sex
Female
Male
Weight
199
lbs
Height
169
cm
Activity Level
Sedentry(Office Job)
Goals
Daily Steps
6000
Weight
Lose
Weight Goal
180
lbs
Lose
0.5
Per Week
Cancel
Save
Profile
Weight
Week
Month
Year
Profile
Age 24
Sex Male
Weight 199lbs
Height 169cm
Activity Level Sedentry(Office Job)
Weight Goal 180lbs
Step Goal 6000
Update Profile
Steps
Today
Weekly
Monthly
Total 4242
Remaining 758
Goal 5000
U-Fit
Calorie Goal: 2385
Remaining: -35
Calorie Goal - Calorie Intake + Calories Burnt = Remaining
101.22%
7 Day Calorie Intake
Quick Add Food
Quick Add Activity
Home
Food
Activity
Profile