project 1: exercise “fake out”

30 January 2020 / Team Greekatarian / Andrew Johnson / Sarah Deak

Project Overview

Background

Pedometers have become a common way to collect information on the health of people. Basic wearables, such as watches that collect information on steps taken throughout a day, have been adopted as ways to collect this personal information in the workplace. Many companies have chosen to implement these wearables as a form of keeping employees healthier and giving cost benefits to those who meet a daily step goal. This has led employees to “fake out” the pedometers, giving their employers a false indicator of their health, failing their own health in the process.

Project Goal

- To modify an existing activity tracker application that links to a basic pedometer, empowering users to be healthier.
- To describe and modify the mental model of what activities are beneficial, rewarding these behaviors over the behavior of cheating.

Mental Model

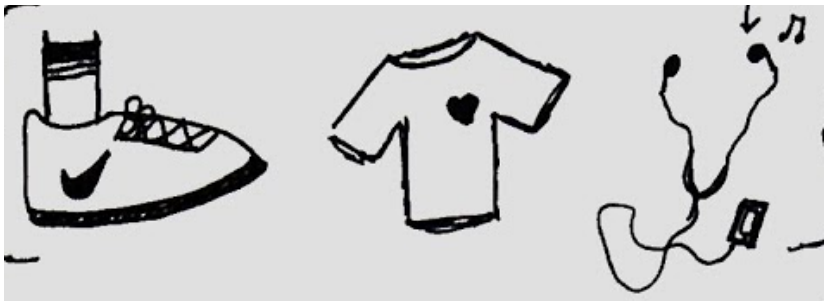
The user’s current mental model is based on the fact that they receive benefits for reaching a set number of steps. To modify this model, we must

- educate,
- convince, and
- remind users

that exercise is necessary for their health, not simply a way to receive cost benefits. This means invoking intrinsic motivation, enabling users to want to exercise to keep themselves healthy.

Ideations 1

At the very beginning of the project, we began to ideate before understanding the correct scope of the project. These were ideations of a pedometer itself, created while investigating how to minimize cheating. The goal of these was to make the hardware harder to cheat, while still giving the pedometer a way to collect body information.

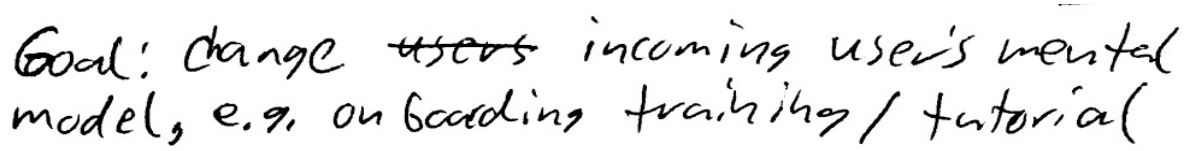


As shown (left to right): a pair of shoes that tracks steps as well as stores weight information, a shirt that tracks heart rate and sweat levels, and headphones that only play music if the heart rate is high enough.

However, the project guidelines indicate that there can be no changes to the pedometer the company uses to track steps, only changes to the mental model of the users. These were early ideations that were exhausted at this stage, as they were outside the project guidelines.

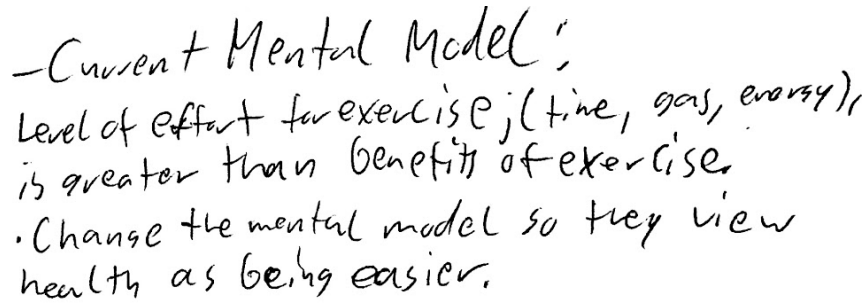
Creating our First Mental Model

As we were coming up with ideas, we were trying to make sense of the prompt that was given to us. After reading through it many times, and talking with our professor, we came up with what the goal of this project was.



Our first understanding of the prompt.

Before working doing research or interviews, we did some rough notes on our persona and laid out what our current mental model was. This mental model was useful in understanding the problem, and finding a direction to go in with our research and interviews. Just having a starting place was useful in identifying what about our model was flawed and what could be more relevant to our users.



Our first understanding of the prompt.

Research

Our research focuses mainly on the health benefits of walking and how step count is related to heart health. Some of our research also touched on pedometers in regards to insurance benefits. We began with the intention to better understand our user group, but our research led us in the direction of the benefits of pedometers as they relate to heart health. This informed most of our decisions throughout our iterations, and is likely why our final design features a human heart.

Steps to Better Cardiovascular Health: How Many Steps Does It Take to Achieve Good Health and How Confident Are We in This Number?

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2894114/

What we learned: The number of steps that someone takes can affect someone's cardiovascular health. If someone takes less steps per day, then their chance of heart failure increases. Increased steps lead to better blood arterial blood flow. People in the U.S. should take roughly 9,000-10,000 steps per day, with 3,000 of them being "moderate intensity."

Walking – the first steps in cardiovascular disease prevention

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3098122/

What we learned: Walking for extended periods can protect against cardiovascular disease. Pedometers may help people take more steps in a day. "...even small improvements in the amount of daily walking is better than no walking."

Implementation and evaluation of an incentivized Internet-mediated walking program for obese adults

https://academic.oup.com/tbm/article/3/4/357/4562886

What we learned: Insurance-based walking programs increase the likelyhood of obese workers participating in physical activity. Some saw the financial element of lower insurance premiums to be "coercive."

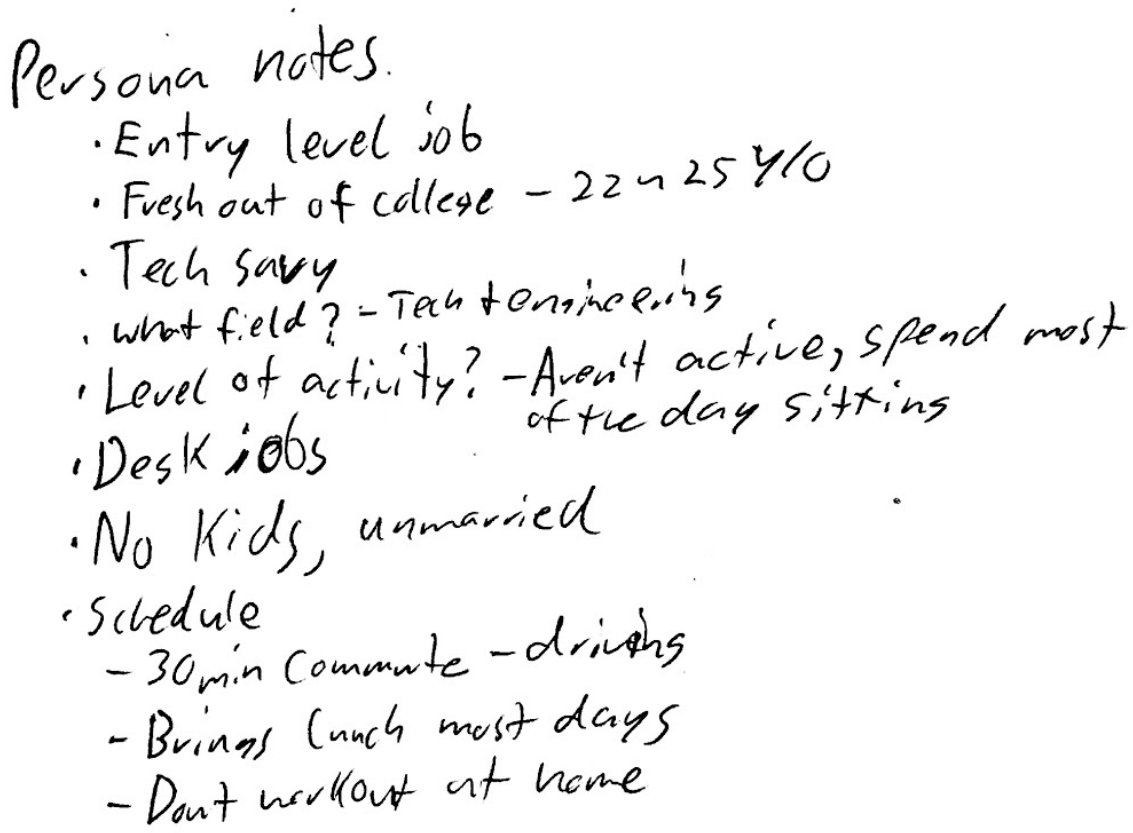
This Is Your Body in an Office Job vs. Your Body in a Physical Job

https://www.mic.com/articles/124711/your-health-and-fitness-with-office-jobs-vs-physical-jobs

What we learned: Prolonged sitting can increase your chances of health complications and heart disease, including cancer. It also ruins the muscles in your body, especially in your neck and pelvis. Lastly, working a sedentary job is a lot worse for you than a high-exercise job.

Creating our Personas

One of the first things we did when we received the project was create a rough idea of a persona. When trying to figure out who our user was, we thought that it would be more manageable to focus on a particular age group, rather than designing a solution for all employees. As such, we chose to focus on entry level tech and engineering employees between the ages of twenty-two and twenty-five. Below are the notes from our first brainstorming session.



Personas

Our personas focus on students leaving college and entering the workforce into technology-heavy careers. Based on our research, we decided these people tend to be most likely to get less exercise during their workday (Plenke), as well as be more likely to understand how to "fake out" the pedometers in easy ways. By choosing to focus on this group of people, we intend to modify the mental model of the people coming into the workforce, which will change the mindset of the general workforce over time as more of these graduates enter into their careers.

Kyla Hayes

Description

- Twenty-three years old.
- Just received her bachelor's degree.
- Has a tech/engineering job.
- Tech-savvy (most likely to fake out pedometers)
- Has no kids.
- Is unmarried.
- Owns a dog.
- Low level of activity.

Image generated on thispersondoesnotexist.com

Daily Schedule

- Eats a quick breakfast.
- 30-minute driving commute.
- Entry-level desk job.
- Sits most of the day.
- Brings lunch to work.
- 30-minute driving commute home.

Ideas of health

- Content with current body type.
- Knows that being more active is better, but weighs the effort as not being worth the benefits.
- Cardiovascular health is not a large concern.

Personas

Malcolm Robertson

Image generated on
thispersondoesnotexist.com

Description

- Twenty-five years old.
- Just received his bachelor's degree.
- An engineer.
- Married and has one child.
- Owns a cat.
- Low level of activity.

Daily Schedule

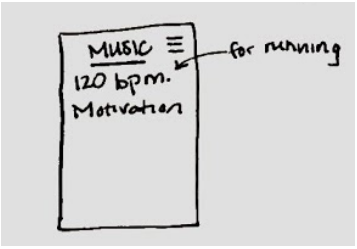
- Does not eat breakfast.
- Drives to his job ~20 minutes away.
- Oversees factory floor.
- On his feet most of the day.
- Has lunch with coworkers.
- 20-minute driving commute home.

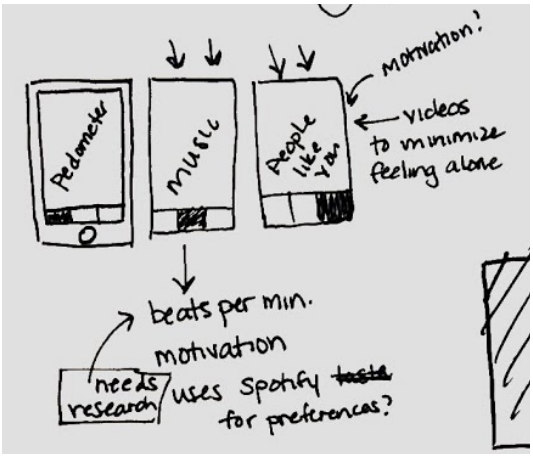
Ideas of health

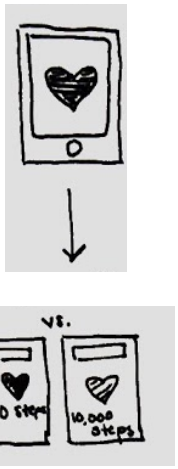
- Does not consider his health.
- Family has a history of heart problems.

Ideations 2

Our second round of ideations came after the development of our personas. We began to have a better grasp of the people we were designing for and the mental model of these users.

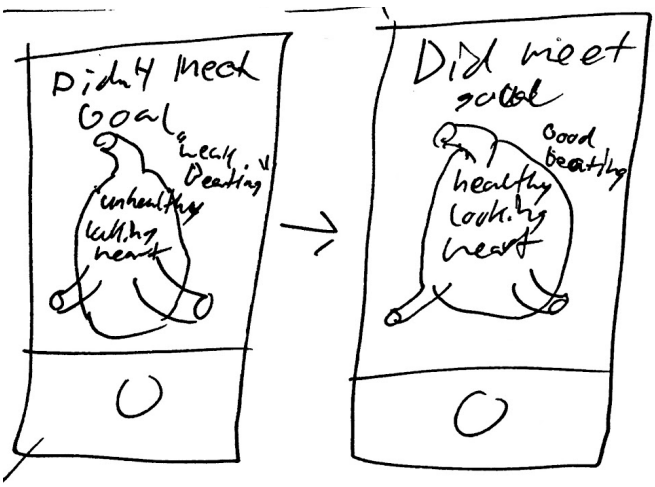






Shown above (left to right): An app that plays music to facilitate exercise based on beats/minute information, an altered Fitbit® App implementing music and videos for motivation. The last design is one we considered aloud a possible solution before ever sketching it, and it is the design that inspired our first prototype. This was the moment that changing our mental model felt possible-- this is a design that would invoke emotion in our user's and entice them to exercise.

Shown below: a detailed iteration of our "heart" design. This was a clearer sketch of our idea and described how emotion would play a huge role in changing the mental model.



These all influenced our further ideations, but as mentioned the last sketch stuck with us throughout the rest of our process. It was modified and added to over and over again, but our final design has a remarkably similar focus.

Interviews

This section contains summaries of the interviews we conducted.

Interview 1: Nineteen year old engineering student.

Our first interview with Shelby* was useful. She told us that one of the things that propels her to be more active is that she is always trying to be more active. She told us that she would use the watch if it was just a pedometer, but she wouldn't use the app that went with it.

When given the Fitbit app to look at. Shelby* said that she valued the workouts section of the app. She thought that having a workout to follow that is 15 minutes long would be useful for those who didn't know what to do when exercising. She also liked the meditation and section of the app. She told us that she wouldn't opt into an insurance program that relied on activity.

**Named change to respect their privacy.*

Interview 2: Twenty two year old computer science student.

We took what we learned in our first interview and used that knowledge to ask better questions in our second interview. The second interview was with Chad*. He uses a Fitbit regularly, so his insights were valuable as we chose to modify a page of the Fitbit app.

Chad* had many of the same points that Shelby* made. He enjoyed having a hub of features available, and used the water drinking feature and the sleep tracker. He also explained that he doesn't use the community feature as you need to have other people with Fitbit watches in order to add them to your friends list.

**Named change to respect their privacy.*

Interview Script

This is the script that we used in our two interviews.

SP2020 Project 1 Interview questions:

Give information about the interview.

Starting with some basic info about themselves
What's your name?
How old are you?

What field of work are you in? / Are you a student currently?
- Worker → How many hours do you work per week?
- Student → How many credit hours are you taking?

Describe your work? Go in depth with what you do. (Open ended)

Describe the workday
- How do you get to work/ school?
  - How much do you walk around during the workday/ school day?
- What do you eat for breakfast?
- What do you usually do for lunch?
- How much do you walk around your building?
- How much sleep do you get a night?
  - If it depends, what is a low amount of sleep that you get and what is the most you sleep in?
- activity level

Do you exercise?
- **YES** How often?
  - Describe your work out
- **NO** Do you feel like you have enough time to add exercise into your schedule?

Do you use a wearable or step counter?
Yes
- How many steps do you average on a work day?
- How many steps do you average on a weekend day?
  - Are you happy with the amount of steps?
    - **Yes**, why?
    - **No**, why?

Is there an app that goes with your wearable?

What is the app?

Do you use the app?

-**Yes**:

-Is there anything in the app that pushes you to be active?****

-What features do you like about the app?

- If your just had a pedometer, would you use a companion app?

-**No**: What makes you not use the app?

-What features do you

-**Does not wear a wearable**

-What is the biggest reason you don't have one?

-If you were given a pedometer for free, what would you use it?

-Do pedometers seem useful?

-**Hand them the fit bit app //Goal: Get a view of what they value most about the app**

What do you like about this app?

What features seem unnecessary? Which features would you use the most or the least?

Would you want a hub of features in one place (calories, female health), or just a simple step counter?

Have them fill out a google calendar for their typical monday and saturday

- **Compare all and then pull insights about why they aren't exercising**

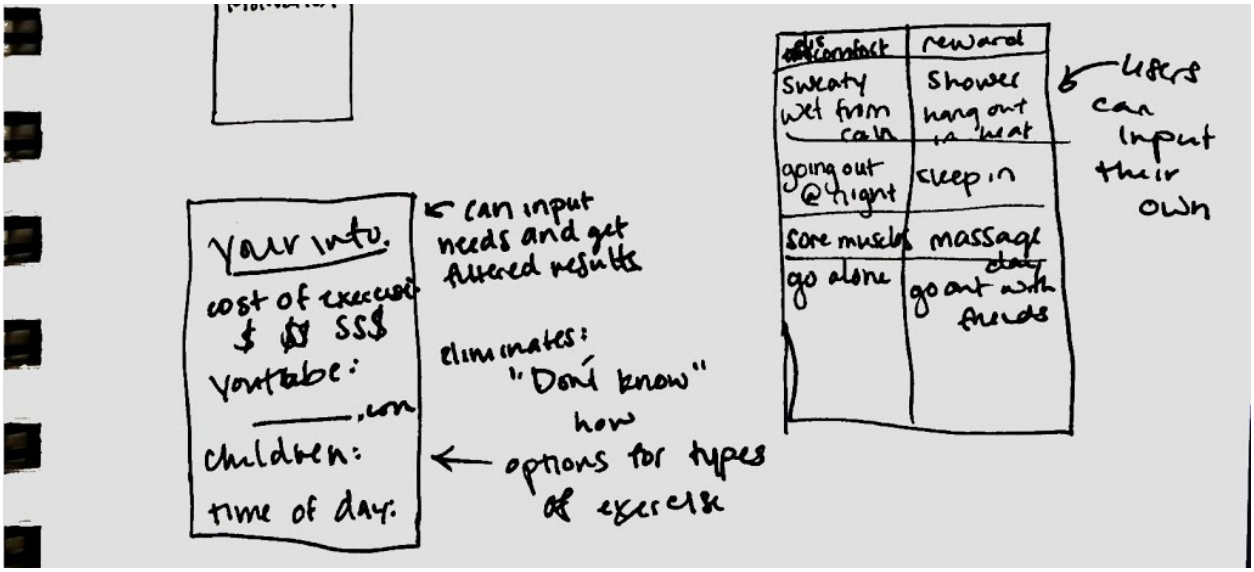
-Have they heard of companies using step counters for insurance?

-Have you heard of people faking out pedometers?

-Have them fill out google docs of daily schedule.

Ideations 3

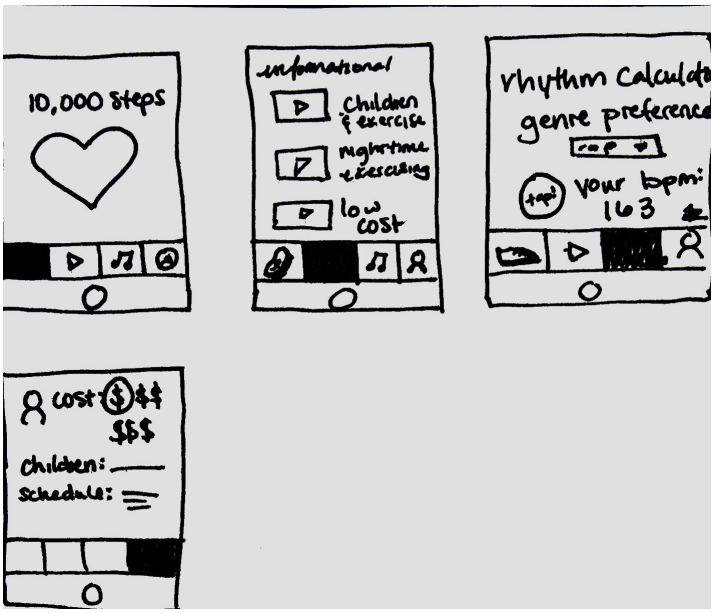
Our third ideation process broke us away from a hole we were stuck in during our process. At the suggestion of a senior designer, we decided to attempt a quick sketching technique. During our first five-minute sketching interval, we ideated the following ideas:

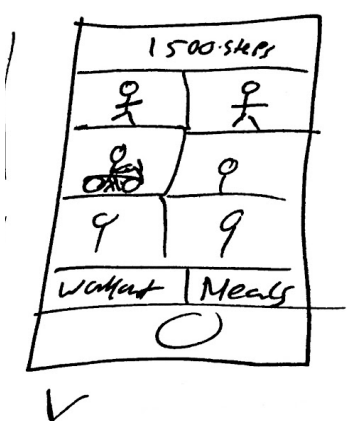


Left: An app that takes into consideration the daily schedule and lifestyle of the user signing up for it, to give individualized workout videos and guides.

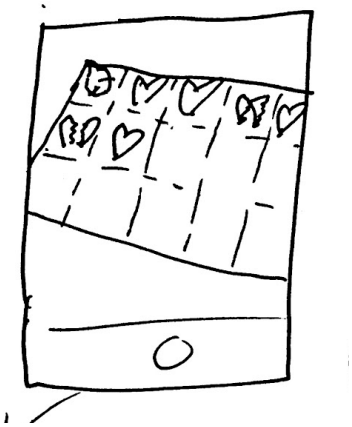
Right: A reward system for the most hated things about exercising. Users could input their own or use the default system.

Below: A combination app implementing our "heart" design, individualized guides, and motivational music.

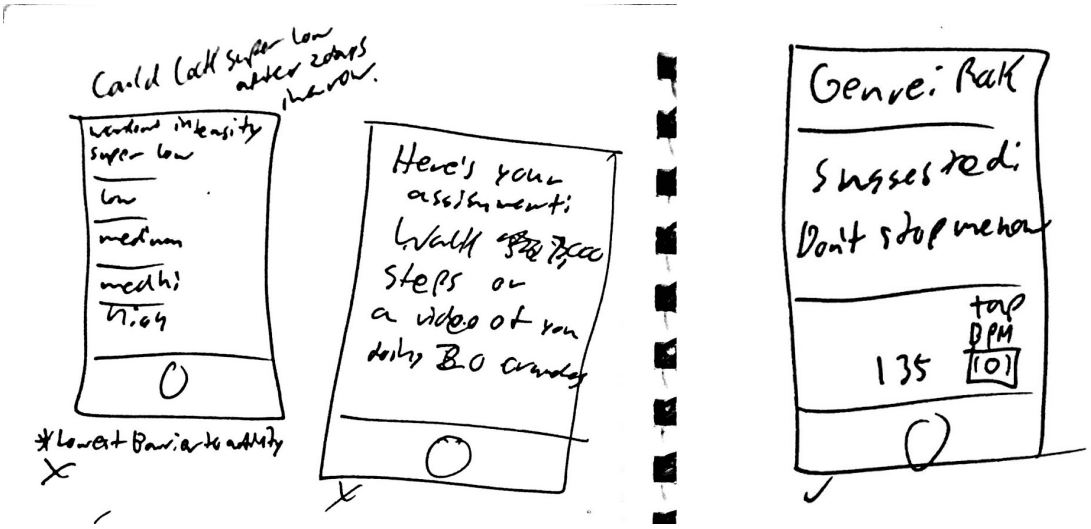




An app that focuses on providing exercise guides and tracking food consumption



An ideation on our "heart" design, which adds a calendar view. We implemented this into our prototype because we felt a screen full of healthy or deathly hearts would have a strong visual impact on our users.

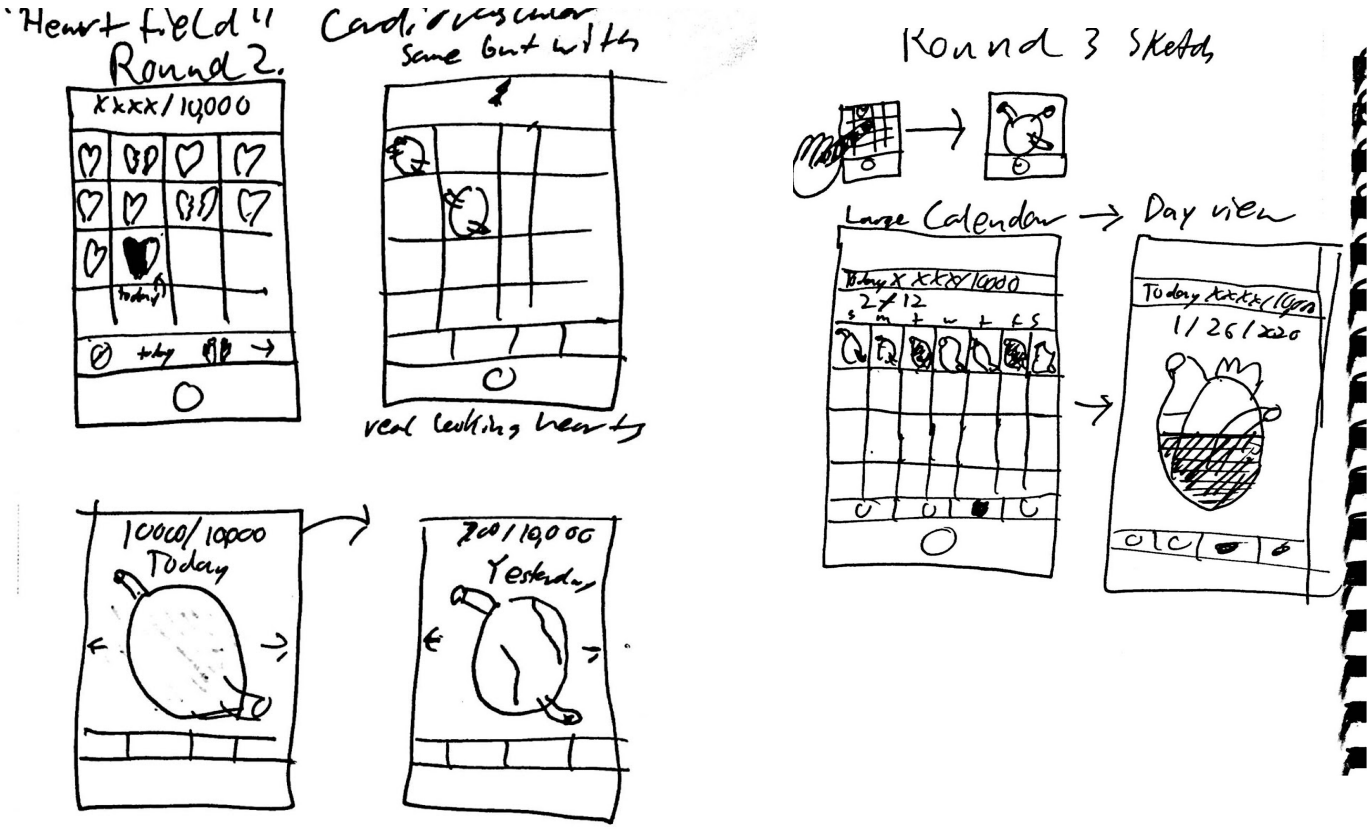


Left: Users can pick very low intensity workouts so that they are more likely to be somewhat active rather than completely inactive. Center: Give users a choice between meeting a step goal or submitting a video of them doing an assigned workout. Right: Users can tap along to their walking or running speed, and then the app will suggest a song of the same beats-per-minute and of the chosen genre.

However, even after this ideation session, we decided only one of our ideas, altered the mental model of our user group. We needed to get our users to want to exercise in the first place, instead of feeling as though they do not need to. This prompted us to choose the design that we believe would most invoke emotion and therefore action in our users: our "heart" design, with implemented calendar view.

Ideations 4

At this stage, we had a good idea of what we wanted our prototype to look like. We created a finalized sketch:

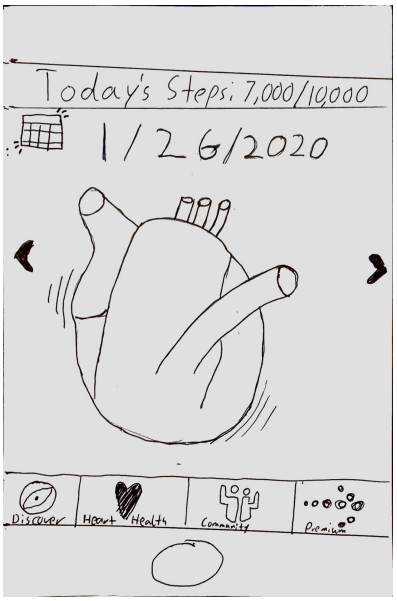


Top left: An app that displays days where users met their step goals as full hearts, and days where they fall short as broken hearts. Bottom left: An app that displays your step count as either a healthy heart or unhealthy heart depending on how close you are to reaching your goal. Right: The two left ideas put together. With a calendar view and a daily view.

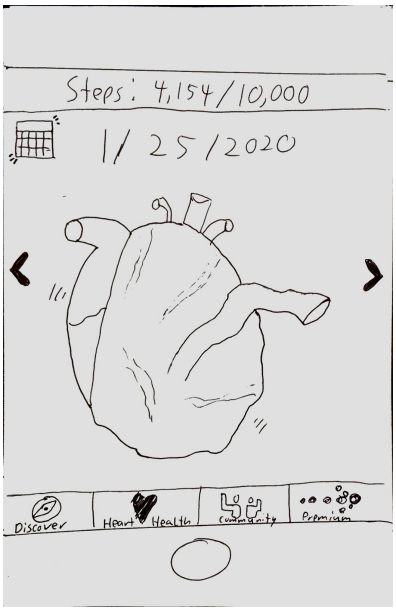
We based our prototype (shown on the following pages) on this design. We have thus far described our process to get to this point. We believe this design will give users the highest emotional impact, as the image of a human heart either healthy (if they've taken enough steps for the day) or withered (if they did not take enough steps for that day) has a strong meaning. It gives users a visual cue as well as a relatable insight into their own heart health.

Prototype 1

Our initial prototype is very similar to our final design, and our rationale will be reiterated.

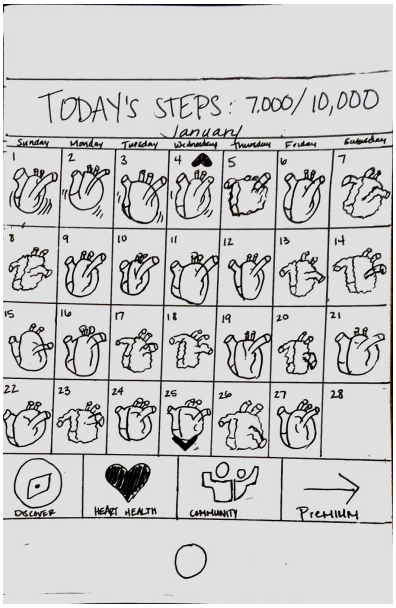


Above: The main focus of our design changes the way the day's step count is illustrated. We chose the heart design as a way to graphically demonstrate the user's heart health in relation to their step count.

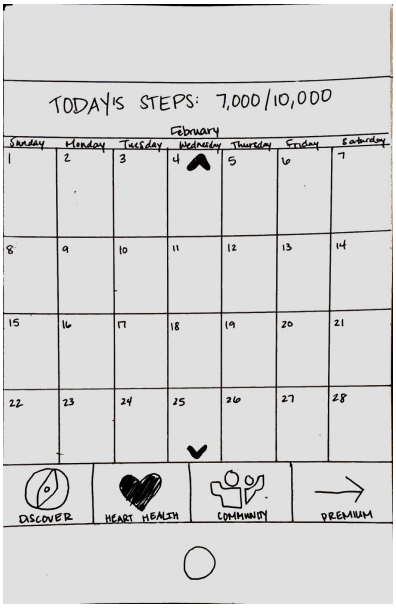


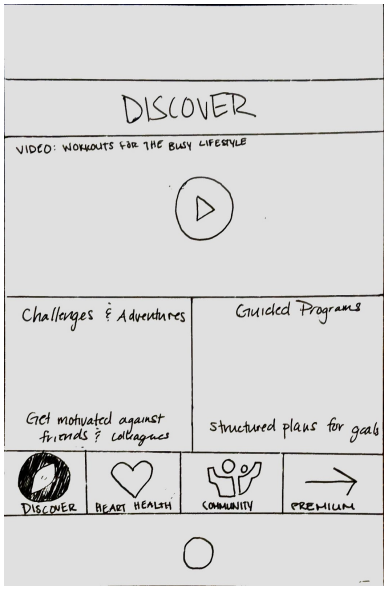
Above: This is the unhealthy heart design for days when the user gets less than the desired number of steps. It graphically shows them that their heart is deteriorating or at more risk of heart disease.

Below: The calendar was a design usability feature initially that we decided to implement. This was mostly implemented for usability.

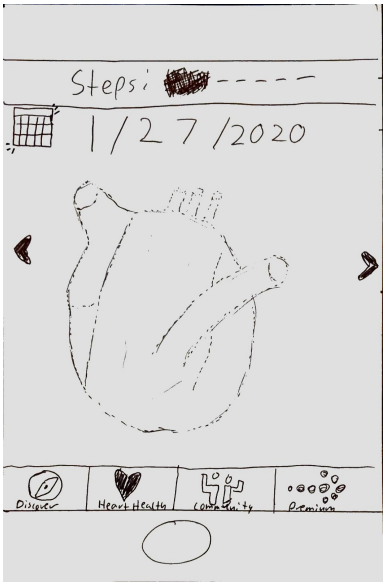


Below: A second, blank month demonstrating what days without data would look like.



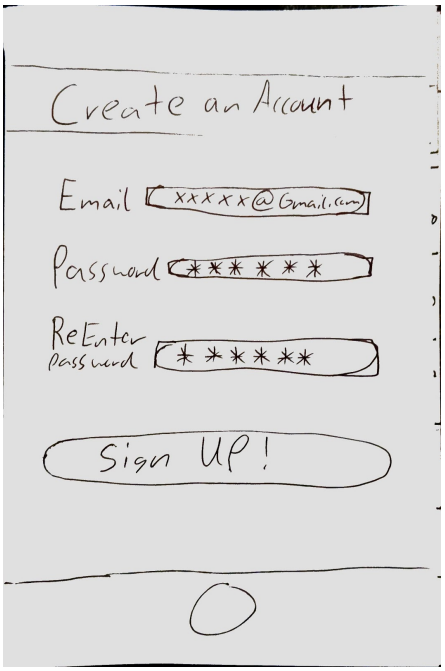


Above: Based on our interviews, we decided to keep the discover page from the original Fitbit® app. Our interviewees believed this was the most useful feature in the app.



Above: This is an illustration of a day view heart with no step information. We thought this was necessary for user interaction, as people often assume this is something they are able to view.

Below: The very last page we chose to add to our prototype was a quick sign up page. Creating an account would be the method for storing user data.



Usability Testing

Our usability testing focused on gaining insights into our prototype's design, interaction, and emotional impact. Our test users were informed on the basic rationale for our design (explained below) and their role in the testing process before beginning testing. They were also asked for permission for us to record both visual and audio information from the test. These can be viewed at Project 1 Usability Testing Videos.

Introduction of Design and Rationale

- Research shows that the number of steps that you take in a day is linked to how likely you are to develop heart disease, the leading cause of death in America.
- Our app's approach to step tracking is to make you more aware of the link between your level of activity and your health. The more steps you take in a day, the healthier that day's heart will appear.
- You can see a daily and monthly view of your steps, and see your patterns of activity. Use this knowledge to find where you can improve your activity, and your cardiovascular health.
- Your role in this test as simply a user of this app, hoping to make yourself more apt to exercise. Remember, this is a usability test, so we are testing the product, not you.

Initial Testing Tasks

- How would you see how many steps you took today? (January 26)
- How would you see how many steps you took yesterday?
- If you were interested in using this app to better understand your own heart health, what would you do?

Why "initial"? *We termed these our "initial testing tasks" because after the feedback from our first usability test we took into consideration that they did not understand what was being asked of them for the third question. Also, these tasks did not allow for a deep enough understanding of all aspects we desired to test. We decided to alter these tasks to the following.*

Revised Testing Tasks

- How would you see how many steps you took today? (January 26)
- How would you see how many steps you took yesterday?
- If you were interested in guides for exercising, what would you do?
- If you wanted to see your progress over a month's time, what would you do?

As will be demonstrated on page 19, the vast difference in quality of testing results generated by user #2 in comparison to user #1 made it clear to us that our first test protocol was indeed flawed. However, some good insights were gleaned (as will be elaborated) from both tests that we used to implement changes into our final design, so we chose to include results from both tests in this documentation.

Usability Testing Results & Application

User #1 feedback

- Account sign up page was understood very quickly
- How many steps was a prominent feature
- When asked how many steps were taken yesterday, the arrows to scroll through day by day view were not apparent enough for the user to notice
- Shading for the current tab was not clear until told
- Task #3 did not have clear phrasing
- User commented on the strong visuals for emotional impact

Application

As noted on page 17, we modified the task list in order to demonstrate more clearly the tasks the test user needs to complete.

We used the information about the tab shading to make sure the shading for the app tabs were more clear in our final prototype.

It was clear to us after this user test that we needed to do a second, better usability test to really be able to understand how our users would interact with the app.

User #2 feedback

- "How many steps" on the home page was not prominent enough for the user to notice right away
- Arrows to swipe up to previous months were not clear to user, thought he needed to swipe sideways to get to previous months
- Calendar icon and swipe to get to previous days in day-by-day view were apparent
- Calendar icon was "extremely intuitive" (mentioned after the end of the recording)
- Shading for the current tab was not clear until told
- Task #3 made the user want to go to "heart health"
- User commented that they did not feel this would change their exercise habits, but did note that the visuals invoked strong emotions

Application

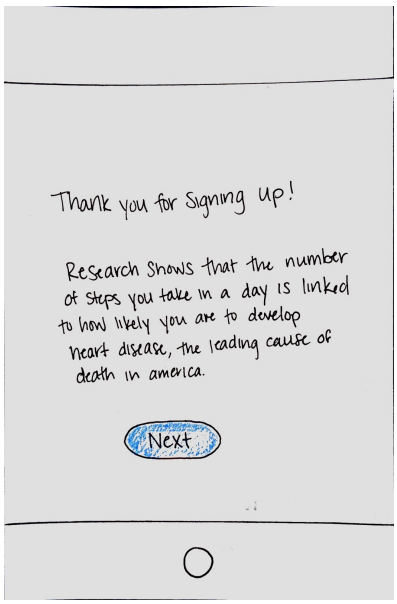
This user test was particularly helpful in its similarities to the first. The fact that there were many similarities between the test results did indicate that our first test wasn't completely useless, and still had some good information in it. In comparing the results of both tests, there were several things that were unanimously good about the prototype, such as:

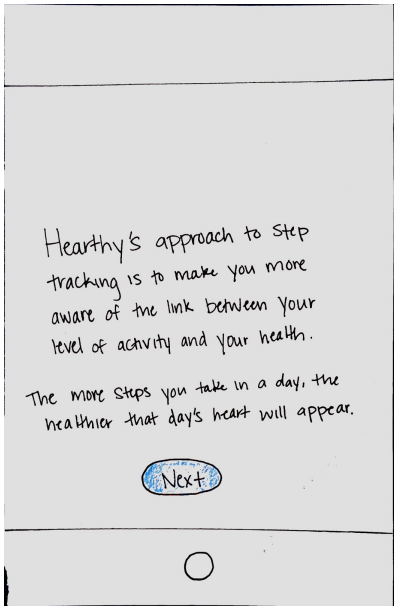
- The calendar icon
- Account sign in page
- Emotional impact of the human heart visual

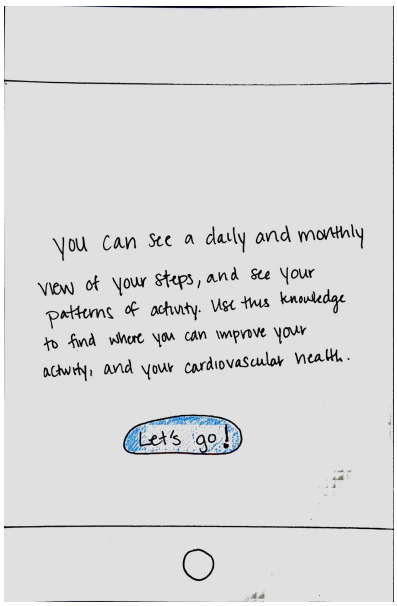
However, there were some features that were very clearly in need of some refinement, such as:

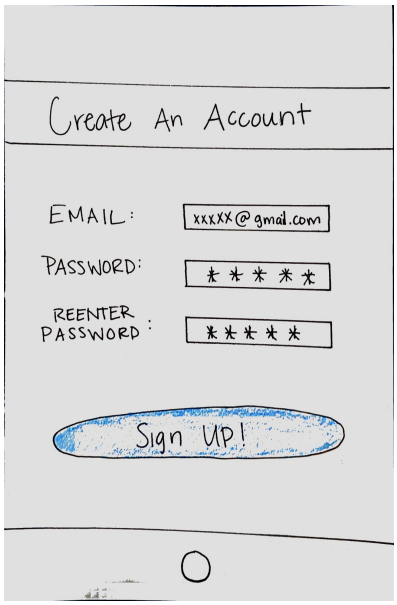
- Shading for tabs
- "Heart health" as a tab title
- Strong arrows for navigation

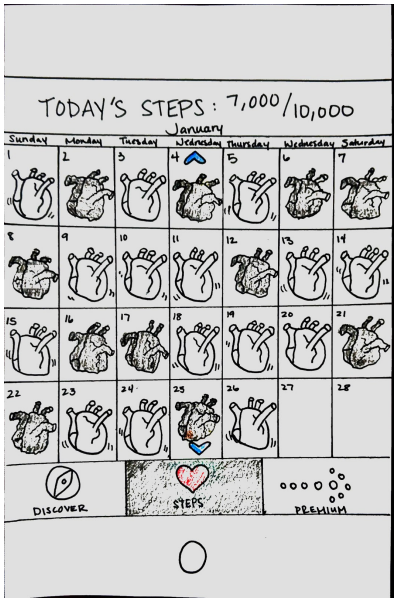
Final Design

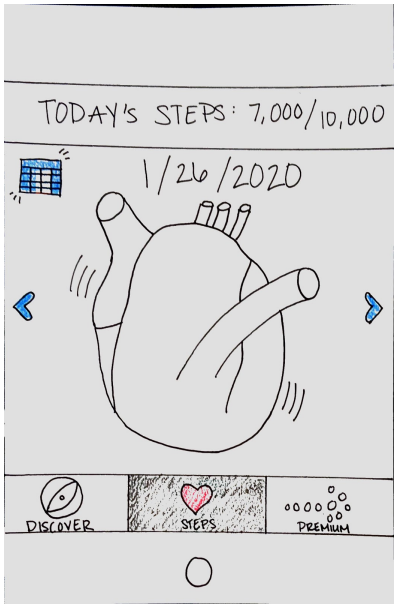


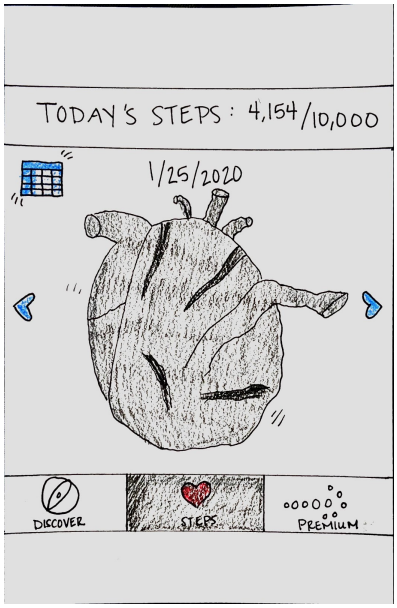


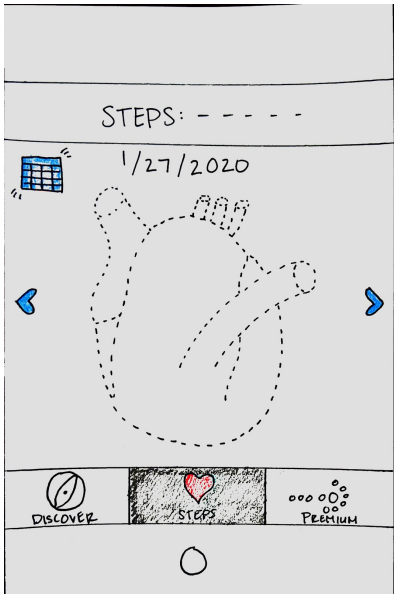


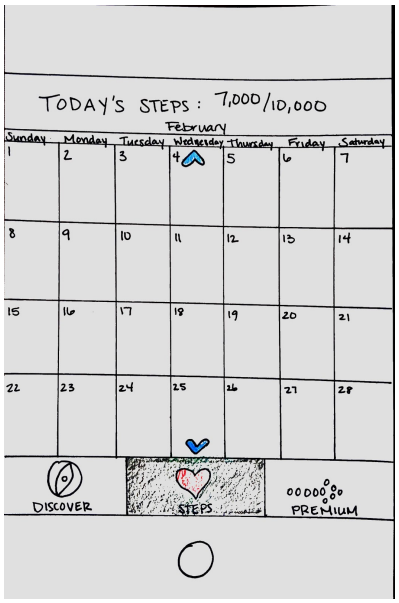


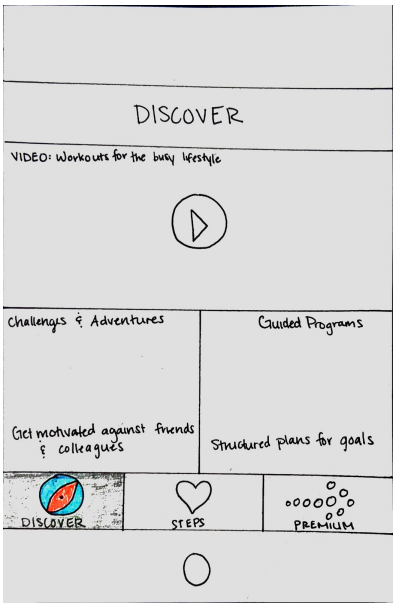



TODAY'S STEPS: 7,000/10,000
1/26/2020
DISCOVER
STEPS
PREMIUM


TODAY'S STEPS: 4,154/10,000
1/25/2020
DISCOVER
STEPS
PREMIUM


STEPS: - - - - -
1/27/2020
DISCOVER
STEPS
PREMIUM


TODAY'S STEPS: 7,000/10,000
February
Sunday Monday Tuesday Wednesday Thursday Friday Saturday
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
DISCOVER
STEPS
PREMIUM


DISCOVER
VIDEO: Workouts for the busy lifestyle
Challenges & Adventures
Get motivated against friends & colleagues
Guided Programs
Structured plans for goals
DISCOVER
STEPS
PREMIUM

Design Rationale

We based our design decisions on whether they would change the mental model of the user to want to be active, instead of choosing to fake their pedometer steps. Also, we decided to base our app on the altering the Fitbit app, as we didn't see a need to reinvent the wheel with what Fitbit already had going right with it.

We kept the guided programs, such as workout videos and meditation, due to opinions expressed in the interviews. We also removed the community tab due to feedback from the interviews, and to save space on the dock. We kept the premium tab because it wouldn't make business sense for Fitbit to cut out a line of revenue just for design reasons.

After the usability tests, we distinguished better between what tab you were on within the app, by making the current tab shaded differently. We also made the arrows for navigating between calendars/ days more obvious. Lastly, we altered the name of the main tab to"steps" to better reflect its content.

One major addition to our app includes the introductory paragraphs. The introductory paragraphs that the user sees after making an account are used to shift the user to understanding that their sedentary lifestyle can lead to something as serious as heart disease. The statistic of heart disease being the number one cause of death in America serves to reinforce this. The user may be concerned, so we explain that we are working with the user to help them avoid this disease. We explain that this tool will make them more cognizant of why they should take more steps daily, in an attempt to have the user believe this and use the app as intended. This also gives a simple tutorial on using the different views of the app (calendar and daily).

Once in the app, we start the user on today's daily view. The daily view has a human heart who's healthiness is dependent on the number of steps you take that day. This is to provoke an emotional response from the reader and to push them to make their heart appear more healthy. This also reminds the reader that health is a real concept with real consequences.

The user can see a monthly calendar with a visual record of how many times they missed their goal. We believe that seeing that your performance history will make the user change their mental model to understanding that health is a daily decision, and that what they choose to do with their activeness will stick with them.

References

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