Let 'em Cook!

Turn Your Kitchen Into a Playground!

Final Report

CS 147 Fall 2025

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The Team

Four Stanford students who think cooking should be more fun.

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The Problem

New adults aren't willing to explore and get out of their comfort zone while cooking, not because of time or budget limitations, but simply because it is not **enjoyable** enough.

Our Solution

Let 'em Cook is a **social cooking app** that encourages individuals to try new foods and techniques by offering unique low-stakes challenges, virtual rewards, and fun, friendly competition with other users. Want to customize your very own personalized pet pal? Challenge your friends to cooking competitions, discover ingredients you've never tried, and start actually looking forward to making dinner!

Needfinding

In line with our studio's mission of Adulting Made Easier, we decided to focus on a subset of adults we rationalized might be having particular difficulties: **individuals transitioning into independent living for the first time (less than 4 years).** This would include new graduates of post-secondary education, as well as individuals who didn't attend/graduate from post-secondary education, such as college dropouts, trade school graduates, military, etc. We initially focused our questions on **food and budgeting**, and refined our interview scope after determining the needs of our interviewees. In total, we interviewed 6 new adults found through **mutual connections** from **work, school, and proximity-based social media**. Most interviews were performed in-person in various locations close to the interviewee's residence, with one out-of-state individual interviewed virtually. All participants were offered compensation in the form of either a meal or beverage, though many refused to accept compensation. Our initial interviews included...

Lillian
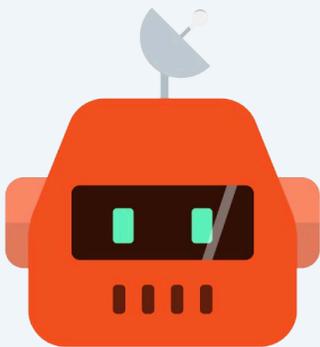
Stanford Class of '25; works in the music/ entertainment industry; lives in San Francisco's Richmond District.

Lillian described herself as "resistant to change," needing a big change/push to do new actions.

However, she valued her independence and being able to try new things, even if they don't go right the first time.

Regarding budgeting, Lillian wanted to try new things, but didn't want to take big risks, such as wasting significant time or money.

Nora

Class of '26 at UC Berkeley; studies film and studied abroad in Japan for a year.

Nora has anxiety, and described a particularly "weird fear of having to cook for [themself]."
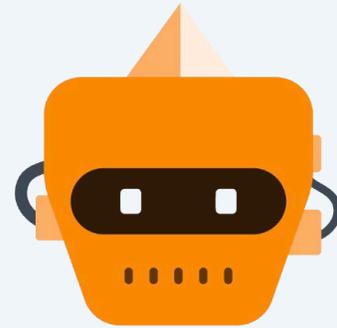
She noted that many adult issues were exposed to her for the first time abroad, such as budgeting for food. She still doesn't feel fully prepared for the financial burden food places on her, buys cheaper food that is less enjoyable to her as a result, and is more scared of trying out cooking, where it can be intimidating at first, or wasteful at the end.

Regarding budgeting, Nora didn't feel confident enough in their financial decisions buying food, nor their personal experience preparing food, to enjoy cooking food herself.

Lucy

Stanford Class of '25; current startup founder; lives in San Francisco.[1]

As a startup founder, Lucy equated time cooking to time she could not be working, which was typically not worth it to her.

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[1] Lucy was an international student living in the United States since high school without her parents, but not quite independently. Thus, she acts as an **extreme user** despite still meeting our criteria as a new adult.

She noted a particular desire for both tasty and convenient food. However, she stated that having a choice in the food she ate was more important than receiving cheap, tasty, or low-time-commitment food. She felt a strong need for agency in her food decisions.
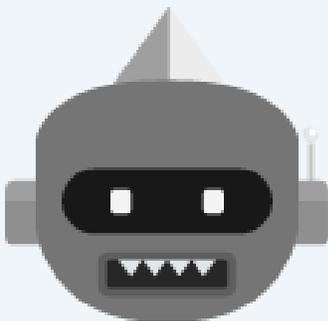
Samantha

Class of '22, current software engineer at Pinterest, lives in SoMa district in San Francisco.

Samantha states that cooking takes significant time, from grocery shopping, to preparation, to cleanup, and that it all adds up,

She felt that without adequate food information/guidance, she was unable to make individual choices that seemed reasonable.

Nathan

21 years old; withdrew from college; living alone in an apartment in the rural WA area.

Nathan described themself as indecisive, but later implied that the number of options and choices in life can often be overwhelming.

When it comes to food/budgeting, he is still experimenting, buying food in bulk but then choosing what to eat "on the fly" each day.

Nathan valued self-automony, but also dealt with anxiety and risks induced by relying on consistent, unassisted, manual action.

Rachel

21 years old; lives in a duplex with 3 other roommates; current junior at San Jose State University.
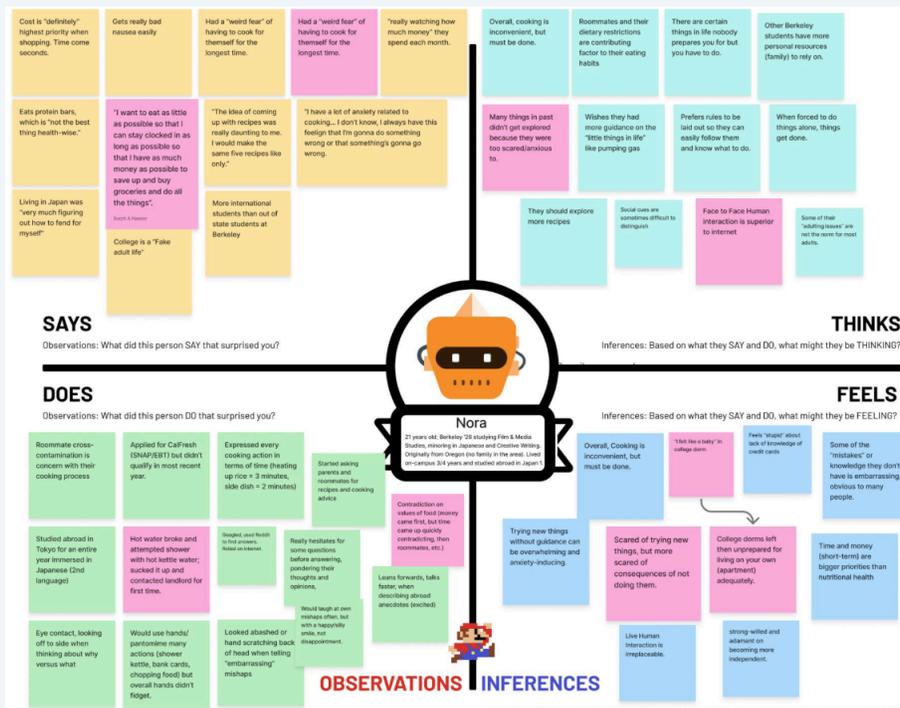
Rachel stated that they felt like they had to "Actively seek out the info [she] need[ed]."
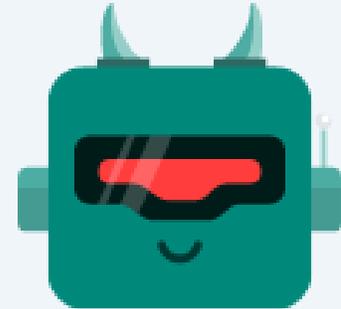
She also expressed uncertainty with how she planned grocery trips and the amount she cooks in general.

Interview Synthesis & Analysis

We created empathy maps such as below for each interview, and highlighted pink the most impactful thoughts for future comparison.

From this, we noticed some common findings: most interviewees stated a desire to try new things, but only to a certain extent—they needed a solution that was flexible to their needs, and not a complete behavior change. They also noted that they typically learned things by struggling first, which makes them cautious to try new things and have to endure the struggle. People could benefit from finding the sweet spot of exploration and trying new things, without breaking the spirit or the bank.

Most interviewees also placed high value on their agency; they didn't want something that takes away choices, but rather helps educate them or reduce the number of choices, or risk associated with certain choices. People want an environment with the freedom to slowly explore and learn.

Lastly, we noticed that preparing one's own food was a constant common link between anxiety, fear, or downright disdain, despite how essential it is to living.

POVs

After our interviews, we framed our findings into three specific POVs (Point of Views) to inspire possible experience prototypes. We formed the following POVs for Nathan, Samantha, and Lillian:

WE MET... Nathan, a 22-year-old who recently moved into a new apartment and is handling his own finances for the first time.

WE WERE SURPRISED TO NOTICE...
although he worries about missing bill payments, he chooses to pay each bill manually (rather than automating payments).

WE WONDER IF THIS MEANS...
he values reinforcing his sense of responsibility and control by exercising financial agency.

IT WOULD BE GAME-CHANGING TO...
maintain Nathan's sense of autonomy and self-trust while reducing the anxiety and risk that come with managing adult life manually.

WE MET...
Samantha, a 24-year-old full-time software engineer at Pinterest who lives alone in an apartment in San Francisco.

WE WERE SURPRISED TO NOTICE...
that despite her appreciation for food as an experience, she defaults to cooking the same few easy recipes, opting for convenience over variety, even though budgeting and time aren't a concern for her.

WE WONDER IF THIS MEANS...
that without a clear vision or recipe in mind, she finds it challenging to depart from what she's culinarily used to, thus ultimately defaulting to one of her "go-tos," even if they aren't ideal flavor/complexity-wise.

IT WOULD BE GAME-CHANGING TO...
make experimenting with new meals feel engaging and prideful, sparking

her sense of curiosity and accomplishment.

WE MET...

Lillian, a 22-year-old who had a sheltered childhood but studied abroad in Italy for a year and now loves to explore new cuisines.

WE WERE SURPRISED TO NOTICE...
her first visit to an Italian farmer's market was overwhelming, but she continued to shop there instead of at a predictable supermarket.

WE WONDER IF THIS MEANS...
she sees unfamiliar food as an avenue for "healthy discomfort" and growth.

IT WOULD BE GAME-CHANGING TO...
reduce the uncertainty that makes food exploration feel overly intimidating, making her feel supported as she tries new things.

HMWS From POVs

With POVs formed, we individually ideated a collection of HMWs per person, and eventually pared down our top selections as a team until we settled upon our best 3 HMWs total.

Nathan	Samantha	Lillian
We met Nathan, a 22-year-old who recently moved into a new apartment and is handling his own finances for the first time.	**We met** Samantha, a 24-year-old who now lives alone in an apartment in San Francisco, where she works full-time as a software engineer at Pinterest.	**We met** Lillian, who graduated from USF as class of '25 and had a transformative experience traveling abroad to Italy during her undergrad.
We were surprised to notice that despite being worried about missing a potential bill payment, he chooses to pay each bill manually (rather than opting for automated payments).	**We were surprised to notice** that despite complaining that her company's office food has gotten less elaborate, she tends to only cook simple meals for herself using nearby groceries.	**We were surprised to notice** that both in Italy and now back home, even though she frequently finds herself gravitating back towards comfort meals, she expresses a deep love for exploring different foods/cuisines.
We wonder if this means that he inherently values his financial agency, particularly when it comes to paying bills.	**We wonder if this means** that she enjoys eating food that requires more preparation, but she chooses to prioritize convenience because cooking/sourcing ingredients feels too effortful and like additional work.	**We wonder if this means** she's seeking growth of her food palette via experimentation, but finds it challenging to find the right opportunities to do so.
It would be game changing if Nathan could continue to feel that sense of autonomy and self-reliance, without the looming anxiety and risk of human error that comes with manual bill paying.	**It would be game-changing** to make cooking meals feel less arduous	**It would be game-changing to** help her discover new ways to experience this 'healthy discomfort' more consistently/ naturally and with adequate guidance.

HMW reduce the stress that comes with paying bills?	HMW make paying bills feel satisfying?	HMW increase the level of transparency in automated payment systems?	HMW reduce the time it takes to cook?	HMW make cooking like a game?	HMW make cooking less of a chore?	HMW push people out of their cuisine comfort zone?	HMW make it easier to find new foods to try?	HMW bring other food cultures to the US?
HMW entirely remove the idea of paying bills (on a scheduled basis)?	HMW allow individuals with similar billing deadlines/dues help each other?	HMW make paying bills feel the grocery store?	HMW make cooking not feel effortful?	HMW get community members to provide elaborate meals?	HMW make SWE work less draining?	HMW make every meal a 'comfort meal'?	HMW provide mentors/experts' to advise trying new foods?	HMW create organic ways to try new foods?
HMW make paying bills feel like a video game?	HMW reduce the desire of financial agency?	HMW boost confidence and self-reliance when it comes to paying bills?	HMW improve Pinterest's provided breakfast and lunch?	HMW make getting groceries fun?	HMW engage apartment neighbors in providing meals?	HMW make trying new foods feel like a late night show?	HMW make trying new foods feel exciting rather than discomforting?	HMW reduce barriers in finding foods to experiment with?
HMW make paying bills entirely automated?	HMW remove repercussions of paying one's bills late?	HMW make paying bills harder to forget?	HMW make cooking something to look forward to?	HMW make eating out alone less awkward?	HMW remove the need to cook meals altogether?	HMW incentivize trying new foods?	HMW make trying new foods feel like a science experiment?	HMW make all foods feel comfortable?
HMW make paying one's bill something memorable/ interesting?	HMW reduce the fear of missing a bill payment?	HMW reduce the possibility of human error in paying bills manually?	HMW make 'simple' meals more attractive?	HMW make getting unique ingredients easier?	HMW make it easier to get help cooking/preparing meals?	HMW make exploration/ experimentation of food a scheduled activity?	HMW better educate people in new foods/ cultures?	HMW traveling abroad for food more accessible?
HMW provide options to bolster agency without stressing people out?	HMW introduce safer finance habits that reduce risk of missing a bill?	HMW introduce budgeting as a skill earlier in life?	HMW discover new foods in a local area?	HMW increase cooking complexity in an approachable manner?	HMW remove the emotional pressure of high-prep meals?	HMW frame food exploration as self-care/healthy habit?	HMW make communal cooking/meals more accessible/ feasible?	HMW get guidance from other people when buying unfamiliar groceries?

HMW Brainstorming: POVs for individual interviewees are listed at the top, and we voted on a group on which HMWs we might consider adequate to move forward.

We ended with the following three "How Might We" statements (HMWs), presenting problems we noticed from our needfinding. One stems primarily from Samantha's POV, and two from Lillian's.

HMW make cooking not feel like a chore?
HMW disseminate adulting knowledge to new adults more widely?
HMW habitualize exploration of food?

Experience Prototypes

These problems led to the formation of three initial Experience Prototypes:

1. Competitive/Social Cooking App

Setup: 2 participants are given the same food ingredients. Prep same meal (or same vibe of meal), judged by others.

This would test the assumption of whether a social/competitive aspect would be sufficient to encourage users to cook/experiment more.

Our Takeaways: Our assumption was *mostly proven correct*. We found that the competitive aspect made participants extremely willing to make food with silly ingredients. Even without a reward/incentive, they had fun and actively were trying to win. However, one participant in a post-interview noted that they specifically stuck to what they knew, and chose to use new things sparingly at best.

We think this may be caused by lack of variance in the chosen ingredients, as well as bias introduced by participants analyzing each others' dishes live, which wouldn't happen online. From these takeaways, we decided this solution was worth further exploration.

2. Scan + Learn App

Setup: A participant judges books solely by their covers, deciding interest. Then, they are presented curated information to simulate an agentified response. The participant then decides interest and confidence with the additional information.

This would test the assumption of lack of concise, relevant information if primarily what prevents people from trying out new things (such as foods).

Our Takeaways: Our assumption was *incorrect,* The participant showed a minimal change in desire to try out new books based on additional information granted about them. They stuck to their first impression, and stated that they typically wouldn't place themself in a position surrounded by books they are unfamiliar with (at least the genre) in the first place.

The participant was also dissatisfied with the additional effort (time) it took to internalize the additional information. We are unsure to what extent preconceived notions of willingness to read a certain genre of book perfectly maps to willingness to try a new food ingredient, but given the participant's steadfast stance on certain genres, and choice to minimize research, we decided this solution was not worth further exploration; concise, relevant information did not push the participant to try out something new.

3. Trivia + Parasocial Pal

Setup: A participant attempts trivia questions. They can opt-in to additional trivia questions in an attempt to obtain a specific, aesthetic reward (stickers of cute, hand-drawn animals). The questions are not particularly interesting on their own, but educational.

This would test the assumption of whether virtual/cosmetic rewards are incentive enough for people to learn about something they otherwise wouldn't.

Our Takeaways: Our assumption was *correct*! The participant's perceived value of certain stickers was enough to drive them to attempt to answer more questions. They also specifically sought out questions associated with certain stickers they highly desired.

The participant stated that they would not have looked into the asked questions in their own free time. One caveat is that some earned stickers were left behind after the test, showing that their value was not long-lasting enough.

From this finding, we deemed that a solution exploring cosmetics may be enough to incentivize users, but likely not in isolation.

Experience Prototypes Takeaway

From the positive reactions to prototypes 1 and 3, we decided to somewhat combine the two and explore a social cooking app (prototype 1) that gamifies cooking by including rewards based on performance (3, but testing cooking instead of trivia skills). We thought that prototype 1's competitive aspects would provide enough buy-in to get people initially engaged, and prototype 3's aspects would help keep users engaged, and incentivize the explorational opportunities of unfamiliar ingredients.

Design Evolution

Final Solution

Our final solution combined the successful aspects of our first and third experience prototype to answer the following question from our needfinding process: HMW make cooking not feel like a chore? Based on the success of the competitive aspect to our cooking challenge, and the positive reception to the aesthetic rewards related to otherwise unmotivating tasks, we arrived at a **social cooking mobile app** where you can challenge friends, attempt global challenges, and receive virtual cosmetic rewards for a personalizable pal upon challenge completion.

In having a combination of features—a series of challenges that are low-stakes, but still fun, whilst allowing power users to make more complicated challenges and achieve fun through difficulty—we present an app that covers a wide spread of users within our target demographic of new adults; those with many friends will compete within their own social circles; those with less active social circles can complete global challenges;

people who are less experienced can use the challenges and the global submissions page to get ideas, and slowly get more experience with cooking; and those who are more experienced can create and undergo higher difficulty challenges to test their competitive spirit. Along the way, all users can customize a personalized pal and use it as a medium of self-expression, which is stood atop of their in-app fridge and appears to other users in their friends lists.

Core Tasks

Stemming from an initial idea of a social cooking app where users would attempt cooking challenges, we ideated upon the core functions a user would perform were they using our app on a daily basis. While these core tasks detail only a small amount of our app's functionality, establishing core tasks helped refine our focus and ensure that design decisions aligned with what we intended our app's core functionality to be. We established the following core tasks catered to different levels of user involvement: simple (done regularly by all users for low effort), moderate (done regularly by users, but requires more effort), and complex (done less regularly by normal users, and grants opportunities for power users):

1. Simple Task: Pin a Challenge to Your Fridge

This task is not strictly necessary to use our app, but represents a significant aspect of streamlined flow and usability: pinning a challenge from the challenges page to your fridge page. Users who do this will be able to quickly access a challenge in the future, without having to search through the challenges tab again, offering a convenient way to remember what challenges a user was planning to attempt, and then quickly revisit the challenge when they are ready to attempt it.

Users can accomplish the task by first navigating to the "Challenges" tab, and tapping on any challenge to visit that specific challenge's page. From there, they toggle the "Pin to Fridge" button, which will change its status to "Pinned", and update the Fridge page accordingly.
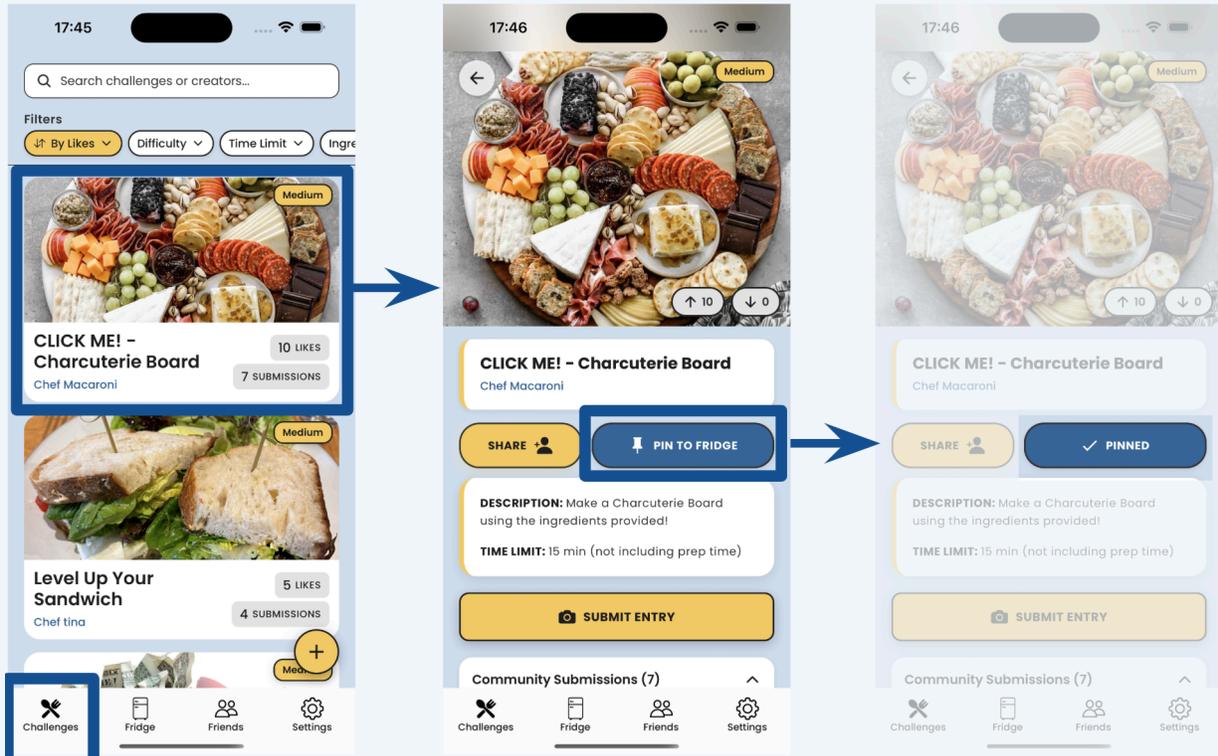
Simple Task: Pinning a Challenge. After toggling "Pin to Fridge", the user's Fridge page is updated accordingly. Tapping the photo on the Fridge page directs to the challenge.

2. Moderate Task: Share a Challenge with a Friend

This task leans into the social aspect of the app, and would see regular use: a user can send a challenge to a friend, such that they both can attempt it themselves and fire up their competitive spirit! This challenge is a main component of what makes *Let 'em Cook* a social app—the ability to strengthen strong ties and regularly undergo challenges with your friends!
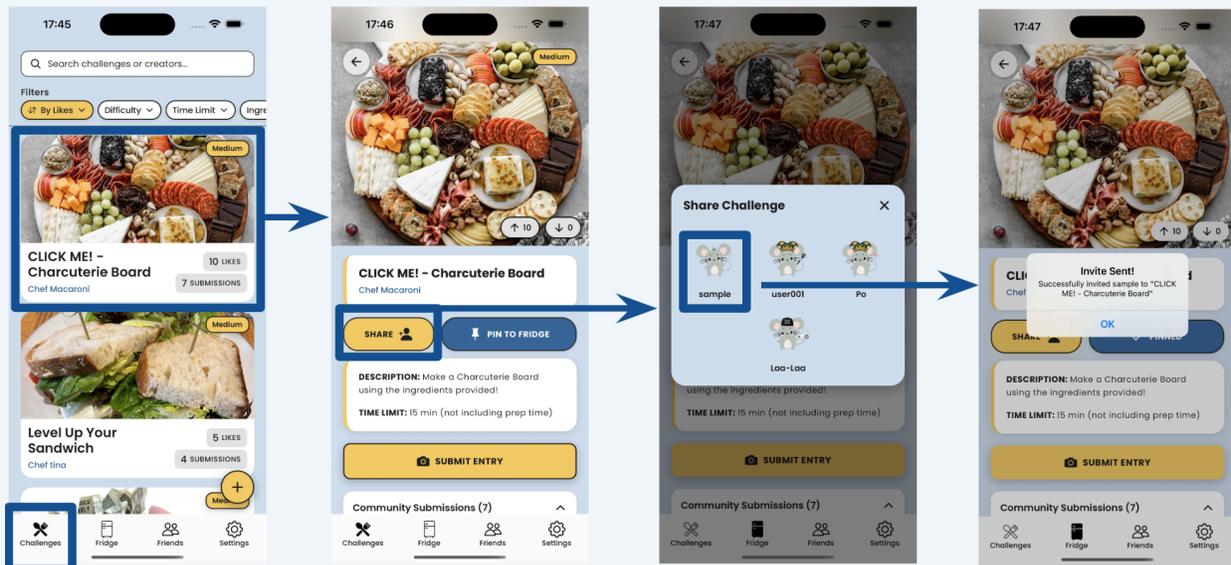
Moderate Task: Share a Challenge with a Friend.
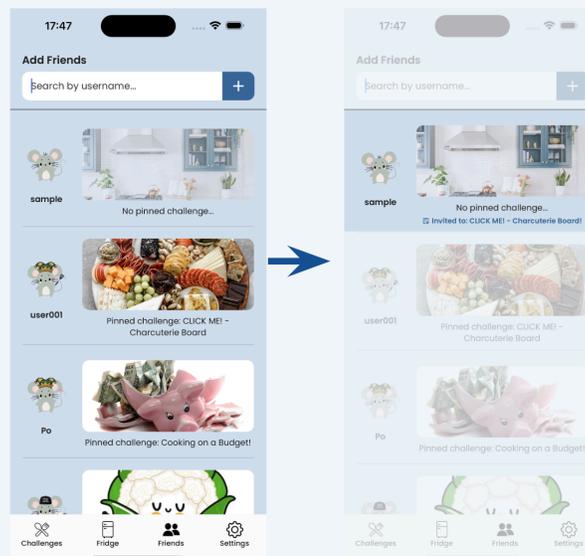
Users can accomplish the task by first navigating to the "Challenges" tab,

and tapping on any challenge to visit that specific challenge's page. From there, they tap on the "Share" button, which opens a popup menu to select a friend from their current friends list. Selecting a friend will send the friend an invite, which they can accept on their end. The Friends Page will update the status of the invite accordingly.

3. Complex Task: Create a New, Custom Challenge

This task takes creativity to a new level, and allows the user to create their own challenge for everyone else to see. This challenge is for users who are a bit more ambitious and who think they can cultivate an experience that others will enjoy as much as they do!
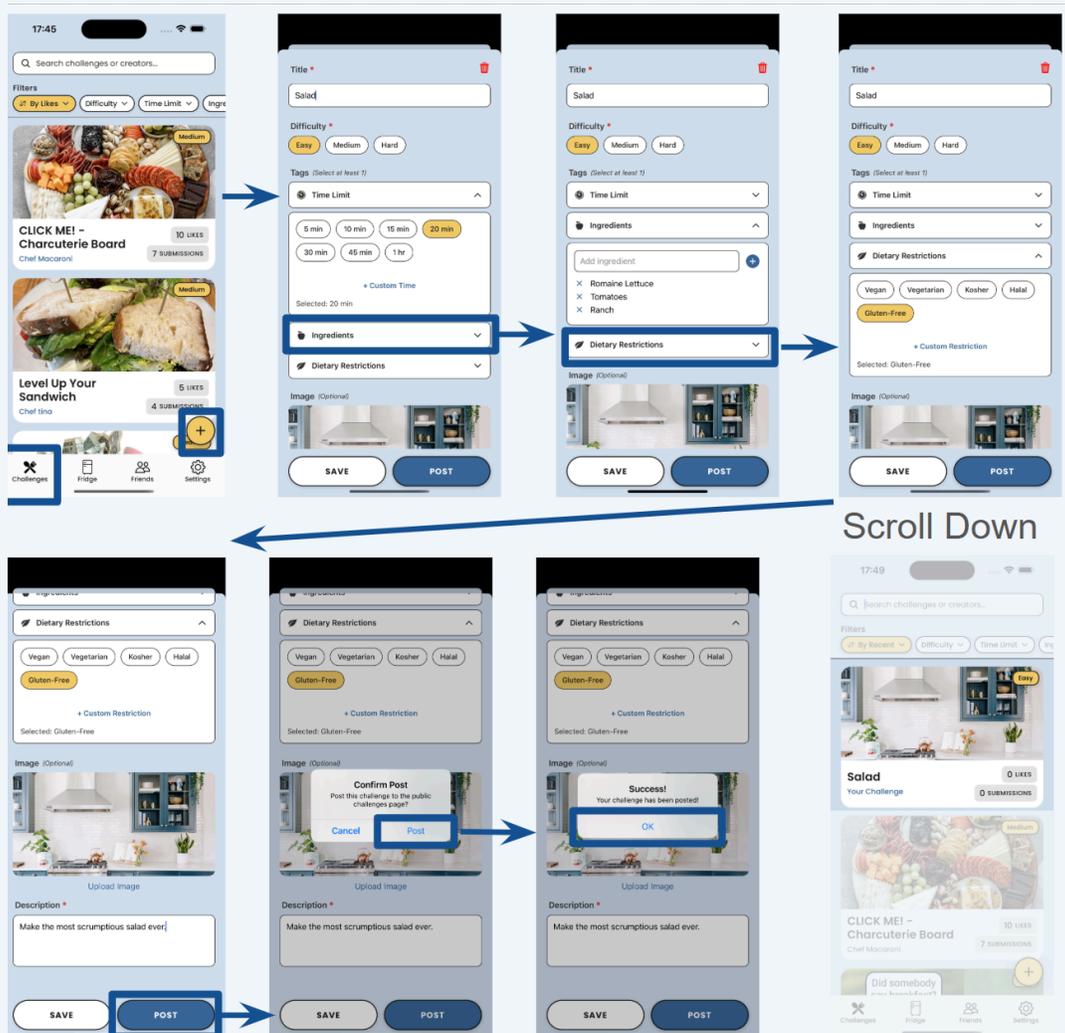
Complex Task: Create a New, Custom Challenge. There are text entries, dropdowns, scrolling, and many buttons to tap (include potential Image Gallery Access) to complete

Since *Let 'em Cook* values accessibility to a wide variety of skill levels, diets, and preferences, this task utilizes a detailed tagging system so that users are able to filter created challenges to their liking. As a result, power users undergoing this task might need to think more deeply about their challenge's content, adding more complexity to the task beyond the existence of many more inputs being necessary. However, the creative potential is what solidifies the app as one with long-term sustainability—new ideas and challenges are created all the time!

Users can accomplish the task by first navigating to the "Challenges" tab, and tapping on the yellow "+" button in the bottom right corner above the bottom navigation bar. This pops up the "New Challenge Creation Page," where the user must do the following to complete the task:

- Enter a Title for the Challenge (Tapping on the Box then typing using Keyboard)
- Select the Difficulty (Easy, Medium, or Hard) for filtering purposes
- Add at least 1 additional tag between Time Limit, Ingredients, and Dietary Restrictions. Options for these settings are included by tapping the arrows to expand the dropdown menus for each tag category setting.
- Scrolling Down to see the Image and Description sections (Image Inclusion is optional, but selecting "Upload Images" asks for permission to access the device's photo library, and if permitted, will upload an image the user selects).
- Enter a Description (Tapping on the Box then typing using Keyboard)
- Tapping the Blue "Post" button in the bottom right corner
- Confirming Challenge Creation by clicking the "Post" popup
- Pressing "OK" after the challenge is successfully posted

Afterwards, the new Challenge will appear at the top of the Challenges page if the user has the default sort settings (Sorting by Recent). If a user starts challenge creation, and wants to come back to finish it later, they can tap the "Save" button in the bottom left of the New Challenge Creation Page, and pressing the "+" button from the main challenge page will resume where they left off.

Design Evolution Process, Visualized

Initial Sketches

As part of the brainstorming process, we individually sketched out potential realizations of our solution across different mediums. This ranged from mobile apps, AR/VR, smartwatch applications, to a smart fridge interface.
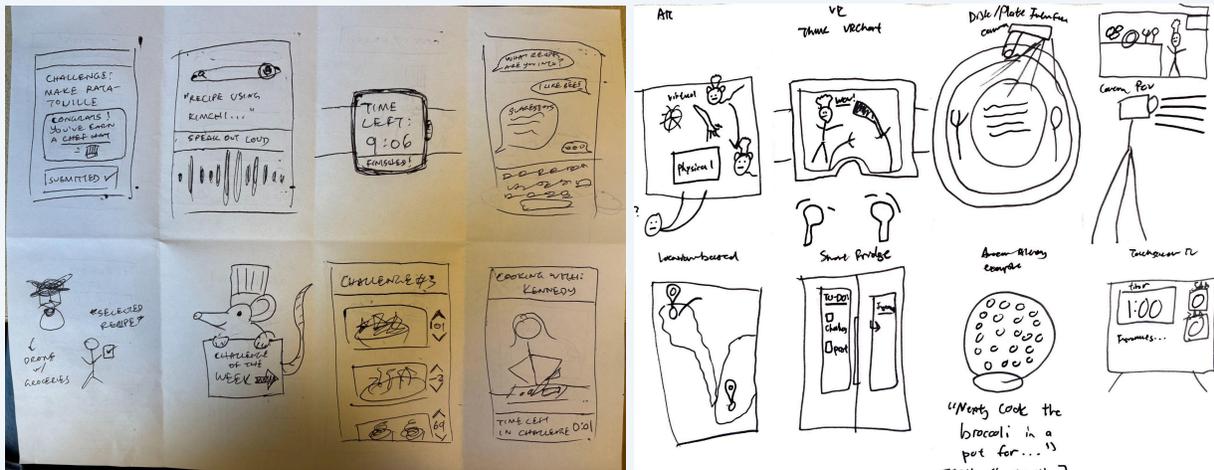

After discussions, we selected two realizations which we believed offered the greatest affordances for accomplishing our goal of making cooking more fun for young adults—this ended up being for a smartwatch and smartphone application, respectively.

Ultimately we chose to proceed with a smartphone app since both realizations had similar weaknesses in terms of platform competition and usability while cooking, but smartphones would reach a wider audience of young adults, and provide more surface area so images and text would be easier to read and view.
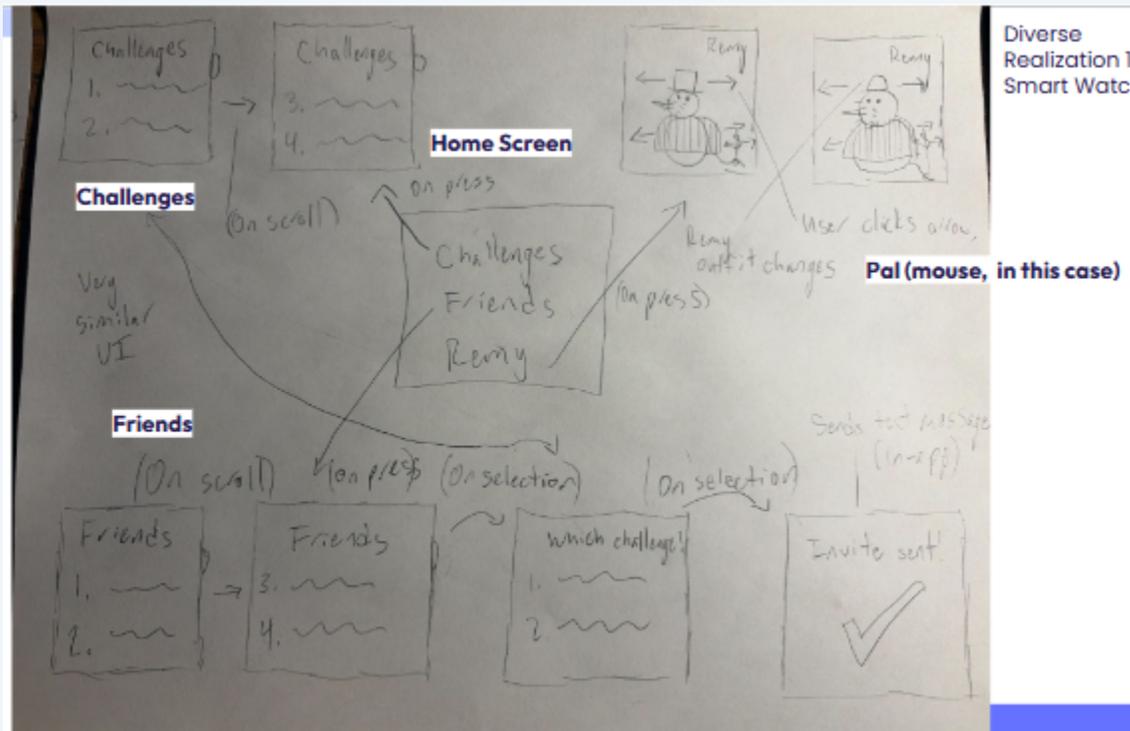
Diverse Realization 1: A Smartwatch Interface. There would be lots of scrolling and small amount of text, but emphasis placed on the Personalizable Pal
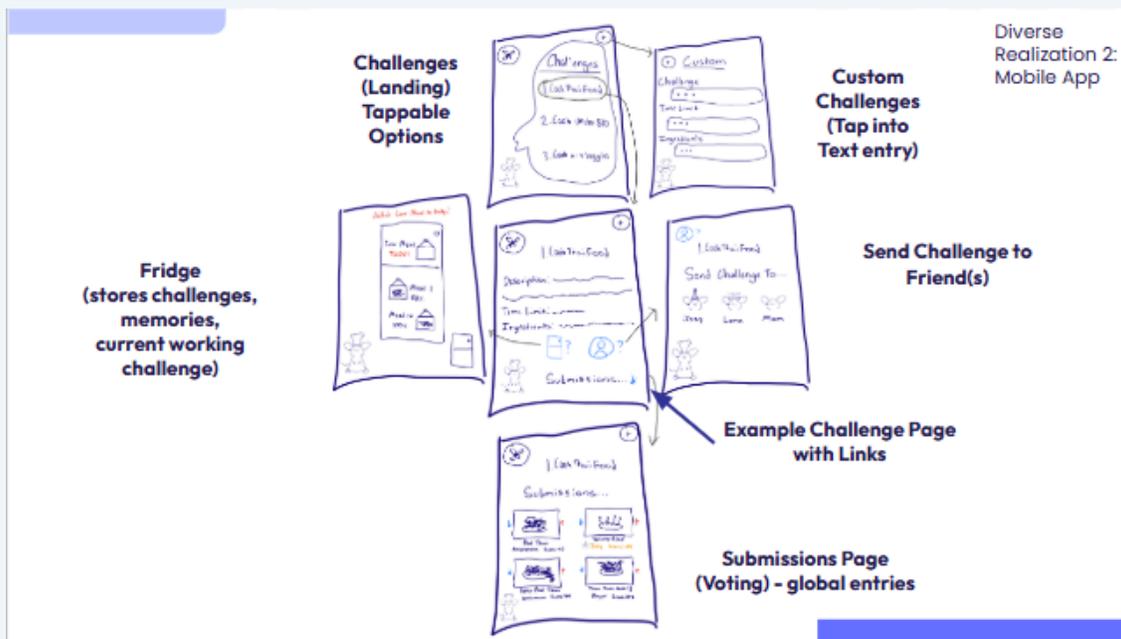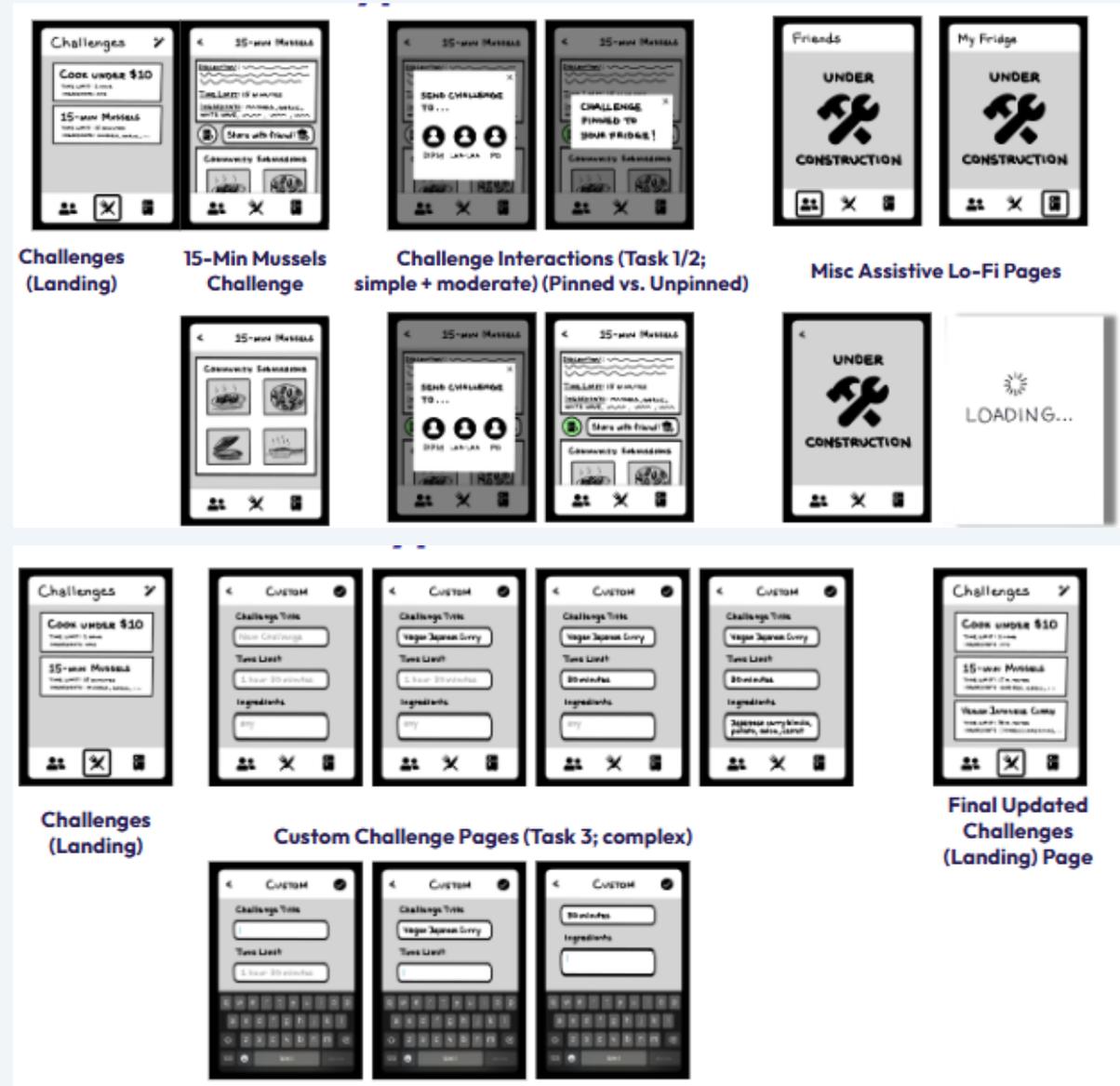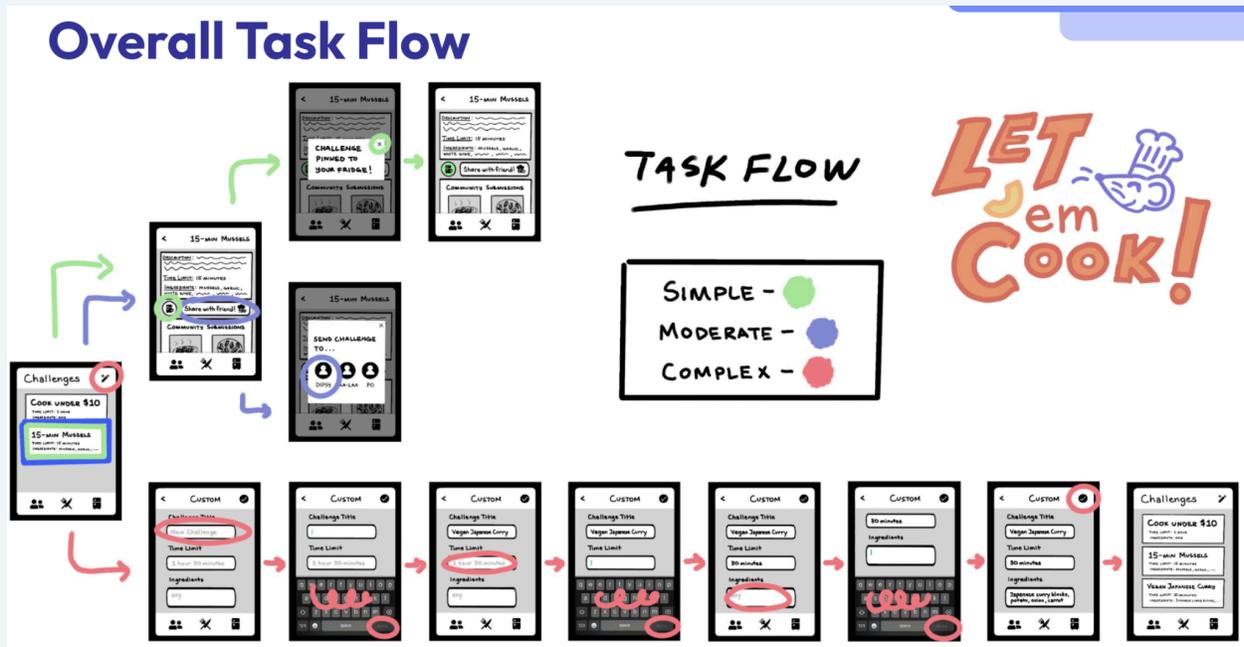

Diverse Diverse Realization 2: A Smartphone Application. Each screen's connections to the other screens would be essential for clarity of navigation and our app's concepts
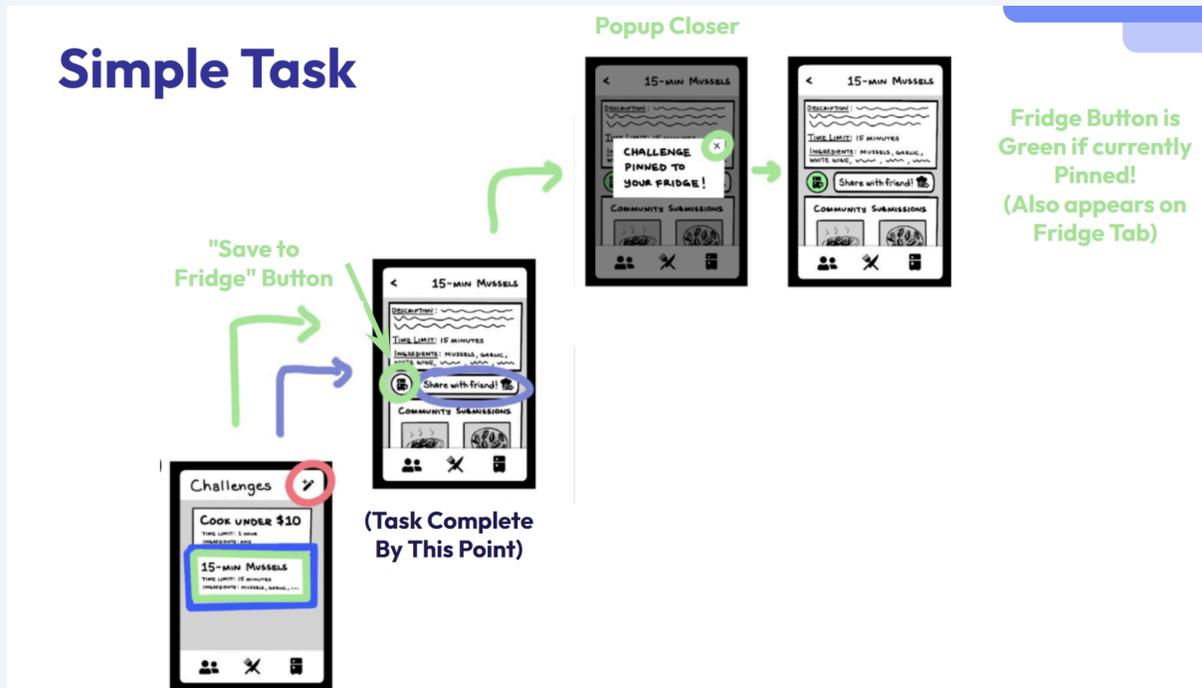
Low-Fidelity Prototype and Evaluation

With a smartphone interface selected, we solidified our three Core Tasks for our low-fidelity prototype, which went unchanged up until our final implementation. We created our low-fidelity prototype by drawing a simple, color-deficient interface digitally on a tablet, and printing them out on paper, with a team member acting as a computer and replacing/stacking screens as testers acted on the screen.

Challenges (Landing)   **15-Min Mussels Challenge**   **Challenge Interactions (Task 1/2; simple + moderate) (Pinned vs. Unpinned)**   **Misc Assistive Lo-Fi Pages**

Challenges (Landing)   **Custom Challenge Pages (Task 3; complex)**   **Final Updated Challenges (Landing) Page**

All of the screens included for our low-fidelity prototype.

Overall Task Flow

An overview of all three tasks and how they flow from similar screens. The complex task is noticeably more complex to complete, requiring significantly more inputs. This pattern remained consistent across all prototypes. We eventually changed the logo to place less emphasis on the Personalized Pal, and more on the social cooking aspect.

Simple Task

Simple Task Flow for the Low-Fidelity Prototype. Testing would indicate that more clarity for the "Save/Pin to Fridge" button would be needed.
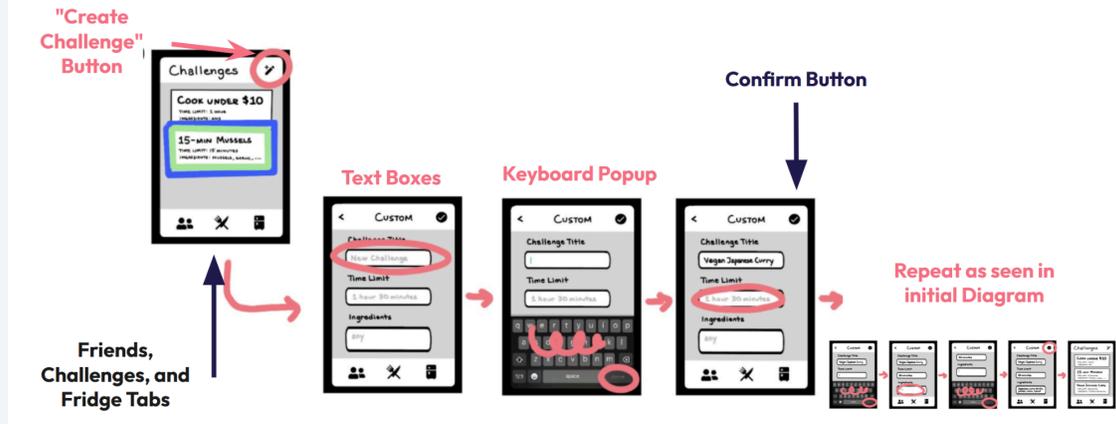
Moderate Task
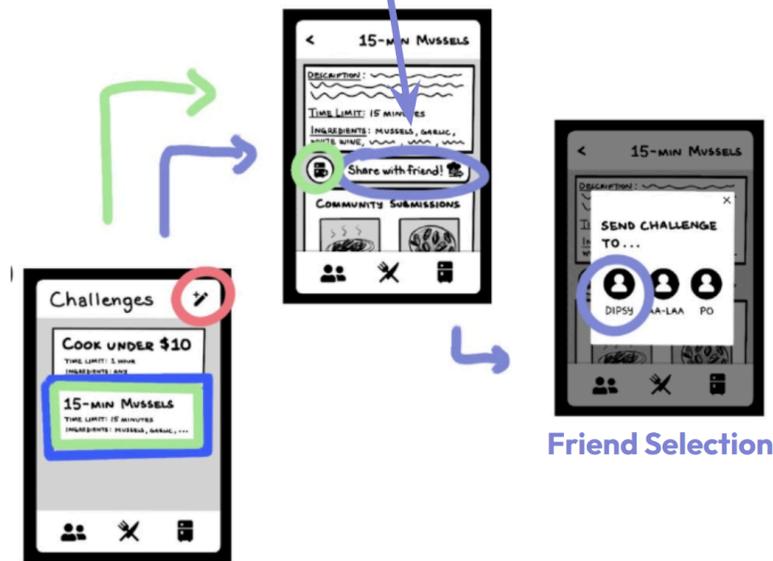
Moderate Task Flow for the Low-Fidelity Prototype. As the Friend Tab was not yet implemented, testers were simply told that the friend received the challenge.

Complex Task

Complex Task Flow for the Low-Fidelity Prototype. As the Friend Tab was not yet implemented, it would be stated that the friend received the challenge, with no screen.

Using a paper prototype and using minimal color (only for the pinned status update) allowed us to verify whether the flow of the app made sense, whether screen connections and buttons were intuitive, and allowed us to indicate to our testers that visual design was not the focus of testing at this point, but rather usability and clarity.

We performed user testing on 4 senior students at San Jose State University whom we met through mutual friends. All were new adults who purchase their own groceries and cook for themselves, and so were perfect testers of our target demographic. For this iteration of the prototype, only the Challenges tab was fully implemented. Users could only perform three simple actions: Tap, Scroll, and Type. Users were given a brief overview that they were the user of a competitive cooking app, as well as what actions they could perform, but were otherwise left to explore the app and complete the assigned tasks.

At this stage, tasks were more specific than their generalizable equivalents (i.e. "Pin the 15-Minute Mussels Challenge to your fridge", instead of "Pin a Challenge to your fridge"). This was to reduce information overload and the number of paper screens that needed to be produced.

Users were evaluated on the following criteria:
1. Time Taken to Achieve a Task
    a. This would gauge efficiency/speed, and help indicate the simplicity and implicit connectivity of the UI.
2. Number of "Incorrect Moves" made towards accomplishing a Task.
    a. This was measured in taps, and used to determine confusing elements, as well as balance out the first evaluation criteria to users who simply made more actions per minute.
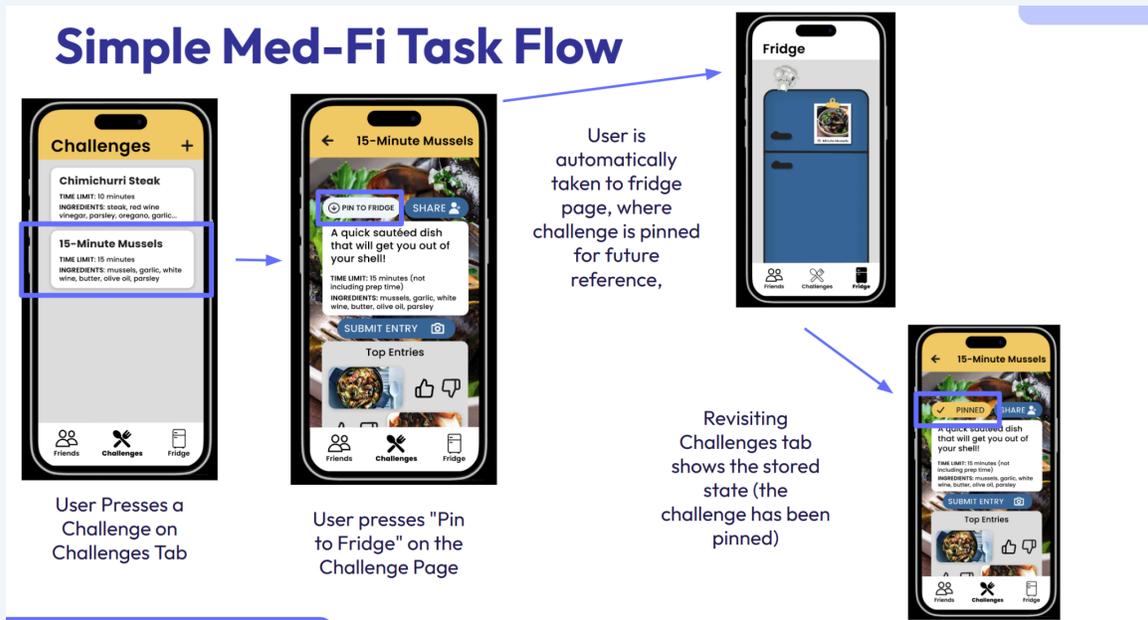
From User Testing, we found that users generally found the simple and clean UI easy to use, but noted some confusion with unintuitive icons and locations that were unlabeled. Additionally, while users performed generally well on our first evaluation criteria, they did poorly in the second: users felt that they needed to explore each tab fully to understand what their purpose was, and thus accumulated a high number of "incorrect moves," even if the tasks were completed quickly.

From this testing, we determined that more explicit labeling/text would be necessary for all buttons as the app evolved, and that more explicit color coordination (mapping colors to certain actions) would assist users in understanding inter-application connections. We also decided to implement an onboarding process quickly explaining what each page did, and what actions one could perform on each page, to reduce confusion/forced exploration and incorrect moves made in attempts to complete a task.
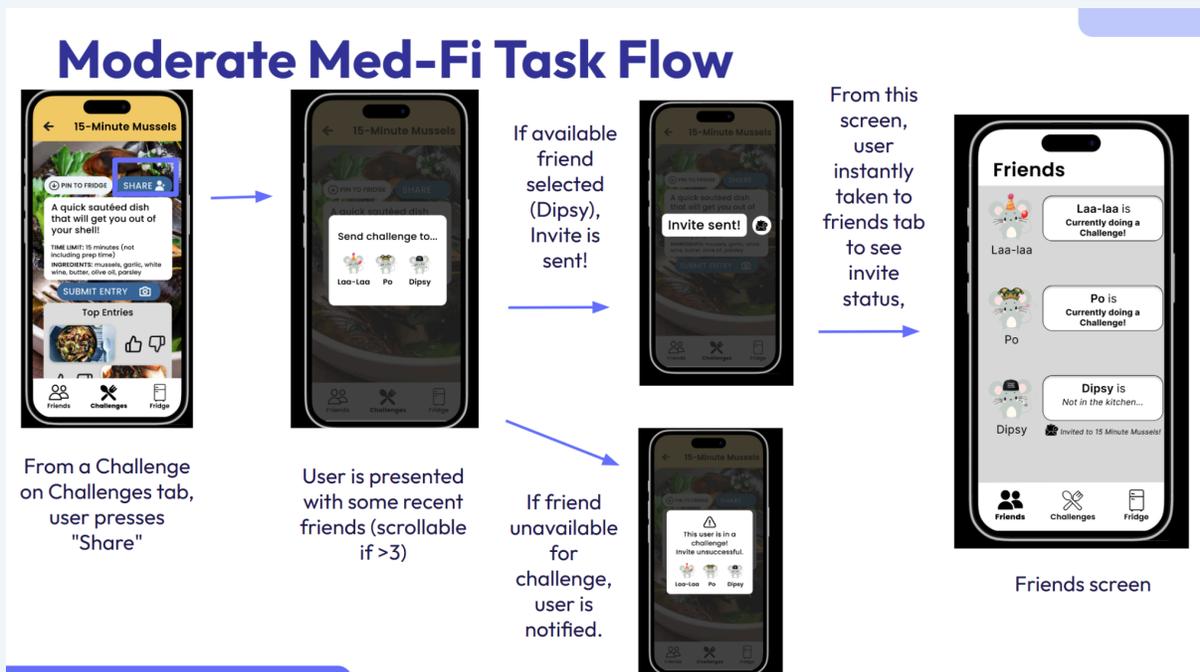
Medium-Fidelity Prototype and Heuristic Evaluation

For our Medium-Fidelity Prototype, we moved to a digital, interactive prototype using Figma. We wanted to start working with state management and tracked variables so that users could get immediate, conditional feedback and provide detailed feedback on how using the app truly felt.

As stated earlier, the three core tasks went unchanged throughout the entire design process. However, this prototype mainly focused on adding color, stronger usage of labels/text, and replacing all icons with more clear indicators of the actual functionality of the tab/button. Additionally, the Fridge and Friends pages were implemented, allowing more feedback on the app's functionality beyond our core tasks.

Simple Med-Fi Task Flow

User Presses a Challenge on Challenges Tab

User presses "Pin to Fridge" on the Challenge Page

User is automatically taken to fridge page, where challenge is pinned for future reference,

Revisiting Challenges tab shows the stored state (the challenge has been pinned)

Simple Task Flow for the Med-Fidelity Prototype. The Fridge Page is now implemented, and pinning to Fridge automatically routes the user to the Fridge to see the change. Feedback was given against the "automatic routing" and color palette (gray and yellow)

Moderate Med-Fi Task Flow

From a Challenge on Challenges tab, user presses "Share"

User is presented with some recent friends (scrollable if >3)

If available friend selected (Dipsy), Invite is sent!

If friend unavailable for challenge, user is notified.

From this screen, user instantly taken to friends tab to see invite status,

Friends screen

Moderate Task Flow for the Med-Fidelity Prototype. The Friends Page is now implemented, and users can see their friends' customized pals. Feedback was given against using a gray background very similar to the mice, and the inconsistency in header color (gray for Friends vs. yellow for Challenges)
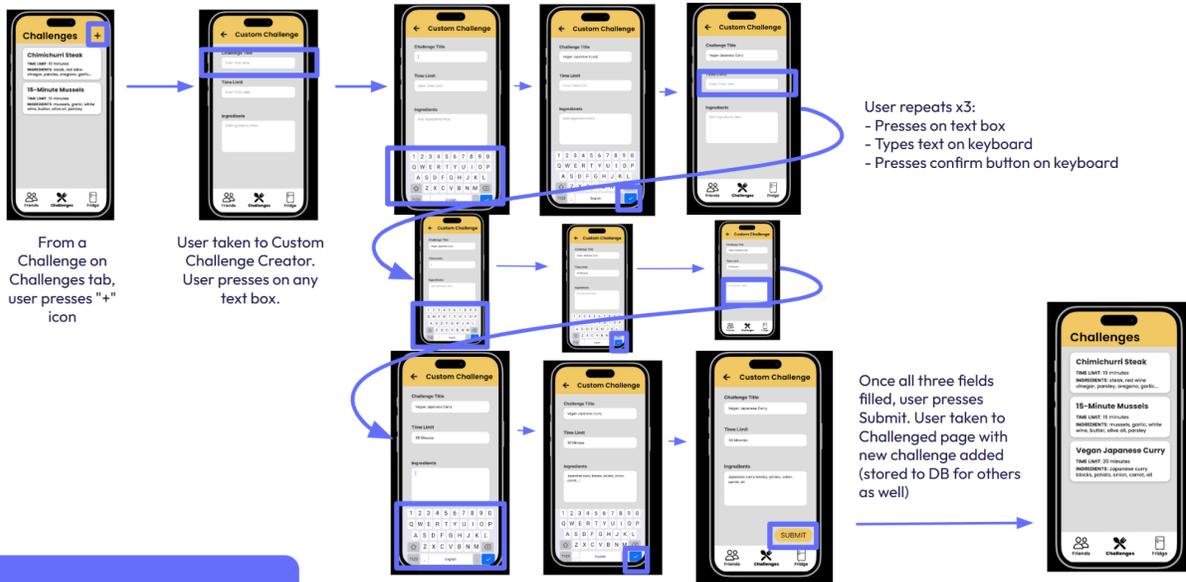
Complex Task Flow for the Med-Fidelity Prototype. This was the most similar task to the Low-Fidelity prototype. Feedback was given to allow more user freedom with saving progress, and reduce user effort by allowing dropdown selections instead of typing for the Time Limit, both of which were implemented in the final implementation.

An Heuristic Evaluation was performed by other members of our studio, arriving at 57 violations, including 3 severity 4 and 26 severity 3 violations.
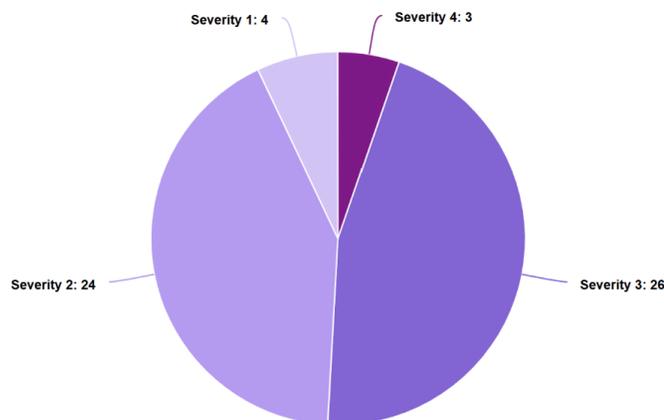
However, many of the violations listed were addressing similar behavior in different locations of the app, and nearly all severity 2 violations addressed similar issues to a severity 3/4 violation, but had fewer impacts on the user. Additionally, the Heuristic Evaluation had violations per task, but our tasks have significant overlap of pages, so many violations were reiterated for multiple tasks. A summary of the unique severity 3/4 violations and their resolutions for our future design are as follows:

Heuristic	Violation(s)	Resolution(s)
H1: Visibility of System Status	- No save progression or success indicators - Some Task Flows are forced/unclear (i.e. what to type, where to click after certain inputs, etc.)	- Added save/resume functionality where applicable - Removed presumptive flows present for med-fi simplicity
H2: Match Between System & World	- Many terms required presumed knowledge of app functions - Some terms vague (i.e. "time limit" vs. "time to cook" - Added content appears at bottom, requiring scrolling	- Added onboarding to clarify term usage - Onboarding addresses difference between "time limit" (challenge tag) and "time to cook" (descriptive text) - Moved added content to top if using default sorting
H3: User Control & Freedom	(4) No save progression (4) "+" Icon disappears after creating a challenge - Redirection of tabs after certain actions is jarring - No visible indicators for certain popups	- Save progression added! - Fixed "+" disappearing bug - Removed tab redirection after pinning challenge/sending challenge to friends - Added visible indicators for popups
H4: Consistency & Standards	Various Issues related to Figma (color, spacing, state management)	Fixed issues on final prototype

H5: Error Prevention	• No Action Confirmation popups • Inputs are not restricted/ guided (i.e. ingredients and time entry boxes)	• Added action confirmations • Added input guidance to "Create a Challenge Page" in form of selectable dropdowns and buttons
H6: Recognition Over Recall	• No indicator of creator of challenges	• Added "Your Challenge" and "Chef [Name]" to challenges to indicate creators
H11: Accessible Design	• (4) Background Images have significant contrast and excessive space • Some Background colors match elements too closely (such as gray mice and gray Friends Page)	• Removed overlays or text over any background images • Added more contrast and acted with larger critical lens for color overlap in future
H12: Value Alignment	• Various, but particularly for being accessible to beginner chefs	• Created deeper filterable tags selection, including adding a Difficulty tag.
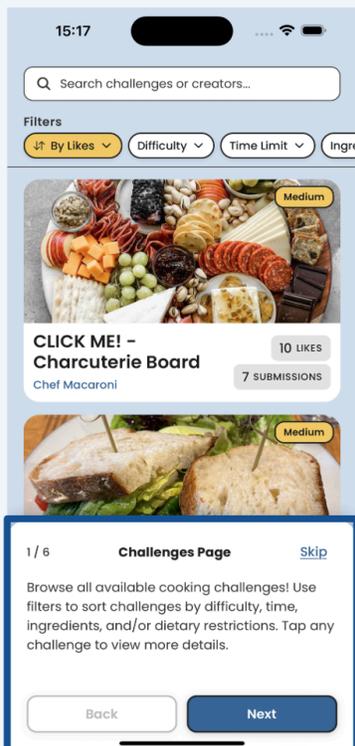
An example of our newly-added onboarding process. This helps alleviate many violations for various heuristics, and allows users to more quickly understand our app. Users can revisit the onboarding process from the newly-added settings tab.
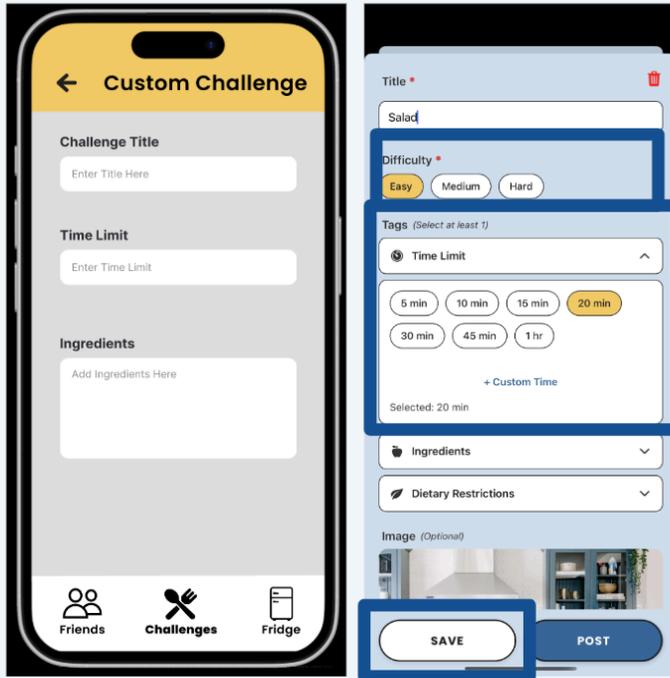
Custom Challenge Creation Before and After Heuristic Evaluation. To address H1,3,5, and 12, filters including difficulty, pre-selectable buttons, and save ability were added.

Challenges Page Before and After Heuristic Evaluation. To address H2,4,6,11, and 12 more labels are added, users have more agency in searching and filtering through challenges, Image overviews exist with proper bounding box elements so there is enough contrast to read any text, and creators of challenges are specifically noted at all times. Additionally, more thought was put into using light blue as a background color, and yellow exclusively for accents (making the difficulty and new challenge button stand out).

Overall, the Heuristic Evaluation process was excellent at exposing the weaknesses and oversights in our team's design thinking process, and led to more active effort and deliberate indicators of prototype fidelity abstractions versus design oversights. We left the process prepared to address these issues, thinking more actively about how to self-detect our own oversights in the future, and acted with generally a more critical lens from this point onwards.

Values in Design

Before moving on to our final version of our app, we established design values that we wished to remain consistent with throughout the entire process, and make present in our features. We sought to make *Let 'em Cook*

- **For Experimenting**
- **For Everybody**
- **For Sharing**
- **For Fun**

That is, we sought to create an app that encourages exploration and trying new things; that everyone can use, regardless of cooking experience or skill level; that encourages people to share and be social; and, above all, makes cooking a fun experience.

We integrated these values into deliberate features within our app: for experimenting, we encourage people to create wacky challenges, and try challenges to showcase the unique creations one can make even with the same ingredients or other restrictions. In being for everybody, we created an integrated tagging system so users can filter based on their own needs or desires, including skill level—and if a challenge doesn't suit them, they can create their own! We also implemented accessibility considerations, such as

avoidance of red/green colors for color-blindness and considerations of visibility and labels to be screen-reader accessible. In being for sharing, we integrate social interaction, including sending challenges to friends as a defining feature of our app. In being for fun, we allow users to make memories with a silly interface, a personalized pal, and interaction with their friends.

Despite a strong cause with these values, there are some tensions that exist within our app: primarily, it was difficult to align with being for experimenting, when ingredients are expensive, and disaster could mean financial ruin, and possibly throwing your creation in the trash. To address this tension, we leaned into the prospect of challenges being a *creative* endeavor, rather than skill-based endeavors. Default challenges are simple, including "Make a sandwich," "Make a Charcuterie Board," or "Make a salad." By creating a series of challenges that reward creativity rather than pure skill, it allows less-experienced users to experiment in a safer environment, and they can also look at other individuals' submissions to get inspiration and learn more, without having to risk creating things themselves first.

Other tensions arise such as potential for trolling, and an addiction to extrinsic rewards (such as upvotes). However, we believe that under the assumption of a small critical network of good-faith users, our app successfully aligns with our design values against the fear of trolling, and the lack of any other rewards associated with upvotes should curtail desire to obtain them to an addictive extent. In doing such, we believe we have addressed the possible value tensions that have arisen during our design process.

Final Prototype

Final Prototype Additional Features

Beyond our three core tasks (the flows of which are present under the <u>Core Tasks Section</u>), our application includes a variety of features that exist to streamline the task completion process, and overall make cooking a more enjoyable experience. Additional features exist to streamline the above tasks, and make cooking a more enjoyable experience. A quick overview of what a user can do within the app is separated by bottom-bar tabs below.

Challenges Page

- Search through challenges using the search bar, which allows users to search via a specific challenge title or a fellow app user's username, and the filters, which allow users to search by the type of challenge, such as difficulty or a quantitative metric, such as by number of likes.
- Tap on certain challenges to upvote/downvote them, pin the challenge to your fridge, submit an entry, or view and upvote/downvote on community submissions to the challenge.
- Create your own challenge for everyone else to see!

Fridge Page

- View your pinned challenge at the top half of the fridge.
- A personalized pal sits atop the fridge; you can change their accessories with any rewards unlocked by completing challenges.
- View your past challenges/submissions which appear under the "History" section (bottom half).

Friends Page

- Add friends by entering their usernames and tapping the "+" button at the top.

- View your friends' personalized pals, explore what challenges each friend is currently attempting, and/or check the status of any invited challenges to see if your friends have accepted them!

Settings Page
- This tab contains account settings, where you can change your username, password, logout, delete your account, or re-follow the onboarding tutorial.
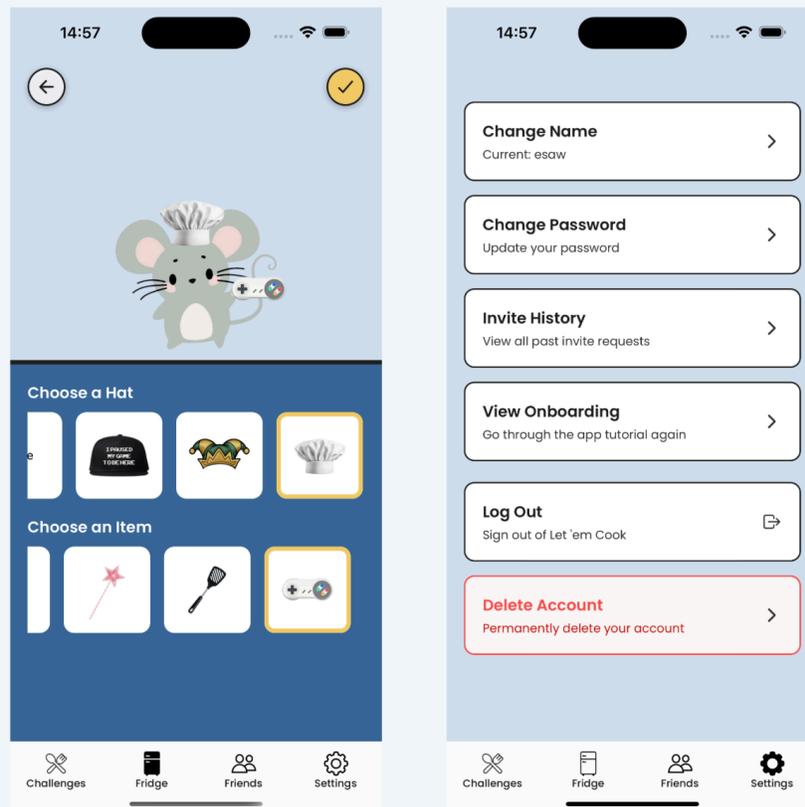
Final Prototype Additional Pages: Customize Personalized Pal (Left) and User Settings Page (Right)

Tools Used

To develop our application, we used React Native with Expo Go to create features for a real mobile device, with an emphasis on design for iOS. We

used GitHub for collaboration and version control, as well as Supabase for authentication and database storage.

Wizard of Oz, and Other Hard-Coded Items

Due to the nature of a social app, and for the facilitation of a project expo demo, the following aspects are Wizard of Oz'd or hardcoded in the final prototype:

Friending is currently one-directional—typing a username instantly adds them as a friend. This is to accelerate the demonstration of friending and not have to wait for the receiving user to see and accept a friend request before state change is observed. In reality, we would want to handle this via a request and accept/deny process by the other party before a bidirectional friendship is established.

Signup/Login only requires a (unique) username and a password. This facilitates the process for users using the demo, so they need not use their real contact information, and reduces the time before expo attendees can use the app.

Some Challenges and Friends are hardcoded to already exist in the app to create a default state. This allows users a comfortable experience that is not too sparse, and attempts to reduce the impact of the Cold Start Problem.

Available criteria for customization at the moment is currently just limited to three main fully-customizable ones — time limit (the maximum amount of time that a user should spend on making their creation), ingredients (ingredients that the user must use in their creation), and dietary restrictions (eg. requiring a user's creation must be halal, vegan, etc.). There are many

more types of criteria we could have added (eg. cooking methods, budget, "twists," etc., but to keep the UI simple for our demo, we stuck to these three, and we think they allow for a relatively high amount of user freedom, particularly since with each, the user can customize each to their liking and combine them as well to create more variety.

Available unlockable items are currently limited to just a single, hard-coded item (a party hat for the user's customizable pal, which unlocks on first submission to a challenge). This is for the sake of simplicity and not having to implement/create many different customizable items and independent unlock cases for each of them. But, we could follow this pattern and have new unlocks for every 5, 10... submissions, on the creation of one's own challenges, on voting on other submissions, etc. This would reward people interacting with the app and cooking consistently.

AI Tool Usage

AI was used for our final prototype to form element layout after visual guidance instructions were provided. This included supplying colors, spacing, font choices, and allowing AI to create the physical elements in accordance to the text and content desired. This was down to reduce the manual coding of repeated static elements after small design changes that needed to persist across the app, which is both timely and overly tedious, Beyond visual elements of final prototype development, AI was not used for the rest of the creation of *Let 'em Cook*, including the remainder of the design process (such as needfinding, low/medium-fidelity prototyping, etc.).

Reflection & Next Steps

Main Learnings

As a team, one of the main learnings we had was the idea that we should always, always, *always*, think back to the user and our target audience. We quickly realised that it was unproductive to go down a rabbit hole of experimenting/unthoughtful brainstorming when we did not place ourselves in the shoes of someone who would actually use our app. Particularly with the proliferation of (code-generating) LLMs, we realised that the **what** we wanted to make was pretty limitless, but the **why** was the more difficult question. Before this class, members of our team didn't quite have a grasp on just how important constant iteration and prototyping was for an eventual successful product. Getting practice with rapid iteration, not becoming attached to our ideas, and really verifying our assumptions was a helpful experience for our design futures.

While working on *Let 'em Cook* in particular, it was sometimes hard for us to "throw away" an idea, design, or piece of text we had already created—but as we continued with our project, we became less attached to the effort invested, and more concentrated on the potential improvement and impact that removing an element, or replacing it with something more effective, might yield. We also started acting with a much more intense critical eye after the heuristic evaluation, and started exposing the issues from a design perspective, rather than a "general vibes" perspective from that point onwards. And generally, we learned about all of the considerations and norms that surround the creation of a social application, which we will surely keep in mind for future projects!

As for our studio theme, we were pretty surprised to hear about the issues that our young adult audience raised—rather than raising concerns about time or money, they generally revolved around the idea of enjoyment/

satisfaction. We theorize that this may be partly due to the geographic proximity of those interviewed: the majority of individuals interviewed were from the San Francisco Bay Area, which generally reflects a higher level of average income or quality of life compared to the United States as a whole. Still, it was reassuring that our testing and evaluations with our target user group verified that our solution truly solved a need, and did so effectively.

If We Had More Time

With more time, we would be inspired to fix the hard-coded elements of our application, including but not limited to a **more-secure signup/login method** (requiring two-factor authentification, instead of just a username), which would also allow users to restore their accounts in cases where they have forgotten their password.

Also high on our priority list would be to fully-flesh out the **friend system**, where instead of just typing a user's username, there would be a two-way request-accept process, similar to other social media apps (eg. Instagram).

Similarly, we would want to **make it easier to add/find friends** within the app. For example, we would include the ability to send friend requests directly from the community submissions page—this way, if you recognize a creation that you liked and you want to follow what else they create in the future, you can quickly and easily attempt to form that connection.

We would also **include more unlockables for each user's personalized pal**, where users can unlock new hats/clothing items based on different criteria (such as the number of challenges they've created, the number of entries they've submitted, the types of challenges they've participated in, etc.). We would also want to include within the Settings page a chart which shows

what unlockables they *can* unlock (and how they can unlock them for better transparency). This way, people will actively attempt more challenges!

We would include **more filters/types of challenges** for improved customization. The app currently remains slightly limited in the three available criteria (time limit, ingredients, and dietary restrictions); adding more challenges would help cut down the time a user needs to spend writing their specifics in the description, as they would more easily be able to select from an already-preset/created format and adjust it to their liking.

Lastly, due to the nature of a social application, **adding content moderation** to ensure a positive experience would be an essential step were we to take this project further. Since hiring a team to do this for a small application may be costly, we would like to explore the use of automated content moderation using AI. While AI moderation has its issues, it would be essential to ensure scalable usage of our application, and allow for all users to maintain a safe, positive experience. The main use case would be ensuring that user-created usernames, challenges, and community submissions are all non-harmful and align themselves with our app's core values.