# Milestone Five:
# Prototyping & Evaluating Interaction Designs

**Prototype showcase:** Week 16 (5/9) during lecture

**Assignment Due:** Week 17 Tues (5/16) 11:59 am **noon**-ish

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## Learning Objectives

For this milestone, you will prototype and evaluate the interactive technology design that you are pursuing. You will learn to:

1. **Design interactive, rapid prototypes that can activate user interactions** and inform design improvement;
2. **Design effective user prototyping studies** that can reveal where and how the envisioned human-computer interactions might fail, and how the technology design might be improved.
3. **Using the prototype and through the user study, evaluate the final design idea**. Assessing the technology design both in terms of whether it addressed the user needs at large and in terms of UX and usability.

## Expectations for this assignment

First of all, we do not expect you to eliminate all risks around your design ideas. It is not a realistic expectation. In practice, the process of UX prototyping, evaluation, and improvement never ends: Designers constantly update their technology product and service designs as long as the tech is still deployed and maintained.

In this context, in your submission, **we are looking for evidence that (1) you are capable of designing rapid prototypes and user prototyping studies *based on the identified UX risks*, and (3) through the process of prototyping, you have eliminated the most significant risks around your design ideas.** The grading rubric reflects these expectations.

## Deliverable

Please read through this whole document first, before answering the questions. The questions are NOT in the order of your workflow. Complete the following form and submit this worksheet to Canvas.

### Team & Team Members:

Meal Prep

Divya Darshni Suresh | Griffin Blotner | Leo Liang | Rachana Chaudhari | Marie Williams

**Remind grading TAs of who your target users are:**

Please copy and paste from your M2 assignment.

Milestone 2
https://docs.google.com/document/d/1jpLofZnsbtHXT3U6Ng9gJFrw_1w3ibZINgMIb7fpkjI/edit?usp=sharing

**Reminder grading TAs what is the user problem you are trying to solve:**

Please copy and paste from your M3 assignment.

**Problem statement:**

**Design goal:**

- Increase the efficiency of bulk meal prep tasks, such as chopping, cleaning, and storing.
- Increase the enjoyment and satisfaction of the meal prep process, by finding ways to make it more engaging and rewarding.
- Encourage creativity and experimentation in meal prep to keep the process fresh and interesting.
- Simplify the meal prep process, making it more efficient and less physically demanding.

**Evaluation criteria:**

- Efficiency: How much time and effort does the solution save in meal prep tasks, such as chopping, cleaning, and storing?
- Satisfaction: Does the solution increase enjoyment and satisfaction with the meal prep process?
- Waste Reduction: Does the solution help reduce waste?
- Creativity: Does the solution encourage creativity and experimentation in meal prep, keeping it fresh and interesting?

Link to M3 submission: Milestone 3

**Reminder grading TAs what is the design idea you are pursuing:**

Please copy and paste from your M4 assignment. No need to update your design idea here, even if your idea has changed. We want to see how your ideas evolve through the prototyping process. The design idea from M4 gives us an idea of your starting point.

**Best design idea from M4:** **Aspects we are utilizing:** Social competition, incentives, mystery ingredient

**Designed for:** Creative persona

**How it works:** The idea is to deliver a bag of groceries that includes a surprise mystery ingredient for meal prepping, encouraging users to be creative while engaging in social competition, but with the catch that they can only share their dish and see others' creations after washing their dishes, verified by the app's camera.

**Its storyboard:**

**Storyboard:**


**Potential risks to be addressed during prototyping:**

The idea of a surprise mystery ingredient for meal prepping comes with some risks. One of the most severe risks is safety concerns. To mitigate this risk, the packaging of the ingredient should include a disclaimer warning users of any potential allergens or safety risks. Moreover, the app should provide a feature for users to indicate any dietary restrictions or allergies before receiving their mystery ingredient.

Another risk is that some users may not be interested in participating in the social competition or may find the surprise ingredient unappealing. This risk can be addressed by conducting user research to determine what types of surprise ingredients would be most appealing to users and incorporating those ingredients into the competition. Feedback on the surprise ingredient and social competition aspect can be gathered during user prototyping studies to determine if it is a feature users find valuable.

Furthermore, the app's camera verification feature could be difficult to use, and users may not be willing to go through the extra step of taking a picture of their clean dishes. This risk can be addressed by conducting user testing during the prototyping phase to ensure the verification process is straightforward and easy to use. User education materials could also be developed to help users understand the importance of the verification process and how to use it effectively.

Lastly, logistical challenges could arise in delivering surprise ingredients to users and ensuring they receive them on time. This risk can be addressed by working with grocery delivery services to ensure timely delivery and by conducting user testing to ensure users receive their surprise ingredients in a timely manner.

**Q1: Final design idea** (idea tagline + a storyboard)

**Idea tagline (max 100 words):**

The idea is to deliver a bag of groceries that includes a surprise mystery ingredient for meal prepping, encouraging users to be creative while engaging in social competition, but with the catch that they can only share their dish and see others' creations after washing their dishes, verified by the app's camera.

**Storyboard:**


## Q2: How has the design idea evolved through the user prototyping process?

See week 14b slides for step-by-step instructions.

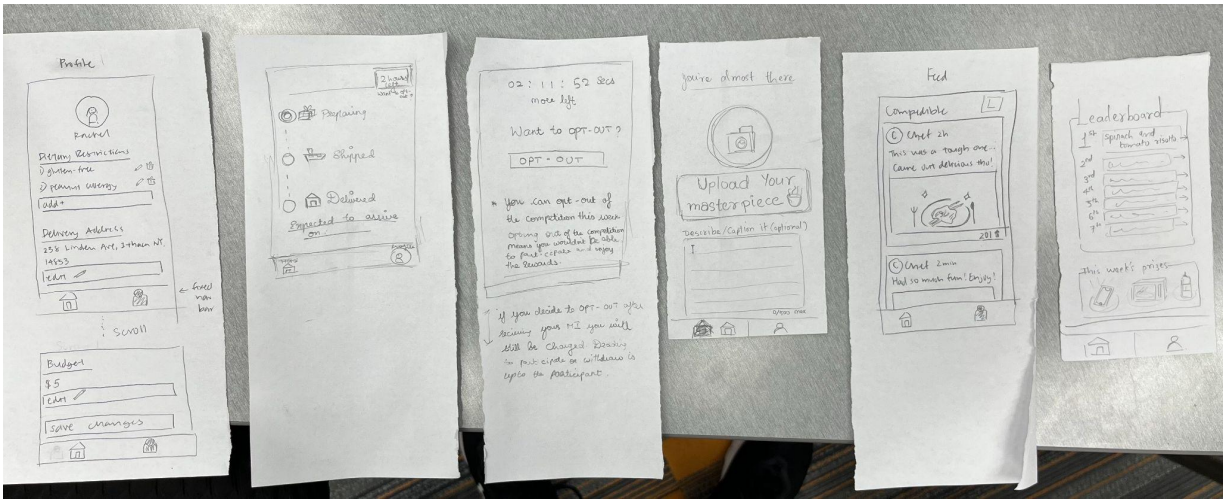
| **Iteration #1 (400 words max in total)** |
| --- |
| **What risk(s) of interaction failure does this iteration of prototype design and prototype user study design aim to address?**<br>• The primary risk we are addressing in this iteration has to do with safety (more specifically, dietary constraints). |

**Iteration #1 (400 words max in total)**

- Another risk we attempt to address is users finding the mystery ingredient unappealing and thus forgoing the competition.
- Note: We describe how each risk is addressed below, in the prototype rationale.

**Your prototype design, tailored for understanding and eliminating this risk** (You can showcase your prototype design with images, texts, and/or video, etc.)

- Prototype design:




- Prototype design rationale:
  - Users are asked to input any dietary restrictions they have on their profile page to eliminate any chances of having a mystery ingredient they cannot consume delivered to them. Our app will simultaneously run competitions specific to each dietary restriction such that a user can be a part of any one of the competitions which fits the dietary needs of the user.
  - To make the user feel more comfortable to be a part of the Compedible community and competitions, the app offers two types of options to opt out. Before the mystery ingredient is shipped, the user can select the “opt out” button to avoid being charged for the mystery ingredient and opt out of that week’s competition. After the mystery ingredient has been shipped, and delivered, if the user finds the mystery ingredient unappealing or difficult, they will be charged for that week, but there is no penalty in deciding to not partake in the competition.

**Your user prototyping study design:**

- Context setup: We jumped right into the questions with our first interviewee and offered context as she asked for clarification, so there was no clear context setup. We’ll be sure to follow a stricter script next time.

**Iteration #1 (400 words max in total)**

- Instructions to the user (verbatim): Our instructions were also somewhat interspersed throughout the interview, but what we said initially was: "You can just look through it and if you have any issues or if you're not able to identify anything you can. Let us know."
- Evaluation criteria: Based on the ways users interacted with this prototype in these contexts, how do you tell if the potential risk is real, how consequential is this potential breakdown?: The user, being a vegetarian, was concerned about making sure her dietary needs were taken care of, and she was able to identify the profile page's dietary restrictions section as a way to communicate her dietary needs. Our focus was mainly on the navigation aspect of the app and the dietary restrictions, so we were not able to gain insights from our interviewee about her concern over the mystery ingredients and whether she would find them appealing.

**User prototyping study findings:**

- A summary of how the user interacted with the prototype: She was able to make sense of the flow of the app pretty quickly (we also walked her through it, so that likely helped), but she had a few questions and suggestions. For example, she expressed confusion over the home button, and she also suggested that we allow users to upload the recipes associated with their dishes.
- Link to raw study data (interview transcript, video recording, etc.)
    - Transcript of user interview 1

**Design changes prompted by the study findings + why these design changes**

- The main design change we will be implementing has to do with the navigation bar. Our user expressed confusion over what exactly the "home page" was, so we decided to scrap the navigation bar completely and instead have the user on one page throughout their entire experience. This page would change as the user progresses through the phases of the competition. We would have a mini navigation bar of sorts to show where the user is in the competition process, and on the top right corner of all screens we would keep the profile button, to allow the user to make changes at any point. (It may be helpful to look at the picture of our second iteration below).

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**Iteration #2 (400 words max in total)**

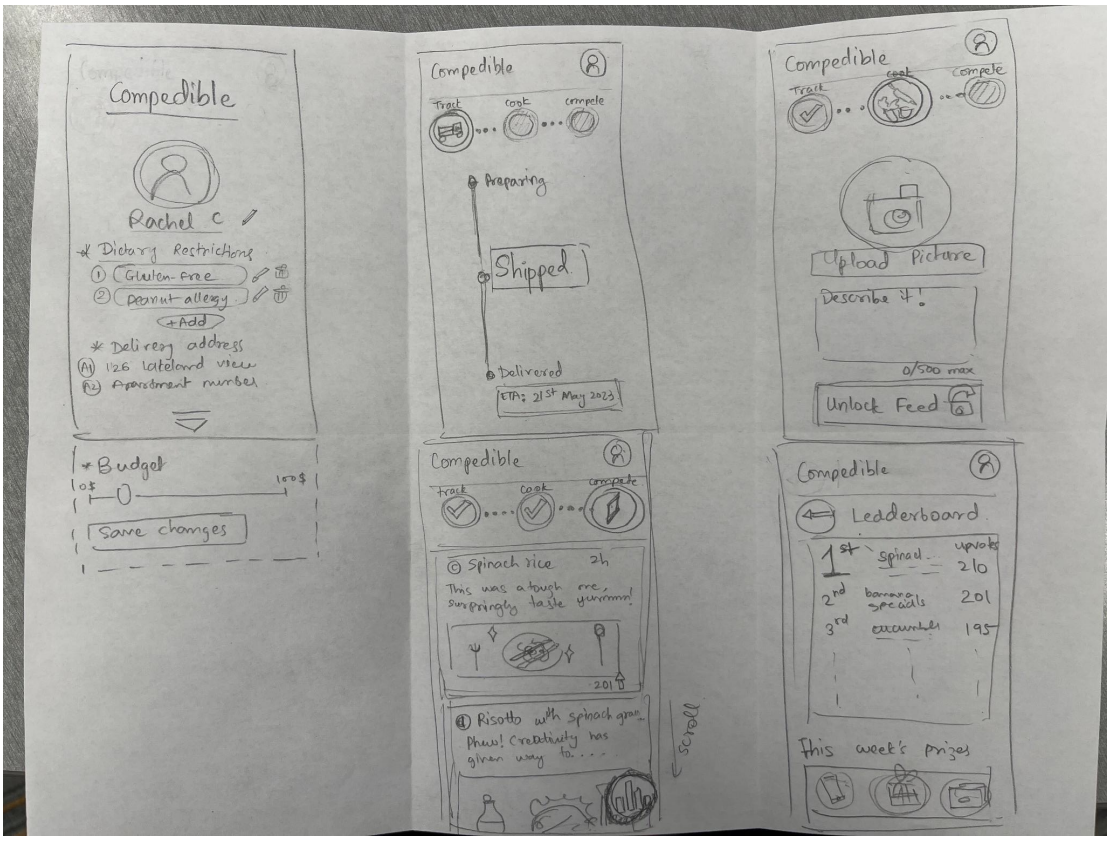
**What risk(s) of interaction failure does this iteration of prototype design and prototype user study design aim to address?**

**Iteration #2 (400 words max in total)**

- Our previous interviewee expressed concerns about what the home page was meant to represent, so we decided to alter our navigation (as described above in the design changes section) to try and make the flow of the overall app more clear to users.

**Your prototype design, tailored for understanding and eliminating this risk** (You can showcase your prototype design with images, texts, and/or video, etc.)

- Prototype design:




- Prototype design rationale:
  - In this prototype we simplified the navigation by showing the different phases of the competition at the top of the main home page. We grayed out the locked parts of the competition so that the users intuitively know that they have to unlock the previous stages by first completing the task on the current page.
  - We also added back navigation buttons to some pages which are acting as secondary pages or pop-ups, for ex: the leaderboard (bottom right of the above image)

**Your user prototyping study design:**

- Context setup: The purpose and the goals of the application was explained to the user in a short overview. We walked them through the overall flow of the app, and we also gave them a basic understanding of the persona we are designing for.

**Iteration #2 (400 words max in total)**

- Instructions to the user (verbatim): After we provided context for the app and how it worked, we asked the user, “can you understand what is happening and how the process is going and if possible, can you like maybe do the clickings like how we would proceed?” We followed up with questions as we watched them interact, such as “Did you find any of these stuff difficult or something or unclear?”, and concluded by asking for more feedback.
- Evaluation criteria: Based on the ways users interacted with this prototype in these contexts, how do you tell if the potential risk is real, how consequential is this potential breakdown?
    - Our interviewee reiterated the navigation problems that we were trying to address in the first place. As you’ll read more about below, they expressed concern over not being able to return to an earlier page and confusion over how to navigate from their profile page to all the pages associated with the weekly competition.

**User prototyping study findings:**

- We were fascinated by the idea of integrating both the user's friends and other individuals with whom they would like to share their work.
- During our discussion, we discovered that there is a mutual preference for recipes instead of merely sharing images of food. Additionally, there was a concern expressed regarding the ease of navigation through the prototype.
- The user also highlighted that the process of reheating and consuming food can be a cumbersome task as opposed to the cooking process itself.
- However, the user was able to understand the concept and could visualize themselves using it in the future.
- Link to raw study data (interview transcript, video recording, etc.)
    - Transcript of user interview 2
    - Interaction of the user https://drive.google.com/file/d/1kMcDbdAz2AuL5-3BM0TxrEzskjtVRqeh/view?usp=sharing

**Design changes prompted by the study findings + why these design changes**

- The design changes we are focusing on implementing are better navigation to the user’s profile and to return to an earlier page by implementing an overlay. This change is required to make the interaction of the user easier.
- Changing the budget option to subscription plans to include feasibility. This will allow the users to choose the level of challenge they want to take up.
- Considering that the user wants to start by sharing their works with their friends and gradually feel more comfortable competing in a larger community, we suggest implementing a system that prioritizes their friends' works in the feed and displays them prominently. Furthermore, to maintain a sense of familiarity and transparency, the system should ensure that their friends' identities are not anonymous.

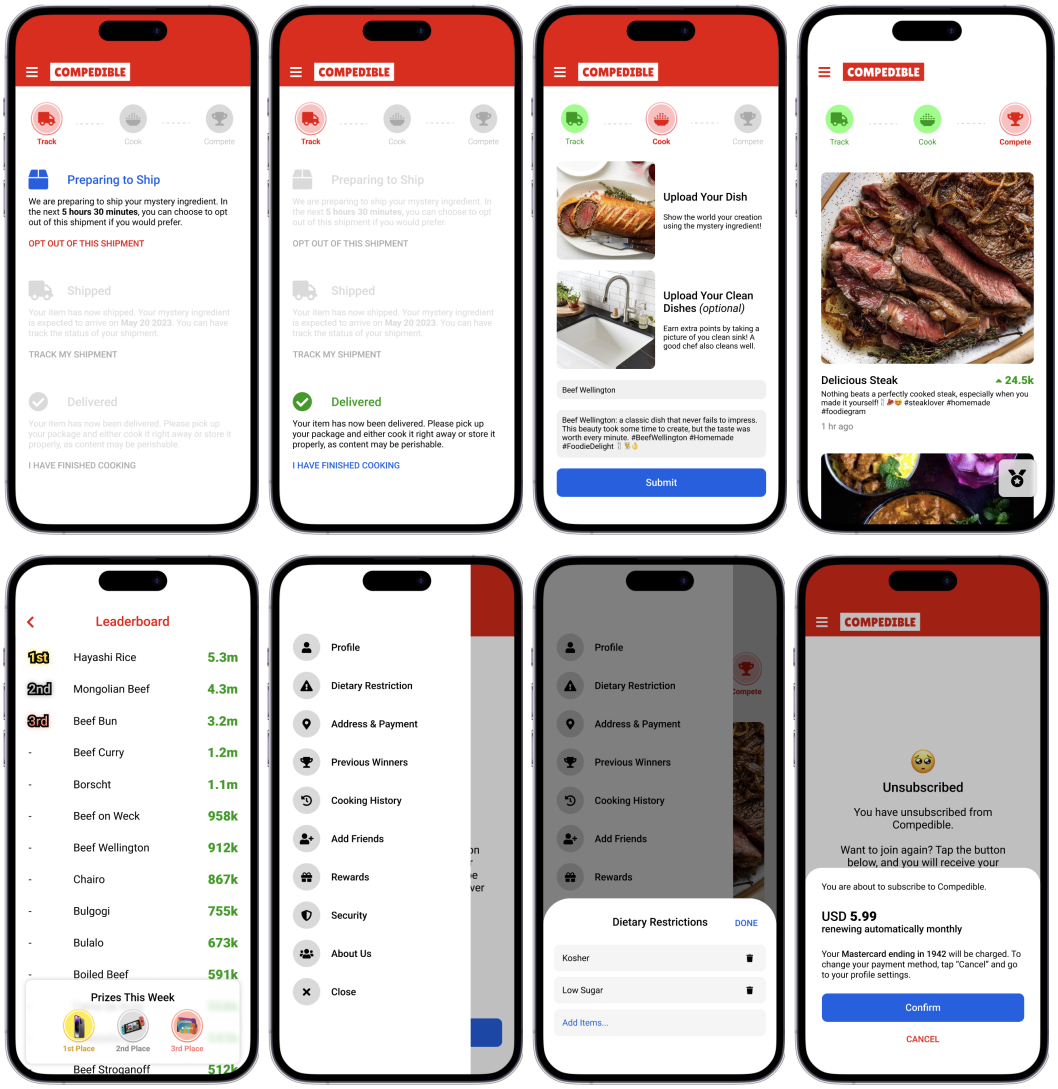
## Last Iteration (500 words max in total)

**What risk(s) of interaction failure does this iteration of prototype design and prototype user study design aim to address?**

- Users are unable to find the ways to modify their dietary preferences, billing options, previous winners, track and redeem their rewards and cooking history
- Risk of users finding the application unappealing and just a cooking contest application
- Users will not be motivated to do their dishes in lieu of the competition

**Your prototype design, tailored for understanding this risk** (You can showcase your prototype design with images, texts, and/or video, etc.)

- Prototype design: https://www.figma.com/proto/w5GNg8JkG7va7wvh3EGXM4/Meal-Prep-Prototype




- Prototype design rationale:

**Last Iteration (500 words max in total)**

- We created a high-fidelity prototype that allows for a more realistic representation of the final product, enabling us to assess user interactions and gain valuable insights into usability, ease of navigation, and overall user satisfaction.
- We added a hamburger menu icon at the home page from which users can click on various options to modify their preferences and billing information. This menu opens as a drawer and closes back so that there is minimal interruption in the normal workflow of the app (the competition)
- We added an option in the sidebar through the hamburger menu called “Add peers” which will allow the user to add their peers to their network and will be given priority in their feed and vice versa.
- To motivate the users to do their dishes, we added an optional image upload of their clean sink on the cooking page of the competition which will give users a boost in votes for the competition.

**Your user prototyping study design:**

- Context setup:
  - Real-world competition simulation with users where the users are briefed about the application’s workflow
  - Demo of the application - a demo of the application and ask the user to interact with the prototype
- Instructions to the user (verbatim):
  - For the real world simulation - the participants were given mystery ingredients to cook with after explanation of the application. After introducing the ingredient the question asked was “what is your thought process?” Later during the cooking process we still kept engaging and asked more questions to understand their interest towards the usage of the application.
  - For the demo of the application - We observed the users without interfering to find out the hesitant moments in the interaction
- Evaluation criteria: Because this is your last iteration, the evaluation criteria should reflect your design goal and eventual design evaluation criteria (both set in Milestone 3.)
  - Efficiency: With the goal of efficiency in mind, the creative recipes that users come up with to use the mystery ingredient may or may not increase time and effort in actuality but when the person is motivated and excited about the recipe they are making, time goes by quickly and the process is more enjoyable.
  - Satisfaction: The meal prep process is definitely made more enjoyable through the competition and the mystery ingredient and hopefully with our talented users, the end product is satisfying at least in terms of being able to get out of the mechanical tasks.

**Last Iteration (500 words max in total)**

- Waste Reduction: Through our user study we found that users decided on what to meal prep with using the leftovers or food which is going to go bad. With the freedom of cooking with anything and the mystery ingredient, the user can still plan out the ways to utilize the food that is going bad. There is no direct solution that is incorporated ot reduce waste in the design, however, there can be some changes made if we get strong user feedback regarding the issue.
- Creativity: Our main focus of the application was to appeal to the creative persona and we think that this evaluation criteria has been achieved above and beyond for the users. The application promotes and rewards creativity and keeps the meal prep process challenging and fresh.

**User prototyping study findings:**

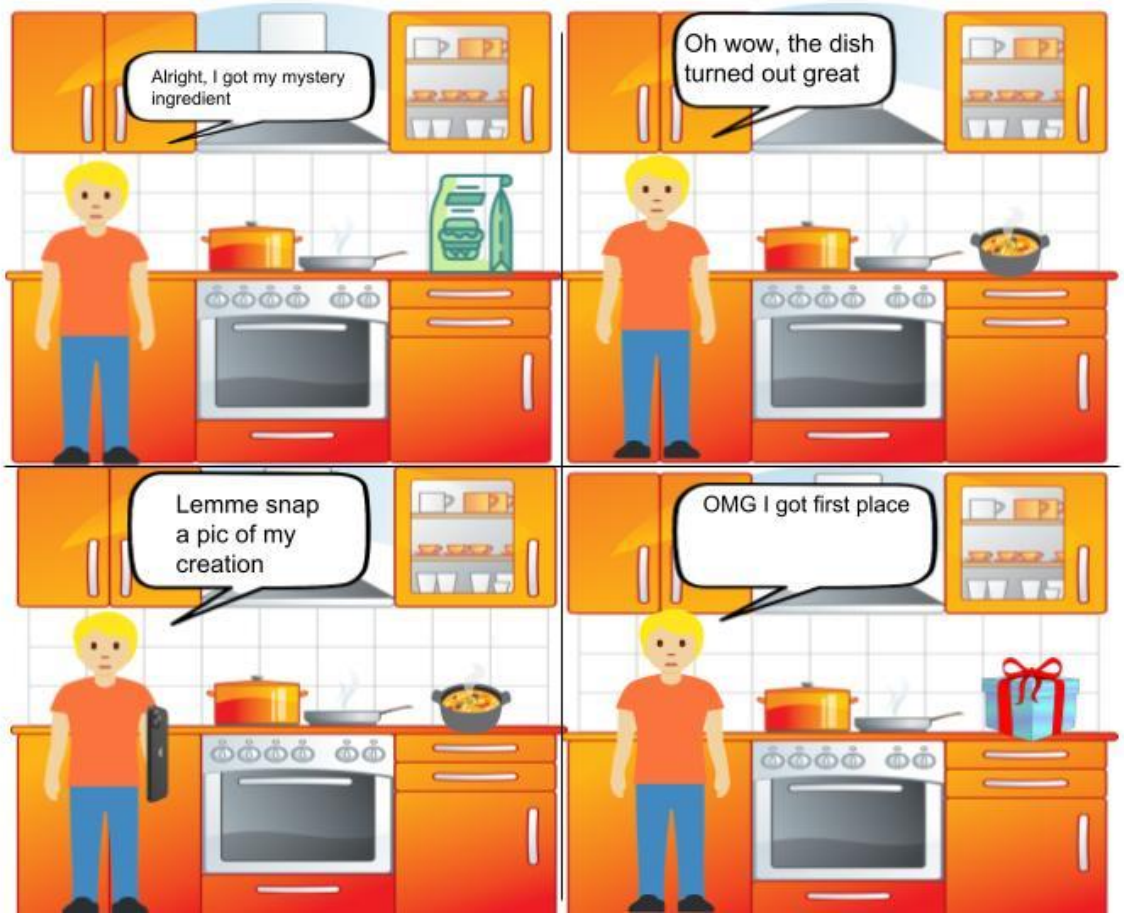
- A summary of how the user interacted with the prototype:
  - The users who interacted with the prototype got a bit more clarity over the navigation and what we were trying to accomplish to begin with.
  - They also found it motivating to them to do their dishes but not in a compelling way.
  - A few feared that a lack of upvotes for their creations would be discouraging.
  - Since the mystery ingredient given during the simulation was rather simple they didn't find it that difficult and were excited to cook.
  - They were happy about the incentives and were curious to unlock the feed of others to know the various recipes they had come up with.
  - Overall they were fascinated with the design of the prototype and can see themselves using it to live their masterchef moments.
- Why do these interactions make you think the design is good (or good enough)?
  - The general ease with which people were able to navigate through the app suggested that at least on the navigation front, our design is good
  - One of the very first things (arguably the most important) we set out to do was make the overall meal prepping process more interesting for our creative persona. Looking at their user journey map, we wanted to make their lows higher, and a common low for our creative persona was the dishes. For our users to find the bonus votes rewarding and an incentive for them to do their dishes signals to us that our design meets the goals we began with. Overall excitement about the app and the cooking that is an essential part of our app, as well as an interest in using it (several individuals who interacted with our prototype during the showcase expressed this), suggests that we have a good design.
- Link to raw study data (interview transcript, video recording, etc.)
  - https://drive.google.com/file/d/1YdeSoVTJk_H5c5QIYcX_AFHVvrq_-aW4/view?usp=sharing

**Last Iteration (500 words max in total)**

- simulation transcription.pdf
- https://forms.gle/GwYNTtw4vR6dxnDn6 - we asked the participants to upload the pictures here as there was no provision to submit in the actual prototype to give them a feel of what the application itself is.
- Compedible (Responses) - the responses of the simulation can be found here.

**Final design idea (tagline and storyboard + interface design)**

The idea is to deliver a bag of groceries that includes a surprise mystery ingredient for meal prepping, encouraging users to be creative while engaging in social competition, but with the catch that they can only share their dish and see others' creations after washing their dishes, verified by the app's camera.




**Anything else we should know about your prototype design and user studies?** (Optional)

As requested by Professor Yang when we spoke to her about our prototype in class, we conducted a user study where we actually simulated the actual competition experience. The point of this study was for us to better understand whether users actually liked the concept (an easier Masterchef, in a sense) we were utilizing. Not all of our users in this study actually knew each other, which may somewhat alter their willingness to continue using our idea (as we anticipated), but everyone generally seemed content with our creation, as mentioned above. They found the idea to be creative, felt the navigation through the application to be easier and most importantly they were able to see themselves use it at some point. And to add-on receiving the best user-centered design award during the demo made us really content with our design. It really motivated us and it was nice to receive good feedback from our peers.

We also wanted to acknowledge and appreciate Professor Yang's sportive participation in our simulation.

## Tips and Reminders

### Major Categories of Design Risks:

- **Why might the target users *not want to* use your design?** Is the design so *valuable* and so *desirable* to your target users that it'd overcome their inertia and beat the competition's solutions?
- **What factors might prevent them from using it, even when they want to?**

| **Experiential (UX) factors** | **Usability Factors** |
|---|---|
| **Emotional experience** (self-fulfillment, the feeling of being a better version of self, identity realization, etc.) | Effectiveness |
| | Efficiency |
| **Social experience** (social motivation/pressure, awkwardness, group belonging, social presentation of self) | Ease of learning to use |
| | Ease of use |
| **Contextual factors** (restrictions on system capabilities or user behaviors due to time, location, wifi connection of the location, etc.) | Errors and error recovery |
| | Credibility/user trust |
| **Cognitive experience** (cognitively demanding vs. easy, background knowledge needed for use) | |
| **Sensual experience** (motion sickness, small screen/eyesore, etc.) | |

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## Prototyping & Evaluating Design Ideas – Quality Control Checklist

Effective prototype designs and prototype study designs should tick all the following boxes. These are also the grading rubric of this assignment. Each criterion is worth 1 point unless otherwise noted.

The final design ideas that make a particularly compelling case for their creativity and their ability to solve the user problem can receive up to 4 bonus points. Typically we award the top 10% of the groups with bonus points.

- **Your prototypes are indeed rapid, useful, UX prototypes.**
  - ☐ Your prototypes allowed users to interact with them while performing real-world tasks in real-world contexts. These are user tasks and user contexts/journeys revealed in your initial user research (Milestones 1 & 2).
  - ☐ Your prototypes are fast and cheap to make and modify, allowing designers to easily and iteratively improve on their designs. A rule of thumb: When the design idea changes, any designer can modify the prototype to reflect the design change within half a day (if not a lot shorter). See common rapid prototyping techniques in week 13b slides.
- **The user prototyping study design is effective.**
  - ☐ The study design is not biasing. The findings and observations from the studies can be trusted. For example, users are not put in contexts or tasks that they are unlikely to encounter in their real-world experiences. Questions to the users are not biasing (e.g., “Do you like this design?”).
  - ☐ The study is constructed so that user interactions with the prototype are observable, and these observations can reveal where and how the envisioned human-computer interactions might fail, and how the technology design might be improved.
- **The prototyping process helped improve the quality of your final design idea.**
  - ☐ [2pts] At least one of the prototyping studies confirmed that the functionality the envisioned technology offers addresses the user need/user problem.
  - ☐ [2pts] At least one of the prototyping studies confirmed that your key interaction design choices (when/where/how the technology intervenes and offers users value, as depicted on the storyboard) effectively achieved the design goals (goals you set in M3.)
  - ☐ [2pts] The delta between the M4 design idea and the final design idea — the design improvements you made — demonstrated your learning from the prototyping process.