

# ASSIGNMENT 5 : Low-Fi Testing

Transforming Living Spaces



**Fabian B.**



**James B.**



**Srinivas M.**



**Jin Woo Y.**

## Introducing Piggybag

---

### Value Proposition

Our mission statement of “Pool your shopping experience” comes from a need of improving grocery runs among roommates.

### Problem/Solution Overview

From our user experience research, we heard many stories on the inefficiencies of planning and making shopping runs among housemates. We observed that it can be difficult for roommates to figure out who buys what, and when groceries will be bought.

Therefore, we aim to create a platform that provides users with an efficient way of tracking what they and their housemates need. Furthermore, our solution will allow users to reduce the number of grocery runs made by pooling shopping lists among housemates.

# Concept Sketches : Exploring different modalities

## Overview

For our initial sketches, we found ourselves using three different ways our application could be implemented. We explored using AR, smartwatch interfaces, and a mobile application.

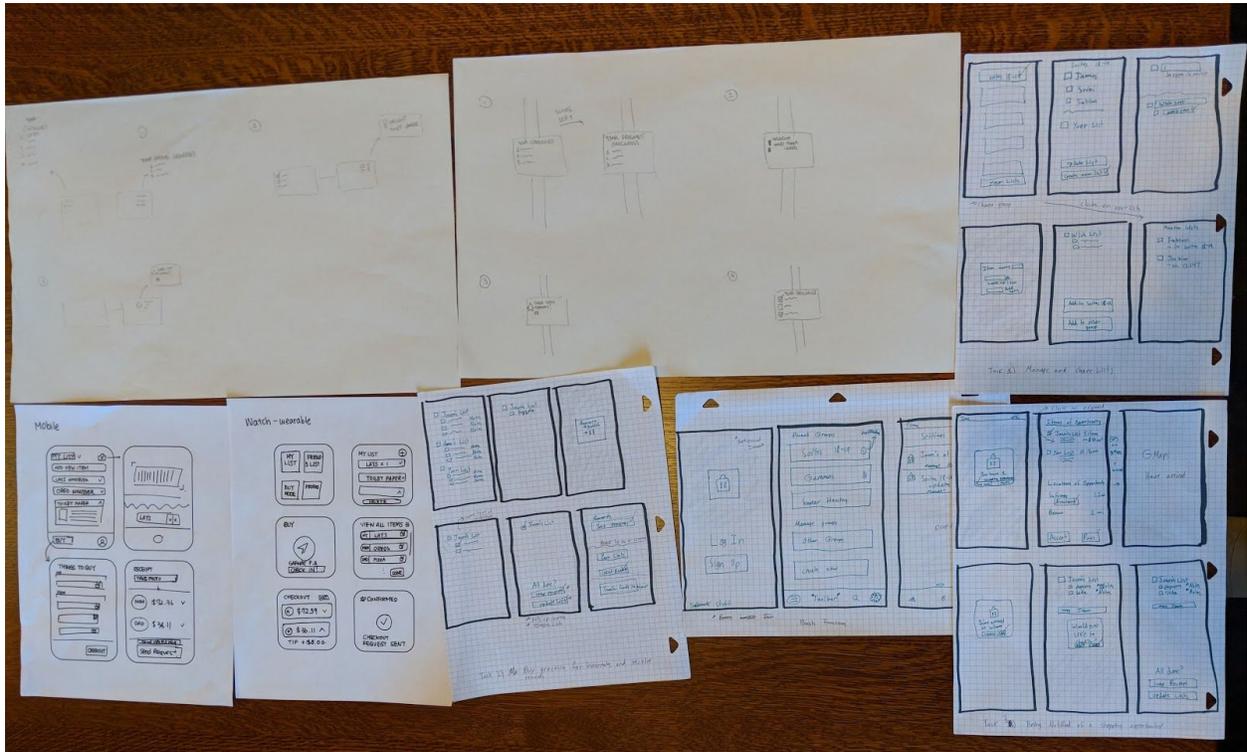
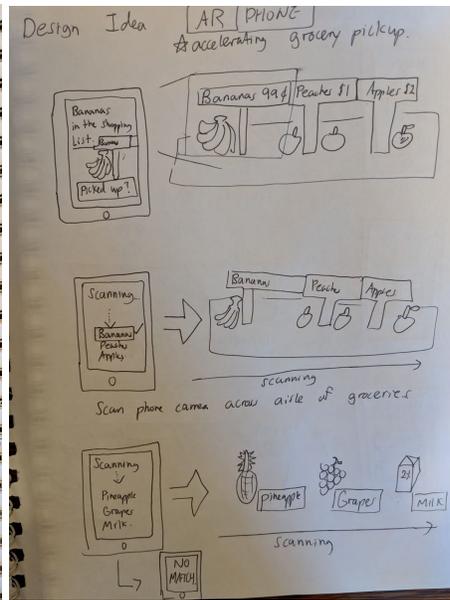
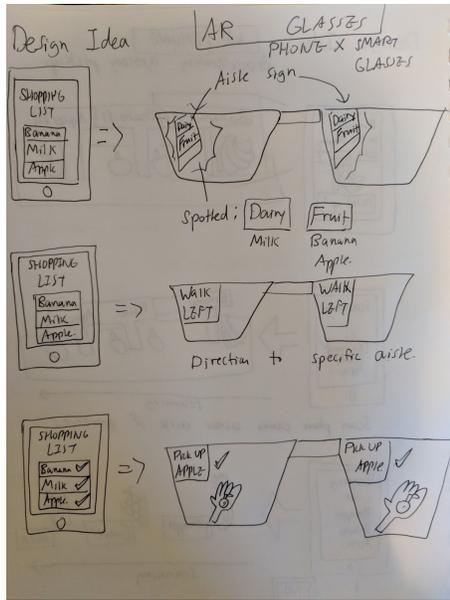


Figure 1: Image of most of our sketches. Going Clockwise, AR concept, Mobile App, Watch App



Figures 2a & 2b: Sketches showing Piggybag using AR glasses

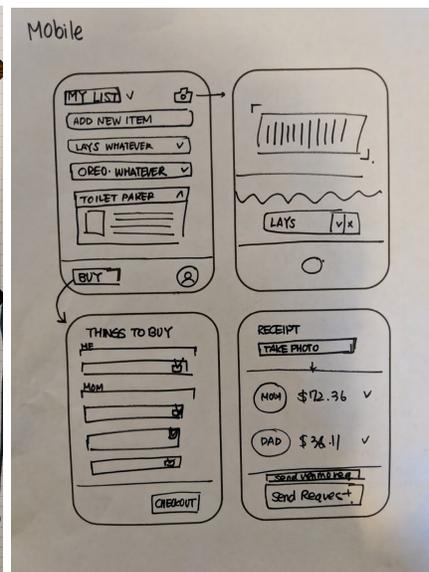
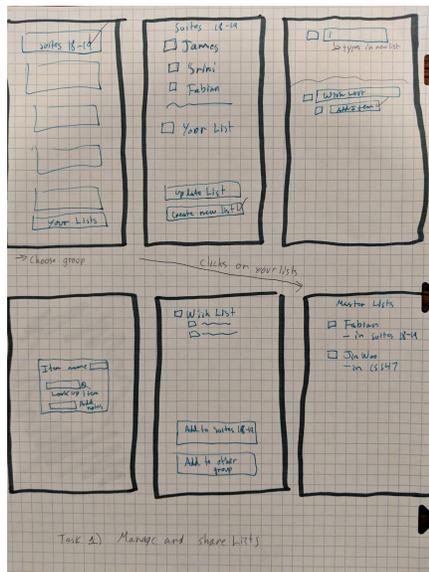


Figure 3a & 3b: Sketches showing Piggybag using a mobile application form

# UI Sketches : Choosing two diverse realizations of the concept

## Augmented Reality Version

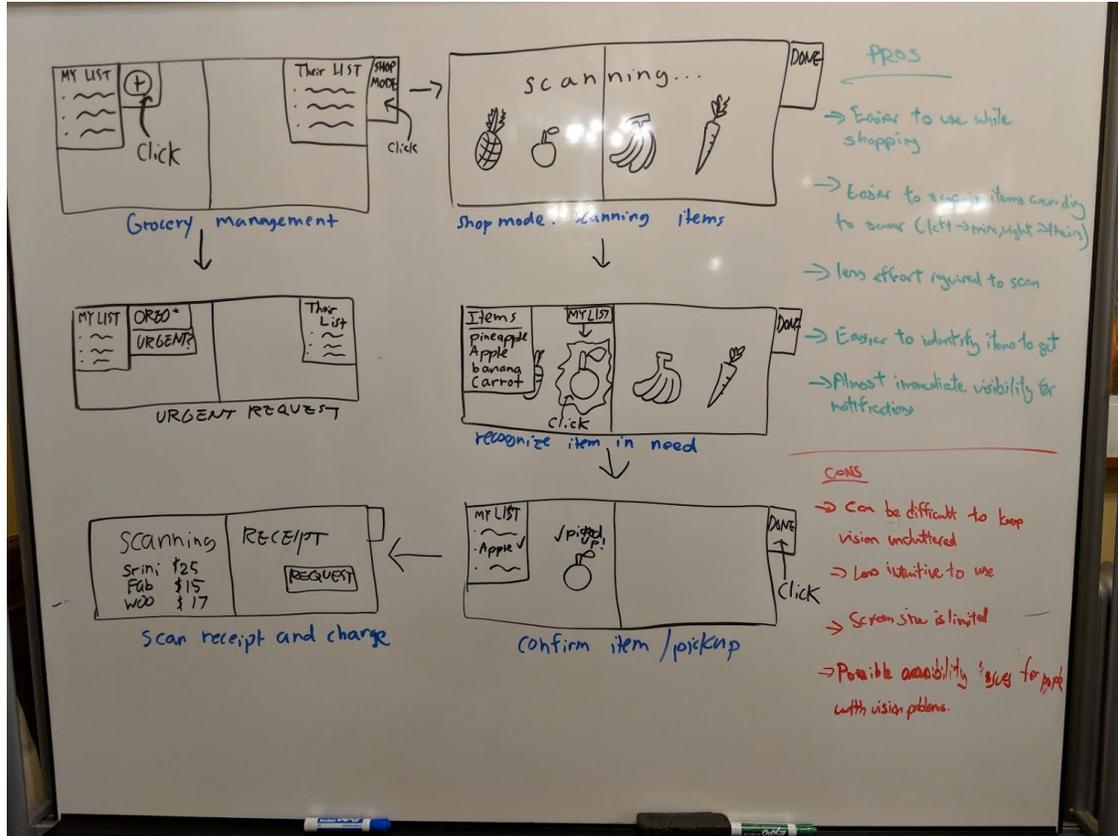


Figure 4: Storyboard of our AR concept expanded to more detail with pros and cons

We found the realm of AR as an innovative way of incorporating the physical space of shopping within the app. Being able to scan items in real time seemed like a good idea.

Pros	Cons
Easier to use while shopping, requires less effort to check since always on	Can be difficult to keep vision uncluttered
Less effort required to scan grocery items	Screen size is limited, limiting possible features

## Mobile App Version

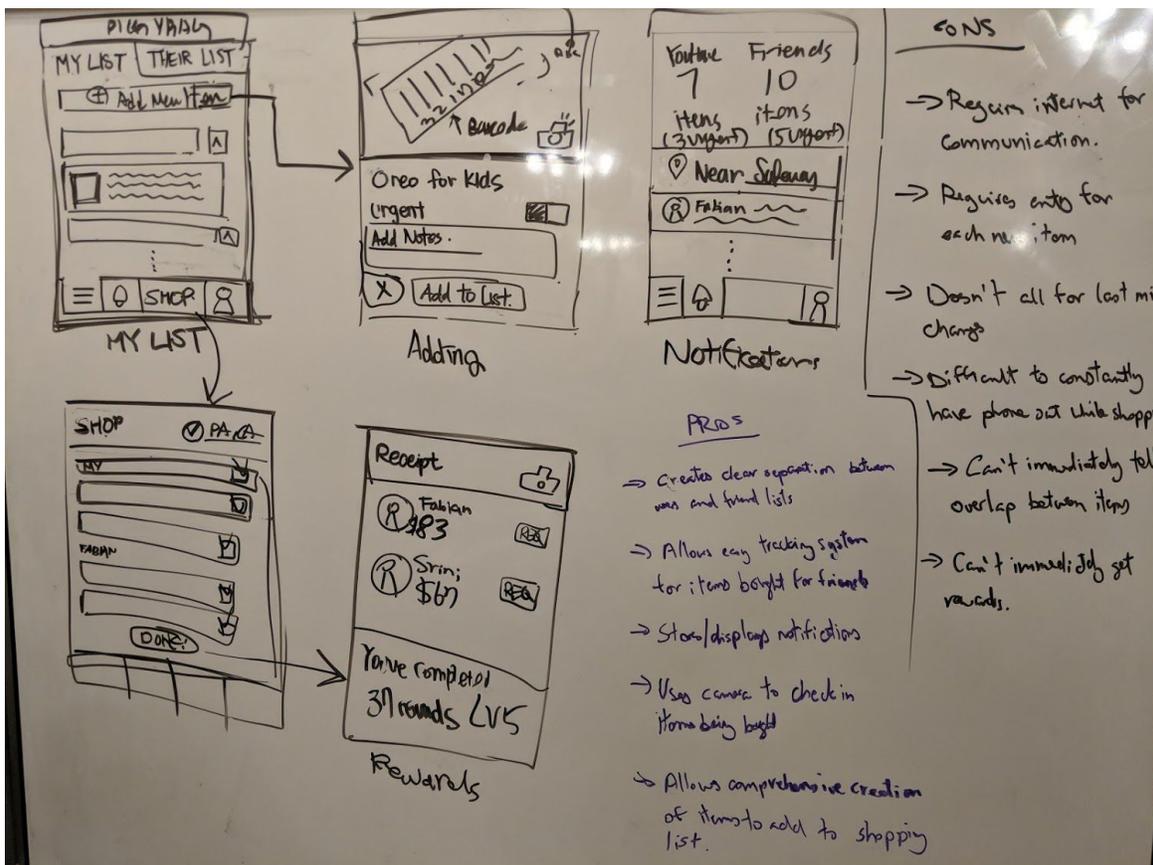


Figure 5: Storyboard expanding on our mobile application concept

With this model we were interested in incorporating the camera of a phone into the app for scanning items and receipts. Similar to the AR version, but a more tangible approach.

Pros	Cons
Has enough real estate to include necessary features and display informations.	Might have too many screens, requiring tedious navigation
Tangible and so more traditionally accessible	Difficult to continuously check phone while shopping

## The Verdict

We went with the second option because it was the most tangible and simpler of our designs. Creating a solution that relied on technology like AR glasses would have made our product inaccessible and less practical in our current time. We are interested in exploring an AR glasses component later on when our product is better established.

# Selected Interface Design & Task Flows

## Simple Task

Manage and share grocery lists among housemates

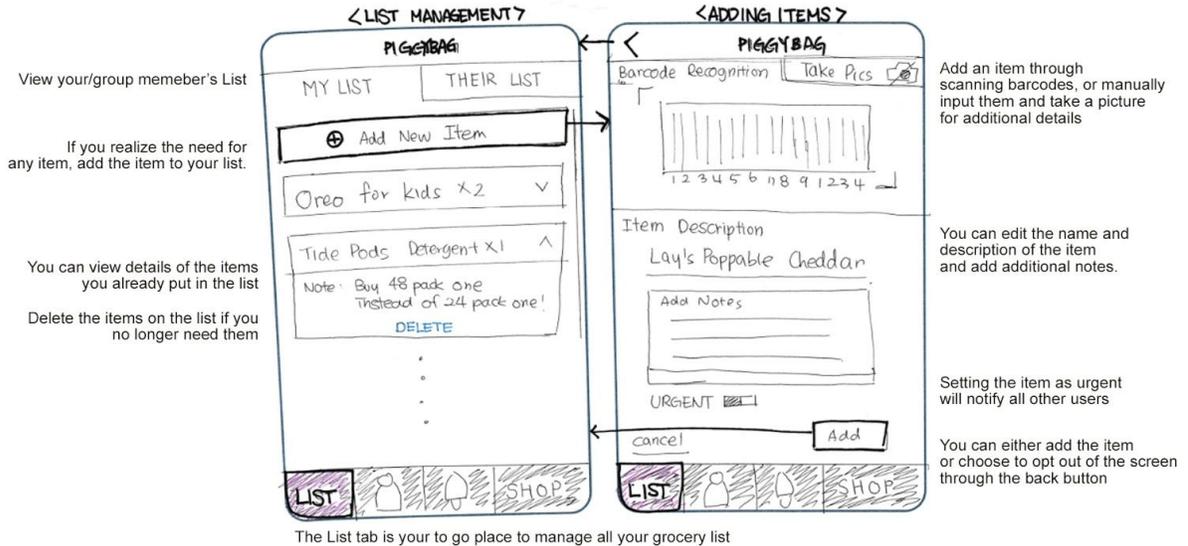


Figure 6: Refined version of our simple task flow

## Moderate Task

Buy groceries for your housemates and receive rewards in return.

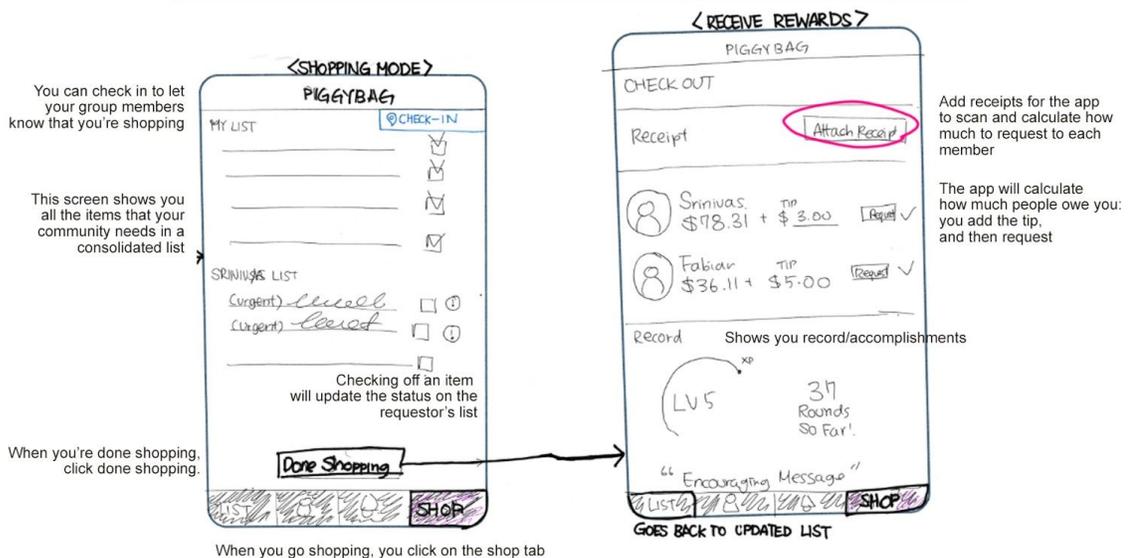


Figure 7: Refined version of our moderate task flow

## Complex Task

Coordinate spontaneous shopping by communicating real time grocery needs.

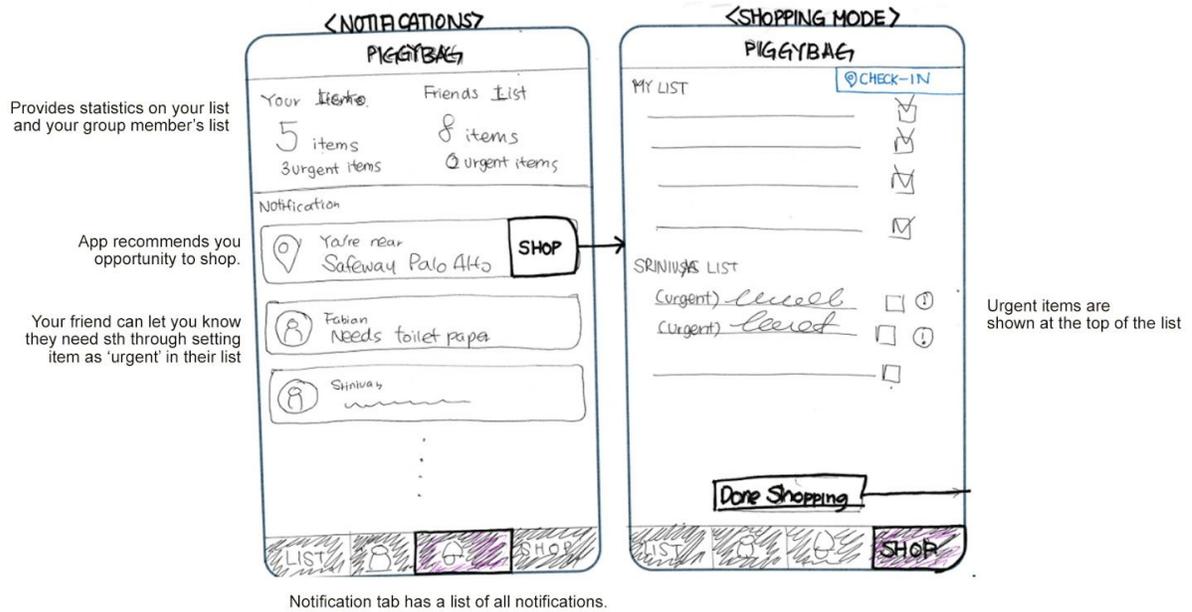


Figure 8: Refined version of our complex task flow

# Low Fidelity Prototype

## Prototype Description

We created our prototype out of white printer paper cut to the size of a mobile screen. Our prototype follows the task flows of managing and sharing grocery lists among housemates, buying groceries for your housemates and receiving rewards in return, and coordinating spontaneous shopping by communicating real time grocery needs.

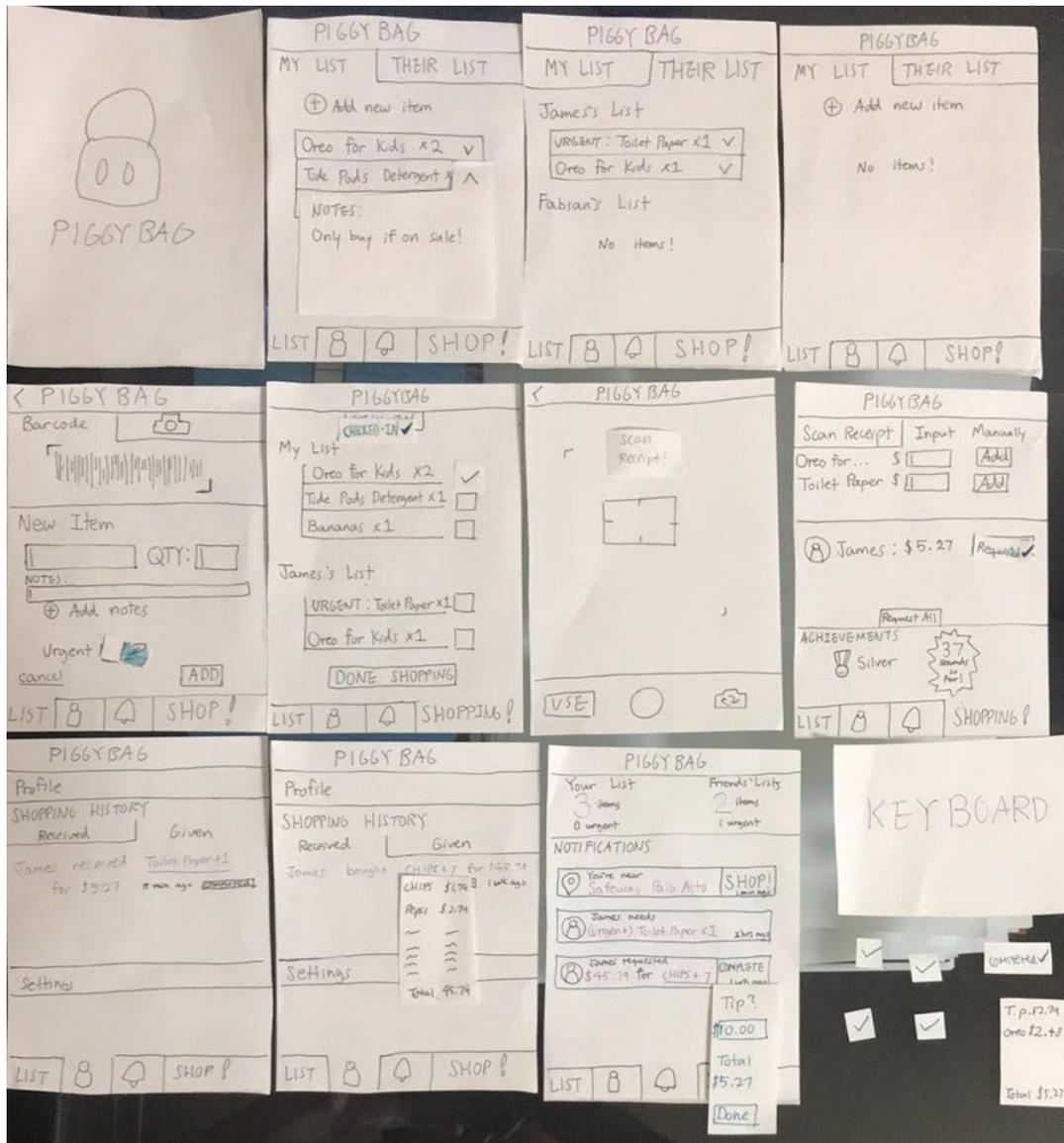
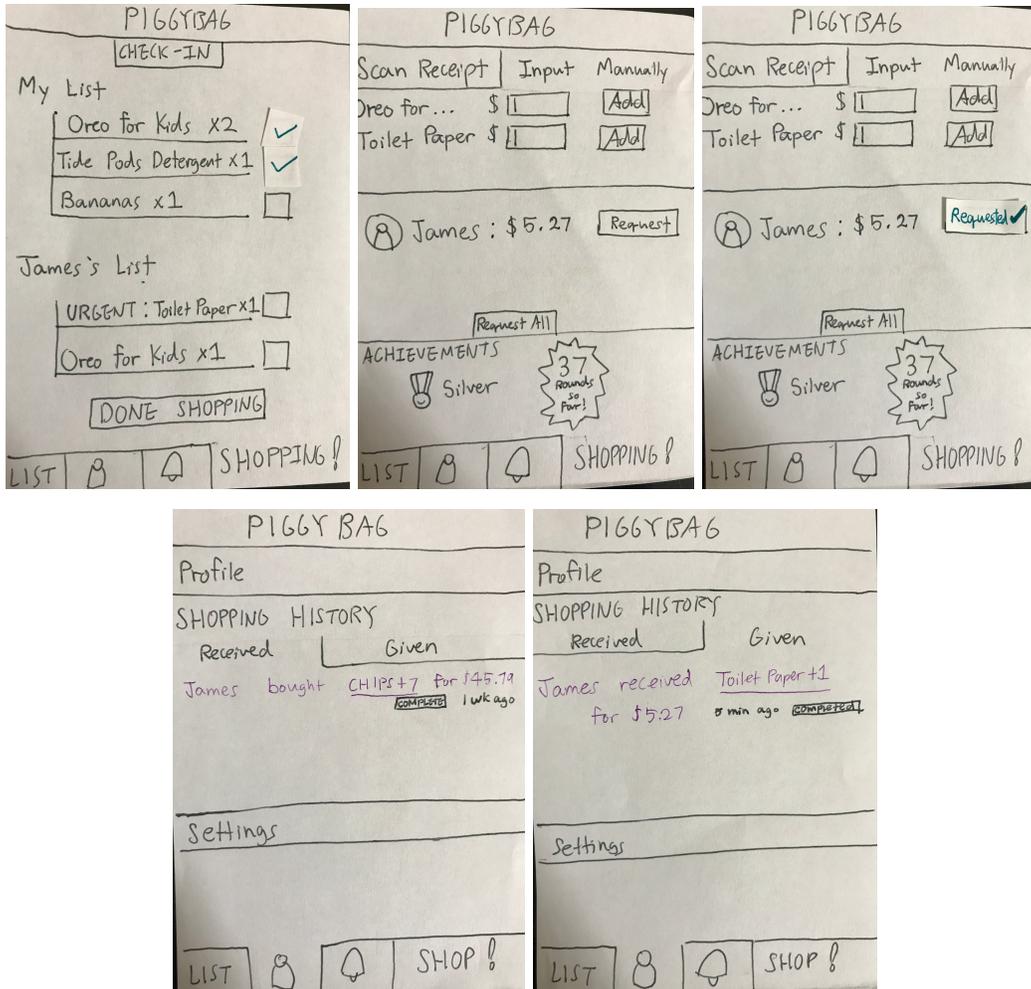


Figure 9: Overview of our Low-Fi prototype





Figures 10-25: These images detail the different screens shown during our user testing

# Testing Methodology

---

## Participants and Testing Environments

We selected testees who were 20 to 40 years of age. We assumed these people would be more willing to use applications to aid with their daily chores. We also took into consideration whether they have lived with/are currently living with other people. Age diversity, gender diversity, their time availability were also taken into consideration. However we did not offer compensations for their participation. The interviews was conducted at Stanford Shopping center on the 25th of October, 2018.

## List of Tasks for Testing Process

1. (Supposing the testee is at home) Add an item to your grocery list [Simple Task]
    - a. Make an urgent request [Complex Task]
  2. (Supposing the testee is on the move) You have a notification, check it [Complex Task]
    - a. Do you want to go shopping? [Complex Task]

(Supposing the testee is shopping at a mart)
  3. Start shopping [Moderate Task]
  4. Notify your friends that you're at safeway [Complex Task]
  5. Check your friend's grocery list [Simple Task]
  6. Pick up an item for yourself
    - a. Pick up an item for James [Moderate Task]
    - b. Is that all you want to get?
  7. Check out at the cashier [Moderate Task]
    - a. [long task, wait until after they finish everything]
  8. Request payment from James [Moderate Task]
  9. Check your shopping history
- Check what you've bought for James

## Procedures / Observation Points

We asked some basic questions to determine the adequateness of the testee (Questions included whether they lived alone, whether they go grocery shopping, etc.). We began by introducing our mission statement and value proposition. Then, we guided the testee to go through the tasks listed above.

We observed how much time the testee took to complete a particular task, and also recorded whatever reaction (including subtle reactions like facial expression/body gestures) the testee displayed. Afterwards, we asked users for the overall impression of the app, and also asked for basic demographic information to get to better know our testee.

## Team Member Roles

**Computer** - James | **Facilitator** - Fabian, Srinivas | **Recorder** - Jin Woo

## Results

---



(Figure 26 & 27) Conducting test with Testee #2(left) and Testee #3 (right)

Overall, the interviewees were able to carry out the provided task easily. Most of them sympathized with our mission statement, and thought it would be a service that they would want to use. They were enthusiastic with helping us come up with a better service, and they provided various feedback that we as a team haven't thought about previously. We were surprised to discover that the interviewees shared certain reactions to specific parts of the app. The reactions are as listed:

### Common Positive Reaction

- The button to add the item was easily noticeable.
- Liked the app's functionality of scanning the receipt and calculating charges.
- Liked that the notification page provided statistics on one's/group's shopping list.
- Requesting charges to group members were easily done.
- Crossing off bought items at Shopping mode was easily done.
- Navigating in to the profile page to view shopping/transaction history was easily done.
- Elements like "Tab layouts" made the app look very familiar and therefore easy to use.

### Common Negative Reaction

- The "Urgent" functionality lacked explanation on what it actually does
- The "Urgent" functionality doesn't seem to fit in to the app - potential feedback on renaming it as "Priority"
- At the camera page, testee 2 expected the screen to transition as soon as picture was taken, raised question on whether we actually needed the 'use' button.
- People were unsure about the purpose of certain functionalities, including the barcode scanning function
- Users most often overlooked the check-in functionality.

## Discussion

---

### Analysis and Proposed Refinement

We were able to gather valuable feedback on additional functionalities, including but not limited to crossing off items at shopping mode through scanning barcodes and the function to leave comments about each shopping run. Also, one notable feedback was on how families would not need the functionality to 'charge' each other. Therefore, the testee suggested a feature to skip the payment page altogether for certain type of groups who does not have separate financial sources.

Having heard this feedback, we will be refining our design in a way that is more explanatory of the functions that the app provides. For the "Urgent" functionality, we realized that people had a hard time figuring out why they would use it, and what it does. We also realized we needed to emphasize certain integral functions of the app, such as the check-in feature, possibly making it a step-by-step page when you enter the shopping mode so that users can't miss the feature.

One interesting observation was that Testee 1 required little guidance to enter "Shopping Mode", , clicking incorrectly on the "List" tab when prompted to view items to buy given that he is currently shopping. Considering that the shopping mode is one of the most integral part of our application, difficulties in accessing the features could not be overlooked, even if such response was limited to a single person. We would need to explore more designs to make the "Shopping Mode" more prominent and obvious to general users.

### Limitations

However, one thing we were not able to assess was how receptive people as a group would be to our service. As a group-based service, the participation of the entire group is crucial, as one of our testees pointed out. The application should be easy to use even for the least 'tech-savvy' member of the community, and additional testing on such people is required. Also, although we did test the 'proximity notification' function by supposing a situation where the testee was in transit, we could not actually gauge how receptive people would be to such notification in a real-life situation.

*Word Count: 1499*

## Appendices (Interview Log, Consent Form)

### Interview Log for Interviewee 1

#### Interviewee Description

In his 30s, Work at Apple Store, Teach a class on Keynote, Very tech-savvy. Lives with Wife.

#### Environment

Stanford Shopping Center (Near Apple Store)

#### Event Log (In chronological order) G : GOOD / B : BAD (Severity Level)

G	(Task 1) Adding Item was easy and intuitive Testee took less than a second to find "add new item" button
G	(Task 1) Adding the item / filling in data and description was done easily
B (3)	(Task 3) The user had a hard time what marking an item 'Urgent' meant. Urgent Functionality was not elaborated well enough.
Feedback	(Task 3) PiggyBag seems like a trust-based system. Marking an item urgent doesn't seem to be a good fit - "If it's so urgent, why not do it yourself?"  Maybe the option of "Prioritizing" certain items? + In notification page, show examples of prioritized item on other people?
G	(Task 3) Notification layout was well designed. Liked the easy view of statistics of oneself's and other member's shopping list.
B (2)	(Task 2/3) The transition from the notification page to the shopping mode was not so obvious (Instead, the testee went back to the list)
Feedback	(Task 2) What about letting people check items off of shopping list by scanning their barcodes?
G	(Task 2) Checking off items was easy / Was able to finish shopping mode easily
G	(Task 2) The purpose of taking the picture of the receipt was clear
B (1)	(Task 2) The fact that the user have to click the "Use" button after taking pic of receipt was unintuitive. User expected the transition as soon as pic was taken.
G	(Task 2) Requesting the money from members was done easily.
G	(General) Familiar UIs / overall easy to navigate in the app
B (3)	(Task 2) The testee did not notice the option to add tips to request to members

## Interview Log for Interviewee 2

### Interviewee Description

Male college student taking a quarter off from Cal Poly/ Used to live with roommate / Sales Rep at Macy's

### Environment

Stanford Shopping Center (Near Macy's)

### Event Log (In chronological order) G : GOOD / B : BAD (Severity Level)

<b>G</b>	<b>(Task 1)</b> The testee was able to view other people's shopping list and add new items to his list easily.
<b>G</b>	<b>(Task 1)</b> The testee was able to easily fill out the information of the product he needed manually.
<b>B (3)</b>	<b>(Task 1)</b> However, the testee was not sure about why one would scan the barcode. It took some time to realize that the function was there to help people add items easily.
<b>G</b>	<b>(Task 1)</b> After taking picture of the product, the testee automatically touched the 'use' button, and did not express any difficulties, unlike the previous testee
<b>B (3)</b>	<b>(Task 3)</b> The testee had some difficulties trying to understand what the "Urgent" function did - It took some time for him to figure it out
<b>Feedback</b>	<b>(Task 3)</b> The testee expressed concerns about how useful the proximity notification would be. As people are used to the geography of where they live, they would know if they would be near a safeway or not.
<b>G</b>	<b>(Task 3)</b> The list of notification is easy to look at and intuitive. He also liked the general layout of having the statistics at the top.
<b>B (2)</b>	<b>(Task 2)</b> The purpose of scanning receipt was not so obvious to this testee. He thought that the only purpose was to make sure the shopper bought everything.
<b>G</b>	<b>(Task 2)</b> The testee was easily able to charge group members.
<b>B (3)</b>	<b>(Task 3)</b> The testee did not notice the option to add tips to request to members
<b>G</b>	<b>(Task 1)</b> Going to profile to view shopping records / history was intuitive

## Interview Log for Interviewee 3

### Interviewee Description

Female high school graduate taking a gap year before going for college, Lives with parents, Currently uses app that lets you share grocery lists but family members, but feels it's not being utilized well as her mom doesn't use it as often

### Environment

Stanford Shopping Center (Near Food Court)

### Event Log (In chronological order) G : GOOD / B : BAD (Severity Level)

<b>G</b>	<b>(Task 1)</b> The testee was able to add an item to grocery list easily.
<b>B (2)</b>	<b>(Task 1)</b> The purpose of scanning the barcode to add the item was not so obvious.
<b>B (3)</b>	<b>(Task 3)</b> The testee felt that the function of urgency needed some more explanation.
<b>Feedback</b>	<b>(Task 3)</b> The testee commented that she liked the urgency feature, but would wish for a different name. She feels having a single-level priority system is better than having ' five-star priority system'. (Feels more intuitive and direct)
<b>G</b>	<b>(Task 3)</b> Given some notifications, the testee was able to easily locate the notification page from the bottom tab.
<b>G</b>	<b>(Task 1)</b> The testee liked that the app provided statistics on my list / friend's list at the top of the notification tab.
<b>B (3)</b>	<b>(Task 3)</b> The button to check in at a particular location when shopping was not so intuitive. The user overlooked the feature.
<b>Feedback</b>	<b>(Task 3)</b> Make check-in like a starting step for the shopping mode
<b>G</b>	<b>(Task 2)</b> The testee felt that the purpose of taking a pic of receipt was obvious.
<b>B (1)</b>	<b>(Task 2)</b> However, the testee felt that the 'use' button in the camera screen to capture receipt was not so intuitive - also expected the app to transition into a different screen as soon as pic was taken
<b>G</b>	<b>(Task 2)</b> Liked that the app automatically scans item from the receipt and calculates charges for each member of the group.
<b>B (3)</b>	<b>(Task 2)</b> The testee did not notice the option to add tips to request to members
<b>G</b>	<b>(Task 2)</b> The testee was able to request charges to members easily

<b>G</b>	<b>(Task 1)</b> The testee was able to easily navigate to the profile tab to look for shopping records and personal stats/records
<b>B (2)</b>	<b>(Task 1)</b> “Shopping History” of profile page was unclear whether it would show you the transaction history or the actual shopping history. (The Given/Received section of the profile was especially confusing)
<b>Feedback</b>	<b>(Task 1)</b> Suggested that the app show a general shopping history through a consolidated list, or maybe categorizing history as money transaction / shopping history?
<b>Feedback</b>	<b>(Task 1)</b> Suggested a function that would let shoppers to leave comments on each shopping run .(i.e. Tell requestors why he/she could not pick up particular items)
<b>Feedback</b>	<b>(Task 2)</b> When you’re living with family, the paying option won’t be necessary. Therefore suggested limiting the target to younger people who lived with strangers (“who have different bank accounts to pull money from”)

# Interviewee Consent Form

2018. 10. 25.

Appendix A: Consent Form

## Consent Form

The [TEAM NAME HERE] application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of [TEAM NAME HERE]. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers ([TEAM MEMBERS NAMES HERE]) or with Professor James Landay, the instructor of CS 147:

James A. Landay  
CS Department  
Stanford University  
650-498-8215  
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the [TEAM NAME HERE] experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name MASON PEABODY  
Participant Number 1  
Date OCT 25  
Signature Mason Peabody  
Witness name \_\_\_\_\_  
Witness signature \_\_\_\_\_

(Figure #) Consent form for Interviewee #1

2018. 10. 25.

Appendix A: Consent Form

## Consent Form

The [TEAM NAME HERE] application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of [TEAM NAME HERE]. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers ([TEAM MEMBERS NAMES HERE]) or with Professor James Landay, the instructor of CS 147:

James A. Landay  
CS Department  
Stanford University  
650-498-8215  
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the [TEAM NAME HERE] experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name TREVOR McQUEEN  
Participant Number 2  
Date 10/25  
Signature Trevor McQueen  
Witness name \_\_\_\_\_  
Witness signature \_\_\_\_\_

(Figure #) Consent form for Interviewee #2

**Consent Form**

The [TEAM NAME HERE] <sup>PIGGYBAG</sup> application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of [TEAM NAME HERE]. Data will be collected by interview, observation and questionnaire. <sup>PIGGYBAG</sup>

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers ([TEAM MEMBERS NAMES HERE]) or with Professor James Landay, the instructor of CS 147:

<sup>PIGGYBAG</sup>  
Jim Wei, James Srinivas, Fabian  
James A. Landay  
CS Department  
Stanford University  
650-498-8215  
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the [TEAM NAME HERE] experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name MARIANA HIZ  
Participant Number 3  
Date OCT, 25, 2018  
Signature [Signature]  
Witness name \_\_\_\_\_  
Witness signature \_\_\_\_\_

(Figure #) Consent form for Interviewee #3