Easy Shopper

1. **Project Name:** Easy Shopper

2. **Team Members:**
   Jessica Bagley - UI Design
   Logan Scovil - UI Prototype Testing
   Nick Thomas - Presentation & Writeups
   Joe Wesemann - UI Prototype Testing
   Matthew Zubair -

3. **Problem and Solution Overview**:
   The problem we are addressing is that many people have a need for better grocery shopping management. Items are frequently over purchased or forgotten, resulting in wasted food and wasted time. With better organization, grocery shopping could be done in a much more efficient manner. However, many potential users have still not found an acceptable solution--the existing solutions tend to be overly complex, tied to a larger program, or poorly designed. Our solution attempts to solve these issues effectively by providing a very simple and intuitive application built around the idea of making a shopping list that can be easily added to, sorted, and removed from. The key features of this list will be store-specific shopping lists and easy methods for re-adding items based on past purchases. Adding items to the list should be simple, fast, and intuitive.

4. **Initial Paper Prototype**:
   Our initial paper prototype, shown below, was created on index cards to simulate the screen size of a smartphone.
   Our first task was to add a frequently purchased item to the list:

1. The application is at the home list screen. The user wishes to add eggs and milk to the list. The user taps on the “Add” button.

2. The application is now on the second screen. The user taps “Frequent Items” to open the list of frequently purchased items

3. The application now shows a list of frequently purchased items. The user taps on “Eggs” and “Milk” to select them.

4. The application highlights “Eggs” and “Milk” to indicate they are selected. The user taps “Done” to add them to the list.

5. The items have been added to the list, and the application is now at the second screen again.

6. The user taps on “Back” to return to the home list, where we can see the desired items have been added to the list.

Our second task is to sort the list by the store at which items are purchased:

1. The application is at the home list screen. The user taps on “Sort”.

2. The sort dialog window opens over the home list. The user taps on “store” to sort by store.

3. The items are now sorted by store first then alphabetically.

5. **Testing Process**:

   In order to improve our prototype, we performed three usability tests to determine the strengths and weaknesses of our current implementation. We wanted each of our usability tests to have a natural progression of user tasks, so we used the following general protocol for our tests: First, we had our users add items, both manually and from the 'frequent items' list. We then had our users add a store. The next task was for them to perform an item sort by store. Finally, we had our users remove and edit a store and an item from a pre-populated list. The specific usability tests are discussed below.

   Our first usability test was done with a stay at home Mom of 3 children, who is our target demographic for our app. They grocery shop about once a week on average and the app would be something they would user multiple times through the week in order to prepare and plan for the shopping. The usability test was done in her home because that is one of the environments that the app would be used in, and is the most calm and open environment to perform the test in, compared to doing it in a grocery store. We did not provide verbal help to the user during the test and just let her operate the application herself, after describing how the test was going to work.

   Our second usability test was done with a working mother of 4 children, 2 of whom live at home. The test was done in the dining room on the table, because it was a nice, quiet atmosphere and is also a place where someone would likely be using the app. Similar to the first test, we offered no verbal help, such that the tester would have a 'blank slate' approach, much like our future users will.

   Our final usability test was with the husband of our second tester, in the same environment as before. (He did not, however, view the other usability test, so he also had no prior knowledge of the app.) Our third tester also did a substantial amount of shopping and cooking. It was after this test that we decided to implement the checking and unchecking feature, so we had our user perform another brief usability test afterwards so that we could gauge these changes.

   After our third usability test, we decided to make some substantial changes to our app. (These changes are discussed in further depth in part 6.) Accordingly, we had to make changes to our testing process: First, we no longer had the user use the 'frequent item' feature, as we had (temporarily) decided to remove it. Secondly, in addition to regular adding and removing from a list, there was also the feature of 'checking' and 'unchecking' an item on the list, so we had our last user perform these actions as well. In general, our other changes were fixes that made the app easier to use, but did not

change any core functionality, so these changes did not cause us to modify our testing process.

6. **Testing Results**:
   We made a number of changes as a result of our in-class and out-of-class usability tests. These changes, along with the critical incidents that inspired them, are discussed below:

1. Too many clicks to add items to list (in-class heuristics evaluation)

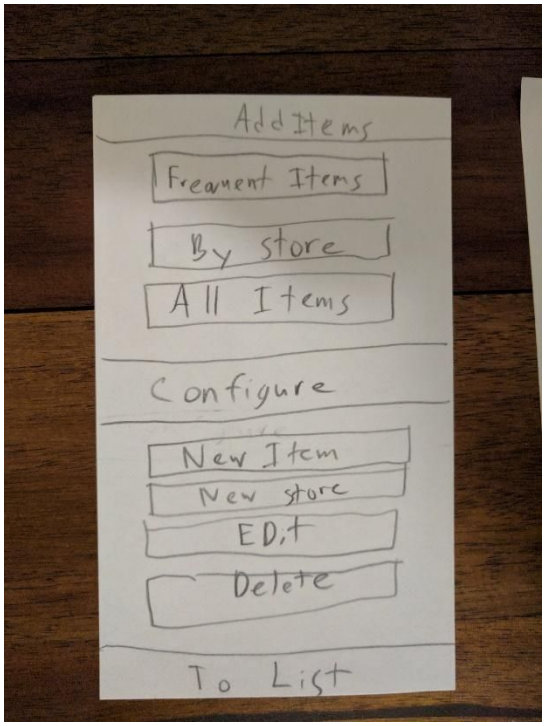
One of our main tasks and interactions is adding items to a list. Some of the feedback that we got was that it took too long to add items, and it was not a simple enough process. Ease-of-use is a main selling point of our application, so this was an important issue to fix.

Heuristic Violated: Flexibility and Ease of use

Severity Rating: 3

Revision:

We took the 'add item' functionality out and put it into a popup menu that is easier to navigate to from the home screen, so that we could remove that button from the intermediate screen.



2. **Confusion about the store button on add menu (in-class heuristics evaluation)**

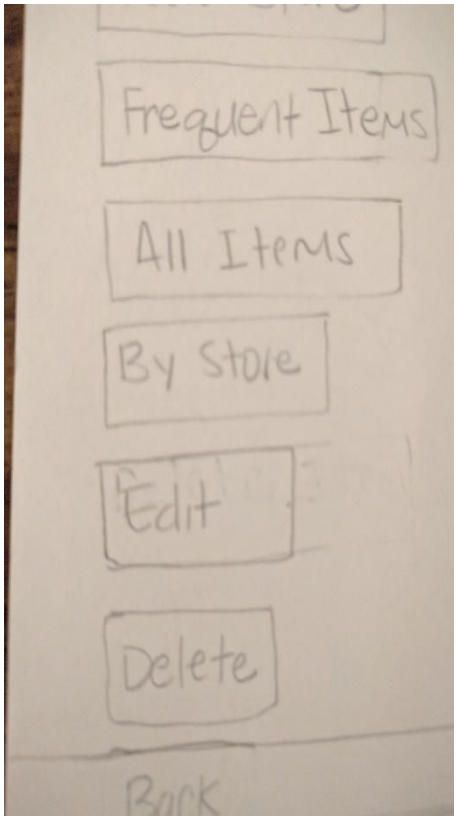
When a user clicks ‘add,’ it takes them to another menu asking what to add, and the button that says “store” was confusing to some people. People also did not understand what the delete button was because it just says “delete” on it.

Heuristic Violated: Error Prevention

Severity Rating: 2

Revision:

For this revision, we simply changed the text on some of the buttons on that menu to be more descriptive about what is going on.



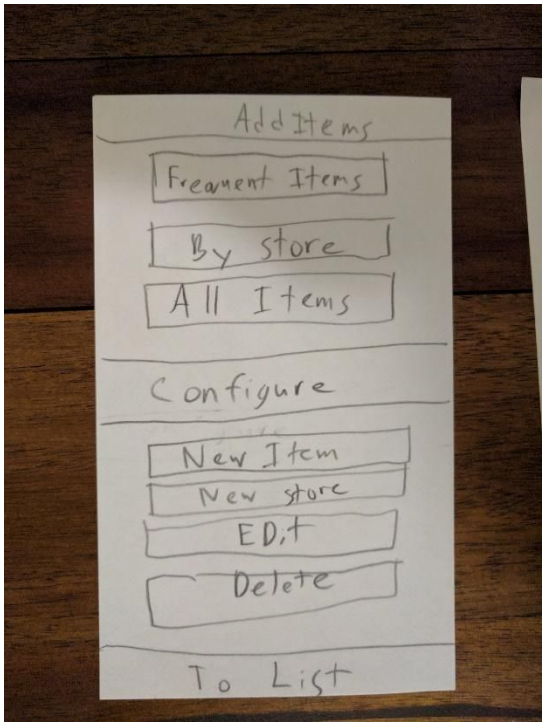
3. **Too many buttons on add menu (in-class heuristics evaluation)**

The app has the ability to add a variety of different things. Because of that, on the add menu there are a lot of buttons. This was causing confusion and is not as aesthetically pleasing or organized as it could be.

Severity Rating: 3

Revision:

In order to fix this issue we reorganized some of the UI and the way that you get around to the other add menus, so the master add menu does not have to be so cluttered with buttons going everywhere. Added some intermediate menus to alleviate this as well.



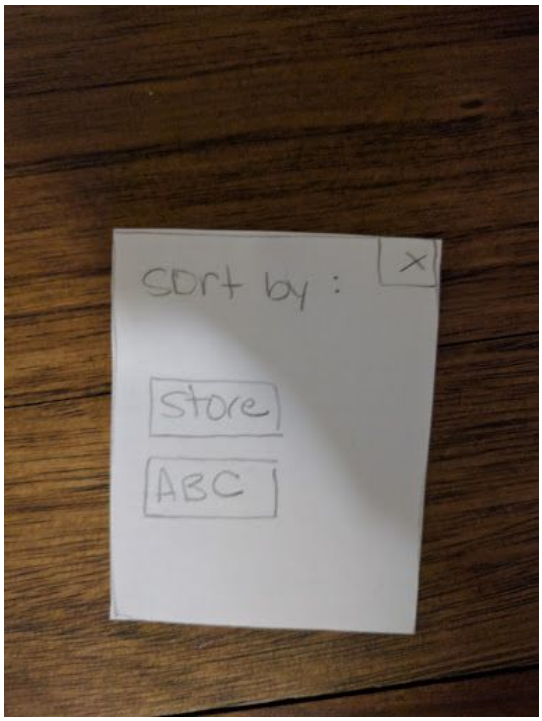
4. **ABC Sort button is not intuitive enough (usability test 1)**

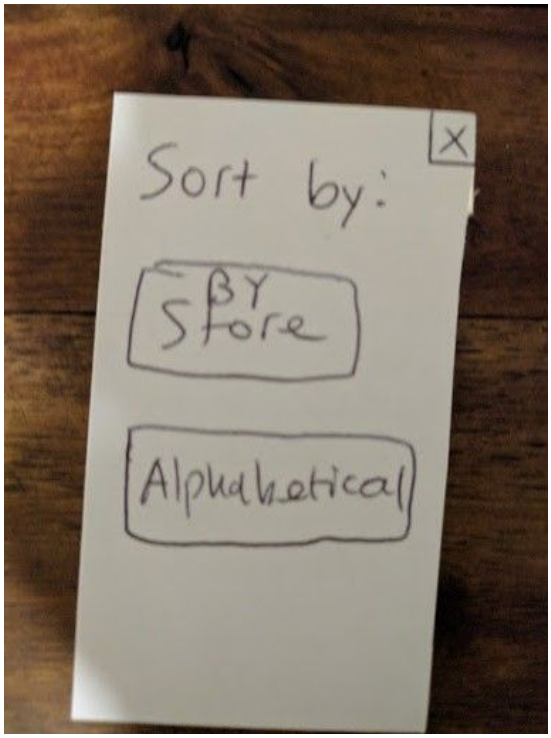
We have a button to sort items in the list, and it has a pop-up menu asking you what type of sort to do, “ABC“, or “Store”. Store made sense, but ABC was confusing to the user. She was thinking out loud when she navigated to that menu and said that she did not understand what that button was saying.

Severity: 2

Revision:

We decided to fix this issue by making the text on the button more descriptive, instead changing it to say “Alphabetical” and “By Store”





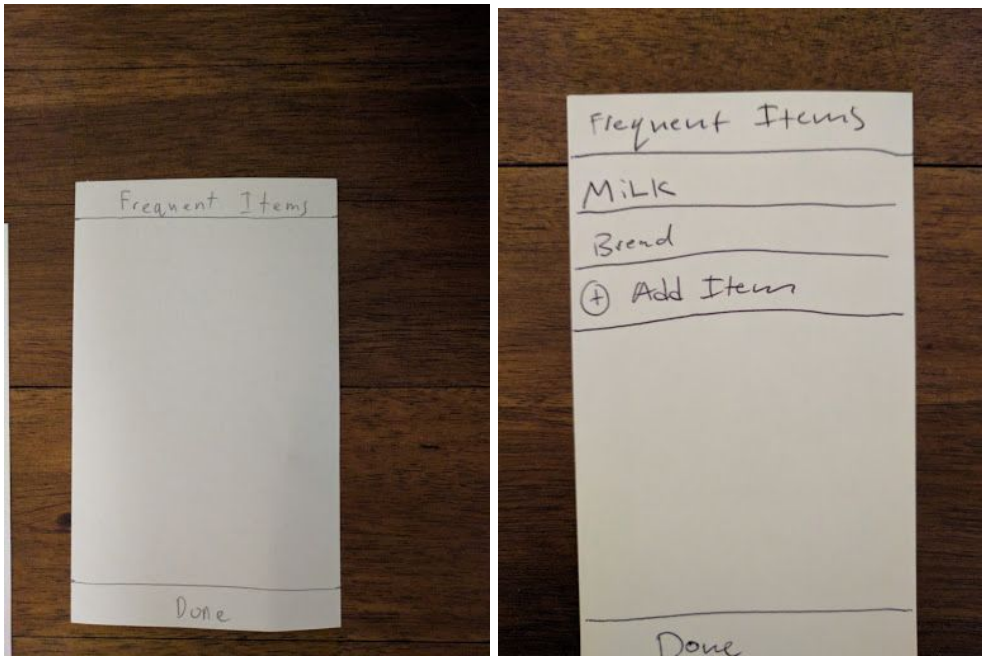
5. **Very impressed with 'frequent items' feature (usability test 1)**

Our user was very impressed by the frequent items feature and thought that it should be more prevalent in the app because it could save her a lot of time and be more usable. This point is both a positive and negative because she wanted to make the good feature more dominant in the app.

Severity: 2

Revision:

In order to make the frequent items feature more prevalent in the app, we decided to give the user the ability to add whatever they wanted to the frequent items list, so that they could tailor it to their exact needs.



6. **Not knowing when to use ‘configure’ button (usability test 2)**

In this example, our user did not know to use the ‘configure’ button in order to access the ‘delete item’ option.

Severity: 2

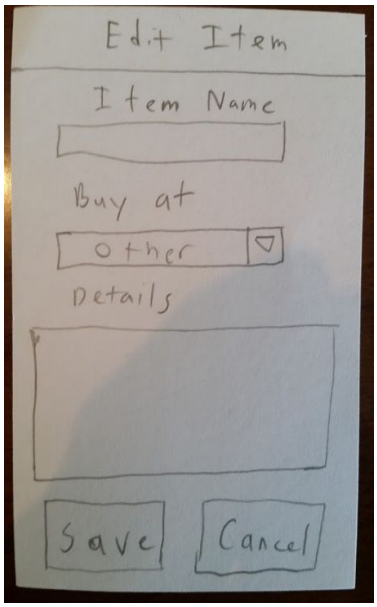
Revision: The word ‘configure’ can be intimidating to a lot of users, and a more user-friendly way to describe the function of the button would be ‘edit items/stores.’

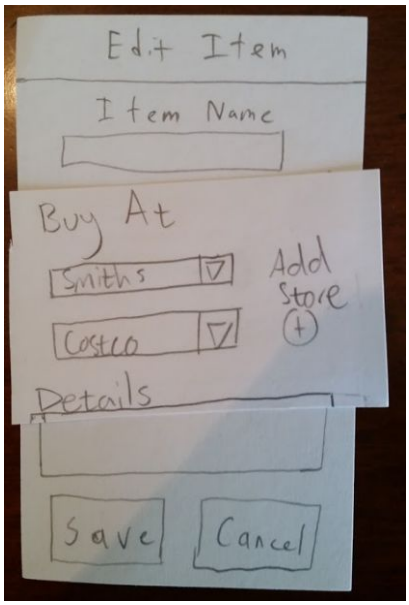
7. **Adding item to two stores (usability test 2)**

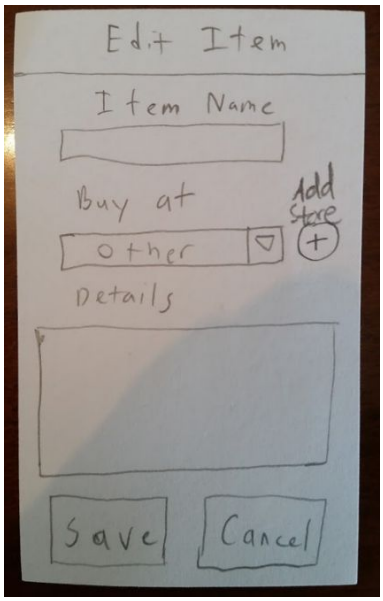
Our user was curious as to whether they could add an item to two grocery stores--e.g. they prefer to buy milk from either Smiths *or* Costco. This was not a feature that we had included, and after discussing it with our usability tester, we decided that it would be a very common desire of our future users.

Severity: 2

Revision: On the edit-item menu, users now have the option to add another store for the item. If an item has two or more stores, it will show up on each of the store's lists when the user sorts by store. If the user is sorting their main list alphabetically, then the item will only show up once. The two images on the right show how the improved prototype functions when an additional store is added.







8. **Confusion over ‘sort list’ feature (usability test 3)**

Here, our user assumed that the ‘sort list’ option was a feature that allowed them to easily sort/rearrange the lists themselves, where in reality, the feature sorts the list (into grocery stores or alphabetically) based on previously provided information.

Severity: 1

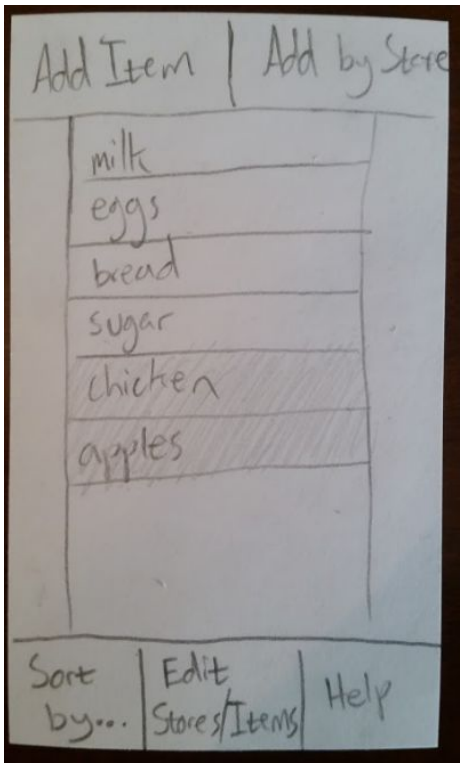
Revision: This is another easy-to-solve issue--we simply changed the ‘sort list’ text to ‘sort by...’

9. **Confusion over ‘add frequent’ feature (usability test 3)**

In order to facilitate quicker adding of items, we have an ‘add frequent’ option that allows the user to select items from a list of items that they have frequently had in the past. In our second usability test, our user was unsure if ‘add frequent’ would add the last entered item to the frequent list, and upon clicking ‘add frequent’ they were confused about the ‘frequent items’ list and the main list worked together.

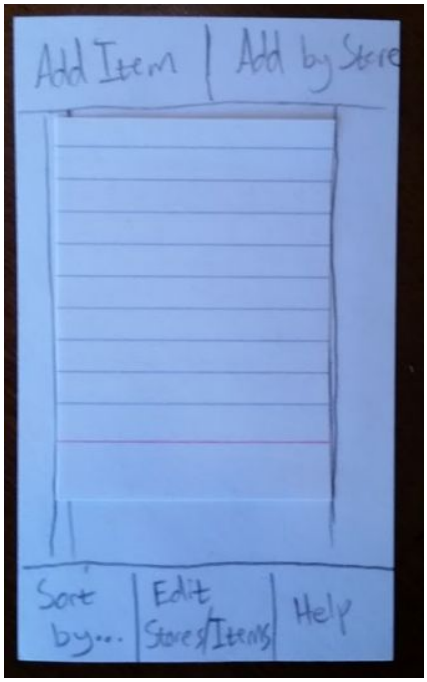
Severity: 2

Revision: This revision was larger in scale than the others. We decided to eliminate the ‘Frequent Item’ feature altogether in favor of a more intuitive method for reviving past items. In the main list (and in the sublists), swiping an item will now ‘deactivate’ it, indicating that it has been purchased. A deactivated item still shows up on the list, but will be at the bottom, and will have a faded (but still clearly visible) appearance. Swiping the item a second time will ‘reactivate’ the item. When a user clicks on an item to edit it, the edit panel will now show the option to deactivate/reactivate the item. Users will also still have the option to delete the item altogether.

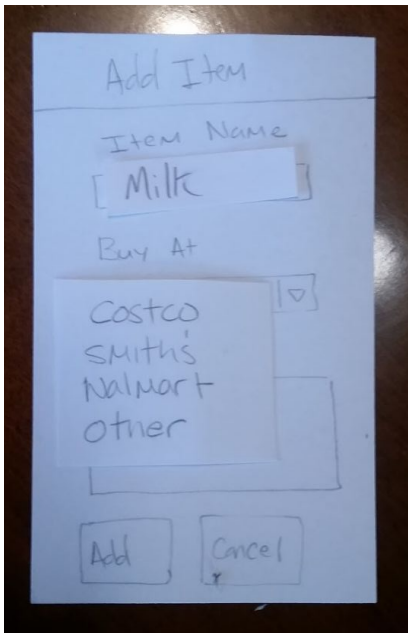


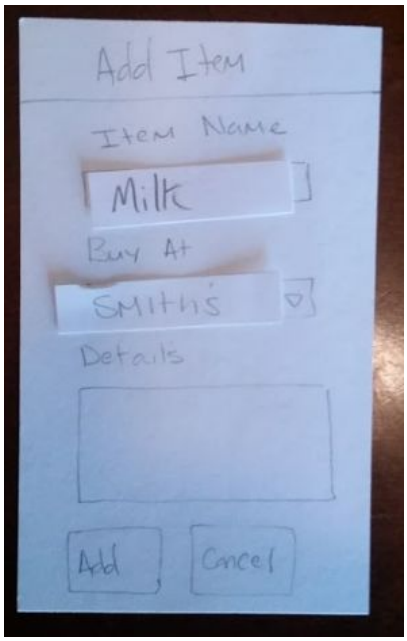
7. **Final Paper Prototype**: (1 page)
   Our final paper prototype's two primary tasks are shown below. The full prototype can be found in the appendix.

   1. The application is at the home list screen. User wishes to add eggs and milk to the list. The user taps on the "Add Item" button.

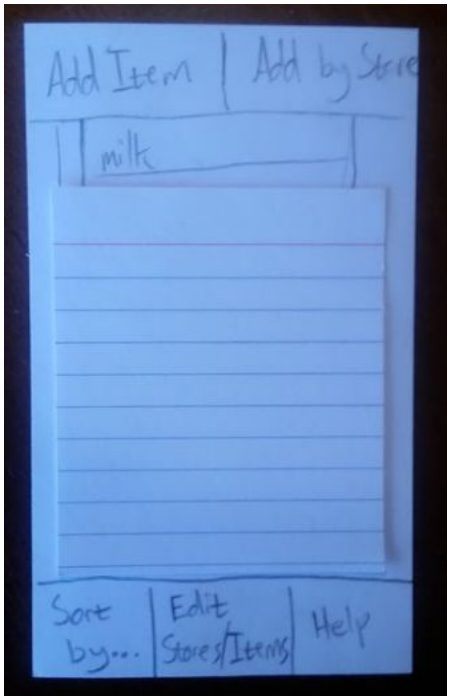


   2. The user now enters the item's name and where to buy it

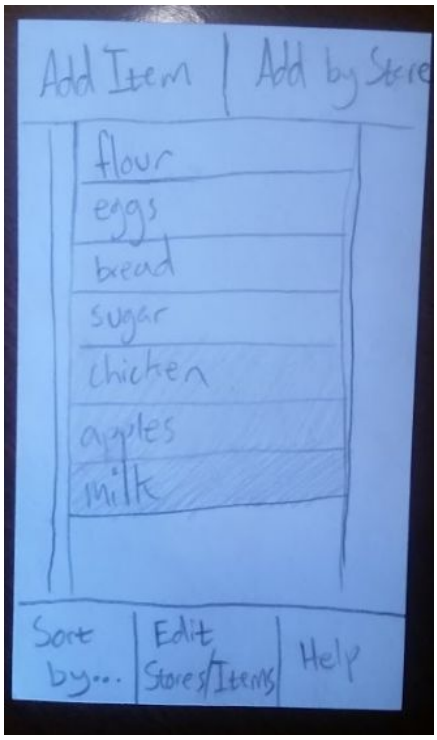




3. The item has now been added to the list

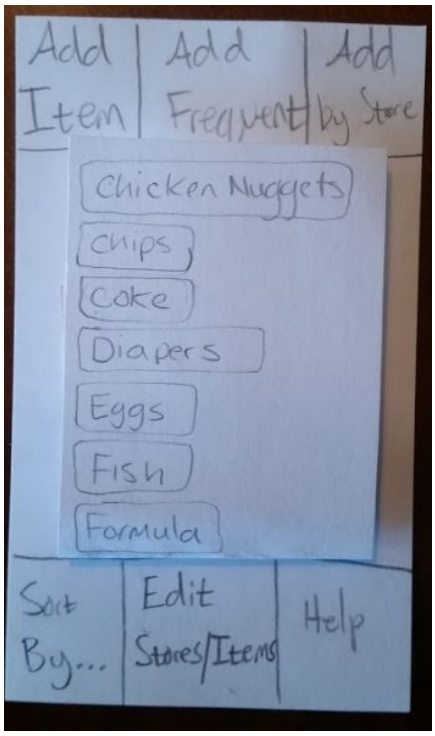


4.In the future, if the item is swiped off of the list, it will be deactivated and moved to the bottom.

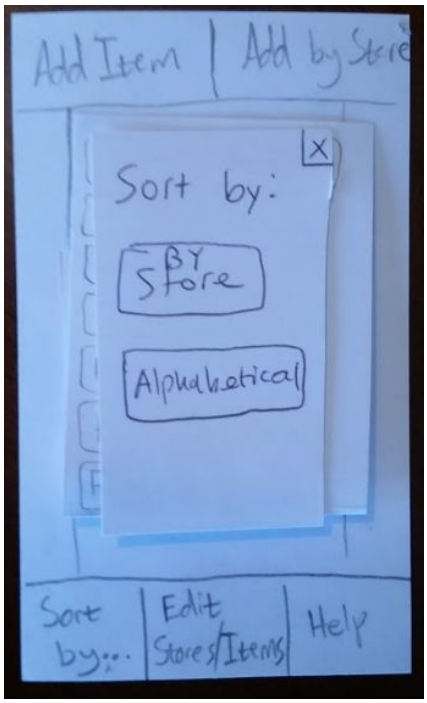


For our second task, we sort an existing list by grocery store:

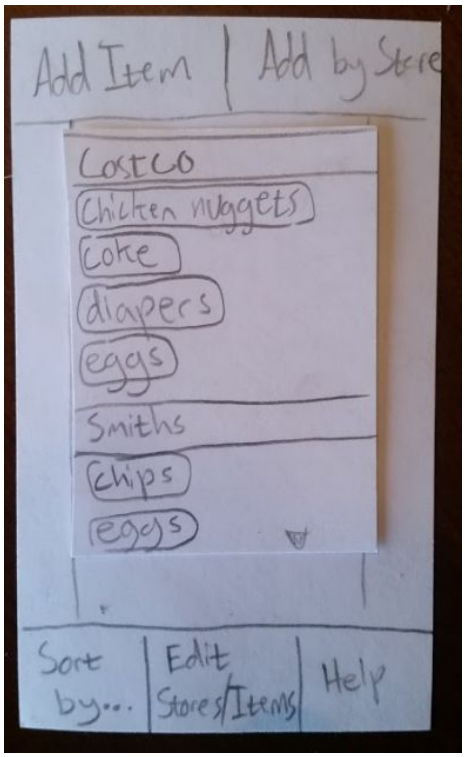
1. We begin at the home screen, and the user presses “Sort by...”



2. A popup dialog asks the user how they want to sort the list, and the user presses “By Store”



3. The items are now sorted by store first, then alphabetically.

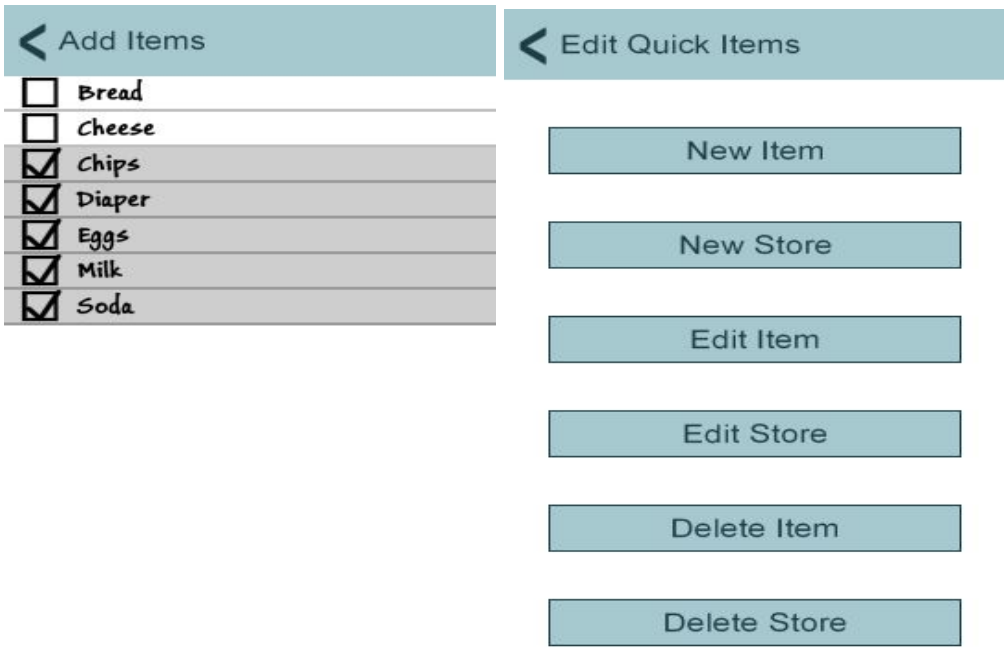


8. **Digital Mockup**:
   The biggest change in our application from the final version of our paper prototype to the digital mockup is that instead of using overlays for displaying the search and clear options we switched to entirely new screens. This was done to prevent confusing screen clutter around the edges of the overlays. We also added a frequent item check box to allow the user to specify frequent items. We had originally planned to have the frequent items generated based on shopping patterns, but our testing revealed a desire for better control. Finally, we added the ability to add an item to the list from the item details page at the suggestion of one of our users.
   We also made some changes from the initial digital prototype to the one shown below. After some user testing we found that the list was not designed similar to other generic list applications, and for that reason would be non intuitive. We added boxes to the list to imply that the user needed to check them off, and made some other minor UI changes to make it more user friendly.

Tasks:

Our first task is to add a frequently purchased item to the list. This was noted to be one of the most desirable features of our application, and has therefore been greatly streamlined.

To start, the application is on the main screen. Notice that the list is sorted alphabetically except for the end of the list which has greyed out items. These are frequently purchased items, as defined by the user.
If you click on add items on the quick add item list, you can add new items that you will be able to quickly add to your shopping list. When you are on your shopping list and you select add item, you will be taken to the list of you quick items where you will be able to quickly assemble your list.



Our second task involves sorting a list by store. If you see your regular shopping list like the one below, you can navigate to the menu and then click on sort, which will take you to the screen below where you are able to select alphabetical sort, or sort by store. When you do that you will be able to view the list split by stores so you can execute your grocery plan accordingly.

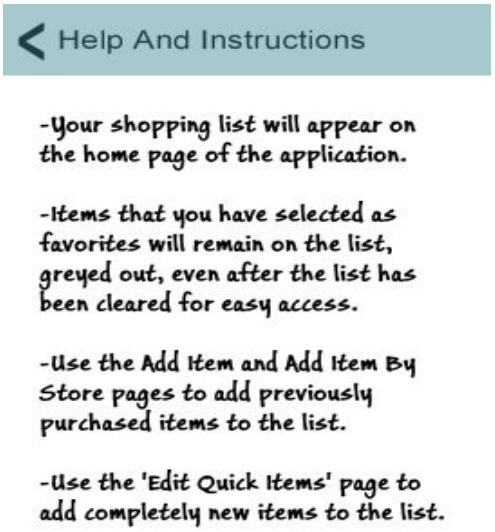

Shopping List
Add Item
Menu
Bread
Cheese
Chips
Diaper
Eggs
Milk
Soda


Shopping List
Add Item
Menu
Costco
Milk
Smiths
Eggs
Wal-Mart
Bread
Cheese
Other


Add Items
Costco
Diaper
Milk
Smiths
Eggs
Wal-Mart
Bread
Cheese
Chips
Soda
Other


Sort Shopping List
Sort List Alphabetically
Sort List By Store


Shopping List
Add Item
Menu
Costco
Milk
Smiths
Eggs
Wal-Mart
Bread
Cheese
Other


Help And Instructions
-Your shopping list will appear on the home page of the application.
-Items that you have selected as favorites will remain on the list, greyed out, even after the list has been cleared for easy access.
-Use the Add Item and Add Item By Store pages to add previously purchased items to the list.
-Use the 'Edit Quick Items' page to add completely new items to the list.


Item Details
New Store
Item: Diaper
Store: Costco
Size 6
Store Name
Food Mart
Add New Store
Add Item To List
Cancel

9. **Discussion**:

We think the main things that we learned from the process of iterative design were that it allowed for multiple iterations of user feedback, which was very valuable, it helped us to refine our design to near perfection before getting to any implementation steps, and it helped us to always have a clear vision of our goals for the project.

After going through an iterative design process we really saw the importance of user feedback, because ultimately it is the most important thing when it comes time to take the product to market. In the end, the users literally are everything, and the difference between the success and failure of your product. By iterating multiple times, doing research each time, and obtaining feedback, we were able to correct the many issues that we had with our design. If we had not done that, and gone straight to implementation, we would have had much more painful and more time consuming iterations towards the end and most likely would have failed. Another great thing about iterative design is that by our final iteration we had something that we knew was going to be useful to people and we were no longer guessing. We were much more educated on the market and knew what people wanted. We think that having that in mind allows you to go into implementation with more peace of mind and drive to do a good job.

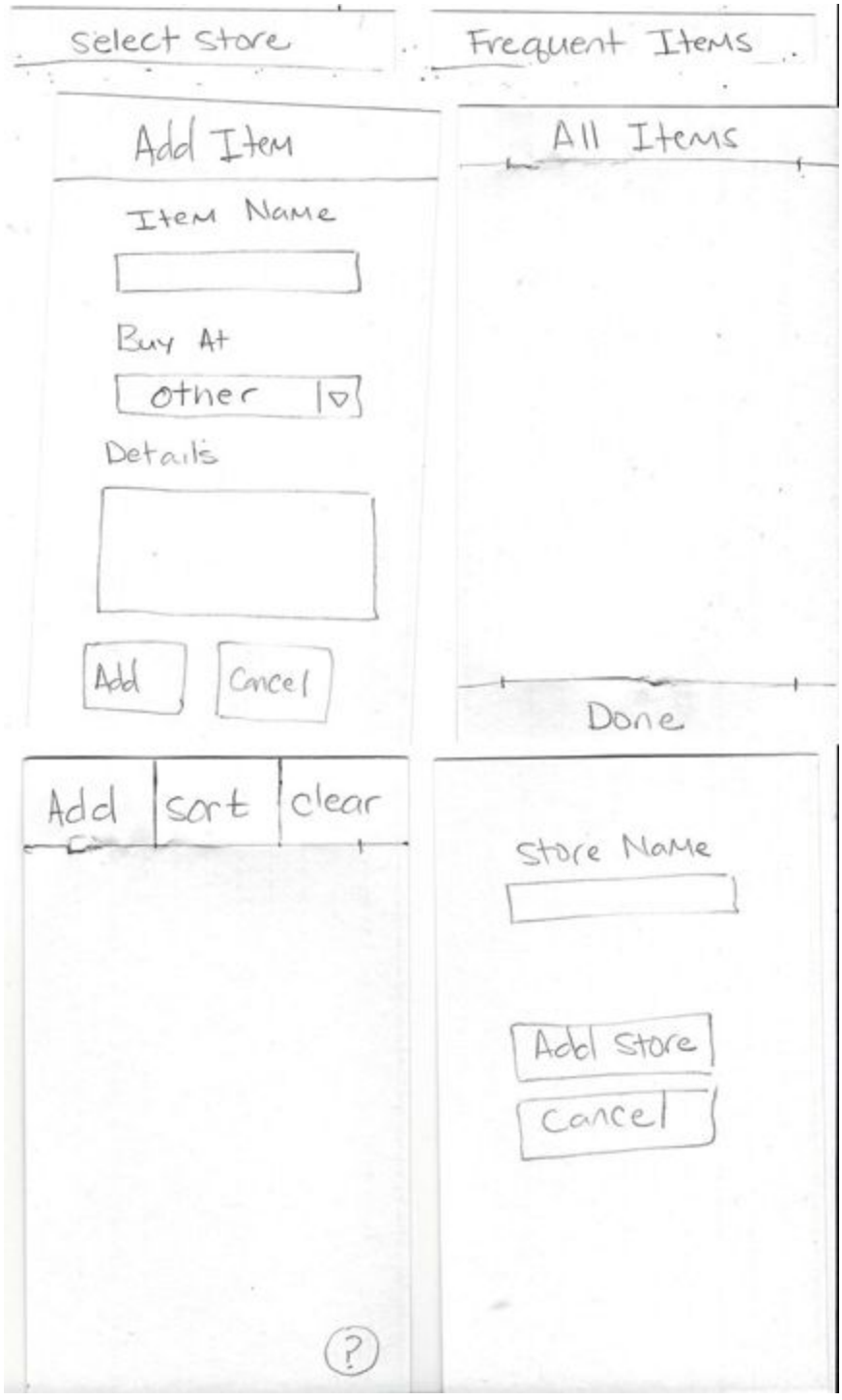
Another reason why the iterative design process is a great way to do design is that it always helps you keep your goals in sight. Instead of spending all of our time working on the project chunk by chunk, we designed the entire thing multiple times, so it was easier to stay on track towards the goal of our project. If we had followed more of a waterfall approach, it would be our easier for our work to begin to veer of course and forget about our goals.

We made tons of mistakes that would not have been corrected without an iterative approach. At the beginning we were assuming things about users, and some of those things turned out to be true, while others turned out to be completely false. For example one of our main points of emphasis initially was recipies with your groceries and budgeting. After doing some contextual inquiries it was clear that no one cared about these things as much as we thought they did, because they were not real issues to them. Because we did the research on this we were able to correct our vision for our project on the next iteration, and decided to focus more on things that mattered to users, like lists. We think that our iterative design project had the correct number of iterations. On the final iteration, we were able to clear up the last of the discrepancies on our design, however it does feel like another iteration could always be used. The design does not feel 100% perfect and we don’t know if it ever will feel absolutely perfect, but after the iteration process that we did it feels pretty close.

Ultimately, going through the iterative design process with this project revealed some important aspects of design that we hope to not overlook in the future. The process

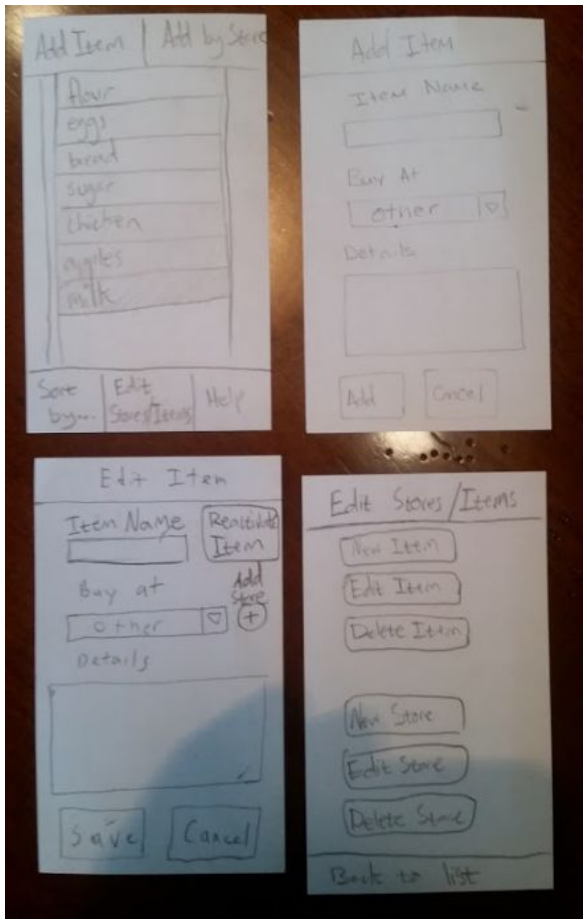
emphasises focus on goals and receiving user feedback, and we learned that having a user centric design approach helps produce better designs. Because of the iterative design process, we were able to design something that we are confident people will find useful, and that will impact their lives in a positive way.

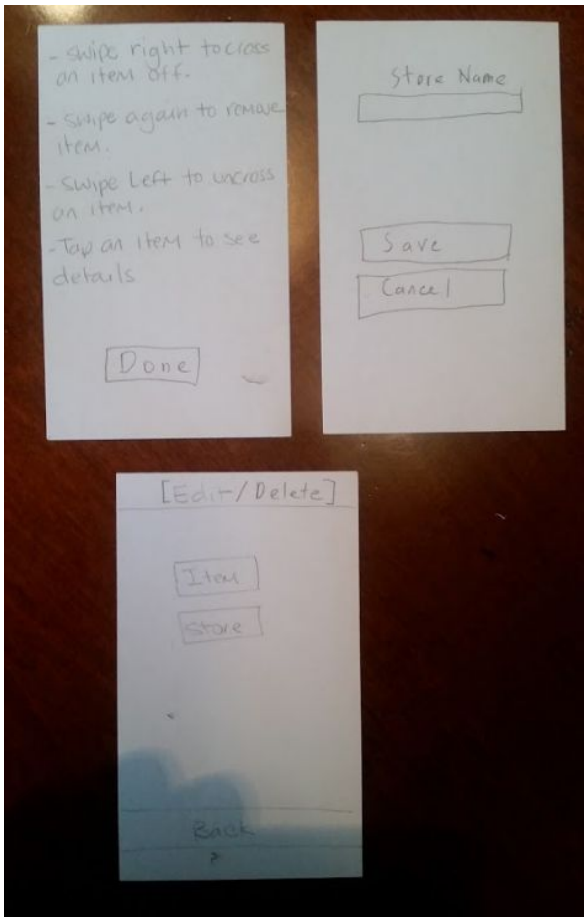
10. **Appendix**:

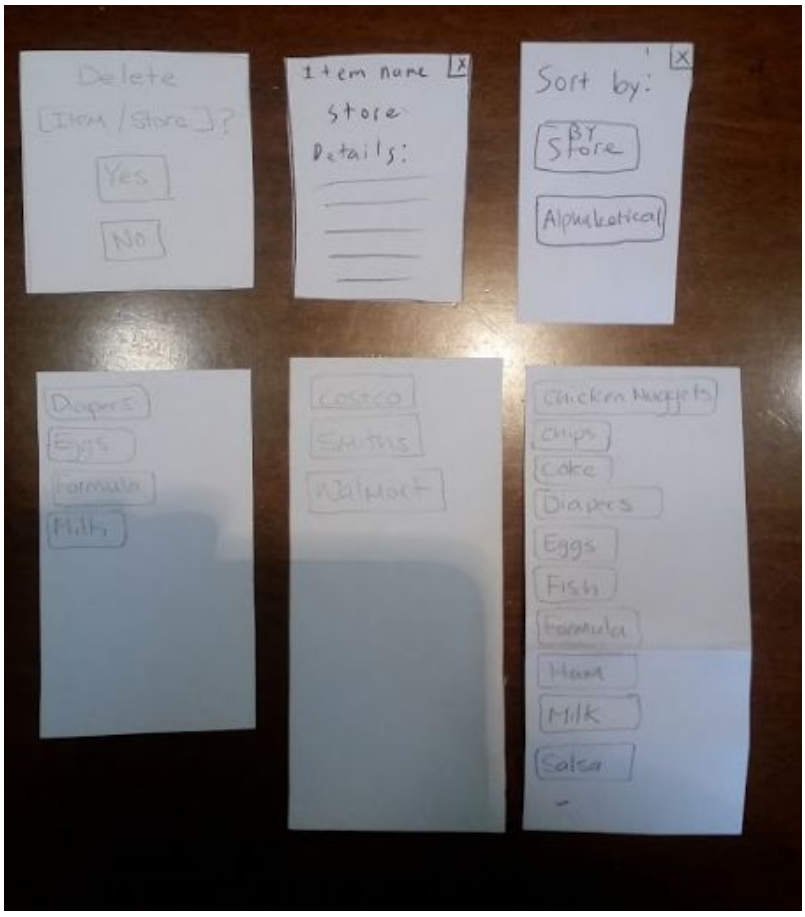

Select Store
Frequent Items
Add Item
Item Name
Buy At
other
Details
Add
Cancel
All Items
Done
Add
sort
clear
?
Store Name
Add Store
cancel

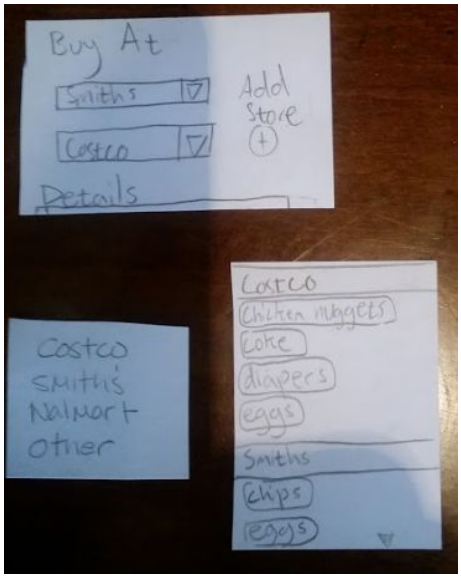

Clear all crossed off
Clear all Items
Cancel
Costco
SMith's
WalMart
other
Costco
SMith's
WalMart
Key board
Sort by :
Store
ABC
COSTCO
Chicken Nuggets
Coke
Diapers
Eggs
Smith's
Chips
eggs
Fish
Milk
Salsa
WalMart
Formula
- Swipe right to cross an item off.
- Swipe again to remove item.
- Swipe Left to uncross an item.
- Tap an item to see details
Done
Chicken Nuggets
Chips
Coke
Diapers
Eggs
Fish
Formula
Ham
Milk
Salsa

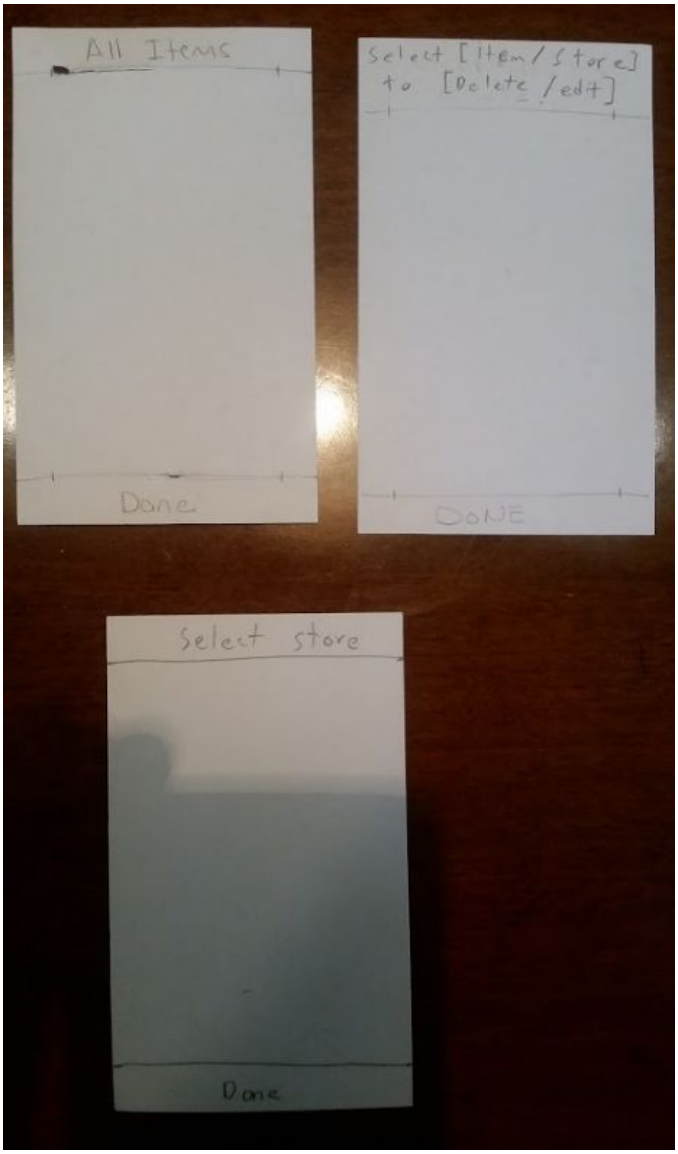

New Item
New store
Frequent Items
All Items
By Store
Edit
Delete
Back
Edit
Item
store
Back
costco
Smith's
WalMart
select item to Delete.
DONE
Chicken Nuggets
Chips
Coke
Diapers
Fish
Formula
Ham
Salsa
Diapers
Eggs
Formula
Milk
Delete [Item / Store]?
Yes
No
Save
Edit
Edit
Delete
store
SAVE
Milk
Eggs


Add Item
Add by Store
flour
eggs
bread
sugar
chicken
apples
milk
Save by...
Edit Stores/Items
Help
Add Item
Item Name
Buy At
other
Details
Add
Cancel
Edit Item
Item Name
Restrict Item
Buy at
Add Store
other
Details
Save
Cancel
Edit Stores/Items
New Item
Edit Item
Delete Item
New Store
Edit Store
Delete Store
Back to list


- swipe right to cross an item off.
- swipe again to remove item.
- swipe Left to uncross an item.
- Tap an item to see details
Done
Store Name
Save
Cancel
[Edit/Delete]
Item
Store
Back


Delete
[Item/Store]?
Yes
No
Item name
Store
Details:
Sort by:
By Store
Alphabetical
Diapers
Eggs
formula
Milk
costco
Smiths
Walmart
Chicken Nuggets
chips
cake
Diapers
Eggs
Fish
formula
Ham
Milk
Salsa


Buy At
Smiths
Costco
Details
Add Store
+
Costco
Smiths
Walmart
Other
Costco
Chicken nuggets
Coke
diapers
eggs
Smiths
chips
eggs


All Items
Done
Select [Item / Store] to [Delete / edit]
DONE
Select store
Done