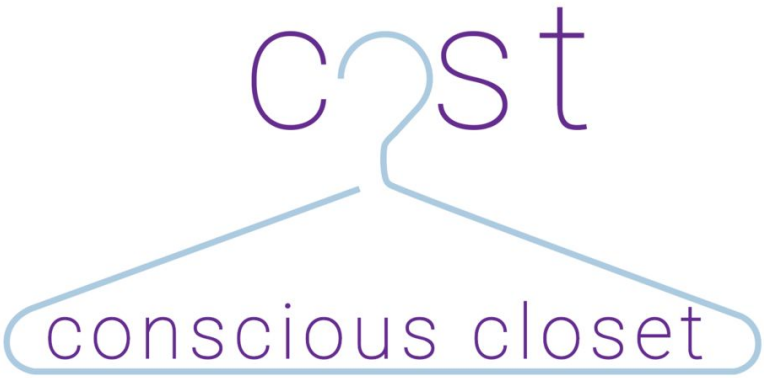


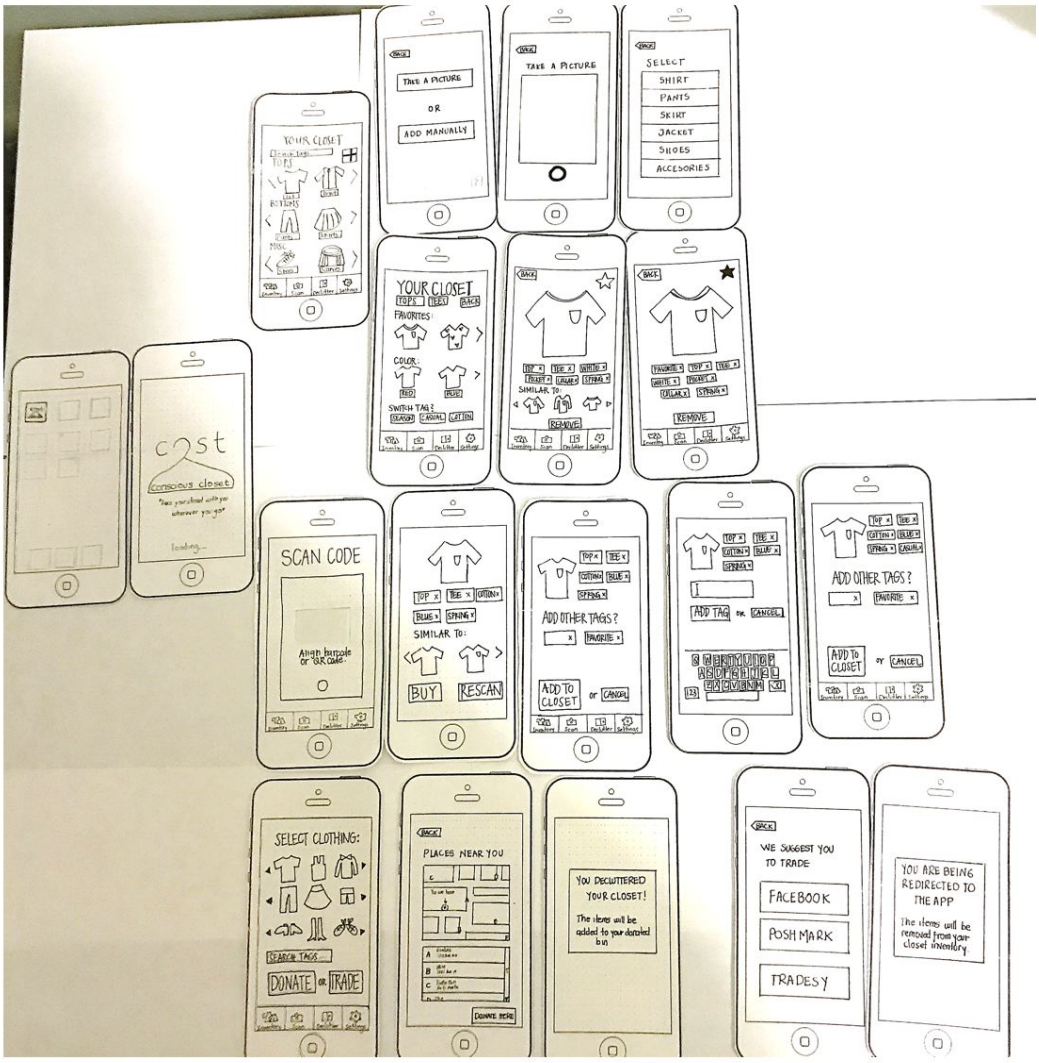
TEAM

Michelle Lee: Designer, Writer
Cathy Cao: Designer, Writer
Yadi Reyes: Designer, Project Manager
Raag Pokhrel: User Researcher, Writer

PROBLEM AND SOLUTION OVERVIEW

Consumerism is taking a toll on many families and their financial situations. Americans are constantly looking to purchase the next trendiest shoe or handbag, and yet, they still feel materially dissatisfied. According to a 2014 Gallup poll, 45% of Americans are spending more than they were a year ago. In fact, millennial are spending more on discretionary spending categories, such as clothing. As a result, individuals and families are left with a cluttered home with things they really don't need. Our closet is a common cluttered area, for example. We often forget about what clothes we already have, and spend more money, causing a cycle of cluttering and overspending. We decided to tackle this problem by designing a mobile application for college students or young professionals, busy people who are often "on the go". Our solution provides people with portable access to the contents of their closet. They perform a closet inventory at time of installation, then record personal purchases and cross-reference items that they are interested in buying with their current inventory to make sure they avoid duplicate purchases. The application alerts and reminds people to donate clothes to a non profit or to trade clothes with other users via existing marketplaces such as Facebook Marketplace or Craigslist.

INITIAL PAPER PROTOTYPE



1. **Scanning items to prevent duplicate or unnecessary purchasing**

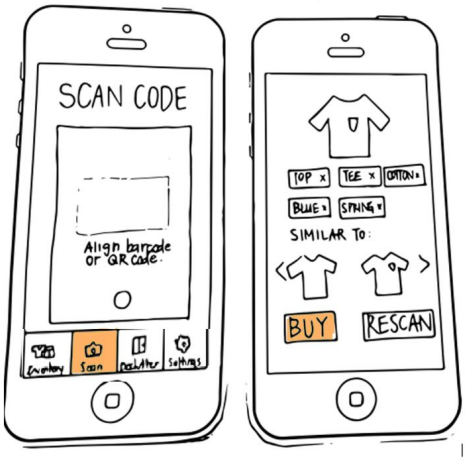


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Figure 1.1: While the user is out shopping, s/he taps the "Scan" and scans the barcode of the clothing item they are thinking about purchasing.

Figure 1.2: The application displays the scanned item, identifying tags and any similar items that already exist in the user's closet. User decides to buy the item so user taps the "Buy" button.

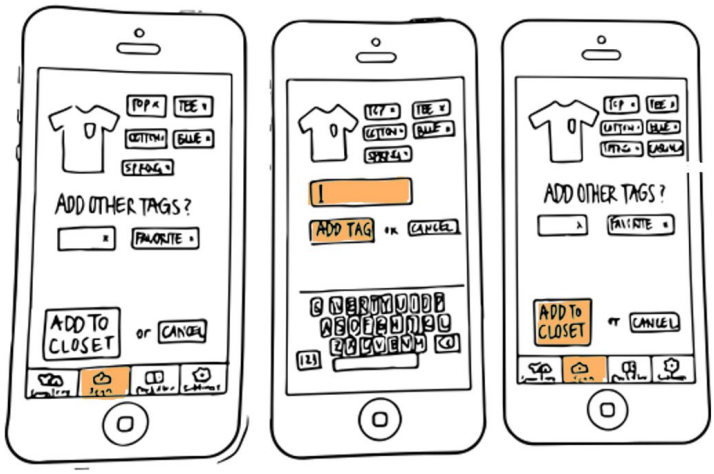


Figure 1.3 **Figure 1.4** **Figure 1.5**

Figure 1.3: After the user decides to purchase the item in the previous frame, the application gives the user the option to specify new tags.

Figure 1.4: The user inputs a new tag using the keyboard and then taps the "Add Tag" button.

Figure 1.5: When the user is done adding tags, s/he can tap on “Add to Closet” to add the item to their closet inventory.

2. **Trading or donating to help declutter the closet**

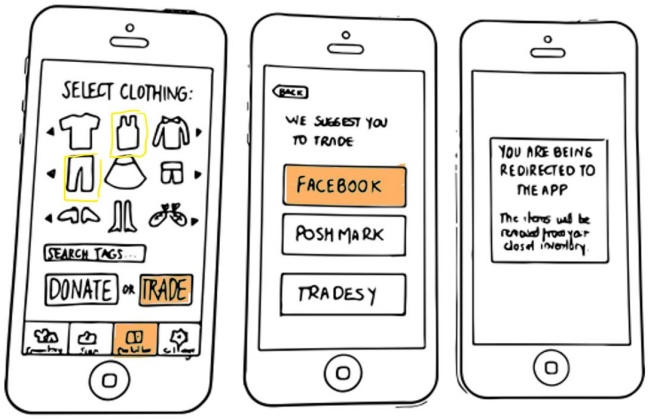


Figure 2.1 **Figure 2.2** **Figure 2.3**

Figure 2.1: User decides that s/he wants to trade some items, so taps on the “Declutter” icon and selects items to trade, and taps on the “Trade” button.

Figure 2.2: The app provides some options for the user to trade his/her clothes

Figure 2.3: The user is redirected to a service that allows them to trade clothing items with other people, and those items are removed from the inventory.

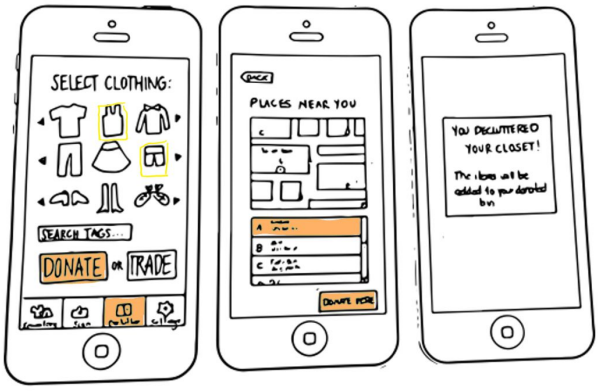


Figure 2.4 **Figure 2.5** **Figure 2.6**

Figure 2.4: This is the same screen as Figure 2.1, but alternatively, the user can select items for donation and tap “Donate”.

Figure 2.5: The app shows a map window and a list of nearby places where clothing items can be dropped off for donation. After choosing a location, the user can tap on “Donate Here”.

Figure 2.6: Similar to Figure 2.3, the app shows a message saying the items were success added to the donation history.

TESTING PROCESS

Method Overview:

We conducted three usability tests in the UW CSE ACM Lounge because it is quiet and conducive to focusing properly and has ample space for us to provide a relaxed environment for our participants. We introduced participants to the team and our individual roles, provided them with an overview of the application, and encouraged them to think out loud with each interaction. Cathy was the facilitator, Yadi was the computer, and Raag and Michelle were the observers.

The testing protocol was to allow participants to experiment with the application. We introduced them to the two tasks we wanted them to accomplish and took note of their observations and concerns while keeping interference or instruction to a minimum. After completing the two tasks, we concluded by asking the participant to share their opinion on the usability of our design and a specific point of improvement for our design. The first participant wanted to explore further the design and try to complete tasks that were not our primary two tasks. We therefore revised our process afterwards by explicitly laying out the two tasks for participants to follow. Another refinement was to refrain from having more than one team member communicate with the participant in order to avoid information overload or confuse the participant.

Participants:

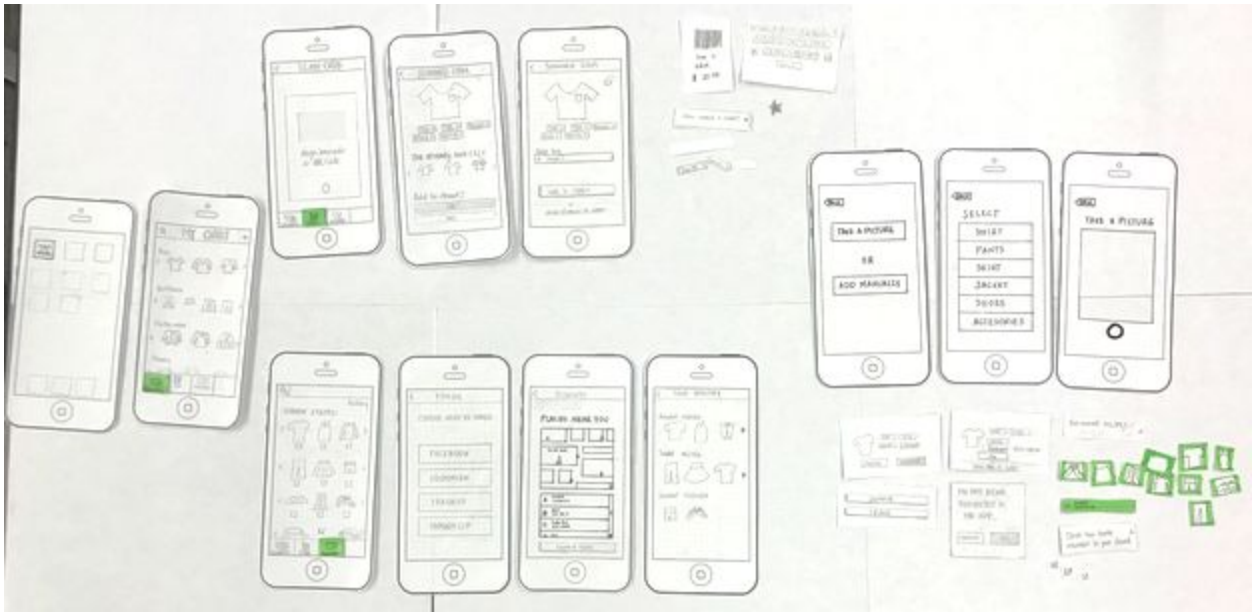
Our first participant was Wei, a male UW student in Computer Engineering. We chose Wei because he is familiar with applications and testing and we could rely on him being able to provide incisive feedback without worrying about his performance. The testing protocol in this usability test was to allow Wei to experiment with the application while keeping interference or instruction to a minimum. A problem we encountered when following this testing protocol was that of the participant attempting to access features that we were not currently testing. This is where we had to repeat instruction regarding the scope of our test and why we restructured how we would conduct subsequent usability tests.

Our second participant was Rita, a female UW student in CSE. We chose Rita as we were scouting possible participants for our usability test, and she seemed interested in our app. Rita mentioned that she owns a lot of clothing and shops online frequently so we thought she would be great in testing out our design. The testing protocol was to clearly define our two tasks in the beginning and lead her to perform those two tasks without getting distracted with other features. She managed to complete them relatively smoothly. She thought out loud for the most part and gave us great suggestions at the end, some of which we incorporated into our final product.

Our third usability test participant was Betty, a female UW student in bioengineering. We chose Betty because our last two participants were CS/CE majors so we thought it would be helpful to

get input from those in other majors. Betty also mentioned in the beginning that she owns a lot of clothing and has trouble finding certain items sometimes. The testing protocol was similar to our second usability test, to clearly define our two tasks at first, and this helped the test go smoothly. Betty also had no trouble completing the two tasks and she thought out loud throughout the whole process.

FINAL PAPER PROTOTYPE



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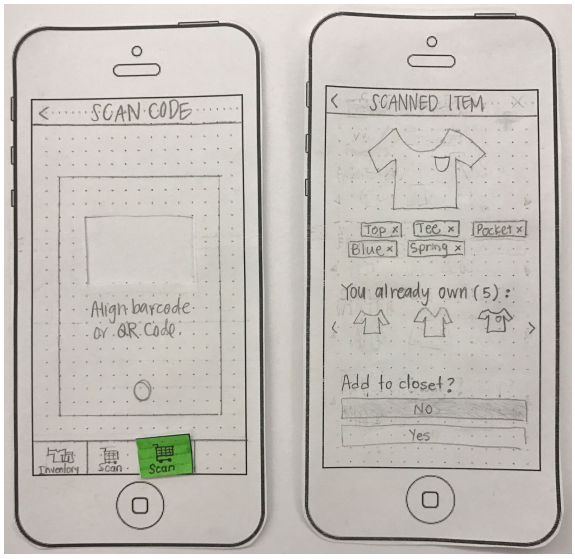

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Figure 1.2: The application displays the scanned item, as well as identifying tags and any similar items that already exist in the user’s closet. User decides to buy the item so user taps the “Yes” button. Ideally, the user will tap “No”.

Figure 1.3

Figure 1.3: If the user taps no, s/he will be redirected to the inventory and will display a message of how much money they saved from unnecessary spending.

Figure 1.4

Figure 1.5

Figure 1.4: After the user decides to purchase the item in the previous frame, the application gives the user the option to specify new tags.

Figure 1.5: The user inputs a new tag using the keyboard and the tag will be added automatically.

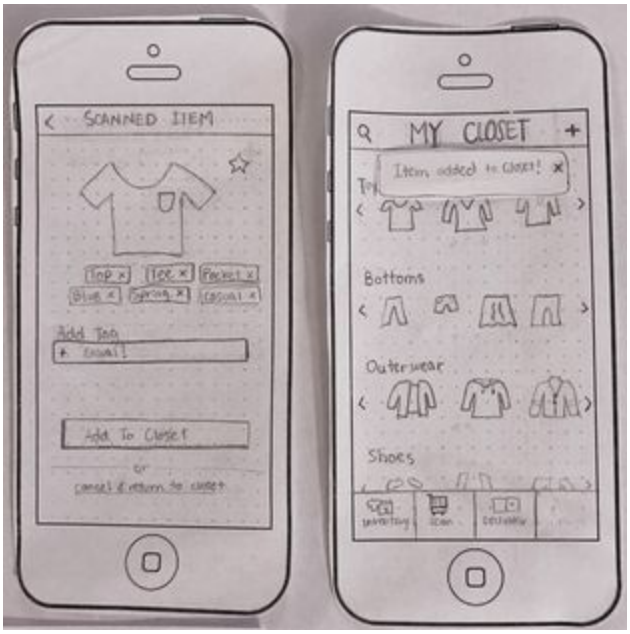

Figure 1.6

Figure 1.6: When the user is done adding tags, s/he can tap on “Add to Closet” to add the item to their closet inventory. The app will redirect you to your closet inventory and will popup a window showing that the item has been added.

2. Trading or donating to help declutter the closet

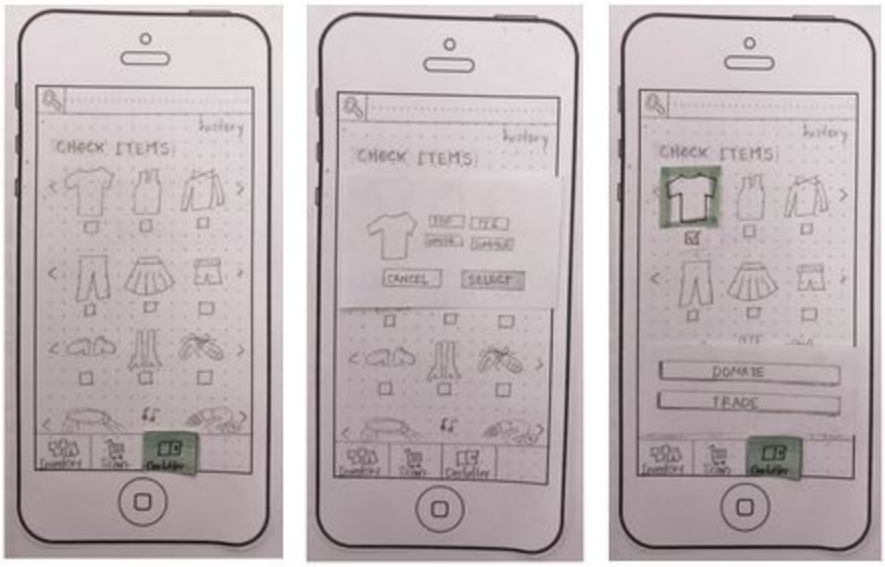

Figure 2.1

Figure 2.1: User decides that s/he wants to trade some items, so taps on the “Declutter” icon and selects items to trade. Either the user decides to individually click on each element to get

more details about the clothing, or just marks the checkbox of the element they want to trade and tap on the “Trade” button.

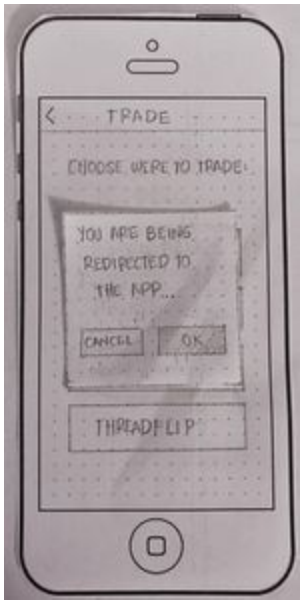

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Figure 2.2: The app provides some options for the user to trade his/her clothes

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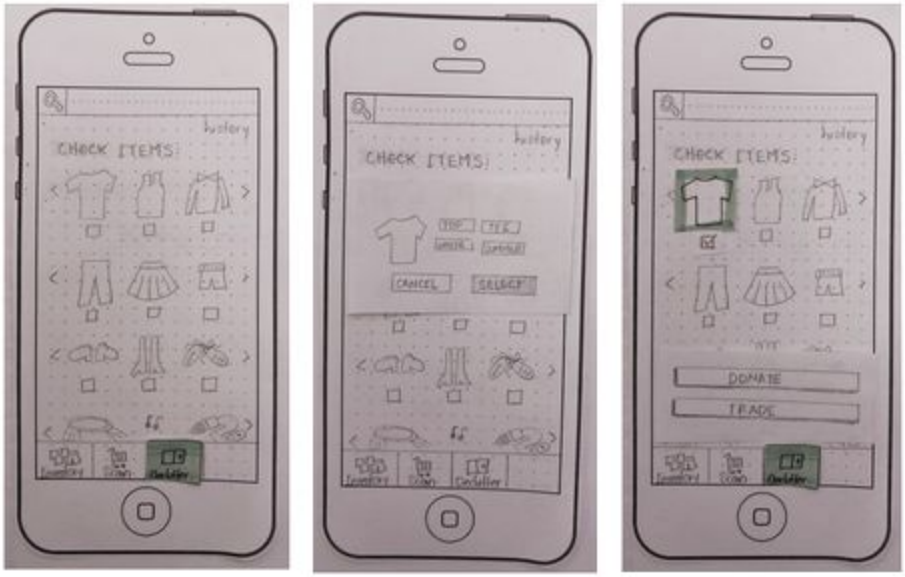

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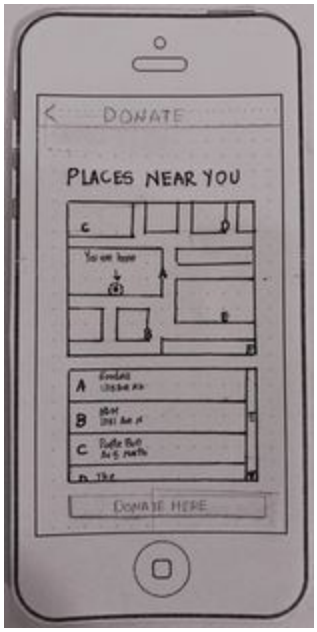

Figure 2.5

Figure 2.6

Figure 2.5: The app shows a map window and a list of nearby places where clothing items can be dropped off for donation. After choosing a location, the user can tap on “Donate Here”.

Figure 2.6: Similar to Figure 2.3, the app shows a message saying that you have decluttered your closet. You can find your donated items in “history”.

DIGITAL MOCKUP

In our digital mockup, we wanted the users to feel a real experience of the app. We did not add real pictures of clothing to make the design more clear and easy to follow for the users, but still giving the idea that the app contains clothing items.

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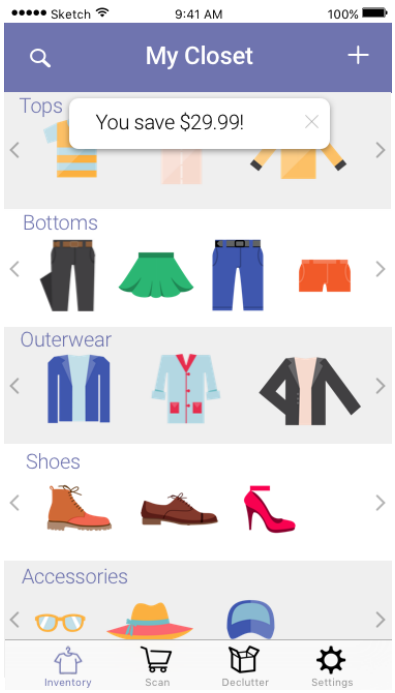

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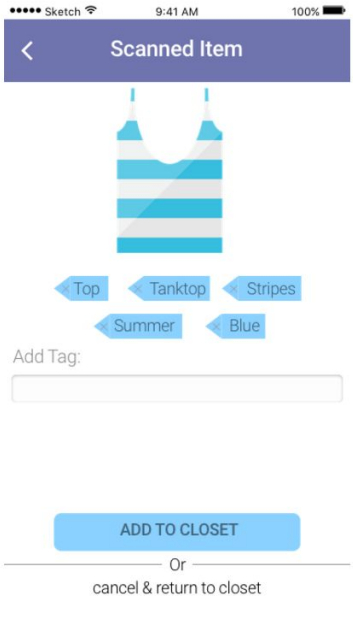

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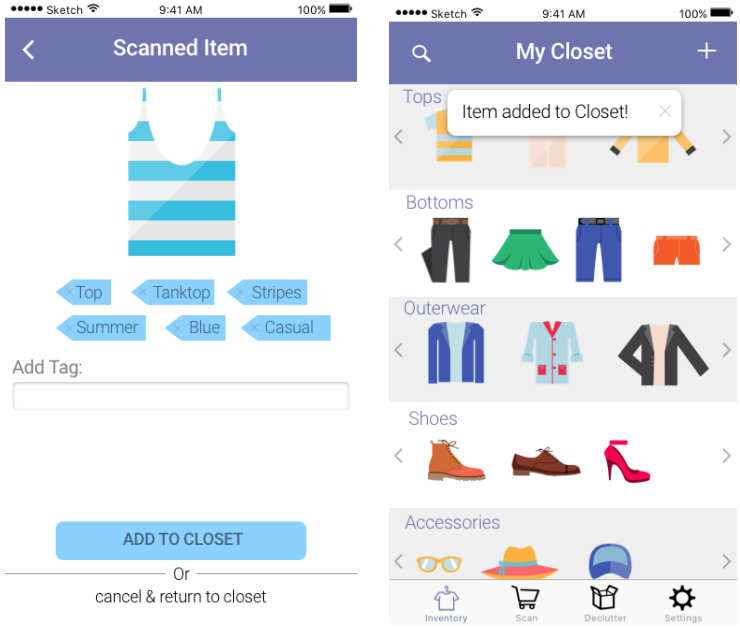

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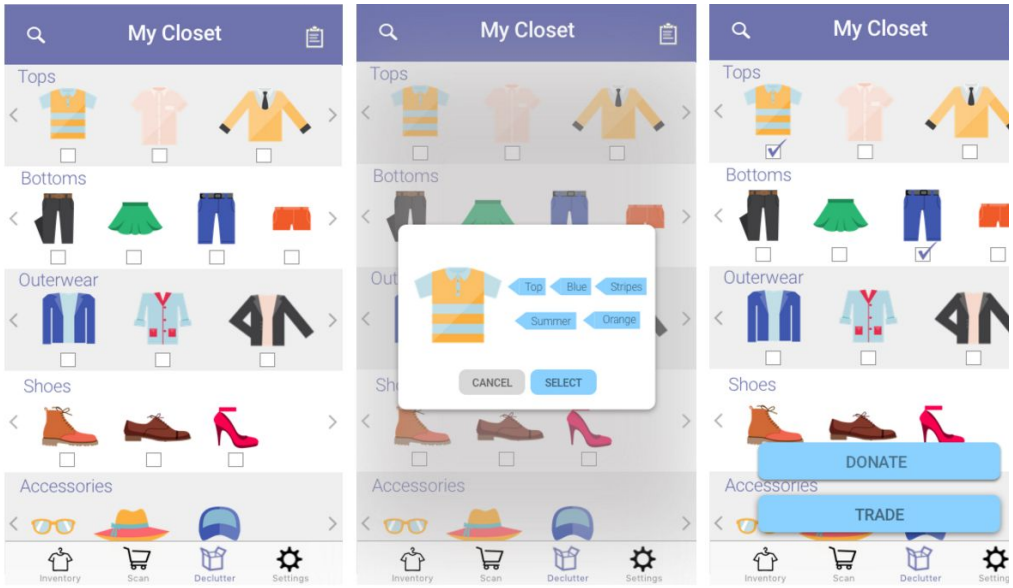

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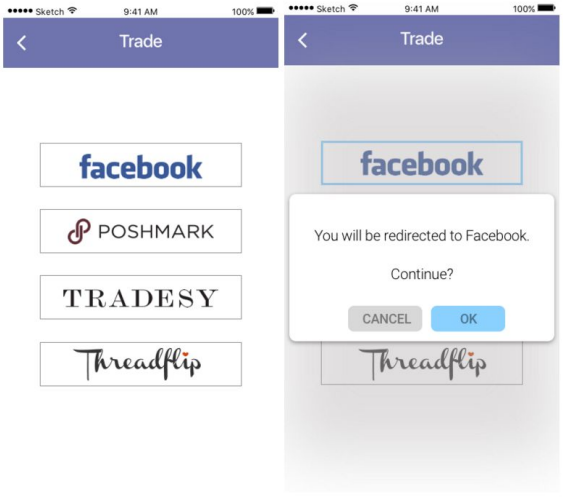

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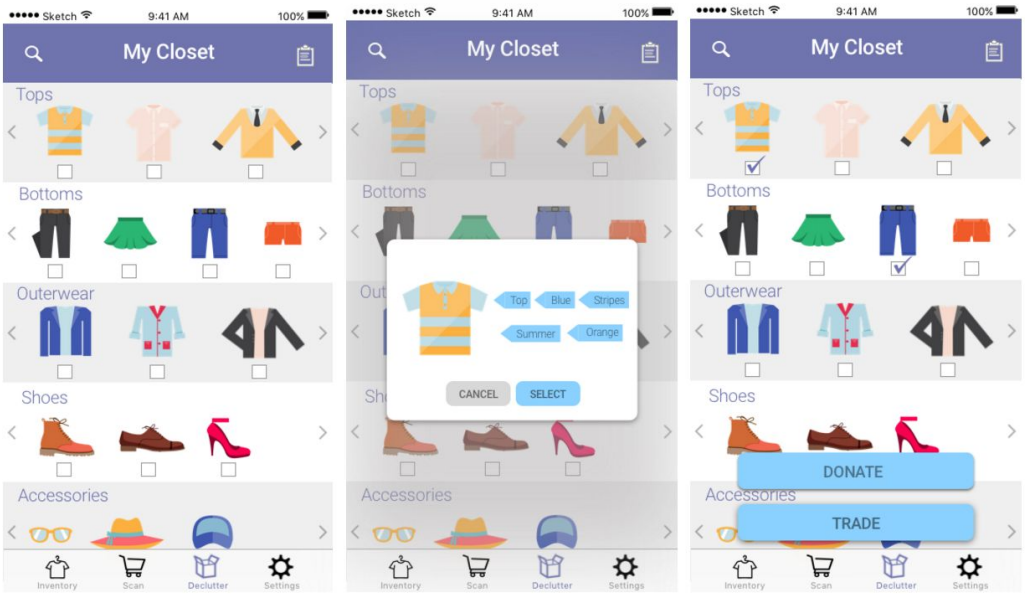

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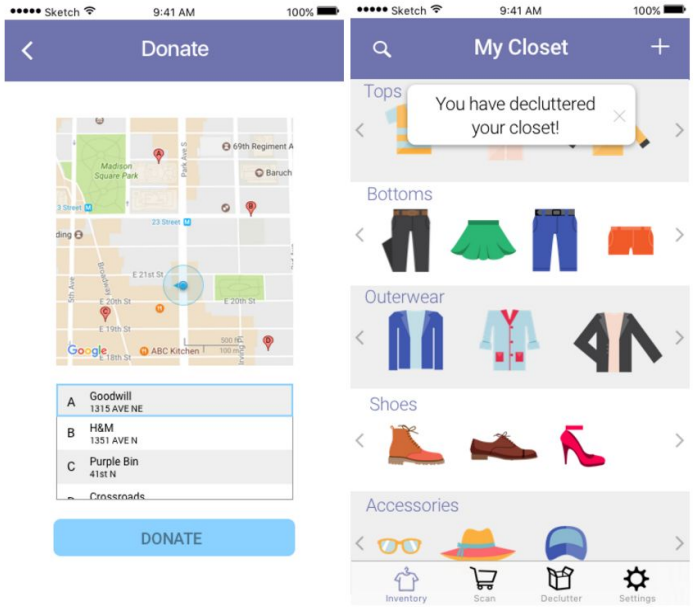

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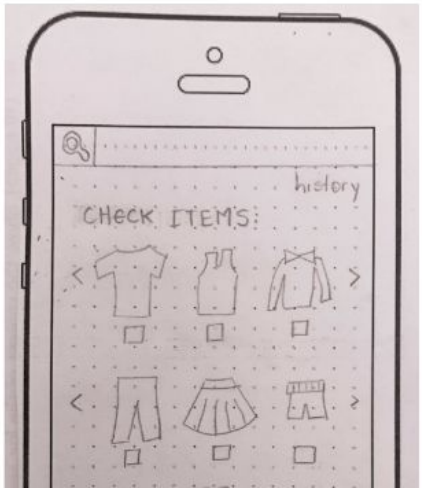
Figure 2.6: Similar to Figure 2.3, the app shows a message saying that you have decluttered your closet. You can find your donated items in “history” the icon in the top right of the app.

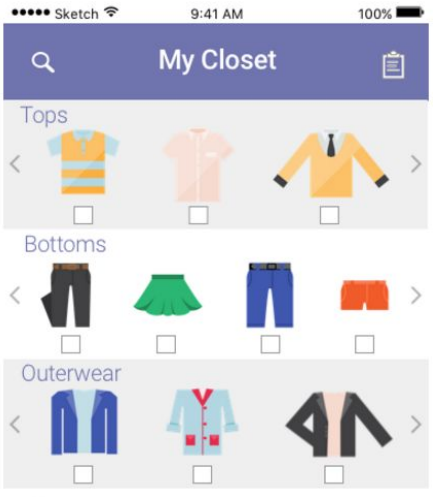
DESIGN CHANGES

Our group did not make any major changes from our paper prototype to the digital mockup. Below are the two main changes done to the digital mockup.

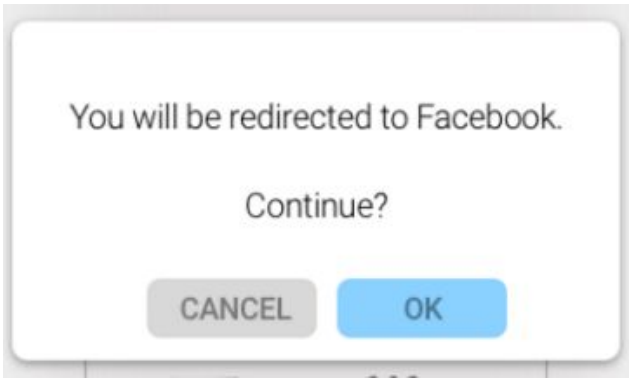
In the final paper prototype, we decided to add a history tab for users to find all of their donated/traded items. This way, they could easily add back any clothing that did not get rid of in their decluttering process.

In the final digital mock up, we changed the history hyperlink to use a button at the top of the screen. This change will visually help decluttering the screen and making it more clear for users to access their past donation and trading history.





Lastly, in the paper prototype, once an user clicked on trade, we had a confirmation button that inform the user that it will be redirected to third party applications to proceed with the trade. In the final digital mock up, we decided to reword the pop up button to be more specific and much more clear for the user to understand.



DISCUSSION

Our group found the process of iterative design to be really helpful and effective. Going through the design process encouraged more frequent team meetings and communication. Early on, we recognized that “divide and conquer” would not work in this design process; we found that drawing and designing the prototypes together allowed for better discussions on how we could make the design better and more intuitive for users. Furthermore, we could more efficiently filter out good ideas for the design, put those ideas to paper, and get immediate feedback from one another on strengths and weaknesses in the design. As a team, we also learned that after conducting heuristic evaluations, our initial prototype, which seemed great to us in the beginning, actually needed massive improvement. Furthermore, throughout usability tests, the revision process continued upon each iteration, and it was even more important for the team to continue to communicate over refinements made to the design. The feedback we received from participants in the testing process and the feedback we gave one another helped our team efficiently and continuously analyze and refine our design.

In the iterative design process, we conducted heuristic evaluations and usability tests that allowed other people to test our design. From the people’s suggestions, we made a lot of improvements to our design from the initial to the final prototype. For example, in heuristic evaluations, people said our design was not easily understandable and lacked internal consistency and navigation. To fix this, we added a banner for all our screens with a “back” button (we did not have a “back” button for most of screens initially). In usability tests, people voiced some confusion as they completed each of our two tasks. From concerns like removal of clothing items when donation or trade was not completed, we were able to add a history page to our donating/trading task which allows the user to easily review and retrieve clothing when needed. Furthermore, our group learned a lot about the importance of wording since throughout this process, we encountered issues with misleading phrasing. We spent a lot of time finding concise ways to describe actions. For example, we wanted the wording on our scanned item page to demotivate the user from making a purchase but in testing, we realized that sometimes participants did not understand the phrasing or thought the phrasing implied making a monetary purchase (when the design would simply add the item to the inventory).

What we came up with for our final prototype was after several iterations of refining, testing, and adding participants' suggestions to the phrasing.

During the usability tests, we recognized that the two primary tasks were clear in purpose to our participants. For the scanning task, we worked on decluttering the screens and also making wording clearer. For the donation/trading task, from participants' suggestions, we added a history page and pop-ups to help people through completing the task. While our specific tasks did not necessarily change, in going through the iterative design process and conducting usability tests, we made additions and improvements to the process for each task that provided users more information and control. It would be better if we had more design iterations to more thoroughly test our prototype, but with the iterations we have completed, we received and applied a lot of the feedback and our final prototype shows massive improvement from our initial prototype.

APPENDIX

Cost Conscious Closet Usability Testing Plan

Purpose: The purpose of this usability test is to examine the usability of this mobile app. This is a list of what we are planning to include:

- Recruit students/early young workers that have a lot of clothes and shop impulsively.
- Introduce them to the C3 app.
- Have each participant completed two tasks with the paper prototype.
- Two of our designers will take notes during each study session while observing participants interact with the paper prototype.
- Interview the participants after the study to get more in deep knowledge on how the prototype works for them.
- Modify the paper prototype based on the feedback and iterate through different feedbacks.

Questions:

- How intuitive was the paper prototype?
- Was there an specific task that was not intuitive?
- What aspects of the prototype were not clear at all and why?

Participants Profile:

We are planning to recruit people that have busy lives and need an app on the go. Also, people that have interest on clothing items and usually go shopping and end up impulsively buying duplicate items or really unnecessary clothing items that just helps cluttering the closet. We have no restrictions on age or gender.

Task Scenario for Participants

Task 1: Imagine that you're shopping on your favorite store and you find a shirt that is very appealing to you. How do you find if it's necessary to buy that item or not?

Task 2: Now imagine that you have a lot of items in your closet and you realize you need to declutter some items. How do you use the app to do such a task?

Critical Incidents

1. **Similar Items/ Put it back**
   When deciding if he wanted to buy and add a scanned item into the closet inventory, Wei did not immediately understand what "You already own:" meant, but after thinking out loud, he figure out quickly that it indicated clothing items he owned in his closet. Wei also struggled to understand what "Put it Back? Yes/No" implied. It was only after we gave some suggestions that he was able to figure out that selecting yes meant he was not buying the item, and selecting no meant he was buying the item and adding it to his closet inventory in the application.
2. **Removing clothing items from the app when no longer intending to donate or trade**
   When our popup for successful donating/trading and removal of donated/traded items, Wei wondered what would happen if he actually decided not to donate/trade the items he had selected previously and wanted to keep those items in his inventory. He expressed concern that if he changed his mind, the application would not be able to undo his action.
3. **Viewing clothing details when selecting for trade/donate**
   Prior to even selecting any items for donation/trade, Wei commented that he would have liked to see more clothing on the screen in the area where the donate/trade buttons were. In selecting clothing items for donation or trade, Wei said he wanted to be able to view the details of the clothing he selected prior to clicking on the donate or trade buttons. At first glance he may want to donate/trade it, but then he wished to know the specific tags on the clothing item just to know what exactly he was donating/trading and ensure he actually wanted to donate/trade it.

4. **Do you still want to buy? Wording confusion.**
   Upon reaching the scanned item screen, Rita did not immediately understand what "Do you still want to buy?" meant, and she had to think about the phrasing in order to realize that the application was asking if she wanted to add this newly purchased item to the closet inventory. Furthermore, in the beginning, Rita did not fully understand the words "Inventory" and "Declutter" and their implications of what clicking on them would do.

5. **Adding dates to history page**
   Rita stated that she would like see the history page be organized by date, as that is what a "History" page instinctively means to her. The current version of the history page appears a bit too random and is not organized like a conventional history page.

6. **Confusion with floating window in restoring a donated item**
   Rita did not understand what the buttons "return to closet" and "OK" would do since at first glance, she thought that "OK" could also add something back to the closet.