# *UXchange*

---

**Cleophas Kalekem & Bess Alshvang**

**CS125a: Human-Computer Interaction**

**Professor Alterman**

**December 7, 2015**

## Table of Contents:

# UXchange Final Report

## A. Executive Summary

**Design Problem**

Throughout the year, students, staff and the faculty wish to buy, sell or offer for free items they do not need online. However, the existing platforms are highly disorganized and sometimes are not safe to use. The process of posting items for sale, searching for items to buy and even paying for such items is frustrating, time consuming and annoying. Therefore, our project will focus on the following design problems:

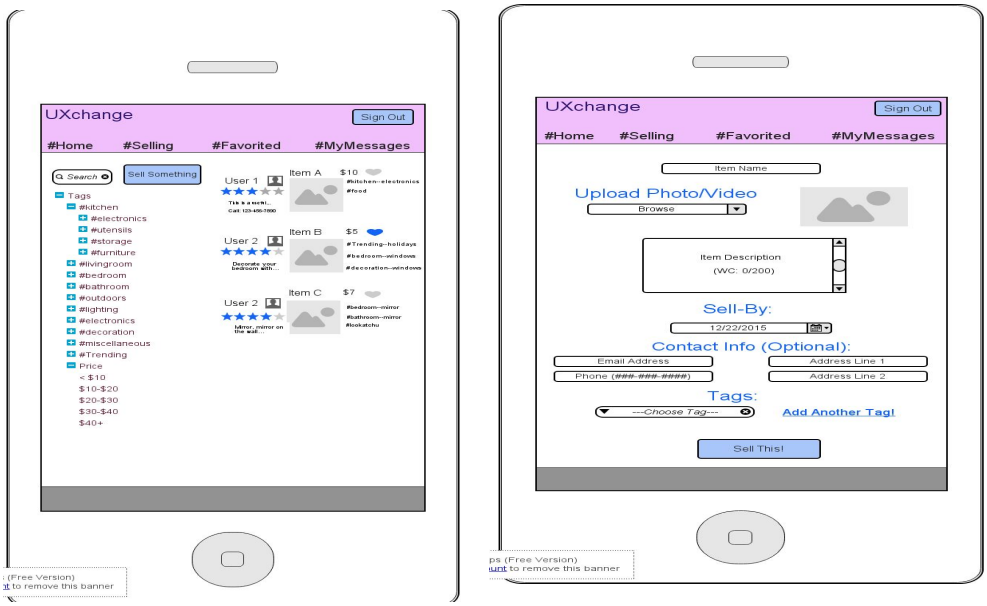
1. A tagging system to allow users shopping for items (buyers) to easily check if what they are looking for is currently being sold and allow users selling items (sellers) to classify their items as they wish
2. An integrated messaging system to allow for easy and faster communication between the users
3. A rating system (five-star rating system) in which users can rate each other after transactions
4. A notification system so that users can be notified depending on their preferences (ex. when they receive a message, when a new item is posted for the tags of their interest)
5. A favoriting/removing system whereby users can swipe to remove items they are not interested in or favorite items they wish to have easy access to

**Problem Space**

Posting items for sale and searching for items to buy in the current existing social platforms is painful process to most users. Users have to go through a long registration process to create accounts and when they post items for sale they do not tag them on different categories. This means that users buying items through the platform have to spend a lot of time searching for items to buy due to the high disorganization of the platforms. Most of the platforms also do not have integrated messaging system or other efficient means of communication which causes communication breakdown between users. As a result, the process becomes time consuming, frustrating, confusing and annoying to the users. Many users would want these platforms to have a tagging system to allow users shopping for different items to easily check if what they are looking to buy is currently being sold, an integrated messaging system to allow for easy and faster communication between users and a five-star rating system in which users can rate each other after transactions. Users with higher rates can easily find someone to buy their products as higher ratings gives a mental idea of what other users think of a particular person during and after the transaction interactional process. Items with higher ratings will also be placed on top of the specific category that the item belong.

**Product Concept**

UXchange is a simple, convenient and an organized mobile application platform that can be converted into a web interface in which users can use to buy and sell items. Users selling items can post items they do not need either for free or for profit. On the other hand, users buying items can search through a list of items (from the most recently added items on the homepage or by the seller rank based on the page categories). UXchange will have an integrated messaging system that can help users to communicate. Buyers can contact sellers directly through this messaging system. It will also support phone numbers and will integrate it with the smartphone calling or texting and users can decide whether to use the integrated messaging system to contact the seller or just call/text the seller directly using their smartphones (this will depend on whether the seller included their phone numbers when posting the item for sale).




UXchange has an available menu that allow buyers to search among items for sale based on the use or location of use. All items on sale are distinguishable by tags such as “kitchen—utensils” or “lighting—lamps” so that buyers can easily search among the specific types of items they are looking for to buy. If an item is tagged in different categories, it will appear in those multiple tagged categories but in no more than three categories in order to prevent excessive tagging of items. Users can also rank each other using the five-star rating system based on their experiences during the transactional interaction process. Within a given category, not on the homepage, items on sale will be sorted by the highest-ranked seller to the lowest-ranked seller. To promote and ensure safety and convenience, users will sign up for the app using their school email addresses. Our target users will be students, staff and faculty attending colleges in the Greater Boston Area.

This project and application is a good idea because the available current products to sell and buy items are highly disorganized, generally require access to social media, and are not necessarily safe. For example, a similar Brandeis Facebook group would not allow for a ranking system and would require a buyer to continuously scroll down until they see something that peaks their interest. This process is time consuming, frustrating and annoying and confusing as well due to its high disorganization. A tagging and classification system will allow buyers on a mission to buy products to easily check if what they are looking for is currently being sold. Other sites such as Craigslist, Ebay, and Angie's List etc. have some sort of safety features in place but due to lack of a good tagging system, you may end up finding irrelevant posts in certain categories which may prolong the time used to search for items and as result cause frustrations to the users. By designing a smartphone application that may be converted into a web interface as well, we are generating a safe, engaging, organized and usable user-experience.

In terms of "doability", the project is doable because it is centered on the user/customer. We present the option to act as two different users with one account: seller and buyer. At college campuses such as Brandeis, students, faculty and the staff have many items that they would want to sell or give a way for free throughout the year. There is also a ready demand for these items from within the campus or the neighboring schools in the Greater Boston Area. Providing a clean and organized platform for such interactions between sellers and buyers of certain items will take advantage of the existing similar platforms and transfer it to simpler, easier to use, and convenient interface to interact with. No third-party transactional payment system will be integrated to the application which leaves the users to decide on the payment method. This would mean that designing the front end and implementing the back-end of the system would be doable.

**Existing Products**

There are a number of existing online platforms for selling and buying items that influenced our project. These include Facebook, Craigslist, Ebay, and Angie's List etc. In Facebook selling groups for example, items are not organized, which means that you have to scroll through everything to find what you're looking for and as a user/seller, you cannot organize the items on sell. Safety is another issue with Facebook, Craigslist and other online selling platforms because you're not sure that someone is trustworthy and is actually selling what they say they are selling. There is also a high risk of falling a victim of online scams that masquerade as legitimate persons or items. UXchange will not include any ads and all the users have to sign up with their school email addresses. This will ensure that the platform is safe from any online scammers. The rating system also will give a mental idea to the buyers about certain sellers of items and therefore sellers will strive to provide a trustworthy information when selling items otherwise they will receive low ratings which may affect them negatively later when they want to sell items again through the platform.

## B. **Methods**

**Design Development**

Before we started designing our first prototype, our final goal was to design a selling and buying system that students, staff and faculty in the Greater Boston Area could use to use. We wanted a system that was simple, convenient, well organized, safe to use, effective and efficient. We wanted users to reduce the time they used to buy or sell products online, have fun and enjoy their buying or selling experience. We wanted to design a platform that was safe enough for doing business.

We therefore decided to reach out to our users and gather data from them in order to reinforce our understanding on the problem space. We developed questionnaires for collecting users' opinions about our product and the demographic data. Our questionnaire included both structured and open ended questions each of which required data that would be instrumental in our design development.

*Below is our design development plan/outline*

| Date | Task |
|---|---|
| Week 1-2 : 10/25/15 | 1. Submit project proposal - 10/26/15<br>2. Determine problem space<br>3. Research stakeholders<br>4. Draft questionnaires/interviews questions |
| Week 2: 11/01/15 | 1. Begin questionnaires and interviews @ end of week 2<br>2. Post 8 due |
| Week 3: 11/08/15 | 1. Finish 1st round interviews/ questionnaires<br>2. Work on 2nd draft design @ end of the week |
| Week 4: 11/15/15 | 1. Continue with design<br>2. Second (2nd) round of data gathering @ end of week<br>3. Post 9 due- 11/16/15 |
| Week 5: 11/22/15 | 1. Finish 2nd round data gathering<br>2. Fix design again + work on final report @ end of week |
| Week 6: 11/29/15 | 1. Finish the final round of the design<br>2. Finish final report - due 12/04/15 |

**Data Gathering Plan**

Our data gathering plan began with a questionnaire in order to help us determine the problem space and design requirements. Initially, we wanted to determine what our stakeholders liked and disliked about similar existing products, so that we could better design our product to incorporate all benefits of existing products and be enjoyable to use. Furthermore, we sought to determine whether the tagging, rating, messaging, setting notification preferences, and searching designs that we were interested in implementing were favored by potential users. These were the categories of questions that we asked:

*Demographic Information*: We asked about demographic information to be able to analyze our results based on age and what type of university member was responding (i.e. student, faculty, staff). This information helped us to see which type of user was most interested in our design and what they found most valuable.

*Use of Similar Existing Products:* We wanted to determine which type of products users were most familiar with, so that our design does not require them to learn a lot about usage. Additionally, we asked about usability functions and designs of current products that they had the most and least difficulty using, so that we would better understand the problem space.

*Design Feature Preferences:* We asked respondents which aspects of certain design features they found most and least important in order to present them with the best user experience. By determining what users preferred, we had a clearer idea of what aspects of our design to focus on most.

*Our Ideas for Design and Design Features:* We presented respondents with questions regarding our ideas for designs and design features to see which they were interested in using. We did not want to overwhelm the users with a lot of features, so we wanted to focus on those that would be the most valuable and present users with the greatest benefits to the problems that current products have.

Following our questionnaire, we developed a preliminary storyboard and paper prototype design and conducted semi-structured interviews to see what potential users thought of our design and the two main interactions of buying and selling. After returning to our design and revising it based on interviews, we again asked potential users to provide feedback through semi-structured interviews and more cognitive walkthroughs.

Looking back, we are satisfied with the process of our data gathering. Had we not conducted the initial questionnaire, we would have had a far more complicated design and several unnecessary features in our first prototype. It may have benefited us to conduct a few semi-structured

interviews before creating our first prototype as well, but we do not think we were disadvantaged by not doing these. We modified our initial data gathering plan by not presenting a follow-up questionnaire to users, but instead focusing our efforts on interviewing users. We found that the interviews gave us a much better idea of how users would interact with the product and allowed us to witness them and their thought processes.

**Stakeholder Types**

We focused our design on two stakeholders in particular: the user acting as the buyer and the user acting as the seller. While a user may act as both buyer and seller, we distinguished them as two separate stakeholders, since they can act as only one or the other for each major interaction.

*User as Buyer*

The user acting as the buyer is interested in purchasing something, likely for a reduced price and from another member of the Greater Boston Area university community. The buyer may or may not have a specific item in mind when searching for their new purchase; therefore, they may either use the search bar or specific tags to find what they know they want or they may scroll through all the items available. The buyers are likely at least somewhat tech-savvy, since they are members of universities where technology is frequently employed and since they must own a smartphone in order to access the application. However, in the event they are unsure of how to proceed in using this application, we must account for this with tools to help them understand how to act as a buyer.

*User as Seller*

The user acting as the seller is interested in selling something. Their items for sale are likely something they have used or purchased themselves, and they are probably interested in selling it for a somewhat reduced price and to the Greater Boston Area university community. The seller probably has an idea of how much money they seek to gain from their item (price) and by when they must get rid of it (sell-by date). They are likely tech-savvy enough to understand what is necessary to sell something on an online platform and will be able to transfer their knowledge to a mobile platform. However, in the event they are unsure of how to proceed in using this application, we must account for this with tools to help them understand how to act as a seller.

**Needs and Requirements**

The following is the list of the needs and requirements for UXchange:

**Functional**

- Sellers should be able to post items for sale
- Sellers should be able to upload the item pictures and videos
- Sellers should be able to tag items and create their own tags

- Buyers should be able to set notification preferences
- Buyers should be able to receive notifications based on the set preferences
- They should be able to favorite and save items they want
- Buyers should be able to reject items they do not want
- Buyers should be able to contact sellers via the app messaging integrated system
- Buyers should be able to search items based on the tagging system
- Users should be able to rate each other

**Data**

- The system should be able to display accurately the posted items i.e the correct price, quantity, and quality as specified by the poster/seller
- The system should be able to reflect and update new item postings
- The system should be persistent and always notify the user/buyer when an item is posted based on their set notification preferences, new messages etc
- The system should be able to immediately reflect the new user ratings
- Should prompt the user to remove items once "sell-by" date expires

**Environmental**

*Physical environment*

- The users must have smartphones to use the app and they must download it from the app store

*Social environment*

- The sellers must be able to post items and these postings must be viewed by the buyers
- The users must be able to view the ratings they receive after transaction is complete
- Users must be able to see the messages that are sent through the system

*Organizational*

- The system must organize data in such a way that the users can be able to easily access and use it.
- The system should organize the data such that it's easy to read, and with existence of potential text-to-speech translation for those who have near-sight problems

*Technical*

- The users must have either IOS smartphones or android to access the app/ system
- Basic tutorials on how to download and use the app/ system should be available
- The users must download the app onto a mobile device in order to use it

**User Characteristics**

- Users are likely age 18 + ( primarily students 18-23), including potential faculty and staff
- Users should be from universities in the Greater Boston Area
- The users must have smartphones / tablet device and should have basic proficiency on how to upload videos/photos and send text messages
- The users should know English

**Usability & UX Goals**

- The system must be able to deal with user errors
- The system should be effective and efficient- users should be able to post and search for items quickly based on the set tags
- The system should be fun and enjoyable - i.e tagging of items and setting of preferences
- The system must be safe to use - users from the Universities in the Greater Boston Area use their school email addresses to login in to the system
- The system should be simple to use and features well organized to support user's learning and memorability
- It should be easy and fun to search, save, and reject items i.e it should not be frustrating to the user

## C. Prototyping

**Scenarios**

*Scenario 1:*

It is the end of the year, and Andy has a few things he needs to get rid of before he moves out of his off-campus apartment in Waltham. He needs to get rid of the following:

- Microwave
- Desk
- A couple books
- Unopened boxes of pasta

He would like to sell the microwave, the desk, and the books; he wants to give away the pasta boxes. He knows that if he does not get rid of these items within the next week, he will have to leave them on the curb.

He logs into the UXchange application. For each item, he takes a picture , adds a description, the selling price, and some contact information. He also adds a "sell by" date of one week from today for each item. Then, he tags each item:

- Microwave: kitchen -- electronics, white, Hotpoint, like new, for sale
- Desk: bedroom -- furniture, modern, wood, for sale
- Books: school -- textbooks -- English literature, highlighted, 2-for-1, Gothic, for sale, for trade
- Pasta: kitchen -- dried food, rotini, generic brand, carbo-loading, FREE

He hits 'submit' for each item, making them visible to potential buyers.

He soon receives a message on the application's integrated messaging system from a student at Bentley University who is interested in purchasing his microwave. After exchanging a couple of messages, they agree that the Bentley student will come by his apartment in two days to pick up and pay for the microwave. The Bentley student - on her side - rates Andy with 5 stars, which raises Andy's ranking from 4 stars to 4.5 stars, and she reviews her experience with "great price, great product!".

Andy logs back into his UXchange account and clicks on "My Items". Under "For Sale", he selects the "transaction complete" button next to the microwave, thereby removing it from his list.

Within the next few days, he is also able to sell his desk and he trades his English literature books for the newest edition of his favorite literary magazine. Since his pasta give-away was not successful, however, UXchange prompts him to choose whether to extend its availability one time for either another week or another month or to remove; Andy selects to remove, and the pasta is no longer available on UXchange.

*Scenario 2:*

Emma is an avid collector of drinking glasses - any size, shape, color, design, or branding. She uses them for decorating, for drinking, and as vases. She wants to know whenever someone at any university in the Greater Boston Area is selling, trading, or giving away a drinking glass. However, she does have a budget, and cannot spend more than $10 dollars on any one glass.

She goes into 'my account', chooses 'notification preferences', and begins setting her preferences. She chooses:
kitchen -- cups & glasses, decoration -- glasses, and - just for fun - trending -- DIY and christmastime.

When she returns to her homepage, she selects from the menu 'under $10' and 'my preferences only'. She now only sees all items that only fall under both categories. She clicks the first drinking glass, realizes she does not like it, and swipes it down in the 'reject' category. The following item she swipes into the 'save' category, and the third she decides to ignore by swiping left and moving on to the fourth item.

She wants to go back and see all of them in a list again, so she clicks 'Show All'. She finds her saved item at the top of the list with a highlighted heart next to it followed by the third item she saw; the rejected glass has been removed from her list of all items.

She closes UXchange. Two hours later, she receives a push notification that someone has just placed something with the christmastime tag for sale for $5/for trade. She clicks the notification, sees the item post, and decides she must buy this holiday-themed mug! She sees that the seller has added a phone number, which she clicks. It is automatically added in her smartphone keypad. After pressing call and talking with the seller - who just so happens to also go to Brandeis - she decides to meet him at the SCC on campus to pick up her mug and exchanges the mug for a pumpkin-shaped bowl.

After the transaction is complete, she goes on UXchange and gives the seller 5 stars. In turn, the seller ranks Emma with 4 stars and adds "wished the bowl was cleaner and more orange."

**Conceptual Model**
We have based our application on the combination of two conceptual models:

*Model 1:*
This conceptual model is that of a shopping cart as though in a store.

*Interface metaphor*: When the user is searching for something to purchase, they will add it to their shopping cart, so that when they are ready to purchase all the items they are interested in, everything is together to be checked out. Similarly, a user will be able to add things to their cart

by favoriting them, so that when they are ready to make purchases, they will have all the items they are interested in buying organized in one spot.

*Interaction type and Interface type*: A manipulation and exploring interaction type would be best, so that users can "throw away" the things they do not want to purchase and "cart" the things they are interested in. They would also be able to move around the store to see which things are where; as a store is organized by different categories of things, so would this store to allow for efficient and easy searching for items of interest. The interface would be best as a virtual reality where users can move around the store and find what they are looking for as though they are in an actual store. Then, they can add the things they want into their cart by picking them up and dropping them into the cart. At the checkout, they will be able to "talk" to the seller and make their transaction.

Since we are providing a mobile touch platform instead, this underlying model will be present in the way we organize the application. Therefore, each instruction or manipulation (swipe to save/remove) is based on the physical actions one would do with a shopping cart in a store. Some examples are as follows: when we need to find something in a store, we ask an employee - here, we use the tagging and search options; when we are interested in something, we will add it to the cart - here, we may swipe to save it or highlight the heart button; when we are not interested in something, we don't care to look it at it or we may no longer desire to purchase it, we move away from it or remove it from our cart - here, we can swipe to remove it from view or deselect the heart button; when we are ready to make our purchases, we go to checkout - here, we message the user to complete payment transaction.

*Activities*: Searching/organizing information, buying an item, favoriting/saving an item, completing transactions by communicating

*Functions*: Allowing a user to search through items for sale, choose which ones they want to purchase, and save those items; then, at transaction time, they can message any other user in order to determine the transaction.

*Relationship between functions*: A user may be searching for something to buy based on what it is (i.e. specific tags) and add it to their cart so that they can easily check out (i.e. saves/favorites it); then they go check it out once they've decided that's what they want to buy (i.e. messages another user to purchase it).

*Information Requirements*: The items for sales and what categories (i.e. tags) they fall under; what they user already has in their cart (i.e. saved); how they will be checking out their items (i.e. which users they'll be communicating with to complete their transactions).

*Model 2:*
This conceptual model is based on yard sales.

*Interface metaphor:* When you are at a yard sale, different items that people are trying to sell are being offered for reduced costs. Usually, they are also organized by category (you tend to see clothes in one area, movies on a table with cups and desk objects, books in another place, etc.). So, if you are selling the items, you will likely mark them down since they have been used and you will organize them according to what they are. Not only that, as a buyer, you would know where to look to find what you are interested in buying, but you can also easily look at what else is available.

*Interaction type and Interface type:* An exploring, manipulation, and instruction based interaction would work best, so that users can walk around the yard sale, "grab" the things they want, and also make notes of the prices, locations, and can interact with the sellers. A virtual reality and a touch/shareable interface would work best for this conceptual model. Users can explore around the yard sale and will get to touch and interact with the sellers directly, as they would in real life.

Once again, since we are providing a mobile touch platform instead, this underlying model will be present in the way we organize the application. Therefore, each instruction or manipulation (swipe to save/remove) is based on the physical actions one would do at a yard sale. Some examples are as follows: when we need to find something at a yard sale, we ask the sellers/hosts

- here, we use the tagging and search options; when we are interested in something, we may hold on to it before we buy it - here, we may swipe to save it or highlight the heart button; when we are not interested in something, we don't care to look at it or we may no longer desire to purchase it, we move away from it or place it back from where we got it - here, we can swipe to remove it from view or deselect the heart button; when we are ready to make our purchases or when we want to know more about something for sale, we may speak with the seller/host (and pay for what we are buying) - here, we message the user to learn more about items they have posted for sale and to complete payment transaction; when we sell items at a yard sale, we organize them based on certain characteristics - here, we tag items to organize them based on functions and characteristics. In this model, the user can essentially be hosting their own "yard sale" by placing items for sale or the user can be browsing the sale as a buyer.

*Activities:* Buying items & searching for items, selling items (organizing items for sale), completing transactions by communicating

*Functions:* Allowing a user to look around to find what they are interested in buying; allow a user to sell things and add prices to them and arrange them as they like; allow users to interact to complete a transaction.

*Relationship between functions:* After a user has added something with a certain price to a certain area of the yard sale, another user can come in, find it, and buy it by talking and exchanging money with the seller.

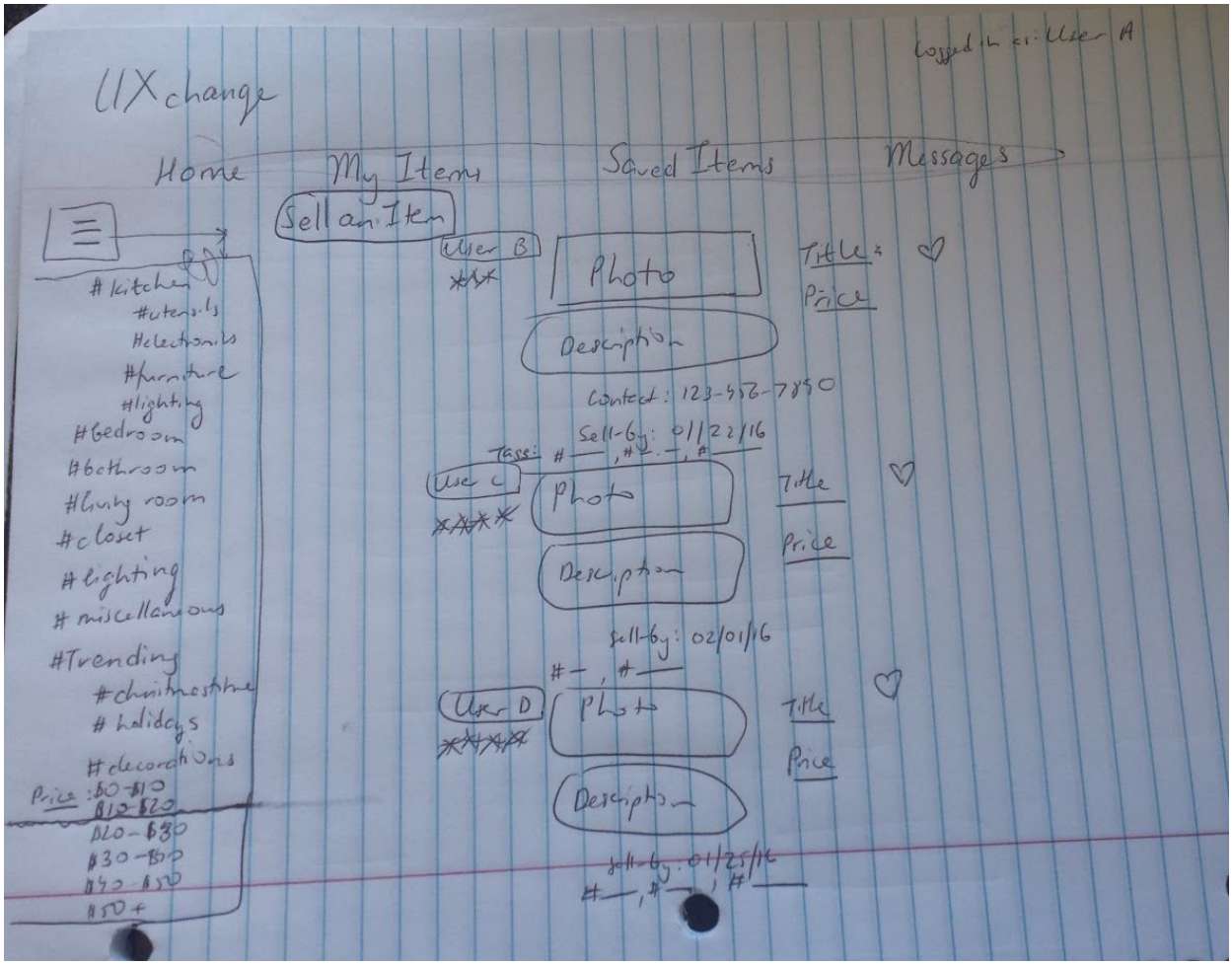
*Information Requirements:* User's items for sale & item details; where/under what category the item is located; communication between the users.

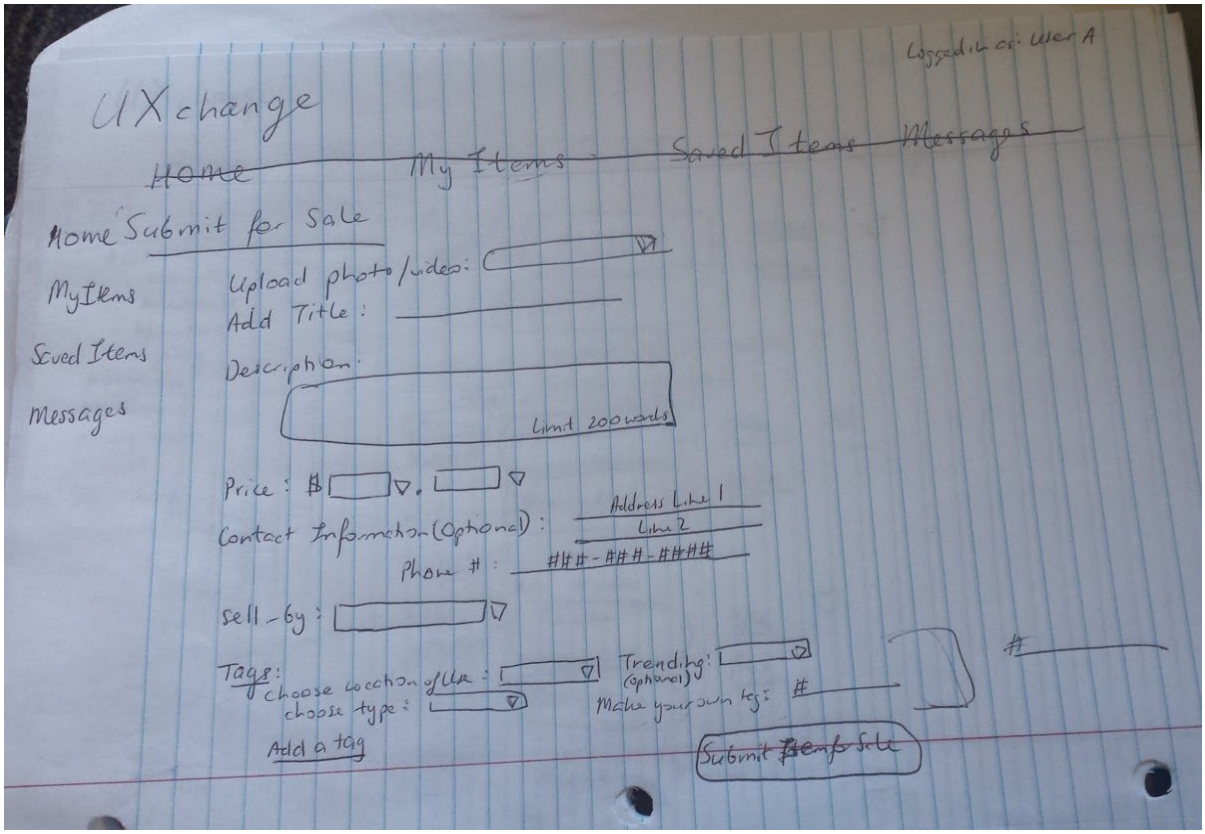
Using these conceptual models allows this application to provide users with the ability to search/organize information from a buyer's perspective, as well as to interact with sellers to finalize transactions. Furthermore, it allows sellers to add their own items to the database of items for sale and allows these things to be placed in specific categories by tagging them accordingly.

The most important interactions on UXchange will be to post an item for sale and to search for an item to buy. The shopping cart model presents users with the idea of how to find items they

are interested in, save them or place them back, and complete their checkout. The yard sale model presents users with the idea of how to search for items they are interested in, save them or place them back, organize (i.e. tag) their items, sell things at a reduced price, and interact with sellers for questions or to complete their transaction.

**Paper Prototype and Evaluation**






The first prototype on paper focused on the searching interaction done by a buyer and the posting item for sale interaction done by a seller. We limited it to these two actions, so that we would better understand through interviews and cognitive walk-throughs whether the design had some major flaws that needed to be addressed.

*Landing Page/Searching Page*

The landing page automatically defaults the user as a buyer. When you open the application, you have the option to search for a specific type of item by tag or by price. Upon further walk-throughs, we realized that by not providing users with a fill-in search bar, we are limiting their search options; thus, we included this on the following design iteration. The user can also see a list of all items currently for sale; they can then use their fingers to scroll through all of the items, beginning with those most recently updated found at the top. Originally, we had the entire post information shown on the landing page. However, based on preliminary data collected, we found this would create too much clutter on the page and far too much scrolling. We decided instead to minimize the item description to just the first few words and we re-organized the setup of the portion of the post you can see on this page (ex. title and price at the top). Based on interviews with stakeholders, we also determined that the names for the different interactions in

the navigation bar were not clear enough. Therefore, for our second prototype we changed the names and made them look as though they are 'tags' themselves (beginning with "#").

*Posting 'For Sale' Page*
The posting 'for sale' page is what the user sees when they choose to 'sell an item'. It outlines the required and optional information that is necessary to submit in order to properly add a posting. Since you do not need to search as a buyer (because you are acting as a seller), the search options are not visible on this page. Through interviews, we found that the tagging system we originally designed was too complicated. While we initially (as seen on this paper prototype) allowed users to select tags from pre-selected options available - including potential 'Trending' tags - as well as make their own tag, we found that it would be much simpler to show a box for sellers to write in tags. An autofill method would present already available options; overriding the autofill would allow users to generate their own tags. We recognized that we needed to account for error prevention, which is why once sellers select to submit their posting, they are prompted with whether they are sure they are ready to submit; if they select yes, then their posting goes live. Finally, since we are using a mobile platform, this screen cannot fit on one view; while we drew it as though it fits, a user would have to scroll from one half of the view to the other half to finish entering the posting information, so that they can clearly see everything that they are typing.

As for the navigation bar, we were unsure of whether it would fit better on top or on the side, so we were experimenting with the design by asking our interviewees about comfort and usability. Considering that we have the search options on the side, we decided that it would create a cleaner design by maintaining the navigation bar at the top of the screen.

## D. Final Design/ Second Prototype

**Cognitive Walkthrough**
We are going to present a detailed cognitive walkthrough of posting an item for sale to the system.

| Scenario | Detailed Walk-through |
|---|---|
| • Andy has determined the items he wants to get rid of- Microwave, desk, books and unopened boxes of pasta | • Andy logs into the UXchange application and he immediately sees the list of items currently on sale with the names and rating of the sellers. His goal is to post his items for sale so he locates the "sell |

| | |
|---|---|
| | something" button in the top left corner of his smartphone screen. He touches/clicks it and a new window to enter more description about the seller and item(s) opens. |
| ● Andy wants to enter the name of the item he is selling i.e Microwave | ● Andy touches/clicks on the "Item Name" box and a blinking cursor appears signalling to him that he can enter the name of the item he wants to sell. Andy types the name to the name text box |
| ● Andy wants to upload the picture/video of the item he is selling | ● Andy clicks/touches the box written "browse" and the system displays to him the locations that the picture/ video of the item is located/ stored. He double clicks the photo and now the photo is successfully uploaded to the interface. He can now see the picture of the item below the item's name. |
| ● Andy wants to describe the item he is selling | ● Andy clicks in the larger paragraph box and he can now see "item description" default words in the text box. He can also see that the maximum number of words he can enter is 200. He can see the blinking cursor at the top left corner of the box which signals him that he can now describe the item he wants to sell. He can use one sentence or a long paragraph to describe the item as long as the word limit is not more than 200. He entes types down the item description in the paragraph text box |
| ● Andy wants to enter the date that the item should be sold by | ● Andy presses/clicks/touches the calendar icon in the "sell-by" box. The system displays the calendar and Andy enters the deadline that item should be sold by in which case if the item would not have been sold by that date, it automatically |

| | |
|---|---|
| ● Andy wants to enter his contact information so that sellers can reach him directly. He chooses to enter both his email address, home/school address and phone number<br><br>● Andy wants to tag the item he is selling<br><br>● Andy wants to create his own tag<br><br>● Andy wants to post the item for sale<br><br>● Andy posts the item to the system for sale | gets deleted or he can extend the date if he so decides.<br><br>● Andy can now see that the system displays a heading "Contact Info (Optional)". He wants to enter the details of all of his contact information to ensure that his potential buyers can easily reach him. The system presents him with four text boxes. The first one is the text box to enter his email address. He clicks the textbox with the words "Email Address" and with the blinking cursor active, Andy enters his email address. He does the same with rest of the other textboxes, "phone" to enter his phone number, "address Line 1" to enter his first address line and "address line 2" to enter the second address line is he has one.<br><br>● Andy presses/clicks/touches the text box whose heading is written "Tags". The system presents him with a list of the available tags. He checks through the list to find the correct tag in which the item he is selling belong to. After finding the right tag, he selects it by double clicking it<br><br>● Andy clicks the "Add Your Tag" link and the system presents him with a textbox in which he enters the name of the tag he wants to create. He clicks "save" or presses the "enter" key for the tag to be added to the system<br><br>● Andy skims through the information he has entered to ensure that everything is okay. Convinced that he has entered everything about the item that he had wanted to include before posting the item for sale, Andy presses "Sell this" at the bottom of the window interface. |

| | |
|---|---|
| • Andy wants to know if his item successfully got posted.<br><br>• Andy wants to post another item for sale | • The system prompts an alert to Andy asking him if he is ready to sell the item. There are two options in the alert window that pops up- “No” and “Yes”. Since Andy is all set to sell the item, he presses “YES” and the item is successfully posted.<br><br>• Andy looks at the top of the Items on sale and his item is either at the very top or at least the top 10 items in the list of sale depending on how many other users posted at the same time Andy posted his item.<br><br>• He starts the same process again by clicking “sell something” button at the top left corner of the screen and follows the same steps as the first item he posted. |

From the cognitive walkthrough above, it is clear that the steps for posting an item is pretty straightforward and guides the seller enough to avoid any confusion.This process is easy for both first time sellers but it can be even easier and very simple for frequent sellers who have mastered on what’s required to post an item using the UXchange system.

**Usability Criteria**

*Effective:* Our design allows for the two most important functions: buying and selling products. In addition, it allows for convenient searching, interacting with other users, staying informed with notifications, rating users, and tagging items.

*Efficient:* The software we provide allows for faster searching by allowing users to use tags that distinguish different products for sale. It is easy to message any user whose product you are interested in purchasing with the click of a button; similarly, rating a user is just one click as well.

*Safe:* Our design is safe to use because in order to register an account, you must have a valid current university email address. It is also safer to buy or sell something to someone who has good ratings and reviews.

*Good Utility:* Our design has good utility because it is possible to buy or sell any item. Before you make a purchase, you can discuss the product, the price, or anything else with the seller. You can also search for an item for sale by typing into the search bar, looking through a list of items within a particular tag, or by scrolling through all available products on the home page. It is easy to remove any product you are not interested from your view by swiping it to the left. In order to sell a product, you only need to input some information on your mobile keyboard and upload a photo.

*Easy to Learn:* It is easy to learn because it based on similar products, but provides users with a more intuitive and fun way to buy and sell products. Furthermore, by clicking the question mark button on certain screens, the user can learn more information about how to interact with the product.

*Easy to Remember How to Use:* It is easy to remember how to use because the main interactions are ultimately limited to: buying and selling. All other design features are extensions of this: searching, tagging, rating, messaging, favoriting, and swiping to remove or save. Users can always select the question mark to remind themselves of how to use the software.

**Cognitive Factors**

*Attention:* We separated the navigation bar options found on every page from the rest of the page options available with a border line below. On the search/post listings pages, we focus the user's attention to the center of the page where the main information is located and use the left-hand side for search options. Every major heading and buttons (such as when messaging users, posting an item for sale, or looking at one specific post) is clearly separated from the rest and is generally larger than the information within it/is visually distinct from another type of information.

*Perception:* We separated the navigation bar options found on every page from the rest of the page options available with a border line below. When a user submits an item for sale, the form categorizes the information to be filled in with white space in between. Between the different messages within a thread of messages, there is white-space and each individual message has a thought-bubble border. Every tag that a user generates begins with "#" and is separated from any other tag they generate by white-space.

*Memory:* We do not require users to rely very much on their memory. If they are interested in a product, but cannot devote time to it at the moment, they can favorite it; if they do not want to regularly check the application themselves, they can set notification preferences that will let them know when a new item is posted specifically for the tags they are interested in. If they would like to sell something, they need only to select "sell something" and if they happen to

forget how to navigate, they can always select the question mark button to give them a brief overview.

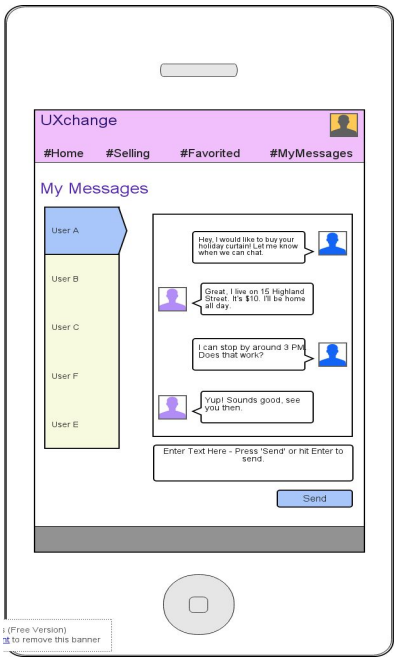
*Learning:* Users can always select the question mark button to give them a brief overview of pages that are of importance/greatest possible confusion.

*Reading, Speaking, Listening:* There is no speaking or listening involved in our design. All reading is limited to one-word bits or small amounts of text regarding product information or messages between users. Therefore, it does not overwhelm users with a lot of sounds and information.

*Problem Solving, Reasoning, Decision Making:* In addition to being able to select search options by tag, there is a search button at the top left to help users find what they would like to see. Most functions on the interface are pretty self-explanatory and easy to learn and remember, so that you do not end up doing something complicated or wrong (and if you do, we have added error prevention and easy reversal of actions - described in *Expert Review* below). If users want more information about a specific item for sale, they can view it as an individual post and they can see recommended products based on that one; if they are interested in purchasing it or require more information, they can message the user selling it to find out more.

**Gestalt Principles**

These principles are based on the design of our messaging page.



*Similarity:* On our messaging page, every individual message looks the same (is surrounded by a thought bubble), but the thought bubble's edge may face right or left (toward a user's photo) depending on which user in the conversation sent the message. In order to send a message, there is a clear boundary with a separate text box to enter a message and a separate send button. Every message thread will look as such, and the clear demarcations that create dissimilarity distinguish the various functions within the page.

*Continuation:* We have continuation here, because a user will begin scanning the message thread from the top (or the oldest message) to the bottom (or the most recent message), following the order of messages one after another. Similarly, if a user wants to find a different user to send a message to within their "#Messages", their eyes will be scanning from most recently messaged user to least recently messaged user to find who they are looking for.

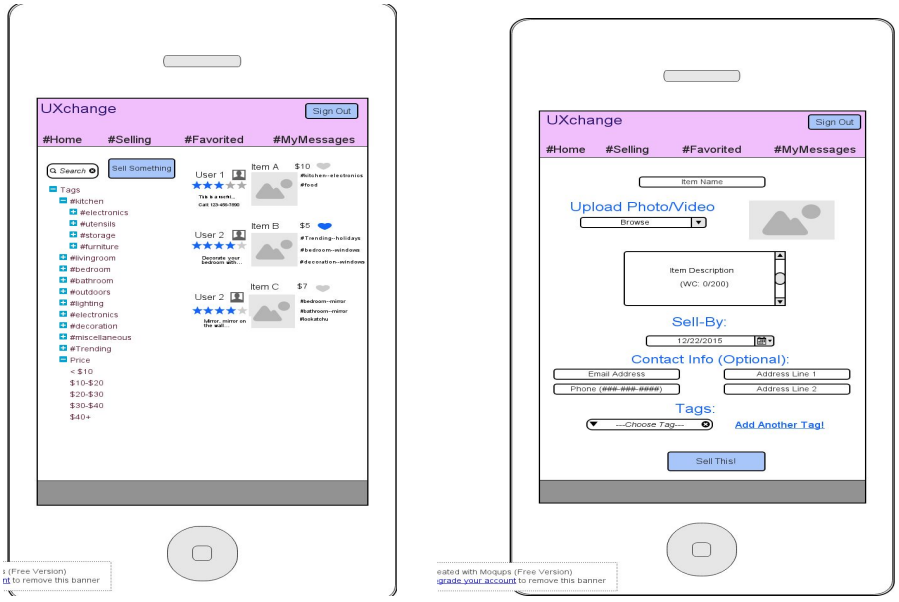
*Closure:* While we did not create clear border lines separating the various users the current user has messaged, it is clear that selecting a space on or near a user's name will open the message thread between that user and the current user.

*Proximity:* We placed each message within a thread near each other to show that they are part of a unified continuing conversation between the same two users. By having the box to type a new message just below the box containing the already sent messages, it is clear that sending a message from within this box will add it to the bottom of the list of those already sent.

*Figure and Ground:* Within each box, there are separate figures, but the ground is almost always the space behind the figure. For example, the header "My Messages" is the figure, and the ground is just the white-space background, similarly to the user names and the white-space backgrounds behind them. However, the individual message figures have a ground of the white-space background within the thought-bubble; and then this thought-bubble figure has a ground of the white-space background of the message thread box.

**GOMS Analysis**

We performed a GOMS analysis for uploading a picture of an item to the UXchange for sale. Since our system only works with touch screen smartphones, we used the updated KLM operators- the Touch Level Model (TLM). The following are some of the operators we used from Touch Level Model to perform our GOMS analysis:




Pinch(P)- Time it takes to perform the common two-finger gesture
P= 0.4 seconds

Zoom (Z)- Time it takes to zoom or perform the reverse application of the Pinch operator. Value in MS = 200 ms
Z= 0.20 seconds

Tap (T)- The time it takes to perform the physical action of tapping an area on the touchscreen device in order to initiate some change of action.
T=0.20 seconds

Drag (D)- Time it takes to swipe, drag or tap a location on the screen then move one or more fingers in specific direction
D= 2.45 seconds

So let's say Andy is ready to upload the picture of his microwave for sale in the system. He logs in to the UXChange system and he first sees the homepage with the list of items currently on sale. He wants to sell his item so he taps (T) the "sell something" button and he is led to a new window where he can upload the picture of the item he wants to sell. He taps (T) the box underneath "upload photo/video" section and the system displays to him the locations that the photo is stored. He taps (T) the picture which immediately uploads itself to the system. If Andy wants to enlarge or make the picture smaller he zooms in or out (Z) by pinching (P) it with his two fingers. The total time for this would be:

⇒ 3T if Andy doesn't pinch and zoom the picture to fit the picture box given
⇒ (T+ T+T= 0.2 + 0.2 +0.2)
= 0.6 s
⇒ 3T+ Z+ P if Andy pinches and zooms the picture to fit the picture frame in the system
⇒ (T+ T+ T+ Z+ P= 0.2 +0.2+ 0.2+ 0.2 + 0.4)
= 1.20 s

However, if Andy decides to drag the picture directly to the system without resizing it to fit the picture frame, the total time would be D
⇒D
= 2.45 s
but if he drags the picture and zooms it in or out by pinching it, then the total time would be
⇒ (D+ Z= 2.45 + 0.2 )
= 2.65 s

(Since we were unable to determine specific time values for most operators, we estimated them as found above.)

**Expert Review**
*Consistency:* Our design offers consistency by presenting the same colors for the same functions. For example, the user's personal avatar has a golden background (default), buttons have blue backgrounds, and the top banner is light purple. Also, the tags and the navigation bar links all follow the similar #__ pattern. We also use a similar layout between screens; for example, the landing page (i.e. see all items for sale page) and the page showing all items for sale for a specific tag follow the same layout of most recently updated to least recently updated posting and each posting is shown in the same way.

*Universal Usability:* Our design presents a clickable question mark option on pages of importance/greatest possible confusion for users who are either new to this type of technology or are novice users of the software. For expert users, they can simply type into the search bar or choose an available tag for searching and can easily type into the required form options for selling a product.

*Informative Feedback:* Our design provides informative feedback by showing users what they have entered or selected. For example, when filling in the form to submit a new item for sale, the user will see reflected in the boxes what they have entered; when they upload a picture, a thumbnail of the picture will be visible next to where they uploaded it. Once they have

confirmed they are ready to submit, they are shown the final public view of their posting. When a user searches for a certain item, selects to navigate to another page, or messages another user, they receive feedback in terms of the page they are viewing or an updated message thread.

*Dialogs Yield Closure:* Our design provides for dialogs that yield closure by showing users what they have done and what they may have left to do. For example, the search path may take a user from the initial landing page, to a tag-specific list of items, to swiping to remove one item from their view, to one specific item of interest, to selecting to message a user, to hitting send message to message a user. The path of placing an item for sale will reflect the information the user has already entered, and by scrolling down the page, the user can see what they have left to enter. Once they select to submit, they are prompted with a confirmation; by confirming they are ready to submit this posting, they no longer see the prompt, but instead are taken to the public posting page of their item. The two tasks of buying and selling are clearly separated and have individual paths to follow.

*Error Prevention:* Our design has error prevention, primarily in the case of posting an item for sale. The fields that require integers, such as price, sell-by date, and phone number, will only be valid if they are integers. All fields that are required must be filled in before submitting, but the final submission does not go through until the user confirms that they are ready to post.

*Easy Reversal of Actions:* Our design has easy reversal of actions. For example, when submitting a posting for sale, any field that was filled incorrectly may be re-entered before a user submits the posting. Furthermore, the user can always go back and edit their post. All fields that are required must be filled in before submitting, but the final submission does not go through until the user confirms that they are ready to post; therefore, if they realize that something needs to change, they can select no and go back and fix their posting. If a user accidentally saves an item, they can easily click the heart button again to remove it from their list of favorite items. If a user clicks on a page they are not actually interested in, they can go back to whatever other page they were interested in.

*Internal Locus of Control:* Our design has an internal locus of control for expert users, because they are able to set their notification preferences to reflect specifically that which they are interested in purchasing. Therefore, they may only have to access the postings that they are notified about. As for sellers, when they are selecting the tags they want, they will have an easy time entering just a few letters before allowing auto-fill to enter the rest.

*Reduce Short-Term Memory Load:* Our design reduces short-term memory load by showing users what they have entered and where they are located. When posting an item for sale, the users see reflected in the form what they have just entered; similarly, when messaging another

user, they see what was just sent or received. When opening a certain tag option, they will see highlighted what they have selected on their new page. Selecting to favorite something or to rate a user will result in a color-shaded heart or star(s), respectively.

**Evaluation of Second Prototype**

Our second prototype, created using moqups, had several iterations of design. Our ultimate design was based on feedback we received regarding our first paper prototype and on feedback we received regarding the prior iteration. Ultimately, we added:

- Names on the navigation bar were changed to be clearer.
- A "Message User X" button was added.
- The search bar is visible.
- There are recommended similar options when you select one item of interest.
- The tagging method is autofill.
- You have a confirmation prompt when you choose to sell something.
- You can sell something from several pages.

among the existing designs.

We received positive feedback from our interviews, but we know that there is more work to do to further improve on the design. For example, we would like to create a “back” button that would allow users to easily navigate. We also want to simplify the overall design, especially for expert users, so that users can customize their views in order to see what they find most valuable. For example, users posting an item for sale would be able to, say, click the thumbnail photo and directly take a picture with their phone that could be saved as their item’s picture. Furthermore, we would like to give users more viewing options, such as sorting by seller rating, cost, sell-by date, and more within a page listing the items for sale. Ultimately, there could even be a way to connect users to third-party payment sources, such as Venmo. All updates to the current design would be important for improving usability and user experience principles, Gestalt principles, touch-level model analysis, and Schneiderman’s Rules/Neilsen’s Rules.

## E. Appendix

**Checklist**

- ❖ At least one interview script and interviews of potential users or a focus group.
  - ➢ Appendix A
- ❖ At least one survey questionnaire and the data you collected.
  - ➢ Appendix B
- ❖ An analysis of requirements and needs.
  - ➢ Refer to Data Gathering: Needs and Requirements
- ❖ Develop two/three different scenarios of use of your interactive product.

- ➢ Refer to Prototyping: Scenarios
- ❖ Develop at least three tasks for each of the scenarios.
  - ➢ Appendix C
- ❖ A paper prototype.
  - ➢ Refer to Paper Prototype and Evaluation
- ❖ A patterns-based prototype.
  - ➢ Appendix D
- ❖ Detailed cognitive walkthrough of your prototype for each of your scenarios.
  - ➢ Appendix E
- ❖ Observation of at least two subjects using paper prototype and doing a talk aloud.
  - ➢ Appendix F
- ❖ Observation of at least two subjects using your second prototype and doing a talk aloud.
  - ➢ Appendix G
- ❖ A design rationale that uses Gestalt principles to defend some design decisions.
  - ➢ Refer to Final Design/Second Prototype: Gestalt Principles

## Appendix A

**Interview Script and Interviews**

1. Are you student, faculty, or staff?
2. How old are you?
3. Are you interested in trying a new software to buy and sell among university members of the Greater Boston Area?
4. Tell me about your experiences with Craigslist, Ebay, and Facebook groups?
   a. Elaborate on x (where x is some specific aspect of experience).
5. I would like to show you a design. Please give me any and all feedback.
   a. Design walk-through with scenarios
      i. Ex. I want to sell something. What do I do?
      ii. Ex. I am interested in buying some decorations for under $10. Where do I go?
   b. If there is something that is unclear, we pause to talk about it.

Example Interview Response:

1. Student
2. 21
3. Sure, I'd like that/I need things, since I'm from out-of-state/that seems like a good idea
4. I use them because they're available, but it always takes me so long to find anything worthwhile. And I never know if it's legit.
   a. I don't have enough time to endlessly search through things. I know what I need, and I want to find it easily.

5. (a, i.) I guess you'd go to "sell something"..It brings you to a page where you fill in the information about your product, okay...I fill in everything on my phone, upload the photo, and then I add tags based on what it is. Then I submit it.
6. (a.ii.) I would use the search bar and type decorations. Or I would select the "decorations" tag and - oh - the "under $10" price and then it would show up.

## Appendix B

**First Prototype Survey Questions**

1. Please classify yourself in one of the following
    a. Student
    b. Staff
    c. Faculty

2. What is your age range?
    a. Below 18
    b. 18-25
    c. 26-35
    d. 36-45
    e. 46-60
    f. Above 60

3. How often do you buy products online?
    a. Extremely often
    b. Quite often
    c. Moderately often
    d. Slightly often
    e. Not at all often

4. Which of the below platforms do you use to buy or sell items?

   a. Craigslist
   b. Ebay
   c. Facebook
   d. Amazon Marketplace
   e. Angie's List
   f. Other (Specify)

5. For your above selection, please rank your satisfaction with the following on a scale of 1 - 10 (1 = Lowest, 10= Highest)
   a. Organization
   b. Ease for searching
   c. Trust for sellers
   d. Efficiency of use (as a buyer or seller)
   e. Clarity of item posts

6. If you have ever used the above platforms to sell or buy items, did it take you more or less time than you expected to find what you were looking for?
   a. A lot less time
   b. A little less time
   c. About what I expected
   d. A little more time
   e. A lot more time

7. When searching for things to buy, do you usually know in advance what you want or do you prefer to scroll through things?
   a. Know in advance
   b. Scroll through things to see

8. Please rank your agreement with the following statements
   a. I have items I would like to quickly sell/give away at the end of the school year
   b. I would like to be able to easily pick up things in close proximity (within 1-10 miles)
   c. I find Craiglist difficult to use and would want to have a simpler platform/application

9. Please select from the list below what you care most about when using an online platform to buy and sell items
   a. Ease of use
   b. Organization of items

c. Effectiveness
d. Efficiency
e. Ease of searching items
f. Ease of posting items

10. In a scale of 1-10 (1 = Lowest, 10=Highest), rank the following statement
    a. I would want to search for items in a faster and efficient way
    b. I would want the application to be safe and have a good reputation

11. Are you interested in using an application to trade items?
    a. Yes
    b. No
    c. Maybe

12. Would you like items to be tagged in different categories i.e Microwave (Kitchen), Desk (furniture), Books (School ) etc
    a. Yes
    b. No
    c. Maybe

13. Check the top two ways you prefer to communicate as a seller or buyer in an online selling & buying application?
    a. Messaging (via application)
    b. Phone Call
    c. Text/SMS
    d. Email
    e. In Person
14. Would you like to be able to generate your own tags?
    a. Yes
    b. No
    c. Maybe

15. Would you like to be able to search items based on "Trending" tags?
    a. Yes
    b. No
    c. Maybe

16. Would you (either as a buyer or seller) like to rate and also be rated by other people that you sell to or buy items from?

a. Yes
b. No
c. Maybe

17. Do you want to set notification preferences based on tags/items you are interested in?
    a. Yes
    b. No
    c. Maybe

18. When you sell an item through the application, would you add your phone number alongside your item post?
    a. Yes
    b. No
    c. Maybe

**Majority of Survey Responses Appeared as Such:**

1. 18-25
2. Student
3. Quite often
4. Facebook, Craigslist, Amazon Marketplace
5. Range (4-7)
6. A little more time, about what I expected
7. Know in Advance
8. Strongly agree
9. Ease to use, Organization of items, Efficiency, Ease of searching items
10. Range (8-10)
11. Yes
12. Yes
13. Messaging (via application)
14. Yes
15. Yes
16. Yes
17. Yes
18. Yes

The results we received from our questionnaire indicated that 90 percent of our users quite often use online to buy and sell their items. 90 percent also of the users who responded to our questionnaire were students. Most of the users cited Amazon Marketplace as one of the most frequent platform that they use whenever they want to buy or sell items. Some cited Facebook, while few of them said they have at least once used Craigslist and ebay to either buy or sell their

items. They cited high disorganization of information, high time consumption searching for products and safety as some of the issues they had with Craigslist and Facebook. On the question on what features they would like to see in our platform, majority of the responses we had indicated that they cared most about ease of use of the system, good organization of the items in the system, efficiency and ease of searching items. The features and functions that they wanted to be considered during the design include a tagging system to reduce the time that buyers spend on searching for items, an integrated messaging system to ensure faster communication between the users, and a star rating system in which users can use to rate each other after every complete transactions.

We used the feedback we received to create our first prototype. We then used the first paper prototype to create our second and final design prototypes. We presented this first paper prototype to three different stakeholders and asked them how they would interact with it. They thought that the process of posting and selling an item was pretty clear and straightforward. They also liked the tagging system and how the system could allow you to be one in two i.e you could act as a seller and buyer. We continued to test the paper prototypes with different other stakeholders in form of informal interviews. We then eventually created a final software version of the product design having included all the suggestions that the users brought up in the data collection and testing process.

*Below is our design development plan/outline*

| Date | Task |
|---|---|
| Week 1-2 : 10/25/15 | 1. Submit project proposal - 10/26/15<br>2. Determine problem space<br>3. Research stakeholders<br>4. Draft questionnaires/interviews questions |
| Week 2: 11/01/15 | 1. Begin questionnaires and interviews @ end of week 2<br>2. Post 8 due |
| Week 3: 11/08/15 | 1. Finish 1st round interviews/ questionnaires<br>2. Work on 2nd draft design @ end of the week |
| Week 4: 11/15/15 | 1. Continue with design<br>2. Second (2nd) round of data gathering @ end of week<br>3. Post 9 due- 11/16/15 |
| Week 5: 11/22/15 | 1. Finish 2nd round data gathering<br>2. Fix design again + work on final report @ end of week |

| | |
|---|---|
| Week 6: 11/29/15 | 1. Finish the final round of the design<br>2. Finish final report - due 12/04/15 |

# Appendix C

**Task Analysis for the Main Tasks**

Considering Emma's buying scenario, below is the task analysis of buying an item

- Setting notification preferences
- Searching for item
- Swiping to reject or save items
- Saving items
- Contacting seller
- Rating seller

Open UXchange app

1. Log in and go into "My Account"
    1. Choose "Notification Preference"
    2. Set notification preference
2. Go back to the homepage
    1. Select price range
    2. Select "My preferences only" (to receive specific notification)
3. Check the list of items in the specified category
    1. Swipe item to "reject" category if not liked
    2. Else if item is liked swipe it to "save" category
4. Click "Show all" to check the list of saved items
5. Continue exploring or close the app if done

6. Wait for notification on when an item on your preferences is posted
    1. If notification is received, click it
    2. Check if the seller has added a contact information i.e phone number
    3. Click the number and press the call button to call the seller
    4. Decide with the seller on how the item(s) can be accessed /transported/ picked up
7. After the transaction is complete
    1. Rate the seller using the 5 star system.
8. Task is completed.

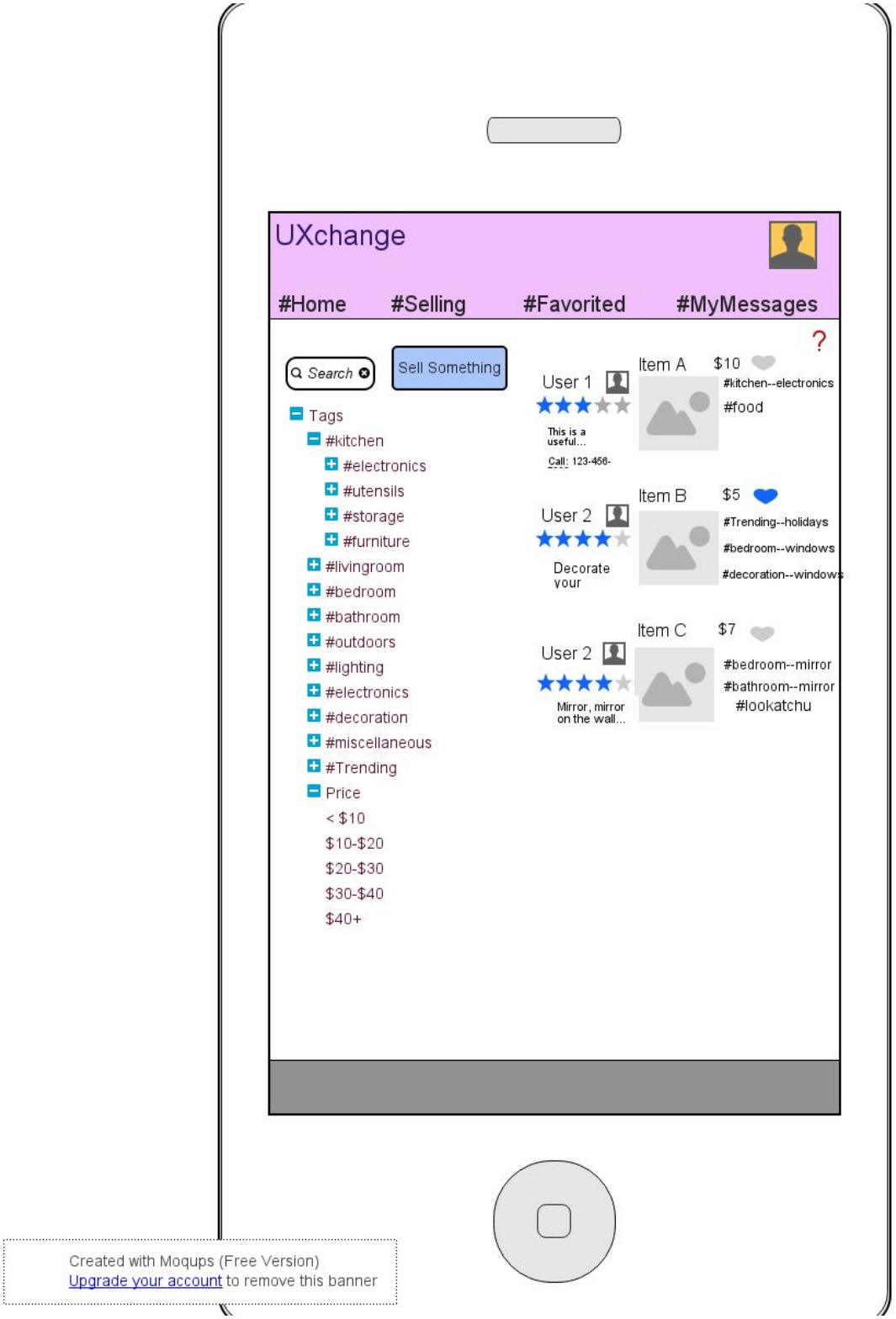
Considering Andy's selling scenario, below is the task analysis

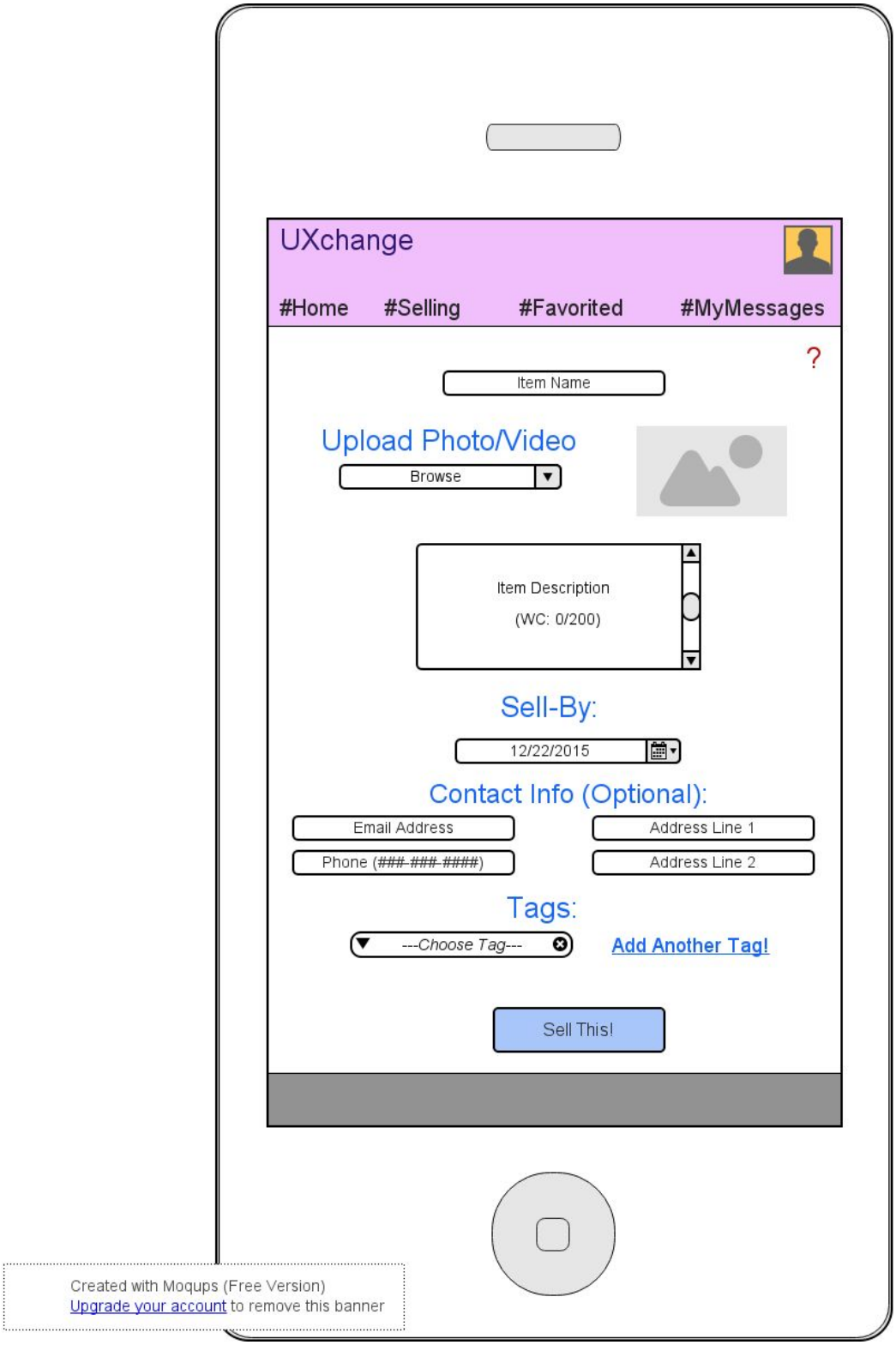
- Tagging an item
- Selling an item
- Marking status of item for sale

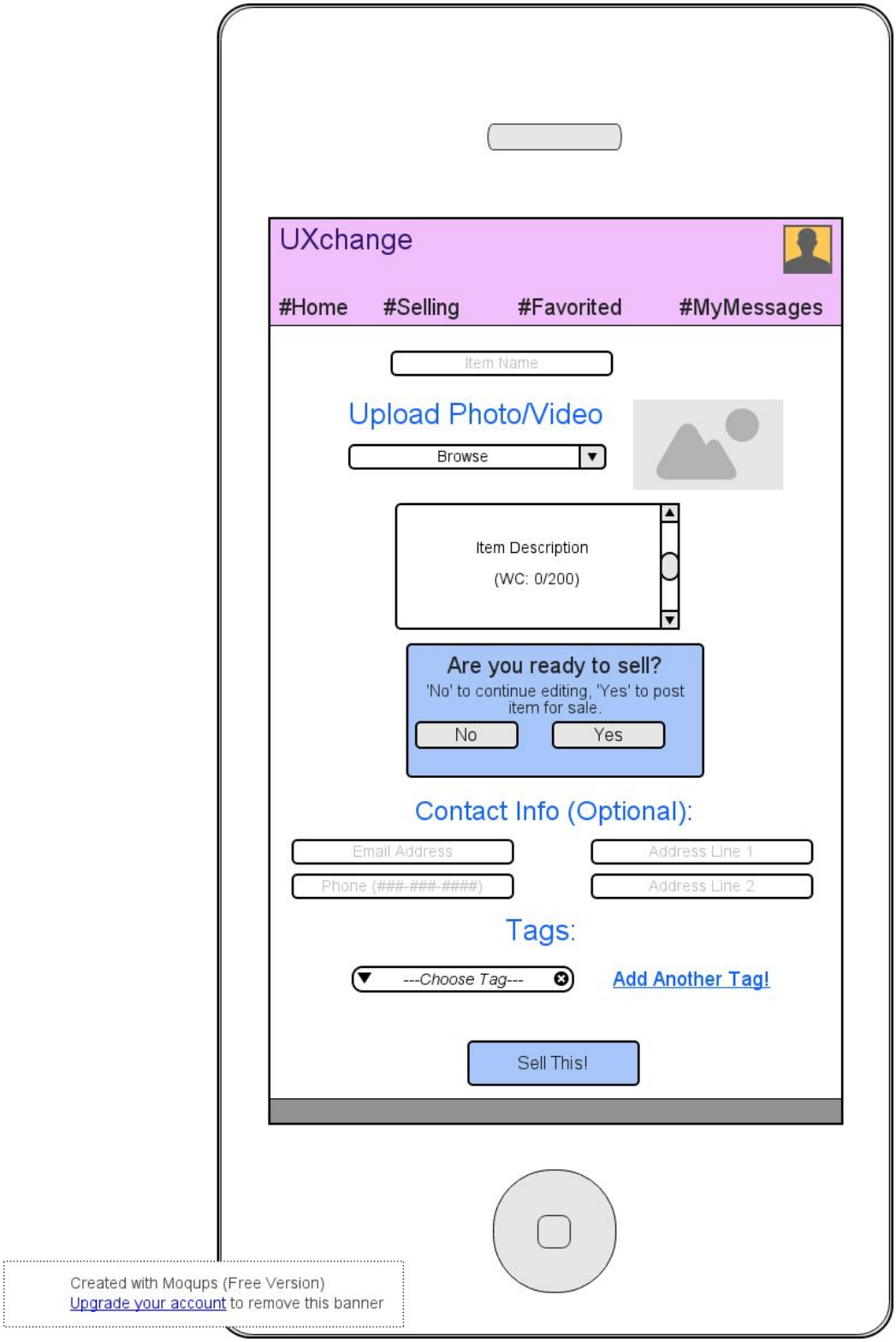
1. Choose to Post New Item
2. Upload photo/ video of item
3. Fill out required information
    a. Price
    b. Title/name
    c. Description
    d. "sell-by" date
4. Add contact information
5. Tag item
6. Click "sell this" to post the item for sale
7. Select "yes" on confirmation prompt
8. Item posted for sale
    a. Once item sold, change status of item to "sold"
9. Task is completed.

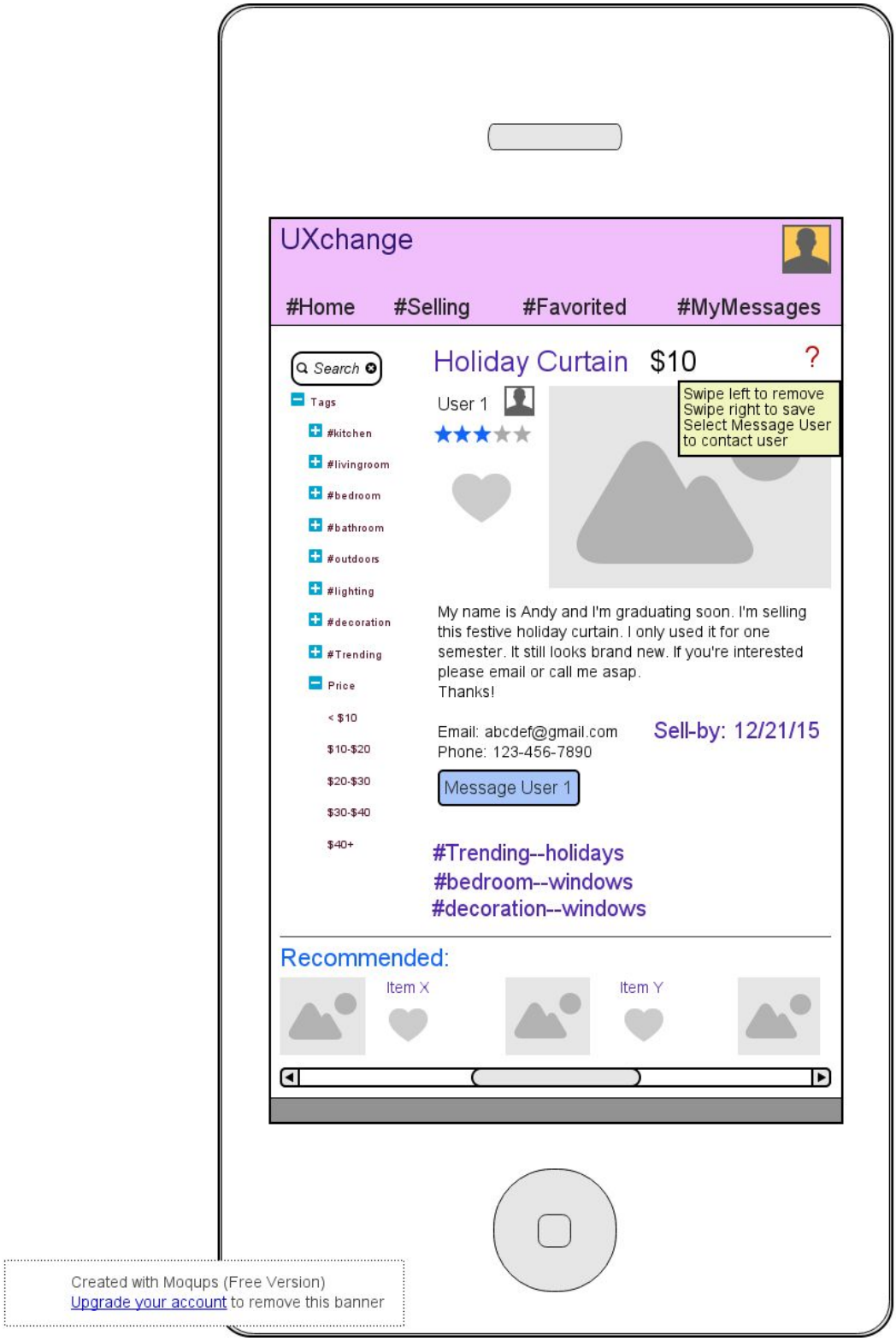
# Appendix D

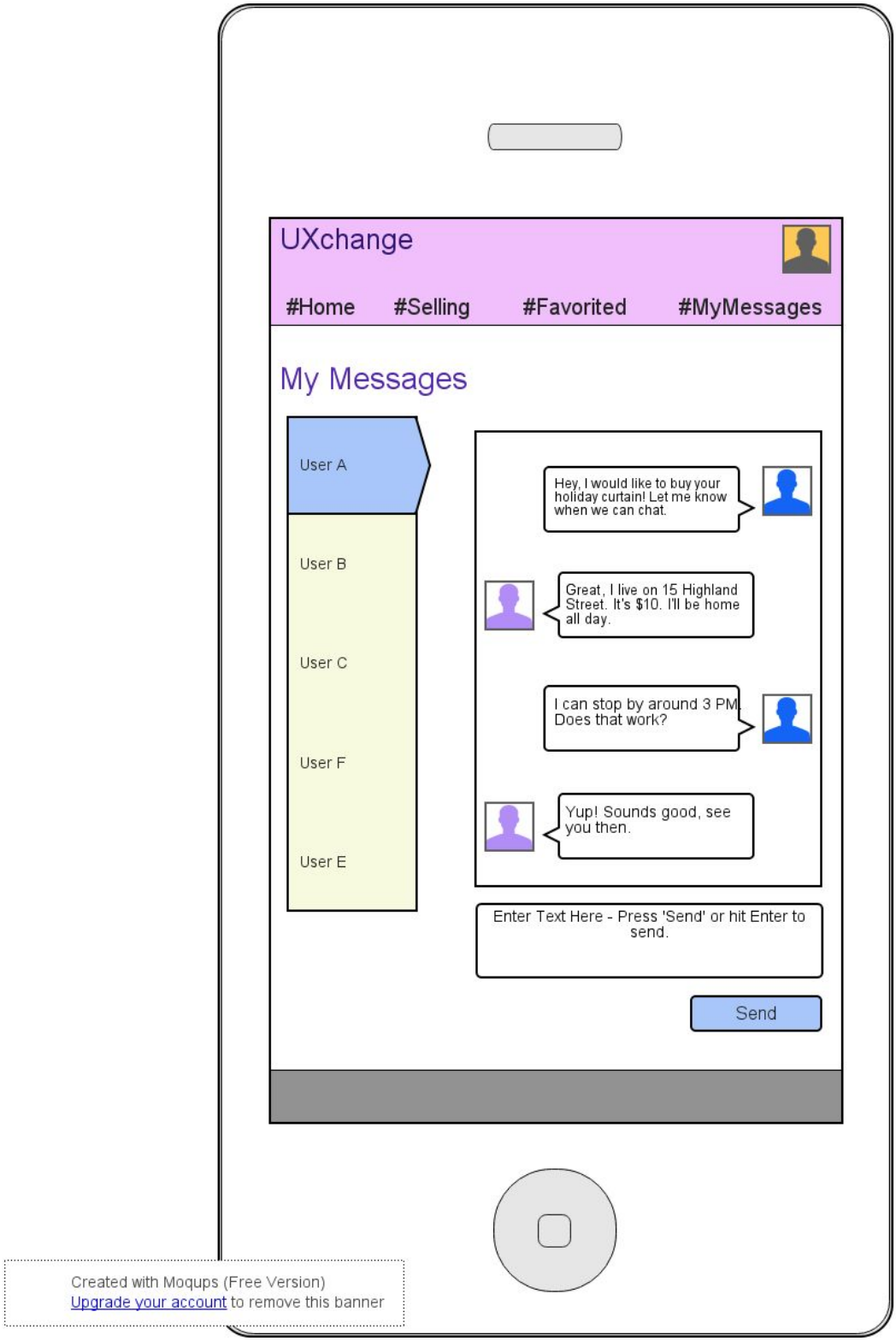
**Second/Final Prototype**

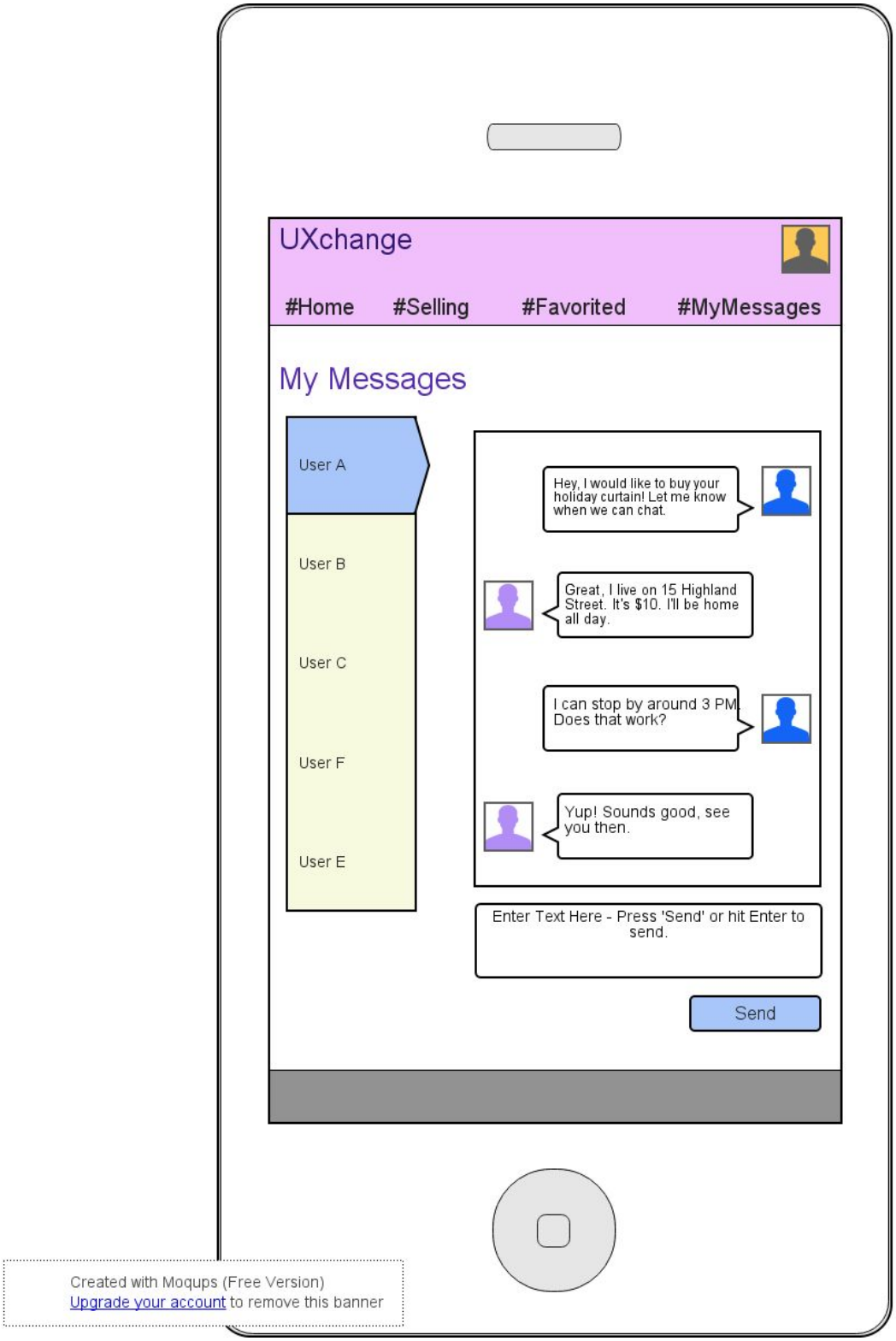

UXchange
#Home
#Selling
#Favorited
#MyMessages
Search
Sell Something
Tags
#kitchen
#electronics
#utensils
#storage
#furniture
#livingroom
#bedroom
#bathroom
#outdoors
#lighting
#electronics
#decoration
#miscellaneous
#Trending
Price
< $10
$10-$20
$20-$30
$30-$40
$40+
User 1
This is a useful...
Call: 123-456-
Item A
$10
#kitchen--electronics
#food
User 2
Decorate your
Item B
$5
#Trending--holidays
#bedroom--windows
#decoration--windows
User 2
Mirror, mirror on the wall...
Item C
$7
#bedroom--mirror
#bathroom--mirror
#lookatchu
Created with Moqups (Free Version)
Upgrade your account to remove this banner

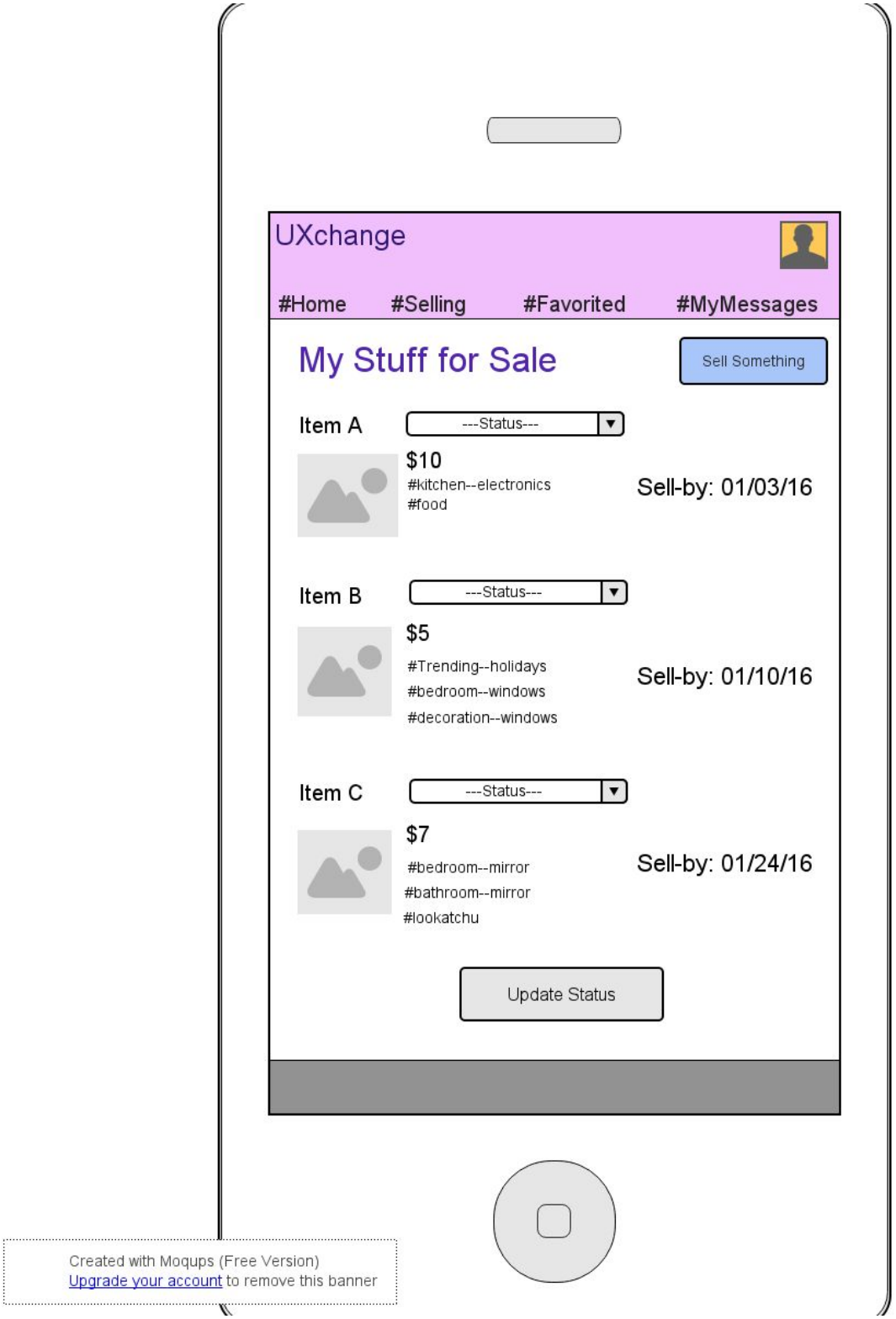

UXchange
#Home
#Selling
#Favorited
#MyMessages
?
Item Name
Upload Photo/Video
Browse
Item Description
(WC: 0/200)
Sell-By:
12/22/2015
Contact Info (Optional):
Email Address
Address Line 1
Phone (###-###-####)
Address Line 2
Tags:
---Choose Tag---
Add Another Tag!
Sell This!
Created with Moqups (Free Version)
Upgrade your account to remove this banner

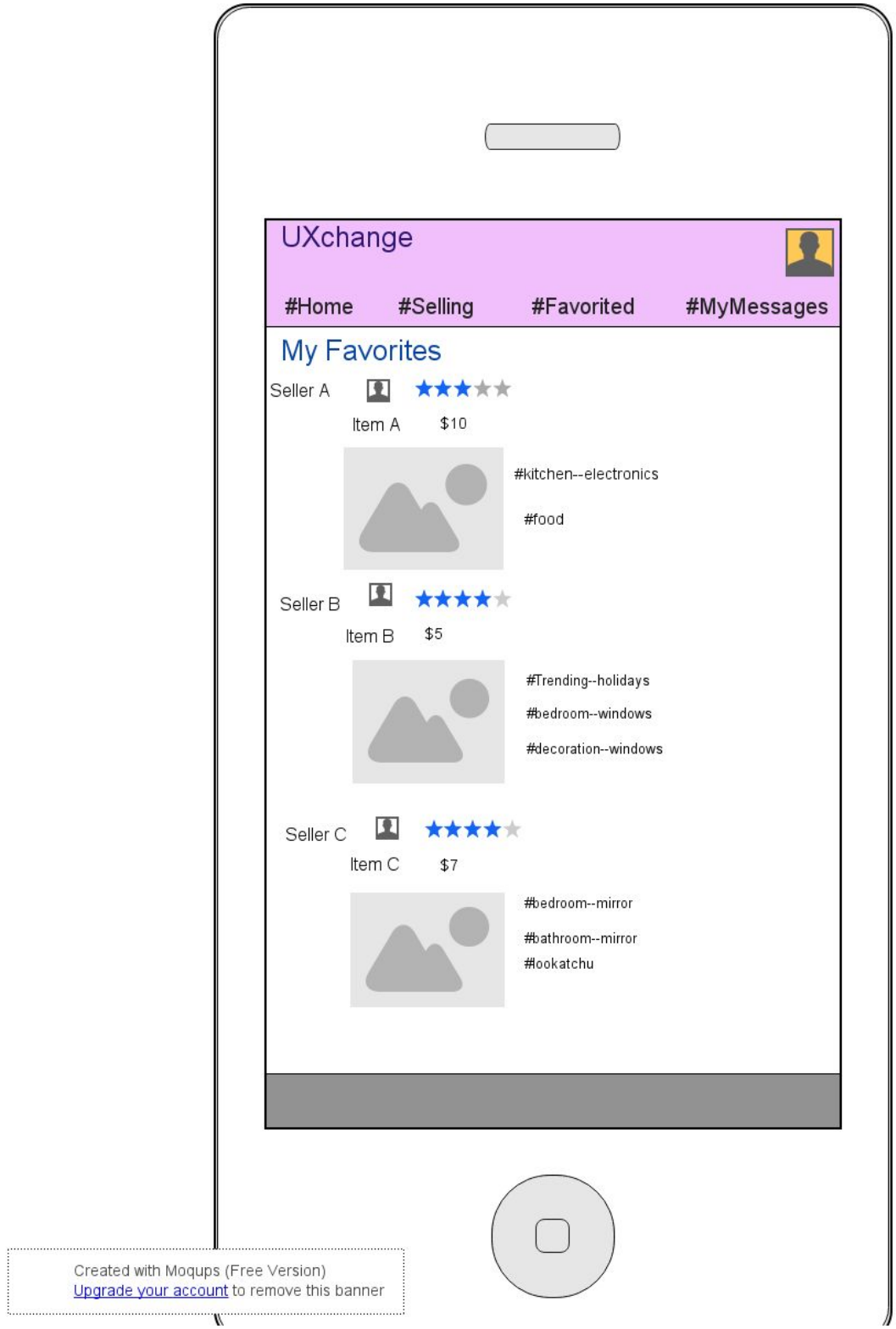

UXchange
#Home
#Selling
#Favorited
#MyMessages
Item Name
Upload Photo/Video
Browse
Item Description
(WC: 0/200)
Are you ready to sell?
'No' to continue editing, 'Yes' to post item for sale.
No
Yes
Contact Info (Optional):
Email Address
Phone (###-###-####)
Address Line 1
Address Line 2
Tags:
---Choose Tag---
Add Another Tag!
Sell This!
Created with Moqups (Free Version)
Upgrade your account to remove this banner

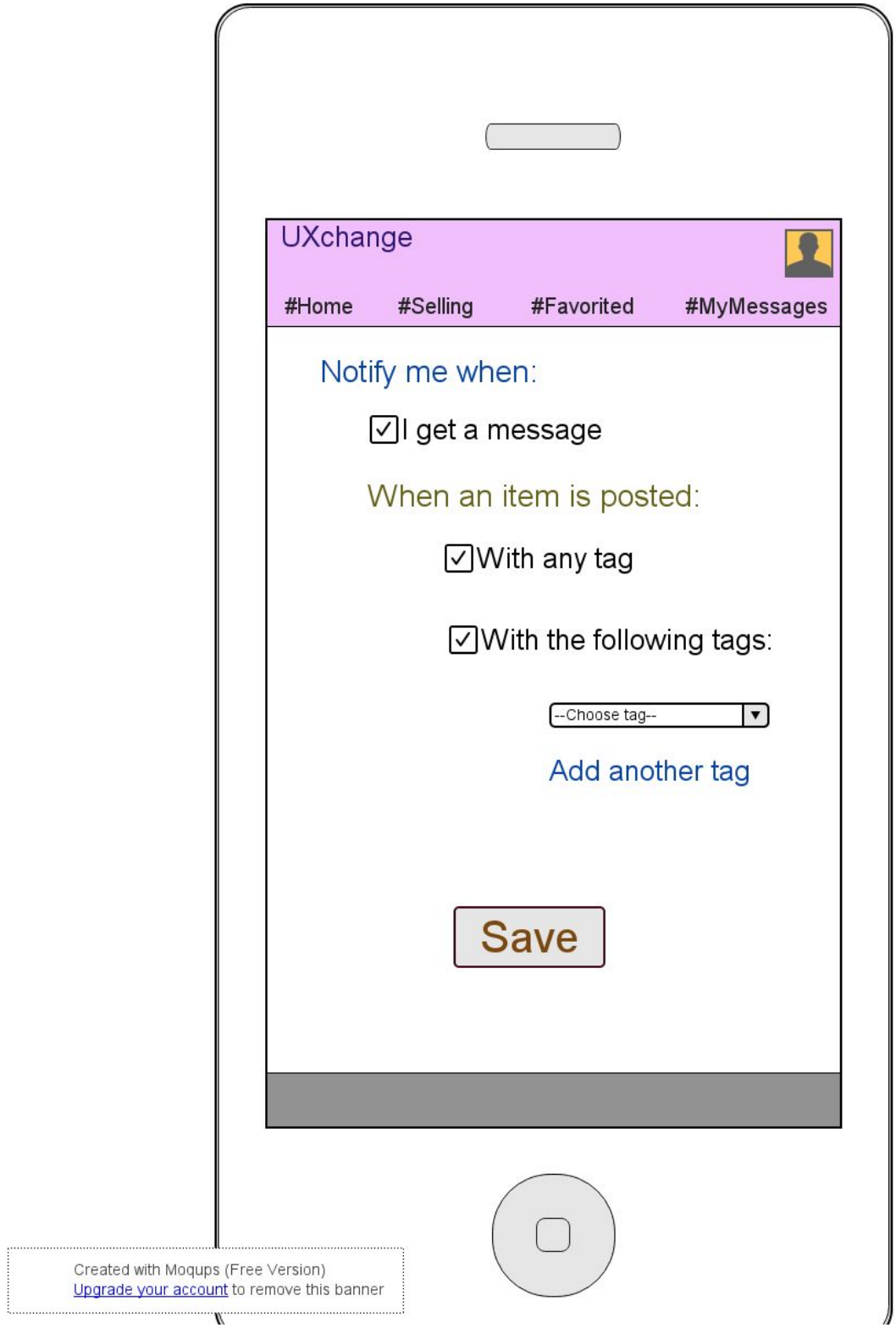

UXchange
#Home
#Selling
#Favorited
#MyMessages
Search
Tags
#kitchen
#livingroom
#bedroom
#bathroom
#outdoors
#lighting
#decoration
#Trending
Price
< $10
$10-$20
$20-$30
$30-$40
$40+
Holiday Curtain $10
?
User 1
Swipe left to remove
Swipe right to save
Select Message User
to contact user
My name is Andy and I'm graduating soon. I'm selling this festive holiday curtain. I only used it for one semester. It still looks brand new. If you're interested please email or call me asap.
Thanks!
Email: abcdef@gmail.com
Phone: 123-456-7890
Sell-by: 12/21/15
Message User 1
#Trending--holidays
#bedroom--windows
#decoration--windows
Recommended:
Item X
Item Y
Created with Moqups (Free Version)
Upgrade your account to remove this banner

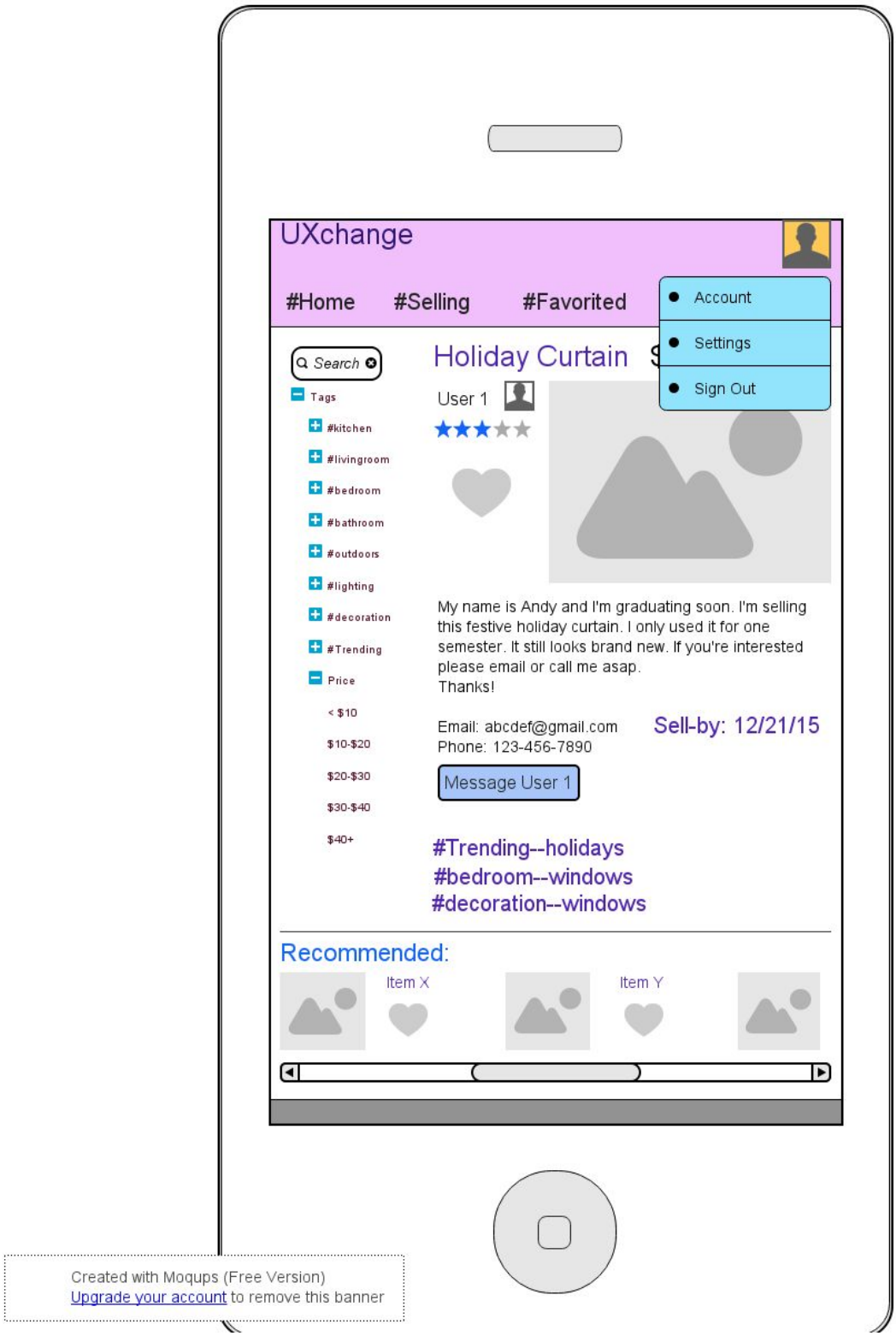

UXchange
#Home
#Selling
#Favorited
#MyMessages
My Messages
User A
User B
User C
User F
User E
Hey, I would like to buy your holiday curtain! Let me know when we can chat.
Great, I live on 15 Highland Street. It's $10. I'll be home all day.
I can stop by around 3 PM. Does that work?
Yup! Sounds good, see you then.
Enter Text Here - Press 'Send' or hit Enter to send.
Send
Created with Moqups (Free Version)
Upgrade your account to remove this banner


UXchange
#Home
#Selling
#Favorited
#MyMessages
My Messages
User A
User B
User C
User F
User E
Hey, I would like to buy your holiday curtain! Let me know when we can chat.
Great, I live on 15 Highland Street. It's $10. I'll be home all day.
I can stop by around 3 PM. Does that work?
Yup! Sounds good, see you then.
Enter Text Here - Press 'Send' or hit Enter to send.
Send
Created with Moqups (Free Version)
Upgrade your account to remove this banner


UXchange
#Home
#Selling
#Favorited
#MyMessages
My Stuff for Sale
Sell Something
Item A
---Status---
$10
#kitchen--electronics
#food
Sell-by: 01/03/16
Item B
---Status---
$5
#Trending--holidays
#bedroom--windows
#decoration--windows
Sell-by: 01/10/16
Item C
---Status---
$7
#bedroom--mirror
#bathroom--mirror
#lookatchu
Sell-by: 01/24/16
Update Status
Created with Moqups (Free Version)
Upgrade your account to remove this banner


UXchange
#Home
#Selling
#Favorited
#MyMessages
My Favorites
Seller A
Item A
$10
#kitchen--electronics
#food
Seller B
Item B
$5
#Trending--holidays
#bedroom--windows
#decoration--windows
Seller C
Item C
$7
#bedroom--mirror
#bathroom--mirror
#lookatchu
Created with Moqups (Free Version)
Upgrade your account to remove this banner


UXchange
#Home
#Selling
#Favorited
#MyMessages
Notify me when:
I get a message
When an item is posted:
With any tag
With the following tags:
--Choose tag--
Add another tag
Save
Created with Moqups (Free Version)
Upgrade your account to remove this banner


UXchange
#Home
#Selling
#Favorited
Account
Settings
Sign Out
Search
Tags
#kitchen
#livingroom
#bedroom
#bathroom
#outdoors
#lighting
#decoration
#Trending
Price
< $10
$10-$20
$20-$30
$30-$40
$40+
Holiday Curtain
User 1
My name is Andy and I'm graduating soon. I'm selling this festive holiday curtain. I only used it for one semester. It still looks brand new. If you're interested please email or call me asap.
Thanks!
Email: abcdef@gmail.com
Phone: 123-456-7890
Sell-by: 12/21/15
Message User 1
#Trending--holidays
#bedroom--windows
#decoration--windows
Recommended:
Item X
Item Y
Created with Moqups (Free Version)
Upgrade your account to remove this banner

# Appendix E

**Cognitive Walkthrough**

For the second scenario where Emma is buying items through the UXchange, we are going to present a detailed cognitive walkthrough of setting notification preferences based on different tags / categories

| Scenario | Detailed Cognitive Walkthrough |
|---|---|
| • Emma wants to set notification preferences for the items she is interested in buying | • Emma logs in to UXchange, goes to "My Account" by clicking the human head icon in the top right corner of the screen. She clicks "settings" and the system displays to her "notification preferences" in which she can now choose her preferences |
| • Emma sets notification preferences to receive messages | • After clicking "notification preferences", the system displays to Emma a list of options that she can choose from. At the top of the screen is written "Notify me when:" then follows a checklist of different scenarios. Emma wants to receive a notification when she receives a text message through the system, so she checks the box that says "I get message" |
| • Emma wants to get a notification when an item with any tag is posted | • Emma looks through the list of the notification preferences checklist. She can see a box with the text "Notify me when an item is posted with any tag". She checks this box |
| • Emma wants to choose her own tag to receive notifications from only the chosen tag(s) | • Emma looks at the notification preferences checklist. She can see the text "Notify me when an item is posted with the following tags" then underneath is a list of options in which she can choose from. |
| • Emma sets the notification preferences to only receive notifications when an item from the chosen tag is posted | • Emma chooses one of the tag in the list given which is added to her notification preferences tag list. She wants to receive notification when items with the |

| | |
|---|---|
| | following tags on them are posted: Kitchen, Decoration, and Trending items. She can see from the list given that these tags are included. So she clicks "Add Another Tag" and chooses Kitchen. She can now get notifications when an item that fall in the kitchen category is posted to the system. She again clicks "Add Another Tag" and chooses decoration from the tags list. She repeats the same for Trending items and now all of her tags are successfully added to the notification preferences. Emma can now receive notifications in her phone when items that fall in the chosen tags are posted. |

## Appendix F

**Paper Prototype Talk Aloud**

*Subject 1:* If I wanted to sell something, I would hit "sell something". Okay, so that brings me to this other page that asks for information about what I'm selling… I guess I'd touch each part to fill it out. And what about when I hit to upload photo? Where does that take me? Okay, so it opens my photo gallery - that makes sense. And what is this tag stuff? When I add a new tag, do I select "add new tag" or does it do it automatically? Yeah, this part is confusing. But then when I'm done, I hit submit.

*Subject 2:* First, I would touch "sell something." I see all the information I need to fill out. I write in the title, upload a photo (right?), put some description information, add the sell-by date, my contact info, and tag it. What are all these tagging options, though? After I'm done, I hit submit!

## Appendix G

**Second Prototype Talk Aloud**

*Subject 1:* Alright, so this first page lets me see everything. If I wanted to sell something, I'd click "sell something" and if I wanted to search for something, I'd either use the search bar or the tagging on the side. I like that it's all there for me to see, because that's less for me to click to find. What's the difference between "My Items" and "Saved Items"? "My Messages" are your messages with other users, right? I can click either the item name or the photo to see the entire

post, I'd say. And if I like it, I can click the heart to save it and I can click "Message User" to message the person selling it. I'll set my notification preferences so that when they reply, I'll get a notification.

*Subject 2:* When I open the application, I get to see everything that's available for sale. If I want to find something specific, I could search for it or find it via some tags. If I want to sell something myself, I would hit "sell something". Hitting that button would take me to a page where...I fill in all the necessary information and then hit "submit". Say I also want to buy something - then I click "Home" and click what I want by the title or photo. That takes me to...a page where I can see everything in more detail. I like it; I want to buy it; I'll message the user with the "Message User" button. I can rate the user too! And if I want to buy more, I'll go back to the listings. If I don't like them..I want them out of view; oh, you said I can swipe to remove? Great, I'll do that. Alright, no more shopping today. I'll close the application now.