

CPSC 481: Assignment 1

Group 2

Bond Estate

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Section 1: Identification and requirements

Introduction

Background Environment

Our team of developers at Bond Estate has decided to enter into the market of digital real estate platforms operating in Canada. Due to the small size of our team, we cannot compete with the technical fidelity and variety that some other large platforms such as Zillow and RentFaster provide. Instead we are focusing on the marketspace of users who value a personalized experience and the ability to seamlessly interact with people and our compact system throughout the house buying/selling process.

Most other platforms work to engineer a complexly powerful approach to engaging with real estate, however, in doing so, the number of available search options and criteria choices can be overwhelming. Additionally, the user interfaces make engaging with real people in the process appear undesirable as a result of the focus on automated functionality and less obvious communication methods.

From our research and discussions with people engaged in the real estate market, the current system of choices available to house buyers and sellers has become rather dichotomous. An individually-guided information-focused approach to engaging with the market is supported through the large online platforms (eg. Zillow). On the other hand, a more communication, and preference guided approach is primarily restricted to traditional in-person methods (hiring a realtor, emailing sellers, etc.). There are not many options available for people to engage with both styles of real estate interaction simultaneously.

We intend to design and develop a new simplified system which will address the challenge of merging technical real-estate details with a communication-driven system. This will allow prospective users to have a simple, but robust method for addressing their unique house buying/selling needs.

System usage and general expectations

Our system will act as a new standalone, online platform for the purpose of buying and selling houses in Canada. Users intending to buy a house should be able to specify specific criteria that they are looking for and be guided towards listings matching their search. Users looking to sell a

house should be able to list their property on the website and provide a number of details about the house to attract prospective buyers. At all points in interacting with the system, communication should be simple and intuitive. Buyers should be able to contact the sellers directly, and become in contact with realtors who can guide their search and provide more information on the buyer's favorite listings. The user interface should be simple, but including sufficient features to handle most instances of the addressed use-cases for our system.

Our system will not handle renting of properties, nor will it include advanced metrics such as price tracking, estimations of selling period, etc.

System Constraints

This project was created with a strict timeline established from the outset. The project has been allocated 3 months of development time, which includes scoping, prototyping, development and analysis. As a proof of concept, Bond Estate wants to have a fully realized user interface implementation of the system by the end of the development period. However we are uninterested in the back-end functionality at this stage, with the assumption that the additional development can be planned and included after analysis of the front-end functionality.

Due to the existing resources and online infrastructure supported by Bond Estate, the system must be developed in C#. The target platform for our application is any modern web browser capable of supporting and displaying HTML5 content. Only a PC experience will be considered, with understanding that intuitive display on a mobile device will not be considered during the software development stage. Our platform should eventually support mobile browsing/interaction, however this is a concern that can be addressed in future development iterations.

Our platform is designed to be structured around (house selling) user generated content. During development, this content will be created and curated by our own developers and may not perfectly reflect real-world real estate data.

Phase 1: Identification

Expected types of users of the system

User 1: Users purchasing a home

For users purchasing a home, we expect the greatest variance in terms of challenges when navigating the website. The reason for this is because of differing levels of technical competence, and compared to buying a home, a user might not have as clear input parameters. For example, with selling a home, the user already has access to all the dimensions of their home, and can easily provide photos as well. But with purchasing a home, a user might be uncertain about what information that they need to provide to find homes that are a good match for them without being too narrow in their scope.

For our application we decided to focus on 3 different profiles of users based on previous study conducted by the National Association of Realtors (NAR)

<https://www.nar.realtor/sites/default/files/documents/2021-home-buyers-and-sellers-generational-trends-03-16-2021.pdf>

Profile 1 (Family): Families with young children living at home made up a significant portion of our user group. 61% of buyers between 31 and 40 years old had at least one child under 18 with them when they purchased a home.

Considerations:

- Tech literate
- Busy

Profile 3 (Middle age): Middle age (45-60) people make up a large portion of our user group, and may be one of the most important groups to consider when designing our application as they may find it the most challenging. We expect this group to have people of varying tech literacy skills but they will have more free time compared to our other user groups.

Considerations:

- Varies in tech literacy
- More free time

Profile 3 (Young working professional): We decided to include this type of user as the age range closely matches the ages of the group members and we would be most familiar with this type of user as some of our peers are in this user profile and those peers that we know are looking to purchase a home.

Considerations:

- Tech literate
- Busy

User 2: Users selling a home

For users that are selling a home, we expect much less challenges compared to users buying homes due to the previously mentioned factors. We expect this group of users to be able to complete online forms. We are reasonably confident that this will be accessible to a large user group as the forms that are submitted will be reviewed and corrected by real estate agents.

User 3: Real estate agents

Real estate agents will be a large portion of our user base. Real estate agents will be the type of users on our platform with the most training. They will have formal training and licensing from the Real Estate Council of Alberta (RECA). Not only will the realtors have formal training, but they will also regularly use our platform as they will have multiple clients at a time. Real estate agents will also return to our website regularly as they will continuously have clients.

Additionally, some of the existing responsibilities of realtors involve:

- Writing emails.
- Filling out comprehensive forms.
- Navigating various websites to keep up to date with the current real estate market.

For this reason, we expect this type of user to be technologically literate and able to adapt to updates to our website fairly quickly.

Work contexts

The typical work setting for our users is with a regular working schedule with hours primarily between 8AM to 6PM. This will especially be the case with the young working professional group of users. However for the older user groups, we expect that the number of people who are not working in the day to increase, both due to retirement and also stay-at-home parenting. These are the factors why asynchronous communication is important on our platform, to minimize lost and unnecessarily repeated information.

These work settings align with the profile of users who we interviewed while working on this deliverable. These users include group member's friends who were primarily in the young working professional category, and parents and friends of parents who were in the middle age category.

Concrete task examples

Task 1

Julien is interested in moving to Calgary from Buenos Aires, Argentina. He would like to know the available housing market in Calgary and have a set of options that he can tour and purchase on arrival to the city. Julien expects that it will take a few weeks to secure a downpayment on a house, so he has living arrangements organized for a few weeks interim while he completes his housing search. There are a few considerations that are highly important to Julien when considering which house he will purchase. Firstly, Julien will be starting a new job near the University of Calgary and would like to search for a house within the vicinity. Secondly, Julien has a firm price range that he is willing to work within when purchasing a house; he will not spend more than \$800,000, but he expects that to satisfy his requirements, he will be spending at least \$550,000. In addition to the more strict requirements that Julien has put in place for his prospective house, he also has some considerations that would be nice to have in the case where his primary requirements are satisfied. Julien learned English as a second language and although he is reasonably proficient, he is more comfortable speaking Spanish. Julien would ideally like to use a realtor who can speak Spanish so that he can be fully informed and confident in his purchase.

He begins by searching online listings for possible houses, however the quantity that fully or partially match his requirements are overwhelming to him; they all appear roughly the same. He then selects a few at random to take a closer look at. Julien contacts a realtor to guide his in-person search during his trip to Calgary ahead of making a final decision on which house to buy. Julien has difficulty understanding the details and nuance of everything the realtor points out since Julien is not a native english speaker, but he doesn't have time to find a different realtor during the few days he will be in the city. After touring several houses Julien settles on a decision, which he puts a down payment on. Although the house matches Julien's price range, location in the city, and number of bedrooms, he quickly realizes some frustrations after moving in - such as limited access to parks and loud nearby rental houses. The experience leaves Julien feeling frustrated as though he was not fully informed and did not make the best possible purchase for his needs.

Julien represents a common expected user of our system in that he is technologically literate, he knows generally what he is searching for and he requires assistance with navigating the real estate market (particularly because of his foreign language barrier).

Task 2

Jane and Robert are looking to move into a larger house for their two children, who will begin school soon. They want to live close to one of their preferred schools, so walkability is an important aspect of their home search. Jane and Robert know what school they want to register

their children to, so they have specific neighborhoods in mind. They also know that they want a house with two bedrooms. Robert works long hours and doesn't have much time to go on realtor guided tours of houses, so his wife handles the role of viewing the houses in person. However, Robert still wants to be fully informed about which houses are reasonable candidates. He finds that reviewing the numerous emails that his wife sends him containing links to possible listings is both tedious to organize and the images do not provide a particularly immersive understanding of which houses best suit their needs.

With limited available options, Robert and Jane decide to put their search on hold, however they want to be ready if a suitable house does become available. For this reason, Jane and Robert spend an hour together every Saturday morning analyzing new available listings. Their current system of searching is time consuming and frustrating, but the couple wants to feel independently confident in their final decision.

Jane and Robert are a typical group of users for the application, they are able to use and access their computer and have access to email so that they can be contacted and notified. This task focuses on family user groups and their particular neighborhood needs. Additionally, this task ensures that the system supports groups of users with different availability working together to buy a house.

Task 3

Mark is leaving Vancouver for a new job and he is looking to sell his home as he does not plan on returning in the short term. He wants to get an idea for how much his home is worth in the current housing market and wants to be connected with a realtor. Mark goes online and creates a listing for his house on an online real estate platform. He submits details about his home including size, location, number of bedrooms and bathrooms, and some pictures. Mark spent a significant amount of effort and financial investment while renovating the house and wants those details to be made clear to prospective buyers, however the structured form of the template that the website provides does not allow him to make these details a primary consideration in his posting, instead he has to include them in list form in the description field. After submitting this information, Mark contacts a realtor via email and sends him a link to the listing along with a request to meet in person to arrange how he wants to market his house to prospective buyers. Mark will not be able to frequently come back to Vancouver while the house is up for sale, so he communicates with the realtor over email and phone to get updates on prospective buyers. Mark would like to be more engaged with the selling process, but given his circumstances he feels as though he has to put his faith in the realtor.

Mark fits the typical user group for our application, he is able to operate a computer and is able to easily fill out forms and upload images to websites. He is able to be contacted through email and knows sufficient details about his house to individually fill out a listing. This task is done frequently and is important, as this is one of the core functionalities of the website.

Task 4

John is a professional who does not have much time to browse through multiple different potential houses. He has a general idea of what he is looking for, but he does not have a list of very specific requirements, and specifically only wants physical showings to get a strong personal sense of which houses fit his needs best. John contacts a realtor he saw advertising for on social media and provides him with his high level requirement list, in hopes that the realtor will be able to guide John's search and minimize tours of houses that John wouldn't otherwise consider.

Based on the list John provided, the realtor tours John through a dozen houses over the course of a couple weeks. Out of the numerous houses, there were only three that John thought appropriately matched his requirements. John revisits the possible candidates and settles on a house which he places a down payment on. Although he is quite happy with the end result, John felt that the process was rather stressful and time-consuming and feels as though he will have to seek other methods if he goes through the process of buying a house again in the future.

John fits the typical user group for our application. He has a general idea of what he would like but no very specific requirements. He wants to be matched with a realtor who will help him through the process of selecting and buying a house, and would like the ability to set up physical showings without the use of any 3rd parties.

Task 5

Steve is a realtor looking to post a number of properties for his clients online. Steve uses an Excel spreadsheet to keep track of his clients, their contact information, and their details. Email is his typical method of communication with clients and prospective buyers. Although Steve has been moving towards using online platforms, he has some difficulty navigating the complicated functionality of the larger online real estate services. With his new set of client house details, Steve creates a listing for each of the two new houses he is intending to help sell and posts them online. Steve lists his own information in the contact section of each posting. Within a few days Steve's email inbox has received numerous inquiries about the listings. Steve finds that it is time consuming to address which listing belongs to each buyer inquiry, but tries his best to answer questions as best he can. For the questions that he does not have an answer for, he emails his

clients directly and waits for them to respond to forward the answer back to the buyer. After touring a few of the prospective buyers through the houses, final deals and down payments were secured for both of his clients. Steve's clients and the buyers were pleased with the process, however Steve felt that his system put a strain on him to do a lot of extra work that he wished could be offloaded to an automatic system.

Steve fits the typical user group for our application, as we will be targeting retailers alongside potential buyers. He wants to post the houses he is selling, and he is able to easily interact directly with anyone who shows interest in these listings.

Phase 2: Tentative list of requirements

Absolutely must include

Requirement	Related Tasks + Applicable Task Interaction	Reason for importance level
User defined house listing search filtering Users should be able to define specific criteria (locations, sqft, house type) when searching for locations	Task 1: There are a few considerations that are highly important to Julien when considering which house he will purchase. Firstly, Julien will be starting a new job near the University of Calgary and would like to search for a house within the vicinity. Task 2: Jane and Robert will be able to selectively view houses which only have 2 bedrooms and are located in their desired neighborhood.	Buyers prefer to have their specifications focused on in the search process. The scope of the search can be quickly contained to a manageable level.
Realtor Contact Users should be able to connect with realtors when wanting to sell a house	(All Tasks) Task 3: He wants to get an idea for how much his home is worth in the current housing market and wants to be connected with a realtor.	This is a must have as talking to a real person helps you understand better and is your to-go help for any concerns/questions that arise.
Integrated Instant Messaging	(All Tasks)	This is a must have as this will

<p>Similar to how websites like Kijiji allow you to direct emails to sellers, but allow you to be notified through the Kijiji app when they respond.</p>	<p>Task 3: After submitting this information, a realtor is assigned to this home and gets all of these details and is able to contact Mark through the platform.</p>	<p>allow for a seamless chat experience with the realtor.</p>
<p>Neighborhood testimonies/descriptions Giving a personal touch to understanding the neighborhood can ensure that the listing feels less robotic and more personal.</p>	<p>Task 1: The experience leaves Julien feeling frustrated as though he was not fully informed and did not make the best possible purchase for his needs. Task 2: They view the listing of some of the homes that fit their desired criteria; however they do not see any homes that stand out to them.</p>	<p>This is a must have as it gives a more personal touch to the houses and neighborhood. It allows a human view to be connected with the house and the area. Works similar to restaurant reviews.</p>
<p>Accessibility to regions outside Calgary Although our application is intended for use to explore Calgary's housing market, the site should be accessible from elsewhere in the world without making expectations that the users implicitly are familiar with the area.</p>	<p>Task 1: Julien is interested in moving to Calgary from Buenos Aires, Argentina.</p>	<p>This is a must have as it allows for a better accessibility to users who aren't in Calgary currently.</p>
<p>Clear price indication Viewing price is one of the most important aspects of the house buying process, so this information should be shown at every level of view for a house, including when shown on the map.</p>	<p>Task 1: Secondly, Julien has a firm price range that he is willing to work within when purchasing a house; he will not spend more than \$800,000, but he expects that to satisfy his requirements, he will be spending at least \$550,000.</p>	<p>This is a must have as price is one of the most important aspects when buying houses and a driving decision when selecting a house.</p>
<p>List of Active Listings (Realtor Seller) Realtors and sellers can view a list of active houses to allow the user to skip the houses which have already been bought or are in the process of it.</p>	<p>Task 5: Steve wants prospective buyers to easily navigate to his client's property listings.</p>	<p>This is a must have feature as it ensures that our website functions to always provide buyers and sellers with updated information of the current real estate market and availability.</p>

Edit listing Realtors and sellers can edit listing details which may be incorrect or need updating from their initial input.	Task 3: Task 5: With task 5 we have the realtor who is selling multiple houses, since descriptions can be updated, typos fixed, and detailed updated we need this functionality to ensure that our website remains up to date with accurate information.	This is a must have as it ensures that the information displayed on our website can be corrected.
Publish Listing Realtors can finalize details and approve publishing a listing.	Task 5: After finalizing all of the details of the listing with the seller, the real estate agent will be able to publish the listing for view on the website.	This is a must have as it serves half of the core functionality of the website. We also want to make sure that the listings are checked prior to showing on our website.
Chat Realtors, buyers, and sellers will use the chat functionality to communicate on our platform.	Task 5: Steve wants to communicate asynchronously with the home sellers as well as the potential home buyers and their realtors.	This is a must have as the platform's chat will be the primary means of communication between our different users.

Should include

Requirement	Related Tasks + Applicable Task Interaction	Reason for importance level
Filterable Realtor Expertise	Task 1: Julien ideally needs a realtor who can communicate in Spanish, so that he can have a smoother process.	Should have as it will help the realtor connection and search process become more user-guided.
Customizable Listings Fields and Descriptions	Task 3: Mark spent a significant amount of effort and financial investment while renovating the house and wants those details to be made clear to prospective buyers. Task 5: Steve wants to make sure that he is able to highlight his client's homes to prospective	Cookie cutter fields might not always meet the needs of all users, providing customizable settings can allow the sellers to give additional details.

	buyers so he wants to be able to customize listings to showcase the unique aspects of each home.	
Virtual Tour Options	Task 2: Jane can share listings of her toured houses to her husband who can then view interactive virtual tour options.	It is important for buyers to be able to get insight into the houses that they may be interested in without having to visit those locations in person. 3D photo spheres, floor plans, etc.
Interactive List of Nearby Amenities	Task 1: Task 2: Jane and Robert can be informed of the schools, stores, and other family friendly resources near their prospective house.	For many of our users, neighborhood, and ease of living details are equally, or more important than the house-specific details.

Could include

Requirement	Related Tasks + Applicable Task Interaction	Reason for importance level
Last Recorded Sale of the House (Year and Price)	Task 3: Mark can get a good preliminary understanding of the market before hiring a realtor.	Allows users to approximately calculate market trends in a selected neighborhood.
User Profile Details	Task 5: Steve can update his details as a realtor providing better insight to his prospective buyer clients.	Although not essential for the base application, it makes sense from a user perspective to be able to update account/personal details.
Displayed Post Metadata (Date Posted, Associated User Info)	(All tasks) Task 1: Julien can easily view information about the seller and a better understanding of demand for the properties he is interested in (through the use of Date Posted).	Allows users to get a slightly better understanding of the properties they are looking at, and information about who they are dealing with. It is not necessary, as this information will be indirectly available through other features.

Exclude

Requirement	Related Tasks	Reason for exclusion
Projected Sale Price and Availability Period	N/A	Highly algorithmic and back-end focused requirements, are uninteresting to us from the perspective of gearing our system usability to our target user groups. These details could be scoped in distant future iterations of the project.
Rental Listings	N/A	To manage scope and features, our application will focus on the home buying and selling process so we won't have the ability to post rentals on our website.
Predictive Search Results	N/A	The user-customized focus of our system will be done through intelligent user interface and interaction path design, so we are ignoring elements that would be handled through back-end logic in the current scope.

Phase 2: Low Fidelity Prototype Development

Due to the size of the sketches and for ease of readability with the associated explanations of improvement and modification, we have included the process in the appendix. Refer to [Appendix B: Sketch Drafts](#)

Section 2: The first prototype and walkthrough

Task 1: (Julien is moving from Argentina to Calgary to buy a house with specific qualities)

Storyboard: Refer to [Appendix A1](#)

Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments on solutions for this step
1. Select "Buy a House"	Julien knows he wants to buy a house		Perhaps this page should be the home

			page of our application by default
2. Select “View Homes Now”	Julien wants to start looking for a home immediately	Julien wants to look at homes, but the system does not make it obvious whether an account is necessary	Some indication of whether the user needs an account should be included
3. Press the “Filter” button	Without having done this before, Julien may not immediately know this is an option available to him.	The number of houses will be overwhelmingly large otherwise.	
4. Search for Max Price and fill out field with \$800,000	Julien knows his filter criteria, but would not know for certain that this filter category would exist.	Julien wants his house criteria to be satisfied	Should there be a more intuitive way to know which filter tags are available besides a scroll/search window? Possible Solution: Set list of fields which can be filled or left empty.
5. Press “Apply” button	The “Apply” button is obvious and it is unlikely that Julien would click off the filter menu.		
6. Search for Min Price and fill out field with \$550,000	(Same as Step 4)	(Same as Step 4)	
7. Press “Apply” button	(Same as Step 5)		
8. Type University of Calgary in the map search bar and press enter key	Julien is reasonably technologically literate and has used online maps before. This functionality is therefore intuitive.		
9. Select available house marker on the	Hovering over the house icons shows	Julien will want to get more details about each	Perhaps additional information should be

map	price, which indicates that selecting it will bring up more details.	house beyond just the price.	shown beyond the house price in the pop-up tooltip to incentivize clicking the markers.
10. Review details in side panel	The house information takes up roughly ½ the screen and is very obvious.		
11. Repeat steps 9 and 10 (*) times	N/A		
12. Press the “Find a Realtor” button	Julien knows that he needs to find a realtor, however he may not know where the button is located.	Users will be somewhat motivated to find this feature, however if they have trouble locating it, it could lead them to seek external means.	Possible solution is to use a pop-up guided approach that points to the button with a hint indicating that the option exists for first time users.
13. Press the “Filter” button	The filter controls are in the same location as the map view, so this should be a learned interaction.	Julien ideally wants to find a realtor who can speak Spanish, so checking the filters makes sense.	
14. Search for “Language” and select “Spanish” from the dropdown	(Same as Step 4, 13)		Although keeping the filter very similar to the map view is intuitive, there may not be enough filterable qualities to justify having a pop-up menu. Possible Solution: Display filter fields in the panel directly
15. Press “Apply” button	(Same as Step 5, 13)		
16. Select an available realtor from the filtered list	The behavior of selecting an option and viewing details in the		

	side panel is the same as for the map view, so this should be a learned interaction.		
17. Press the chat button next to the realtor profile.	Julien knows he needs to contact his selected realtor, and this button is very obvious.		
18. Type a message regarding intention to set up an external meeting and press send.	Julien has experience with other online messaging platforms such as Facebook Messenger, so the interface would be intuitive.		An account is probably needed for this step, otherwise message history won't have been able to be saved.

Task 2: (Robert and Jane are buying a new house which must meet certain family-friendly requirements)

Storyboard: Refer to [Appendix A2](#)

Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments on solutions for this step
1. Select “Buy a House”	Jane and Robert know that they want to search for a home to purchase		Perhaps this page should be the home page of our application by default
2. Fill in form fields and select “Create Account”	Jane knows her basic personal information	Yes, as the user was prompted prior to creating an account to choose if they wanted to view homes without creating an account.	
3. Press the “Filter” button	Jane may not know that she is able to choose filters.	Yes, the user wants the number of displayed homes to be reduced.	Maybe before getting to the list and map view we should provide users with the options

			to pre-filter the displayed homes by high level attributes such as community or size.
4. In the max price field enter \$1,000,000.	Jane knows her family's budget for a new home.	Yes, the user wants to see homes that are in their budget.	
5. Press "Apply" button	The "Apply" button is obvious and it is unlikely that Jane would click off the filter menu.		
6. In the min price field enter \$700,000.	(Same as Step 4)	(Same as Step 4)	The user should be able to input a range in a single step rather than having to select a min and max price separately.
7. Press "Apply" button	(Same as Step 5)		
8. In the community field enter "Brentwood."	Jane knows the community that her preferred schools serve.	Yes, Jane wants to view homes in specific communities.	
9. Press "Apply" button	(Same as Step 5)		
10. In the community field enter "Dalhousie."	(Same as Step 8)	(Same as Step 8)	The user should be able to input multiple communities at the same time to reduce redundant work.
11. Press "Apply" button	(Same as Step 5)		
12 In the bedroom number field enter 2	Jane knows how many bedrooms that her family needs.	Yes, Jane has a required number of bedrooms for her home so she wants to only see the homes that meet this need.	

13. Press “Apply” button	(Same as Step 5)		
14. Select available house marker on the map	Hovering over the house icons shows price, which indicates that selecting it will bring up more details.	Jane will want to get more details about each house beyond just the price.	Perhaps additional information should be shown beyond the house price in the pop-up tooltip to incentivize clicking the markers.
15. Review details in side panel	The house information takes up roughly ½ the screen and is very obvious.		
16. Repeat steps 14 and 15 (*) times until Jane sees a home that she's interested in	N/A		
17. Click on the expand button of a home that Jane is interested in.	Jane is fairly tech literate so she knows what the icon means underneath the listing.	Yes, as Jane wants to see more details about homes that she is interested in.	The icon can be made more clear to show what action will happen on clicking it. This will be helpful for people who might be less technically inclined.
18. Click on the favorite button	Jane knows that she wants to save this listing to share with her husband Robert.	Yes, Jane wants the easy ability to reference listings to share with her husband.	The favorite icon should be made clear as to what it is used for.
19. In the favorites menu, click on share icon	Again, Jane knows which listing she wants to share with her husband.	Yes, rather than send an email or message with the listing link. Jane wants to easily be able to share with her husband.	We should add a way to indicate when a house is sold, so it doesn't appear as though entries are disappearing from the favorites list.
20. In the favorites menu, click on share icon	Again, Jane knows which listing she wants to share with her husband.	Yes, rather than send an email or message with the listing link. Jane wants to easily be able to share with her	

		husband.	
Switch to Robert's view/screen			
21. In Robert's account, he can see what homes Jane has favorited and shared with him.	The users might not have knowledge of sharing within our platform itself and may share links instead.	Yes, as Robert wants to stay in the loop of the home buying process and wants to see prospective homes selected by his wife.	It should be made clear that sharing can happen directly on our platform to all the users.
22. Click on a home in the "Homes shared with you screen"	The user might not know that clicking on a home leads to another view.	Yes, Robert wants to see what the current progress is on the home viewings and purchase process.	There should be a button that prompts users to "View Current Progress" in the shared home screen to make it clear that the user can see the progress from their own app.

Task 3: (Mark is selling his house with a high level of knowledge about what he wants to include in the listing)

Storyboard: Refer to [Appendix A3](#)

Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments on solutions for this step
1. Select "Sell a House"	Mark knows he wants to buy a house		Perhaps this page should be the home page of our application by default
2. Fill in form fields and select "Create Account"	Mark knows his basic personal information	The system does not provide an option to bypass creating an account	Users should probably be able to view listings and access application functionality without creating an account.
3. Fill in the square footage field with 6,500	This is one of the key details that Mark knows about his house		

4. Fill out the number of bedrooms and bathrooms fields with 3 and 2 respectively	(Same as Step 4)		
5. Press the “Upload Images” button and use the standard file explorer upload interaction.	(Same as Step 4)		
6. Hover over an image and select the “Primary” button	Unless Mark has used the system before, he would not necessarily know to apply this option.	Mark might make the assumption that the first image that was uploaded will be the primary image (this occurs by default)	Perhaps remove the primary image option and instead passively always use the first image uploaded as the primary.
7. Fill in the house location (123 lane NW) in the address field.	(Same as Step 4)		
8. Leave other fields not marked with an asterisk (mandatory) empty	This step assumes that the user has experience using other online forms. If so, then this action is intuitive.		
9. Select the “Add Custom Field” button	The purpose of adding custom fields may not be obvious if Mark has not done so before.	Mark is motivated to make the details about his house clear, so he will search for a way to do so.	Perhaps one custom field must be added by default for the description and the user can add more.
10. Select “Renovations” from the added dropdown menu	Mark knows that he wants to add details about renovations to the house description, however he wouldn’t know that this is an option in the list.	Mrak does want his renovations to be listed, but he might not care whether they are under a generic description or a specific header.	Perhaps list the options in the dropdown in a string list in the field header.
11. Fill in the text area with details of home renovations.	Mark intimately knows what the details of the renovations are.		

12. Select “Submit” button	This button is very obvious, and since Mark is confident in posting, the step is clear.		Perhaps we should add a cancel button to provide users an extra way to navigate away from the listing form.
13. Press the “Find a Realtor” button	Mark knows that he wants to find a realtor, but the button location may not be obvious.	If Mark does not immediately see the button option he may try to search up a realtor manually outside our application	Possibly add a pop-up after important actions, such as listing form submissions to prompt the user to find a realtor.
15. Select an available realtor from the filtered list	Mark doesn't necessarily know what details he wants for a prospective realtor.	Selecting options is the only intuitive way to find out more about what realtor to select.	
16. Press the chat button next to the realtor profile.	Mark knows that he needs to contact the realtor, and the chat button is large and obvious.		
17. Type a message regarding intention to set up an external meeting and press send.	At this point Mark knows how he would proceed with a conversation with a real estate professional		

Task 4: (John is a busy professional looking to have a more traditional house buying approach with a focus on in-person elements and communication)

Storyboard: Refer to [Appendix A4](#)

Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments on solutions for this step
1. Select “Buy a House”	Yes, John knows to buy a house	This is only one of two options shown on the main page.	Perhaps this page should be the home page of our application

			by default
2. Fill in form fields and select “Create Account”	John knows his basic information.	A user is not able to proceed without creating an account.	A user should be able to browse listings without the use of an account.
3. Press the “Find a realtor” button	John knows he does not have the time to browse listings on his own, so he wants to connect with a realtor.	Yes, the button is not in an ambiguous location.	
4. He clicks on one of the realtors shown.	John knows to connect with a realtor, and he would like to see information about them beforehand.	Users are given a variety of different realtors and are given the ability to choose one to their liking.	
5. He clicks on a different one of the realtors shown.	John is not completely satisfied with the first realtor, so he tries a different one.	Same as step 4.	We should have an easier way to cycle between realtors and reduce options. Possibly filter based on neighborhood.
6. He clicks the “Chat” button	John knows that he wants to speak with a realtor		
7. He types a message in the chat box regarding his requirements, and presses send.	John has a general idea of what he is looking for, and notifies his selected realtor.	The chat feature is specifically designed to do this, and is very clear in its design	
9. John receives messages from the realtor regarding a potential house and details about setting up an external meeting(s).	There is no knowledge required for this step.	N/A	
10. John re-opens the application and presses the “Chat” button.	John will be notified that he has received a message.	Yes, there is an indicator on the chat button showing that a	

		new message has been received.	
11. John clicks on the chat he has with his realtor.	John would like to respond to his realtor		
12. He types a message confirming an external meeting(s) and presses send.	John knows his schedule and confirms the meeting(s) with his realtor.		It may be useful to implement a calendar system to keep track of external meetings.

Task 5: (Steve is looking to sell a few houses for his clients and would like to maximize communication with his clients and prospective buyers)

Storyboard: Refer to [Appendix A5](#)

Step Description	Does the user have the knowledge to do this step?	Are users motivated to do this step?	Comments on solutions for this step
1. Steve clicks on “Create Listing”	Its obvious, to click on “create listing” to put two listings		
2. Steve creates an account and logs in to the Realtor Site	Yes, Steve knows he needs to log into the site in order to use it.	The system won’t work, without logging in	
3. Select “Sell a House”	Steve knows which house to put on list and all their info	In order to sell/list a house you need to do this step	
4. Fills in the house info he is listing(postal code, property type, address, city, province, year built, description etc.)	In order to sell the house properly, you need to have the correct information in it	To make his life easier and have the information in the house listing he should	
5. Click submit button	“Submit” button is important to post your		

	listing for future buyers to see		
6. Posts second house listing	(Same as steps 3 to 5)		
7. Steve finds issues in his listings so he edits his current listing by clicking the “edit” button.	Yes, there is a edit section in his posted listings	It depends if he has made a mistake, then Steve will definitely, edit his current listings	We should make it more obvious (perhaps with pop-ups) that If the user is confused, he can use the chat feature and go to the bot section, to find out about the ‘edit’
8. Steve checks the chat notification to see numerous potential buyers willing to buy	He should easily access the chat feature as he will get notified about it.	It will make it easy for him to keep track of clients' messaging instead. So steve will definitely be motivated to use it	We should implement a notification section that will pop up on the chat section for Steve to see.
9. Steve messages clients and books meeting with them	He should, so he can potentially sell the houses	The realtor wants to sell the house, so he should	
10. Both of his listing are sold and clicks the “sold” button on his current listings	It would be obvious to do this since it would make life easier for him to handle all his tasks and not be notified about houses already sold.	There is a sold section button on his current listing component	We should create a scripted set of steps that Steve can then walk through after his listings are sold.

Walkthrough Results Summaries:

Task 1:

The prototype handles this task very well, as the functions in this process were one of the primary considerations when designing the low-fidelity prototypes. Most of the flow from step to step was quite smooth, however an assumption that we made at the outset that new users would want a simplified set of options led to the issue of ambiguity around whether an account was necessary for some features of our system. We noted that it should be communicated what functionality would not be available without an account. Navigating from step to step is very

simple if the user knows what they are looking for, but this can be a bit confusing to a new user. We think that we should add a pop-up walkthrough function to guide the user to the next pages they should visit. Some functionality seemed slightly beyond what was needed, such as the ability to filter on realtor qualities. This should probably be reduced to be as simple as possible.

Task 2:

This task was able to be successfully completed using our system with a relatively clear and straight path of user interactions. Most of the friction points that we identified had to do with lack of fidelity for filtering and navigation according to personalized interests. This is a major concern since these are intended to be core aspects of the appeal of our solution. We will need to reduce some of the back and forth in the filtering process as well as include additional high-level options according to our use-cases. Some aspects of the UI that were intuitive from a design perspective are less intuitive from a user perspective. For example the expand details button clearly expands “something” but it is not clear what. Many of the details that are relevant to the users are hidden behind this step. We want to avoid users missing critical aspects of our system because they are not expressly communicated.

Task 3:

This was an important task for validating our prototype, and it is able to be completed relatively efficiently. Due to the nature of the task as mostly centering around filling out a form to publish a listing, there were not many friction points identified. Most of the areas for concern came from considerations around the novel functionality we are providing to the users. For example adding in custom fields seems like an important feature, however it is difficult to convey why this is important to the user without a block of text explaining. Currently the user has to figure this out for themselves, so we will probably need to add in some tooltip to indicate why and how the functionality should be used.

Task 4:

This task did a good job of highlighting our prototype’s strength in providing the ability to allow users to use our system loosely to cater towards an in-person, customized experience. As such there were not many identified friction points in the system itself, but we did note that by driving much of the interaction to external means of communication, we are opening the risk for the typical organizational challenges that busy consumers face. As such we may want to incorporate certain elements that make scheduling more efficient, such as a calendar to book meetings with realtors.

Task 5:

This task helped identify issues that our realtor and real estate involved users would face. When many listings are being posted there are several organizational challenges that can be faced by the users. For instance we noticed that it isn't entirely clear how to approach editing a property or what to do once a property is sold. For this reason we plan to implement a set of scripted steps that can be stepped through for normal interactions with our system.

Overall Summary:

Based on the aggregation of our walkthroughs, we found that overall, our prototype did a very good job of addressing the typical user interactions with our system. There were a few common patterns that we noticed in terms of friction points and interactions that we had neglected to consider. For instance, most of the problems that we independently identified while performing the walkthroughs had to do with the user not knowing exactly what to do next if they hadn't used our system before. From a strict design perspective, these options all exist at the appropriate times, but knowing how and when to use buttons and features can be confusing, especially when our design deviates from typical online real estate platforms. Most of our prospective solutions in this problem-space surround adding pop-up walkthrough tips for new users. This can help train the user to use our system, but could be frustrating to experienced users. For this reason, we will also be considering ways to communicate functionalities without making our system overly explanation-heavy.

Another common issue we noticed is that several of the features that we included in the prototype were engineered to match the requirements for specific tasks, but didn't really make sense from a generic user perspective. For example the filter menu in the "Find a Realtor" section is a little bit excessive for its intended purpose of providing a set of realtors that could all service the customer needs. These issues should be fairly easy to address, since it merely requires simplifying the interaction.

The most concerning problem areas for our prototype had to do with hidden functionality. If we have added important functionality, but the user doesn't know that it exists and doesn't interact with it, then it is essentially a waste. Currently we noticed this issue with the expanding details for house listings, and for adding custom fields when posting a listing. We need to make sure that the user knows that these options exist, and is incentivized to try using them. This can be done with clearer buttons, pop-up hints, or text headers above the options.

Appendix A: Storyboards and Sketches

Appendix A1 (Task 1)

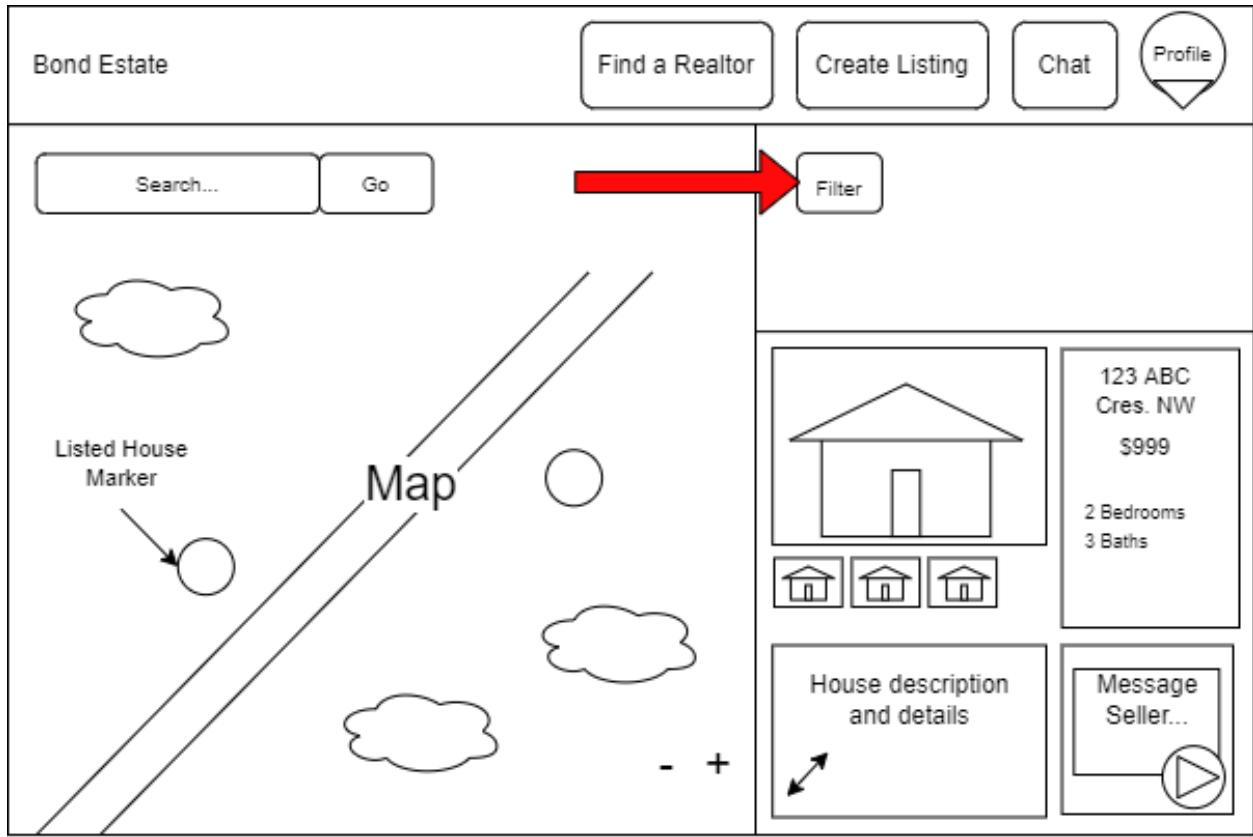


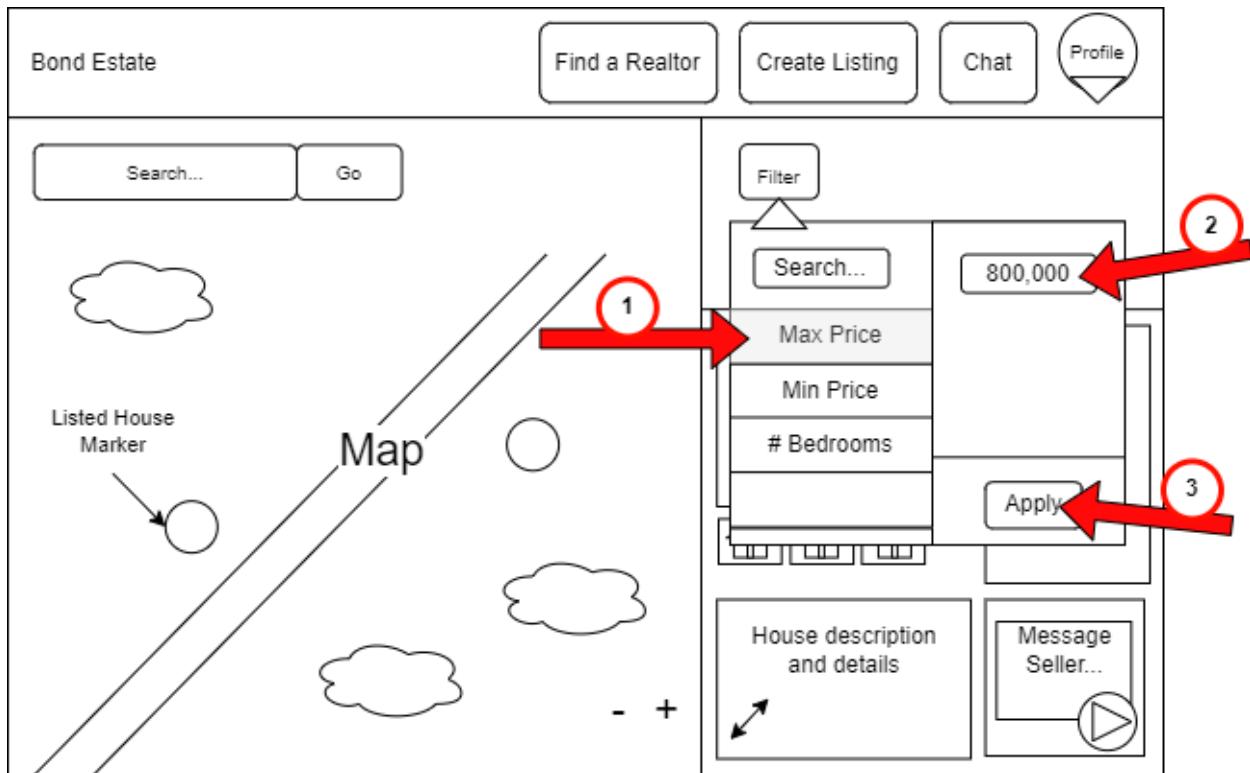
Bond Estate

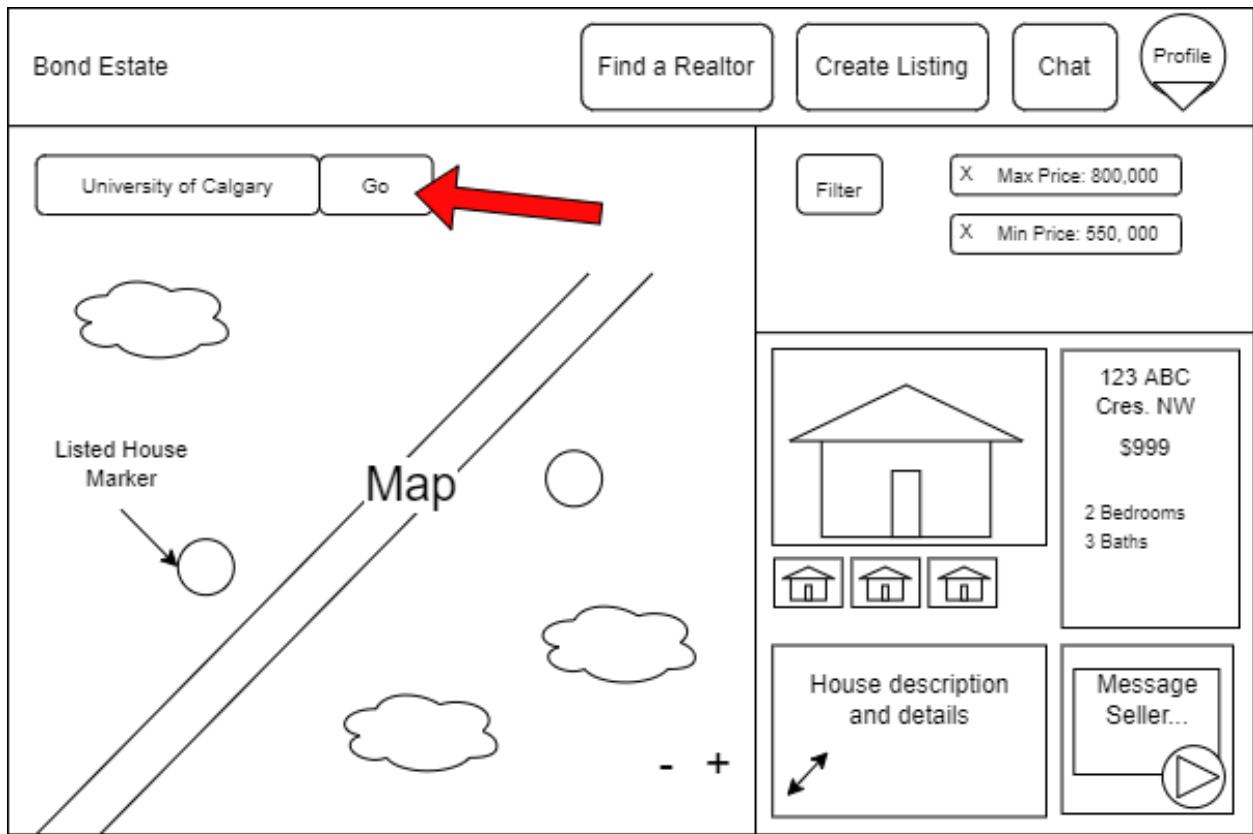
View Homes Now

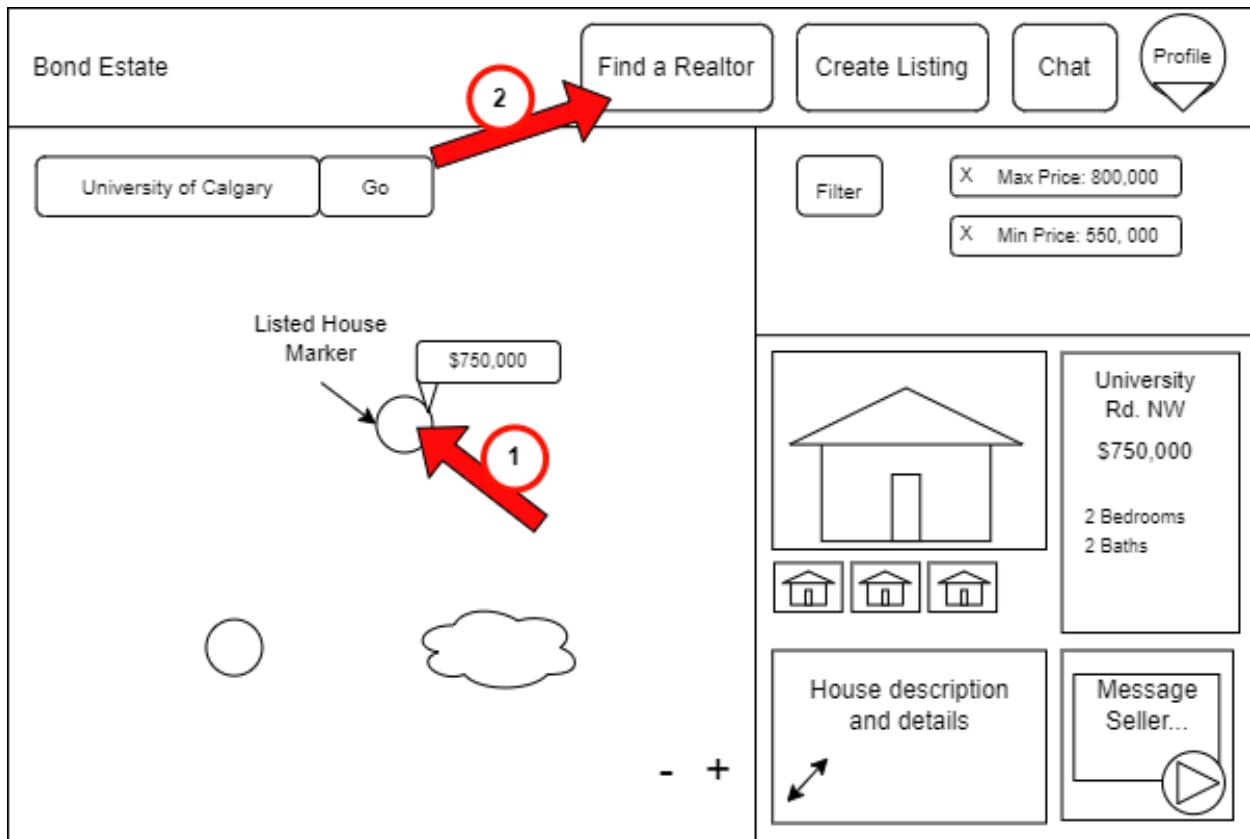
Sign Up For An Account











Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go Filter

Realtor Dan

Realtor Michael

Realtor Paul

Realtor Sidney

Realtor Ripley



 Chat

Realtor Michael
10 years of experience
Speaks English

The screenshot shows a web-based application interface for a real estate platform named "Bond Estate". At the top, there are navigation links: "Find a Realtor", "Create Listing", "Chat", and "Profile". Below the header, there is a search bar with a placeholder "Search..." and a "Go" button. To the right of the search bar is a "Filter" button, which opens a sidebar.

The main content area displays a list of Realtors, each with a small profile icon and their name:

- Realtor Dan
- Realtor Michael
- Realtor Paul
- Realtor Sidney
- Realtor Ripley

A red arrow labeled "1" points from the list to the "Filter" button. Another red arrow labeled "2" points from the "Spanish" checkbox in the filter sidebar to the "Apply" button. A third red arrow labeled "3" points from the "Apply" button back to the list of Realtors.

The filter sidebar contains the following fields:

- Search...
- Language (with a dropdown menu showing "Spanish")
- Years Experience
- # Clients
- Apply

Below the sidebar, there is a note: "Realtor Robert 10 years of experience Speaks English".

Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go Filter X Language: Spanish

Realtor Dan

Realtor Paul

1

2

Realtor Paul
20 years of experience
Speaks English, Spanish

Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go

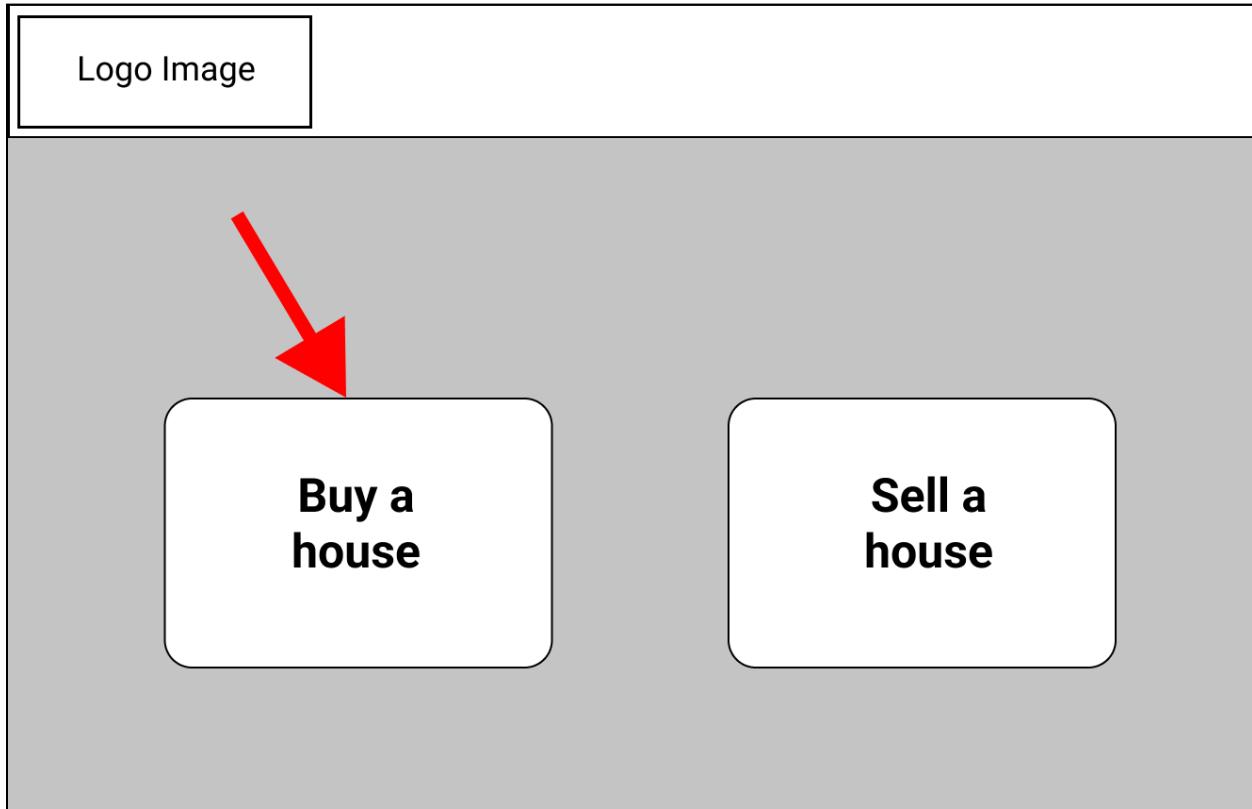
Realtor Paul

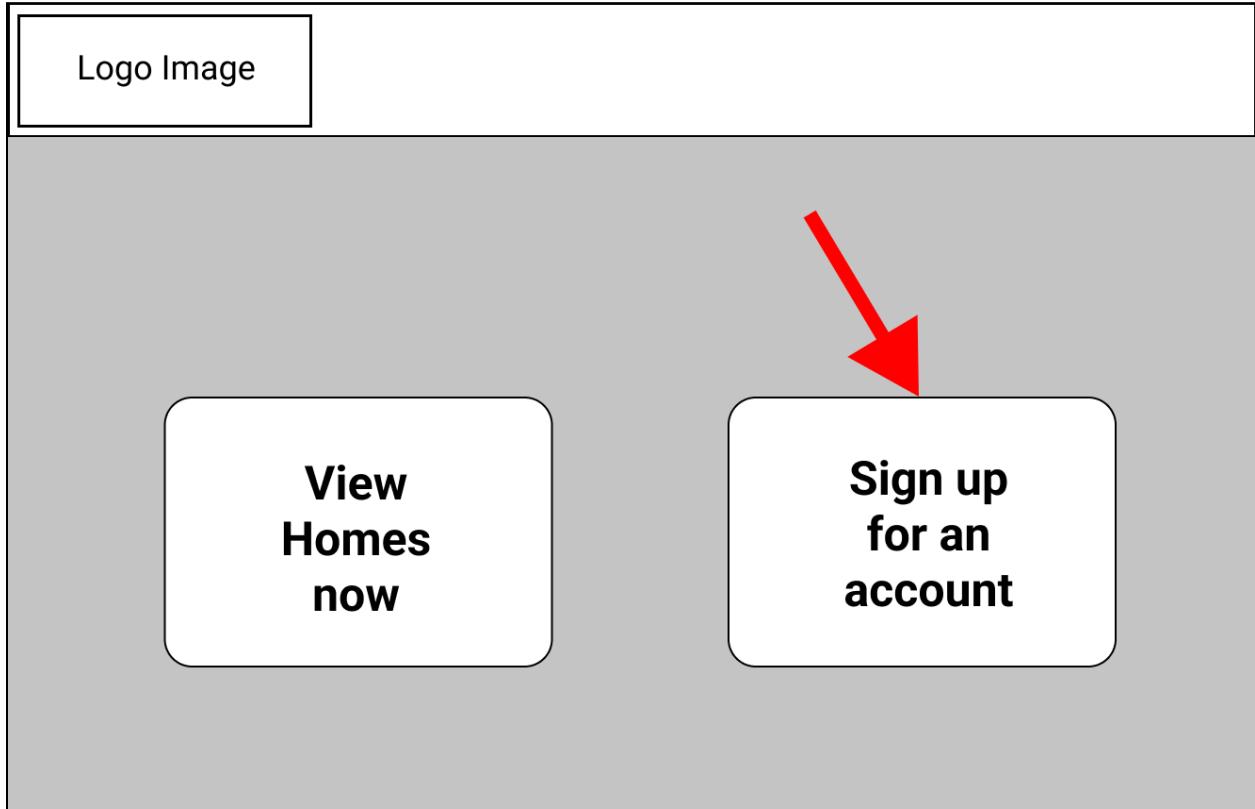
Realtor Paul

Hello Paul, I have a few houses I would be interested in taking a closer look at. Would you be able to connect for a call this week?

36

Appendix A2 (Task 2)





Logo Image

Profile photo

First Name
Jane

Last Name
Smith

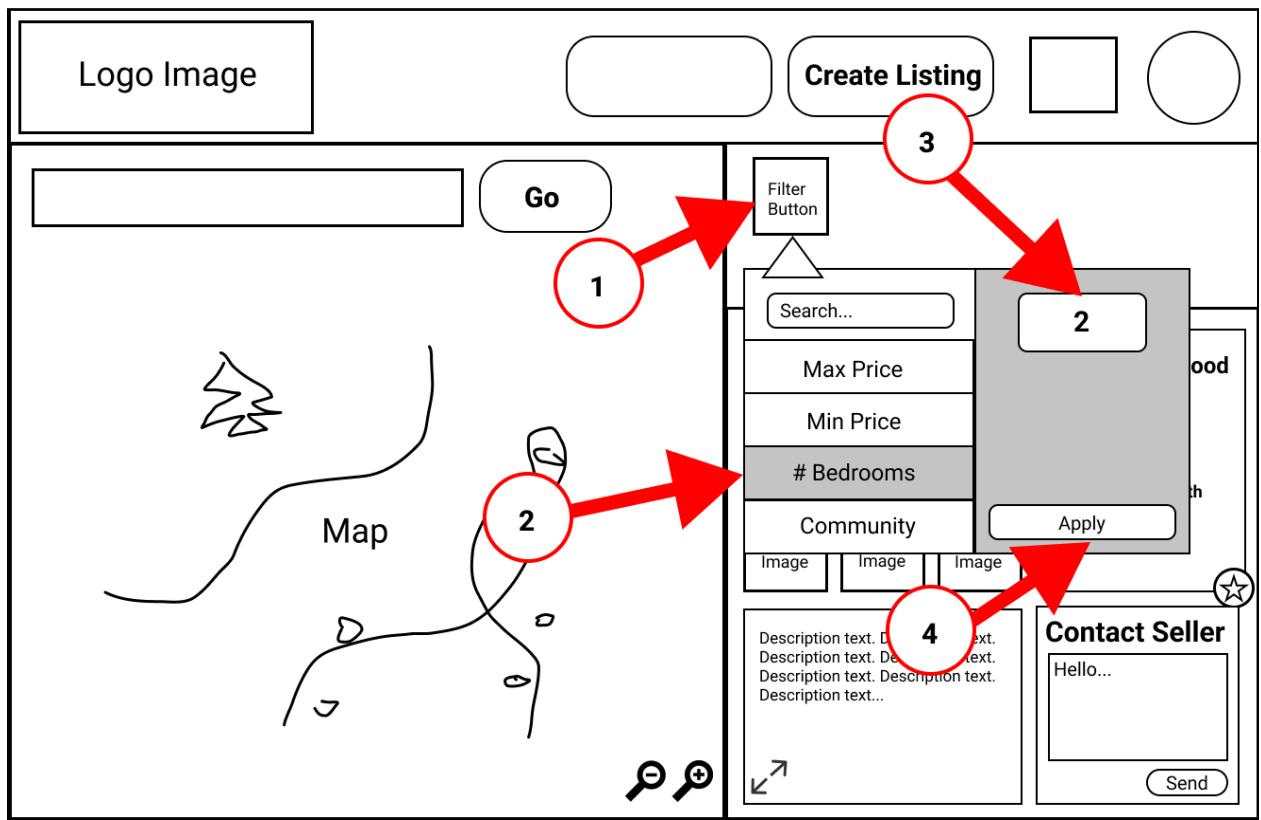
Email
jsmith123@gmail.com

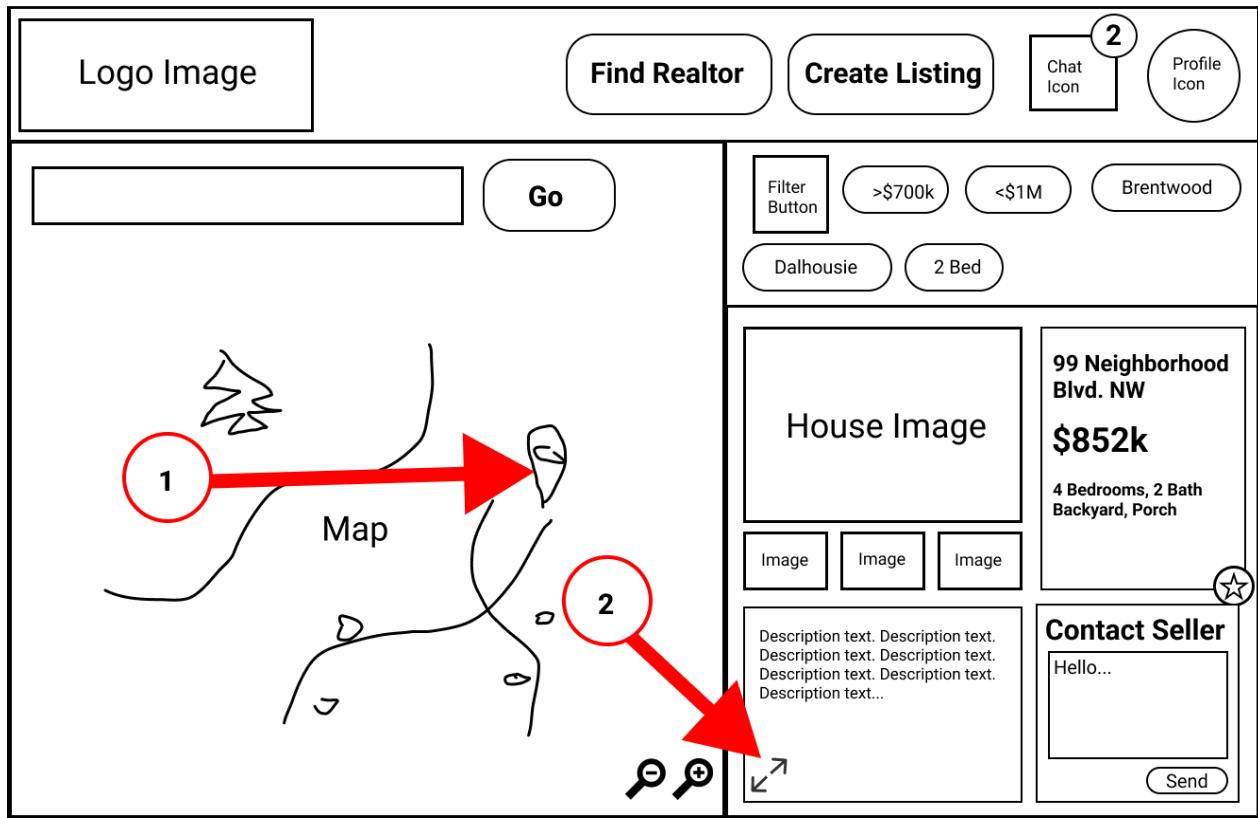
Password

Confirm Password

Create Account







Logo Image
Find Realtor
Create Listing
Chat Icon
Profile Icon (2)

House Image

Image 1

Image 2

Image 3

Amenity Map

99 Neighborhood Blvd. NW

\$123k

4 Bedrooms, 2 Bath 1,054 SQFT
Backyard, Porch

Description text. Description text. Description text. Description text.
Description text... [read more »](#)

Information

Bedrooms	3
Bathrooms	3
Full Baths	3
Lot SQFT	4,294
Year Built	2002
Status	Active

Amenities

Parking Spaces	5
# of Garages	2

Interior

Heating	Natural Gas
Basement	Developed

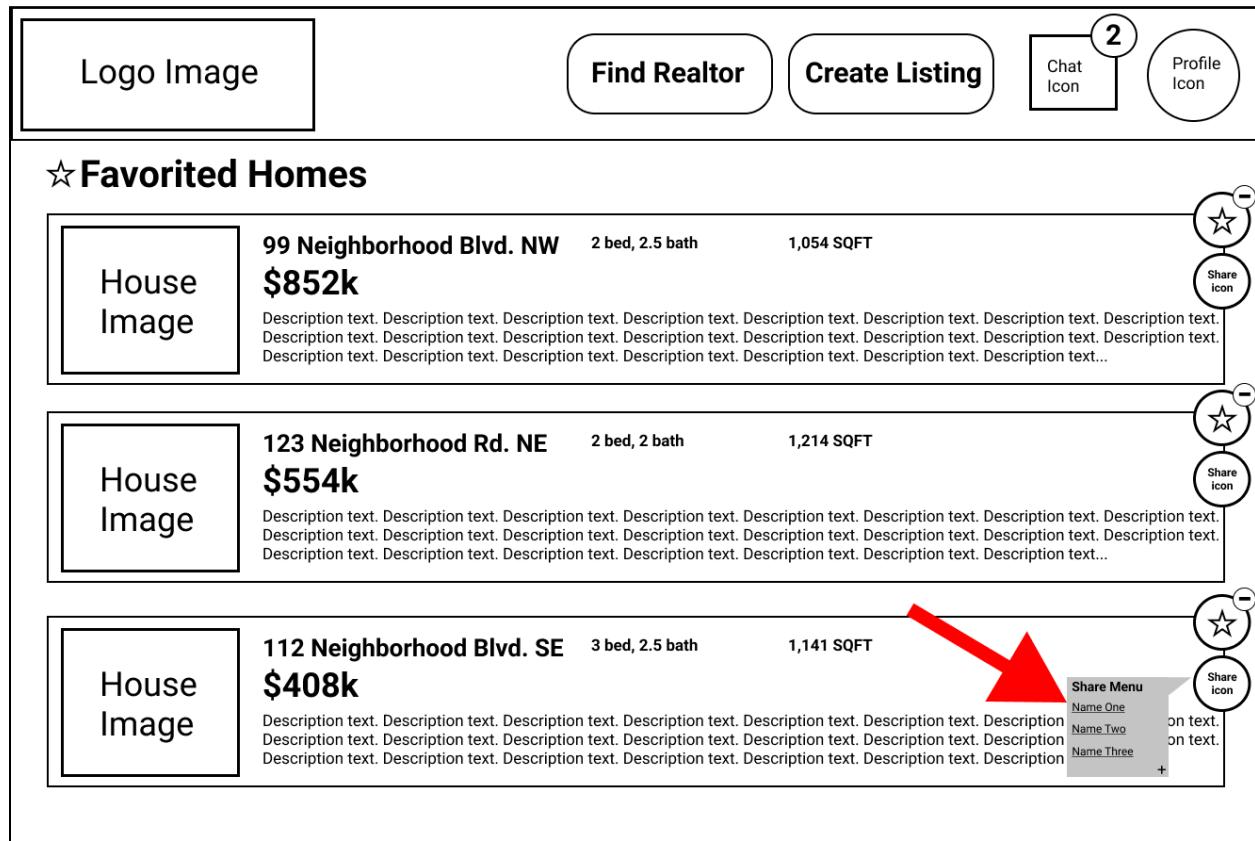
Neighbourhood Reviews

★★★★★ Review 1 text. Review 1 text. Review 1 text.
Review 1 text. Review 1 text. Review 1 text.
Review 1 text. Review 1 text.

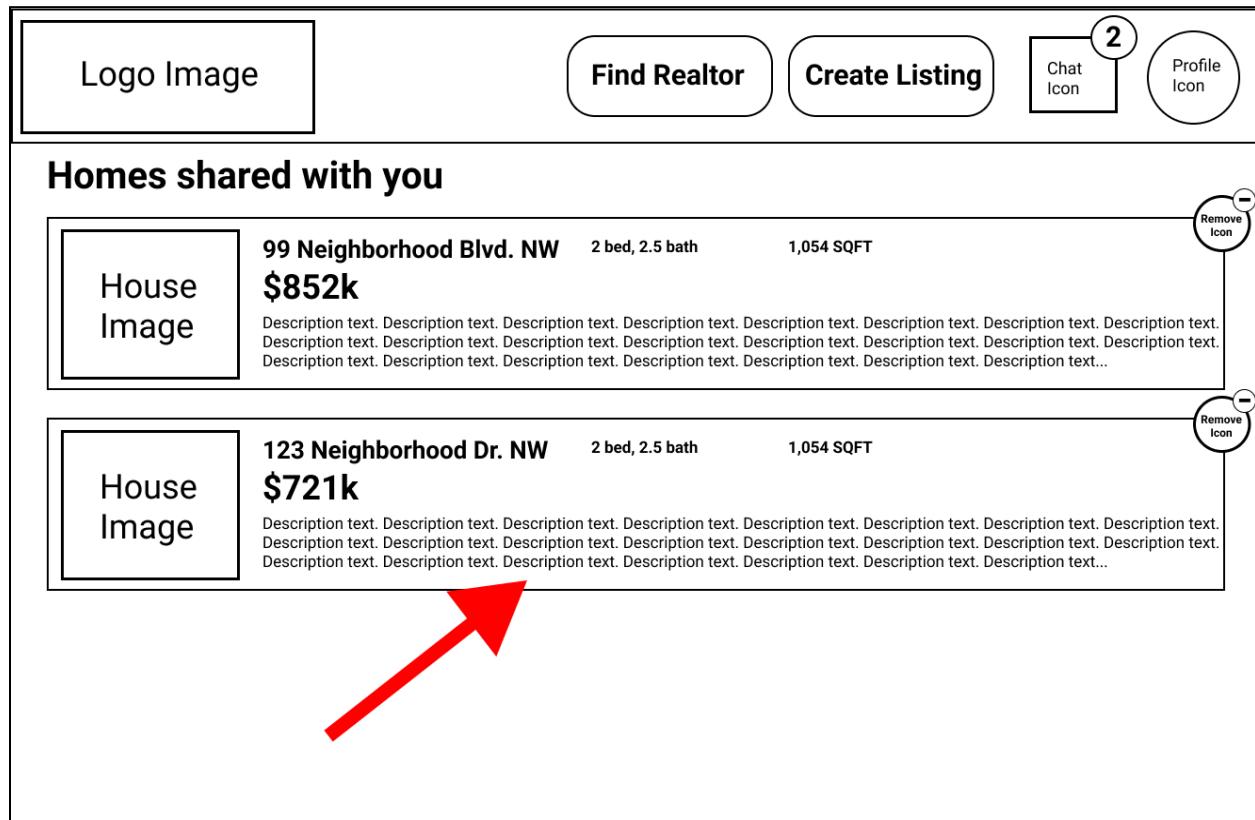
★★★★★ Review 2 text. Review 2 text. Review 2 text.
Review 2 text. Review 2 text.

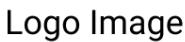
★★★★★ Review 3 text. Review 3 text. Review 3 text.
Review 3 text. Review 3 text. Review 3 text.

[Read More Reviews](#)



Robert's Screen:





[Find Realtor](#)
[Create Listing](#)

Chat Icon

Profile Icon

House
Stop Tracking Icon

99 Neighborhood Blvd. NW 2 bed, 2.5 bath 1,054 SQFT

\$852k

Description text. Description text...

Current Progress

Virtual Showing
Month 12, 2021

In-person Showing 1
Month 20, 2021

In-person Showing 2
Month 30, 2021

Offer
Started Month 20, 2021

Home Inspection

Final Walkthrough

Appendix A3 (Task 3)



Bond Estate

Profile

First Name Email

Mark john.a@gmail.com

Last Name Password

Le *****

Confirm Password

Create Account



Bond Estate

Find a Realtor Create Listing Chat Profile

Create Listing

Address	123 Lane NW
Square Feet	6500
# Bedrooms	
# Bathrooms	
Add Custom Field	

Images

Upload Images...

SUBMIT

1

2

Bond Estate

Find a Realtor Create Listing Chat Profile

Create Listing

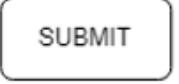
Address	123 Lane NW
Square Feet	6500
# Bedrooms	3
# Bathrooms	2
Add Custom Field	

Images

Upload Images... 

 1

 2

 3

SUBMIT

Bond Estate

Find a Realtor Create Listing Chat Profile

Create Listing

Address 123 Lane NW

Square Feet 6500

Bedrooms 3

Bathrooms 2

Add Custom Field

Images

1 2 Make Primary Upload Images...

SUBMIT

Bond Estate

Find a Realtor

Create Listing

Chat



Create Listing

Images

Address	123 Lane NW
Square Feet	6500
# Bedrooms	3
# Bathrooms	2
Add Custom Field	



Upload
Images...

SUBMIT

Bond Estate

Find a Realtor Create Listing Chat Profile

Create Listing

Address 123 Lane NW

Square Feet 6500

Bedrooms 3

Bathrooms 2

Add Custom Field

Renovations
Damages
Neighborhood
Amenities

Images

Upload Images...

SUBMIT



Bond Estate

Find a Realtor Create Listing Chat Profile

Create Listing

Address 123 Lane NW
Square Feet 6500
Bedrooms 3
Bathrooms 2
Renovations Modernized, Hardwood, New appliances
Add Custom Field

Images

Upload Images...

SUBMIT

Address	123 Lane NW
Square Feet	6500
# Bedrooms	3
# Bathrooms	2
Renovations	Modernized, Hardwood, New appliances
Add Custom Field	

Bond Estate

Find a Realtor

Create Listing

Chat



Create Listing

Images

Address

123 Lane NW

Square Feet

6500

Bedrooms

3

Bathrooms

2

Renovations

Modernized,
Hardwood,
New
appliances

Add Custom Field

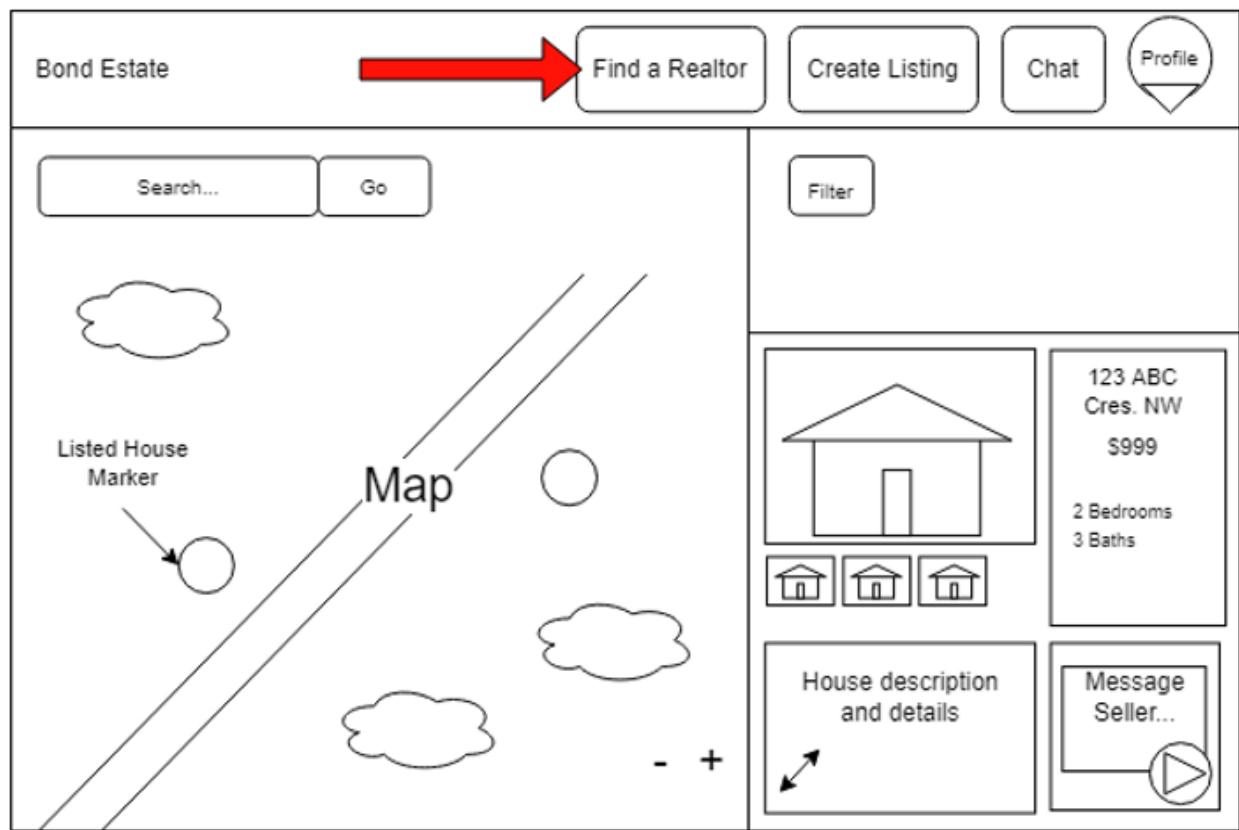
[Empty input field]



Upload
Images...

SUBMIT





Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go Filter

	Realtor Dan
	Realtor Michael
	Realtor Paul
	Realtor Sidney
	Realtor Ripley



 Chat

Realtor Michael
10 years of experience
Speaks English

Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go

Realtor Michael

Realtor Michael

1 Hey Michael, I've submitted my listing to Bond Estate as I would like to sell my house. Let's set up a meeting where we can go over the details. Thanks!

2

Appendix A4 (Task 4)



Bond Estate

Profile

First Name

John

Email

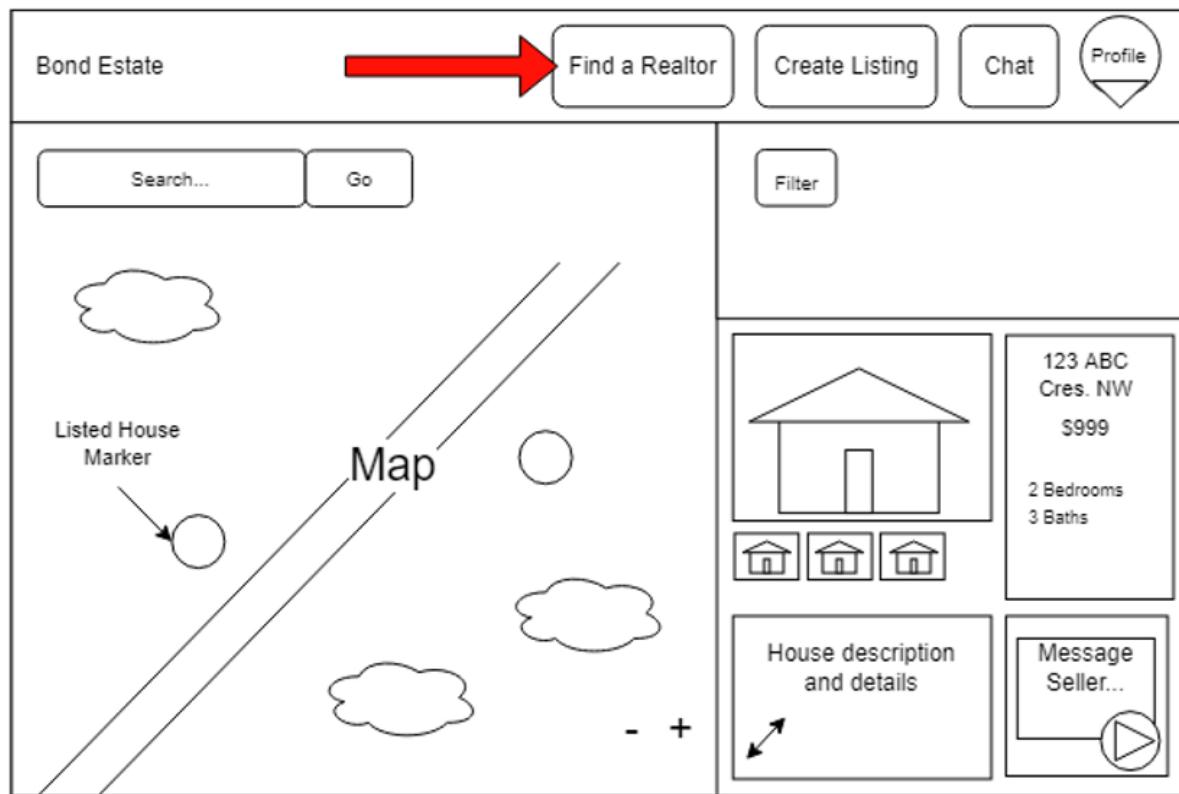
john.a@gmail.com

Last Name

Appleseed

Create Account





Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go Filter

Realtor Dan

Realtor Michael

Realtor Paul

Realtor Sidney

Realtor Ripley

Chat

Realtor Michael
10 years of experience
Speaks English

Realtor Michael

10 years of experience
Speaks English

Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go Filter

Realtor Dan

Realtor Michael

Realtor Paul

Realtor Sidney

Realtor Ripley

Realtor Sidney

13 years of experience
Speaks English, Arabic

Chat

Bond Estate

Find a Realtor Create Listing Chat Profile

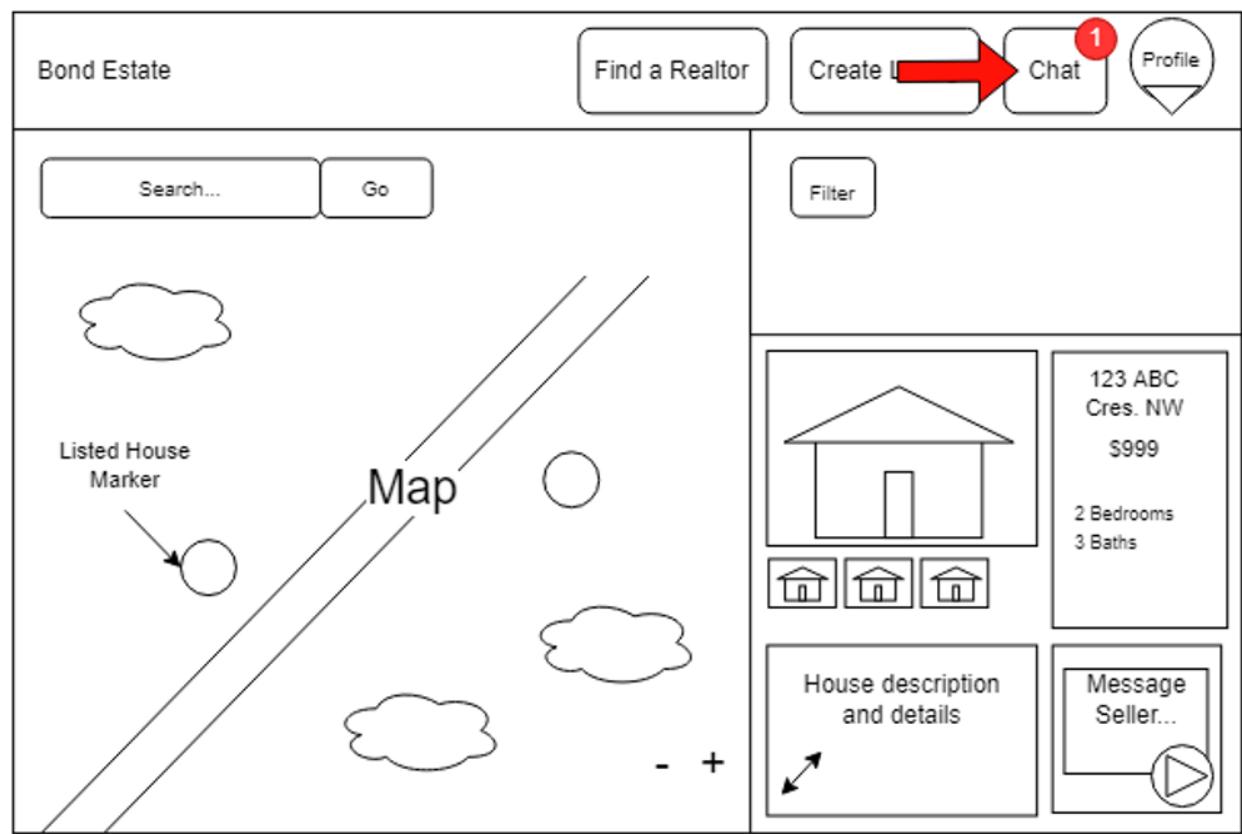
Search... Go

Realtor Sidney

Realtor Sidney

1 Hello Sidney, I am looking for a house. I don't have many very specific requirements, but I want something with at least two bedrooms, 1500sq ft., and a modernized interior. I don't have much time to look on my own and I would like to view houses in person only, could you help me out?

2



Bond Estate

Find a Realtor Create Listing Chat Profile

Search... Go

Realtor Sidney

Realtor Sidney

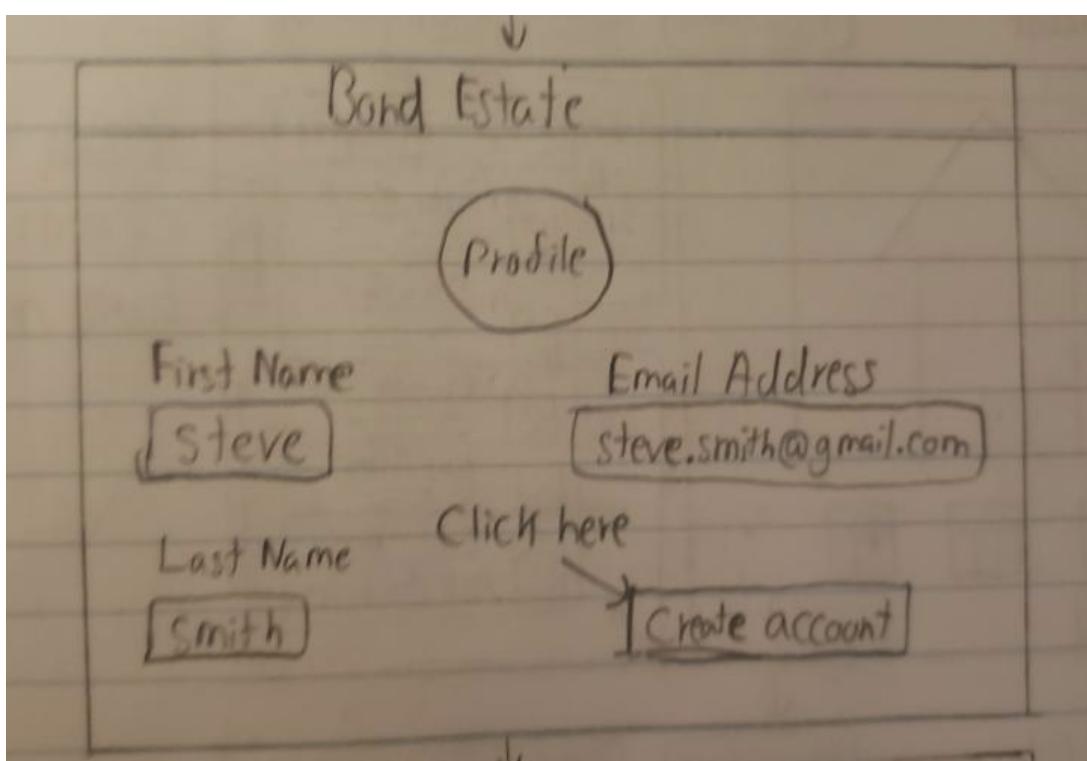
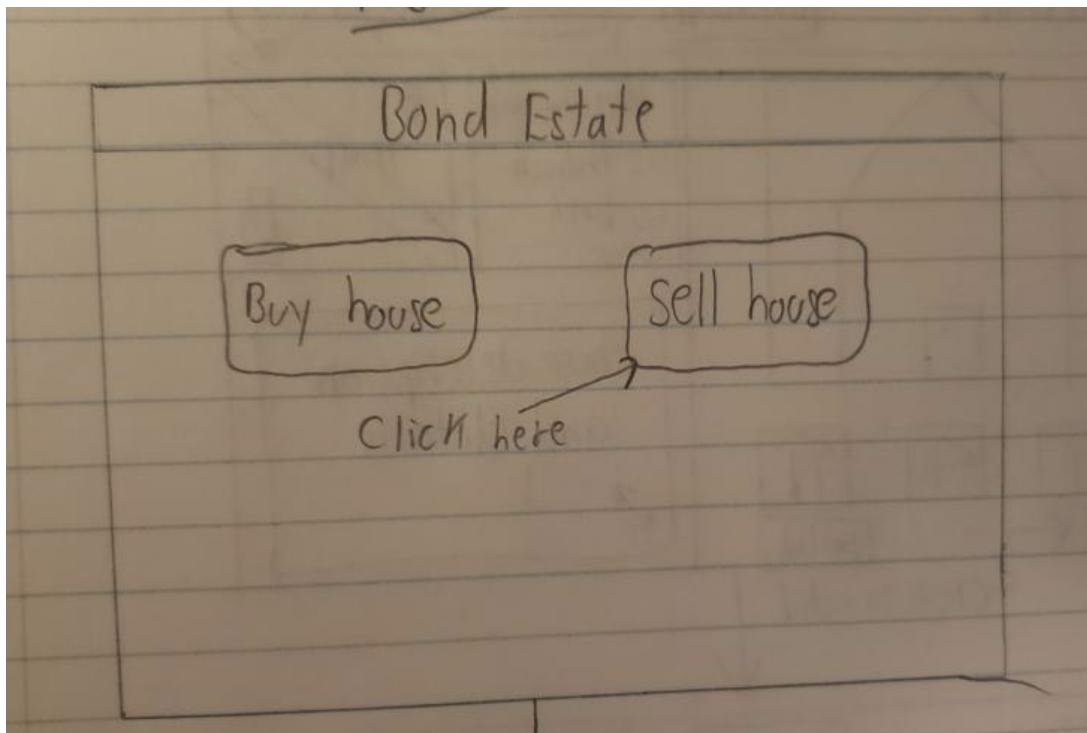
Hello Sidney, I am looking for a house. I don't have many very specific requirements, but I want something with at least two bedrooms, 1500sq ft., and a modernized interior. I don't have much time to look on my own and I would like to view houses in person only, could you help me out?

Hey John, I understand. I've picked out some houses for you to take a look at. I've listed them below, please let me know if 2PM on Sunday works for you to have a physical showing.
1 - 123 1st Street NE
2 - 308 Negra Arroyo Lane SW
3 - 914 Temple Drive NE

1 Hey Sidney. I am available on Sunday at 2PM. We'll start with the first house and work our way down the list. Thanks!

2

Appendix A5 (Task 5)



Bond Estate ↓

Buy house. Create Listing

Create Listing

Property type: House Price: \$300000

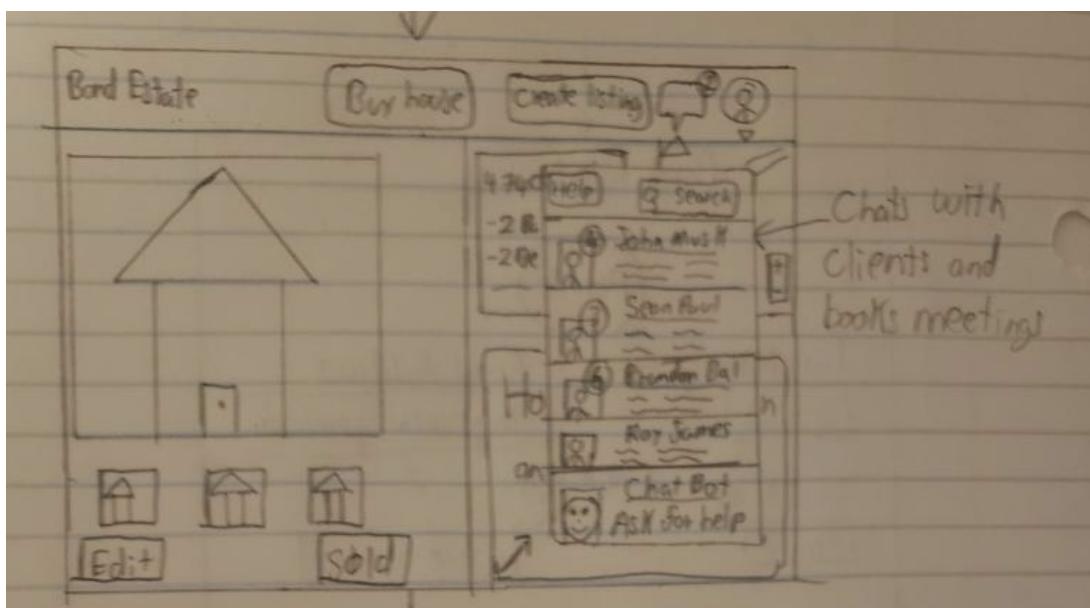
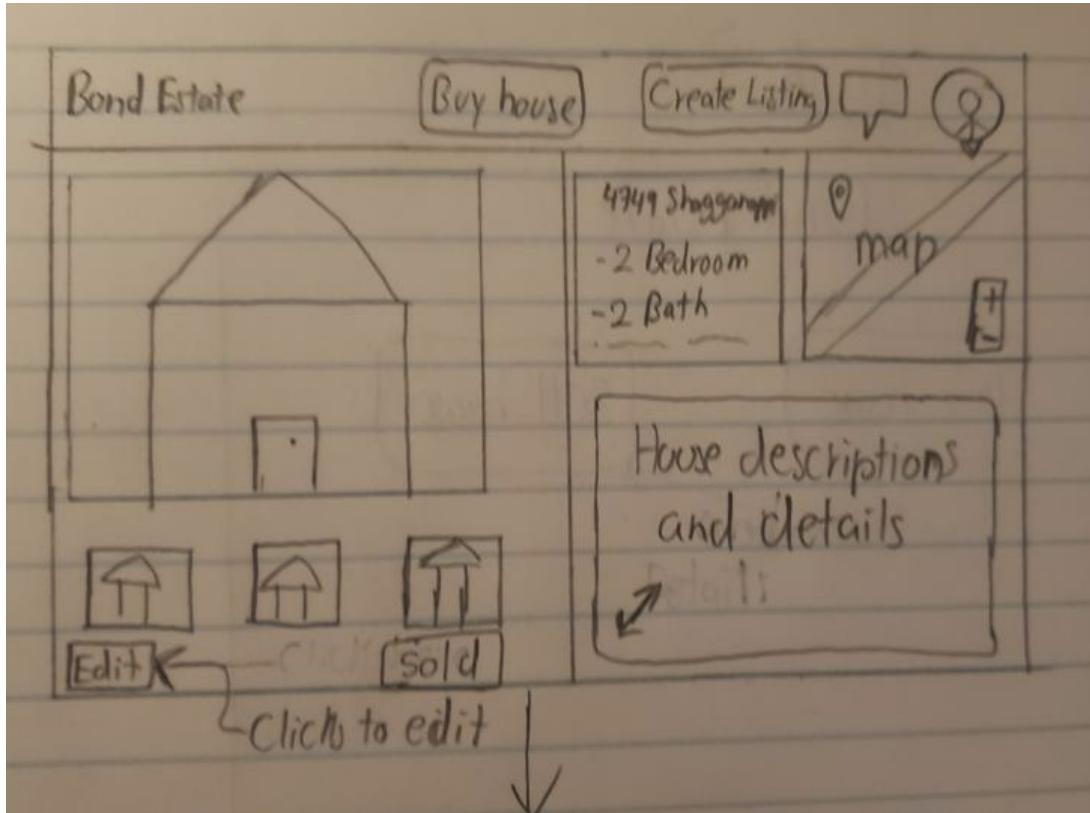
Address: 4749 Shagganapi Rd

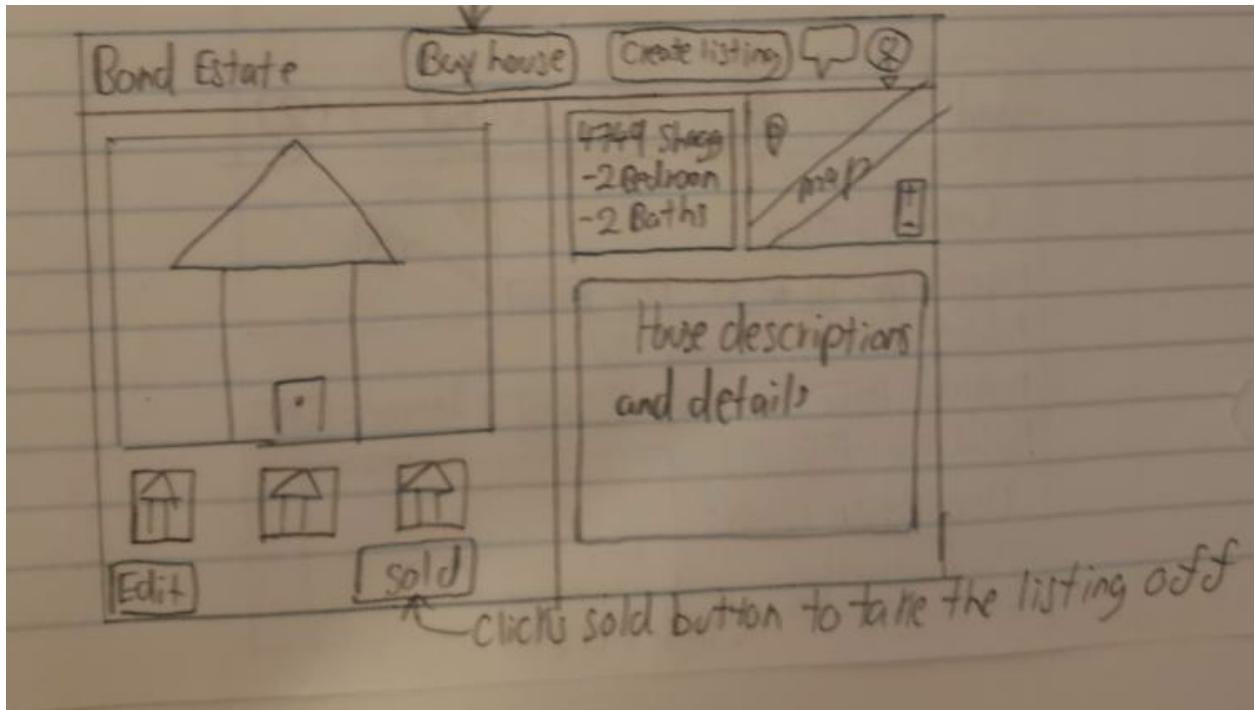
Province: None City: Calgary Images:

Postal code: T4S 6A2

Description / Info:

~~Map~~

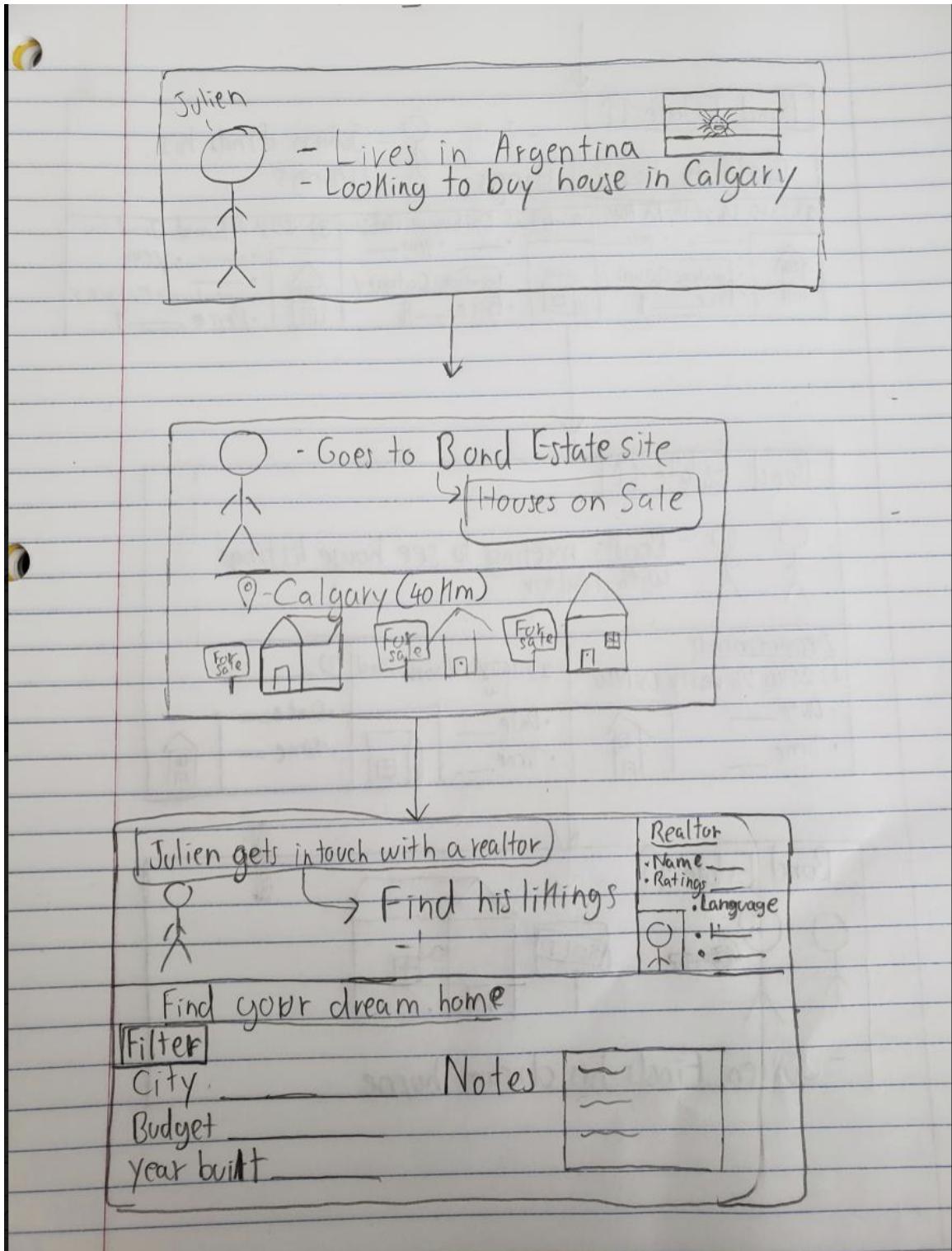


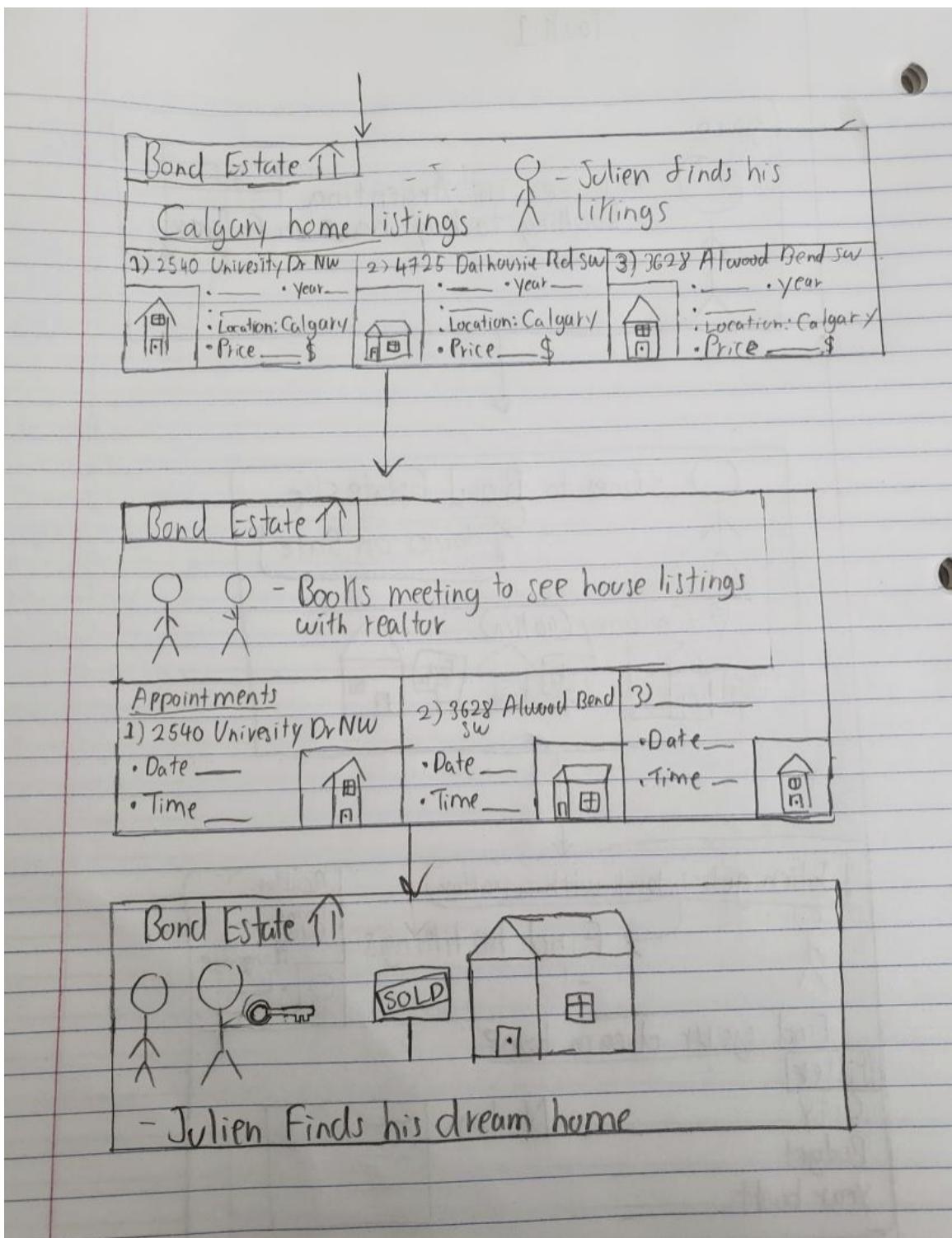


Appendix B: Sketch Drafts (Early Prototypes)

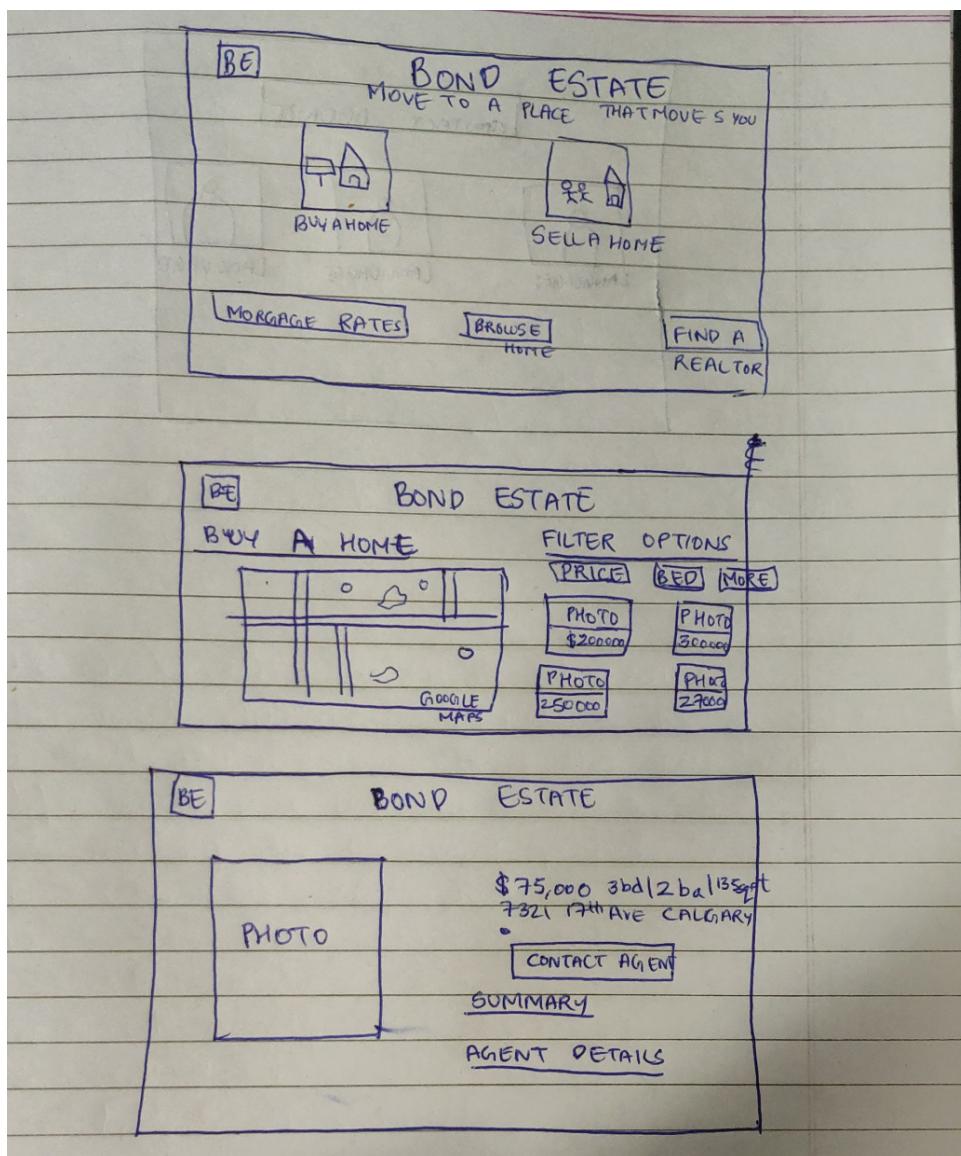
In this section of the appendix, we will highlight some of our iterative processes when developing prototypes.

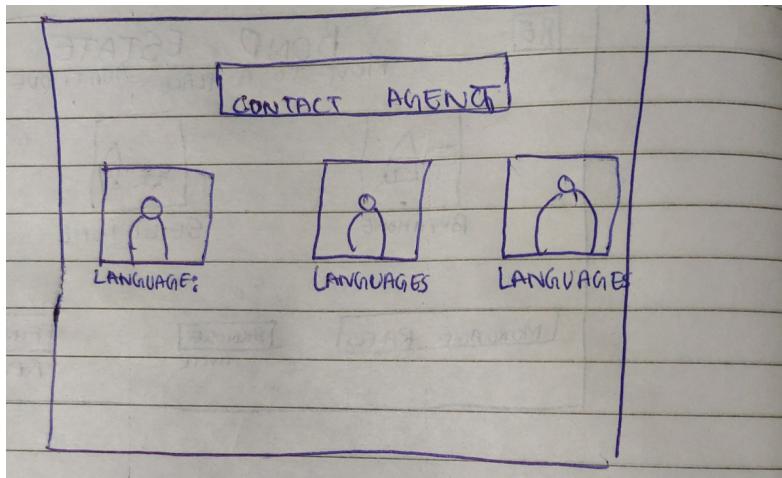
This high level storyboard allowed us to understand how the user of task 1 would navigate through his requirements for our program and gave us an idea about the friction points which exist when navigating for houses. Its strengths was that it gave a great idea about how our website will look at a high level but it lacked some of the important functionalities and details. We needed to add the functionalities and UI details in our later sketches, and fix some of the extra information which this sketch provided.



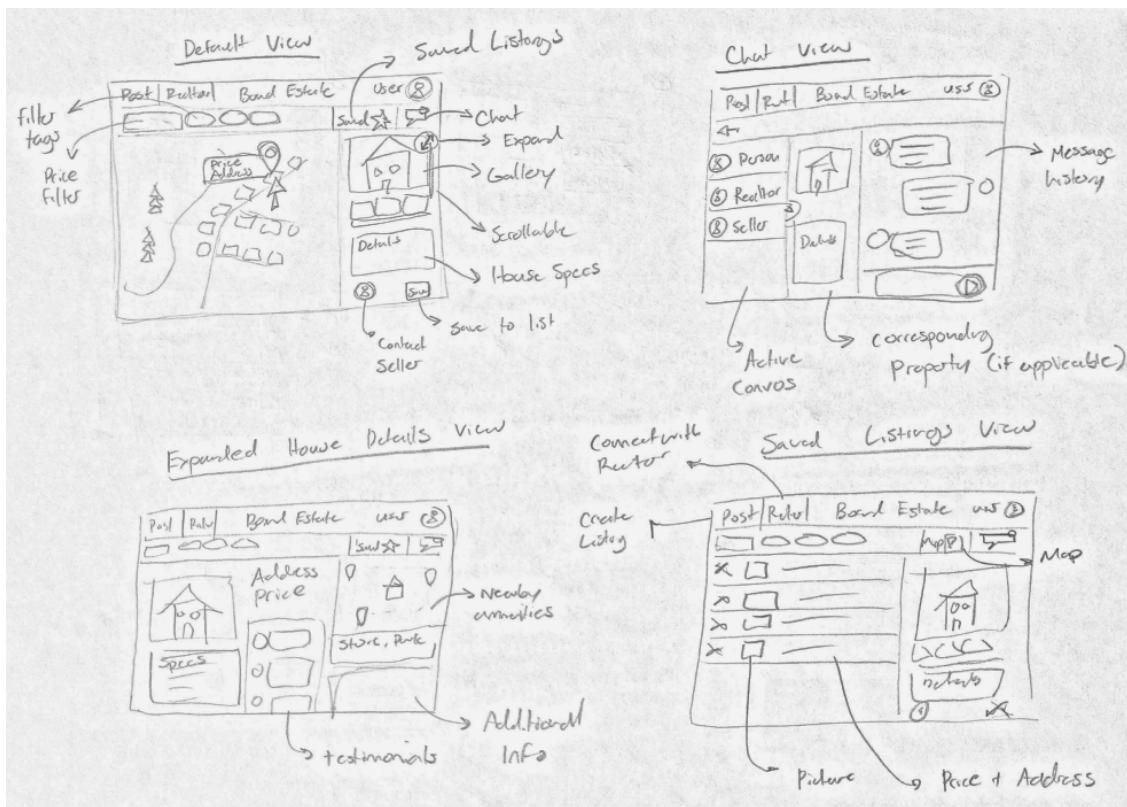


This next iteration of the prototype took the form of a paper sketch providing a clearer approach on how the website would look and helped us have a visualization and understanding of the user's process to buy a house. It provided a bit too much detail which could be reduced as this should be a low level design which should focus on the requirements mainly, and not the formatting.



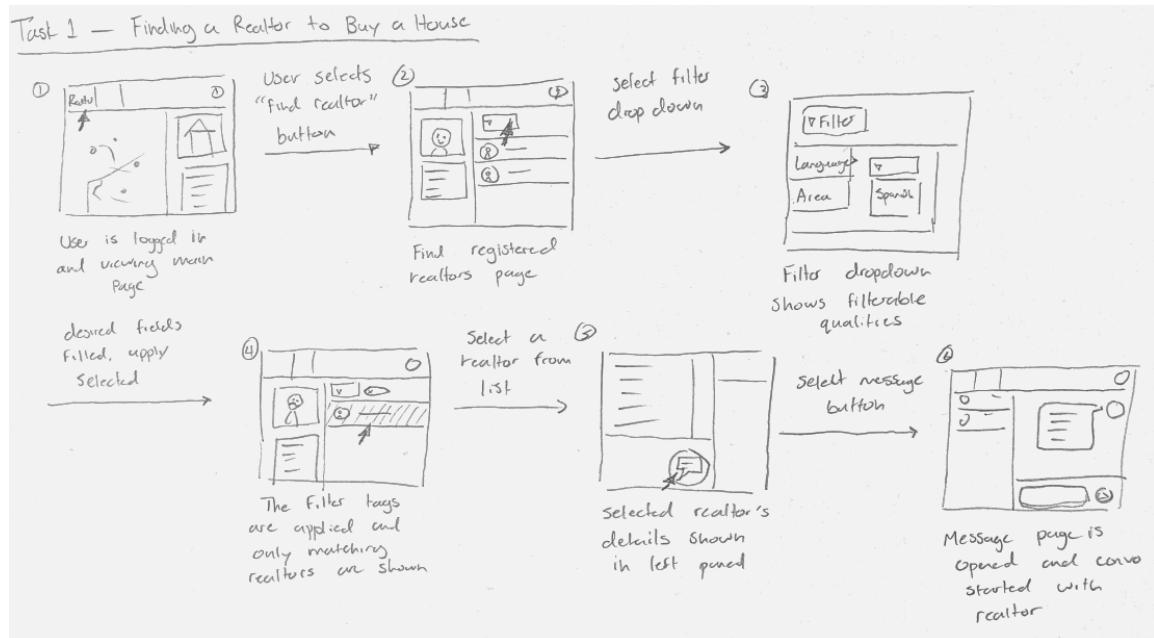


The next iteration of our prototype took the form of a detailed sketch of how different pages and views of the website could look like. This sketch did really well with the explanation of each part of their screen and creativity was great too. It didn't lack much as it covered most of the requirements pretty well.

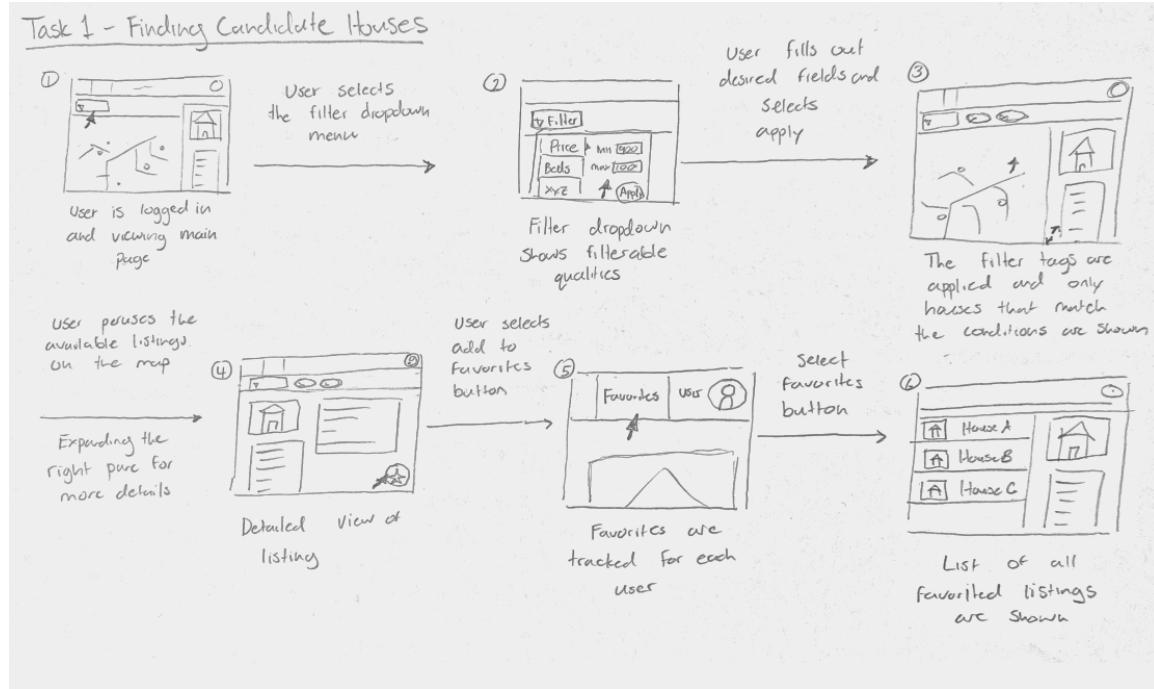


To validate our current prototype layout and functionality arrangement, we mocked out a few low-detail storyboards containing some aspects of our identified tasks. This helped iron out the last few missing functional details and arrangement of UI elements, which gave us enough of a baseline to construct our final prototype from.

Task 1 — Finding a Realtor to Buy a House



Task 1 — Finding Candidate Houses



Task Centered Design and Prototyping Grading Sheet: Be sure to include it in your portfolio

Student
Names
and
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Note: The list below is a set of guidelines, or a "convenience" checkpoint. Getting many satisfactory checks does not necessarily indicate a good project (or vice versa).

Structure and format

	Included	Not included		
Portfolio uses a binder	1	0		
Section separators	1	0		
Name on outside cover	1	0		
Name and contact information on the first page	1	0		
This grading sheet included in portfolio	4	0		
	Complete	Missing portions	Not included	
Table of contents	2	1	0	
	Great: no problems	Good: a few minor problems	Poor: Problems throughout (your mark in other sections may also be affected as well)	
Appearance (organization, layout and whitespace)	6	4	0	
	No typos, grammatical or spelling errors, clear writing style	Minor typos or grammatical errors or spelling mistakes or some writing may be a bit vague	Problems in two areas (spelling, grammar, style)	Problems in all three areas

Language and writing style	7	5	3	0
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Setting the stage

	Clear and complete (yes)	Clear and complete (no)		
Background	1	0		
Expected uses of the system	1	0		
System constraints	1	0		
	Lists user groups along with relevant skills and experience	Lists user groups with no additional information	Information not included	
Expected users	2	1	0	
	Clear & complete	Some information missing or unclear	Information not included	
Work context	2	1	0	
	Spoke directly with actual users	Spoke with a representative of the user	Made it all up	
Approach for getting background information for tasks	2	1	0	

Tasks

	Appropriate No. (~5-7)	Fewer than what's needed for the usage of the system	No tasks were included in the portfolio	
Number of tasks	2	1	0	
	Covers all relevant activities	Missing a few important tasks	Missing many important tasks	No tasks were included in the portfolio
Coverage of the tasks	8	6	2	0

	No violations	A few minor violations	Many violations throughout	No tasks were included in the portfolio
Do the tasks follow the properties of a good task?	8	6	2	0

Prototypes

	Two or more	One	Marked improvement from version to version	Few and/or superficial changes from version to version	No evolution between prototype versions
Number of versions/iterations	2	1			
Evolution of prototypes	6	2	0		
Description of how prototypes evolved	4	2	0		

Provides clear idea of how prototype changed from version to version

Describes changes but some parts are unclear

None

Requirements

	Requirements are grouped into categories with clear and detailed explanations based on the users and their tasks	Requirements are grouped into categories, no indication of how functions were put into particular categories	Requirements are shown in a single list, no attempt at prioritization	No requirements listed
Description of system functions to be implemented	5	2	1	0

Walkthroughs

	Walkthroughs for all relevant tasks	One	Zero	
Number of walkthroughs performed	4	1	0	
	Walkthroughs conducted, all or most usability problems were caught	Walkthroughs conducted, some minor problems were missed	Walkthroughs conducted, many minor or several serious problems were missed	Walkthrough not performed

Results of conducting the walkthrough algorithm	10	8	4	0
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	Walkthrough results summarized for each scenario/task	Walkthrough results summarized for each scenario/task but not for all tasks	Walkthroughs conducted and results shown in table but no additional analysis, summarizing problems
Analysis of walkthrough results	6	3	0
Ease of following/tracing the walkthroughs	Walkthroughs easy to follow (e.g., included diagrams at all relevant points of walkthrough, diagrams are annotated)	Some points of the walkthrough difficult to follow (e.g., walkthrough description didn't match interface, additional diagrams would have made things clearer)	Walkthroughs not conducted

Tutorial presentations

	Provides clear background information, good tasks presented, requirements properly categorized	Minor problems: some background information unclear, minor violations in the descriptions of the tasks, requirements could better justified	Poor: task violate many properties of good tasks, or background missing or largely incomplete, requirements are not justified	No presentation
First presentation: Phase one and two	4	3	1	0
	Walkthrough: caught most problems, clear indication of what future improvements should be	Walkthrough: Missed a few minor problems in the walkthrough	Walkthrough: Missed many minor problems in the walkthrough or a few major usability problems	Walkthrough: Many serious problems were missed in the walkthrough
	Prototype: Gives a good feel for how the interaction unfolds, covers main system functions	Prototype: Some parts of the interaction unclear, a few minor system functions (relevant to task) or a major function is missing	Prototype: several main system functions missing	Prototype: main system functions were missing
Second presentation: Phase three & four	4	3	1	0
All team members completed all weekly MVP surveys to portfolio due date	Complete	Incomplete		