

# Improvement in Features offered by Home Searching Websites

Degree in Techniques for Software Application Development - 1st year

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## 1. Summary

### ENGLISH

This project is based on a homeseeker case study. Our goal was to design and prototype some features that would make our hypothetical website appealing over other similar sites. To do so, we looked at what other services do good and their flaws, and designed a prototype with a set of user profiles in mind.

It was not easy to design something simple and powerful at the same time. One will eventually sacrifice bloating the user interface for some extra convenience. One of the major roadblocks in the project was proposing an interface that was intuitive and accessible for everyone, and still offer similar features to what common homeseekers offer. Though it was not perfect, the resulting prototype of this practice has managed to reach a certain level of usability while maintaining the core principles of minimalism by which it stands.

### SPANISH

Este proyecto se basa en un caso de estudio de una página de alquiler y compra de domicilios. El objetivo fue diseñar y prototipar algunas funciones que formarían parte de nuestra hipotética página web. Para ello, observamos lo que la competencia estaba haciendo, fijándose en sus puntos fuertes y aprendiendo de sus errores, y con ello diseñamos un prototipo teniendo en cuenta nuestros perfiles de usuarios tipo.

No fue fácil diseñar algo simple y a la vez potente. Tarde o temprano se complica la web mucho a cambio de una pequeña funcionalidad conveniente. Uno de los obstáculos más grandes a superar fue el de proponer una interfaz que fuera intuitiva y usable por cualquiera a la vez que tuviera la capacidad de realizar acciones complejas como hace la competencia. Aunque no es ni de lejos perfecto, el prototipo resultante de esta práctica ha conseguido hasta cierto punto alcanzar un nivel decente de usabilidad, y ha mantenido los principios fundamentales de minimalismo por los que se rige.

## 2. Introduction

The goal of this subject was to develop a prototype of an interface corresponding to a homeseekers site. In order to design something appealing and fresh to potential customers, we had to add certain improvements that similar services lacked.

To do this, we first started by looking at the competition, i.e. other commonly known homeseeker sites (Fotocasa, Idealista, etc), and did some benchmarking of each of them (see their pros and cons) to understand the kind of things to implement as well as the things to avoid. We chose features 2, 3 and 5 out of the following **5 requirements**:

1. You can search for rental or purchase housing.
2. Search for homes by location (maps, neighbourhoods, municipalities, counties, draw the search area on a map, etc).
3. Check out homes based on their characteristics (number of rooms, bathrooms, equipment, area, price, recently built construction, pool, parking, etc).
4. Check out the full details and description.
5. Three actions should be related to homes, like saving as a favourite, consulting opportunities, sharing an ad, or setting price drop alerts.

We then analyzed the type of user profiles that would use our app, because designing for everyone is designing for no one. This helped us understand what every user profile might need, and better implement the features accordingly.

After that, we started developing our prototype, first by visualizing them inside flowcharts, to better understand possible conflicts (user not signed in, incorrect search parameters, etc). We contacted two test users and interviewed them to better understand how they expected the features we were going to implement, and also designed our first hand-drawn sketches of how these improvements would look in the future.

Next, we re-built the prototypes digitally using prototyping tools such as *JustInMind* or *Jiira*.

Lastly, we analyzed the accessibility and basic aspects of Human-Computer Interaction (*HCI*) of our barebone sketches and proposed some improvements to them to reach level *A* accessibility, and reached out to the peers we had formerly interviewed to test our prototype to find improvements for future iterations of our prototype.

### 3. Structure

#### 3.1. Context

To follow this case study I decided to improve the site with the following features:

1. Search for homes by location (maps, neighborhoods, municipalities, counties, draw the search area on a map, etc.).
2. Check out homes based on their characteristics (number of rooms, bathrooms, equipment, area, price, recently built construction, pool, parking, etc.).
3. Three actions should be related to homes, like saving as a favorite, consulting opportunities, sharing an ad, or setting price drop alerts.

To design these features, I set up the following user profiles:



Figure 1: Kathy Anderson \*

#### Demographics

- 15 to 24 years old (23)
- Single
- College Student
- Lives with her parents in New York
- Very low budget (typical university student)
- Wants to rent apartment near the University

#### Interests

- Usually studies at Starbucks on her laptop
- Has many friends and likes to hang out with them
- Loves to keep her space tidy
- Takes piano classes twice a week

#### Needs & Objectives

- Find a roommate to share an apartment with
- Become a professional artist



Figure 2: Bill Jackson \*

**Demographics**

- 60+ years old (67)
- Married to Emily Jackson (has two adult children)
- Retired (worked at a bank)
- Lives alone after her wife died
- Medium budget, can afford some extras in the new house
- Wants to sell her old house and buy a smaller flat near his loved ones

**Interests**

- Likes to take care of his grandchildren
- Plays pool with his all-time friends
- Likes to chop wood on his second home in the forest
- Sings at the local church

**Needs & Objectives**

- Find a cheap flat near his kids' house to help care for his grandchildren
- Figure out how to use technology and social media to stay in touch with friends and family



Figure 3: Riley Wheeler \*

**Demographics**

- 30 to 40 years old (32)
- Married to John (has three young kids)
- Mechanic engineer (works in car maintenance)
- Lives in a very small apartment with his husband and family
- High Budget, wants to give every extra she can to her loved ones
- Wants to buy a large house with John and her kids

**Interests**

- Loves to care for her three rascals
- Works out at local gym with old college friends
- Has a passion for cooking desserts for a local charity
- Uses social media to advertise her mechanics business

**Needs & Objectives**

- Find some spare to relax from her busy schedule
- Get a large house with a garden and pool in the countryside

**Demographics**

- 15 to 24 years old (20)
- In a relationship with Mary, not married
- College Student, entrepreneur (has a business in cryptocurrency)
- Lives with his parents in Ontario, Canada
- High budget, wants a smaller modern house with very good cell service
- Wants to buy his first small house for himself and his girlfriend



Figure 4: Jack Nelson \*

### Interests

- Works from home and studies completely online at the UOC (Techniques for Software Application Development)
- Has few but valuable friends
- Follows many crypto-related accounts on Instagram to check how the currency changes
- Plays Football in a semi-professional level three times a week

### Needs & Objectives

- Buy a small house in the city
- Balance his busy life and handle being a student, entrepreneur and good boyfriend all at once

\* Images generated by [thispersondoesnotexist.com](https://thispersondoesnotexist.com)

Knowing these user profiles and the insights extracted from the interview made to Pablo and Patricia in Challenge 2, I focused on applying the following aspects of *HCI*:

- The *save as favorite* button should have a heart icon, and possibly be filled upon saving.
- Price-drop alerts should be enabled or disabled by pressing *bell* icon.
- Arrows pointing back must refer to going back (go back on the site, previous image, etc)
- User should not be able to save as favorite without an account (or not logged in), but can set price-drop alerts or contact seller on-demand with an email address.
- The map feature should be visible on the screen, close to the search bar.
- The site should respect accessibility rules (design principles for all), avoiding, color contrast issues, implementing skip links and/or context information for images and buttons (used by screen readers to better explain the user what is being displayed). Some examples implemented in the first designs are short periods for undoing certain actions, and ability to show captions in videos.

Understandably, it was not possible to implement these points perfectly, so the low-fidelity prototype designed during this time may not implement the above aspects of *HCI* faithfully.

### 3.2. Improvement Proposals

These improvements were finally visible in a simple hand-drawn prototype:

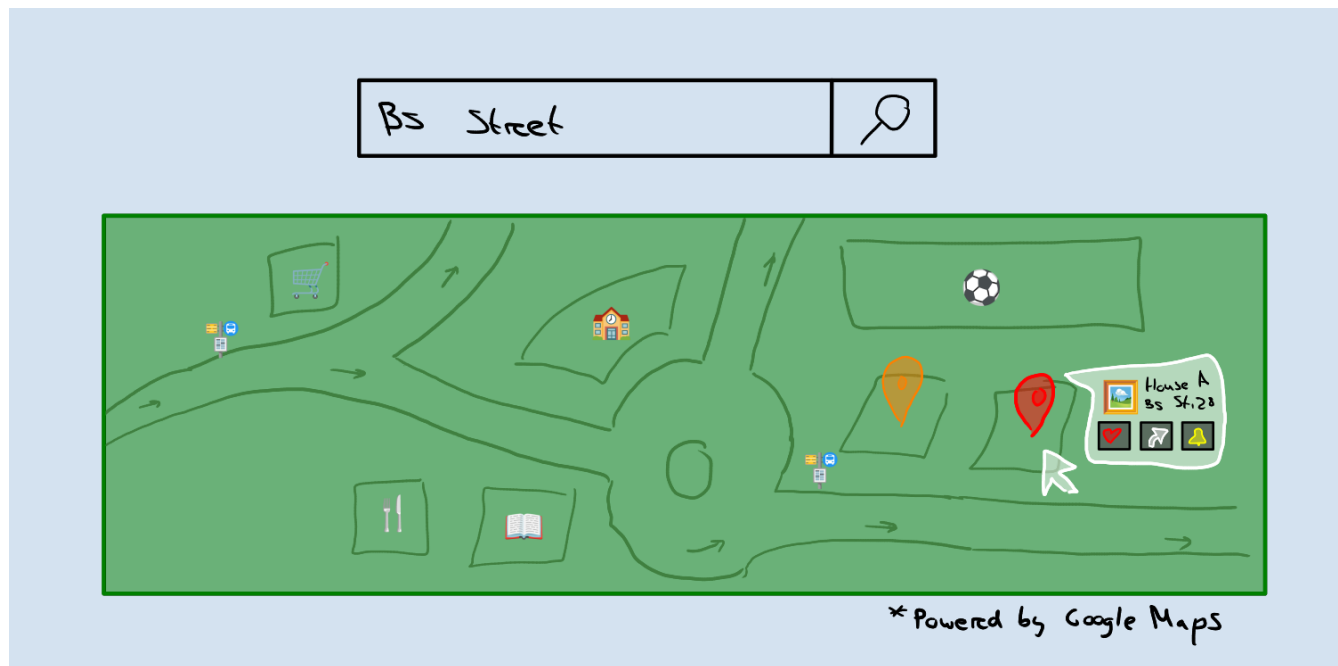


Figure 5: Main Screen - Search box and map



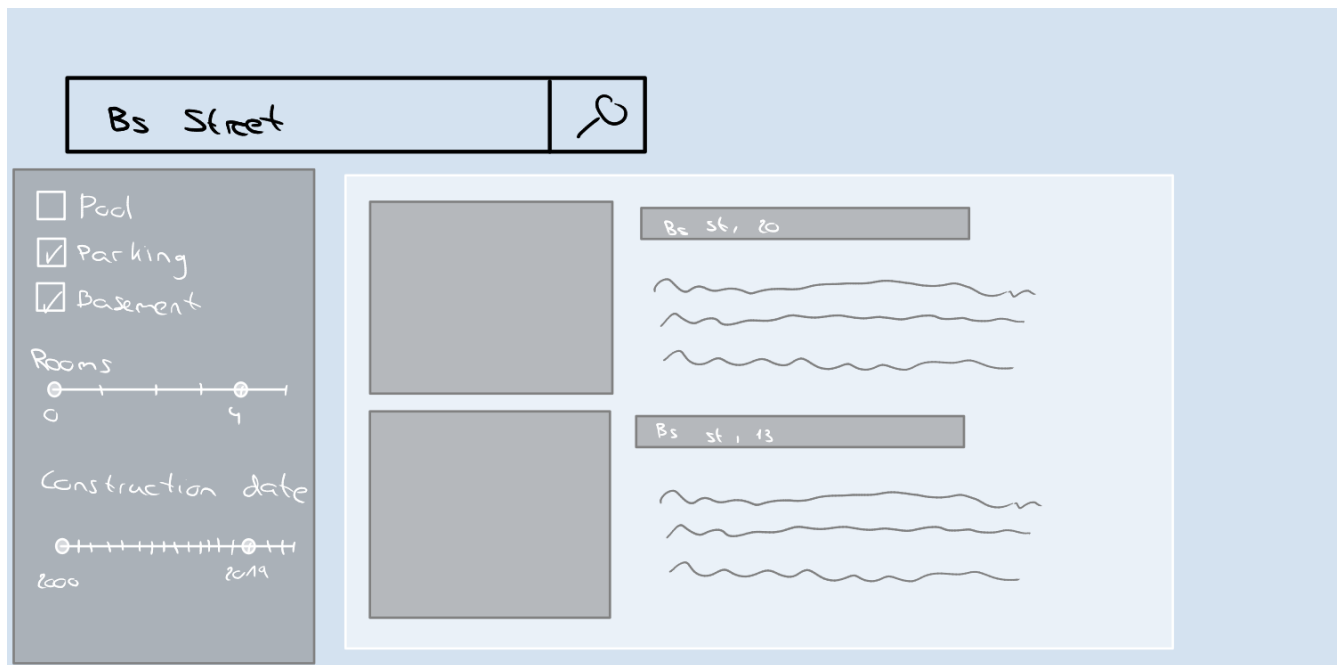


Figure 6: Search Results - Filtering options

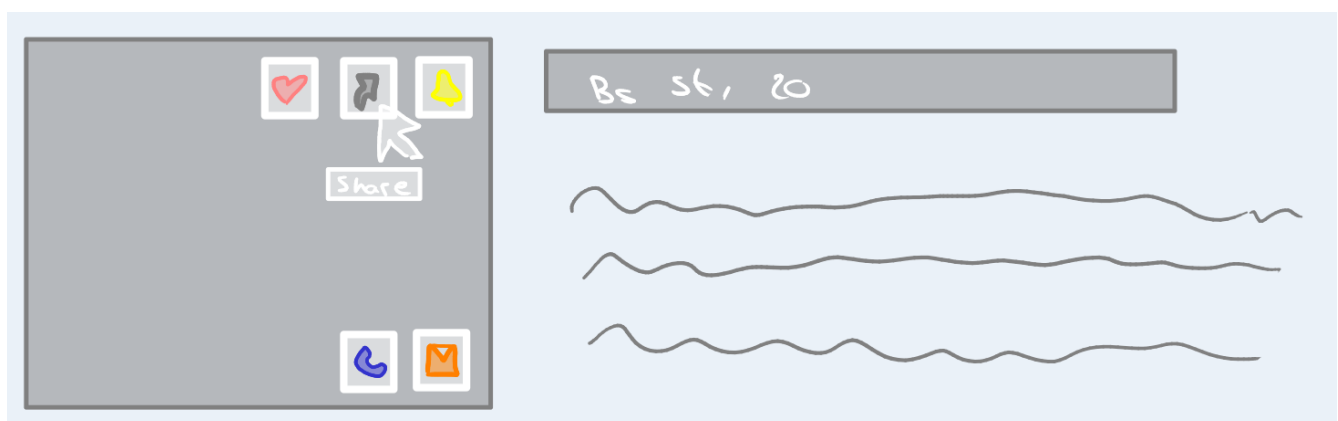


Figure 7: Search Result - Tooltip options (save, share, notify, contact)

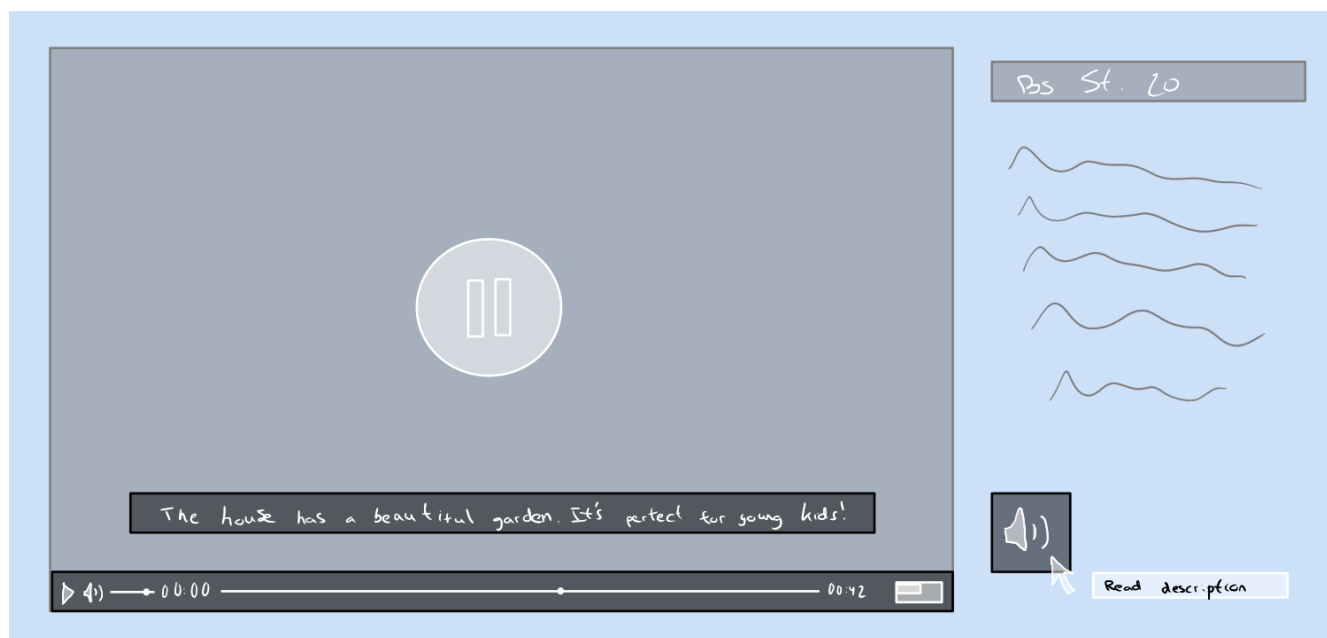


Figure 8: Video Captions and Read Aloud mode

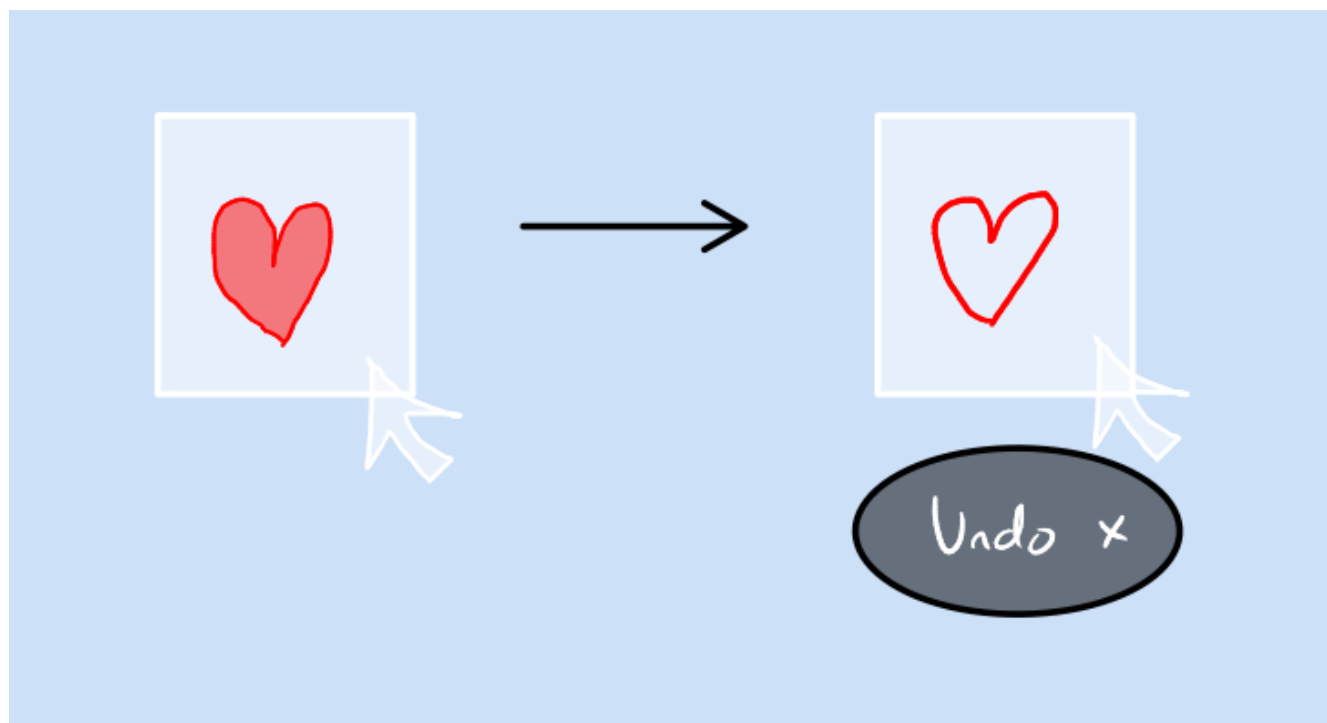


Figure 9: Undo Remove from favorites

As we can see, the interface is quite simple, and that is no coincidence. Users potentially trying out my homeseeker tool will want something that is not underwhelming, and yet is still powerful enough to show as much info as possible at a glance. The photos above show clearly how the page is supposed to work:

Homescreen > Search Results > Product Page

**Homescreen:** hosts a large centered search bar with quick options to change between buying or renting a house, as well as a map (possibly powered by Google Maps) to draw an area directly on rather than typing an address.

**Search Results:** shows the same search bar from the homescreen at the top, a left sidebar with granular filtering options, and the actual result disabled in cards in the remaining space. Each result includes a sample photo, an address or house name, and a short description of the house.

**Product Page:** clicking on any result from the results page will "expand" the result card into a bigger card which takes up all of the width of the page (as there is no sidebar here). The image is now a gallery of pictures, allowing the user to press arrow buttons to see more pictures (or even videos) of the house they are looking at. There is also a set of buttons that appear on top of the picture, which are for saving the house as favorite, sharing the house on social media, set price-drop alerts, or contact the seller.

Once we analyzed the accessibility of these hand-drawn sketches, we designed this low-fidelity prototype. Here are a few images showing some of the most remarkable features:

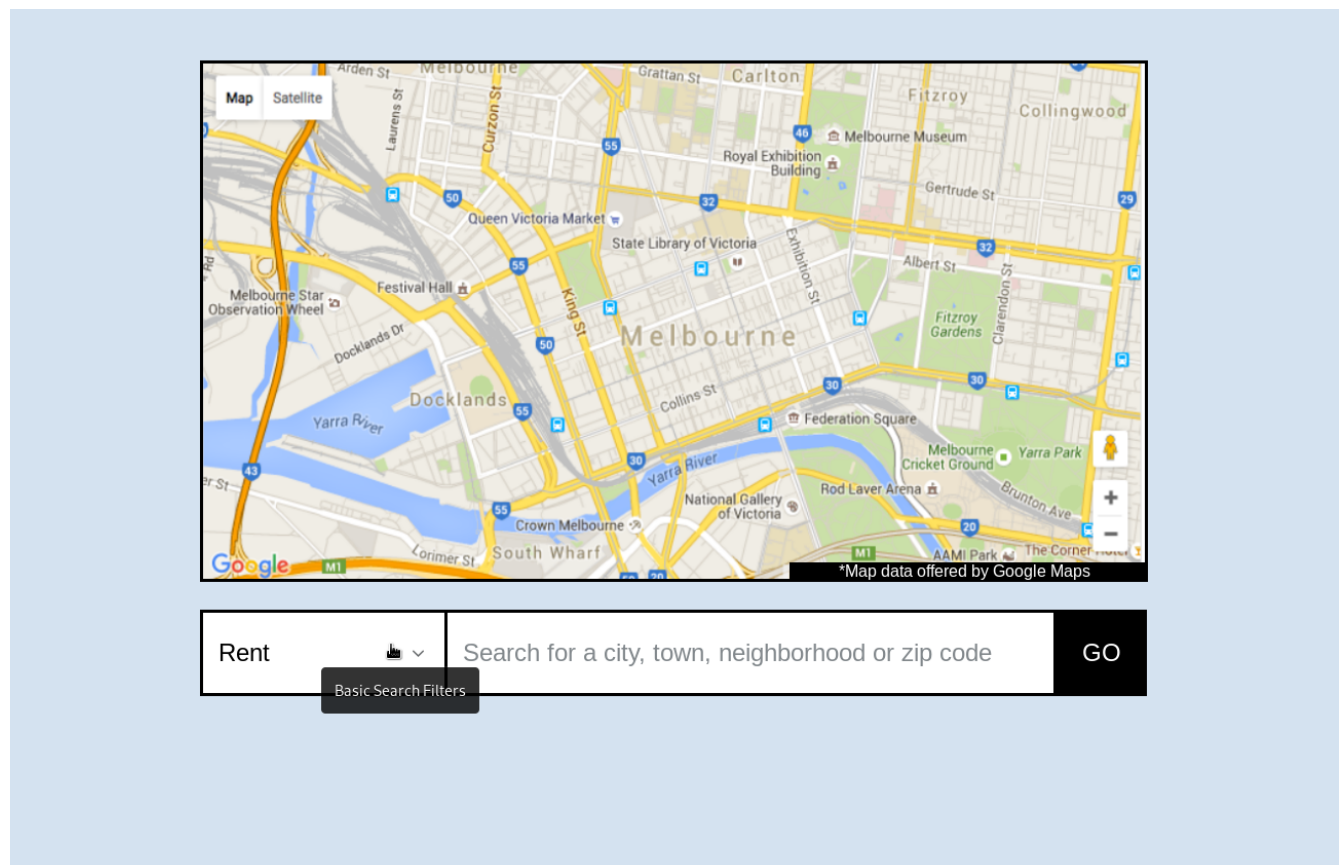
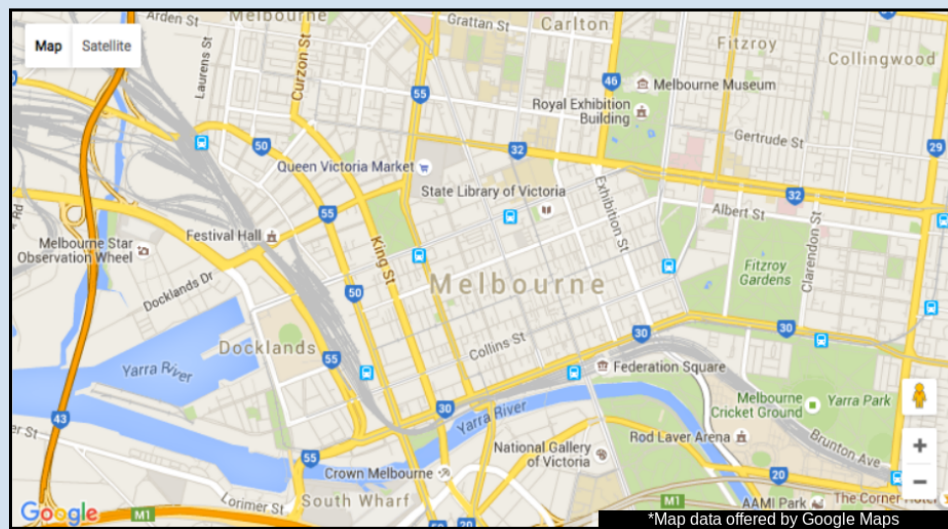


Figure 10: Home Screen Search Bar - Hover



Rent	<input type="text" value="Search for a city, town, neighborhood or zip code"/>	GO
Buy		
Rent		

Figure 11: Home Screen Search Bar - Menu

<

Rent

▼

Search for a city, town, neighborhood or zip code

GO

☒ Parking

☐ Accessible Entrance

☐ Elevators

☐ Basement

☒ Attic

☐ Kitchen

☐ Swimming Pool

☒ Indoor Pool

☐ Garden

Number of Floors

2

▼

Number of Bathrooms

3

▼

Construction Age

3-10 ye...

▼

Number of Bedrooms


1-3 years

3-10 years

10-20years


20+ years

Apply



Bs Street 21, Melbourne

- Two Bedrooms
- 60x70m garden
- Accessible entrance and elevators
- 3 floors: main floor, basement and attic
- Has Pool
- Has Personal Parking
- Built in 1983



Royal Avenue 3, Melbourne

- Single Bedroom
- No garden
- Accessible entrance and elevators
- Two Bathrooms, a kitchen and a livingroom
- No Pool
- Has Personal Parking
- Built in 2015

Figure 12: Search Results - Menu Filter

<

Rent

Search for a city, town, neighborhood or zip code

GO

☒ Parking

☐ Accessible Entrance

☐ Elevators

☐ Basement

☒ Attic

☐ Kitchen

☐ Swimming Pool

☒ Indoor Pool

☐ Garden

Number of Floors

2

▼

Number of Bathrooms

3

▼

Construction Age

3-10 ye...


▼

Number of Bedrooms

1


▼

Apply



Bs Street 21, Melbourne

- Two Bedrooms
- 60x70m garden
- Accesible entrance and elevators
- 3 floors: main floor, basement and attic
- Has Pool
- Has Personal Parking
- Built in 1983



Royal Avenue 3, Melbourne

- Single Bedroom
- No garden
- Accesible entrance and elevators
- Two Bathrooms, a kitchen and a livingroom
- No Pool
- Has Personal Parking
- Built in 2015

Figure 13: Search Results - Hover Image

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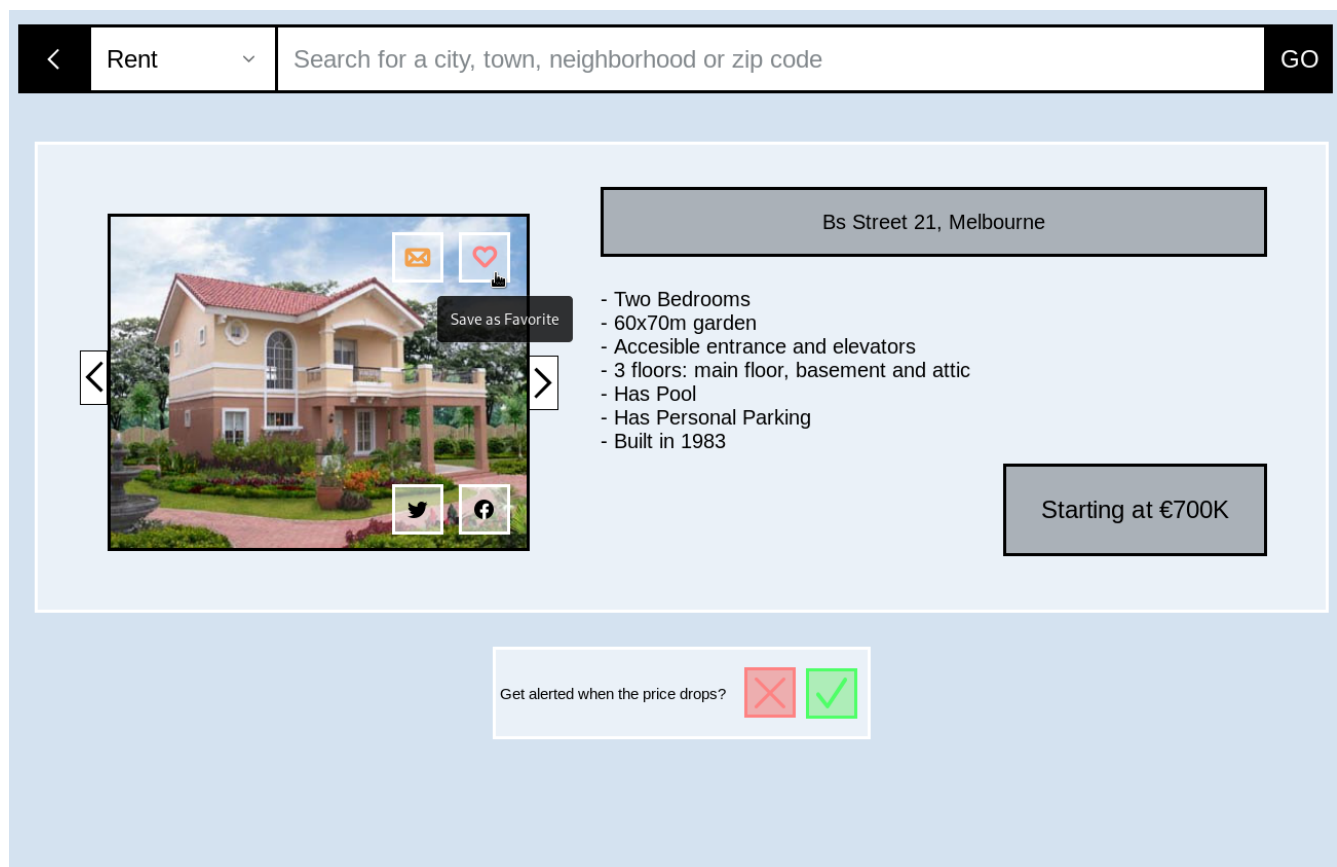


Figure 14: Product - Hover Favorite





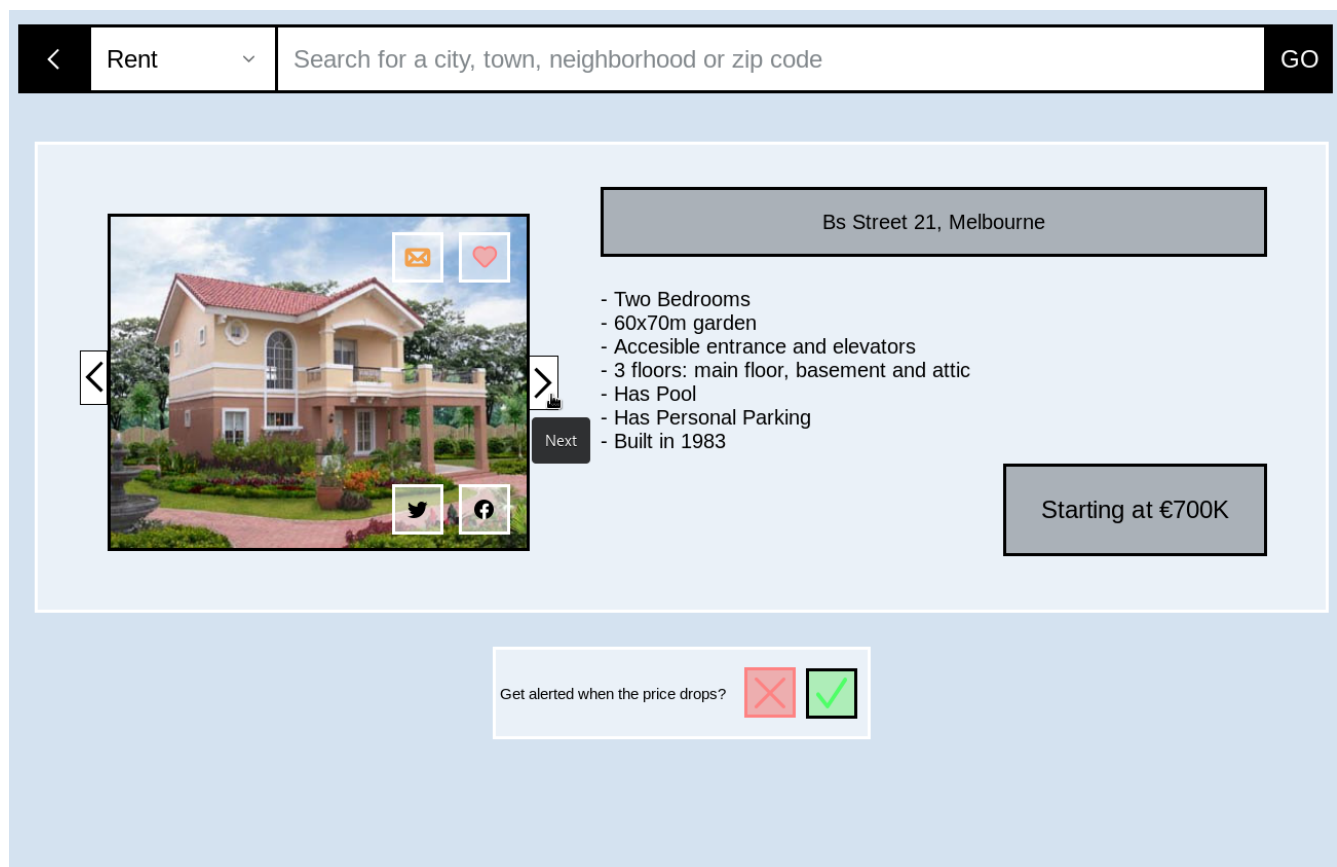


Figure 16: Product - Hover Next

### 3.3. Analysis and Results

Overall, the outcome of the low-fidelity prototype has been decent. There is lots of room for improvement though. Here are some of the most remarkable positive and negative aspects following the user test of the prototype and follow-up interview:

- Both users seem to find their way around the UI without trouble
- The map feature is not so useful if it only accessible from the homescreen. It should be accessible (in full size, or a button) on every page just like the search bar.
- It is not ideal to keep buttons inside the images as their background color may not contrast well with the button's outline color.
- The icons for buttons are universally easy to understand: a heart means you like something and save it for later, an envelope represents sending an email, and so on.
- The entire result card should be clickable to open a house result, rather than only the image opening it.
- The little animations that enlarges an image when hovering over it lets the user know that the house from the image can be clicked to open.
- The buttons and images have good screen reader compatibility with informative descriptions of what they represent.
- The layout of elements is not great, there is much wasted space where useful information may be added.

Moreover, it is essential to review which of the following **fundamental aspects of HCI** are present on our prototype:

- **Metaphor**
  - Heart icon represents *saving as favorite*.
  - Envelop icon represents *sending an email*.
  - Saving an element as favorite fills it up in red to indicate the action was performed successfully.
- **Affordance**
  - There is a prompt to enable price-drop alerts which is quite self-explanatory.
  - There are other self-explanatory buttons in the UI: *Apply*, *GO*, etc.
  - Hovering on an image in the search results page will enlarge it a bit to show that it is focused and that it can be clicked.
  - Many filters and the search bar filter have a drop-down menu represented by a downwards-pointing arrow.
- **Visibility**
  - Search results are split into two panels, one displaying lists of houses matching the search criteria and another on the left showing available filterin options.
- **Feedback**
  - Links will change the cursor to indicate they can be clicked (standard behavior for links).
  - Hovering on an image in the search results page will enlarge it a bit to show that it is focused and that it can be clicked.

## 4. Conclusions

In conclusion, this entire practice has been aimed at developing our first-ever prototype using a real world example case study. We attempted to achieve level *A* of accessibility, though I don't think my prototype is quite there yet. This has been my first contact with a prototyping tool such as *JustInMind*, and it has certainly been useful in order to better appreciate the huge amounts of work put behind every interface, not only in the layout and style of the *UI* and *UX* themselves, but also in carefully ensuring accessibility for all and keeping every user in mind while doing so. Prototyping sure appears to be hard, especially when it comes to balancing out all of these roadblocks, but it definitely pays off in the end.

## 5. References

1. Beaudouin-Lafon, M., Prototyping Tools and Techniques, <https://www.kth.se/social/upload/52ef5ee4f2765445a466a28a/mack-lafon-prototypes-52-HCI.pdf>, 02/11/2022
2. Prototyping Tools, <https://designcode.io/ui-design-handbook-prototyping-tools>, 08/11/2022
3. Shepherd, A., 12/10/2020:12:58, What Is Justinmind and How to Use Justinmind (Mockitt), <https://mockitt.wondershare.com/software-design/justinmind.html>, 15/12/2022
4. McElroy, K., 08/01/2017, Prototyping for Designers: Developing the Best Digital and Physical Products, O'Reilly Media 2017