

[REDACTED]

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Jill Platts

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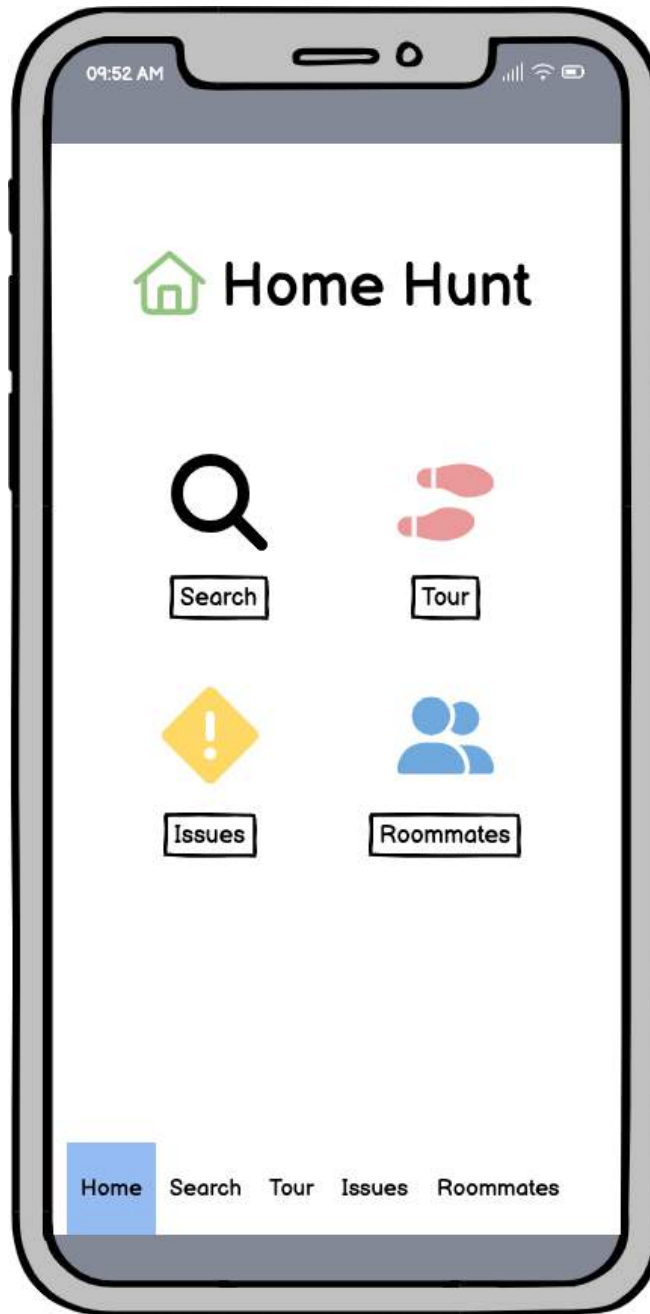
## Introduction

### Application Description

*Home Hunt* is an Apartment Rental Company Application. It has various functionalities including allowing users to search for apartments using a map, viewing apartment details including a 3D walkthrough, a section to report issues or other maintenance concerns, and a roommate support function for users to utilize tools for shared apartment living. This application supports users through the entire journey of looking for an apartment, visiting it in-person or virtually, reporting and managing issues with the apartment, and utilizing tools, such as a shared chores tab to enhance the communal living experience.

The tasks that we chose to prototype are:

1. *Map Search for Apartments*. This task offers an interactive map-based search tool for apartment hunting, tailored to user-specified criteria such as location, bedroom count, bathroom count, price range, and pet accommodations. After selecting their preferences, a user views a list of available apartments which can be switched to a map view displaying pin icons for each property. Selecting a pin reveals key details and information for a property, including contact details.
2. *Apartment Detail/3D Walkthrough*. This task enables the user to view a selected apartment building in greater detail. They can filter their results by searching for very specific floor plans that cater to their needs. There are ample details about the floor plan, apartment building, and surrounding area. The user can view the provided photo gallery of their selected floor plan and enter a virtual walkthrough. This task allows the user to view a desired apartment in detail from the comfort of their own home.
3. *Report Issues/Maintenance Requests*. This task allows the user to Report an issue with the apartment by filling out a form. They can select categories related to the issue, enter their room number, describe the issue, and attach an image for submission. Once the issue is created, the user can navigate to the View All Issues tab. This is where they can keep track of the open or closed issues and also re-open or resolve issues if their needs have changed.
4. *Roommate Support*. This task allows the user to perform several actions, such as reviewing roommate's information, accessing the shared calendar and roommates' notes for the current day. Users can also view their roommate's rent ledger for the month, as well as access their own ledger. Additionally, we also incorporated a 'pay' feature, allowing users to easily pay their rent. Finally, users can access the 'chores' tab enabling them to view and edit chores for the week and their status.



**Figure 1.** Home Screen of the Home Hunt mobile application. This shows the user the different routes they can take on this application.

## Prototype Development for Application Tasks

### Task #1: Map Search for Apartments (Jill Platts)

Task 1 of the Home Hunt application introduces users to a dynamic and interactive map-based search feature for finding apartments. This functionality enables users to select basic relevant criteria, such as city and state, number of bedrooms and bathrooms, price range, and pet accommodation preferences. Once the criteria is set, the application displays available apartments in a list view. A user can easily switch to map view and the search results will be displayed on the location's map. Pin icons are used within the map view to represent different apartments. A user can select any pin to preview key details on the apartment. They can then navigate to a pop-up window with further details, including contact information, on the apartment complex. The focus of this task is on selecting apartment criteria and navigating the map view of apartment options. Prospective renters can efficiently narrow down their apartment options and learn more about properties in their target location.

*Prompt:* You would like to search for an apartment in Charlotte, NC. You want to see available apartments with 1 bedroom, 1 bathroom, and in a low (\$) price range. You don't have a pet, so you can leave "Pets Welcome" unchecked. Navigate to the map view and select a pin. View more information on that pin. Move through the slideshow of information on the selected apartment complex. View the apartment's contact information.

## Sketched Wireframes

11/14/2023

### Prototype Project #4 : Sketching Wireframes I

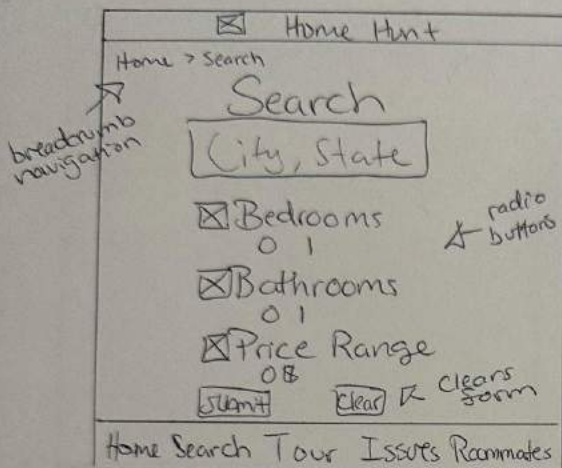


Fig. 1 : Search

Search uses radio buttons, input for city and state, and submit/clear buttons.

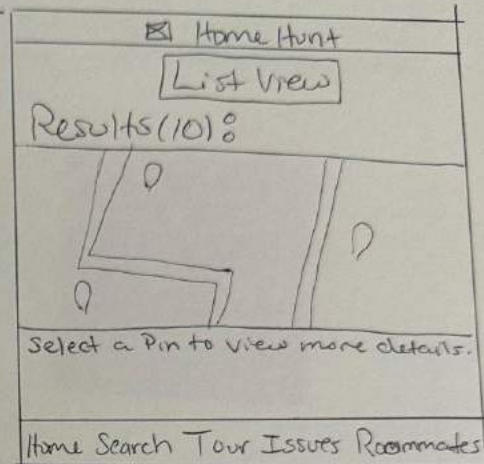


Fig. 2 : Map View

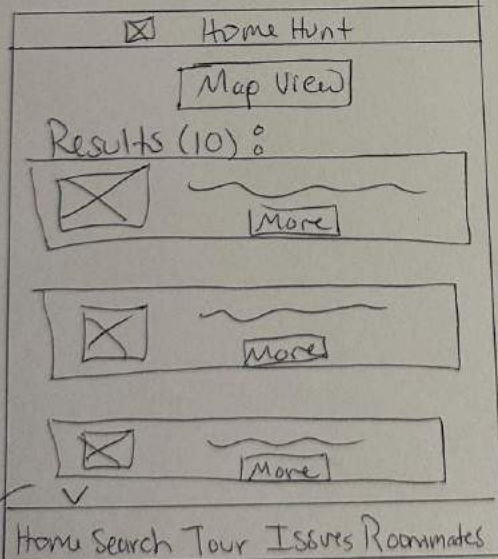


Fig. 3 : List View

infinite scroll for search results

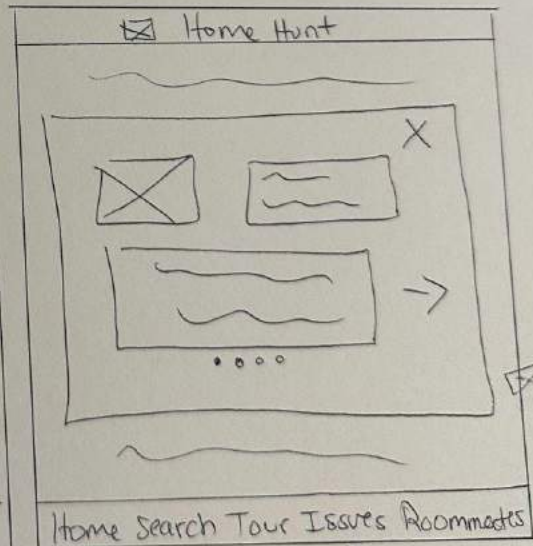


Fig. 4 : Details Preview

Uses a modal window over the map view, along with a slider to present the information.

## Balsamiq Prototype Step-by-Step

A Balsamiq wireframe of a mobile application interface for finding homes. The app is titled "Home Hunt" with a house icon. The status bar at the top shows the time as 09:52 AM and signal indicators. The navigation bar includes "Home" and "Search" (the latter is highlighted in blue). The main content area is titled "Search" with the subtitle "Find for your new home!". A red arrow points to a text input field labeled "City, State". Below this are three sections of filters: "Bedrooms:" with radio buttons for 1, 2, and 3+; "Bathrooms:" with radio buttons for 1, 2, and 3+; and "Price Range:" with radio buttons for \$, \$\$, and \$\$\$, preceded by a checked checkbox. There is also an unchecked checkbox for "Pets Welcome". At the bottom of the form are two buttons: "Submit" (green) and "Clear" (red). The bottom navigation bar includes "Home", "Search" (highlighted in blue), "Tour", "Issues", and "Roommates".

09:52 AM

Home Hunt

Home > Search

Search

Find for your new home!

City, State

Bedrooms:

- ☐ 1
- ☐ 2
- ☐ 3+

Bathrooms:

- ☐ 1
- ☐ 2
- ☐ 3+

☒ Price Range:

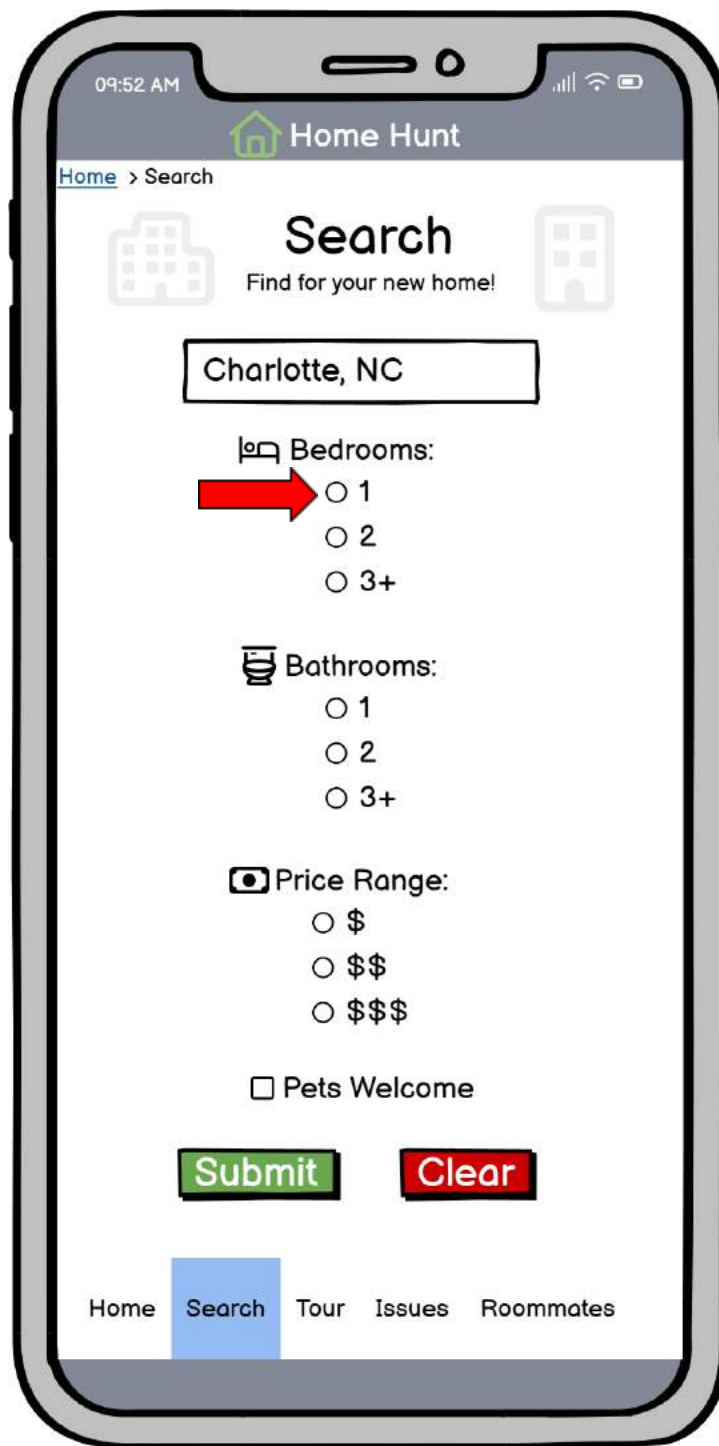
- ☐ \$
- ☐ \$\$
- ☐ \$\$\$

☐ Pets Welcome

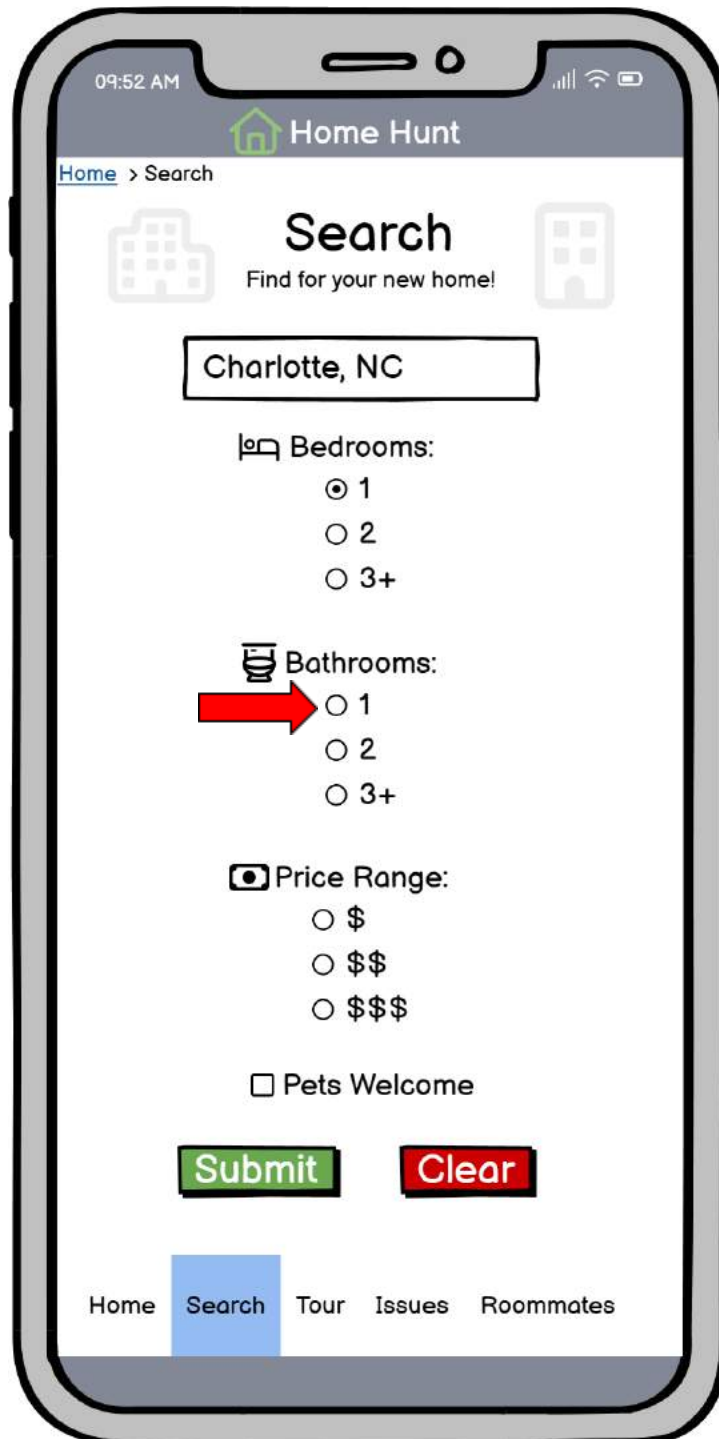
Submit Clear

Home Search Tour Issues Roommates

**Figure 1.** The user begins their apartment search with this form. The user types in their target City and State location.

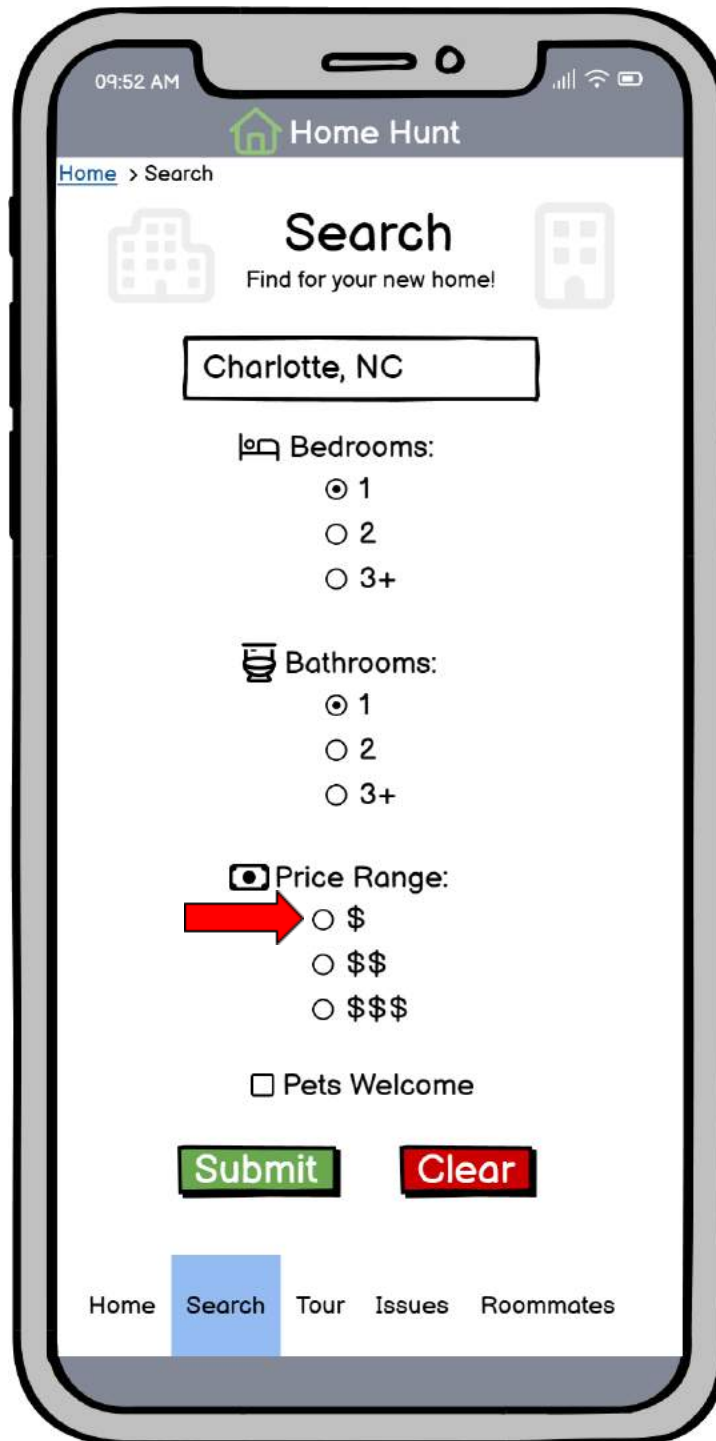


**Figure 2.** The user types in Charlotte, NC for their target City, State. Now the user must select the number of desired bedrooms.

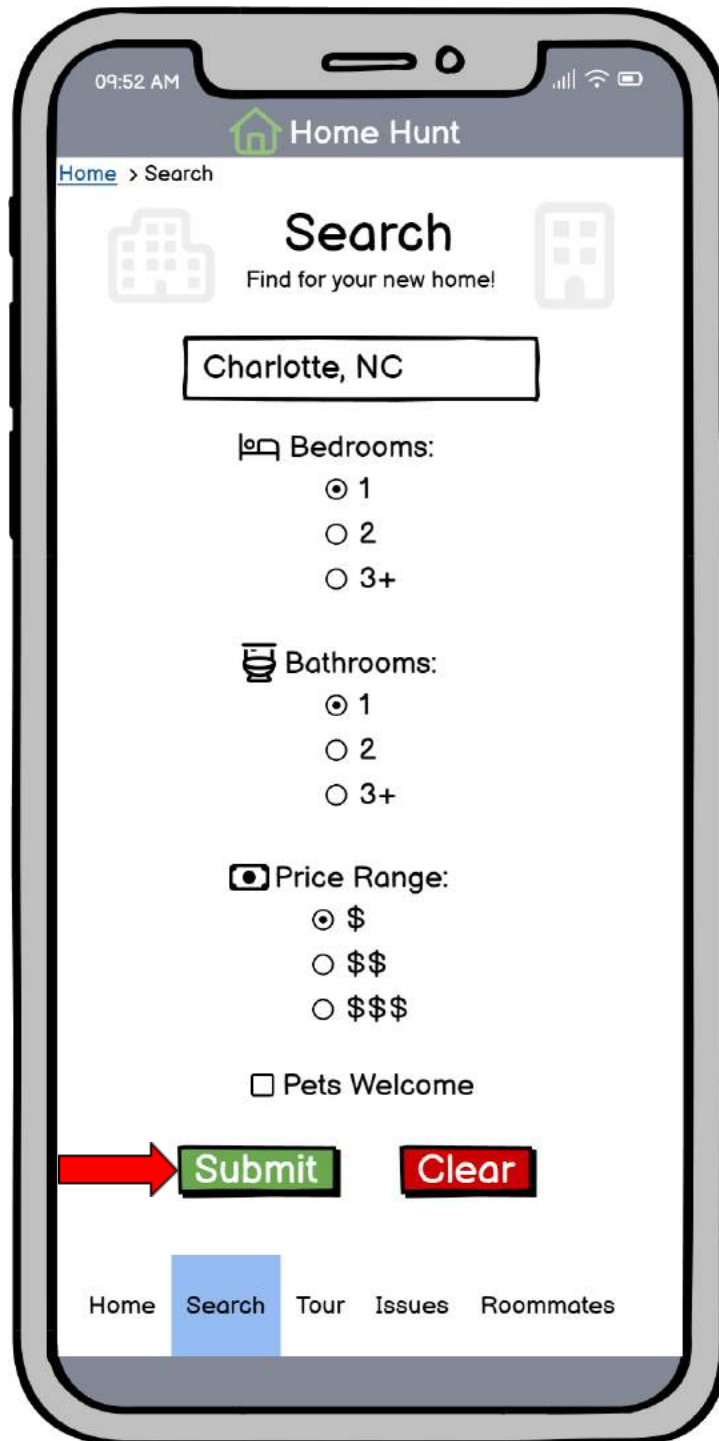


**Figure 3.** The user selects 1 bedroom. Now the user must select the number of desired bathrooms.

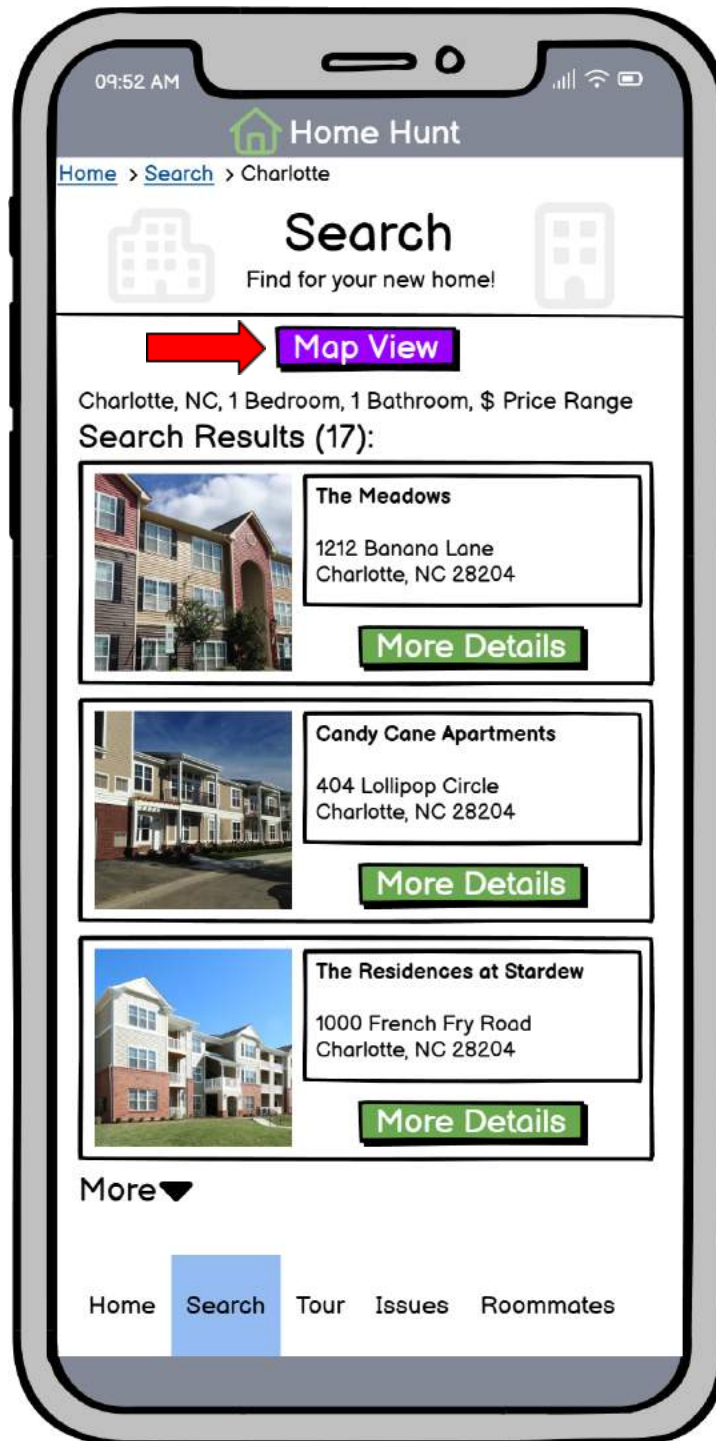




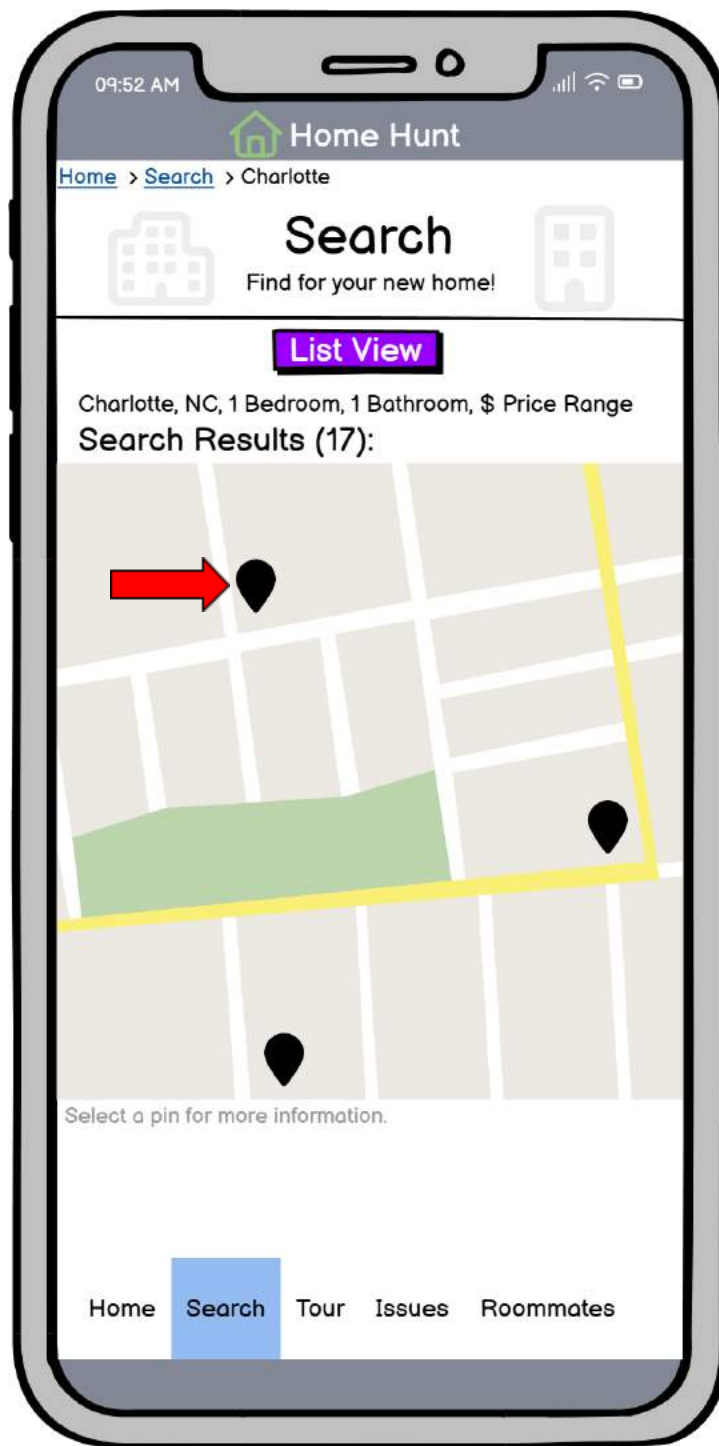
**Figure 4.** The user selects 1 bathroom. Now the user must select a price range.



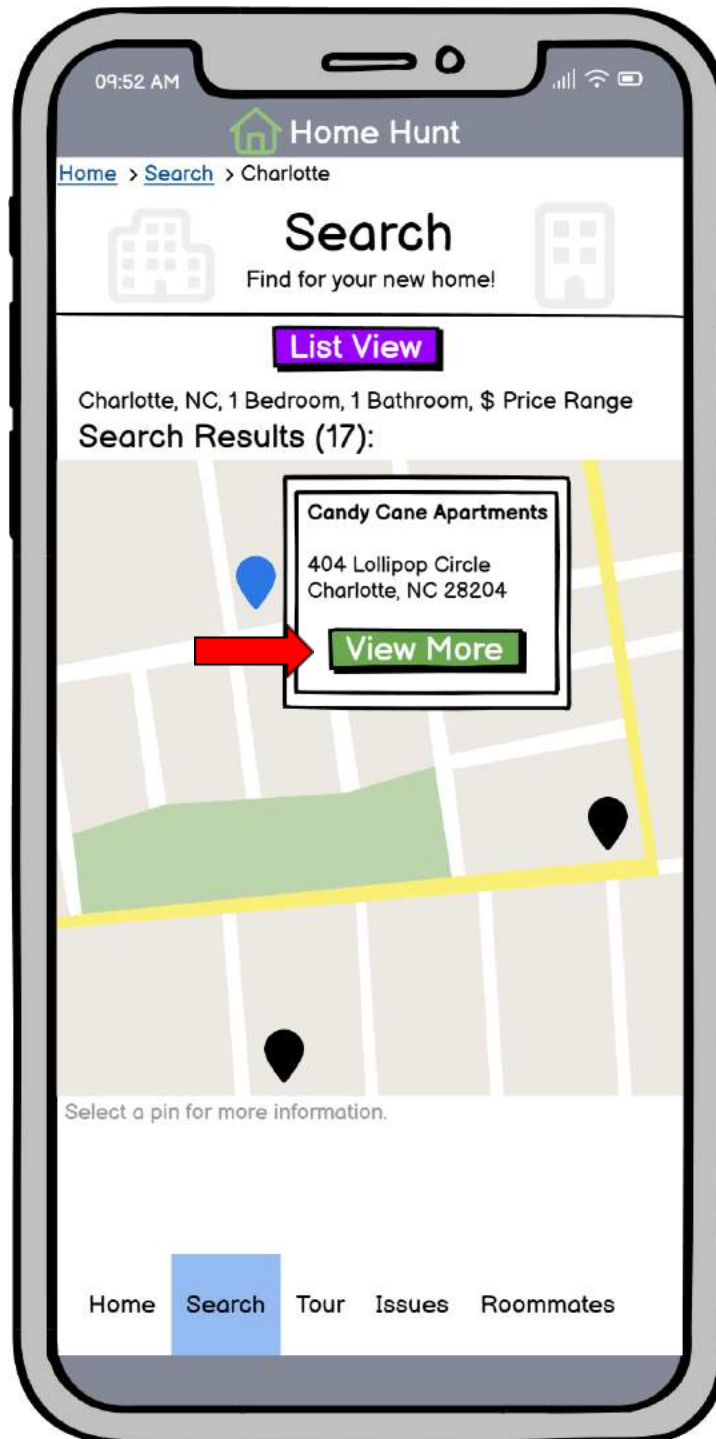
**Figure 5.** The user selects the lowest price range, represented by one dollar sign (\$). The user clicks Submit.



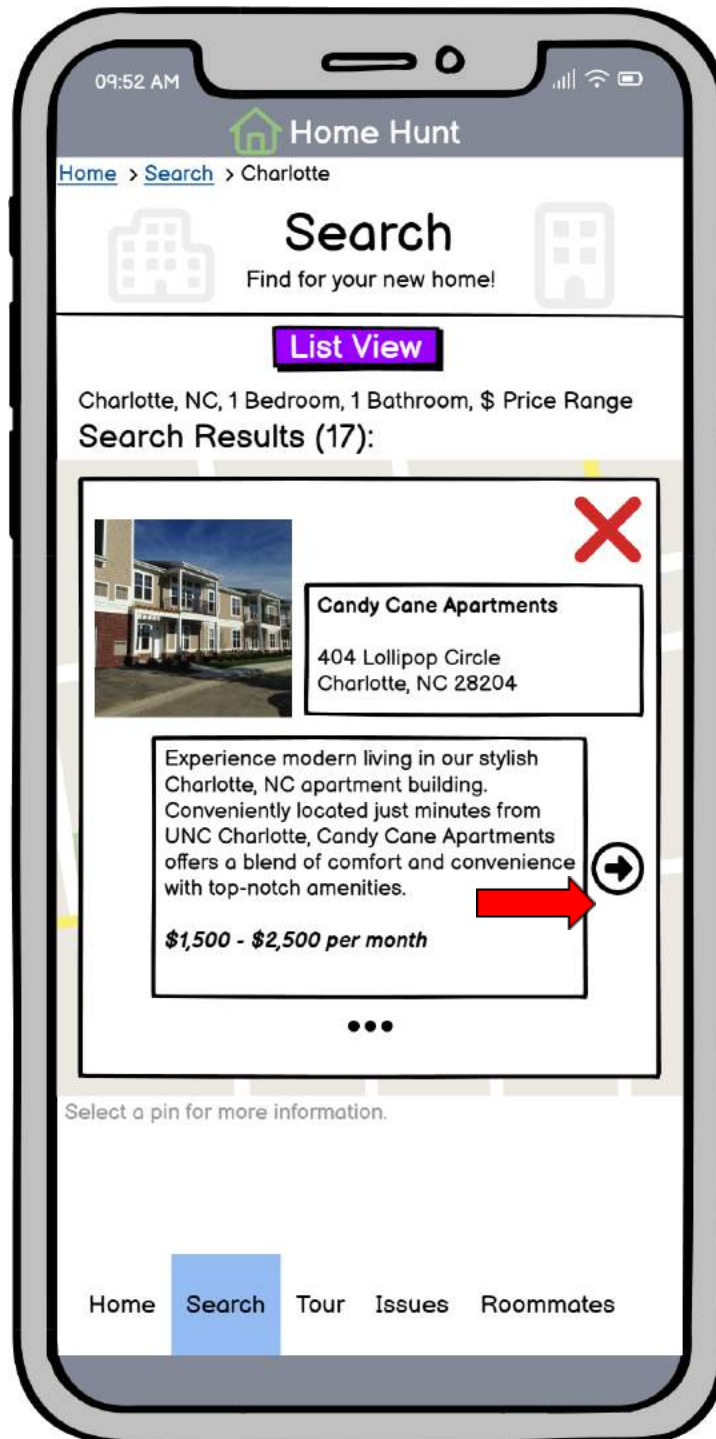
**Figure 6.** The user is shown the search results in a list view. The user clicks the Map View button.



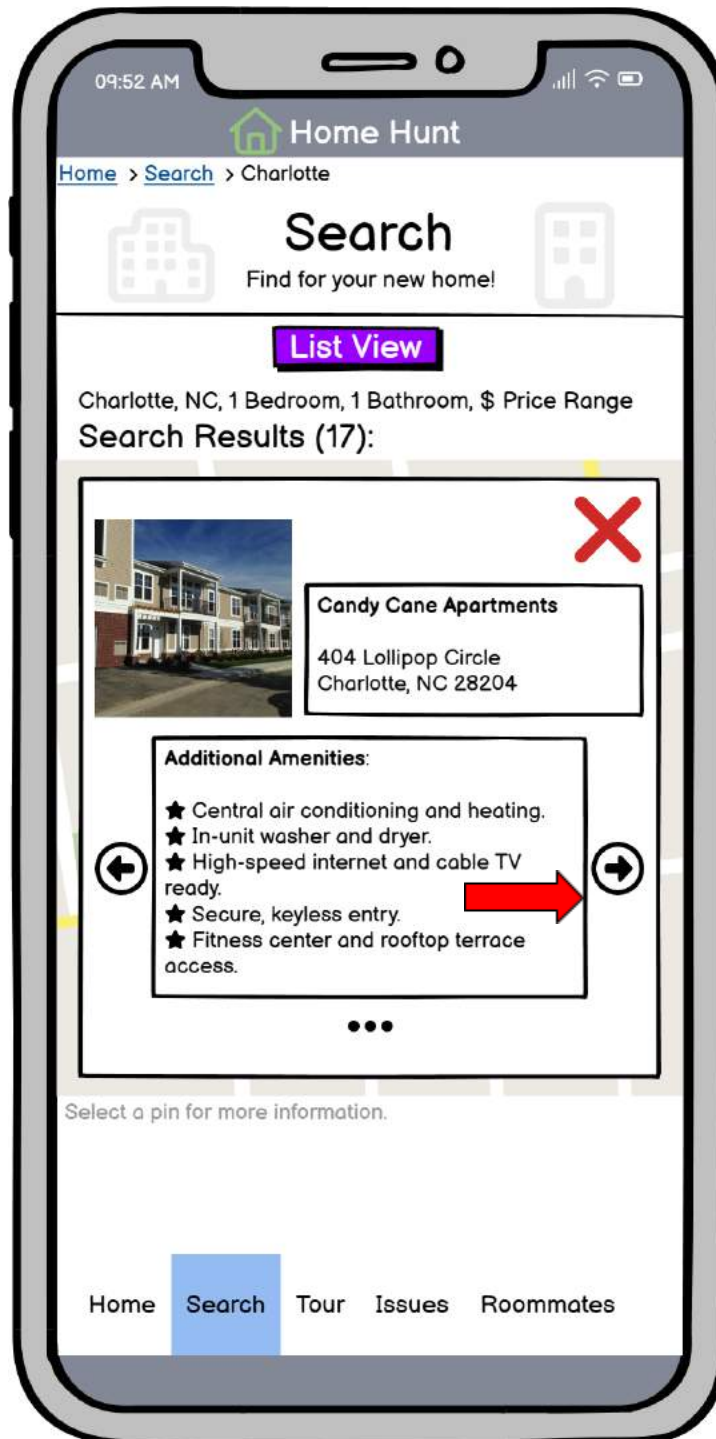
**Figure 7.** After the user clicks the Map View button they are moved to the Map View search results page. The user clicks on a map pin.



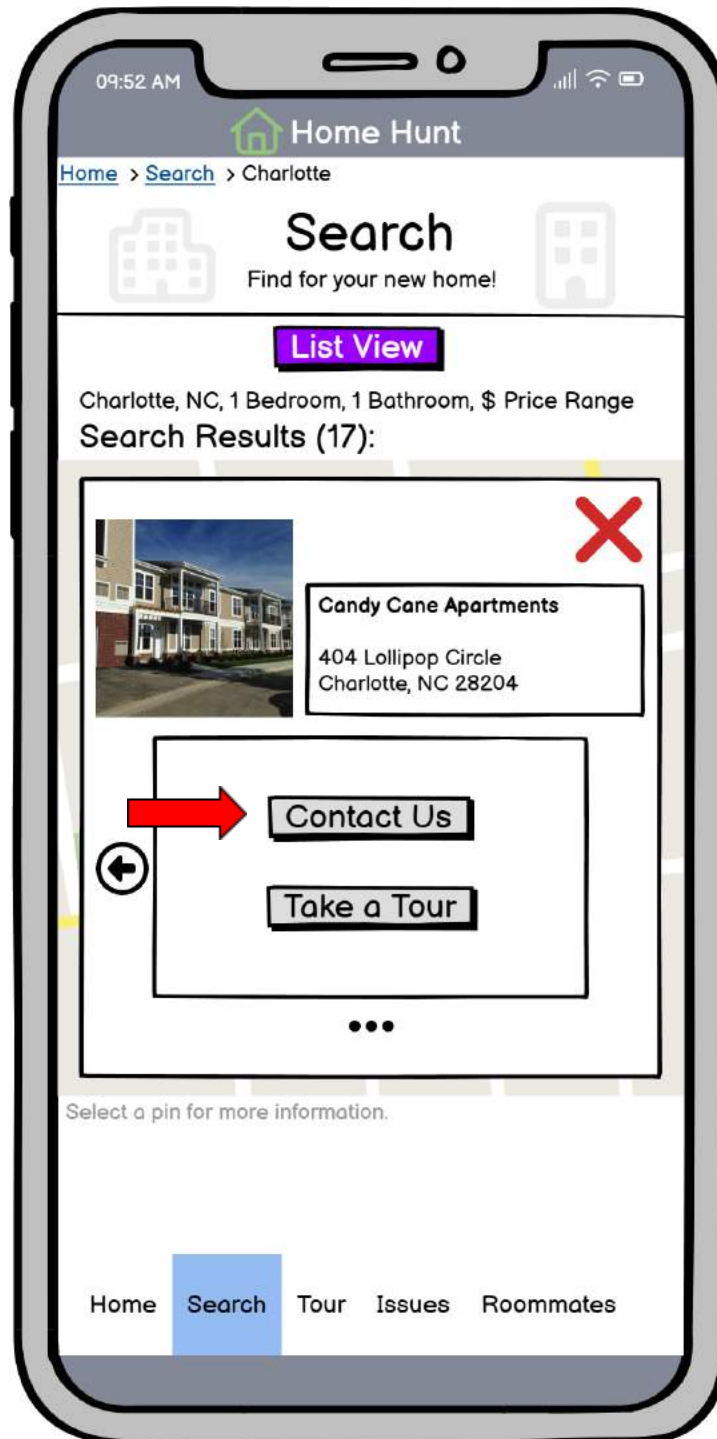
**Figure 8.** After the user clicks on a map pin they are shown the apartment name and address. They then click the View More button for more information on the apartment.



**Figure 9.** The user is now viewing a modal window with more information on the apartment complex. The user clicks the right arrow to view the next slide of information.

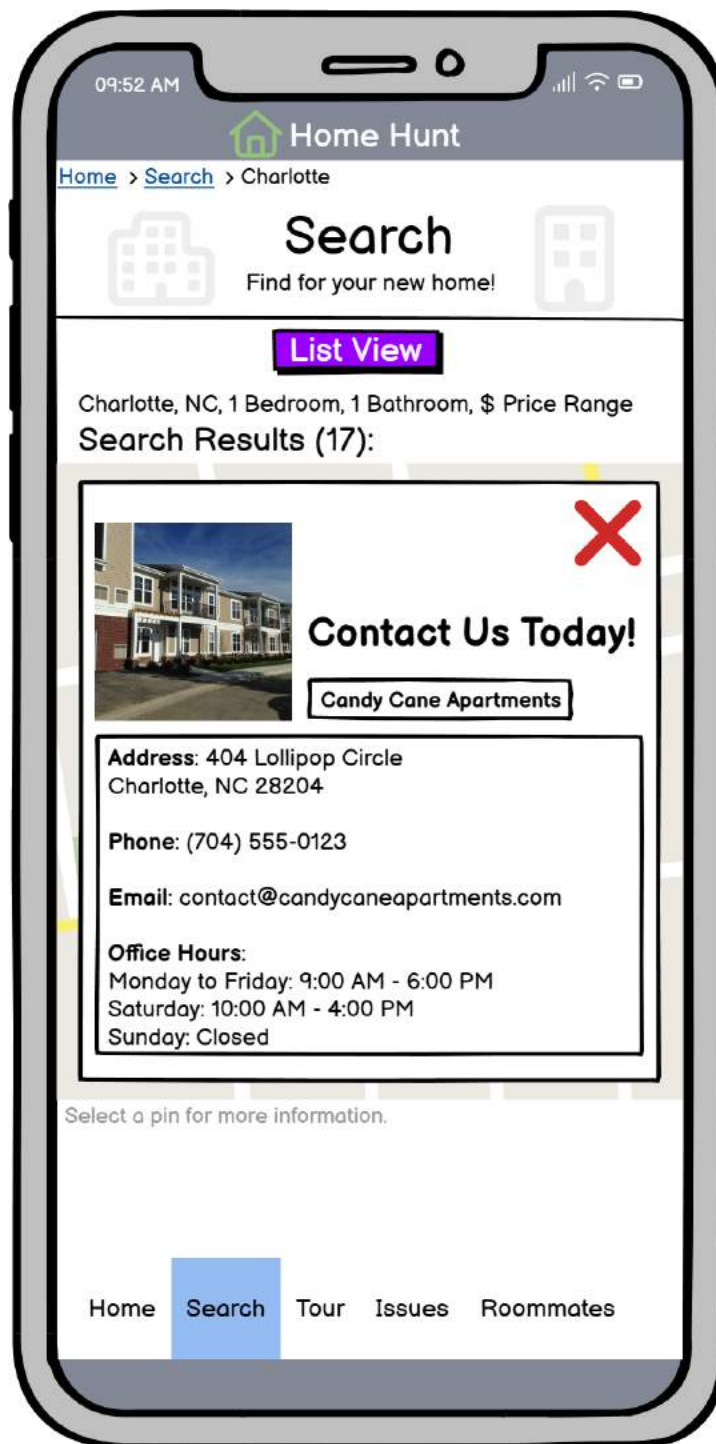


**Figure 10.** The user is now viewing another slide of information on the apartment complex (a list of additional amenities). The user clicks the right arrow to view another slide of information.



**Figure 11.** The user is now viewing the last available slide of information on the apartment complex. The user can choose from a Contact Us button or a Take a Tour button (*the tour functionality is available via Task 2 in this overall prototyping project*). The user selects Contact Us.





**Figure 12.** The user is shown another modal window with contact information for the apartment complex.

## Interactive Elements

For Task 1 of the prototype, the interactive elements include:

- *Radio buttons and Checkboxes:* Radio buttons allow a user to select specific options for their apartment search criteria, including number of bedrooms, bathrooms, and price range. Additionally, a checkbox is used to select whether or not a user is seeking an apartment that allows pets.
- *Breadcrumb Navigation:* This type of navigational element is used throughout the Task 1 functionality to provide a clear path of pages the user has navigated through. This assists user orientation within the application, as well as the specific functionality for this task.  
*Note: This is also a design pattern.*
- *Card Search Results:* Apartment search results (in list view) are presented in card format. Using this type of component makes it easy for users to scan through options and select a property of interest.
- *Slider/Slideshow:* A slideshow is used within the modal window for a selected apartment (via the map view). Using a slideshow to present information allows a user to browse additional details about an apartment complex easily within the compact modal window.

## Design Patterns

For Task 1 of the prototype, the design patterns include:

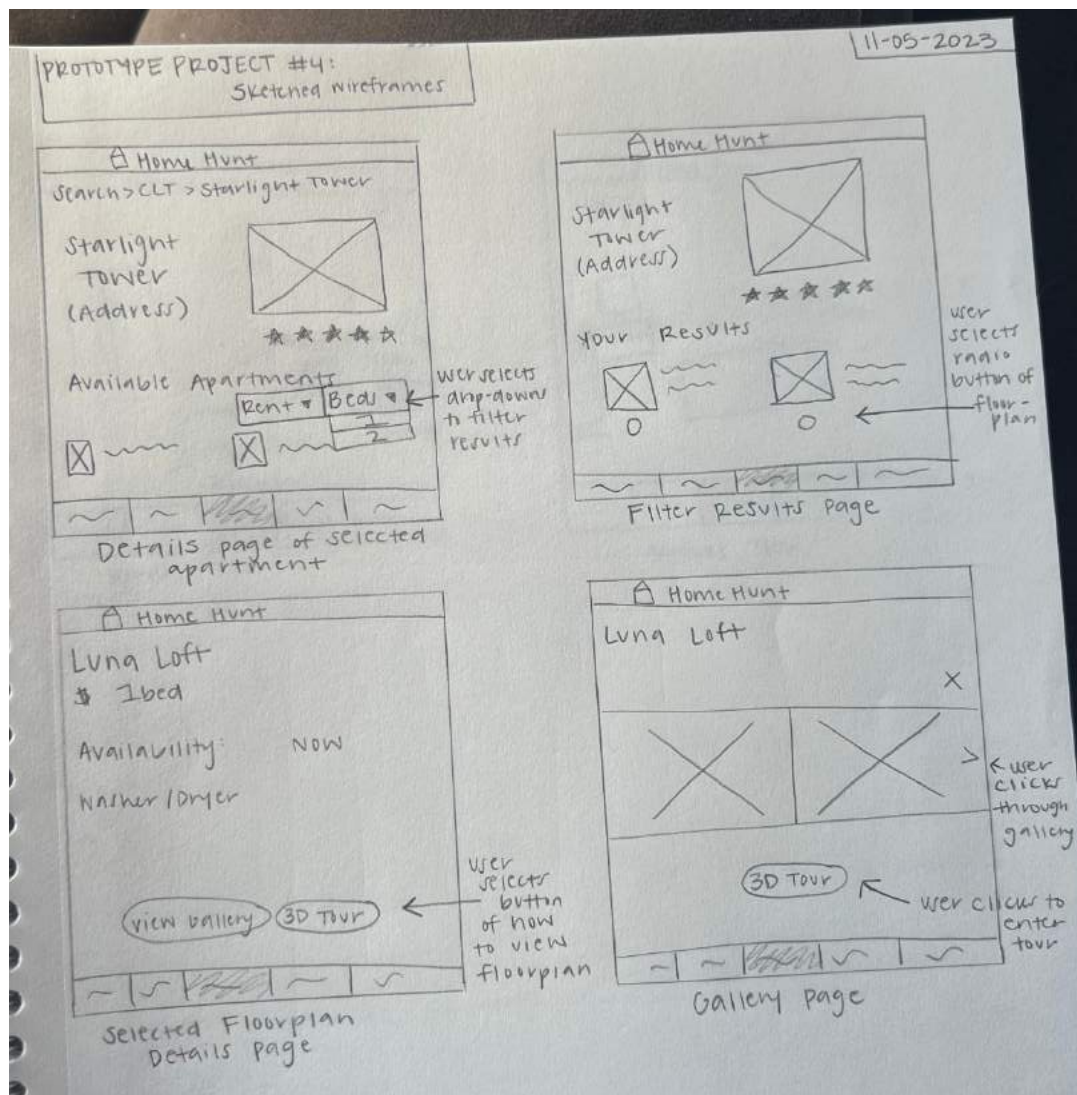
- *Modal Windows:* Modal windows are used to present additional details and information on an apartment complex. Modal windows are great for focused interactions and ensuring users deal with important information without distractions from the main content (in this case, the map view).
- *Infinite List:* An infinite list is used to present search results in list view. An infinite list shows more content as a user scrolls. This approach is a great way to present search result cards to a user in a mobile application.
- *Cards:* Cards are used for the search results, presenting information in digestible chunks and making it easy for users to scan and interact with multiple items.
- *Bottom Navigation:* A global navigation bar is placed at the bottom of the screen, ensuring a user can always reach the home screen or any other prototype functionality.
- *Generous Borders:* Whitespace is heavily utilized around tappable/clickable UI elements, particularly buttons. This is critical for mobile interactions where the screen size is considerably smaller than tablets and PCs.

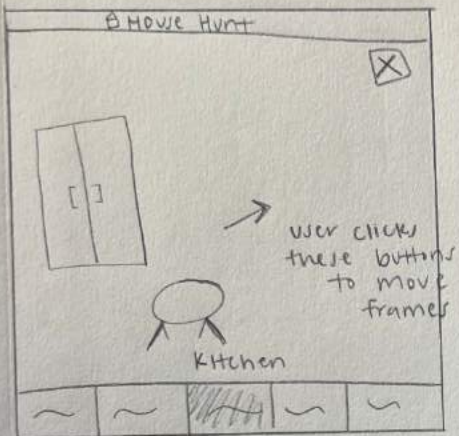
## Task #2: Apartment Details/ 3D Walkthrough

This “Tour” portion of the Home Hunt application allows the user to view the photo gallery of their desired apartment and floor plan, as well as enter into a 3D walkthrough. Once the user has selected their chosen apartment from their search, they can filter the results further to match which floorplan they would like to view in detail. They will be able to read about the details and amenities of the apartment and specific floorplan, and click through the photo gallery. Users also have the ability to virtually walk through the apartment in the 3D tour.

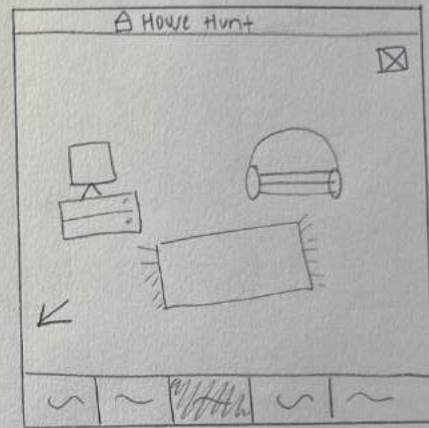
*Prompt:* Filter your search further to tour the 1 Bedroom, <\$1,500 monthly rent floor plan, “Luna”. You can view the details of the floor plan, browse through the gallery, and complete the 3D Walkthrough.

### Sketched Wireframes





Virtual Tour

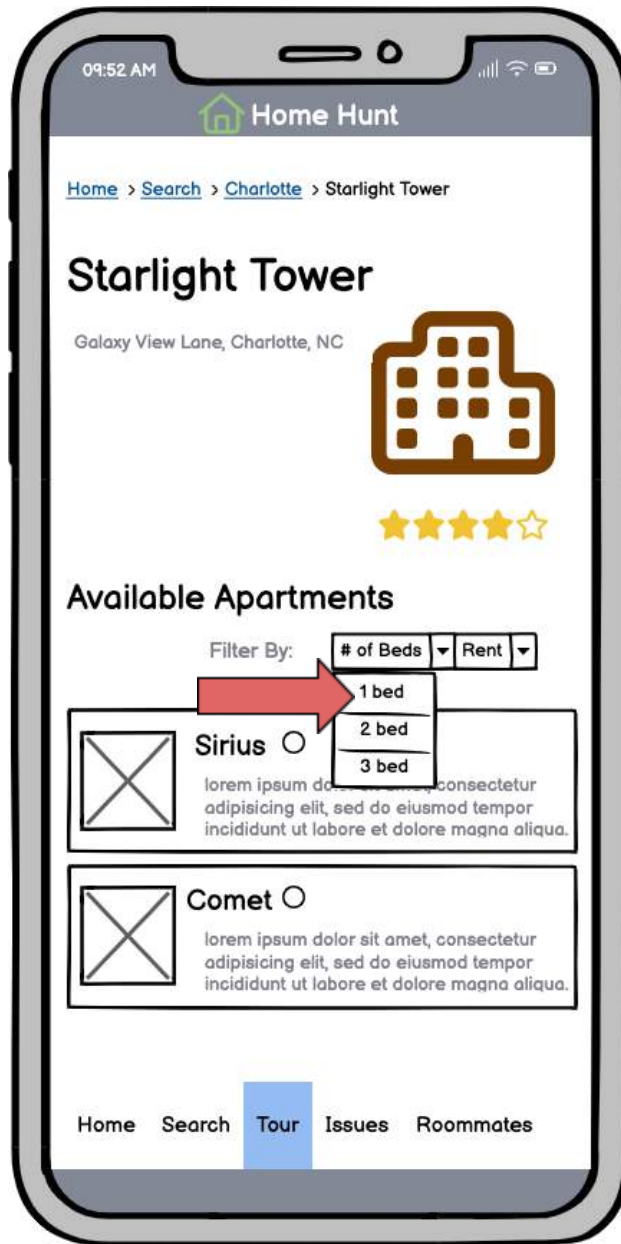


Virtual Tour

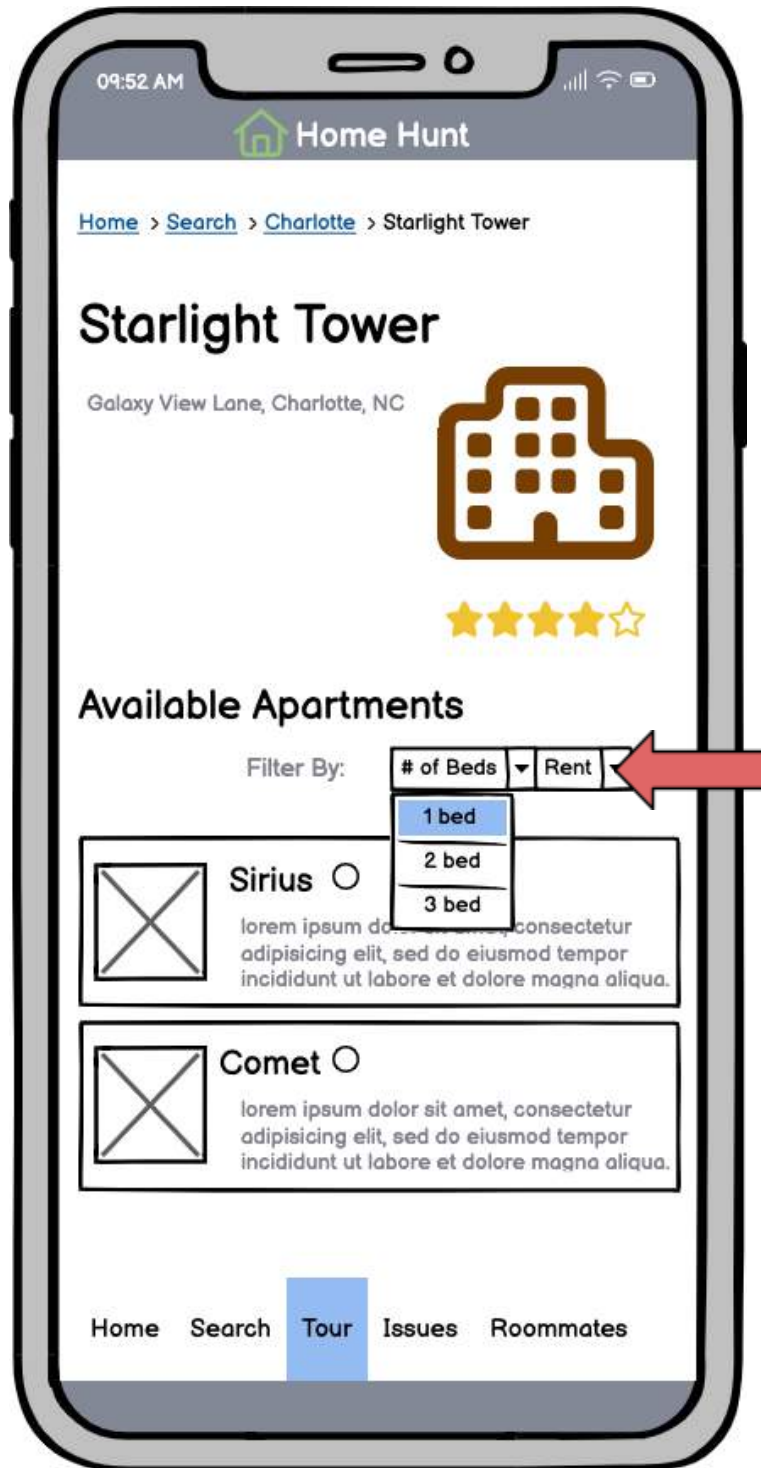
## Balsamiq Prototype Step-by-Step



**Figure 1.** Main Page of the Tour task. The user enters this task after they select an apartment from their Search. This shows the details of the apartment they selected, including floor plans.

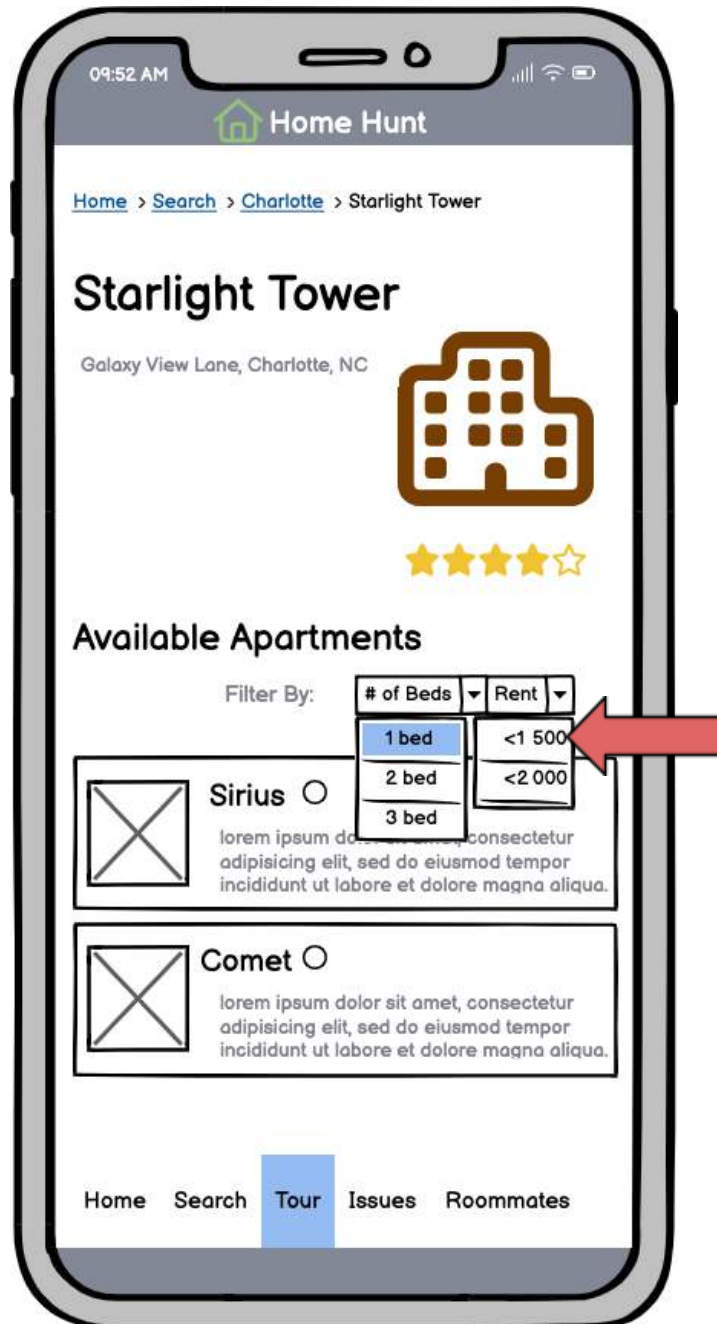


**Figure 2.** The user selects the ‘# of Beds’ drop-down menu to filter the results of floor plans they are viewing.



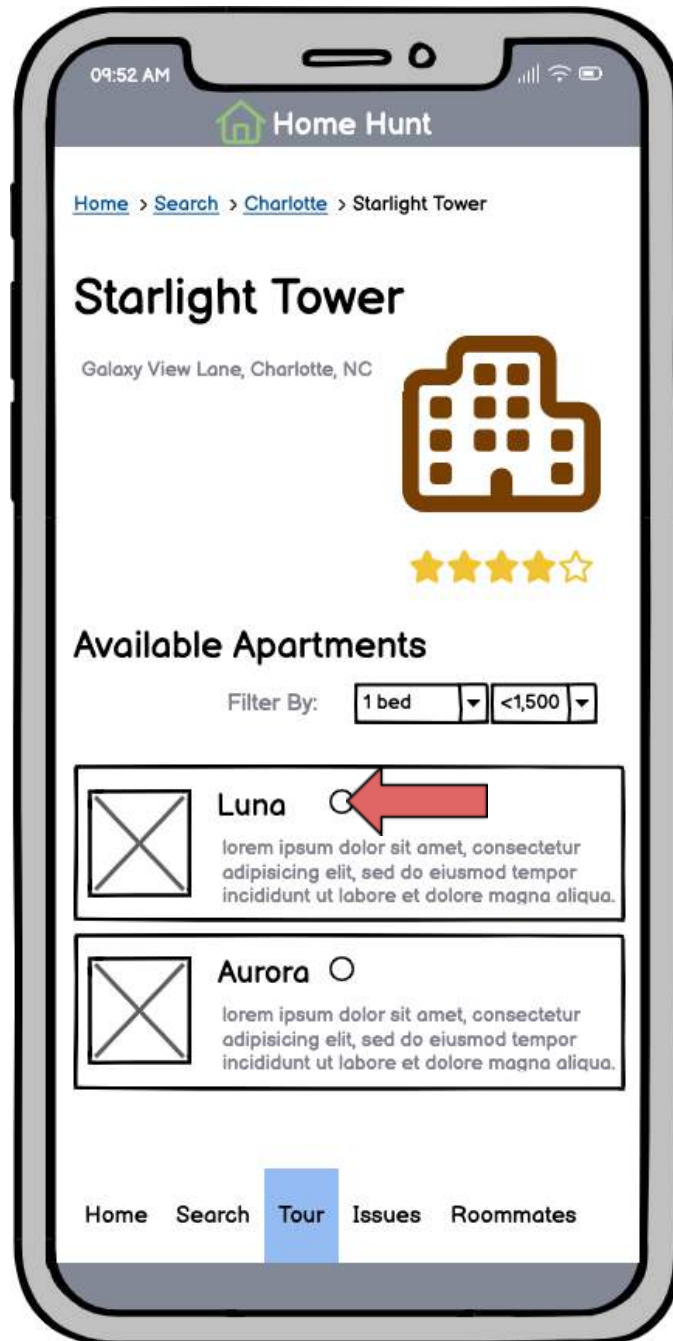
**Figure 3.** The user selects '1 Bed' from the drop-down menu.



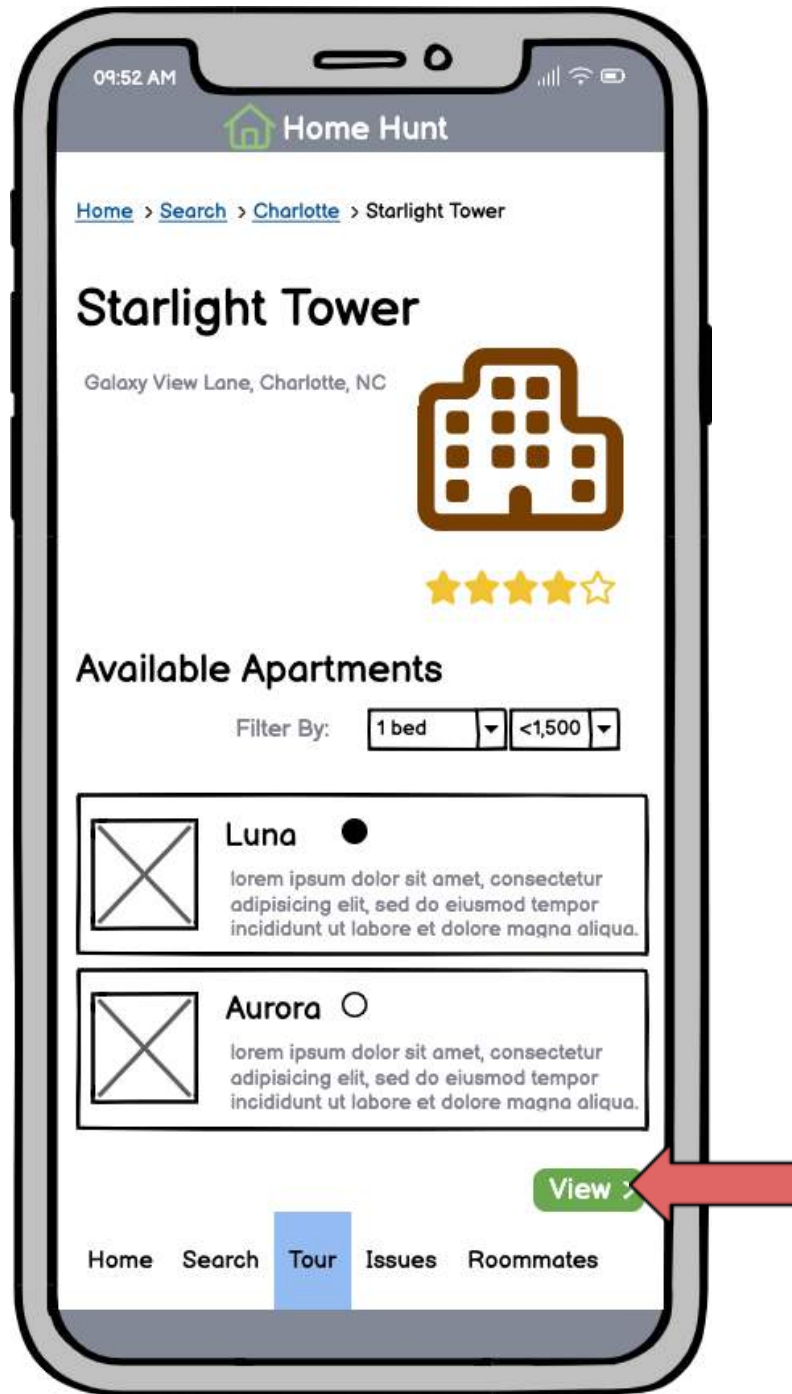


**Figure 4.** The user selects the “Rent” drop-down menu. They can select the maximum rent they would like to pay for their floor plan.

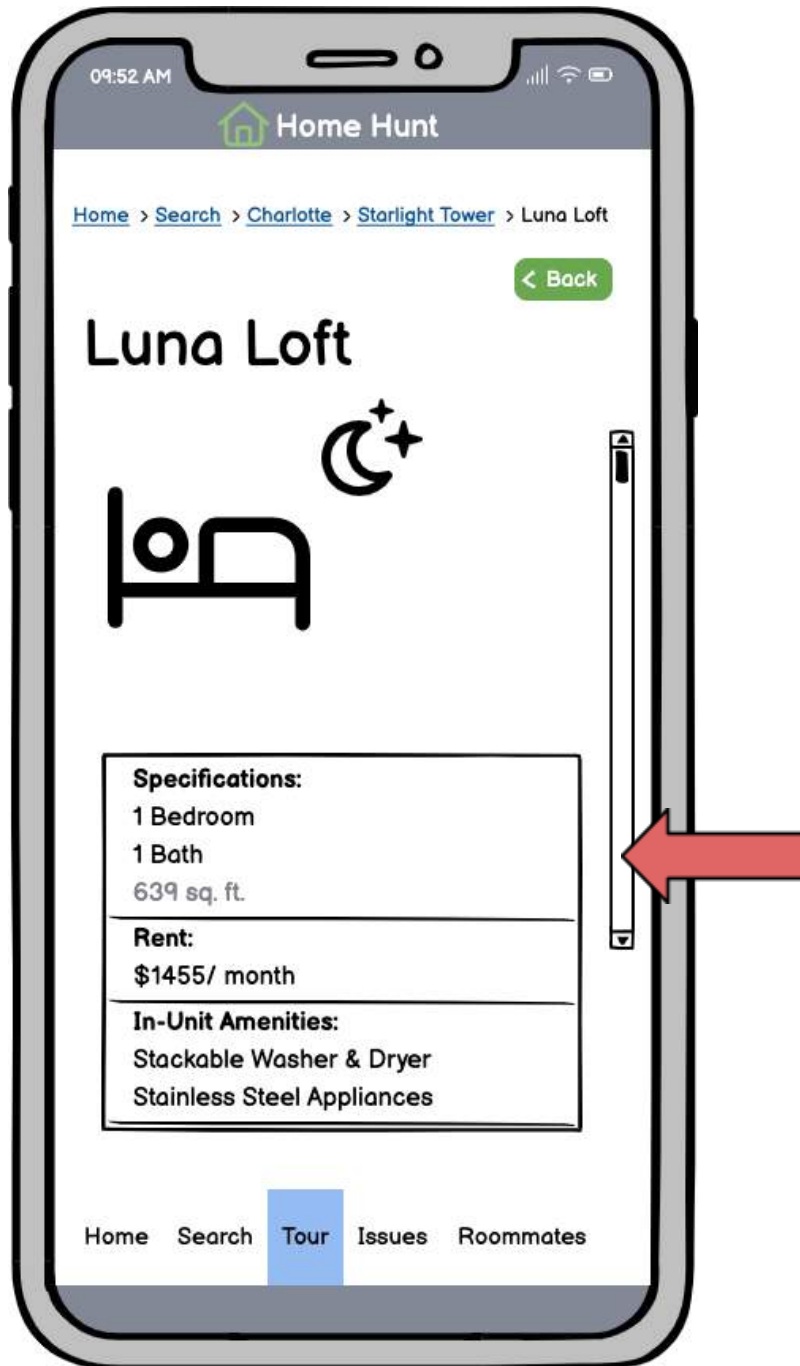




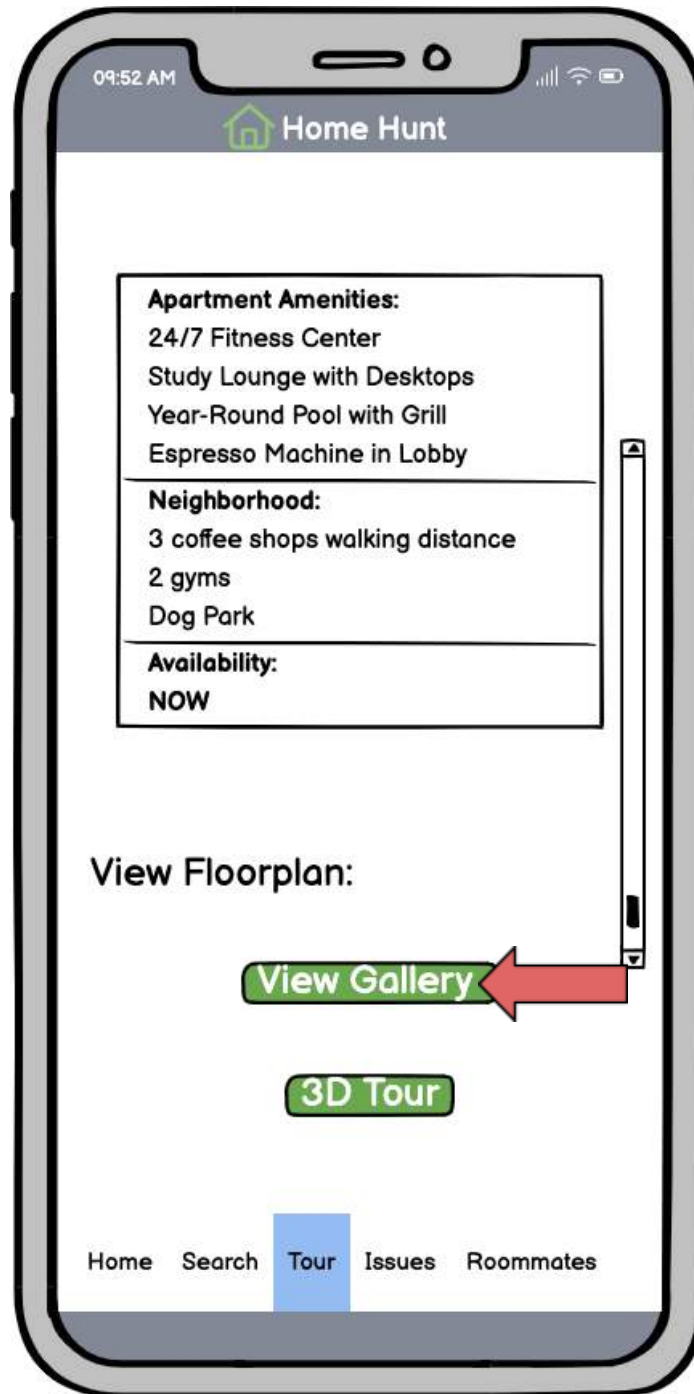
**Figure 5.** The user selects '<\$1,500' in monthly rent from the drop-down menu. The apartments that fit these criteria are populated below.



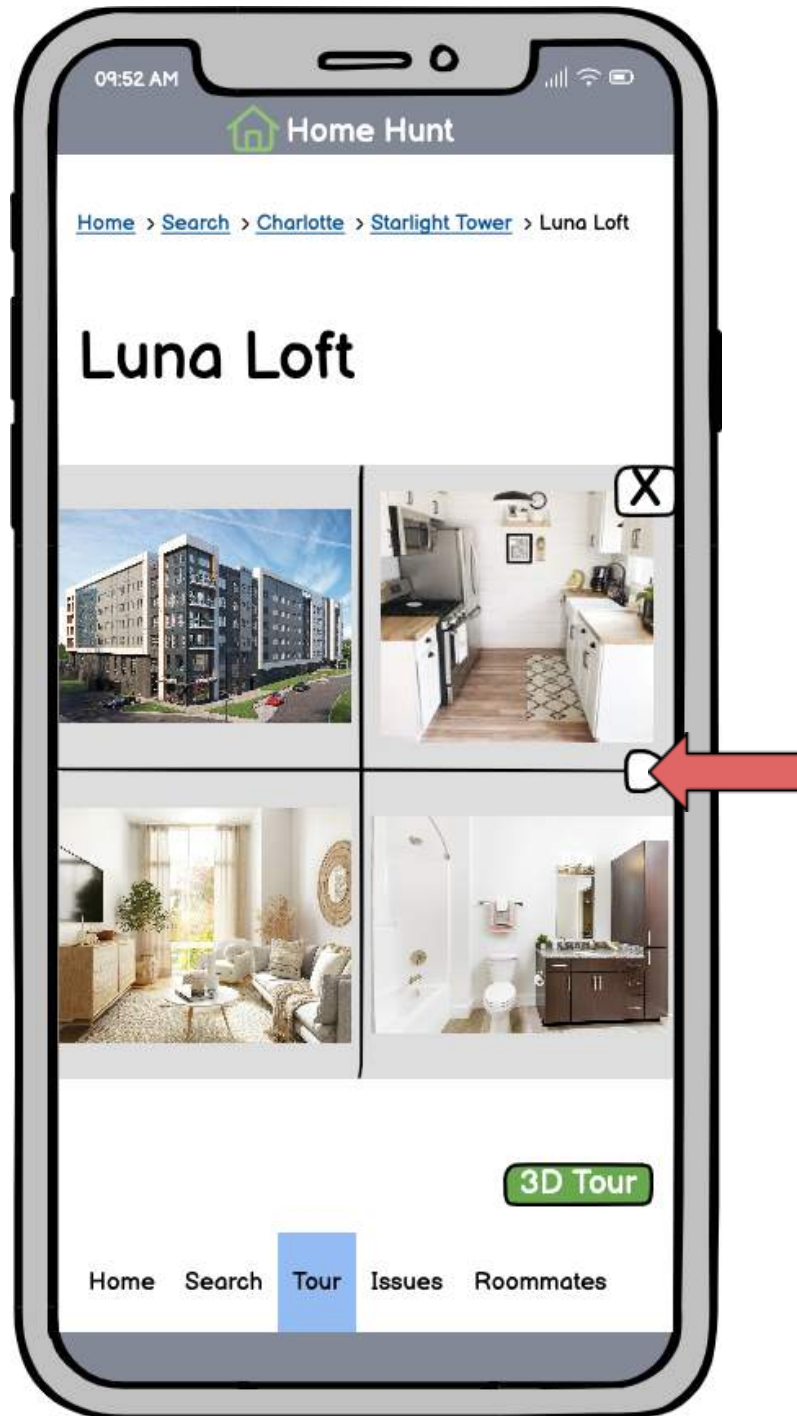
**Figure 6.** The user selects the radio button of the floor plan they would like to view more details for. They can then select the “View” button.



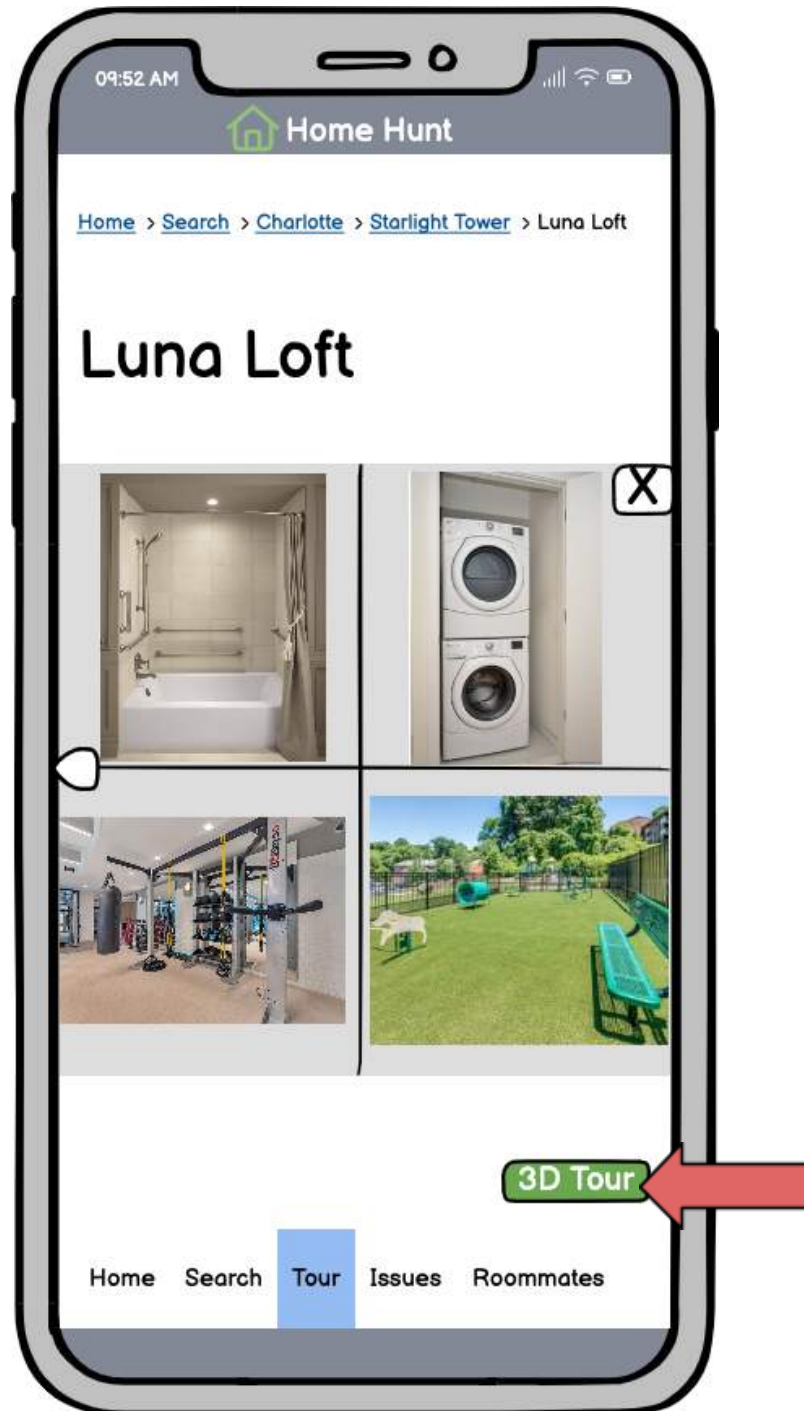
**Figure 7.** The chosen floor plan details page populates on the screen. This shows specifications about this selected floor plan and what is included. The user can use the scroll-bar to view more details.



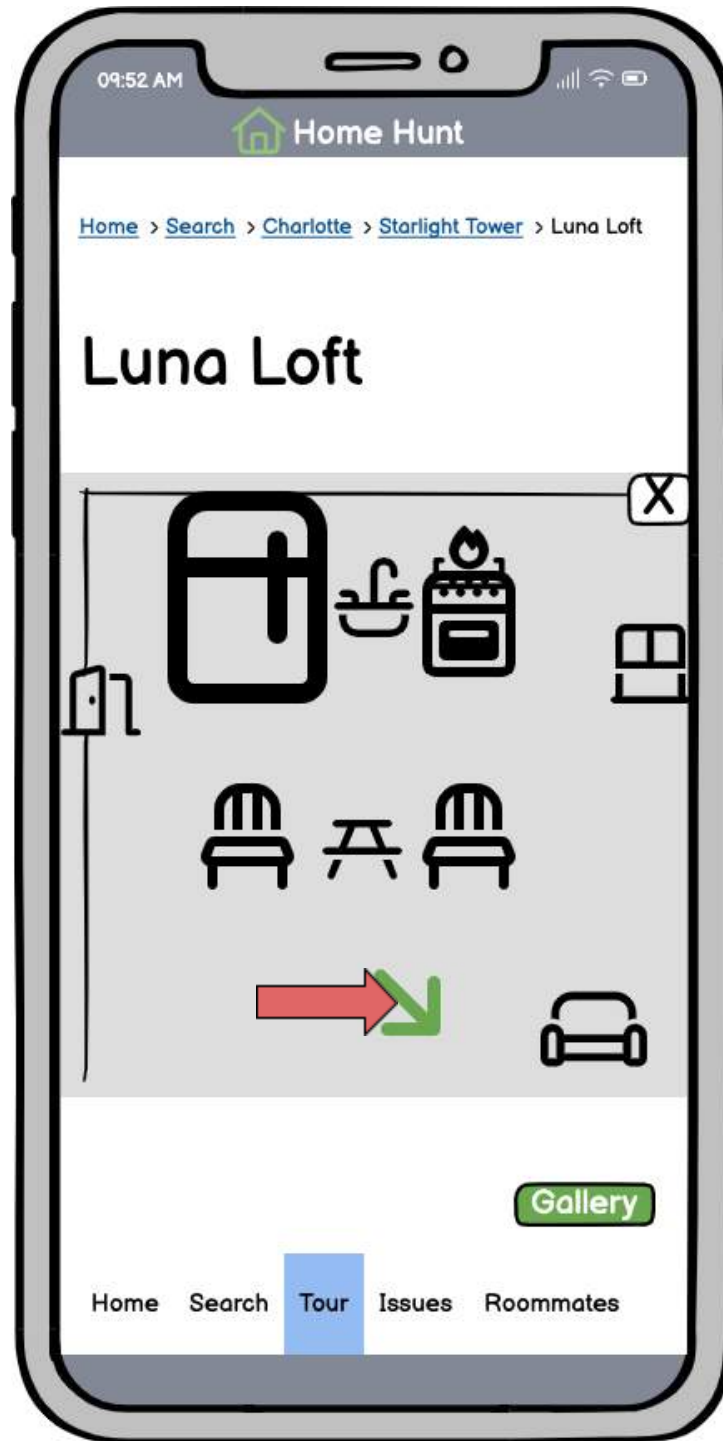
**Figure 8.** The user scrolled to the bottom of the page to view more details. The user can click to view the photo gallery or to enter the 3D tour of the space by selecting either button.



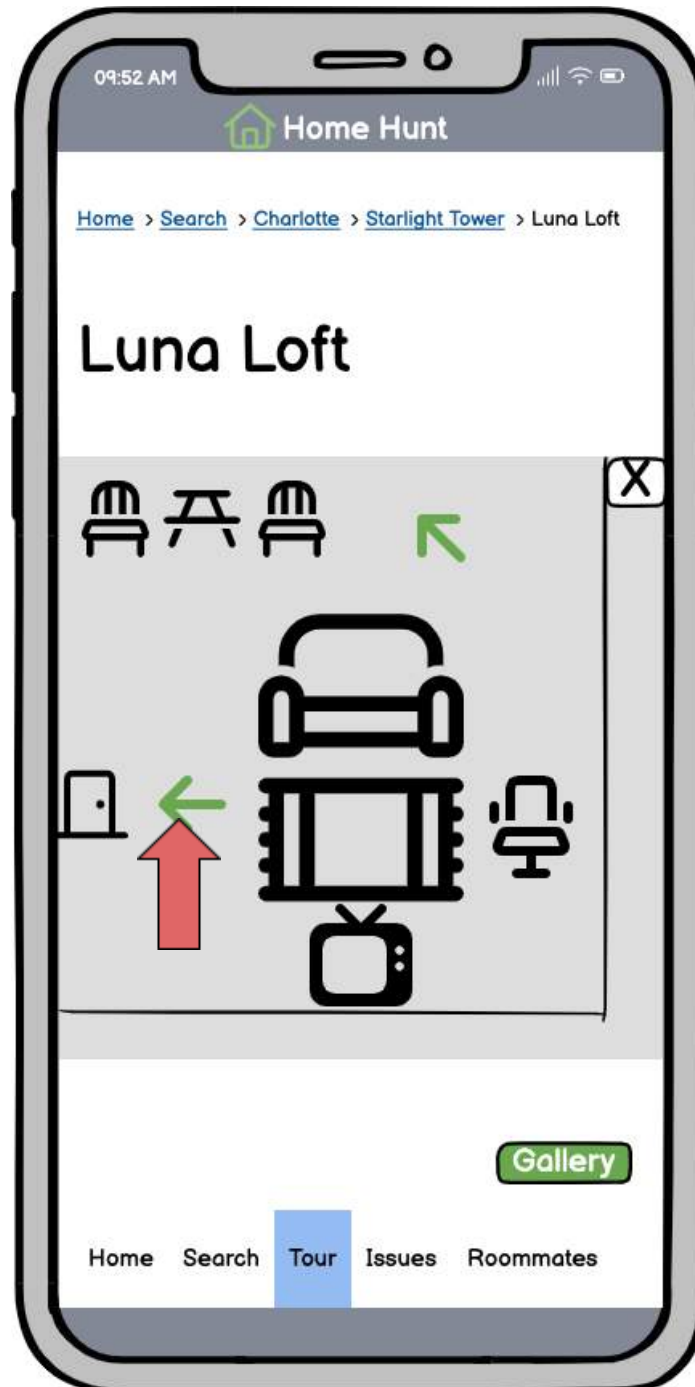
**Figure 9.** The user entered the photo gallery. They can view these photos and press the right-hand arrow to view more. They can also exit the gallery at any time.



**Figure 10.** The user clicked to move right. The user can use the left-hand arrow to view prior photos again. They can also exit the gallery at any time, or use the 3D Tour button to enter the virtual walkthrough.

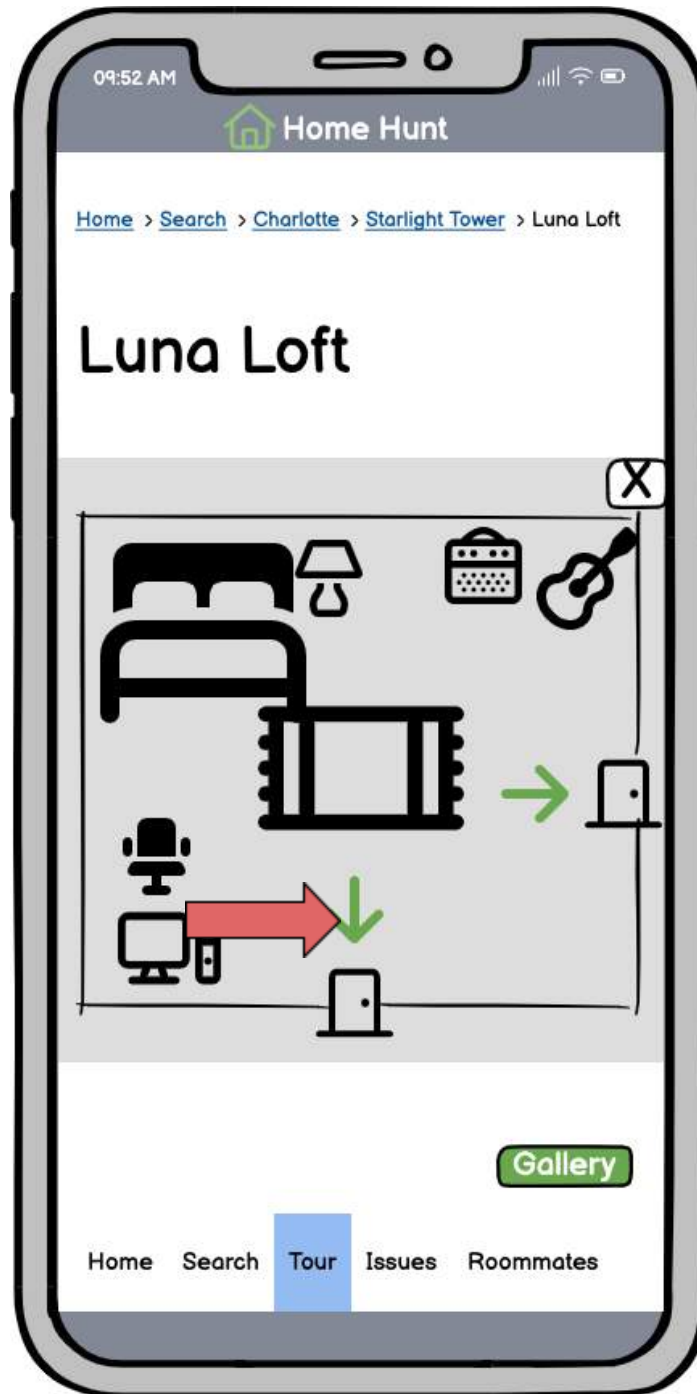


**Figure 11.** The user entered the 3D Tour. The first page of the 3D Tour, the floor plan's kitchen. The user can view the space and utilize the green arrow buttons to move around the apartment. They can also exit at any time or move back to the gallery.

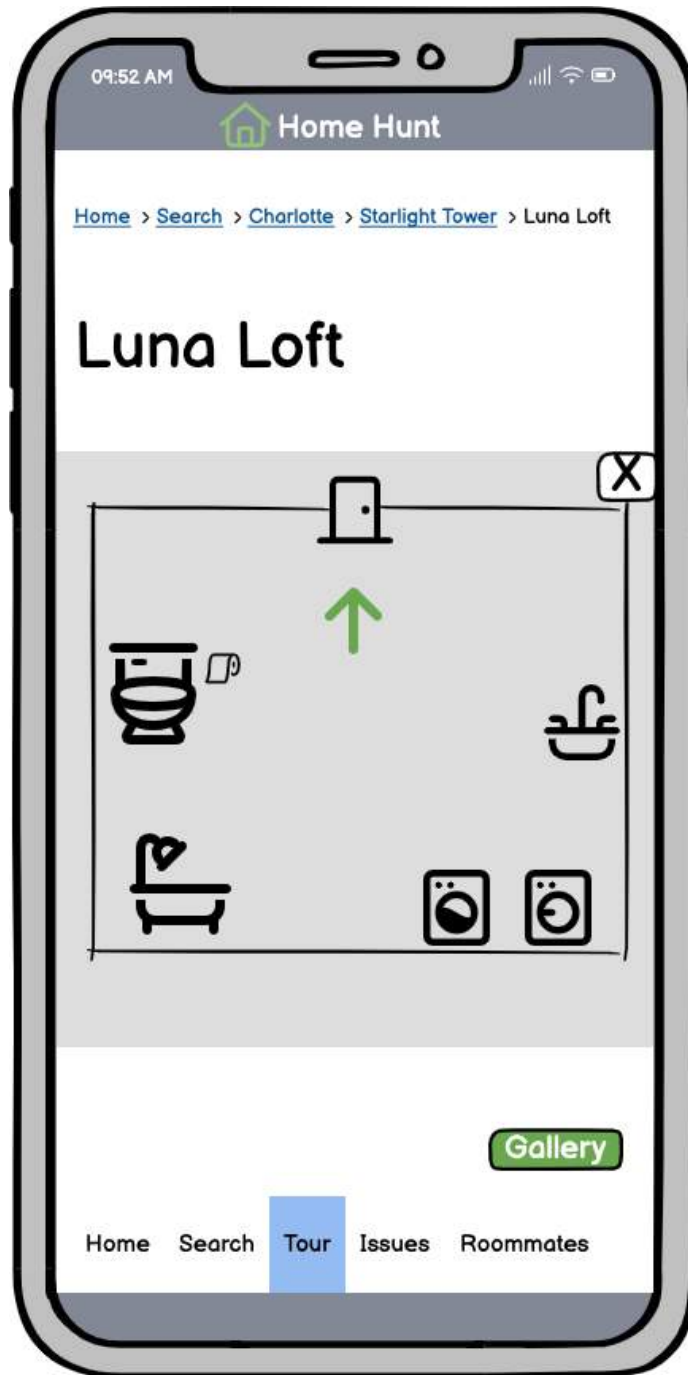


**Figure 12.** The second page of the 3D Tour, the floor plan's living room. The user can view the space and utilize the green arrow buttons to move around the apartment. They can also exit at any time or move back to the gallery.





**Figure 13.** The third page of the 3D Tour, the floor plan's bedroom. The user can view the space and utilize the green arrow buttons to move around the apartment. They can also exit at any time or move back to the gallery.



**Figure 14.** The final page of the 3D Tour, the floor plan's bathroom. The user can view the space and utilize the green arrow buttons to move around the apartment. They can also exit at any time or move back to the gallery.

**Interactive Elements:**

- *Drop-Down Menu.* The user can filter which floorplans populate by selecting the drop-down menus of number of bedrooms and maximum rent amount.
- *Radio Buttons.* The user can select which floorplan to view in more detail by selecting the radio button.
- *Scroll Bar.* On the floor plan details page, the user can utilize the scroll bar to view more details and the Gallery or 3D Tour options at the bottom of the page.
- *Action Buttons.* There are action buttons throughout the task including the button to scroll left or right to view more images in the gallery and the arrows to move around in the 3D Tour.

**Design Patterns:**

- *Bottom Navigation.* Since this is a mobile application, we utilized this pattern to have the global navigation bar for the application at the bottom of the screen.
- *Vertical Stack.* The content on the pages is ordered vertically, so the user can scroll down on their mobile phone. This is seen specifically on the floor plan details page.
- *Center Stage.* During the 3D Tour, the task at hand of walking through the apartment is at the center of the screen and updates as the user interacts with it.

### Task #3: Report Issues/Maintenance

The Report Issues portion of the Home Hunt application allows the user to Report an issue with the apartment by filling out a form. They can select categories related to the issue, enter their room number, describe the issue, and attach an image for submission. Once the issue is created, the user can navigate to the View All Issues tab. This is where they can keep track of the open or closed issues and also re-open or resolve issues if their needs have changed.

*Prompt:* You live in apartment 30B, and your dishwasher's door fell off. You want to fill out a form to report this issue and attach an image before submitting. After you submit the form, you want to view all your issues. While viewing your issues, you realize you no longer need help with one of your open issues (Issue #2: Other), so you want to move it to the resolved section.

### Sketched Wireframes:

Prototype Project 4: Balsamiq Interactive Prototype  
The Application - Apartment Rental Company  
Task 3: Report Issues/Maintenance (for active renter)  
11-09-2023

**ISSUES**

REPORT AN ISSUE | VIEW ALL ISSUES

Report an issue:

1. Category:
2. Room #:
3. Description of Issue:
4. Upload Picture:

UPLOAD | SUBMIT

User can report an issue from this tab. Clicking "category" reveals a dropdown menu

User can enter text for fields 2 and 3

**ISSUES**

REPORT AN ISSUE | VIEW ALL ISSUES

Report an Issue:

1. Category:
2.
3.
4.

For field 4, the user can upload a picture of the issue

**ISSUES**

REPORT AN ISSUE | VIEW ALL ISSUES

Report an issue:

1.
2.
3.
4. Upload picture:

computer files

FILE NAME

uploaded

ISSUES	
REPORT AN ISSUE	VIEW ALL ISSUES
OPEN:	
#4	
#3	
RESOLVED:	
#2	
#1	
[Resolve]	
[Re-Open]	

This is the View All Issues Screen

The user can see Resolved Issues and current open Issues.

The user can re-open Resolved issues and resolve Open issues by clicking checkboxes

ISSUES	
REPORT AN ISSUE	VIEW ALL ISSUES
✓	
YOUR ISSUE WAS CREATED	
YOU CAN CHECK THE STATUS IN THE "VIEW ALL ISSUES" TAB	

Once the user clicks the submit button on the Report Issues form, they have confirmation that the issue has been created

## Balsamiq Prototype Step-by-step:

The image shows a mobile app prototype for reporting issues. At the top, the status bar displays '09:52 AM' and signal icons. The app title 'Issues' is centered. Below it are two tabs: 'Report an Issue' (highlighted in blue) and 'View All Issues'. A blue arrow points to the 'Report an Issue' tab. The main form is titled 'Report an Issue:'. It contains four required fields, each marked with a red asterisk: 1. 'Category' with a dropdown menu showing '- Select -'; 2. 'Room #' with a text input field; 3. 'Description' with a large text area; 4. 'Attach Picture' with an 'Upload' button featuring an upload icon. A 'Submit' button is located below the form fields. At the bottom is a navigation bar with five items: 'Home', 'Search', 'Tour', 'Issues' (highlighted in blue), and 'Roommates'.

**Figure 1:** This is the home screen for the Report an Issue module inside the Issues tab. We see a form that the user can fill out to detail the issue. To begin, the user selects the “Category” dropdown. Category is a required field. Notice the submit button is grayed out, as it is not clickable until the required fields have been completed.

09:52 AM

# Issues

Report an Issue View All Issues

Report an Issue:

\*1. Category - Select -  
Plumbing  
Electrical  
Appliance  
Other

\*2. Room #

\*3. Description

4. Attach Picture

Upload

Submit

Home Search Tour Issues Roommates

**Figure 2:** The dropdown reveals various Category options. Here, the user selects “Appliance.”

09:52 AM

# Issues

Report an Issue View All Issues

Report an Issue:

\* 1. Category

\* 2. Room #

\* 3. Description

4. Attach Picture

Home Search Tour **Issues** Roommates

**Figure 3:** Here the user types in the Room number, 30B. Room number is a required field.



09:52 AM

# Issues

Report an Issue View All Issues

Report an Issue:

\*1. Category

\*2. Room #

\*3. Description

4. Attach Picture

Home Search Tour **Issues** Roommates

**Figure 4:** Next, the user types in a description of the issue. Description is a required field. After typing in the description, the Submit button is clickable because the required fields have all been completed.

09:52 AM

# Issues

Report an Issue View All Issues

Report an Issue:

\*1. Category

\*2. Room #

\*3. Description

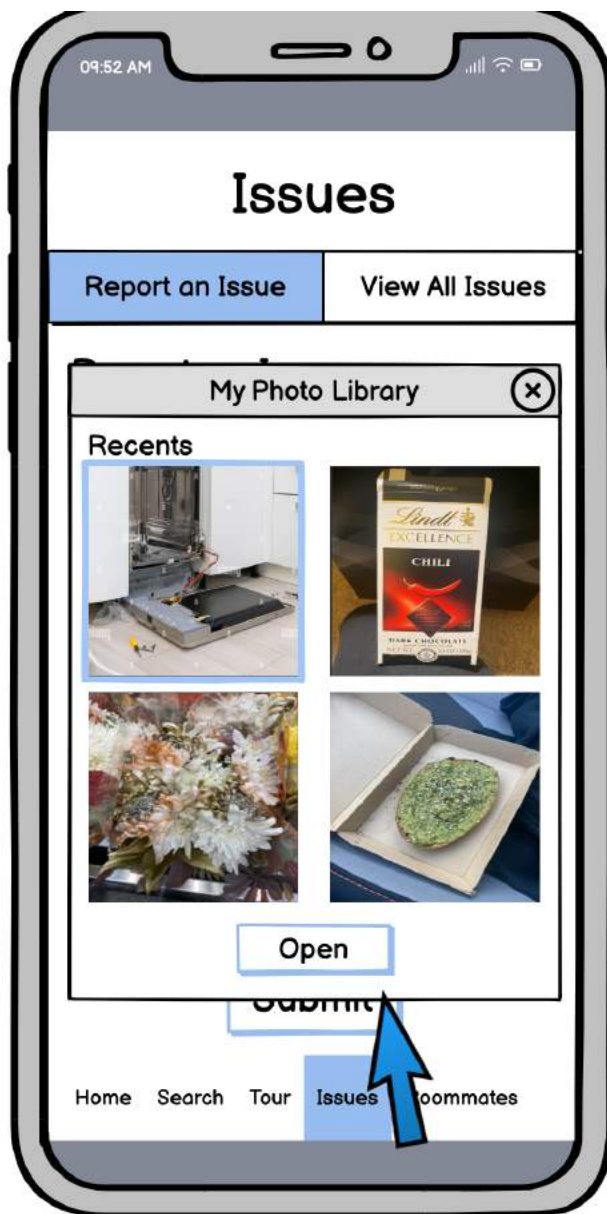
4. Attach Picture

Home Search Tour **Issues** Roommates

**Figure 5:** Before submitting, the user wants to upload an image by clicking “Upload.” This step is optional for the user.



**Figure 6:** After clicking “Upload,” the user can see photos from their photo library. The Open button is greyed out because no photos have been selected yet. The user selects the photo of the dishwasher with a broken door.



**Figure 7:** The selected photo is highlighted. Now that a photo has been selected, the Open button is clickable. The user selects “Open.”

09:52 AM

# Issues



Report an Issue View All Issues


Report an Issue:

\*1. Category

\*2. Room #

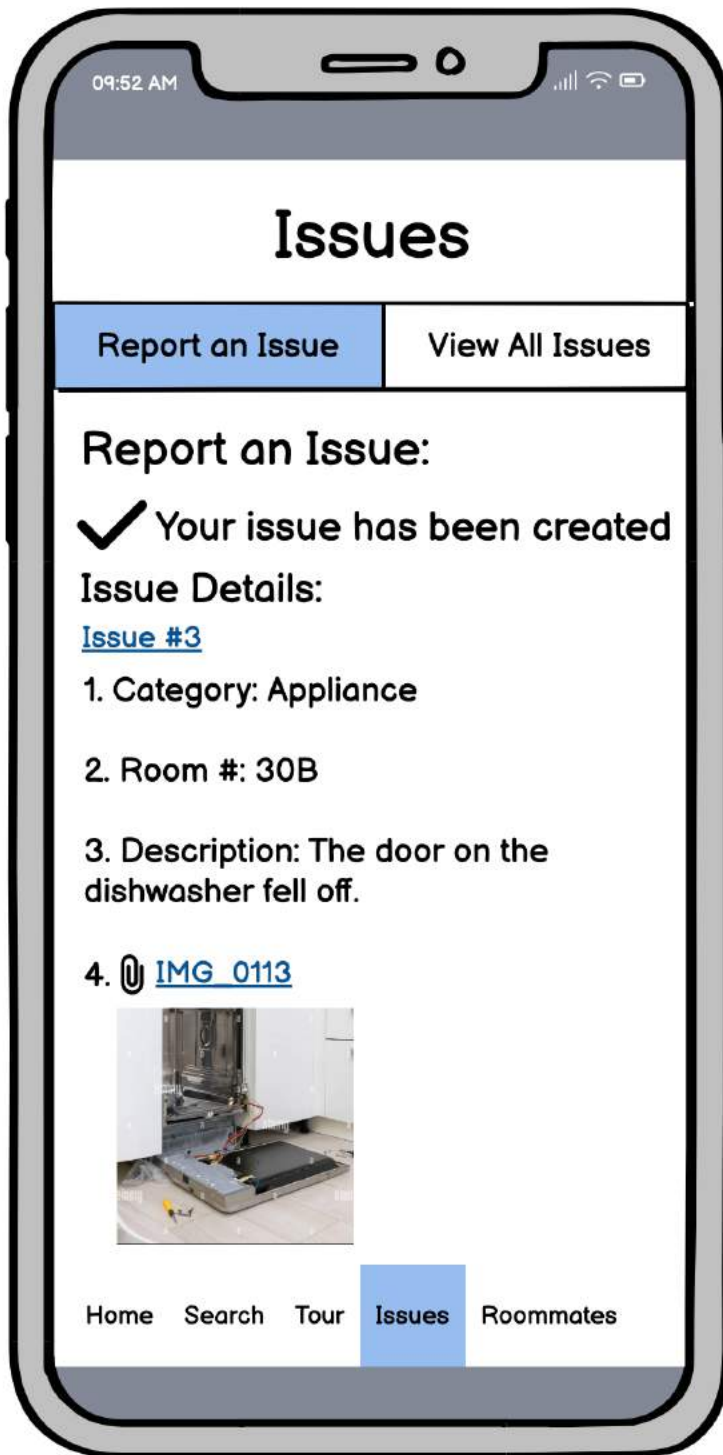
\*3. Description

4. Attach Picture  
  [IMG\\_0113](#)

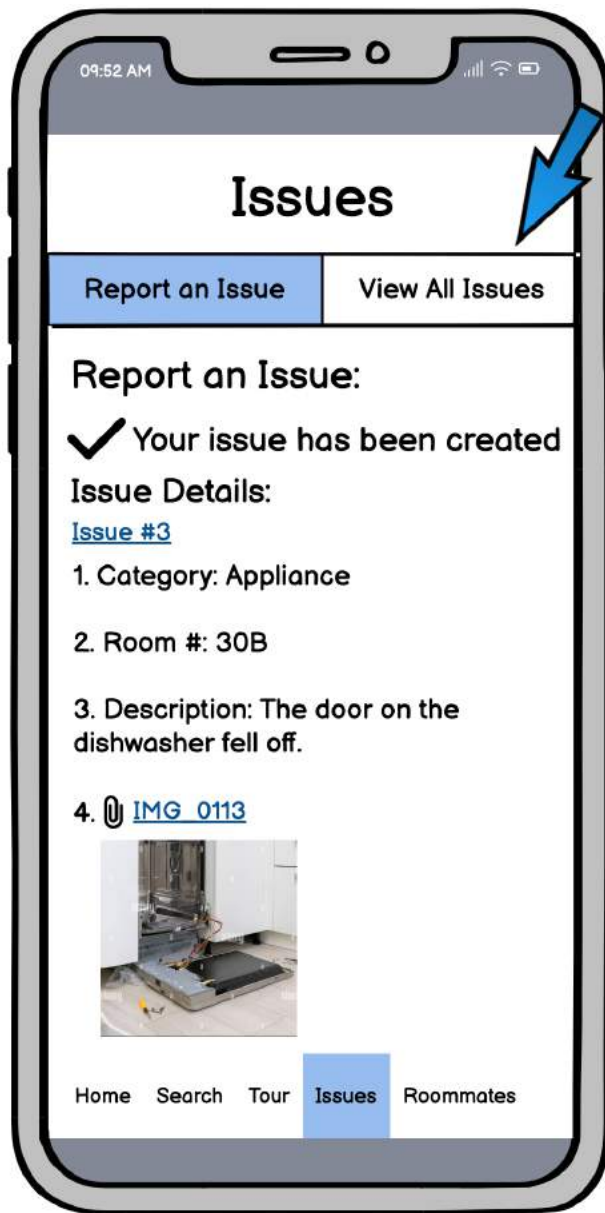


Home Search Tour **Issues** Roommates

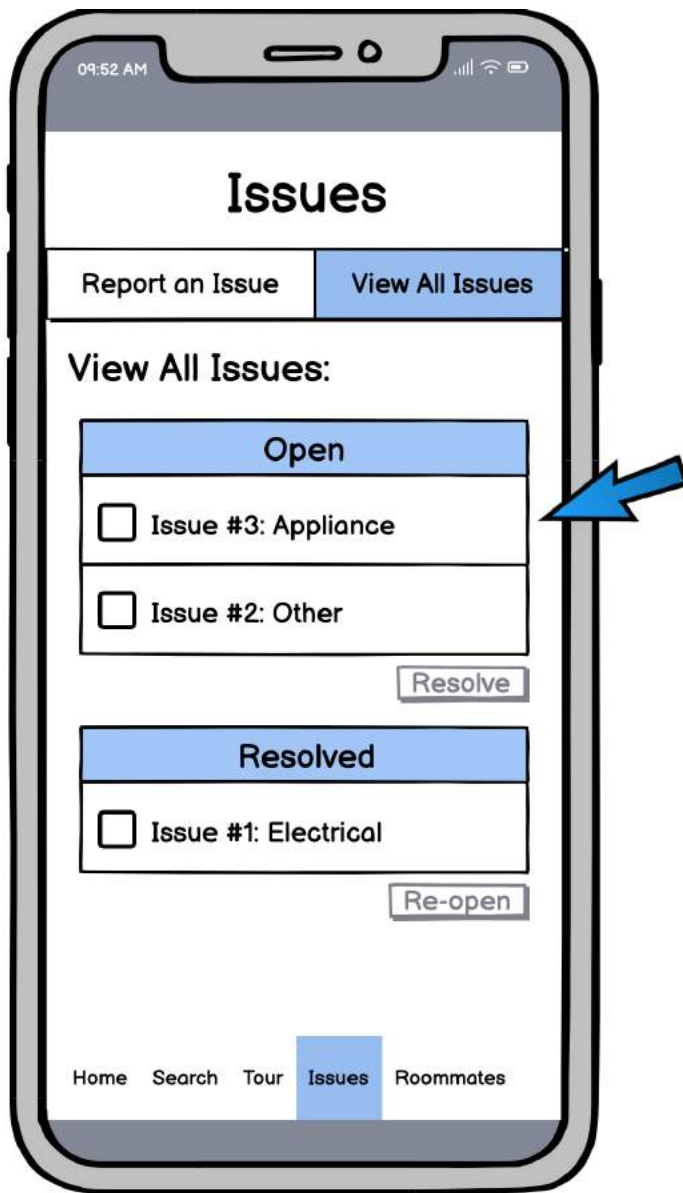
**Figure 8:** After selecting Open, the selected photo is displayed under “Attach Picture.” Now, the user clicks the Submit button to submit the form.



**Figure 9:** Upon submitting the form, the user sees the Issue details. These details include Issue number, Category, Room number, Description, and the attached image.

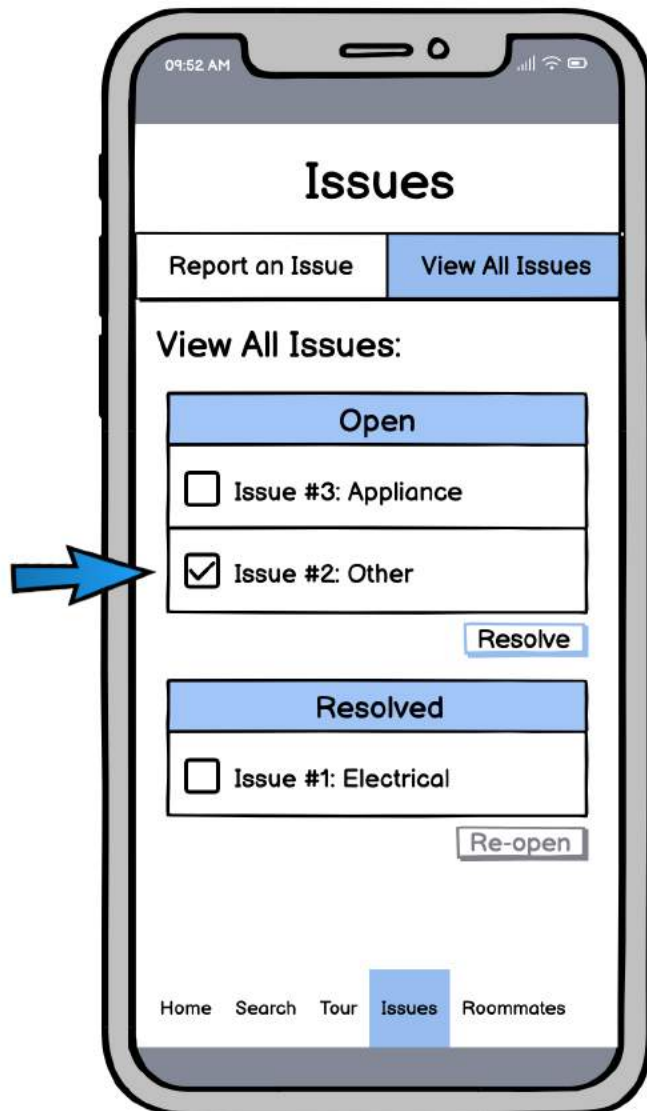


**Figure 10:** Now, the user can select the “View All Issues” tab to see an overview of open and closed issues.

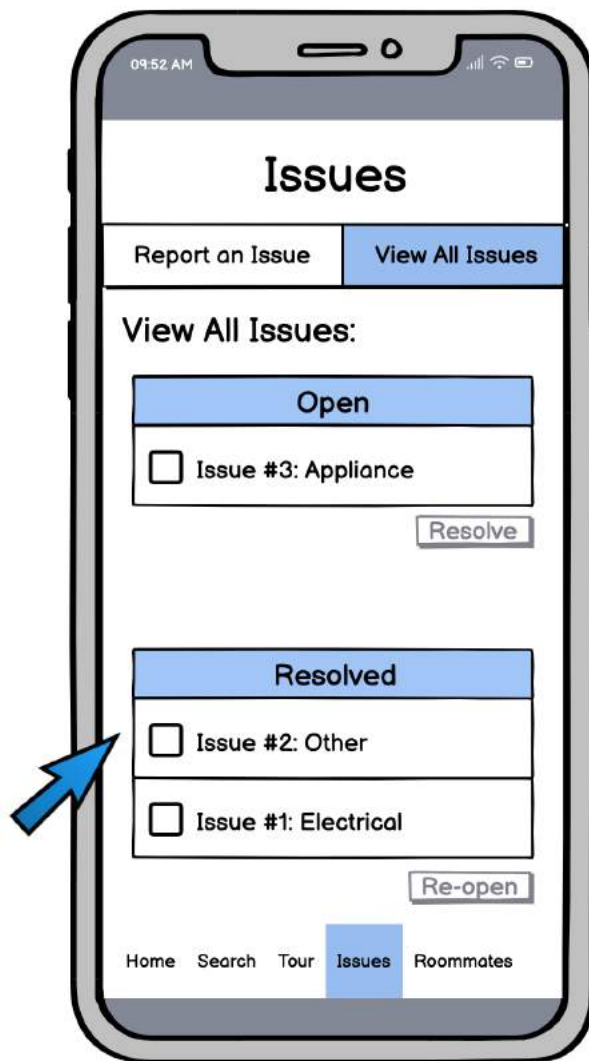


**Figure 11:** This is the home page for the View All Issues tab. The user sees a list of Resolved Issues from the past and Open Issues, including Issue #3, which was just added. Each issue has a checkbox next to it. When Open Issues are selected, the user can Resolve them. When Resolved Issues are selected, the user can Re-open them.





**Figure 12:** The user wants to resolve Issue #2: Other. To do this, the user selects the checkbox next to Issue #2, which enables the Resolve button under the Open section.



**Figure 13:** After clicking “Resolve,” the user sees that Issue #2 has been moved to the Resolved section.

#### Interactive Elements:

- *Drop down list*: The user can select which category their issue falls under by using the Category dropdown menu.
- *Text Entry*: The user can enter text for the Room number and Description of the issue.
- *Action buttons/Links*: The user can click various Action buttons such as Upload, Submit, and Resolve.
- *Checkboxes*: The user can select issues using checkboxes to resolve open issues or re-open resolved issues.

#### Design Patterns:

- *Vertical Stack*: The content on each screen is organized in a vertical column. The user does not need to scroll vertically. They can navigate from one screen to another by simple taps.
- *Bottom Navigation*: The global navigation menu is across the bottom of all of the screens including all of the modules: Home, Search, Tour, Issues, and Roommates.
- *Collections and Cards*: The images that the user can select from when uploading an image to the report issues form are shown as a list of items.
- *Generous Borders*: Buttons are large enough for a user to click on a mobile device, and the entire button/surrounding area is triggered by a tap so the user can easily select the options.

#### Task #4: Roommate Support

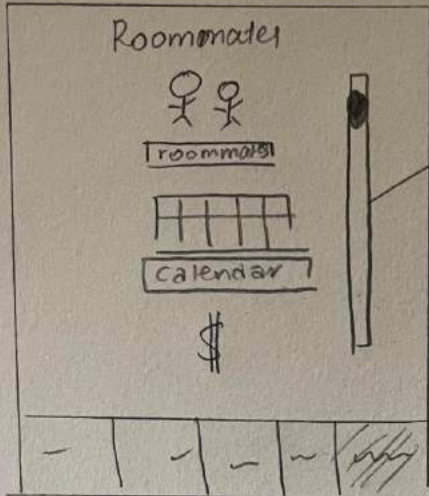
This task allows the user to perform several actions, such as viewing information about their roommates, checking the calendar and roommates' notes for the day, reviewing how much each person owes for rent along with the price breakdown, and finally, viewing the chores for the current week. Users also have the option to edit the chores if they wish.

*Prompt:* On the roommate homepage, first click on 'My Roommates' to learn more about your roommate, Maria. After that, return to the roommate homepage and select the calendar icon to view Maria's notes for November 12th, 2023. Subsequently, return to the roommate homepage once again and select 'My Rent' to review the price breakdown for yourself and pay for the current month. Following the payment, check the 'Past' tab to see your payment history. Then, return to the roommate homepage again and select the 'Chores' tab to see the chores for the week of 11/13-11/19, and edit a few of them.

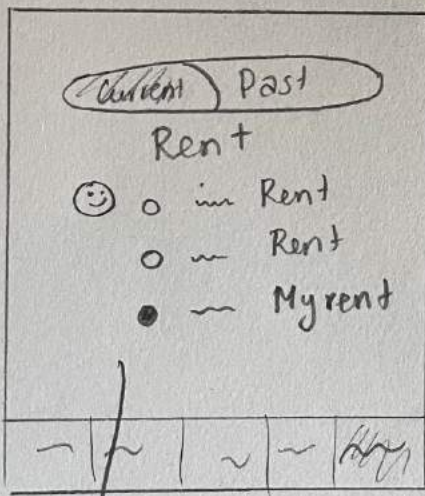
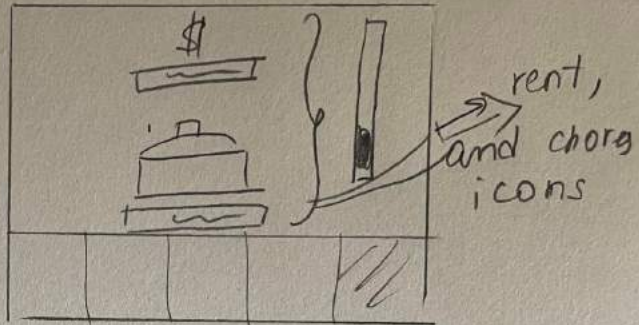
# Sketched Wireframes:

Date - 11-11-2023

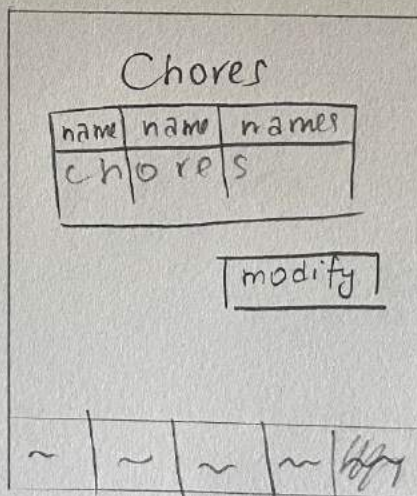
## Prototype Project 4 Sketched Wireframes



Scroller so user can see the content below, such as



user can see their, and their roommates' ledger

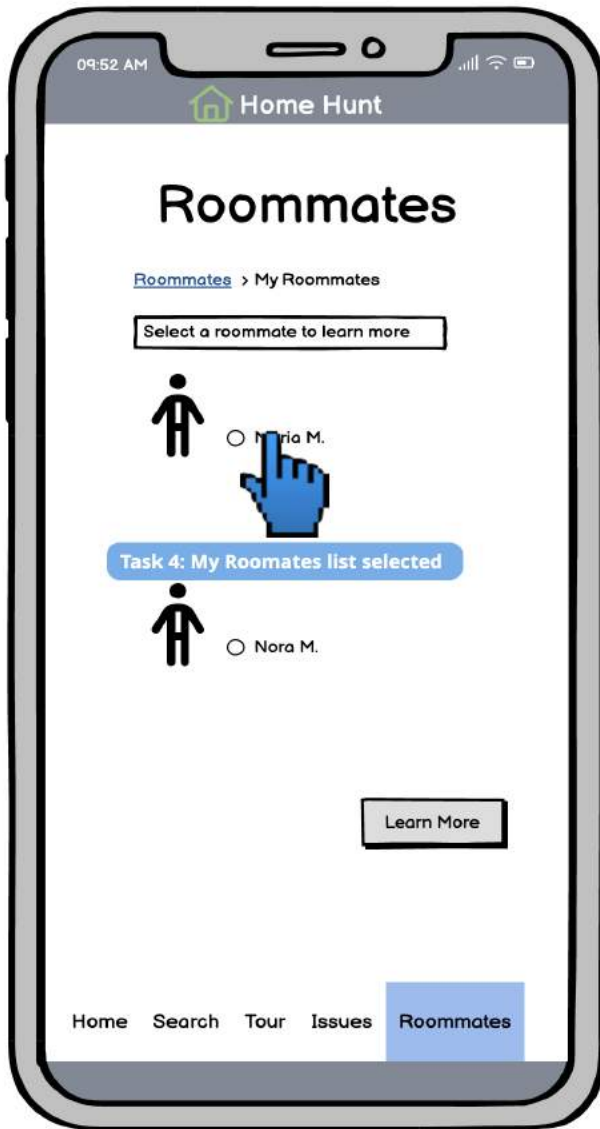


user can modify the chores in the chores tab

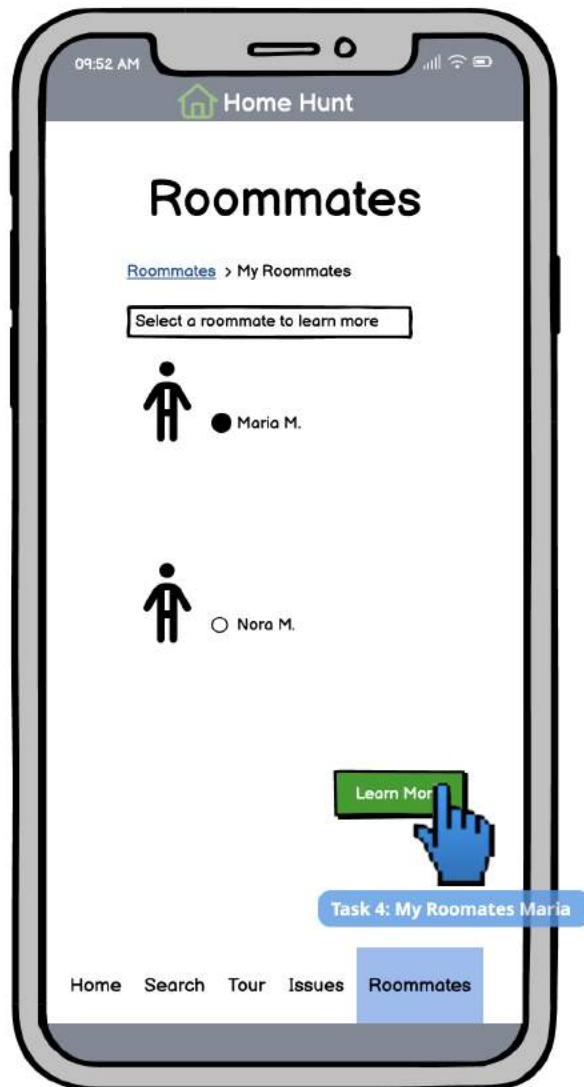
## Balsamiq Prototype Step-by-Step



**Figure 1.** User clicks on 'My Roommates' in the roommates tab to see the information about the roommates.

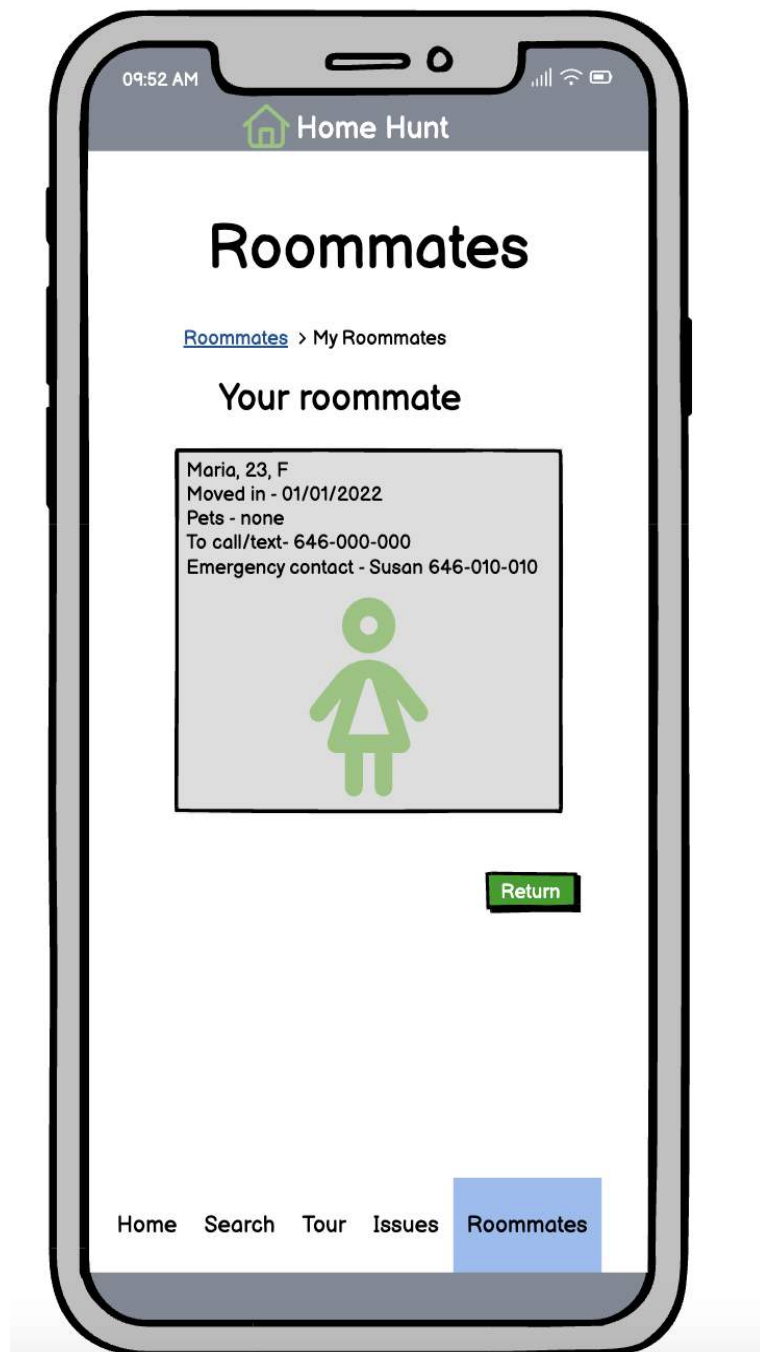


**Figure 2.** User clicks on the Maria M. radio button.

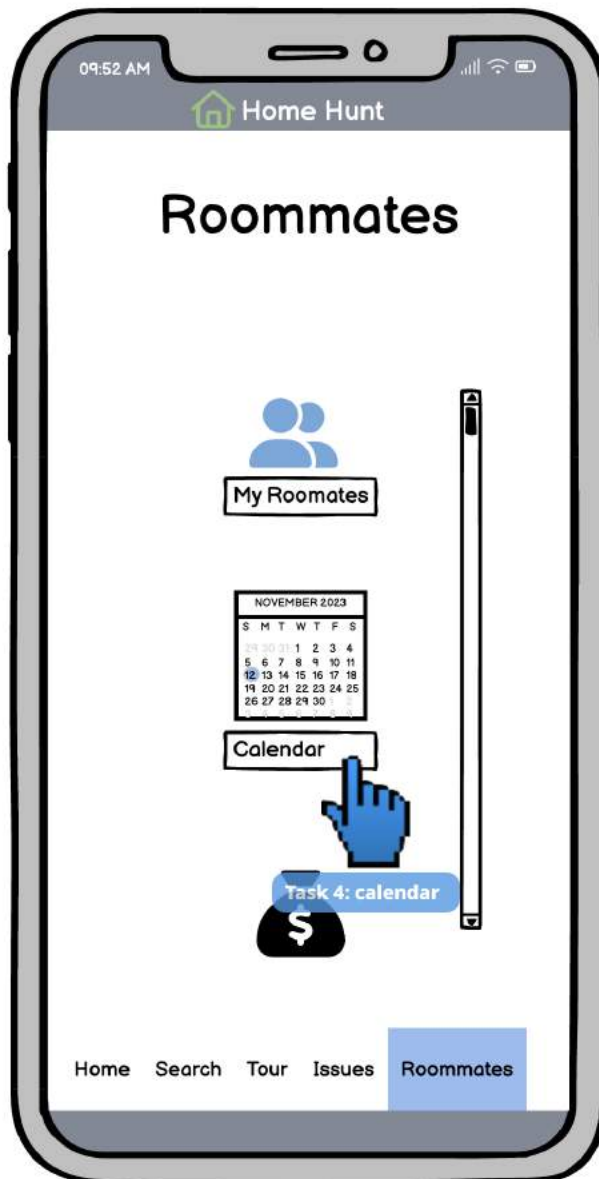


**Figure 3.** Now, users can click on the 'learn more' button to see more information about Maria.

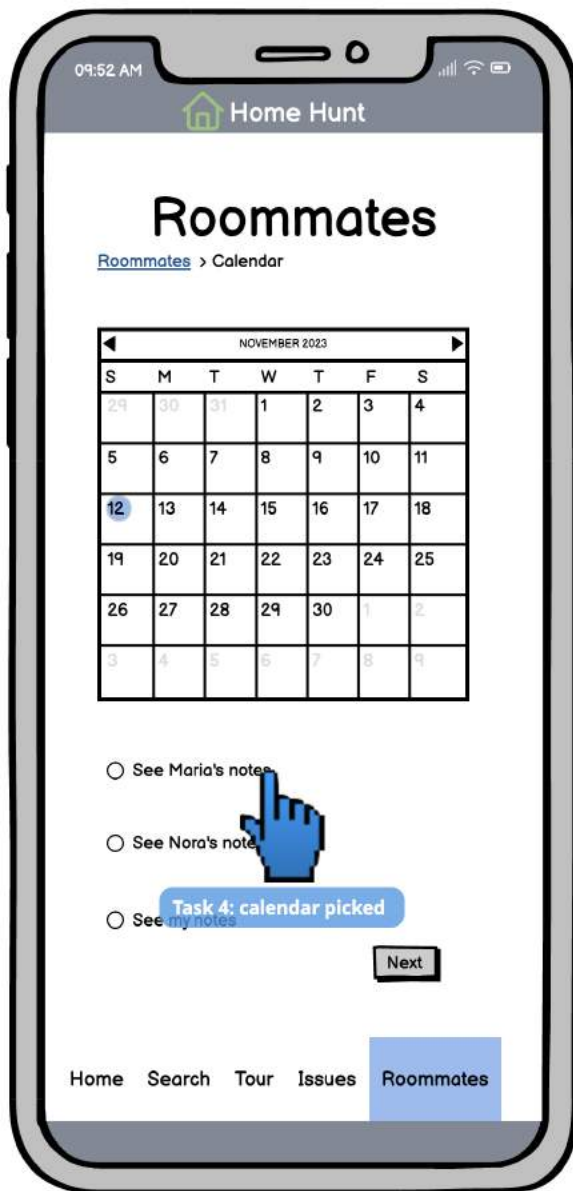




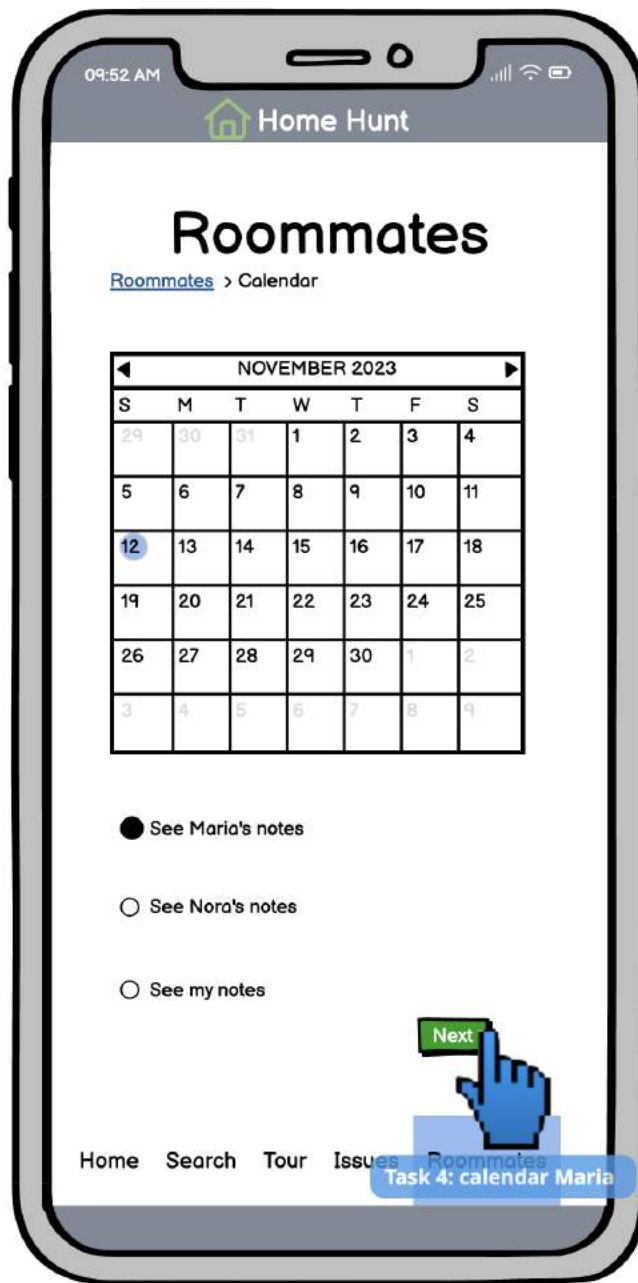
**Figure 4.** User sees more information about the roommate, and now can click on the ‘Return’ button to go back to the home page.



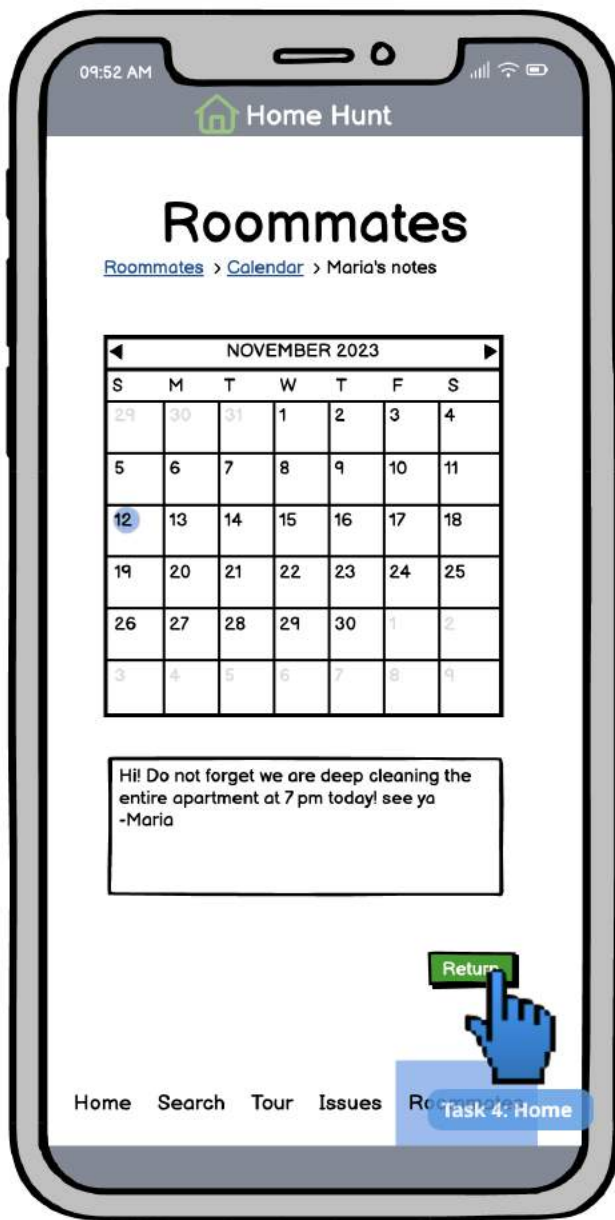
**Figure 5.** After the user returns to the roommates tab, they can select a calendar.



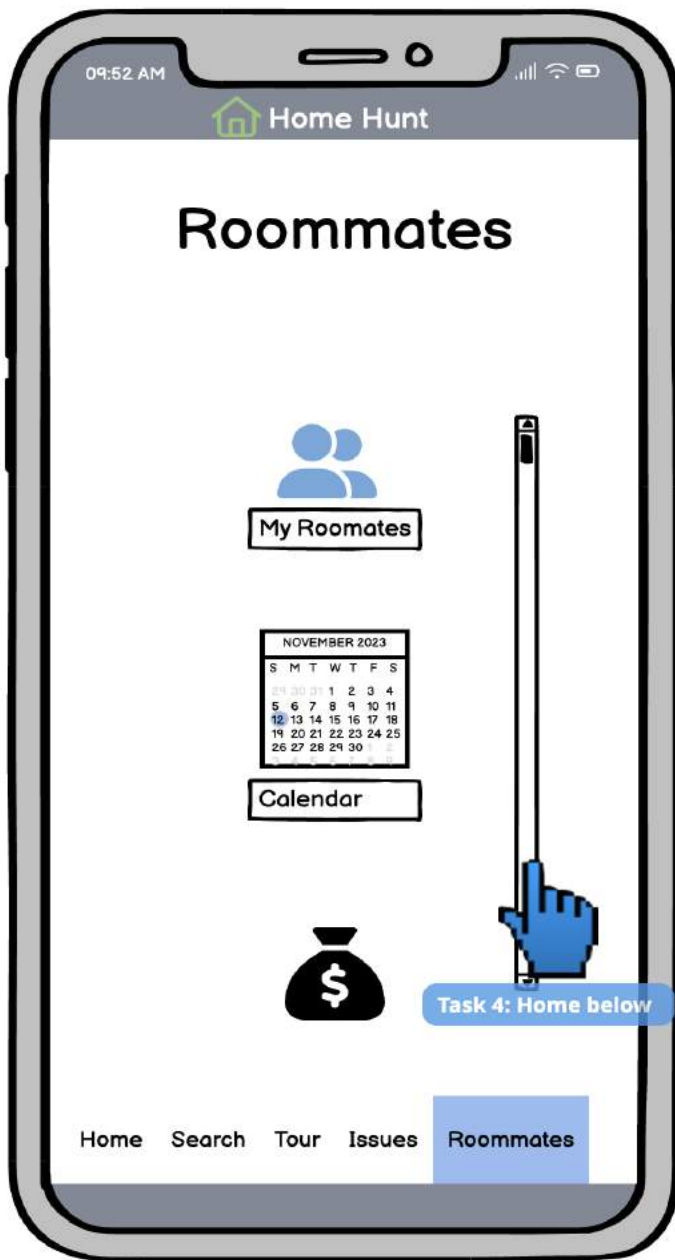
**Figure 6.** From the calendar, users can select any of the roommate's to see the notes.



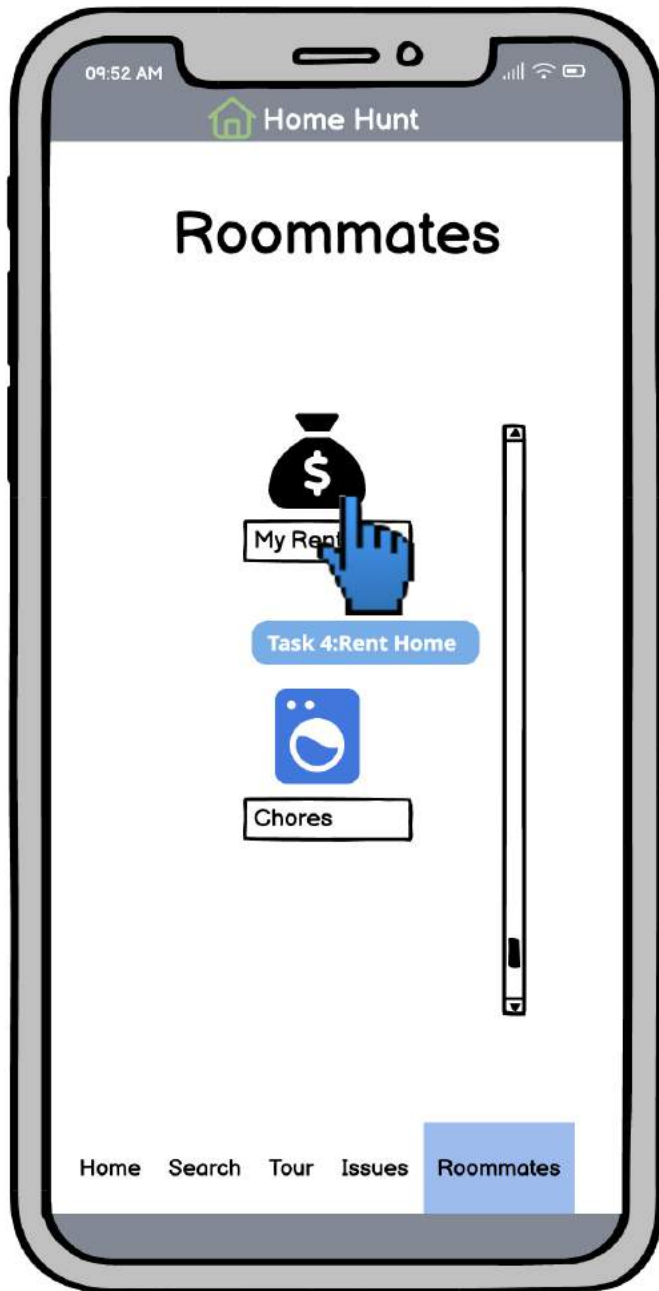
**Figure 7.** Once a user selects Maria, they can click on the 'Next' button.



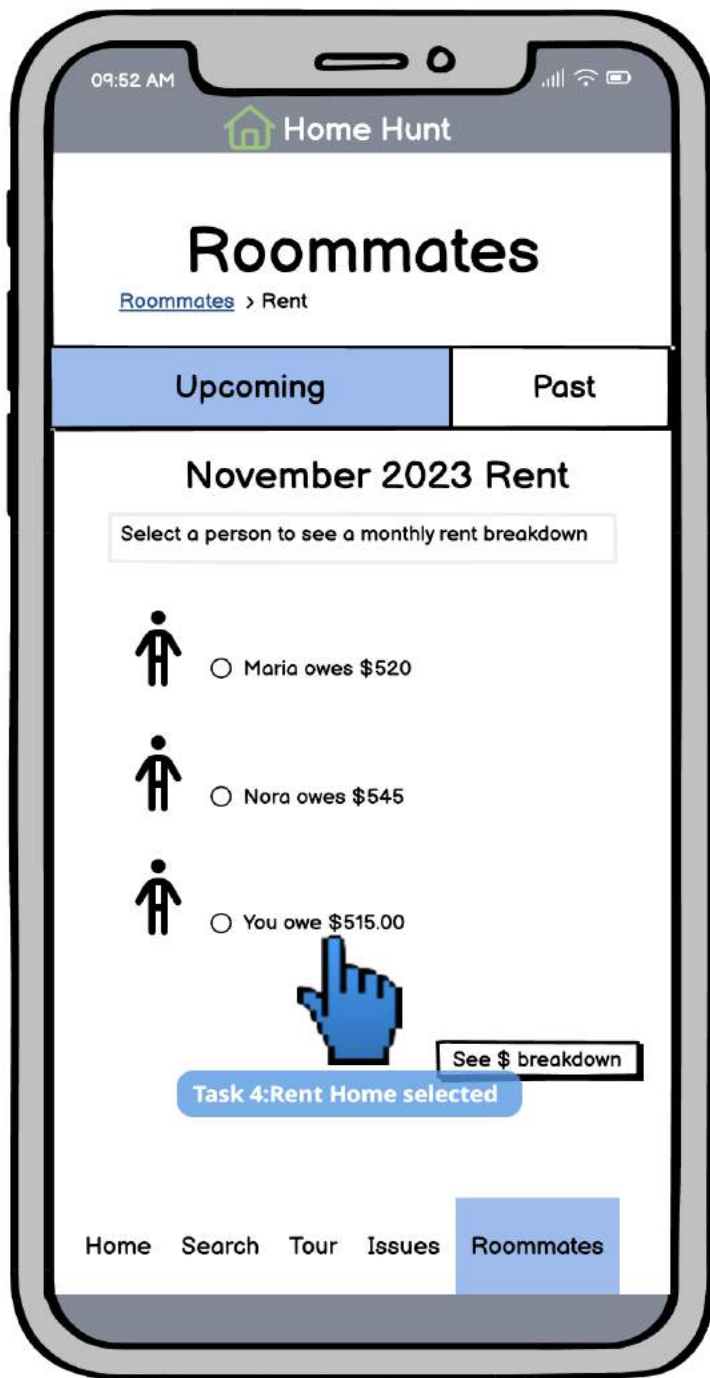
**Figure 8.** Now, users can see Maria's note for the 12th of November , and click on the 'Return' button to return to the home page.



**Figure 9.** Once a user is returned to the home page, they use the scroll bar to see more content.

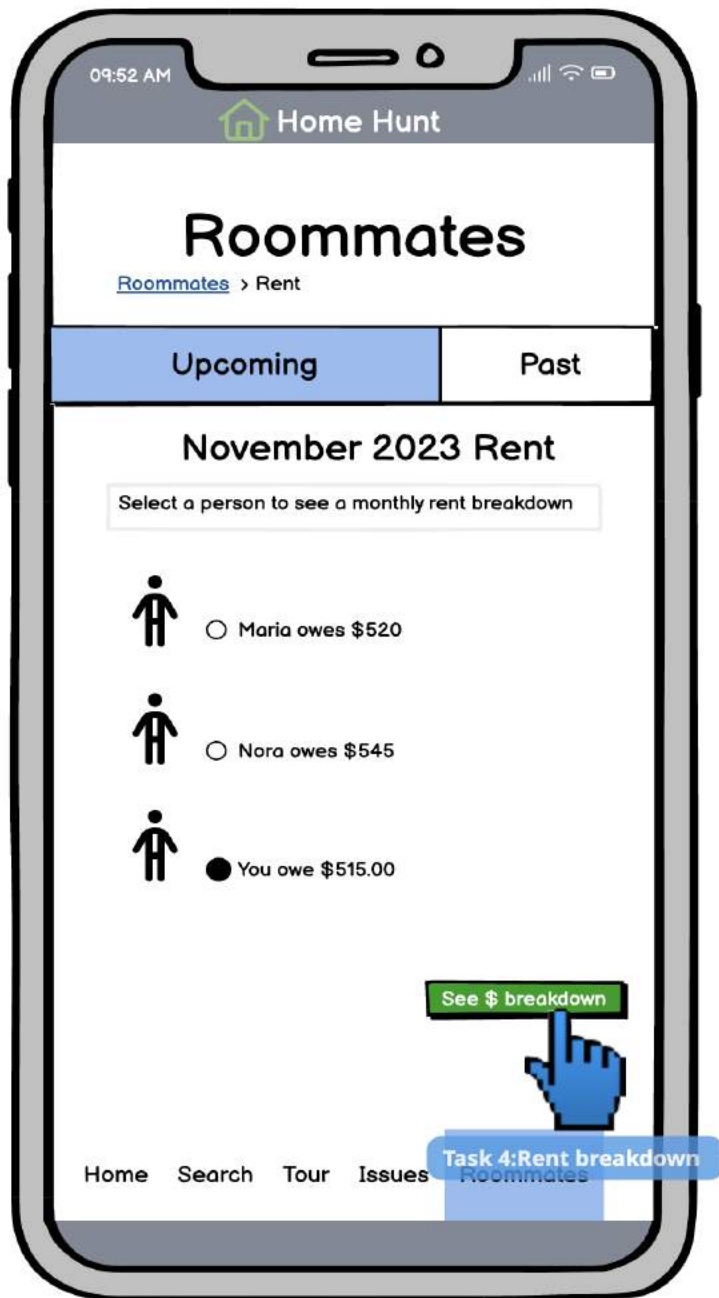


**Figure 10.** Once the user sees the content at the bottom by utilizing the vertical scroll bar, they can click on the 'My Rent' button.



**Figure 11.** Users can see how much they and their roommates own for the rent for November 2023. Now, the user can select themselves to see the monthly rent breakdown.

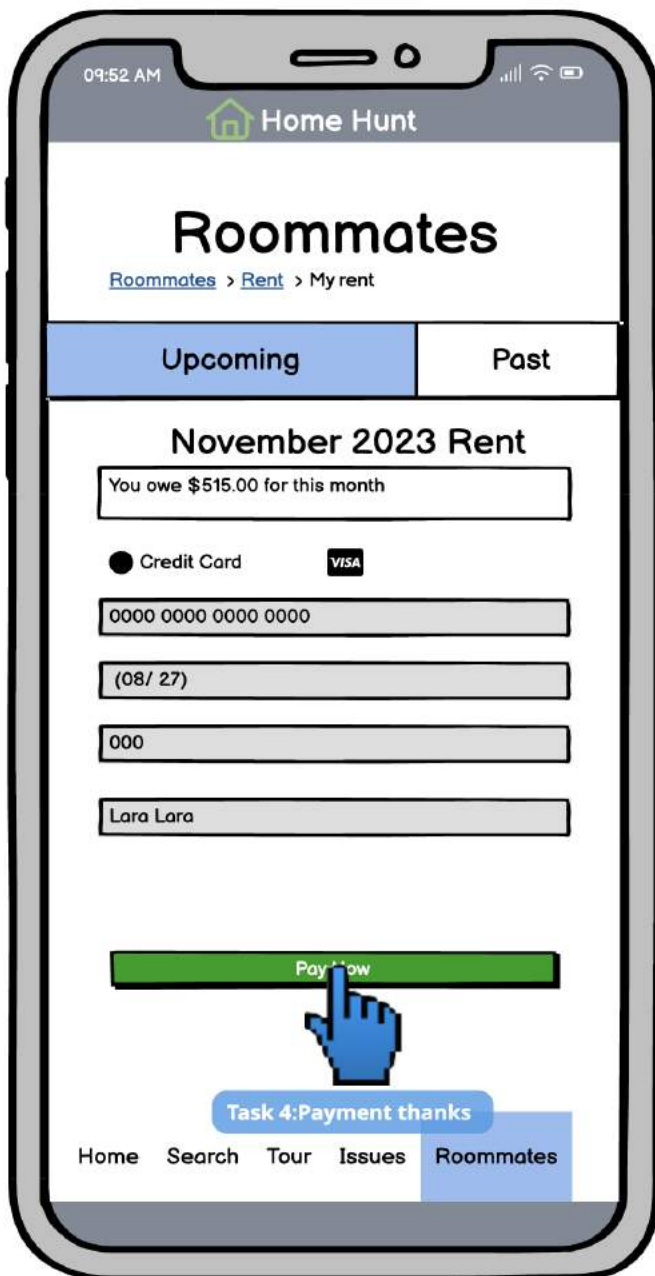




**Figure 12.** Once the user selects themselves, they click on the ‘See \$ breakdown.’



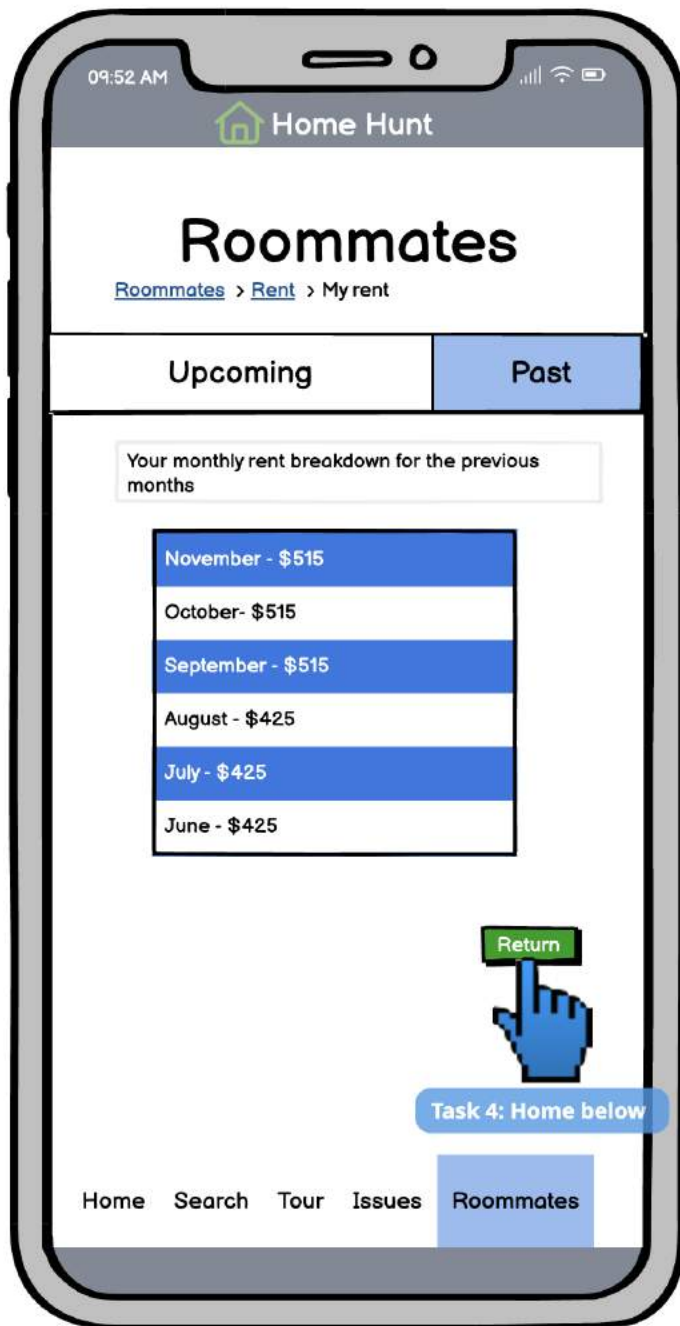
**Figure 13.** User sees the November 2023 Rent Price breakdown, and clicks on the ‘Pay Now.’



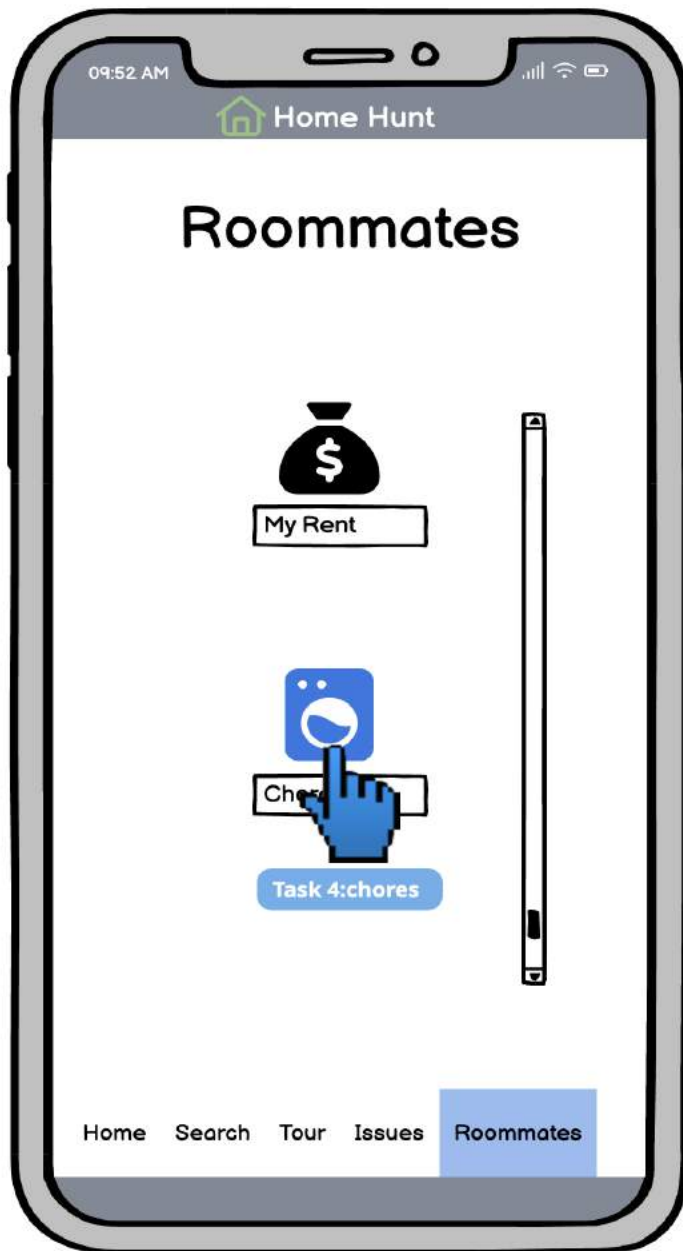
**Figure 14.** The user sees the card information, and clicks on the 'Pay Now' button.



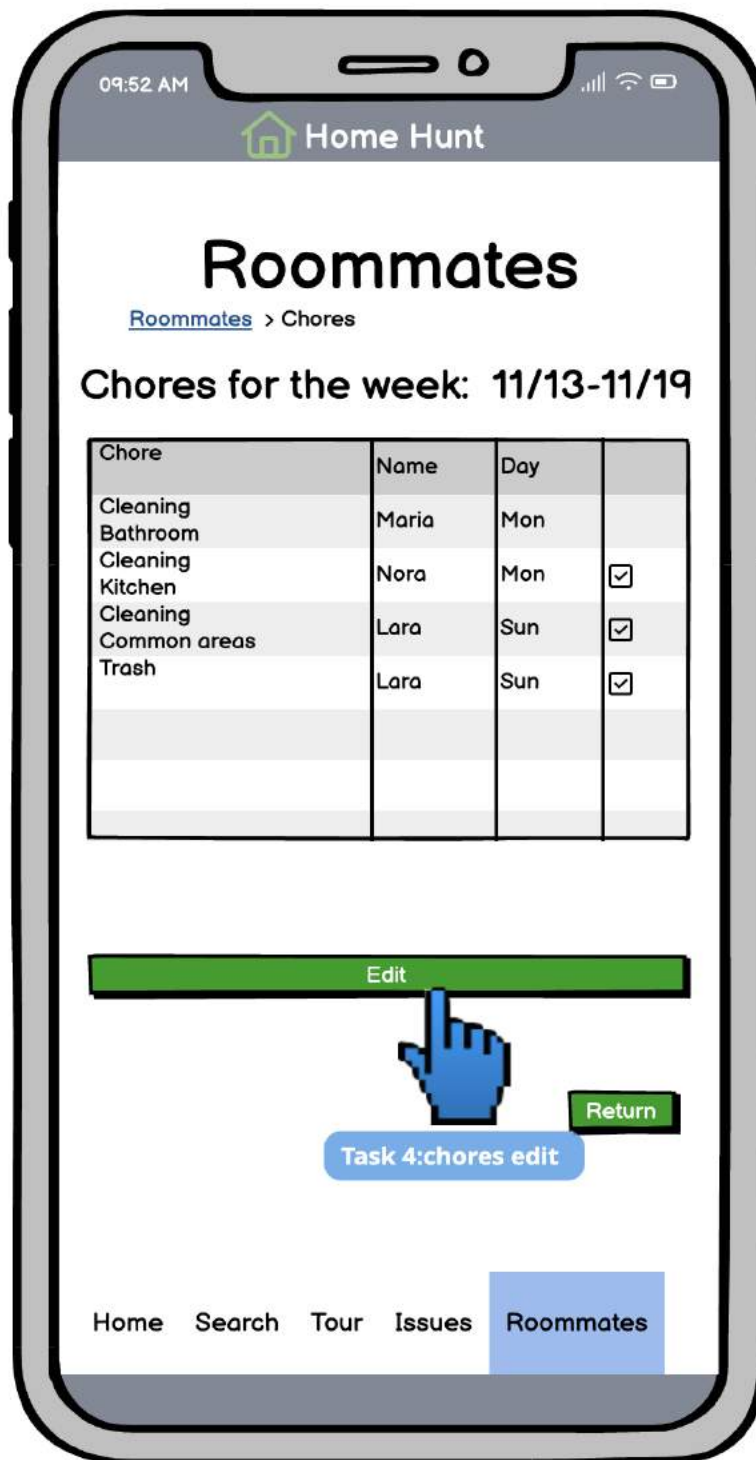
**Figure 15.** The user sees the confirmation modal, and clicks on the 'X' to close it.



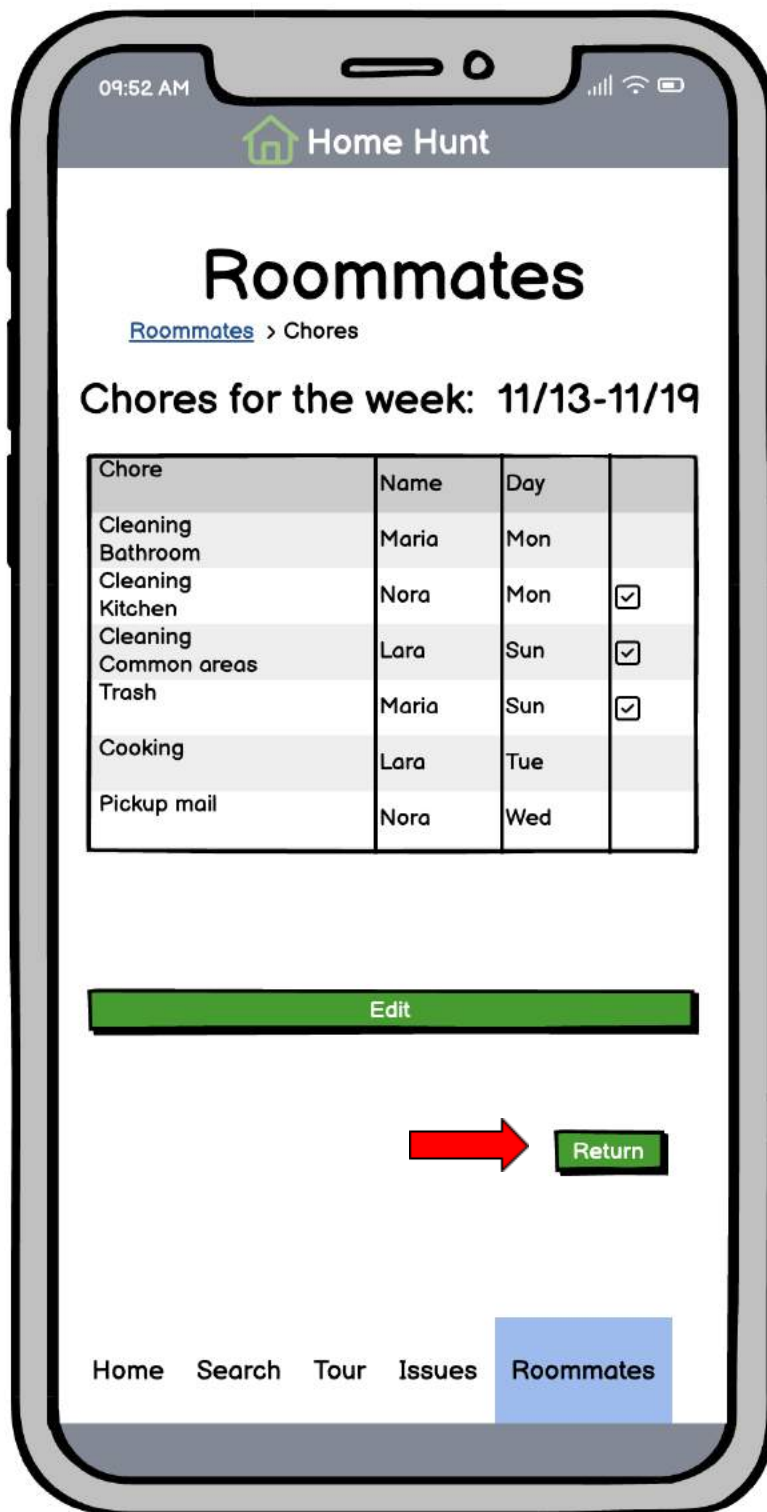
**Figure 16.** Now, the user sees the 'Past' tab where they can see how much they paid for the rent in the previous months. The user clicks on the 'Return' button.



**Figure 17.** The user is returned to the home page, where they can click on the 'Chores' tab.



**Figure 18.** The user sees the chores for the week of 11/13-11/19. They click on the 'Edit' button to edit the chores.



**Figure 19.** The user sees the updated list of chores after editing.



**Interactive Elements:**

For Task 4 of the prototype, the interactive elements include:

- *Vertical scrollbar* on the homepage for the 'Roommates' page.
- *Radio buttons* on multiple pages, for example on the rent page when selecting a person.
- *Action buttons*, for example 'Edit' on the chores page.

**Design Patterns:**

For Task 4 of the prototype, the design patterns are:

- *Generous Borders* that leave lots of space around the tappable UI element, for example, on the Roommates home page, all 4 UI elements ( Roommates, Calendar, Rent, Chores) have plenty of space between them.
- *Module Tabs 'Upcoming' and 'Past'* on my rent page. One can tap on 'upcoming' or 'past' to see charges for the current month, and for the previous months.
- *Breadcrumb navigation bar* at the top that allows users to move between different pages.

## Summary and Discussion

### User Study Details

#### **Prompts:**

*Task 1.* You would like to search for an apartment in Charlotte, NC. You want to see available apartments with 1 bedroom, 1 bathroom, and in a low (\$) price range. You don't have a pet, so you can leave "Pets Welcome" unchecked. Navigate to the map view and select a pin. View more information on that pin. Move through the slideshow of information on the selected apartment complex. View the apartment's contact information.

*Task 2.* Filter your search further to tour the 1 Bedroom, <\$1,500 in monthly rent floor plan, "Luna". You can view the details of the floor plan, browse through the gallery, and complete the 3D Walkthrough.

*Task 3.* You live in apartment 30B, and your dishwasher's door fell off. You want to fill out a form to report this issue and attach an image before submitting. After you submit the form, you want to view all your issues. While viewing your issues, you realize you no longer need help with one of your open issues (Issue #2: Other), so you want to move it to the resolved section.

*Task 4.* On the roommate homepage, first click on 'My Roommates' to learn more about your roommate, Maria. After that, return to the roommate homepage and select the calendar icon to view Maria's notes. Subsequently, return to the roommate homepage once again and select 'My Rent' to review the price breakdown for yourself and pay for the current month. Following the payment, check the 'Past' tab for November in the rent section. Then, return to the roommate homepage again and select the 'Chores' tab to edit them.

#### **Participant 1: Brittany**

Study setup: The study was conducted in-person. The participant was seated in front of a computer, viewing the Balsamiq prototype live. I introduced the study by briefing explaining what the application was (mobile application for an apartment rental company) and what functionalities were available (map search for apartments, apartment detailed view and 3D walkthrough, report feature for issues and maintenance, and roommate support). The participant was given each task prompt (one-by-one) and then allowed some time (5-10 minutes) to complete the prompt.

#### **Main Points:**

- For Task 1: The participant navigated through the task without issue. They inquired about the lack of star ratings or reviews for the apartments, noting that such features would aid in choosing the best housing options.

- For Task 2: The participant navigated through the filters and to the details page. She remarked that the extensive amount of detail was helpful. The participant also liked the organization of the gallery view.
- For Task 3: The participant moved through the task efficiently. She remarked that there was no cancel or back button on the final 'Report an Issue' page.
- For Task 4: The participant moved through the task quickly. She liked the icons and felt they were very helpful when quickly scrolling through the main menu.

#### Lessons Learned:

- The participant's request for star ratings or reviews in Task 1 highlights how something small can drastically improve the decision-making process for a user.
- The absence of a cancel or back button on the 'Report an Issue' page indicates a potential gap in the app's user interface. Adding some additional navigational options ensures a user can always move backwards or exit from any process without feeling stuck.
- Though not explicitly mentioned, there seems to be an opportunity to improve communication features throughout the application, such as notifications or alerts regarding apartment updates or roommate activities.

#### **Participant 2: Ken**

Study setup: This User Study was conducted in person, with the user directly interacting with the online prototype. I explained what the application was that the user was going to interact with. I gave instructions for each task one by one to not confuse the participant with too much information at one time. The user thought aloud while working through each task and I asked one follow-up question after each task to ask if they had any comments about the design.

#### Main Points:

- For Task 1: The user expressed satisfaction with the first task and did not showcase any frustrations or confusion.
- For Task 2: I observed the user looking for a way to go back to the original apartment page after the photo gallery and could not figure out they had to scroll back up.
- For Task 3: The user stated they did not know they had to upload an image since there was no asterisk next to it like the other prompts. Although it isn't a requirement, it did not populate the "Submit" button until it was filled out. Also, to upload the image the "Open" prompt confused the user because they were looking for a "Select" or "Upload" option. They stated they felt they already opened the image.
- For Task 4: There was minor confusion about there being no "back" button, but they did quickly realize that you could click on the breadcrumb navigation pattern to move backwards. Additionally, on the main home page, the scroll bar was not obvious since there were no other indicators which led to a slight delay in finding the "Chore" button.

#### Lessons Learned:

- There should always be a quick access element to designs. A better way to facilitate easy navigation is by always having an element to move one step backwards.
- Users will always look for the quickest or most efficient ways to complete a task. For this reason, important elements should remain discoverable and obvious at all times.

#### **Participant 3: Vikash**

Study setup: This study was conducted in person. The participant was handed the laptop with prototypes ready to be interacted with. I briefed the participant on each task before they had to walk through it, and I answered any questions they had before the process began.

#### Main Points:

- For Task 1: Participant walked through the task with no issues or confusion.
- For Task 2: Participant stayed in the Search tab and tried repeating the steps of Task 1 in an attempt to find the Luna floorplan.
- For Task 3: Participant walked through the task with no issues or confusion.
- For Task 4: Participant clicked the text under “Chores” icon, but the page did not load unless the icon was pressed. Participant did not understand why Maria’s notes would be on the calendar, or what those notes represent.

#### Lessons Learned:

- The wording for task prompts is very important. For example, Task 2 was worded “Filter your search to tour...” In this case, the word “tour” did not stick out to my participant. My participant stayed in the search module for a couple minutes before deciding to try the tour tab. The user also faced confusion when the task stated to filter for greater than \$1500, and the prototype only had an option for less than \$1500. These issues highlight the importance of proper wording in the task prompts.

#### **Participant 4: Saud**

Study setup: The study was conducted in person, and the user was directly interacting with the prototype. I explained the idea behind the app, and provided prompts for each task.

#### Main Points:

- Task 1: User was confused why the screen displayed that 17 apartments met the criteria but he could only see 3. Besides that he moved through the task with no issues.
- Task 2: User was a bit confused on how to browse through the gallery; he liked that the pictures were provided making the app feel more authentic.
- Task 3: When trying to upload a picture, the user tried several times to hit the ‘open’ button without selecting the image first. The user liked that he could see the previous issues too.

- Task 4: The user could not understand how to navigate to the chores tab, he thought it was missing. The user suggested implementing the confirmation text once you edit the chores.

#### Lessons Learned:

- It's important that the numbers match what's actually there. If it says there are 17, but you only see 3, it can be confusing. Sometimes, a heads-up can save time. For instance, if you need to pick a picture, knowing you have to select it first before hitting 'open' would be helpful. Moreover, it's frustrating when you can't find important sections in an app. We need to ensure that we offer straightforward navigation. Also, having a confirmation or a message after making changes would provide a reassuring touch.

#### **User Study Summary:**

##### *Similarities*

- All participants encountered some form of navigational issue, such as the absence of a 'back' or 'cancel' button, or confusion in moving between different sections of the application.
- Each participant expressed a need for clear, detailed information, whether it was through star ratings and reviews, detailed apartment views, or clear prompts for actions like uploading images.

##### *Differences*

- Brittany and Vikash navigated most tasks without confusion, whereas Ken and Saud experienced difficulties in tasks that required more complex navigation.
- Vikash, Ken and Saud had issues with specific elements like the photo gallery navigation and icon functionality, whereas Brittany's feedback was more focused on the overall features of the app.

##### *Unique Observations*

- Brittany, Ken, Saud, and Vikash each offered unique insights into the app's usability. Brittany emphasized decision-making aids such as star ratings or reviews. In contrast, Ken and Saud encountered navigation challenges and specific task-related difficulties. Meanwhile, Vikash faced issues linked to task prompts and wording. This diverse range of experiences illustrates the variety in user expectations and experiences, highlighting the importance of addressing diverse user needs to enhance overall usability.

## Task Coordination

Before completing our individual tasks, we created a base for our design. This helped to ensure that each task was designed in a consistent manner throughout the prototype. This base was an iPhone layout. At the very top, we included the name of our application, Home Hunt. Then, we had the four modules in the form of icons: Search, Tour, Issues, and Roommates. Across the bottom, we had these same four modules in the form of buttons for the user to click depending on which module they want to access. When we completed our individual tasks, we agreed to each highlight the button on the footer of the task we were prototyping. This base encouraged cohesion in our prototype.

## Content-Fidelity Matrix

Content	Very-Low Fidelity	Low Fidelity	Medium Fidelity	High Fidelity	Very-High Fidelity
Information Design			<b>X</b>		
Interaction Design				<b>X</b>	
Visual/ Branding Design			<b>X</b>		
Editorial Content				<b>X</b>	

### Information Design:

- We chose Medium Fidelity for our Information Design because while we have a consistent layout for the header and footer, we have small differences in our individual prototypes. For example, one person has the “X” to exit in the color red, and another has a black “X” to exit. We may also change the location of certain icons in different prototypes, such as the placement of the back arrow icon.

### Interaction Design:

- We chose High Fidelity for our Interaction Design because our prototype and corresponding task functionalities are feature-rich, with a wide variety of complex interactions. Interactions available include bottom and breadcrumb navigation, sliders, modal windows, radio buttons, and much more. This high level of interaction design allows users to navigate through the application efficiently and effectively, without feeling overwhelmed.

#### Visual Design/Branding:

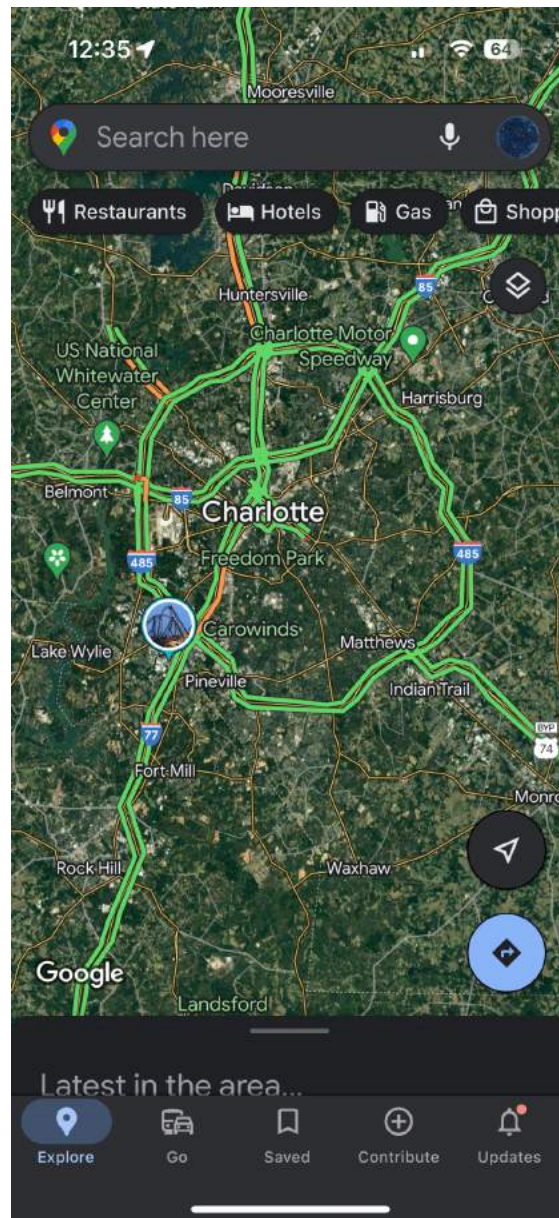
- We chose Medium Fidelity for the visual/branding because, although we selected a specific logo, a distinctive name, and fonts for our app, we did not have a specific set of images that would represent the app we created. Moreover, we could have chosen a more specific color palette to better represent our brand's identity.

#### Editorial Content:

- We chose High Fidelity for our Editorial Content because there are no placeholder images or text. All content within the prototype among all tasks have real images or Balsamiq images, and real example text. We did not choose very-high since there is not an abundance of textual options or information, the prototype is still at a basic level.

## Inspirations

Google Maps (Figure 1) served as a key inspiration for Task 1's apartment search map view. The use of pins by Google Maps, to represent specific locations, is an effective and user-friendly way to visually convey geographical data. Additionally, the smooth scrolling functionality of Google Maps makes navigation through different areas of the world seamless. Taking inspiration and ideas from Google Maps' familiar design ensures users have an established mental model that compliments what is presented to them in this apartment search prototype.



**Figure 1.** Google Maps interface for Charlotte, NC.

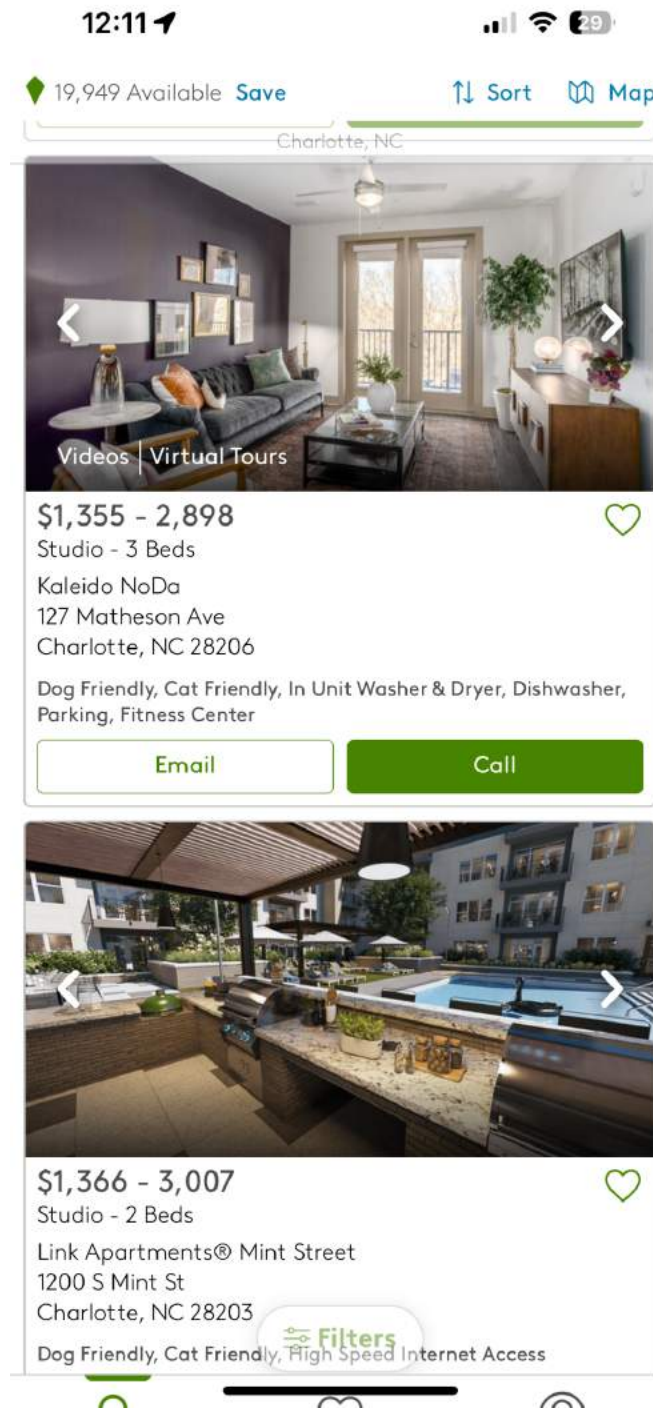


For the Virtual Tour task of the application, we drew inspiration from Apartments.com. They showcase virtual tours by walking through each room and the user can tap on the circles to get from one room to the next, which inspired the use of the arrows.



**Figure 2.** Apartment Virtual Tour.

Another source of inspiration was the Apartments.com mobile application (Figure 3). This application uses cards to display information on apartments, as well as an infinite scroll for the list view of search results. The general visual and interaction design of this popular application was very helpful.



**Figure 3.** Apartments.com Mobile Application.

## Project Reflection/Critique

### **Strengths:**

- The cohesiveness of the application allows for a pleasant user experience. It is understood at all times where the user can navigate to. We created the bottom navigation bar to be linkable to all 4 tasks at any time.
- All of our applications utilized mobile design patterns, such as Vertical Stack, in order to design an interface best for the mobile device. Lists and other elements are vertically scrollable.

### **Needs Improvement:**

- We could have solidified our visual design choices even more to remain consistent. Minor changes, such as the use of the same color for certain buttons would have contributed to a more consistent design.

## **Task 1**

### **Strengths:**

- The process of selecting criteria, such as bedroom count, bathroom count, and price range is straightforward, particularly with the use of radio buttons that only allow one choice for each criteria.
- The ability to switch between list and map view allows a user to visualize apartment locations effectively.
- Pin icons on the map provide a clear visual representation of apartments. Additionally, clicking on a pin leads to an organized slideshow of additional information.
- The use of modal windows, an infinite list, and generous borders contributes to a user-friendly interface, specifically tailored to mobile devices.
- Between the breadcrumb menu and the bottom navigation menu there is a clear path through the Task 1 functionality, as well as to the other prototype tasks/functionalities.

### **Needs improvement:**

- Additional filter options are needed, including specific criteria like apartment amenities, proximity to public transportation, and much more.
- Advanced sorting options for both the list and map views would be helpful, such as sorting by date listed or distance from a certain point.
- Clarity related to price range is needed. The use of the '\$' symbol might be ambiguous for some users, a clearer numeric range would be more informative.
- Map zoom and pan functionality was assumed to be available with finger movements (similar to Google Maps), but adding a pan/zoom button could enhance clarity.

## **Task 2**

### **Strengths:**

- There is an “exit” option on almost all parts of the task. The user can exit the photo gallery or virtual tour at any time.
- The use of interactive elements is diverse. There are a multitude of buttons, checks, scrolls, walkthroughs for the user to experience.
- The virtual walkthrough mimics the layout of a real apartment. It makes it very clear and easy to navigate by including navigation arrows of different colors.

#### **Needs Improvement:**

- The design could have been more cohesive with the rest of the application. A better landing page option for the user to look to tour any recently viewed apartments.
- More functionality for the user to view the photos in the gallery in more detail would be a better user experience.
- Instead of having buttons only appear once the user makes all required selections, I could utilize the “graying out” feature of Balsamiq to indicate to the user what they will be doing next once they make all required selections.

### **Task 3**

#### **Strengths:**

- Having red asterisks next to required questions makes it clear to the user which fields are necessary before submitting
- Having the Submit button grayed out before all of the required fields have been completed is a good way ensure error prevention for the user
- Having the Submit button enable once the user completes the required fields is a good way to let the user know that they have completed all of the necessary parts
- Having the Open button grayed out when uploading a picture before a picture has been selected and then changing it to be enabled once a picture is selected lets the user know that they are moving in the correct direction and makes it clear what the next step is
- Having a confirmation page with issue details gives the user feedback to let them know that the issue has been successfully created

#### **Needs Improvement:**

- There could be more functionality added for a user to view the image that has been uploaded
- There could be more functionality added for a user to click the issue on confirmation and be directly taken to the View All Issues tab
- There could be more functionality added for the user to enter a subject for the issue to stay more organized when reviewing them in the View All Issues tab
- There could be more functionality added for the user to see the detailed status of the open issues from “Received -> In Progress -> Resolved” rather than just the two categories “Open” and “Resolved.”

### **Task 4**

**Strengths:**

- 'Return' button on almost every page that allows user to return to the 'Roommates' homepage
- Elements on the page are arranged vertically, and have plenty of whitespace between them
- Button turns green whenever a selection is made. This is a helpful indication for a user that the choice has been made

**Needs Improvement:**

- When reviewing roommate information, incorporating a text feature in the app would be more helpful than solely presenting their phone number
- For accessing roommate's notes on the calendar page, displaying these notes directly on the calendar is more efficient than using radio buttons
- It would be helpful to use the different colors for the subheaders
- The 'Past' tab in the rent also should display the ledger for each month's charges
- Instead of implementing a 'Return' button, a back arrow would fit the design better