

# Garden App Framing

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## User Interviews

We conducted 9 user interviews in total. For the first (strictly exploratory) round, we decided to include both novice and master gardeners in order to obtain a holistic view of the gardening scene, and determine which user group we would like to focus on. For the second round of user interviews, we focused solely on novice gardeners in order to narrow in on this target user group, and explore more of their goals. See appendices A and B for a list of interview questions and transcribed interview notes. From our interviews we found that many of interviewees depended on the internet as well as their prior/family-based knowledge to begin their gardens. It was indicated throughout the interviews that some novice gardeners wanted additional access to master gardeners as they still face challenges such as pests, weeds, issues with watering, etc.

## Key Findings

Through our affinity diagram (appendix C), we determined many key themes from our user research. First, many users utilize community shared knowledge in their gardening practices, whether it comes from family members, word of mouth, or several classes taken in the past. Gardening for many individuals is something to be shared with other people, as is the knowledge that can be learned over time. In addition, our users often described using existing search platforms such as Google and Facebook in order to find more information when they needed it. Another common theme was the trial and error approach to gardening. Users would try something, and then if it did not work out the way they had hoped, they would try something different next time. Yet another theme that arose in every user interview was the constraints placed on many gardeners, especially pests management, wildlife, and adequate care. We found that motivations and participation in gardening communities varied amongst users. Ultimately, the strongest ties we found amongst our users were regarding the source of knowledge, using social platforms to share and view information, and the types of constraints faced by gardeners. We can use these key findings to determine user goals, and subsequently tailor our app design to meet such goals.

## Specific User Profiles

**User 1:** 21 year old female college student whose immediate and extended family all own and live on farms. She is a novice gardener and is currently taking classes about basic techniques in gardening. Most of her gardening knowledge comes from her family and they have taught her a lot of different techniques. Her garden consists of heirloom tomatoes, cherry tomatoes, grape tomatoes, cucumbers, yellow squash, zucchini, basil, chili peppers, bell peppers, broccoli, pumpkin, and watermelon. Some obstacles she has faced when it comes to gardening is pest control like squirrels and woodchucks and weeds.

**User 2:** 24 year old female who works in development. She is a novice gardener who enjoys gardening because it helps with her mental health and helps deviate from other things going on in

her life. Her main resource for gathering information is mainly the internet, her father, from previous classes she took in college for her major. She is not in any formal gardening communities but tends to send her friends pictures of her plants and they do the same. Some obstacles she runs into is that she sometimes neglects her plants because she forgets about them or she over waters them. Some mitigants are that she tries to check on them on a daily basis and research other ways she can help her plants thrive.

**User 3:** 31 year old male that is an engineer. He has 3 years of gardening experience and based his skill level as intermediate/advanced. He enjoys growing a variety of plants and experimenting with different seeds to see what he can grow. He said he also gardens organic vegetables that his wife wants to use for cooking. His main resource for gathering information is a book called *Grow Food Anywhere*, Google, and his wife's family who has generational knowledge. He says he would rather read the book about gardening than search something up because the information is all centralized in one place. He makes decisions on what varieties of plants to garden based off of what grows easily in his climate zone. Obstacles he faced are soil acidity, pest control, and weeds. He hasn't helped a beginner gardener but if he would he'd ask them what they're interested in growing and what are his goals for the garden. He is currently not in any gardening communities but did meet an internet friend who is a master gardener. She's shipped him a bunch of seeds and offers him gardening advice. He thinks having a gardening community would be cool and he'd be more than willing to share knowledge and volunteer time.

**User 4:** Self-employed elderly man living with a family of four and a dog. He has a rooftop at his home and started creating a garden there 4-5 years ago, with no prior gardening experience. His main target species are dying orchids and bonsai trees from local flower shops; he enjoys reviving them by resoiling and taking care of the plants. If he has questions regarding gardening approaches, he asks local flower shop owners for advice either in person or on WhatsApp. He gardens for himself and likes to garden by himself.

**User 5:** 24 year old male college student and prior military servant from South Korea. After discovering the passion for cooking at home for meals, he decided to grow basic edible plants (cherry tomatoes, basil, and other plants that are easy to grow) himself in his apartment, as his grocery bill was going out of control. He became more serious with gardening his own ingredients after he got back from the military, and it has been 2 years since he came back to school. Because he realized that it is hard to take care of his plants all the time while pursuing his academic studies, he decided to buy a home gardening kit that comes with a sun lamp and auto-watering system. He is not in any gardening communities and uses search engines for gardening advice when he needs them.

**User 6:** 21 year old male college student who grew up on a farm. He considers himself a novice gardener since he has only ever helped out slightly with his family on the farm. Everything he knows about gardening comes from his Uncle, who runs a co-op program through the farm business. He would help garden with his uncle, but never tried on his own (but would Google search if he needed help with anything). He mentioned that it was difficult to use Google since there are always hundreds of resources, and it is challenging to navigate. He also utilized some

resources at Cornell such as the Cornell Sustainable Consulting club, where he learned about composting. Some of the obstacles he described while gardening included weather conditions, wildlife, and most notably the presence of diseases.

**User 7:** A 48 year old female novice gardener who works full time as a contract manager and gardens in her spare time. She grows a vegetable garden along with herbs and blueberries in an average sized suburban garden every year. While, she has gained some experience and knowledge. She still hits many obstacles when making a successful garden such as pests and inconsistent watering. When met with challenges she seeks out help from her community whether that is at the local farmers market or through gardening forums. However, she wished to have more connections with master gardeners.

**User 8:** A 75 year old, retired teacher, who grows Tomatoes, green beans, carrots, potatoes, zucchini, summer squash, butternut squash, and a giant pumpkin. She would rank her skills a 5 out of ten and has gained most of her gardening knowledge from her husband or through internet search. Although, some of her knowledge is from familiarity with gardening in a northeast climate and was not acquired through research. She is currently a part of no gardening communities or forums and has never reached out to a master gardener for help. She currently faces problems in her garden such as plants thinning out and has put in stakes to hold them up and woodchucks, which she has found no solution for.

**User 9:** 73 year old female master gardener who lives in Ithaca, NY and has an extensive garden in her backyard. She used to conduct research on plants in Africa but has since retired and moved back to the states. She gardens with the intent to be environmentally conscious, and she prefers the quality of her gardened food rather than store bought. She said she uses seed catalogs for the majority of her gardening information. She also volunteers for the growline for Tompkins County, where she answers phone calls and gardening questions. She stated that most novices have no idea where to start, and often pick some of the trickiest plants as their first gardening experience. Lastly, commenting on the existing Vegetable Varieties website, she commented it would be helpful to be able to comment more than once on a review, in order to track the plant's progress over the season.

## Target User Group and Goals

Through our user research, we ultimately determined that there was a greater need for novice gardeners than for master gardeners. The master/experienced gardeners already had a pretty good handle on how and where to gather resources, the challenges they would face, and the nuances of pest/disease control. The novices, however, had no idea where to start and often lacked a centralized source of information (user 9 was pretty adamant about this). Thus, we chose **novice and home gardeners** as our final target user group. These types of users have little experience gardening, but are eager to learn more and broaden their gardening expertise.

### User Goals

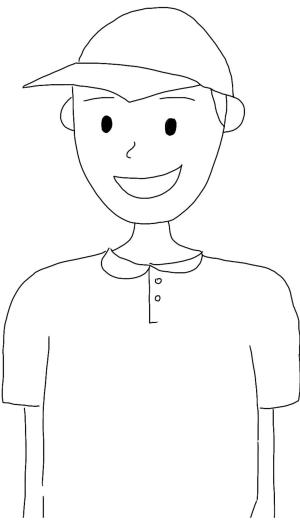
1. Discover new varieties of plants.

2. Build a community of novice and master gardeners.
3. Prevent plant death and curate a successful garden.
4. Receive news and tips relating to gardening practices in their area.

## Persona, Scenarios, and Value Propositions

After identifying the target users and their goals, a better understanding of the user journey was developed using personas, scenarios, and value propositions. The persona was created to identify the specific wants, needs, and background of a novice gardener who would be using the implemented design. The attributes of the persona were used to create scenarios related to completing user-goal oriented tasks throughout the user journey. Finally, value propositions were generated in order to outline how our design solution differentiates itself within the existing market and how it delivers added value to the user.

### Persona

 <p>John</p>	<p><u>Background/skills:</u></p> <ul style="list-style-type: none"> <li>- 21 year old college student</li> <li>- Novice gardener</li> <li>- Lives in Ithaca, NY</li> </ul> <p><u>Factors influencing behavior:</u></p> <ul style="list-style-type: none"> <li>- Junior in college</li> <li>- Misses his mother's homemade meals with fresh ingredients from the garden</li> <li>- Spends too much money eating out/buying snacks so he wants to eat more fresh/healthier</li> <li>- New to gardening – very little experience</li> <li>- Uses a lot of social media</li> </ul>
<p><u>Wants/needs/obstacles:</u></p> <ul style="list-style-type: none"> <li>- Obstacle: can only grow plants best suited for Ithaca, NY</li> <li>- Wants to have a community to support him in his gardening endeavors</li> <li>- Wants exposure to gardening news and tips</li> <li>- Needs help gaining preliminary gardening knowledge</li> <li>- Needs assistance in the growing process of his own fresh produce</li> </ul>	

## User Scenarios [Revised]

After the first milestone, we received feedback from the teaching team that we needed to improve our user scenarios in order to more directly link them with our user goals. We came together as a team and discussed revisions that would make the tasks more specific and testable in the foreseeable future. Below are our *revised* user scenarios.

Goal 1: Discover new varieties of plants.

Scenario 1: John just finished moving into his new apartment in collegetown and now that he's settled in he wants to start looking for plants that he can grow so he can have organic fruits and vegetables. Being that John is a novice gardener he doesn't have much knowledge on what plants are low maintenance and can thrive better in his little upstate New York apartment. To begin with his gardening journey, John wants to discover different varieties of plants suitable for his new garden.

Goal 2: Build a community of novice and master gardeners.

Scenario 2: John has begun his at-home garden in his college apartment. Now that he has successfully harvested some plants, he wants to be able to share his success with other gardening enthusiasts, as his friends do not share the same passion. He wants to share his stories, as well as learn of other people's stories, whether they be novices or masters.

Goal 3: Prevent plant death and curate a successful garden.

Scenario 3: John is a college student attempting to grow plants in his garden and he has picked out the appropriate vegetables that he wants to garden. However, as a novice gardener he continues to struggle with providing his plants the correct amount of water, fertilizer, and sunlight. John wants to be able to keep track of his plant's growth and the daily things he must do to keep them healthy.

Goal 4: Receive tips relating to gardening practices in their area.

Scenario 4: John is feeling more confident about his plant growing abilities, as he has been successful in growing many of his plants thus far. He has developed a passion for gardening and is being more particular about the advice and gardening tips he follows. John wants to achieve best practices and learn from other gardeners in his area.

## Value Propositions

1. Novice gardeners can seek advice from experienced gardeners.
2. Remind users to take care of plants (water, adequate sunlight, pest control, etc).
3. Exposure to new plants that can grow well in the user's local region.
4. Centralized data where users can find vast information on a variety of plants of gardeners in their area.

5. Clear and concise visual of different ratings for a variety of plants to help users make informed decisions.

## Design Planning

### Brainstorming

Our group decided to brainstorm together during studio class time (see Figure 1). We came up with several ideas that we thought best reflected our users needs and goals that we fleshed out previously during user interviews. After coming up with our list, we starred the ideas that were most important for our users, and that we should absolutely include in our final prototype. Subsequently, we began rough, preliminary sketches of these features and what we envisioned they would look like. After the initial brainstorming period, we decided that we wanted to implement our plant catalog feature, the ability to post plant reviews, and a personalized plant journal to keep track of plant growth. Our sketches moving forward will address these three distinct affordances.

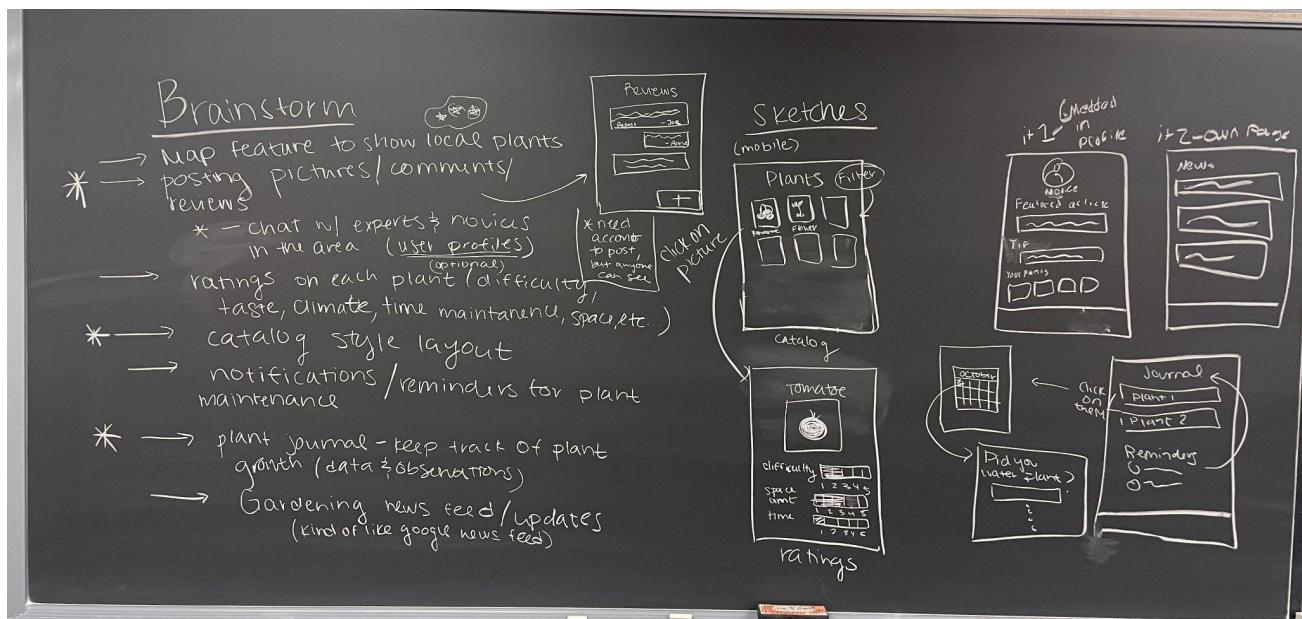


Figure 1: Chalkboard Brainstorming Session

### Sketches

After the initial brainstorming period, our team came together and began iterating on our initial brainstorming sketches (Figure 2). We focused on the three separate features mentioned above and decided to try out various looks and feels to such features. We iterated on our designs using

the user goals and research we conducted previously in order to afford the best conversations between our users and the app.



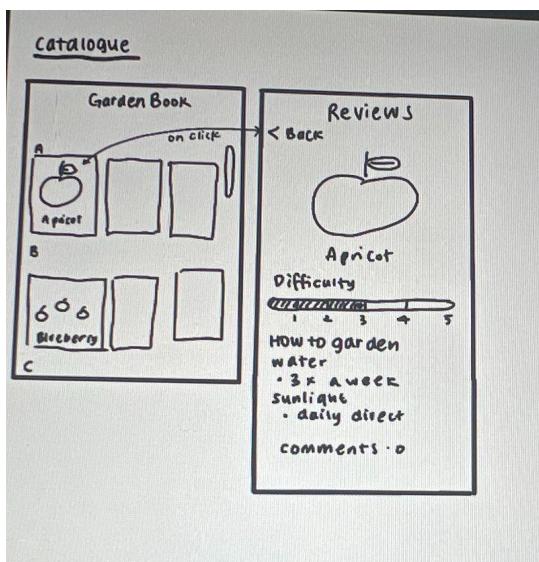
**Figure 2.** Group sketching session during class studio time.

## Catalog Feature

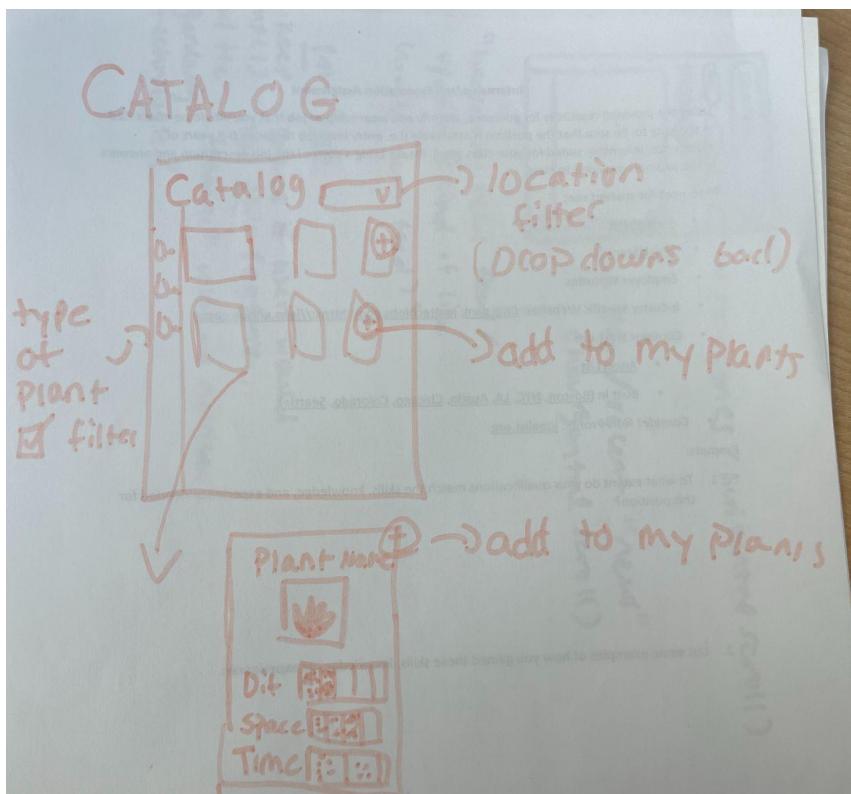


*Iteration 1.* In the first iteration of our catalog design, we implemented a basic grid design for the catalog which allows users to see the different options with photos attached to them. When the

user clicks on a certain image, they come to a specific details page for that certain plant. This design is similar to how apps are laid out on the iPhone, and is a familiar pattern for many users.

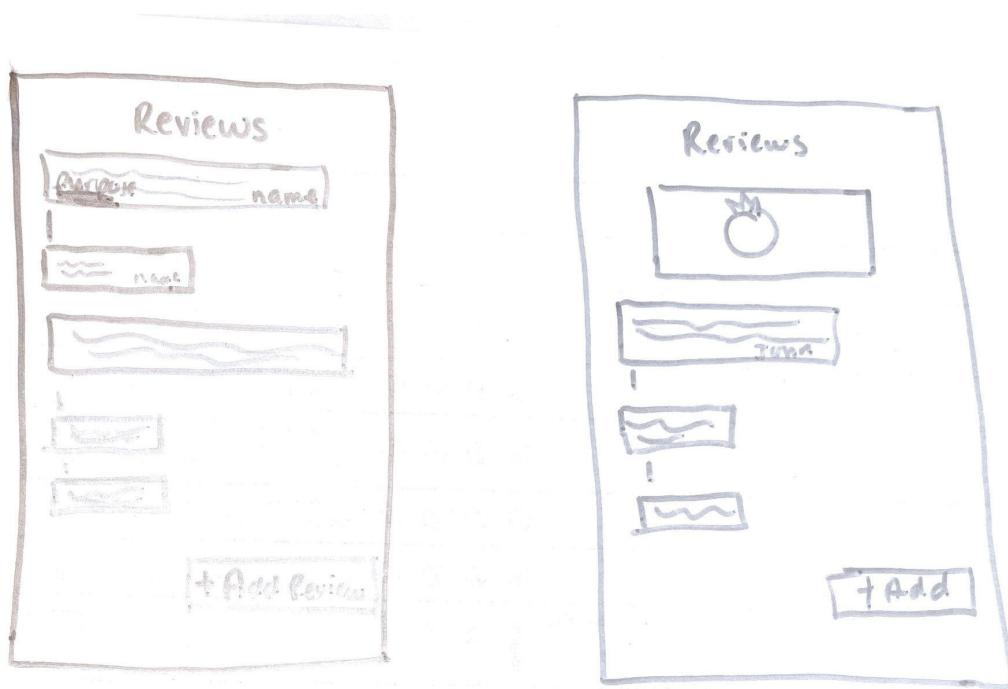


*Iteration 2.* The second iteration uses the same concept as the first except the different plants are already pre grouped (the A, B, C categories). Once again, the user can click on the specific images to obtain more detailed results.

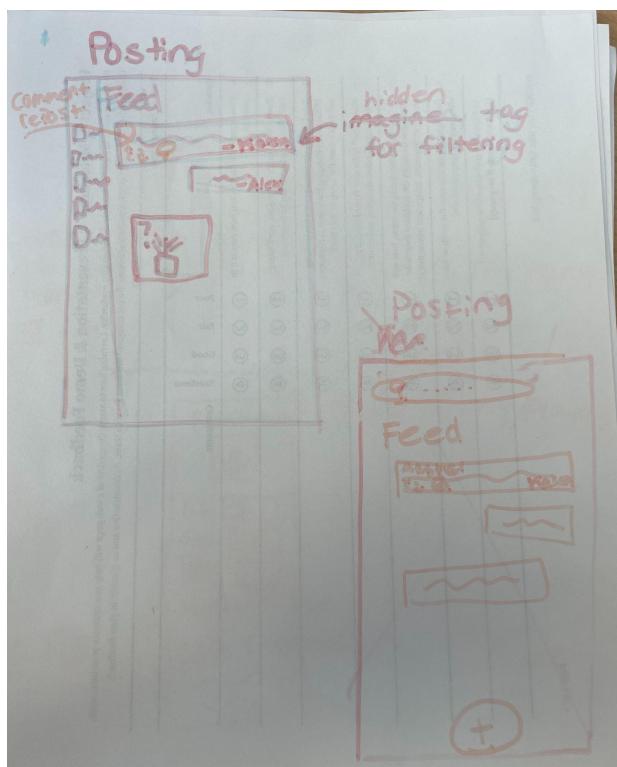


*Iteration 3.* In our third iteration, we began thinking about how we could filter the different results from the catalog layout. Obviously, there are hundreds of plants, so being able to filter them will make life much easier for the user. Moreover, we wanted to add a feature where you could add certain plants from the catalog into the MyPlants part of the app that we envision. This will allow users to browse the catalog and add any specific plants to their plant “wishlist”.

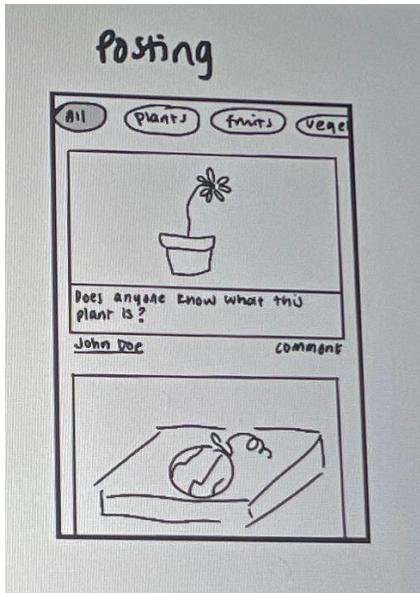
## Posting Feature



*Iteration 1.* For the first iteration, we designed a pretty straightforward review design in which users can post reviews (either in text or photo format) and others can comment on these reviews. We have a simple layout with different threads, and users can easily add new reviews.

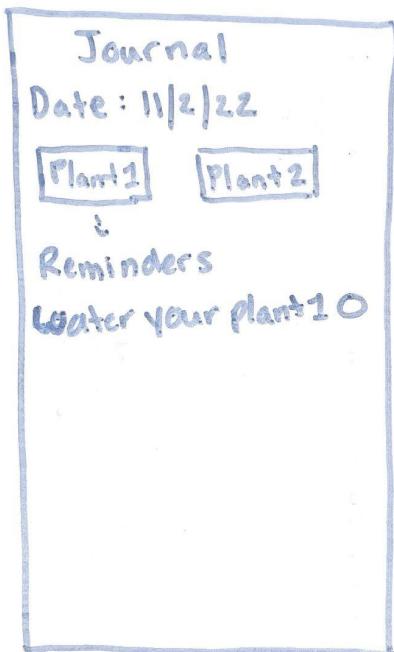


*Iteration 2.* For the second iteration, we decided to add a bit of filtering to the review functionality. We wanted users to be able to filter down their feed of comments in order to better find what they are looking for. For example, if they only wanted reviews about tomatoes, they could find this information easily.

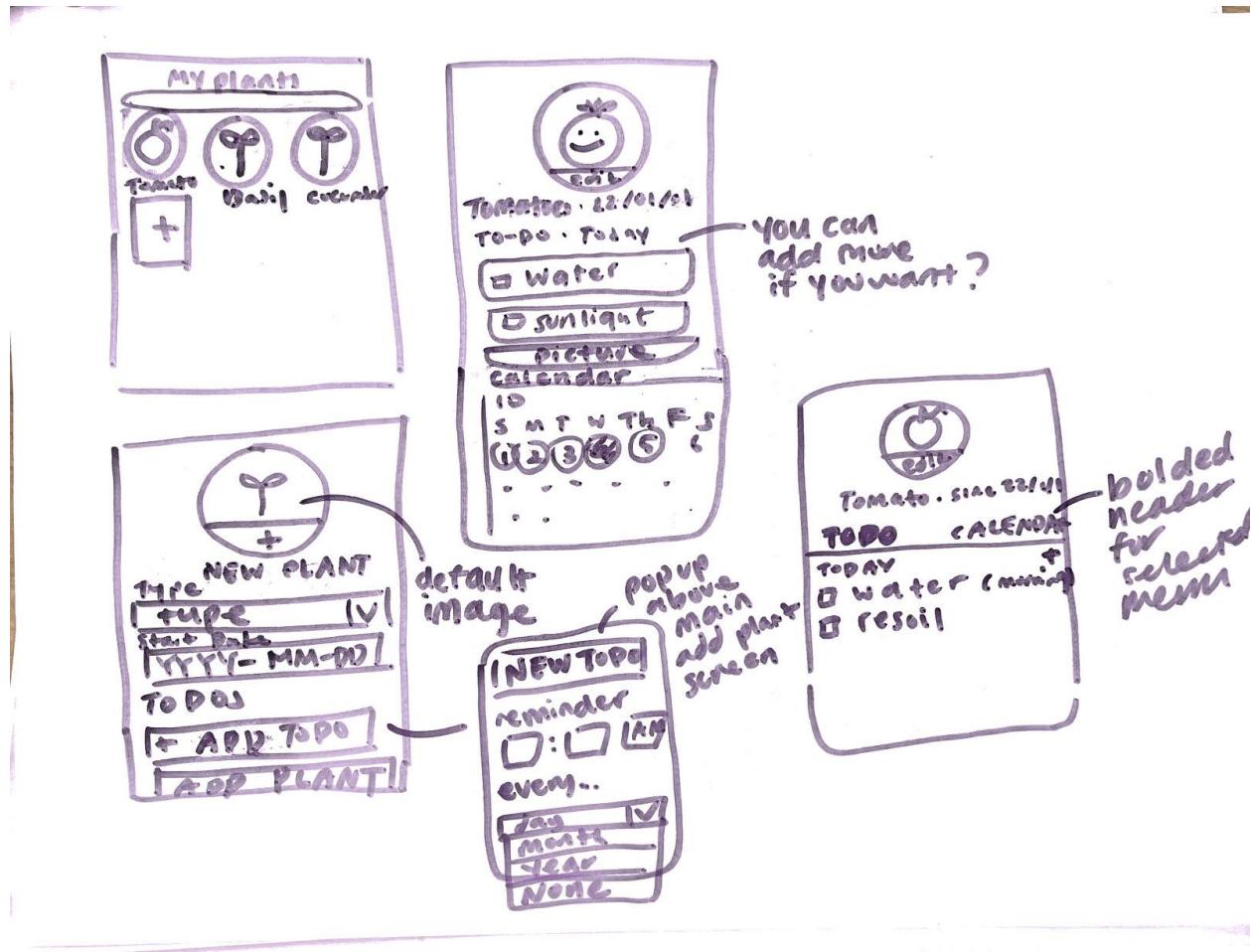


*Iteration 3.* For the last iteration, we decided to play around with a more photo oriented reviews page. This page would focus mainly on the photos the user would upload and then a comment underneath (kind of like the Facebook user interface). We thought this might be helpful so users can have a visual idea of the plant that is being reviewed.

## Plant Journal Feature

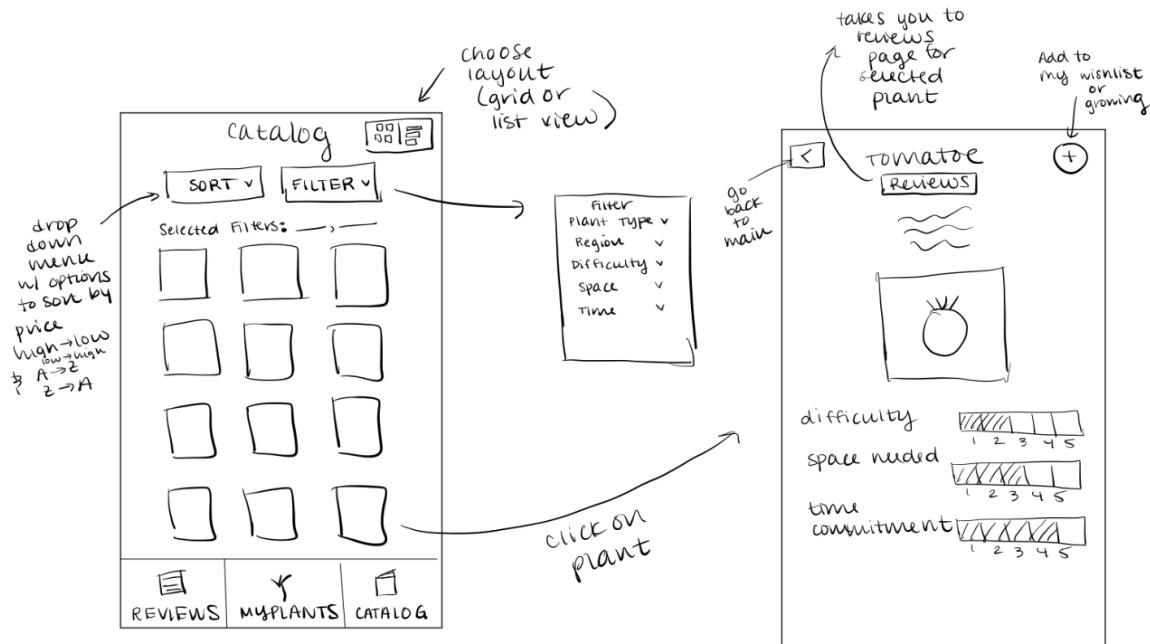


*Iteration 1.* For the first iteration, we designed a very simple journal. In this journal, you would see the date, and then the different plants that the user has saved. There would also be a reminder functionality that could remind users to water their plants among other things.

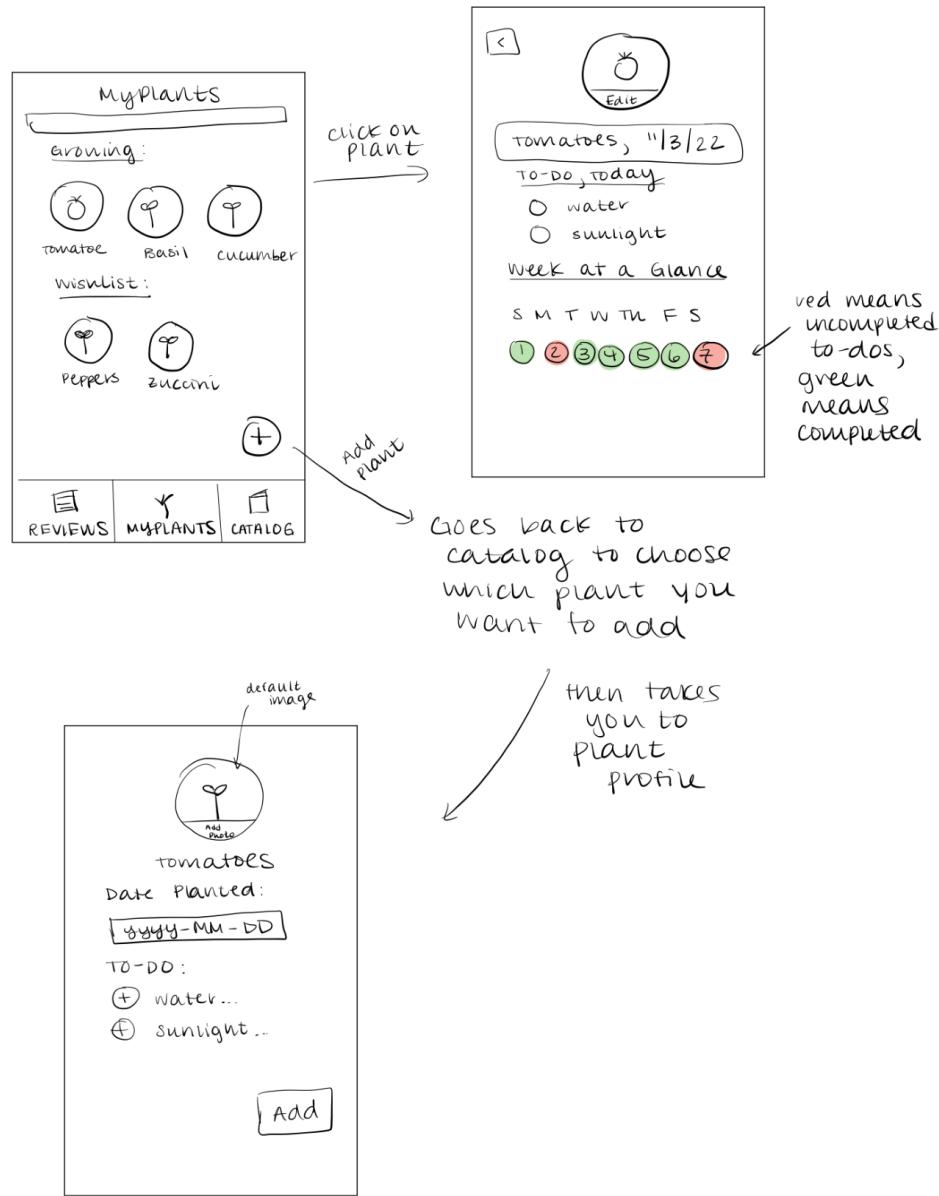


*Iteration 2.* For the second iteration, we wanted to make the plant journal a little more complex. We decided to create a MyPlants homepage which showed all of the user's current plants saved as little icons. Next, the user could hit the + button to create a new plant. This page would allow the user to enter data about the plant and then create personalized to-dos for that specific plant. Also, when clicking on the plant icons in MyPlants it will take the user to that plant's profile with information and to-dos for the day.

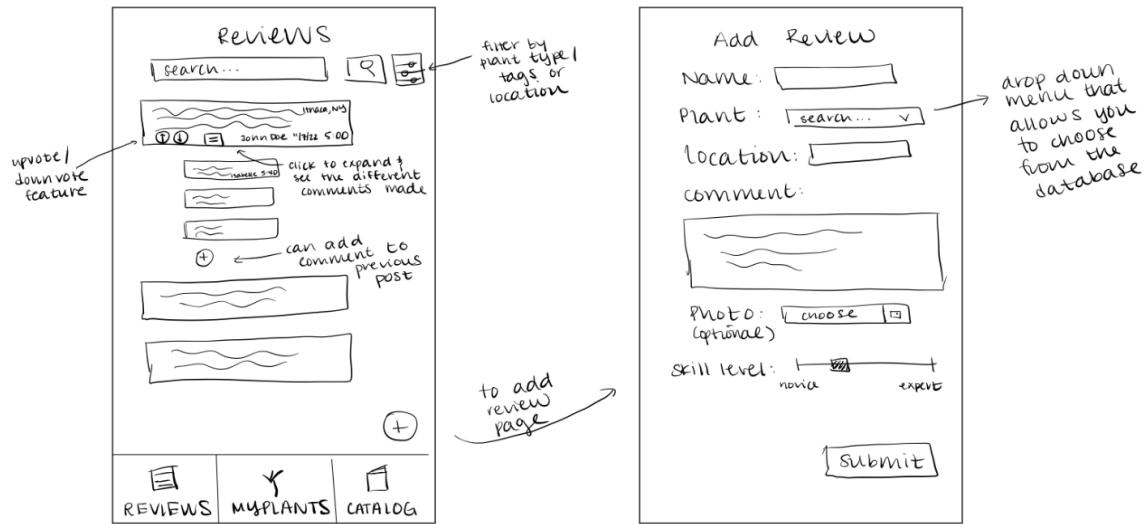
## Final Wireframe Sketch Iteration



*Description.* For the final catalog design, we decided to implement our original grid layout idea, since this is a familiar pattern for many users. On top of that however, we also added the ability to switch between a grid and a list layout for the catalog. In addition, we added more intense filtering and sorting abilities. The filtering would take the user to another page where they would be able to choose many different filters. When the user returns to the catalog homepage, all of the filtering will be applied automatically. In addition, there will be sorting implemented with a drop down menu. When the user clicks on one of the plants, they will be taken to a separate page that will have information about the selected plants as well as the plant's level in certain categories (difficulty, space needed, time commitment, etc). There will also be a way to view all the reviews for that specific plant from the details page. In addition, the + button in the top right hand corner will allow the user to add the plant either to their plants or to their wishlist of plants. We thought these new features would tie this part of the app nicely together with the other parts.



*Description.* For the Final MyPlants design, we decided to make it a bit simpler than our second iteration so as to not overwhelm the user. The homepage consists of the user's plants and their wishlist of plants represented as icons. When clicking on a plant, it will take the user to a "profile" for that specific plant. This profile has all of the to-do's for the plant. In addition, the weekly calendar view colors the dates either red or green, depending if the user completed the to-do's for that day or not. If the user wants to add a plant to their MyPlants page, they can click on the + button on the bottom right corner, which will first direct them to the catalog. From the catalog, they can choose a plant to add. Then, it will take them to another page where they can customize the profile picture for the plant, add a date, and add specific to-dos and reminders. When they hit the add button, it will take them back to MyPlants homepage with the specific plant added.



*Description.* We decided to make our final iteration of the reviews page mostly text based, with the additional option of uploading a photo. We also added a search bar so that users could search for specific criteria that the reviews addressed (like keywords, plant types, etc). We also added the feature of filtering by specific plants, tags, or locations to narrow down the review pool. Users can upvote or downvote reviews in order to show what they thought of them, and also comment on each review. Once again, a + button will denote the ability to add a review. The user will also be able to input their skill level when submitting the review, which we thought was important to distinguish between novices and experts.

## Design Rationale

Having designed with John's goals and scenarios identified through numerous user interviews, personas, and affinity diagramming kept in mind, our gardening mobile application is designed with a simple, unified layout and efficient usability. Our application has three key pages: Review, My Plants, and Catalog.

The review page is designed with a simple, endless thread of personal gardening reviews made by users of the application, organized in the order of most upvoted posts. It also allows filtering of the posts by plant type and/or location for more specific information. This allows John to fulfill his goals of receiving tips related to gardening practices in his area from gardeners of various skill levels by using the location filter. He is also able to engage with an online gardening community by interacting with other users on the application through comments or simple tap of an upvote or downvote, as well as potentially discovering new plants by simply scrolling through

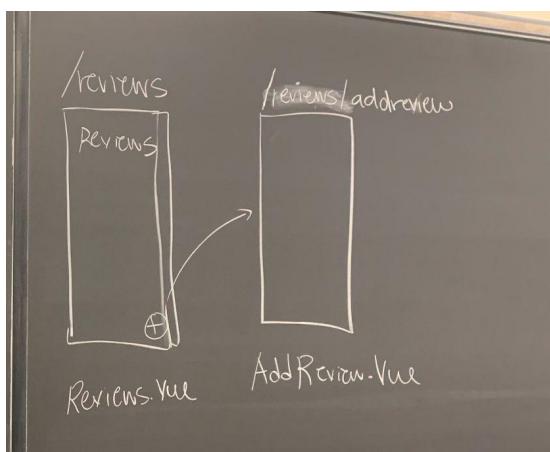
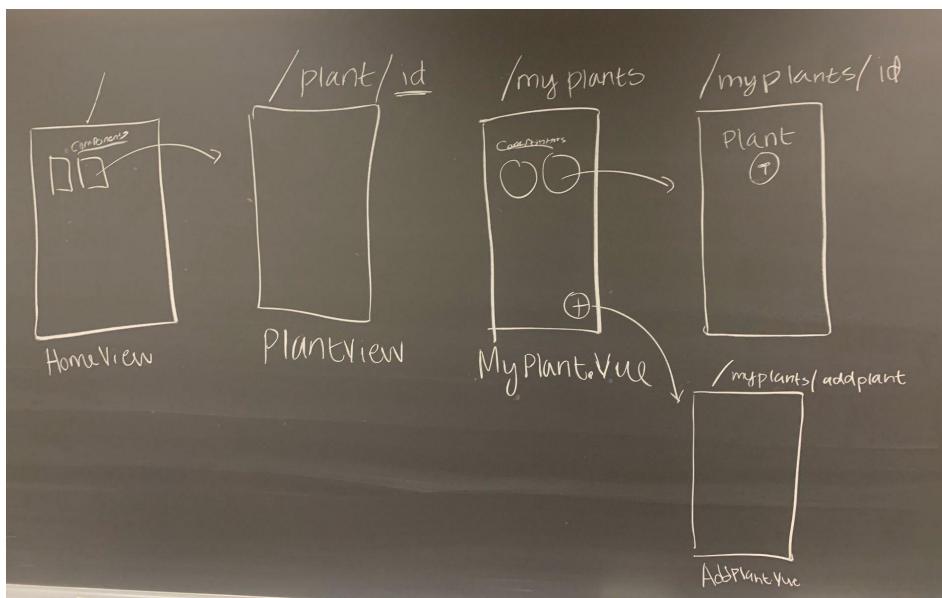
the feed. The review page also allows John to be an active member of the online gardening community and make his own posts by simply tapping on the “+” icon. John is taken to a page with a simple layout that does not take too much mental effort to understand, as John is still a college student and he must allocate his time wisely.

The My Plants page is a personalized page for John to keep track of his plants' well-being. At first glance, John can see how many plants he has, and every time he gets a new plant, he can add a new plant by clicking on the “+” button, similar to the Review page design in order to keep consistency across the mobile App. Similar to the process of writing a review, the process of adding a new plant is also kept very minimalistic, with only the required information being the date planted. Other features, such as adding an image of the new plant and adding todo lists for each plant are customisable to John's likings. The to-do list, once set by John, will send reminder notifications appropriately so that John can fulfill his goal of preventing plant death and having a successful garden.

Lastly, the Catalog page has a compilation of all common gardening plants that gives John the option to view it as a list, for when he is looking for a specific plant name he wishes to learn more about, or the grid view that allows John to visually search for plants that he has in mind. Since there is a lot of information being given, John can also filter it according to plant type, regions, difficulty, space, and/or time, depending on what he is using the catalog for. With this page and its features, John can fulfill his goal of wishing to discover new plants according to his liking with the filter, and also receive plant tips related to gardening practices in his area. Once John finds a plant he wishes to garden by skimming through the catalog and using the filtering features, he can pick a plant that intrigues him and learn more about how much space, time, and effort the plant will require.

# Implementation

In this milestone, we first decided to outline our application according to the different views. We used the skeleton that we developed on the chalkboard in class (see below). We then implemented the skeleton in the main branch of our Github repository. Next, we split up the different features into three separate branches that encompass the main parts of the app: the catalog, MyPlants, and reviews functionality. We then divided the coding work among ourselves, working on each feature in the specific branch. Finally, we merged the different branches together in order to have all of the functionality on the main branch for our initial high-fidelity prototype.



# Contributions

## Isabelle

- Conducted 2 user interviews
- Put observations in affinity diagram, organized sticky notes into themes
- Edited the user scenarios & personas and helped write value propositions
- Formatted deliverable with table of contents, headers, appendices, etc
- Wrote user interview section of deliverable
- Group brainstorming session
- Working together as a group to iteration on sketches and come up with final wireframe design implementation
- Organized sketches in report and wrote captions for preliminary sketches as well as final wireframes
- Revised user scenarios
- Made edits to the design rationale
- Worked on the catalog branch to code the main catalog page, filtering sidebar, and the plants view for when a plant is selected
- Published PWA

## Hajar

- Conducted 3 user interviews & user summaries
- Pasted observations and helped organize affinity diagram
- Created and wrote 2 scenarios and user goals
- Wrote value propositions
- Made final edits on document
- Group brainstorming session
- Working together as a group to iteration on sketches and come up with final wireframe design implementation
- Helped write scenarios
- Worked on the MyPlants branch to code the MyPlant specific plant profile page

## Caitlyn

- Conducted 2 user interviews
- Put observations in affinity diagram, organized sticky notes into themes
- Helped write the scenarios
- Helped write persona
- Provided feedback on value propositions
- Made final edits on document
- Group brainstorming session

- Working together as a group to iteration on sketches and come up with final wireframe design implementation
- Worked on the Reviews branch to code the reviews page and comments functionality

Yoo Jin

- Conducted 2 user interviews
- Put observations in affinity diagram, organized sticky notes into themes
- Persona creation and drawing
- Wrote value propositions
- Edited deliverable
- Group brainstorming session
- Working together as a group to iteration on sketches and come up with final wireframe design implementation
- Wrote the rationale
- Worked on the MyPlants branch to code the main MyPlants homepage

# Appendix A

## User Interview Questions

### *Novice Gardener:*

1. Introduce themselves - name, age, occupation, etc?
2. Explain your gardening skill level and experience?
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
4. Are you in any gardening communities?
5. What types of plants does your garden consist of?
  - a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?

### *Master Gardener:*

1. Introduce themselves - name, age, occupation, etc?
2. Explain your gardening skill level and experience?
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
4. Are you in any gardening communities?
5. How do you go about deciding which plants you want to garden?
6. What types of plants does your garden consist of?
  - a. Do you conduct any research to see what plants are best supported in your garden?
7. Have you ever helped out beginner gardeners? If yes, how so? If not, how would you go about doing this?
8. Have you used the Vegetable Varieties website? What do you use it for? Would you be willing to do a followup where you show us how you use the site?

## Appendix B

### Raw User Interview Notes (9 Total)

#### INTERVIEW 1

*Interviewer: Hajar Sabir*

*Interviewee: Lyda Buck*

1. Introduce themselves - name, age, occupation, etc?
  - Lyda Buck
  - Senior at Cornell studying Environment and Sustainability
  - 21 years old
2. Explain your gardening skill level and experience?
  - I have little experience gardening but I've done gardening at a house in upstate New York and I'm currently in a class where I'm learning about basic techniques in gardening. My family and I have half an acre where we till the land in the spring and spread manure on it to fertilize the soil and buy seeds or young plants to plant in the garden.
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
  - Generational knowledge: a lot of her family grew up in a farm or in the farming industry she knows a lot of general techniques.
  - In her major she's learned through her classes about gardening and different skills.
4. Are you in any gardening communities?
  - Not specifically but I am enrolled in a gardening course where there's other students who have a similar interest in gardening.
5. What types of plants does your garden consist of?
  - Heirloom tomatoes, cherry tomatoes, grape tomatoes, a lot of cucumbers , pickling cucumbers, yellow squash, zucchini, basil, chili peppers, bell peppers, broccoli, & sometimes pumpkin and watermelon. Either buy seeds and plant them or partially grown plants water them then make sure they are growing and take care of them until they're ready to harvest.
  - a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
    - Haven't done personal research but she's taking a class at Cornell soil and crop management taught her that different varieties of plants are more weather resistant, withstand higher temperatures, or use less water for irrigation. Certain plants have different features that can grow better in a garden and get the most out of that crop.

6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
  - Pest control like squirrels and woodchucks that come up and eat the plants. We try to separate those plants from where the pests usually come up and eat them. We haven't found the best solution to keep them away.
  - Weeds are another issue but we've controlled that by putting newspaper down on the soil. This blocks the sunlight so that the weeds don't outcompete the crops.
7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
  - I personally haven't because I only garden seasonally and the practices that I currently do work for me so I haven't felt the need to reach out. In addition to this I have/ am taking courses that provide me knowledge about gardening.

## INTERVIEW 2

*Interviewer: Hajar Sabir*

*Interviewee: Chaimae Sabir*

1. Introduce themselves - name, age, occupation, etc?
  - Chaimae Sabir
  - Age: 24 years old
  - Occupation: Works for the Environment Protection Agency in Development
2. Explain your gardening skill level and experience?
  - I am a beginner by no means am I advanced but I do enjoy gardening mainly for my mental health because in a way it's an escape from reality and my mental health.
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
  - My main resource for gathering information is mainly the internet and my father. He grew up in Morocco on a farm and is extremely experienced in gardening so I take a lot of advice from him. I was also an Environmental and Sustainability major at Cornell and I took some classes on gardening so I have that knowledge as well.
4. Are you in any gardening communities?
  - I am not in any formal gardening communities but a lot of my friends garden so I tend to send them pictures of my plants and they do the same.
5. What types of plants does your garden consist of?
  - Succulents
  - Petunias

- Cherry tomatoes
  - Jalapenos
  - I have a small garden out back and the succulents I keep in my house.
- a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
- I rely on google and my dad for most things but I tend to research a lot about how much sunlight and water each different plant needs because I have made the mistake of watering too little.
6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
- The plants are dying because I neglect them or forget about them. I overcome them by trying to be better about the upkeep of my plants, checking them daily and seeing other ways I can help them thrive.
7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
- I never thought about it because I do have my dad but it's something I would definitely be interested in if it was at my disposal. Gardening helps deviate from other things going on in my life and I would really like to get into more.

### INTERVIEW 3

*Interviewer: Hajar Sabir*

*Interviewee: Craig Feyeraband*

1. Introduce themselves - name, age, occupation, etc?
  - Craig Feyerabend
  - 31
  - Engineer
2. Explain your gardening skill level and experience?
  - Intermediate/Advanced
  - Home garden for 3 years
  - Enjoy growing a lot of weird variety of things I don't like tomatoes but I like experimenting
  - Still learning how to fix our soil
3. What is your main resource for gathering information regarding gardening?  
online websites, forums, etc?

- Grow food anywhere book common pests and what you do about them also has planting calendar colors have different climates
  - Has a book with several pages devoted to everything you want to plant
  - Ranks them easy to grow
  - Small space availability
  - Yield value
  - Pleasure
  - Map of growing region worldwide growing regions different climates
  - What plants need soil, water, light, growing style, planting, harvesting
  - Google
  - Centralized information like reading book about gardening
4. Are you in any gardening communities?
    - Haven't been looking serious enough
    - No I'm not part of one
    - I think would be cool to do that and I would also be more than willing to share knowledge and volunteer time
    - Even though I am not a social person gardening is a passion of mine and I actually met an internet friend who's into seed saving and is also a master gardener and she sent me a bunch of seeds and gave me a bunch of advice.
  5. How do you go about deciding which plants you want to garden?
    - What he knows grows well around here hot peppers do better in the south
    - What grows easily
    - Most of the gardening is for actually seeing things grow whereas wife does it for eating
  6. What types of plants does your garden consist of?
    - Asparagus
    - Strawberries
    - Blueberries
    - Apple tree
    - Lettuce
    - Kale
    - Black kale the dinosaur kale
    - All sorts of varieties of peppers
    - Seed collection
    - Tomatoes
    - Carrots
    - Potatoes
    - Cantaloupe
    - Watermelon
    - Organic

- Squash
  - Cucumbers
  - Yellow squash
  - Gords
  - Ground cherry
- a. Do you conduct any research to see what plants are best supported in your garden?
    - Yes definitely the book
    - Wife's family has generational knowledge
    - 45 minute class about local gardening
7. Have you ever helped out beginner gardeners? If yes, how so? If not, how would you go about doing this?
    - I don't think so
    - I would ask them what are you interested in growing and what are your goals. Food or to sustain you a of your veggies or growing for the sake of growing
    - Not interested in growing the produce but wife is interested in growing for produce
    - Experiment and see what he can get to grow
    - Do stuff to support a family guide them in what foods grow best locally
  8. Have you used the Vegetable Varieties website? What do you use it for? Would you be willing to do a followup where you show us how you use the site?
    - No I haven't used the website
  9. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
    - Soil acidic pine needles and combating that with lime and leaves were turning white from a combination of acidity and a fungal growth. You can spray the fungal growth on plants and can use oil. Have to treat your soil in the fall and spring till it. Mulch locally for free and have a massive mound of it and it had bullet fungus or mushroom little spores that grow and shoot their seed under plants leave had to render everything with more mulch needing sunlight. Google book garden isn't perfect multi year process treating it tilling the soil
    - Spring the weeds are the first thing to pop out little growth shred the roots and you plants and till it

#### INTERVIEW 4

*Interviewer: Yoo Jin Bae*

*Interviewee: Francis Law, experienced home gardener*

1. introduce themselves — name, age, occupation, etc

1. francis law
2. 64
3. self-employed
4. live / work in hong kong
5. have a dog 2 sons wife
6. has a roof and that's where he gardens
2. explain your gardening skill level and experience
  1. skill level → familiar with orchids, likes trees, does not grow fruits and veggies, likes bonsai
  2. experience → 4-5 years; gardens while walking the dog
  3. plants old plants and tries to save them by giving them more nutrition
    1. takes plants as dying plants from flower shop owners (his friends) some don't revive but a big proportion revives
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums etc)
  1. online websites (whatsapp from his friends ; flower shop owners — professionals)
4. are you in any gardening communities
  1. no; gardens for himself
  2. does it alone and likes it (sometimes with son)
5. How do you go about deciding which plants you want to garden?
  1. takes recycled plants, so takes what is given to him
  2. orchids mostly because they are easy to resurrect
6. what types of plants does your garden consist of; do you conduct any research to see what plants are best supported in your garden
  1. sees what plants are in his area and decides like that
  2. based on observation
7. Have you ever helped out beginner gardeners? If yes, how so? If not, how would you go about doing this?
  1. yes, his son
  2. taught his son how to resoil, take the plants out without damaging the roots, choosing soil type, how to layer soils
8. Have you used the VV website?
  1. no

## INTERVIEW 5

*Interviewer: Yoo Jin Bae*

*Interviewee: Jae L, amateur cook*

1. Introduce themselves - name, age, occupation, etc?
  - Jae
  - 24

- from korea
  - student, college
  - likes to cook
2. explain your gardening skill level and experience?
- started in college (2017), but was not consistent with it
  - was in the military for 2 years so had a bit of a break
  - uses home gardening kit with gardening lights
  - mostly gardening for cooking to save money on groceries
3. What is your main resource for gathering information regarding gardening? friends, online web, forums, etc?
- google
4. Are you in any gardening communities?
- no
5. What types of plants does your garden consist of?
- edible things to be used for cooking
  - basil, tomatoes right now
- a. Do you conduct any research to see what plants are best supported in your garden?
- kind of, i read the manual for my home garden kit but most of the things i grow are pretty easy to grow
- 6.what types of obstacles do you turn into when gardening a new plant and how do you overcome them?
- most plants i grow are pretty self explanatory
  - selectively grows plants that are easy to manage
  - a general obstacle is that it is hard being a college student and keeping up with all the plants because I am not in Ithaca all the time (esp. during breaks) and sometimes i get busy with school and end up spending most of my time on campus, forgetting about taking care of my plants. Which is why i bought the gardening kit because it has a feature that waters the plants for me
7. Throughout your time gardening, has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
- no

## INTERVIEW 6

*Interviewee - Matthew Eaglehouse*

*Interviewer - Isabelle Breedveld*

Introduce themselves - name, age, occupation, etc?

- Matt Eaglehouse, 21, student
1. Explain your gardening skill level and experience?
  - Beginner gardener
  - Agriculture, large scale and small scale
  - 100 acres of farmland – field crop

- Uncle runs produce co-op, separate garden at another farm
    - Lots of veggies, produce, planter boxes (9 plants in each one)
    - All types of vegetables (planting, harvesting, etc)
  - Did it mostly when you were younger (until middle of high school)
2. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
    - Word of mouth
    - From family that runs farm
    - Or the internet (google)
    - Challenge uncle when he says nonsense
  3. Can you walk us through your process when deciding to plant
    - Digging in the soil
  4. Are you in any gardening communities?
    - CSC - cornell sustainability consultant
    - Some visited Cornell farm
    - Taught you about composting
  5. What types of plants does your garden consist of?
    - Veggies (lots of tomatoes), irrigation systems
    - Kohlrabi (sorta like a potato)
      - a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
    - Variety, seasonal crops
    - Popularity of produce
    - Divide it by flavor palettes
    - Plan it out in advance when it will be harvested
    - Weather and rain important factors
  6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
    - Weather, rain
    - Wildlife – insects
    - Viruses, **diseases** through the soil (organic vs pesticides)
    - Not enough sunlight
    - Animals like deer and racoon
  7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
    - A lot easier if everything is in one place
    - Internet always has 100 different answers

## INTERVIEW 7

*Interviewee - Christine Johnson*

*Interviewer - Caitlyn Johnson*

1. Introduce themselves - name, age, occupation, etc?
  - 48, Christine, Contract Manager
2. Explain your gardening skill level and experience?
  - Vegetable garden every year, sometimes successful and sometimes less successful
  - medium with skill levels and technique
  - Average size home garden
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
  - Just google and youtube whatever she is looking for
4. Are you in any gardening communities?
  - In facebook gardening groups
5. What types of plants does your garden consist of?
  - Vegetables, herbs, blueberries
    - a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
  - No research unless interested in new vegetable - from experience has general knowledge of what grows well here and grows same things each year
6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
  - Weather - gets watering system and remote timer to help control environmental issue, sprays for bugs and animals
7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
  - Yes - happenstance in farmers market - doesn't go seeking it out
  - Or talks to people on facebooks

## INTERVIEW 8

*Interviewee - Lane Daisuki*

*Interviewer - Caitlyn Johnson*

1. Introduce themselves - name, age, occupation, etc?
  - Lane, 75, Teacher -retired
2. Explain your gardening skill level and experience?
  - Experience: 1 to 10 a 5
  - skill : 5
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
  - Her Husband - likes to research

- Websites
- 4. Are you in any gardening communities?
- No
- 5. What types of plants does your garden consist of?
  - Tomatoes, green beans, carrots, potatoes, zucchini, summer squash, butternut squash, a giant pumpkin
  - a. Do you conduct any research to see what plants are best supported in your garden? If so, how do you go about conducting this research?
  - Basic knowledge of the area - a little research
- 6. What types of obstacles do you run into when gardening a new plant and how do you overcome them?
  - Thinning out of plant
  - Put in stakes to hold them
  - Woodchucks - no solution
- 7. Throughout your time gardening has there ever been an instance where you wanted to connect with a more skilled gardener? Were you able to do so? How did you go about contacting them?
  - no

## INTERVIEW 9

*Interviewee: Tracy McLellan*

*Interviewer: Isabelle Breedveld*

*Master*

- 1. Introduce themselves - name, age, occupation, etc?
  - Tracy McLellan, retired
  - Used to work as professor of genetics in Africa
    - 20 years
    - 3 month field trip to collect plants for research
    - Natural setting of Africa with plants and animals
    - Geology
    - Hard to live there
  - 73 years old
- 2. Explain your gardening skill level and experience?
  - Started growing houseplants in graduate school
  - Fluorescent lights
  - Research on specific south african plants
  - Grown in greenhouses, house plants
  - Retired, moved here with idealistic goals of growing own food
  - Tried to be environmentally conscious
  - Other countries heavily affected by climate change

- 5% of world's people uses 40% of world energy
  - Effects of climate change are huge
  - A really conscious American
  - $\frac{1}{3}$  of an acre
  - Put in vegetable garden and fruit trees
  - Grow a lot of own food – potatoes, squash tomatoes
  - Preserve them in one way or another and eat them over the year
  - South african plants – interesting, knew about them
  - Got really into growing plants for dying fabrics
  - Bridging between interests of gardening and sewing
  - Have to grow acres of indigo in order to get enough dye – challenge
  - Hazelnut tree
  - Ornamentals – for the birds
  - 5 winters in Ithaca
  - Went to Costa Rica – gardened there
  - To make home for birds – bird friendly plants
    - Fruits, host insects, native plants
  - From growing food to environmentally friendly interests
  - Eat a lot more vegetables than before – don't want to waste food
  - Trip to Peru recently
  - 2 zucchinis
  - Freeze a lot too
  - Dried beans but never eat them
  - Healthier diet because they come from the garden
  - Celery – relative of celery, make a salad
  - Different taste right out of the garden
  - Don't do it for the cost – enjoy doing it, principle of environmental, quality
3. What is your main resource for gathering information regarding gardening? Friends, online websites, forums, etc?
- Salt lake city – learned here
  - From reading seed catalogs
    - Incredible information about how to grow things
    - Provide information because they want people to grow things successful
  - Company catalogs, online newsletters, books
  - Volunteer for growline
    - Learned more about pests and diseases – very big obstacle
  - New insect that ruined onions
    - Learned more about the new insects
    - Most of the time it's not that they need water, its an insect or fungus
    - Recognizing those things is really important for gardening

- Growline
  - Working remotely
  - People contacting us via email or voicemails
  - Phone calls are better because you aren't sure what level they are at (in terms of gardening)
  - Talking to people is better
  - Used to get walk ins in office
  - Now mostly photographs
  - Questions range from different things
  - Most people think pesticides will fix everything
  - Cornell big program with IPM (Integrated Pest Management)
    - Advice on which pesticides to use
    - Don't always need to use them
  - Help to identify plants
  - Household bugs as well
  - Referral service as well
- 4. Are you in any gardening communities?
  - Work with Master Gardeners
  - Demonstrate gardens
  - Vegetable Varieties Trial Garden
    - Overrun with weeds in 2020, pulled them out in 2021
    - Statewide program
      - Send them the seeds
    - Prescriptive planting plan – beds (little grid with places to plant)
    - Provide signage for which plants
- 5. How do you go about deciding which plants you want to garden?
  -
- 6. What types of plants does your garden consist of?
  - a. Do you conduct any research to see what plants are best supported in your garden?
- 7. Have you ever helped out beginner gardeners? If yes, how so? If not, how would you go about doing this?
  - Site visits
  - Novice had no idea where to start
  - Hard to help people have no idea what to do
  - People get enthusiastic in the spring without doing proper research and then nothing is growing
  - Beginner gardeners try to go into it without researching
- 8. Have you used the Vegetable Varieties website? What do you use it for?
  - Trial garden – enter in evaluations of different varieties

- Developed 20 years ago, no one has used it since
  - Not sure if you could upload photographs or not
    - Use a different system through it
  - Can't go back and add another comment to the same review
  - \*\*Add another review of the same thing would be very useful
  - Could comment at multiple times throughout the season
    - Would be nice to revise through the season as it grows
  - Consumer side – never used it that way
  - Some varieties have a lot of reviews, some have almost none
  - Not user friendly
  - Trying to look something up
    - Seed catalogs are better
    - Never tried to use the website to look things up
    - Tells you also what's available – important
    - Brilliant reviews + what's in stock
9. Can you walk us through how you would use the site? Can you recall a time where you had trouble using the site? A time where you successfully used the site?
- a. What are things you can do well with the site?
  - b. What are things that are tricky with the site?
10. Other ...
- What they want to grow is different than what users WANT to grow
  - Tomatoes one of the most difficult things to grow but most beginners want to plant them
  - Beginners often get frustrated with difficult

## Appendix C

### Affinity Diagram

[https://jamboard.google.com/d/1vH31vHl-sYDV03\\_DiN\\_uA2qJeApgMtdFwfDTBj\\_5sd4/edit?usp=sharing](https://jamboard.google.com/d/1vH31vHl-sYDV03_DiN_uA2qJeApgMtdFwfDTBj_5sd4/edit?usp=sharing)

