

Timber - A Gardening App

Project Deliverable # 3

Hi-Fi Prototypes and Heuristic Evaluation



System Write-Up

Description of System Design and Implementation

The team broke the implementation of the application based on the major components that were planned to be built, components that would enhance the interaction of the interface, and components that the team could add given we had additional time.

*Details of the major components that were planned to be built and were built can be found in the **Major Components of the System** section below.*

The team used GitHub as our version control system to allow for the team to work collaboratively on the project and allocate work appropriately throughout the team. Due to some technical difficulties that could not be resolved given the time frame of the project, it was decided that two team members focus on the implementation of the application while the other member completes the write-up - *excluding the portion that required individual effort.*

Implementation of the application/deliverable was completed in the following order;

1. Main Screen interface
2. Searching a plant by taking a photograph interface
 - a. Interface that shows you results based on the photograph that was just taken. This was hard-coded and a mock-up, not a fully-functioning analyzations of a photograph feature.
3. Map view interface
4. Manual Search interface
5. Plant Description interface

Interface 4 and 5 were adjusted based on an initial heuristic evaluation. The submitted application is the system after some of the problems found in the initial heuristic evaluation were fixed.

Moreover, the system design was heavily based on the prototype sketching the team did for the earlier deliverable and was then altered based on the feedback of the video prototype from fellow students in the course. The team also met before the implementation of the application to solidify the system design that responded to the need of our prospective users and could be implemented within the given time frame of this deliverable.

Had the team had more time to build the application, the team would have worked towards building the following components to the interface;

- ★ Nearby Stores that hold the plant data,
- ★ User profile and login to store favorite plants,
- ★ Swipe-up motion on screen to add plant to favorites,
- ★ Click plant image to view a gallery of images of the plant - data driven by members of the application,
- ★ Swiping right/left to go to previous screen, and
- ★ Draw a circle on the screen to activate the Photo Search feature.

Major Components of the System

1. Main Screen

Large and simple selection

We wanted the first screen that the user sees to be very simplistic with buttons large enough such that if the user were actually gardening they would be able to select one of the two options with their nose. Moreover, we tried to have descriptive labelling that would let the user know what each feature does without the need to use too many words and the user would be familiar with wording of the labels.

2. Photo Search

This was a feature that came from the team's most earliest brainstorming sessions in which all team members had the same idea to implement a photo search feature. This feature allows that user to use the camera on their device to take a picture based on the picture they will

be provided with plants that look similar to the picture that was just taken. As aforementioned, this feature was hard coded to mimic how this feature would function had the team had time to develop this without any time constraints.

3. Manual Search

Search results view pane

This feature was designed and implemented based on the feedback that the team got on our video prototype. Instead of having a separate screen that presented the user with results of their search it was suggested that we use the previously known space “*Plants You May Like*” on the Manual Search screen to show the search results instead. This was shown in a list view format.

Filtering search results by selecting commonly found symbols on plant cards

This feature would allow the user to select symbols commonly found on plant description cards to filter the search results. We found that there were symbols that were common across all plant description cards and decided to include them in this feature instead of using text.

Keyword

This feature would allow the users that are slightly knowledgeable of the names of plants and it’s details to search by just typing in keywords.

4. Plant Description

Symbols

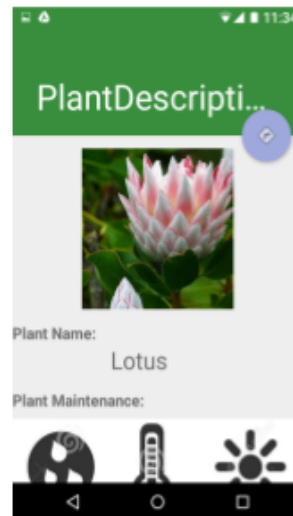
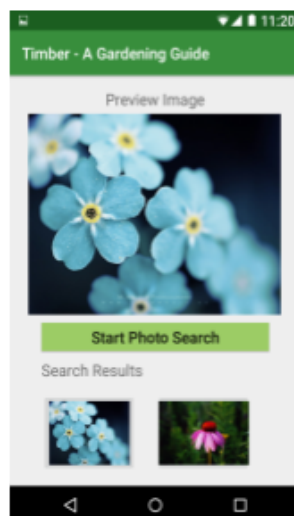
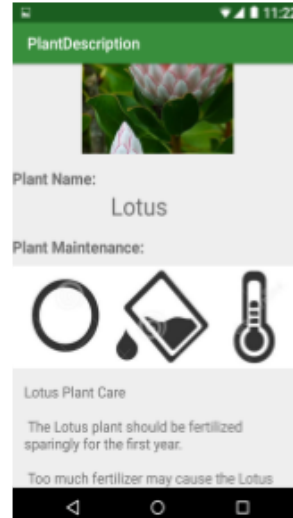
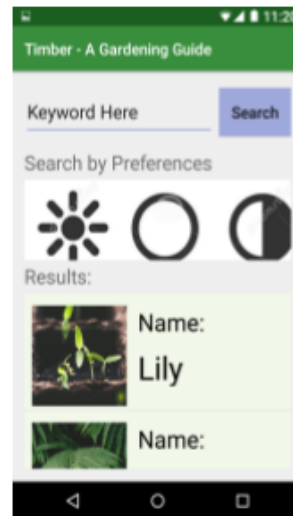
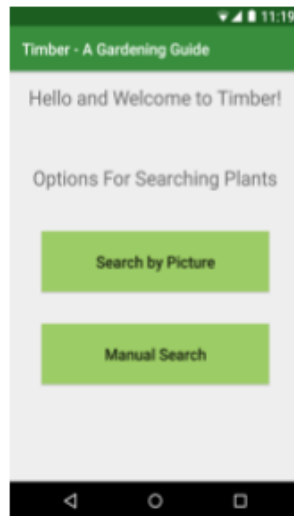
This feature would allow the user to get a quick grasp on the details of the plant based on symbols commonly found on plant description cards.

Text Description

This feature would give users the option to get more detailed information about the plant if they so desired.

Map view of nearby stores

This feature would allow the user to see if the plant they are currently viewing can be found in stores nearby via a map view.



Interface Components and Design Requirements with relation to Task Descriptions designed in P1

Task Descriptions

1. Need to look up if the plant is low-maintenance

The user would firstly select the *Manual Search* option (*See Top-left Image*) their preferences (low-maintenance symbol) in the following interface (*See Top-right Image*) and would be presented with a list of plants from which they can select the low-maintenance plant that they are looking for. Moreover, by selecting the up and to the right arrow in the circle option on the header (*See Bottom-right image*) the user is able to locate where on the map they can find that particular plant.

Design Justification

By allowing the user to simply select buttons to get a list of plants following which a plant description (*See Middle-right image*) that confirmed their search, this process was relatively easily. Approximately, four button clicks, a scroll to the right, maybe a scroll down if the top result is not the desired result, and a zoom into the pinned location - which makes this system easy to use and with a minimal learning curve.

2. Look up how much sunlight the plant needs

The user would firstly select the *Manual Search* option (*See Top-left Image*) their preferences (the desired amount of sun based on the rays and coloration of the sun symbol) in the following interface (*See Top-right Image*) and would be presented with a list of plants from which they can select the plant that they are looking for. Moreover, by selecting the up and to the right arrow in the circle option on the header (*See Bottom-right image*) the user is able to locate where on the map they can find that particular plant.

Design Justification

The same justification as the task before, by allowing the user to simply select buttons to get a list of plants following which a plant description (*See Middle-right image*) that confirmed their search, this process was relatively easily. Approximately, four button clicks, a scroll to the right, maybe a scroll down if the top result is not the desired result, and a zoom into the pinned location - which makes this system easy to use and with a minimal learning curve.

3. If the plant that they're looking up is sold nearby

The user would firstly select the *Manual Search* option (*See Top-left Image*) since they know the plant they are looking for they would type in the keywords in the text area which displays *Keyword Here*, in the following interface (*See Top-right Image*) and would be presented with a list of plants from which they can select the plant that they are looking for. After which they can

select the up and to the right arrow in the circle option on the header (*See Bottom-right image*) the user is able to locate where on the map they can find that particular plant.

Design Justification

A similar justification as the two tasks before, by allowing the user to simply search the plant that they already know substantial information about, they simply need to type the keywords into the text area to get a list of plants following which a plant description (*See Middle-right image*) that confirmed their search, after which they need only select a button to get a map view of where the item can be found nearby. Since the system allows for users to type in keywords to search for plants this appeals to more experienced segment of the population as well as a novice segment. Moreover, allowing users to find a store nearby via the map view is great since a great portion of the population is already familiar with this concept, thus will be able to find this feature both extremely useful with a low learning curve involved.

4. If their plant is edible or not

The user would firstly select the *Photo Search* option (*See Top-left Image*) from there they would take a picture of the plant in-front and they would be presented with plants that look similar to the picture the user just took. From which they can select the plant that they are looking for. After which the user would be presented the plant description interface (*See Bottom-right image*) from which the user can confirm that the plant is in fact edible or not.

Design Justification

By allowing the user to simply take a picture of the plant from their device to get the information they need with of which the user had very limited knowledge about is a very helpful feature to have. Moreover, since the user is provided with plants that look similar to the photo they just took, they have the ability to choose the plant that looks most relevant, from there on they need only select the picture of the plant to more information. Similar to the tasks before, this process requires no text entry, simply pressing buttons and maybe some scrolling to get the information the user needs - which makes this system easy to use and with a minimal learning curve.

5. Selecting different preferences

The user would select firstly select the *Manual Search* option (*See Top-left Image*) their preferences (as many symbols as they like that will actually garner a result) in the following interface (*See Top-right Image*) and would be presented with a list of plants from which they can select the plant that they are looking for.

Design Justification

The same justification as the first two tasks, by allowing the user to simply select buttons to get a list of plants following which a plant description (*See Middle-right image*) that confirmed their search, this process was relatively easily. Approximately, four button clicks, a scroll to the right, maybe a scroll down if the top result is not the desired result, and a zoom into the pinned location - which makes this system easy to use and with a minimal learning curve.

6. Look at the description of a plant

The user would firstly select the *Photo Search* option (*See Top-left Image*) from there they would take a picture of the plant in-front and they would be presented with plants that look similar to the picture the user just took. From which they can select the plant that they are looking for. After which the user would be presented the plant description interface (*See Bottom-right image*) from which the user can get a vague overview or a detailed description (scroll down) of the selected plant.

Design Justification

Same as the justification for Task # 4, by allowing the user to simply take a picture of the plant from their device to get the information they need with of which the user had very limited knowledge about is a very helpful feature to have. Moreover, since the user is provided with plants that look similar to the photo they just took, they have the ability to choose the plant that looks most relevant, from there on they need only select the picture of the plant to more information. Similar to the tasks before, this process requires no text entry, simply pressing buttons and maybe some scrolling to get the information the user needs - which makes this system easy to use and with a minimal learning curve.

7. Perform a ‘like’ on a plant.

Not applicable, since this feature was not implemented in the current iteration of the system due to time constraints. This was at the bottom of our list for implementations when the team began to plan to build this vertical prototype. Moreover, though this was one of the tasks we identified, later the team realized that this wasn’t a must-have requirement and we’d still be able to address the purpose of this application without this feature.

8. Watch a video from the gardening tips playlist

Not applicable, since this feature was not implemented in the current iteration of the system due to time constraints. This was also at the bottom of our list for implementations when the team began to plan to build this vertical prototype. Moreover, though this was one of the tasks we identified, later the team realized that this wasn’t a must-have requirement and we’d still be able to address the purpose of this application without this feature.

Technical functionality and limitations

The system is very simple and most of the back-end database is hard-coded.

In terms of limitations;

- A map view of a hard-coded pinned location as opposed to a list of stores that carry the plant that would map to the map view.
- No accuracy in terms of analyzing the photo to get an accurate list of plants based on the picture that user just took.
- App sometimes crashes in the Manual Search interface and returns to the Main Screen interface.

Heuristic Analysis

Summary of the Major Issues that were found

In total the consolidated list (*Refer to Appendix*) the team discovered 15 issues that ranged from severity 1-4. The major issues that we have decided to discuss in this segment either have the severity of three, four, or because it may alienate a segment of users that we absolutely want to cater to. These major issues that the team identified explore both the depth of the interface and the breadth of the interface.

*Issues that deal with the **depth** of the interface: 1 and 4*

These issues can be encountered when and if the user chooses to search for a plant by selecting one of the symbols and they have no indication if they've actually selected it or not or the fact that when search and/or read a plant description there are symbols that may be unfamiliar to novice users. Therefore, since these two issues only focus and explore this one specific topic of the symbols that are being used for these plants thus these major issues deal with the **depth** of the interface.

*Issues that deal with the **breadth** of the interface: 2 and 3*

These issues can be encountered even if the user hasn't gone deep into the system. Such as, the second issue can be encountered by just going to the Plant Preferences interface and if the user decides to select one of the images that may look similar to the picture and that leads to nowhere. Therefore, since these two issues explore the functionality of the system as a whole, these major issues therefore, deal with the **breadth** of the interface.

Justification for choice of presentation

The major issues (below) have been presented based on the severity of the issue. We have chosen to do so in this manner, simply because these are the issues the team must respond to first, then we should deal with most/all of the other 11 issues identified. Moreover, the issues are presented one after the other (paragraph-style) with clearly labelled sections of what each text represents. Lastly, these issues will significantly improve the functionality and/or 'purpose' of this application if dealt with first in another iteration.

Issue # 1 - Severity 4

Description of Issue identified

If the user selects a logo in the "Search by Preferences" menu, the user doesn't really know if they have actually selected it or not. No indicator to show if the option was selected.

Heuristic violated

Consistency and standards. This major issue violates this heuristic such that the user has to wonder if this action of selection actually means that the option has been successfully selected or not. Moreover, this doesn't follow platform conventions of clearly showing the user that an option has been selected.

Suggested fix

Implement a check mark that is displayed on the symbol or the outline of the circular symbol is bordered with a different and bright color. to notify the user that their selection has indeed been added to criterion which the system will use to give the user a list of results.

Issue # 2 - Severity 4

Description of Issue identified

App crashes when user attempts to scroll down on a Manual Search. Basically, after that user selects the Manual Search option from the Main Screen, after a several seconds of use a dialog will appear notifying the user that the app is 'crashing'. Regardless, the current interface of the application crashes and the message dialog isn't very helpful. (**Note: Does respect that Visibility of system status usability heuristic**)

Heuristic violated

Help users recognize, diagnose, and recover from errors. This major issue violates this heuristic such that though the error message is expressed in plain English (debatable - considering there is the possibility that a portion of the target user base may not be knowledgeable of what a 'crash' in a technological context means) the message does NOT constructively suggest a solution to the crash.

Suggested fix

Have the manual search take up fewer resources in the app. Test out which features will help fix this crash issue, thereby helping s decide what needs to be allocated elsewhere and/or completely eliminated to have the application function properly.

Issue # 3 - Severity 3

Description of Issue identified

Tapping the search results in the photo search does not lead to its description. After the user takes a picture via their device they are taken to the next interface which displays search

results in the form of pictures that look similar to the picture that was just taken. The issue identified is that selecting either of the search result pictures leads to nowhere and the user is not notified of what is going on.

Heuristic violated

Match between system and real world and Visibility of system status. This major issue violates this heuristic such that the system doesn't keep the user informed about what is going on after the user is not taken to the selected plant's description. As well, selecting a result and nothing happening violates real-world conventions.

Suggested fix

This is a simple fix, may have just been forgotten by the programmers. The team need only match this to its intended functionality by connecting the images to a plant description interface.

Issue # 4 - Severity 2

Description of Issue identified

Symbols don't have definitions, therefore new users will not know what they stand for. There is a plethora of symbols throughout the two major components of the system; the Plant Preferences interface and the Plant Description interface. There are symbols that novice users (a key user demographic that we are targeting) may not have seen before or would understand at first glance. This may also apply to experienced gardeners as well. Having symbols that users don't understand defeats the purpose of allowing people to get the necessary information without having to read through massive amounts of text. Or the ease of searching for a particular plant without deeper understanding of the plant.

Heuristic violated

Help and documentation. This major issue violates this heuristic, though the system can be used without documentation or help, it would make the experience better and helpful to the tasks of users if the users were given description of what the symbols represent.

Suggested fix

Have a feature if you hold on to the symbol for a certain amount of time a dialog that's slightly transparent pops up and explains what that symbol means. Alternatively, the system could have a help section with documentation that the user can access to whenever (eg. a '?' bubble that hovers on the bottom right of the application) they are confused about a certain symbol/feature.

Appendix

Individual Heuristics Evaluation

Note: Table is sorted by name of individual conducting the evaluation

Name	Heuristic Violated	Description	Suggested Fix	Severity Ratings
Sammia	Consistency and standards	After you select "Search by Picture" you are re-prompted to select "Start Photo Search" which then leads you to the camera.	Go straight to camera feature when the "Search by picture" option is selected.	2
Sammia	Consistency and standards	"Start Photo Search" button in the results screen, is sort of misleading because you've already started the search.	Change the wording of the button to something more appropriate such as "Search Something New"	2
Sammia	Flexibility and efficiency of use	Need to erase the text "Keyword Here" before the user can begin typing their input.	Have the text greyed out and should erase completely once the user selects to type input. If the user decides not to input anything that text should reappear.	2
Sammia	Aesthetic and minimalist design	Logos in the "Search by Preferences" too big compared to the box they are in.	Resize the images to fit properly in the pane.	2
Sammia	Consistency and standards	If the user selects a logo in the "Search by Preferences" menu, the user doesn't really know if they have actually selected it or not. No indicator to show if the option was selected.	Implement a check mark that is displayed on the symbol or the outline of the circular symbol is bordered with a different and bright color. to notify the user that their selection has indeed been added to criterion which the system will use to give the user a list of results.	4

Sammia	Consistency and standards	Map Functionality option and the Plant Description header disappears and can only be accessed again after the user scrolls back up and makes the scroll up movement once more to make the header reappear. Critical since most people want to get more information on a product before they actually purchase a product.	Keep the header visible when the user returns from scrolling without the need for an scroll movement.	2
Sammia	Visibility of system status	Searching typing in keywords feature doesn't really reflect the idea that the results are based on their preferences. There is no message letting the user know.	Notify the user in the form of a pop-up message that the list of plants in the Search Results pane are based on their selection of preferences or this feature is still under construction and will be available to use very soon.	2
Steven	User control and freedom	List of plants in the search results pane are too close to the bottom. Can cause the user accidentally clicking an option they weren't intending to.	If the user does accidentally click the 'Home' button or any other button on the bottom bar of the phone, they should be prompted with a dialog message to confirm that they wish to exit the app. Also, if they have selected preferences in the manual search window and they choose to return to the previous screen they should be warned that they will lose their current selections.	2
Steven	Help and documentation	Symbols don't have definitions, therefore new users will not know what they stand for.	Have a feature if you hold on to the symbol for a certain amount of time a dialog that's slightly transparent pops up and explains what that symbol means.	2

Steven	Error prevention	Buttons on the first page are small, they can not be easily hit pressed by a nose.	Make the options selection larger and not too close to each other to prevent the user from accidentally selecting the option they didn't intend to in the first place.	1
Steven	Help and document-ation	It is not clear that you can scroll sideways on the preferences.	Have a transparent '>' and '<' symbol on each side of the pane to let the user know there are more options if you swipe right/left.	1
Susant	Help users recognize, diagnose, and recover from errors	App crashes when I attempt to scroll down on a Manual Search.	Have the manual search take up fewer resources in the app.	4
Susant	Match between system and real world and Visibility of system status.	Tapping the search results in the photo search does not lead to its description.	Match this to its intended functionality.	3
Susant	Flexibility and efficiency of use	Need to tap on Manual Search twice before it enters the search.	Resolve this issue, so user only needs to click once.	2
Susant	Aesthetic	Icons in the Manual Search screen are too big to fit on the scroll bar, so you can't see the whole images at once.	Resize the app's images.	2