



# Fami tree

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## Problem and Solution Overview

As people go through their lives and the events that come with that, like leaving home for higher education or entering the workforce, many people begin to grow apart from their families. With less face-to-face time together, it becomes harder to maintain healthy personal relationships and communication with family members who may live far away. Many people are not aware of the effort they must put in to communicating and maintaining the close relationship they have already developed while young, so they begin to drift apart. It is this change in priorities and lack of habit that makes family relationships fall to the wayside. Our design seeks to facilitate communication between these busy individuals and their families. It does so by providing a personal and physical interface that positively rewards meaningful communication with family members and aids in building a habit of frequent communication.

## Initial Paper Prototype

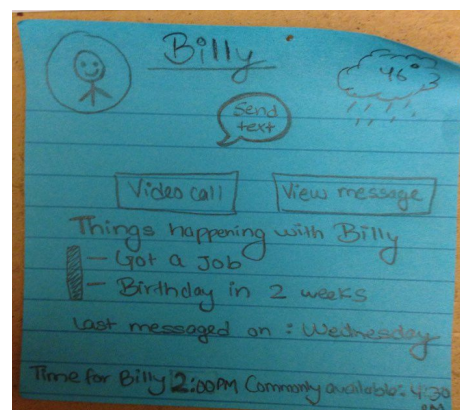


### Overview

Our initial paper prototype had many features that we thought were a must-need to communicate with others through technology, such as video calling and recording audio messages. It also has the tree with the fruits that was at the core of our design idea, where each fruit represents a family member that you can contact. Furthermore, it also allows the person and their family members to indicate if they are online so that other family members can see that and reach out to them.

### Task 1: Find a common time to communicate with family

Our design will keep track of when a person is online and when everyone else on their family tree is online and then match up common times in which they are online at the same time in the person's own respective time zone. They can then see their common available time when they click on that person's



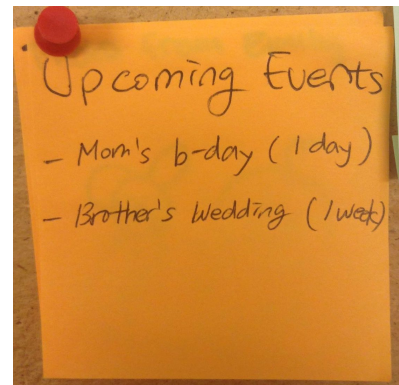
profile. Doing this allows people to have a higher chance of successfully reaching out to someone since they have the knowledge of when the other person is free. They can also be more motivated to reach out since they know that there's a lower chance of disturbing the other person since the other person will have a higher chance of being available at that common time.

## Task 2: Build a habit of reaching out to family



Our design will help the family members to build habit of reaching out and maintain a consistent communication. It does so by reminding the members about the upcoming events like birthdays and anniversary with accessible option to send instant text messages. Our design also provides a quick message and call option for the family members who are available

currently. The popping of posts posted by other family members will help other members know about the events happening in their life and gives them a reason to talk to or talk about which contributes in building habit as well.



## Testing Process

Our testing process included two heuristic evaluations and three usability tests.

1. The first heuristic evaluation was done with 2 participants during the class. Tyler and Vivian facilitated the evaluation.
2. The second heuristic evaluation was done with another 2 participants, while Jinsoo, Tyler, and Vivian facilitated the evaluation. It was tested in NAN study area.

During the heuristic evaluations, we gave the participants two tasks and evaluated the usability of our paper prototype based on Nielsen's heuristic principles. Their opinions were written on cards and they rated the issues for severity and category. We also got some feedback by asking them if there were unclear or unexpected components. Afterwards, we iterated on our designs, helping with the navigation throughout the interface and offering additional capabilities.

We then completed usability tests with 3 different participants:

1. An international student who lived far from family and communicates frequently
2. An international student who also lived far from family, but with a smaller family that communicated less often.
3. A student living far away from her family who wanted to communicate more often but was not able to do so due to conflict in time zones.

Within the usability tests, we gave the participants tasks to complete, asking them to vocalize their process as they navigated through the interface. We would also ask them to reflect on the components that they interacted with and asked if they had any questions. We also let them explore the prototype on their own, not pressuring them to move from completing one task to the next. We often had one person taking notes and another acting as the device, moving displays around. Often, we would have multiple people propose tasks for the participant to try to complete.


Reflecting on the process, we initially over-detailed the tasks for the participants to complete. To make things more reflective of a real use case, we later made sure on the later usability tests to under-specify the tasks and let the participant explore in the way that they would naturally. We also did a better job of splitting the roles between the team who were conducting the interviews. Having a single person interacting with the participant would have made it easier to develop a stable and consistent testing environment which we did not complete in the earlier tests. The last part that we improved on was being more comfortable with being flexible at the computer with unexpected interactions with the prototype. In the earlier tests, we would try to reuse screens that we had already created to extend the capabilities of the test, however it became much more constructive to ask the participant what they would have expected or would like to see happen.

## Testing Results

After conducting the usability testings with multiple participants, we found out many flaws in our design and got to know that our design was not very communicative and needed more work to be accessible by all. We also found that many of the features we focused on did not fully support the tasks we decided in the beginning. Following are the design changes we implemented after receiving the feedback from our usability testers :

- 1) While our design did initially intend for people to see when others were online, it did not account for people having “opposite schedules” and not often being online at the same time. This made interactions between people who were often active at different times more difficult than needed. Specifically, our previous design did not have an option to schedule a call, which was suggested by Rose to have it included so that the family members could be able to fill out the time slots when they were available and let the other person know what time to call. We added this suggestion to our final design. It helped meet the task goal of finding a common time between family members to communicate.
- 2) Our initial design had an option to be online/offline using the button at the bottom center of the screen. After conducting the testing we came to realize that people thought that button as a home button that would bring them back to the home page, which was not the case in ours. We made that bottom center button to be a home button which as expected by most of our users.
- 3) In order to let other family members know about one’s availability to talk and initiate the communication, our final design has an option where people could mark themselves online based on their availability. It’s also reflected in the digital mockup that people will be able to see an indicator in the corner showing if they are online or offline, which might be helpful in the case of someone forgetting if they pressed the button to show themselves online.
- 4) We added an quick option of text and call for the family members who were online so that the communication process would be more efficient and handy. This used the idea of a process funnel- to increase people’s end result of actually sending more messages to family, we wanted to make it very easy for a person to finish sending a message and have something to talk about as soon as possible.
- 5) We did not have an option to post pictures and messages to all the family members dashboard previously but we added that option to our final design because we found out that it would help people get notified about the events happening in other family member’s life which would in turn give them a reason to initiate the conversation and help build the habit of communicating.
- 6) We changed the dashboard which would contain the feed of posts posted by other family members to make it pop with one post or reminders of family events like





birthdays and anniversaries at a time. Users could also get a reminder with an option to send a quick message along with these reminders. These reminders would only pop in the screen whenever the user was around, so that they would not miss the reminders and they would remember to contact their family members on important dates. The camera at the top of the device's frame would sense the person's presence and the display these messages one at a time to eliminate distractions and incentivize the person to interact with the frame quickly, reinforcing habit-building. Having the interface pop up with the reminder would also catch their attention and in that moment, would give them an easy action item to communicate with family.

- 7) We added the feature that showed the current time and weather condition for people's family members when viewing that family member's profile section. This would help other members know current timings and when to call. It also had the added benefit of being a potential conversation topic.
- 8) Initially we did not have the corresponding family member's name attached with the fruit which was confusing to our users during the testings. Therefore we added the name corresponding to the fruit so that user would know who is online instantly.

Generally, we found that our design was well received in topic and concept by our participants, and most of the design feedback was to clarify usage and increase documentation for the users. This was an important issue, especially considering that while we talked with other students and individuals in the class, we mainly got feedback on things we could change with existent features and less feedback on the heuristic regarding help and documentation. Through usability testing with people who hadn't seen our design, we were able to realize that while people were able to point out what they thought might be added in terms of buttons, we needed to watch them use the design in order to understand what they "didn't know they didn't know", like using our button at the bottom as a home button instead of an indicator that the person is online. We were able to either add labels or reassign function to better match the person's expectation of what the design would do.

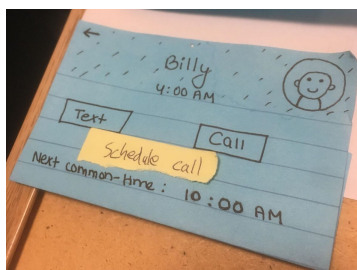
## Final Paper Prototype



### Overview

Our final paper prototype maintained the functionality that the base prototype had. However, we introduced functionality that focused on the tasks of finding a time to communicate and building a habit, creating a more sentimental interface. We wanted to allow people to communicate with their family members whatever means they preferred, whether that be through FamiTree or some other means. We also added features that reduced the burden to communicate and remember to reach out to their family and made the prototype do more of the work. This meant having less buttons to get to certain screens in where they can contact their family or adding automated messages displaying important events that the person can see with quick buttons to make communicating easy.

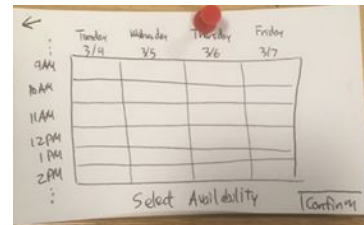
### Task 1: Find a common time to communicate with family



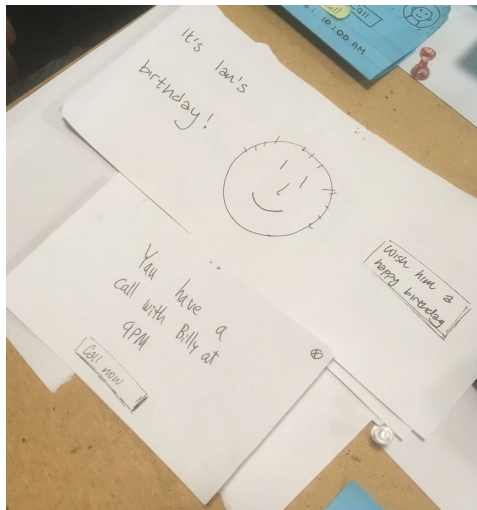
When looking on a family member's profile, a person can see a "common time" in which they share with that other person which tells the person when both their family member and themselves are usually online at the same time. Additionally, FamiTree has the ability to schedule



calls with family where family members can select available times in which they are available, and then send a notification to the other family member requesting a call at that time. When the scheduled time comes, then FamiTree will send notifications to everyone involved in the call that a call is scheduled. People can also use the “common time” to help schedule calls easier.



## Task 2: Build a habit of reaching out to family



When the person walks by the tree, or is sensed to be nearby, the tree will show simple, sentimental messages (like reminding them that it's their brother's birthday) and would encourage them to reach out through a simple text or call that they can easily access by clicking a button. By giving people both a reason and a means to reach out, the tree makes it easier to communicate quickly and more regularly, while also positively reinforcing communication.

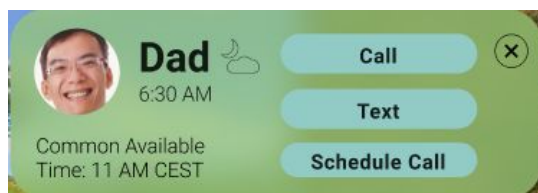
## Digital Mockup



## Overview

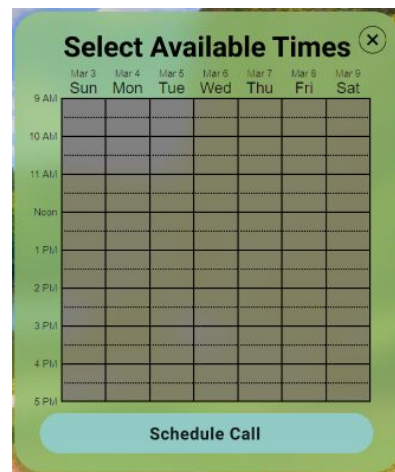
We carried our tree design with the contacts as fruits through to our digital mockup. The digital mockup has a lot of similar features to our final paper prototype, such as video calling, scheduling a call, and notification messages encouraging people to contact their family members. Switching from paper to digital, we realized that there were a lot of parts and buttons that needed to be rearranged in order to make sense logically. For example, our sidebar that included that tree had to be rearranged to increase readability and help others understand what was going on.

## Task 1: Find a common time to communicate with family

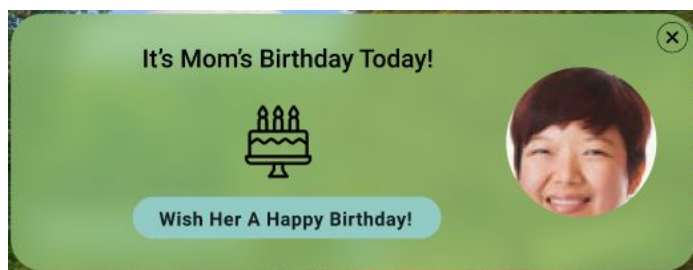


Similar to our paper prototype, when we click on a family member's profile, we can see a "common available time" in their own time zone with the person's time zone labeled. The

time tells both the person and their family member what times they have been seen online together most often. Furthermore, they can schedule calls with the "schedule call" button on the family member's profile which takes them to a visual timeline in where the person highlights times which they are available. Then, it notifies the other family member about the scheduled call and allows them to accept or decline. When the scheduled time comes, a notification will be sent to both parties about the call.

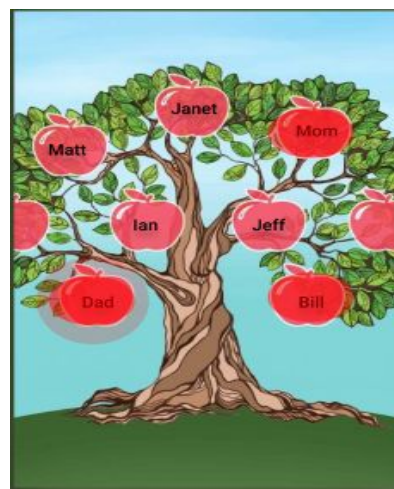


## Task 2: Build a habit of reaching out to family



We encourage people to build a habit by having reminders to communicate with family member's they haven't communicated with often and of important events in their family member's lives. Our goal is to

make it easier for people to remember to communicate with family members by helping them remember important events or that they need to communicate more. By doing that, it gives the person less responsibility to remember to reach out and by having something remember for them instead, the person will, over time, build a habit of reaching out. The design also has fruits that light up when a family leaves a message or audio recording that capture the person's attention. Which is a constant reminder that a family member is trying to communicate with them.



## Discussion

With all the testing, critiques and multiple iterations over the design we learnt that there was always a place for improvement and there is no such thing as perfect design. Initially our ideas was scattered and we tried to incorporate all those in our design, which was even more expanded because we're such a large group. We initially had multiple features which were not necessary, like a highly detailed settings page and a detailed process for adding new family members, something that happens very rarely. However, iteration over the design helped us narrow down our focus and focus more on our selected tasks We were finally able to make our design more simple, communicative and accessible.

After receiving feedback from our testers, we incorporated their thoughts and challenges into our design to create a better user experience. We learned a lot about the accessibility of our design from the feedback of our design testers. We conducted usability testing for each design iteration, which helped us know if the changes made to the design were good or bad, or even if they were understood at all. As a whole, the process of iterative design shaped our final design to be more user interactive and accessible.

Usability testing helped us add the feature of quick call or text and schedule call which is a big plus for our design. These are things that we wouldn't have thought of without having done these in-person tests, but we found that it was really beneficial to hear what the people using our design wanted and needed to complete our tasks more efficiently. Our tasks onwards remained constant but we could eliminate features that were not adding up to the task goal. We were able to do all those from the feedbacks we received from our testers and critiques.

We never felt we needed less iterations over the design. Through multiple iterations, we improved our final design and enhanced the important existing features during the process. If we had time we would definitely do more of the usability testing and iterations. As a whole, our design has become much more simpler and very much accessible due to the iterations and testing we conducted. Those were very helpful and played vital role in making of our final design.

## Appendix

### General Script for a Usability Test

1. Greet the participant and explain ethical requirements (i.e. explaining they can leave whenever they'd like)
2. Explain the idea behind our design, and show which parts were meant to be animated, blinking, or otherwise significantly different from how they appeared.
3. Ask the users to complete tasks regarding the tree. These changed from test to test, but we used all of the following points in every test:
  - a. Add a new family member to the FamiTree.
  - b. Check the messages that have been left for you.
  - c. Mark yourself as "online".
  - d. Leave a message to an inactive family member.
  - e. Find a time to call a family member.
  - f. Start a video call with an active family member.
  - g. Add a family member is online an ongoing video call
  - h. Update your living address
  - i. Post a message on the feed.
4. Give these under-specified prompts to test out the tasks
  - a. "You've just got your FamiTree. Set it up so you can contact your family"
  - b. "You've just gotten back home from a long day at school. As you walk by the FamiTree on the fridge, it pops up with some notifications, what do you do?"
  - c. "You see that you mother has been trying to reach out to you, but you've been busy. You miss her and would like to call but it's nighttime for her. Find a way to communicate with her"
  - d. "You've just finished heating up your dinner to start eating and you see that your grandma is online. You haven't talked to her in a long time."
  - e. "You've just finished moving to San Francisco for work. Update your family members on this milestone!"
5. Thank the user for their time and ask any follow up questions that we might have wanted to ask, but would have compromised the integrity of the test (i.e., did you understand that this feature was meant to do this or would you have guessed this option was available)

### Heuristic Evaluation 1

| Relevant Portion of Prototype               | Heuristic | Severity | Revision   |
|---|-----------|----------|--|
| Home screen - unsure of what can be clicked | 1         | 2        | Encourage user to tap screen when the camera notices |



|  |   |   |  |
|--|---|---|--|
|  |   |   | they're close to the frame   |
| Show difference of clicking avatar vs fruit                              | 4 | 3 | Have clicking on the avatar give quick actions you can do while clicking on the fruit open up the family members profile |
| Better show how to add family members                                    | 1 | 4 | Use a wizard to guide them through adding a new family member and make the option of adding members more visible         |
| Can't see relationship   | 2 | 0 | Add relationship under name when looking at a family member's profile  |
| Send text/view message should be combined into one as they are redundant | 4 | 1 | Send text just takes you to text chat as that is a standard for chat apps  |

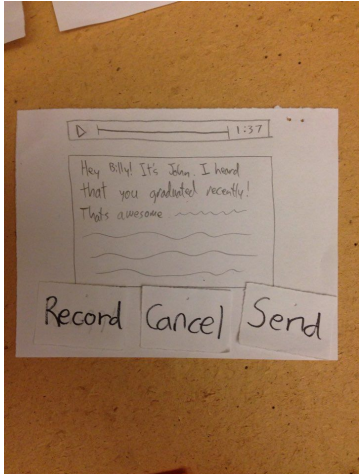
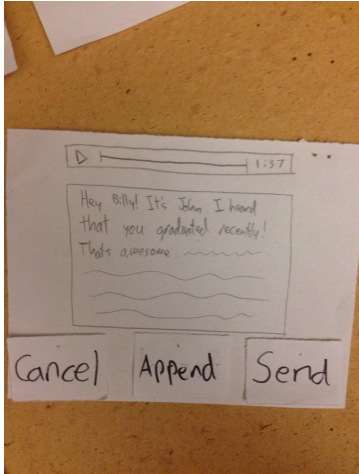
## Heuristic Evaluation 2

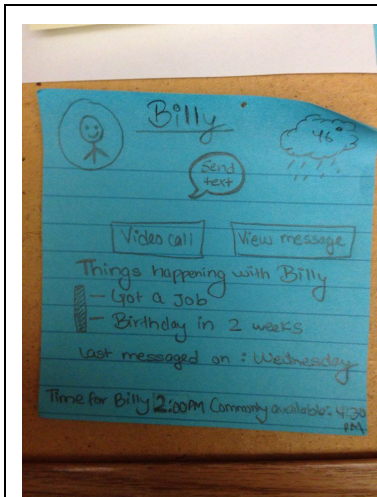
| Relevant Portion of Prototype  | Heuristic | Severity | Revision  |
|--|-----------|----------|---|
| Profile settings are too many clicks away                                | 6         | 3        | Change the settings page to include the profile settings  |
| Make a clear home screen that shows what can be clicked                  | 1         | 2        | Change format to be consistent for all parts of the home screen to encourage user to click on relevant topics |
| Drill in names don't match menu items (i.e. profile vs profile settings) | 4         | 0        | Change names to match   |
| Better show a novice user how to add family members                      | 7         | 4        | Use a wizard to guide them through adding a new family member   |



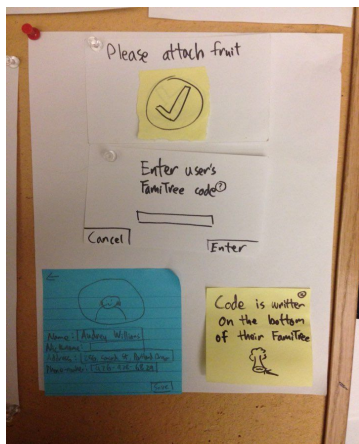
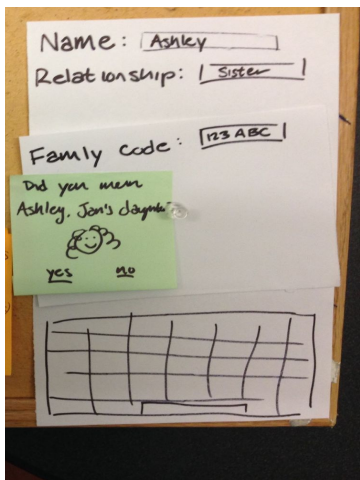
|   |    |   |   |
|---|----|---|---|
| Clarify what a day 1 experience would look like                                     | 10 | 3 | Create documentation to accompany tree (such as a user guide)   |
| Every person would need their own tree  | 3  | 0 | This is a design decision that we're going to stick with - might be difficult to get users to buy but loses its unique factors              |
| Difficult to see that the family photos are a screensaver                           | 1  | 2 | Encourage user to tap screen when the camera notices they're close to the frame and have the screen cycle through photos like a screensaver |
| Clicking a person's photo in chat should show info about them but currently doesn't | 4  | 1 | Click picture in chat to open up that family member's profile   |

### Usability test 1

| Before  | After   | Incident/Severity   |
|---|---|---|
|  |  | After recording a message, the participant could only re-record the entire message but wanted to add things forgot to say. (Severity 2) |

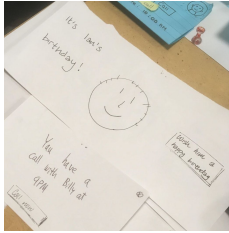
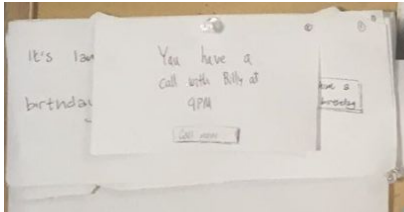



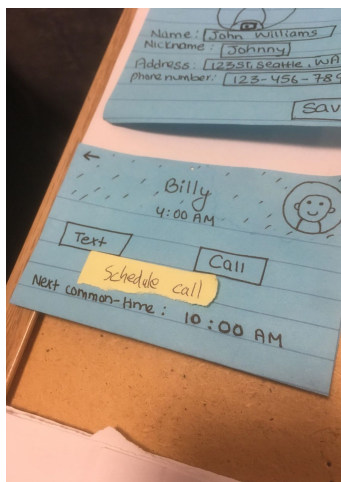
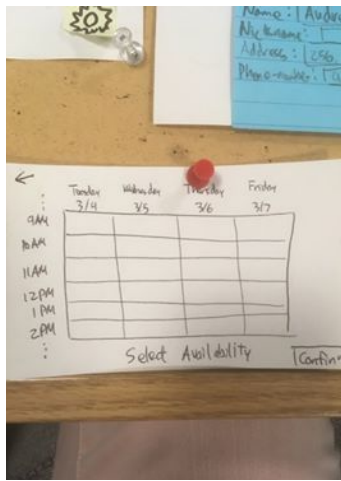
The profile for family members was too cluttered with information so we cut down on the features to make it easier to focus on the tasks you could complete through that window. (Severity 2)




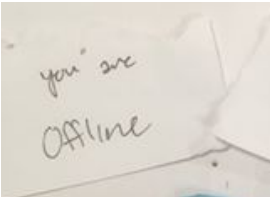
It was unclear how to add a family member and how far along in the process you were. (Severity 3)

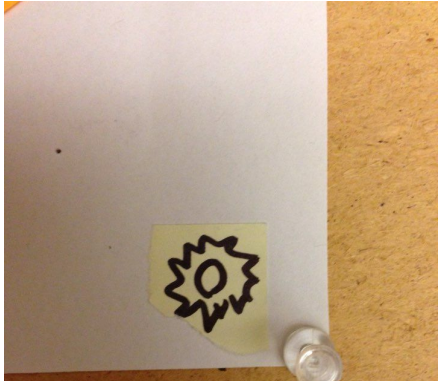
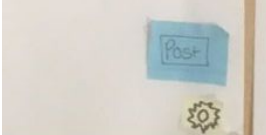


### Usability test 2

| Before  | After  | Incident/Severity  |
|---|--|--|
|  |  | <p>There was no way to remove messages that pop up so we added an "X" button in the upper right corner of each message. (Severity 4)</p> |

|   |   |   |
|---|---|---|
|  |   | <p>We allowed people to schedule a call with their family members by adding the option to on their profile. (Severity 3)</p>                |
| <p>N/A</p>  |  | <p>It was difficult and confusing to schedule a reminder, so we decided to use a grid to show the dates and times instead. (Severity 2)</p> |

Usability test 3

| Before  | After  | Incident/Severity   |
|---|--|---|
|  |  | <p>It was hard to tell what the tree button at the bottom meant so we added a textual indicator telling whether they were online or offline. (Severity 3)</p> |

|   |  |   |
|---|--|---|
|  |  | <p>To make it easier to post, we added a "Post" button to the home screen. (Severity 2)</p>     |
|  |   | <p>We changed the tree button at the bottom to take people to the home screen. (Severity 2)</p> |

### Example of Testing notes

#### Family Tree

Background picture

Click Tree

#### Messages Pop Up when you click the Tree

Message mom and happy birthday to Ian

#### User question: How do I talk to mom again?

Tried to click on the "Active" button, nothing happened

Grabbed mom's fruit

#### The frame shows Mom's profile

Is the time in my time or their time?

#### No problem calling or scheduling a call

#### Try to Add a Person to the Tree

What does the "X" do? Is it a button?

#### Others

More labels around the tree

Can i place the tree somewhere else or take it off? A divider?

More Features?

Keep the tree, a certain number of branches so you need to prioritize people

Didn't know what pressing the button meant, maybe a prompt

Don't think it'll get annoying by pressing the button

Won't remember to turn it off though



## Contribution

Eliza Huang - 20% wrote initial draft for parts of the document and helped revise document

Jinsoo Choi - 20%- wrote and edited document

Pratibha Kharel - 20% - wrote testing results and discussions of the document and edited.

Tyler Mi - 20%, wrote initial draft for parts of the document and helped revise document

Vivian Lappenbusch - 20%- Set up document, revised document & checked against project requirements