Final Write-up

-- Project Smile

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Abstract

Research shows that expressing more gratitude for the things and relationships we have in our lives can significantly increase our feelings of happiness (Toepfer, Cichy & Peters, 2011; Seligman, 2012; Emmons & McCullough, 2003, etc). Various business and political leaders from Facebook's Mark Zuckerberg to PepsiCo's Indra Nooyi to former President George H.W. Bush all make it a point to write thank you letters on a regular basis appreciating people who have touched their lives. Saying thank you to others is not a very time-consuming task either; just writing a few sentences each day is enough to have a lasting impact on one's happiness. However, expressing gratitude is something most people do not do frequently enough even though it is extremely easy to do so.

Our app seeks to encourage users to give thanks on a regular basis and thus promote more positive behavior and greater feelings of happiness. It challenges users to thank at least one person in their lives every day through its interface and seeks to make expressing gratitude a lasting habit. The app reminds users via notifications when they have not yet sent out a thank you message for that day. Users can also earn achievements for keeping up their thank you streak for longer and longer periods of time (e.g., having sent one thank you message every day for 1 week, for 1 month, etc). Finally, users can also receive positive feedback for their thank yous from the recipients of their messages since telling someone how much you appreciate them brings joy to their lives too.

Roles

Creating major project deliverables were split evenly among all group members. All members also participated in research, brainstorming, and ideation early on.

Design

Alice Feng - Alice created sketches for the design of each screen in the app, made high-fidelity mock-ups in Illustrator, and drew up the storyboard detailing how each part of our app was connected to one another and an interactions document labeling each interaction that the user could take on each screen and the result of those actions. Finally, Alice also conducted multiple rounds of user testing to solicit feedback and suggestions for improvement for the app.

Lisa Kim - Lisa created sketches for the design of each screen in the app, made high-fidelity mock-ups in Illustrator, designed icons and other art assets needed, and helped make the first version wireframe prototype of our app using Flinto to show how our app worked. Finally, Lisa also conducted multiple rounds of user testing to solicit feedback and suggestions for improvement for the app.

Wenzhu "Hope" Liu - Hope created sketches for the design of each screen in the app, made low-fidelity mock-ups in Balsamiq and Sketch, and high-fidelity mock-ups in Illustrator, designed logos and other art assets needed, and helped make the second version wireframe prototype of

our app using Flinto to show how our app worked. Finally, Hope also conducted multiple rounds of user testing to solicit feedback and suggestions for improvement for the app.

Programming

Sarah Chen - Sarah implemented the aesthetic design as provided by the designers. She built the layout of the pages of the app using HTML5 and CSS3, and contributed to the interaction design using Javascript as well. She also made the app visually feasible on multiple platforms, such as on mobile devices of all sizes as well as PC monitors.

John Frens - John implemented the core functionality of Bakeoff 2 in processing during some of Project Smile's design phase. He also gave feedback for Greg's API design, designer mockups, and interaction design. During Project Smile's implementation phase, he implemented button and menu functionality and dynamic content in javascript. John reviewed the other programmers' code and API, and helped fix bugs as well.

Gregory Rose - Gregory found and set up hosting for the app on Google App Engine. He then architected the API design, then built the backend to support it in Python and webapp2, backend, setting up error handling, Facebook authentication, the datastore and models, and controllers to store, validate, and access data. He also helped with the frontend interface functions to the backend API, and implemented the style for message and news feed display. Finally, Gregory helped fix bugs and iterate the implementation.

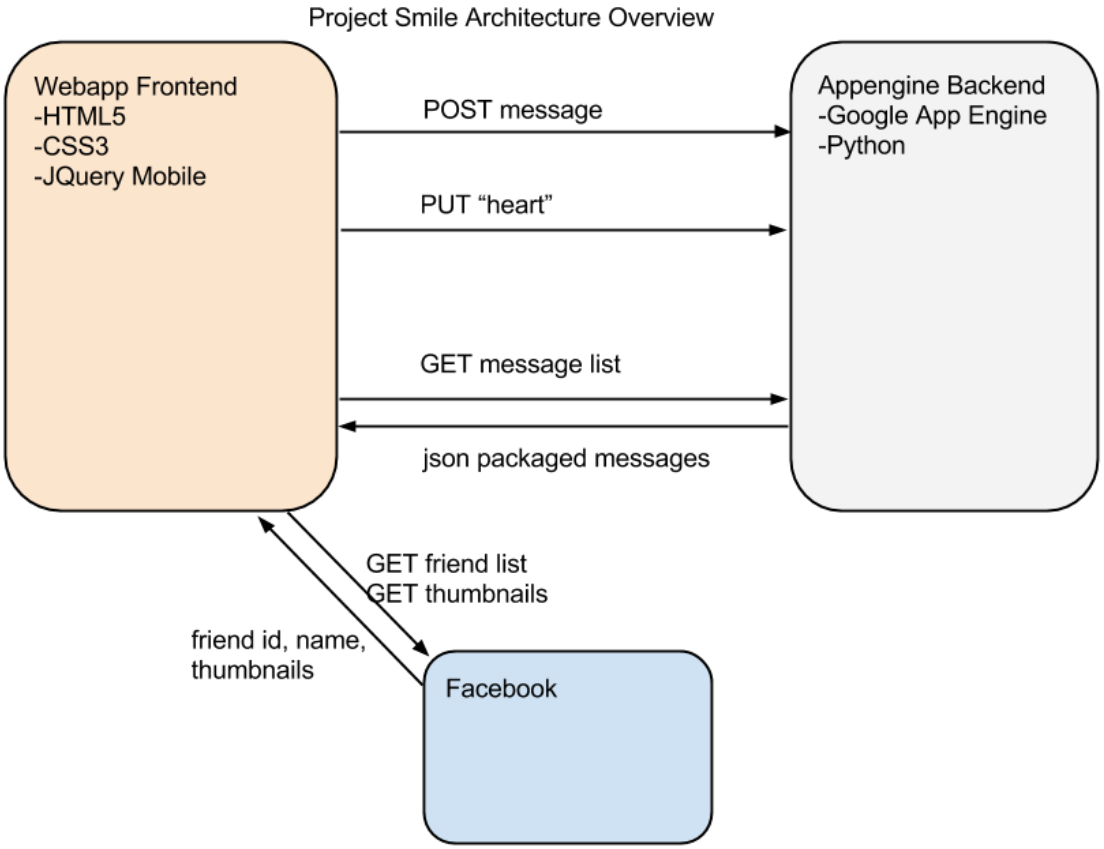
Timeline

Date	Design	Programming
March 4	Initial meeting - modified idea from a website to a mobile app - made sketches for interface screens - created storyboard	Greg: Contextual inquiry with members of Project Smile John: Positive psychology research Sarah: competitive analysis
March 5	Created first version of mock ups	Research into choosing a platform (mobile web app vs. android native vs. possibly phonegap, etc)
March 20	Created second version of mock ups	Training in Javascript and jQuery
March 30	Conducted first round of user testing - discovered users did not think our app was very useful	Implement Facebook login on frontend and functional proof-of-concept of friend selection Begin designing API
April 3	Created a survey to ask CMU students about how they currently expressed gratitude, how frequently they did so and what kinds of features they would be interested in. Conducted survey over the course of the following week.	Chose mobile webapp. Decide on a frontend framework (jQuery mobile), finished the API draft and opened for suggestions, created a basic frontend.
April 9	Came up with version 2 of our idea - moved away from one open message box to 4-square design where users had to first select a pre-specified type of message to send - Created new version of mockups reflecting this design change - Created first wireframe prototype using Flinto	Began work on Minimal Viable Product. Created frontend tabs. Frontend: implemented functions for easy access to API Backend: implemented basic messages API
April 20		

	Conducted second round of user testing based on this new iteration of our idea. Many users still not convinced of the usefulness of our app. Users also indicated that the app was too complicated and some features were repetitive.	Frontend: Implemented feed and message display Backend: Implemented login, users API, and finished message query API, completing the Minimal Viable Product for the API
April 25	Came up with version 3 of our idea - focused less on how to exchange messages and more on how to influence user behavior to encourage users to give gratitude on a regular basis - also tried to simplify the app by reducing the number of features - created final version of mock ups reflecting this design change Conducted another round of user testing to get feedback about this new iteration of our app	Sent group survey to check on the workload and ask for suggestions from the team. Combined frontend + backend. Previously, the frontend was a decoupled HTML document. Now, it's being served by the server, which allows us to test that the API works (previously we were just scaffolding). Thanks to the API documentation, most problems were easy to fix. Chose jQuery Mobile for being light but powerful, instead of other frontend frameworks like Sencha, which we found too bulky.
April 28	Created final set of mock ups, wireframe prototype, and storyboard	Synced-up with designers to get the implementation closer to the mock-ups and flesh out details.
May 1		Implemented backend error handling and input validation, completing the backend. All programmers now on frontend. Fixed remaining bugs on bug list, and created styles to match mock-ups, fully implementing viewing messages and the feed.

Architecture Overview

Our webapp is designed to be easy to access from any device that has a browser. As such our software architecture is a fairly standard html5/jquery mobile/css3 frontend. All navigation is done through Javascript using the jQuery Mobile framework, eliminating the need to load new pages, making navigation fast. Data is downloaded as needed via AJAX calls to a backend API (as documented in the picture below). For the backend we leveraged the easily deployable and scalable Google App Engine, running our app written in Python with webapp2. The architecture diagram below portrays the http calls made between the webapp, backend, and facebook's backend.



There are a few important things to note about our software design. All access to the website is encrypted with https (very easy to enable with App Engine), ensuring that sensitive user data is secured. We did not include push notifications in our software design, although we ideally would like to include that feature in the future.

Below is an image from our api documentation. All of our requests are GET, POST, and PUT http requests with json packaged message data in the body of the request. As in the image, GET

was used to retrieve messages from the server, while POST and PUT calls were made to add or update messages.

List all Messages

GET `/messages{?since,until,limit,offset,type,involves_id,sender_id,receiver_id,privacy,hearts,sort,order}`

Returns a list of Messages. Filters are applied sequentially (so it's a conjunction, or an AND).

Note on multiple-time filters: some filters may be applied multiple times. E.g. to find private messages between user 1 and user 2, do `/messages?` in web dev is designed with compatibility in mind--this way, older servers that only have one value to one key will still get at least one value, which I then pass an array for `involves_id`, e.g. use settings `{'traditional': true, 'data': {'involves_id': [1,2]}}`.

Create a Message

POST `/messages{?since,until,limit,offset,type,involves_id,sender_id,receiver_id,privacy,hearts,sort,order}`

Note: there are no URL parameters (after the ?) used here despite what it seems to say above.

Text may be at most 500 characters.

Heart a Message

PUT `/messages/{id}/heart`

The full api is documented here: http://docs.smile.apiary.io/

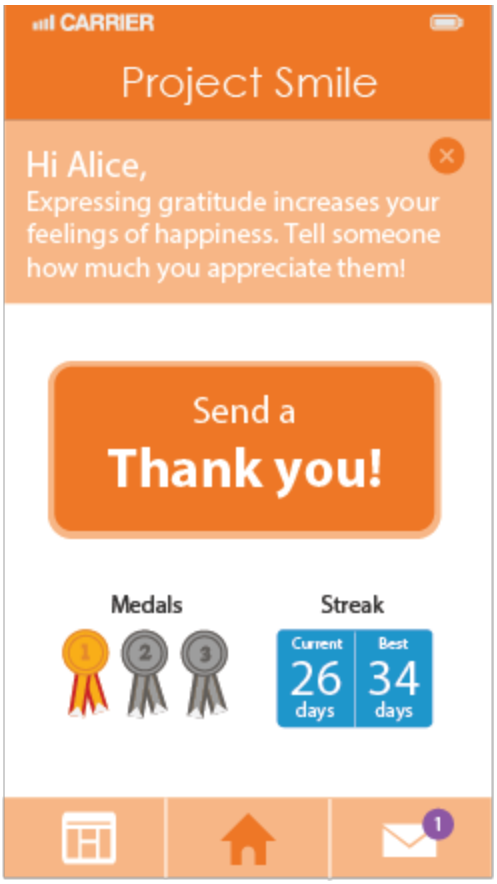
We also deployed Sentry, a script to automatically record frontend errors and report them back to us, providing a full stack trace and allowing us to detect and fix bugs without requiring users to follow a lengthy reporting process.

Description of Final Product

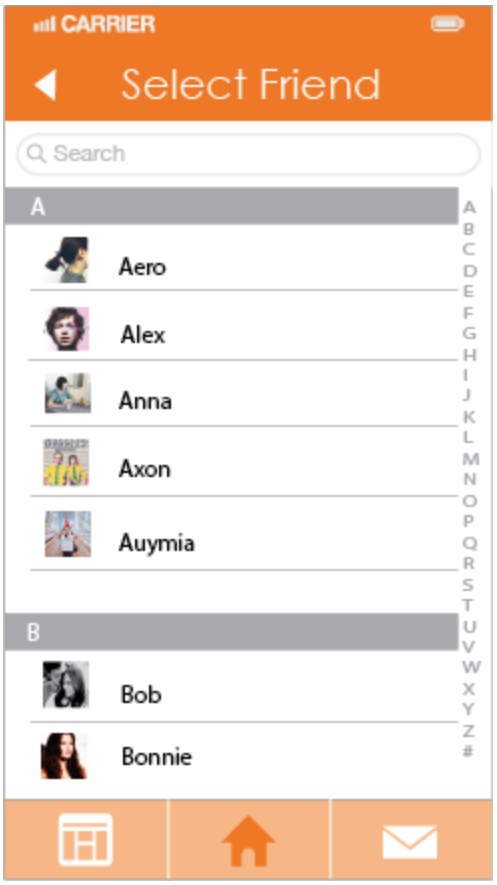
We actually went and created a fully annotated diagram of the app, depicting all the actions you can take on the next page. But in summary, the app is very simple: it provides a Facebook log-in, and allows you to send a Thankyou to a friend from the main page, and read public and private Thankyou's sent to you, thus enabling full-duplex communication. You can also "smiley" any Thankyou you can see to further spread positivity. We hope for this to make it easier to thank people, and to show people how thankful everyone around them is.

Screenshots and Storyboards

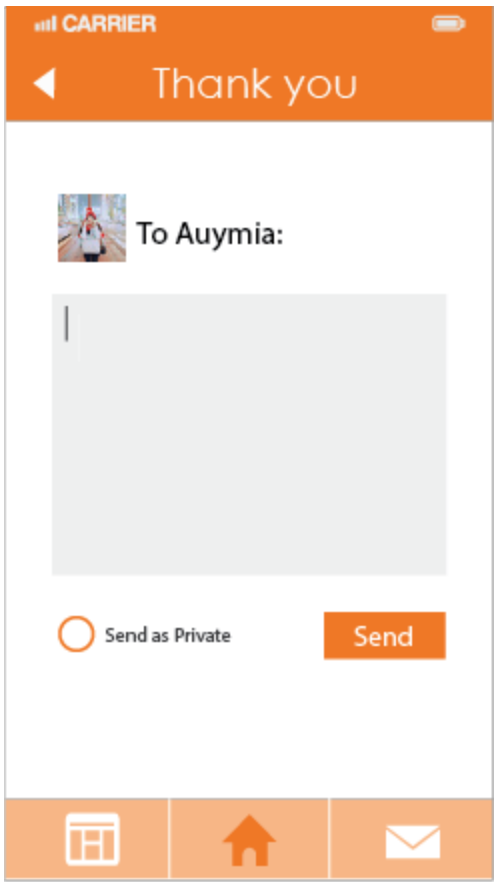
Flow #1: Sending a Thank You to a friend

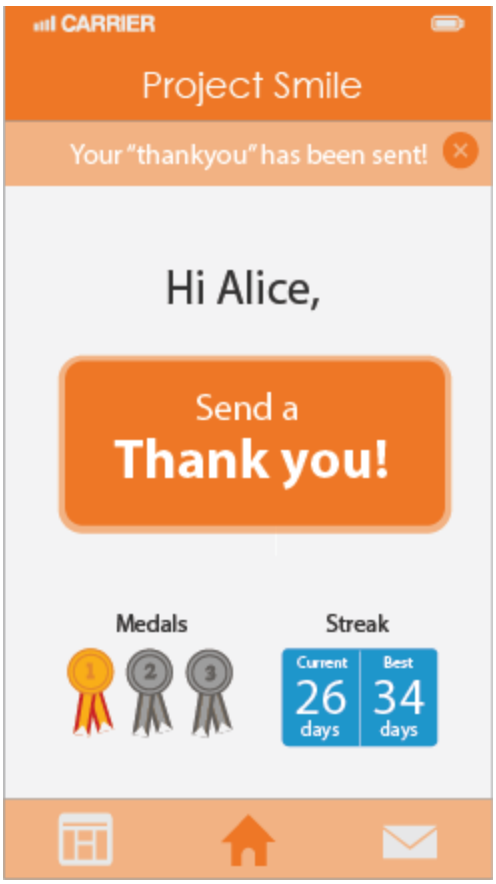


This is “Home”, the home page.
1. Hint (at the top of the page): appears the first time the app is opened to remind users of the motivation for this app and provide instructions. Users can close it the hint so it does not reappear again.
2. Orange box (Send a Thank you!): this is the button users tap to begin the process of sending a thank you to their friend.



This is the next step in the process of sending a Thank You.
After user has pressed the “Send a Thank you!” button on the previous page, they are taken to this page to choose the recipient of their Thank You.
1. White arrow: allows user to return to the home page.
2. Search bar: type a name to search for the friend.
3. Press the bar of one friend to go to the next page.



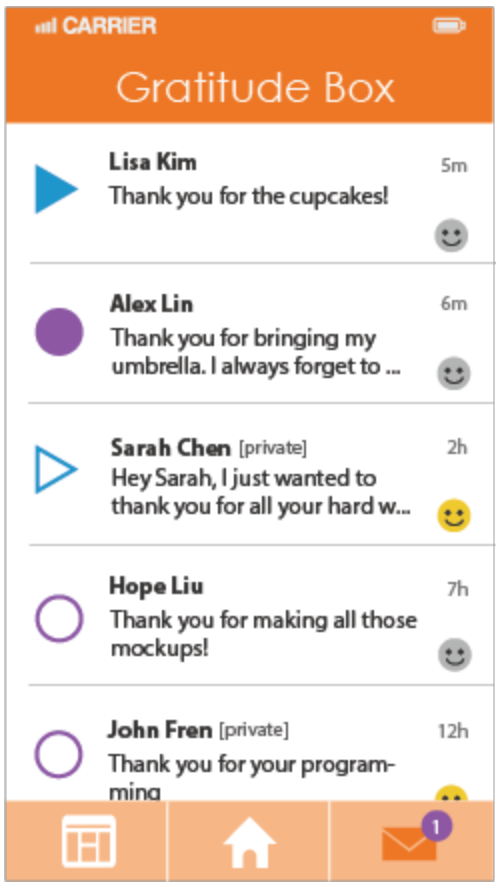


This is the third step in sending a Thank You. After selecting the friend, users now compose their message.
1. Triangle icon: takes users back to the "select friends" page.
2. Users type their message in grey text box.
3. "Send as Private": users can select this option so that their message can only be seen by the selected friend and will not appear publicly in the "Gratitude Corner".
5. Send: press it to send the message to the friend.

This is the final step in sending a Thank You where the user is taken back to the home page and a popup appears to confirm that the message has been sent successfully.

From here, users can easily send another Thank You to someone else.

Flow #2: Viewing Sent and Received Thank Yous in the Gratitude Box



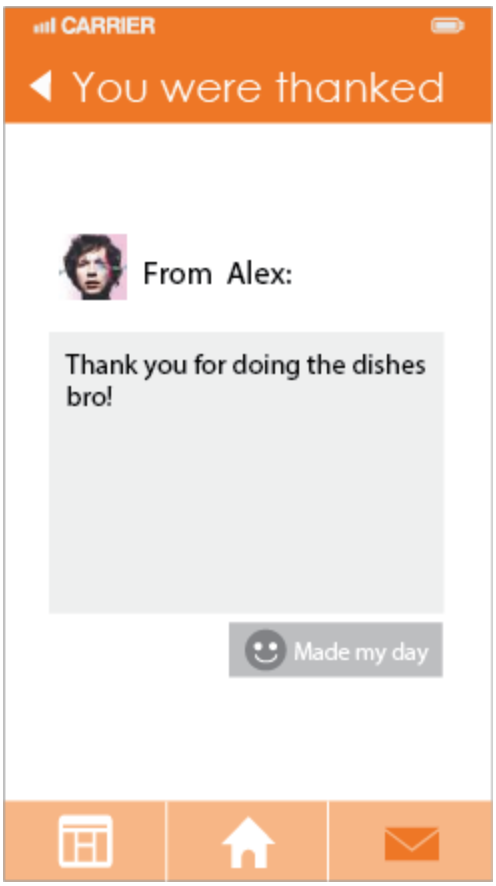
This is the Gratitude Box which shows the Thank Yous that the user has received and sent. Users tap the Thank You to view it.

1. A solid Blue Triangle indicates that this is a Thank You the user has sent to Lisa Kim but Lisa hasn't read it yet.

2. A hollow Blue Triangle indicates that this is a Thank You the user has sent to Sarah Chen and that Sarah has opened and read the Thank You.

3. A solid Purple Circle indicates that the user has received a Thank You from Alex Lin but hasn't opened it yet.

4. A hollow Purple Circle indicates that the user received a Thank You from Hope Liu anc has already read it.



This page shows the user the full "Thank You" message that they have received from their friend.

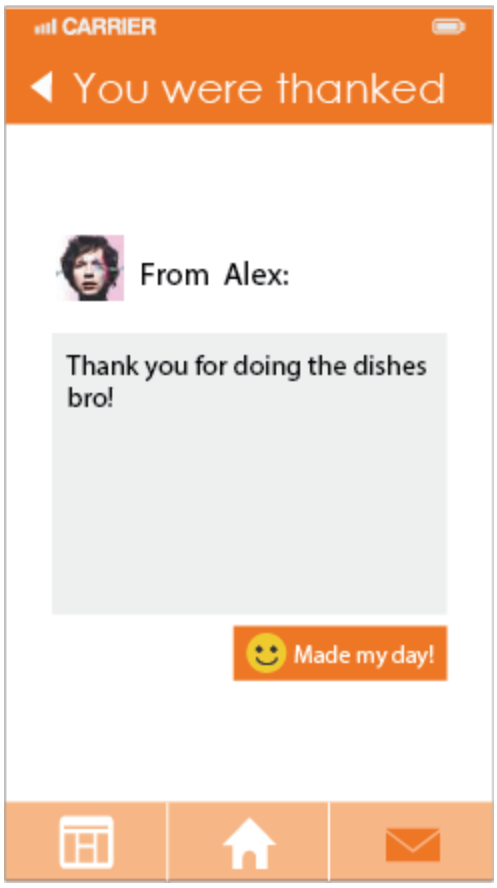
1. Triangle Icon: takes users back to their Gratitude Box

2. "Made My Day" button: users can tap this tc indicate that they "like" the Thank You and send positive feedback to the sender.

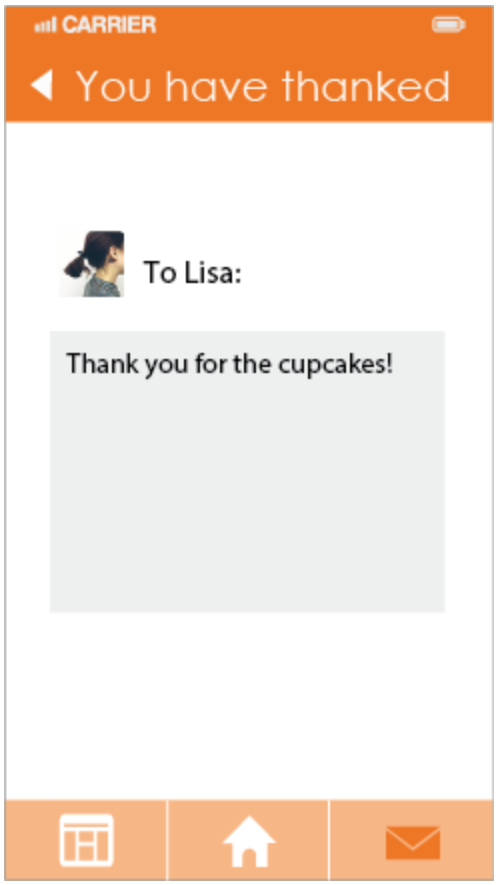
4. The yellow Smiley face indicates that the user has “liked” the Thank You they received or that the recipient has “liked” the Thank You the user sent.

5. A grey Smiley face indicates that no one has liked the Thank You yet.

6. Users can tap the grey Smiley face directly to “like” the Thank You. The smiley face then turns yellow after tapping.



This page shows the message page after user press “made my day!”.
The “Make my day!” button turns from grey to colorful.

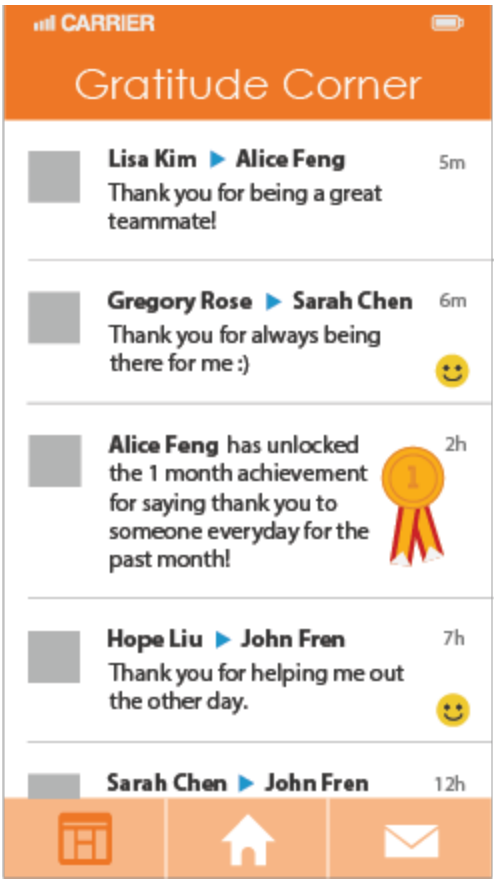


This page shows the user the full Thank You message that they have sent to their friend.

1. Triangle Icon: takes users back to their Gratitude Box

Flow #3: Gratitude Corner

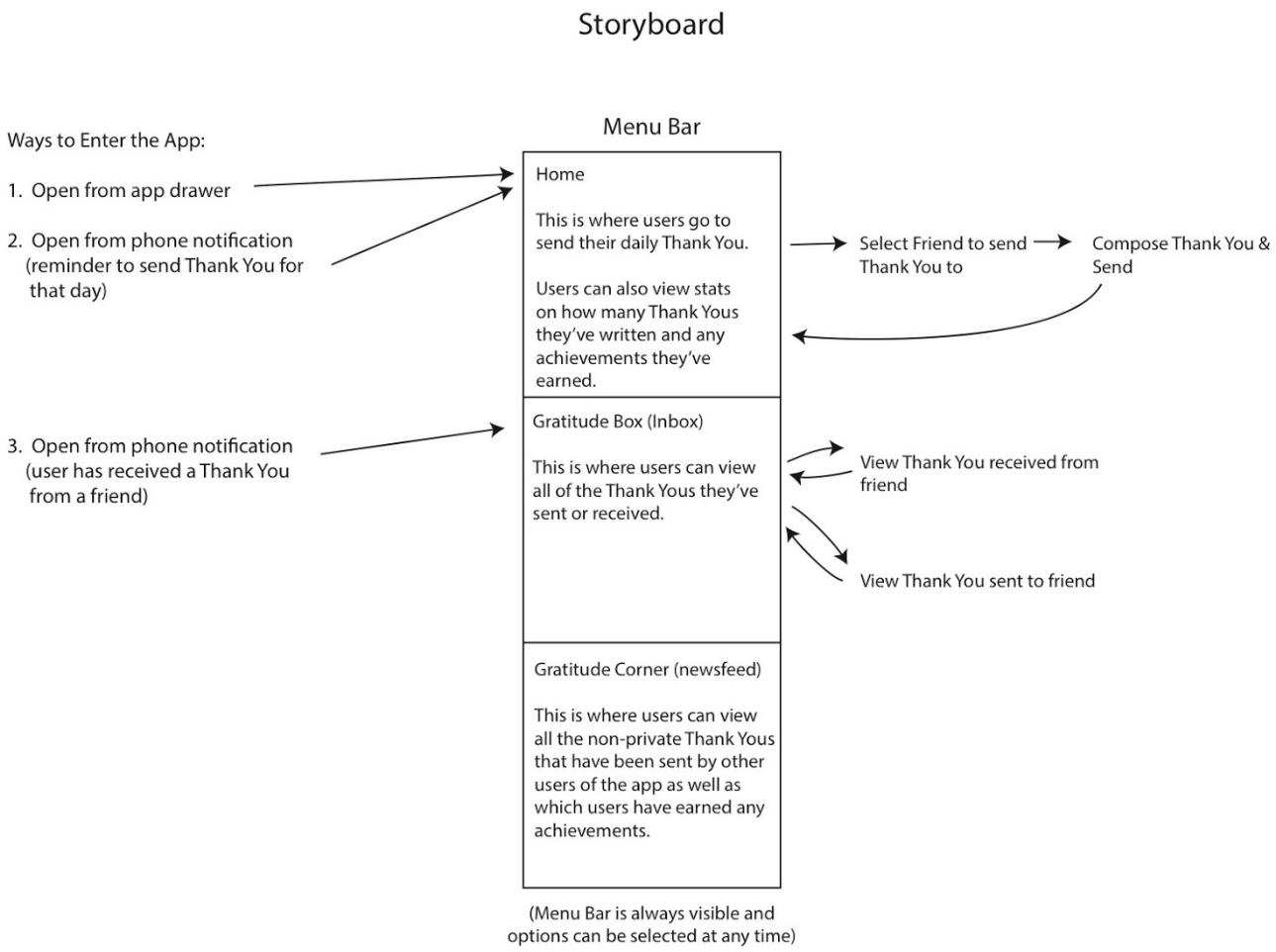
Where users can view the Thank Yous being sent by their friends who use this app as well as any achievements their friends have earned for consistently sending Thank Yous to others



This page shows all of public messages of the user's friends.

1. In the first box, the grey square is the sender's profile. And the first line means Lisa Kim send to Alice Feng. And "5m" means 5 minutes ago. If there is a smile face behind text, it means the receiver reply the sender.
2. The medal is same with the homepage's medals. If a user could send "Thank yous" continuously one month, he could get a medal and let it show in the gratitude corner.

Final Storyboard



Iteration & User Testing

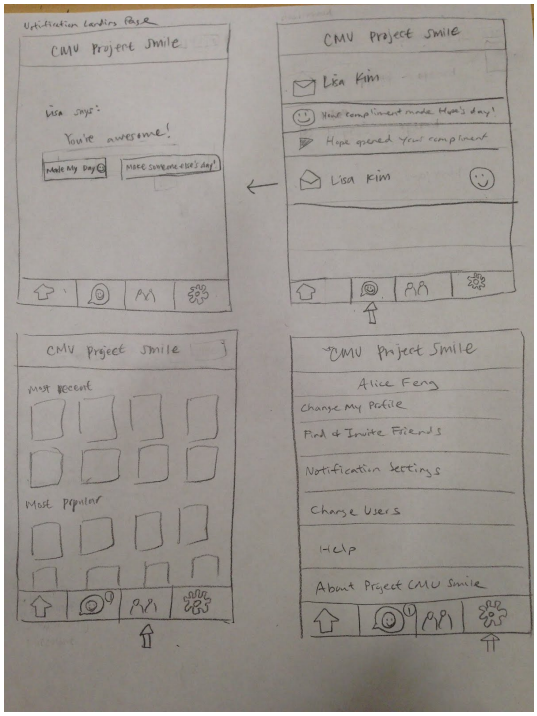
Iteration 1:

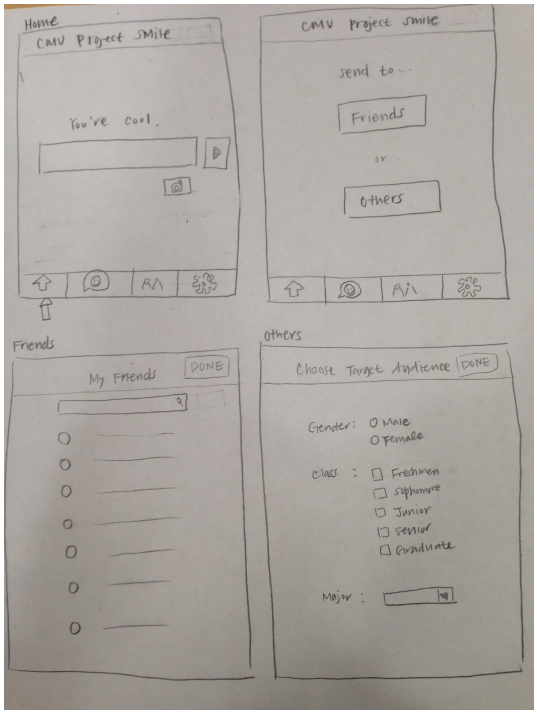
Our initial idea was to create a webapp that shows a random anonymous compliment from its database, submitted by fellow CMU students and then offers users the chance to submit their own. Users can also click a button to say a compliment "made my day", and the original poster gets notified.

We then decided to change our project from making a website to making a mobile app. We thought that an app would better suit the functionality of this project as it uses a rather simple concept, and mobile apps are better for these sorts of quick, simple actions. We could also leverage the features of a mobile app to remind users to continue to use our product.

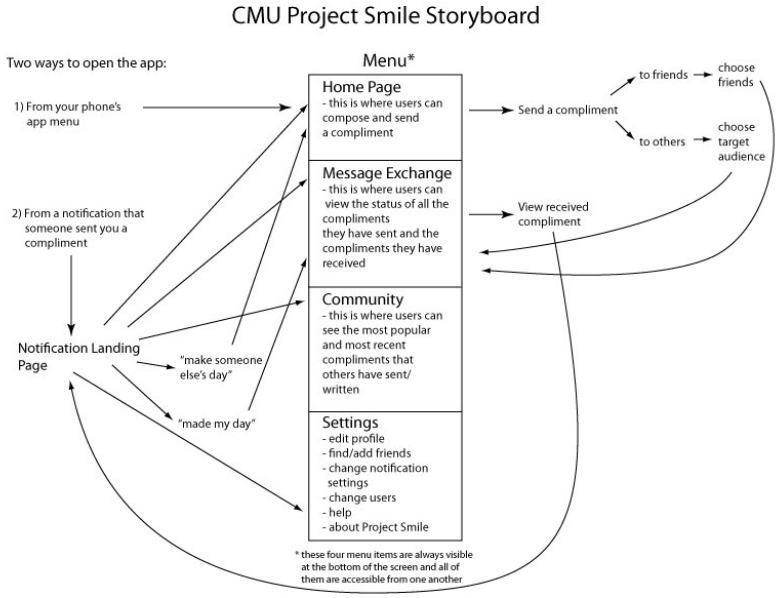
In the first iteration, we designed interfaces for sending and receiving messages between friends or submitting to the public database, as well as seeing exchanges between other people.

Sketches





Storyboard


CMU Project Smile Storyboard
Two ways to open the app:
1) From your phone's app menu
2) From a notification that someone sent you a compliment
Notification Landing Page
"make someone else's day"
"made my day"
Menu*
Home Page
- this is where users can compose and send a compliment
Message Exchange
- this is where users can view the status of all the compliments they have sent and the compliments they have received
Community
- this is where users can see the most popular and most recent compliments that others have sent/ written
Settings
- edit profile
- find/add friends
- change notification settings
- change users
- help
- about Project Smile
* these four menu items are always visible at the bottom of the screen and all of them are accessible from one another
Send a compliment
to friends
choose friends
to others
choose target audience
View received compliment

Mockups

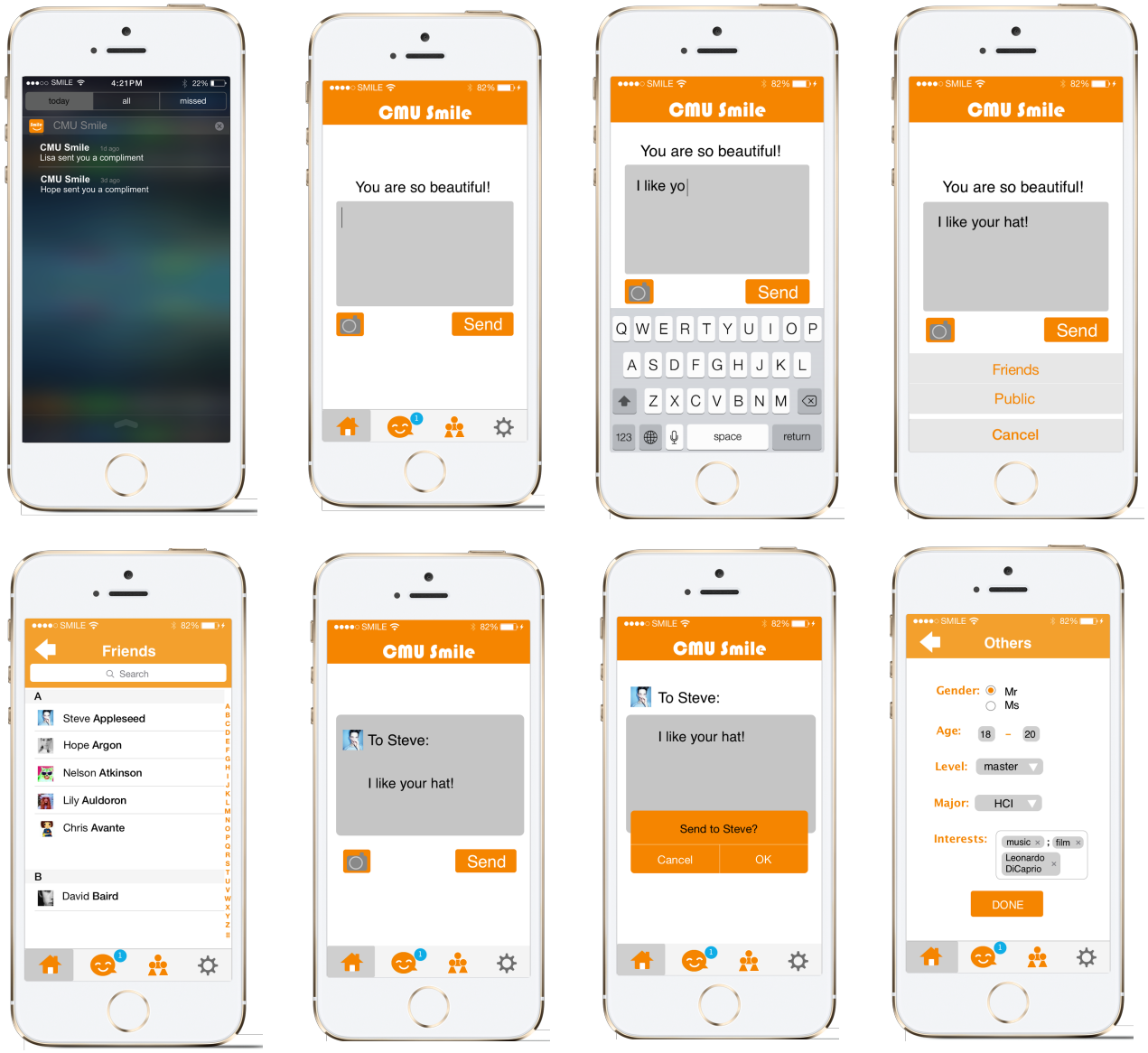
CMU Smile
You are so beautiful!
Send
CMU Smile
Send to
Friends
Or
Others
CMU Smile
Others
Gender:
Mr
Ms
Age:
18
~
20
Level:
master
Major:
HCI
Hobby:
music ; film ;
Leonardo DiCaprio
CMU Smile
Lily:
You are a special girl.
I like your smile.
Made my day!
Reply
Made my day!

CMU Smile
Search
Send to Lucy
2min ago
David reply you
1h ago
Receive from Lily
1d ago
Send to David
1d ago
4:21 PM
today
all
missed
CMU Smile
CMU Smile
Lisa sent you a compliment
CMU Smile
Hope sent you a compliment

Iteration 2:

In this iteration, we tried to include details and all the screens we need for the app.

Mockups

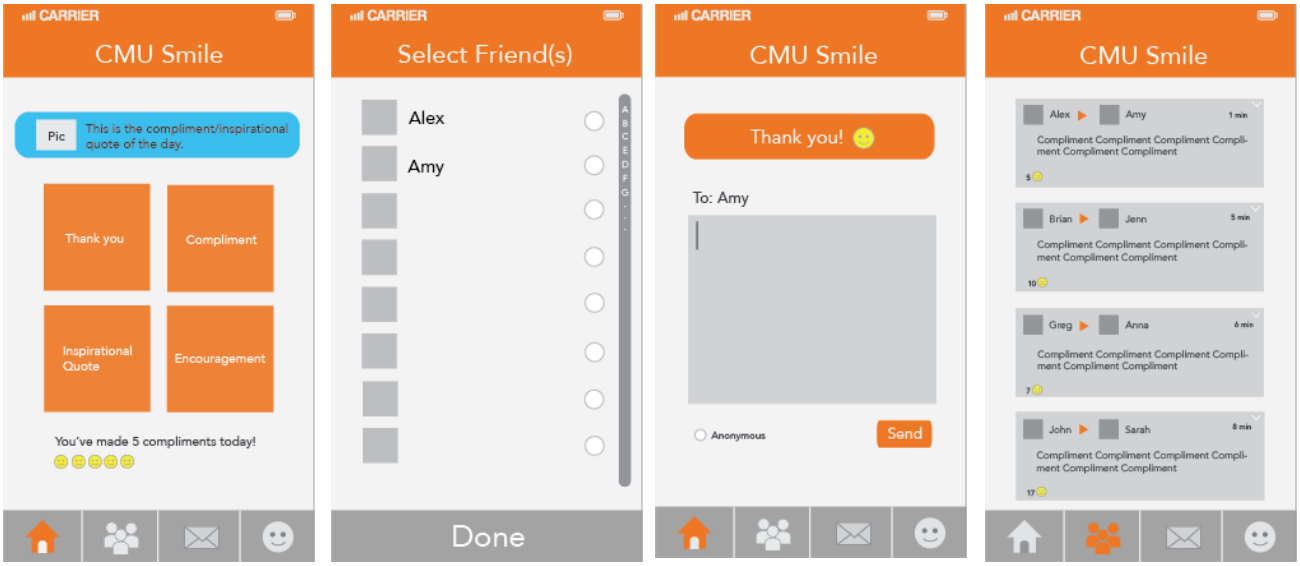


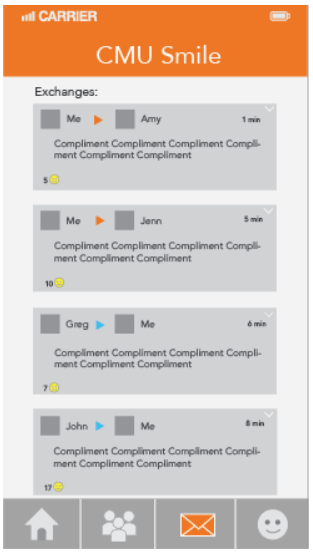
SMILE
82%
CMU Smile
Lily:
You are a special girl.
I like your smile.
Made my day!
Reply
Lily:
You are a special girl.
I like your smile.
Make other's day!
Reply
To Lily:
Reply
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123
space
return
Recent Compliments
Lily Lin 2 mins ago
2Reply 5
Thank you for your courage!
Jacky 5 mins ago
1Reply 2
Everyday is a new day. And you, Jessica, make everyday so meaningful!
Hot Compliments
Nina 2 hours ago
30Reply 50
Please believe you are special.
Damon 10 hours ago
12Reply 30
I like your hair. I like your eyes. I like your work. And I like your choice.

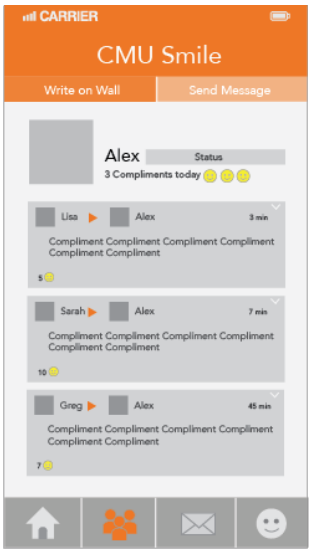
Iteration 3:

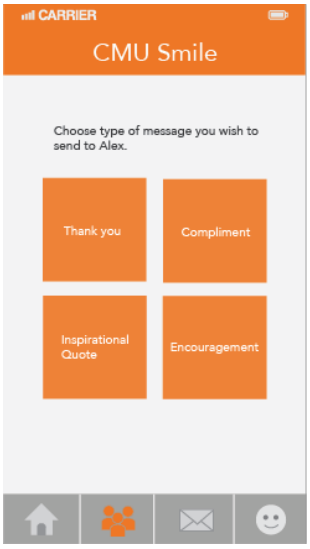
The first two iterations focused on giving and receiving compliments which could be quite open-ended, but after user feedback, we modified our approach to make the type of messages users could send more specific. We thus shifted to a 4-choice approach: “Thank you”, “Compliment”, “Inspirational quote”, and “Encouragement.” We also added profile pages as well as smiley faces showing the number of messages users sent out that day. We thought this would encourage people to send more messages and give them the feeling of accomplishment by visualizing how much positivity they have spread.

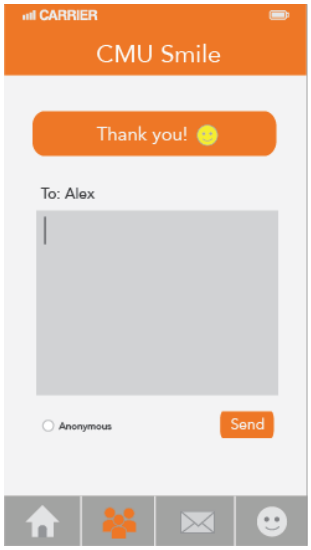
Mockups

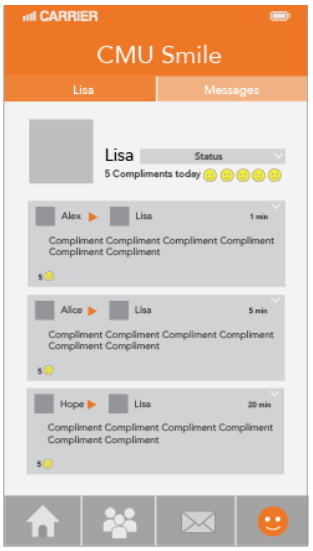


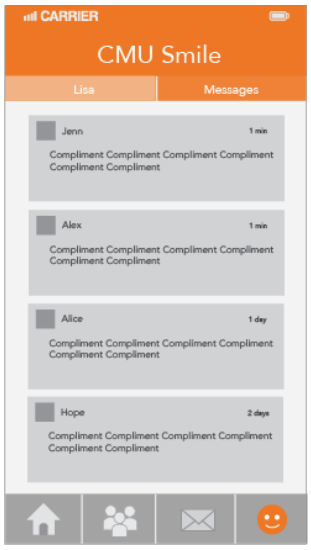

CARRIER
CMU Smile
Exchanges:
Me Amy 1 min
Compliment Compliment Compliment Compliment Compliment Compliment
5
Me Jenn 5 min
Compliment Compliment Compliment Compliment Compliment Compliment
10
Greg Me 6 min
Compliment Compliment Compliment Compliment Compliment Compliment
7
John Me 8 min
Compliment Compliment Compliment Compliment Compliment Compliment
17


CARRIER
CMU Smile
Write on Wall
Send Message
Alex
Status
3 Compliments today
Lisa Alex 3 min
Compliment Compliment Compliment Compliment Compliment Compliment
5
Sarah Alex 7 min
Compliment Compliment Compliment Compliment Compliment Compliment
10
Greg Alex 45 min
Compliment Compliment Compliment Compliment Compliment Compliment
7


CARRIER
CMU Smile
Choose type of message you wish to send to Alex.
Thank you
Compliment
Inspirational Quote
Encouragement


CARRIER
CMU Smile
Thank you!
To: Alex
Anonymous
Send

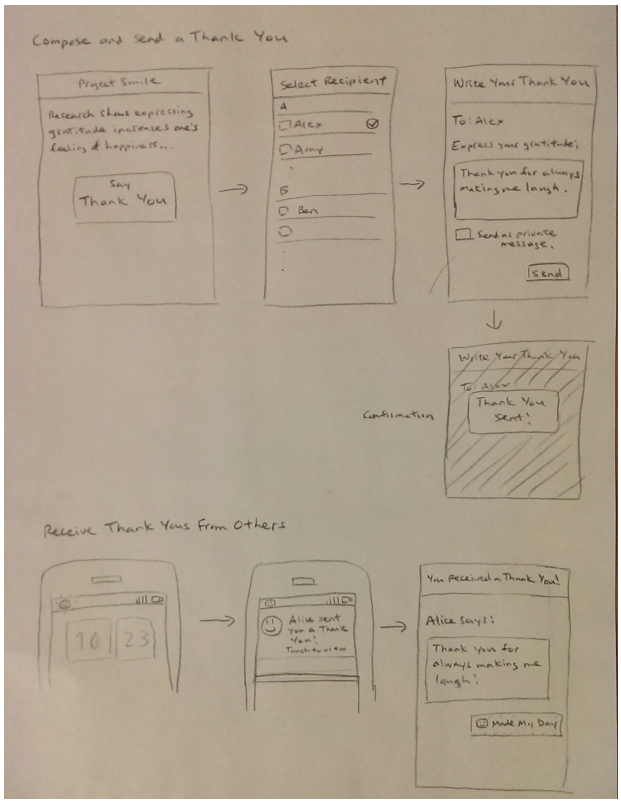

CARRIER
CMU Smile
Lisa
Messages
Lisa
Status
5 Compliments today
Alex Lisa 1 min
Compliment Compliment Compliment Compliment Compliment Compliment
5
Alice Lisa 5 min
Compliment Compliment Compliment Compliment Compliment Compliment
5
Hope Lisa 20 min
Compliment Compliment Compliment Compliment Compliment Compliment
5

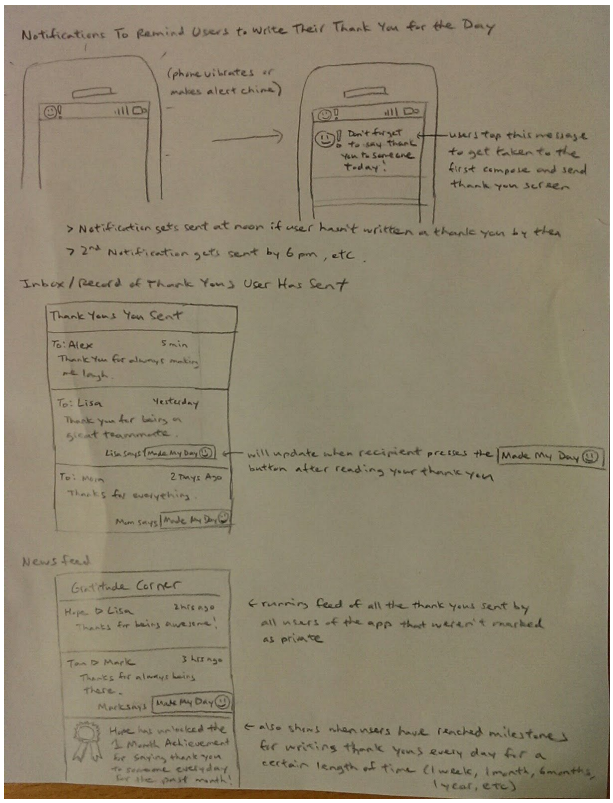

CARRIER
CMU Smile
Lisa
Messages
Jenn 1 min
Compliment Compliment Compliment Compliment Compliment Compliment
Alex 1 min
Compliment Compliment Compliment Compliment Compliment Compliment
Alice 1 day
Compliment Compliment Compliment Compliment Compliment Compliment
Hope 2 days
Compliment Compliment Compliment Compliment Compliment Compliment

Iteration 4:

We then decided to focus less on sending and receiving messages, and more on encouraging positive behaviors by expressing gratitude to others on a regular basis. We reduced the number of features by getting rid of profile pages and focused more on rewarding people when they have sent thank yous to others. By doing so, we eliminated possible confusion as well as repetitive or unnecessary features.

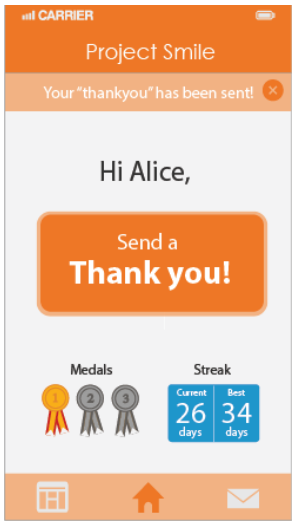
Sketches

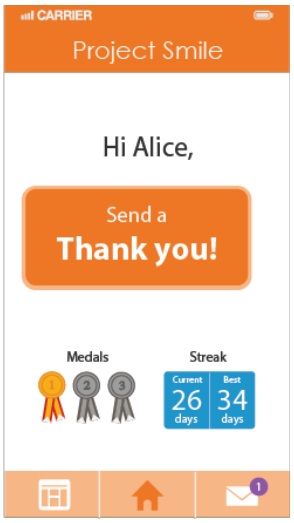


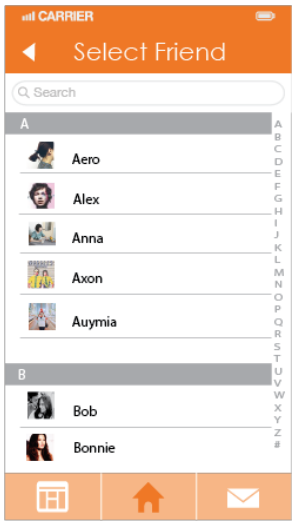


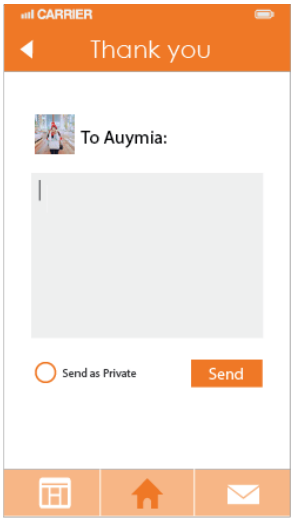
Mockups

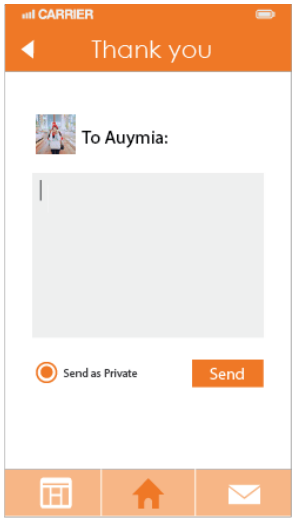
CARRIER
Project
Smile
Login with Facebook

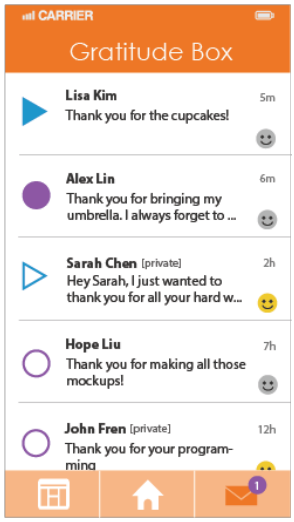

CARRIER
Project Smile
Your "thankyou" has been sent!
Hi Alice,
Send a
Thank you!
Medals
Streak
Current
26
days
Best
34
days

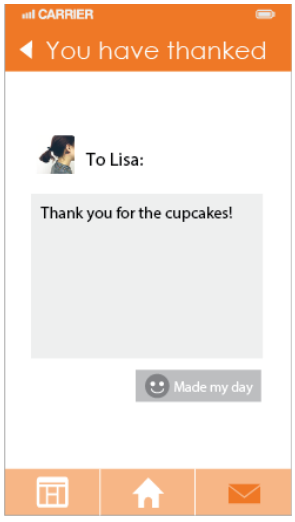

CARRIER
Project Smile
Hi Alice,
Send a
Thank you!
Medals
Streak
Current
26
days
Best
34
days

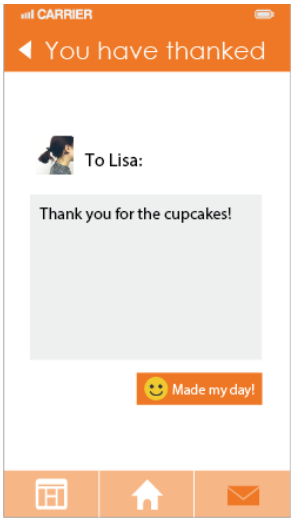

CARRIER
Select Friend
Search
A
Aero
Alex
Anna
Axon
Auymia
B
Bob
Bonnie

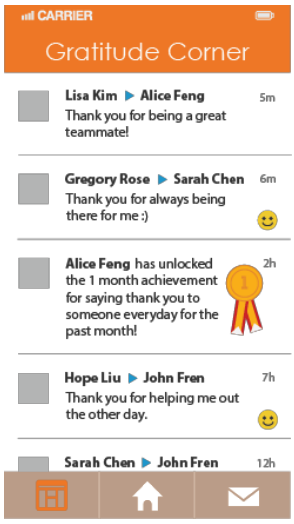

CARRIER
Thank you
To Auymia:
Send as Private
Send

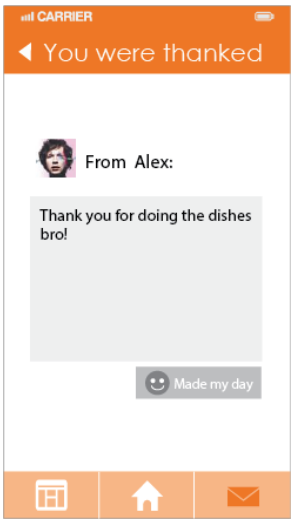

CARRIER
Thank you
To Auymia:
Send as Private
Send

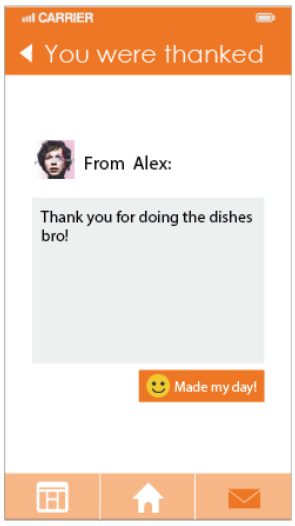

CARRIER
Gratitude Box
Lisa Kim
5m
Thank you for the cupcakes!
Alex Lin
6m
Thank you for bringing my umbrella. I always forget to ...
Sarah Chen [private]
2h
Hey Sarah, I just wanted to thank you for all your hard w...
Hope Liu
7h
Thank you for making all those mockups!
John Fren [private]
12h
Thank you for your program-ming


CARRIER
You have thanked
To Lisa:
Thank you for the cupcakes!
Made my day


CARRIER
You have thanked
To Lisa:
Thank you for the cupcakes!
Made my day!


CARRIER
Gratitude Corner
Lisa Kim ▶ Alice Feng
5m
Thank you for being a great teammate!
Gregory Rose ▶ Sarah Chen
6m
Thank you for always being there for me :)
Alice Feng has unlocked the 1 month achievement for saying thank you to someone everyday for the past month!
2h
Hope Liu ▶ John Fren
7h
Thank you for helping me out the other day.
Sarah Chen ▶ John Fren
12h


CARRIER
You were thanked
From Alex:
Thank you for doing the dishes bro!
Made my day


CARRIER
You were thanked
From Alex:
Thank you for doing the dishes bro!
Made my day!

User Testing

Survey

We conducted a survey to measure people's current behavior as well as their sensitivity to privacy. We found that people say something nice to others fairly often as shown in the graph below. We also learned that there was a decent amount of interest in receiving such positivity and in seeing the compliments other people received.

The results of the survey helped us learn what people were interested in seeing. Based on the results, we decided to add the newsfeed page and give people an option to hide or delete messages.

CMU Smile

CMU Smile is an app that lets you call out your friends for doing good things, and see other people do the same. The app lets you post inspirational quotes, send thank yous, acknowledgments, compliments, encouragements to your friends. You can also view your friends' profiles which contain all of these positive messages they received from others.

*必填

How often do you thank, acknowledge, share inspirational quotes, compliment or encourage others (e.g. telling someone they'll do well on an exam they've been stressing over)? *

1 2 3 4 5

never ○ ○ ○ ○ ○ every day

How interested are you in reading thank yous, being acknowledged, receiving compliments or encouragement from others? *

1 2 3 4 5

Not at all ○ ○ ○ ○ ○ Very interested

How interested are you in seeing whether your friends have given others thank yous, acknowledgements, compliments or encouragement? *

1 2 3 4 5

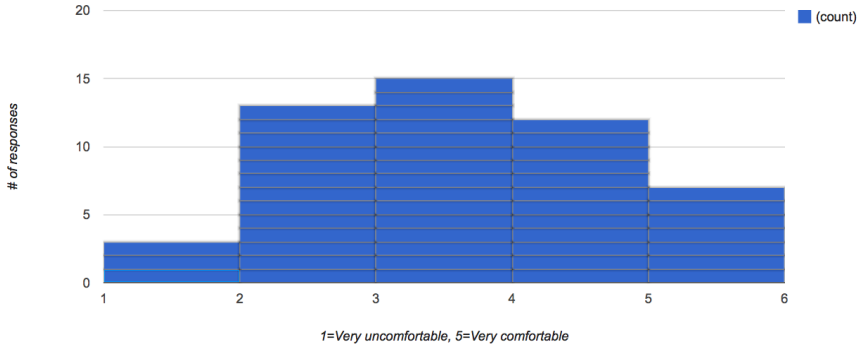
Not at all ○ ○ ○ ○ ○ Very interested

How comfortable are you with having others see the thank yous, acknowledgements, compliments and encouragement you have received? *

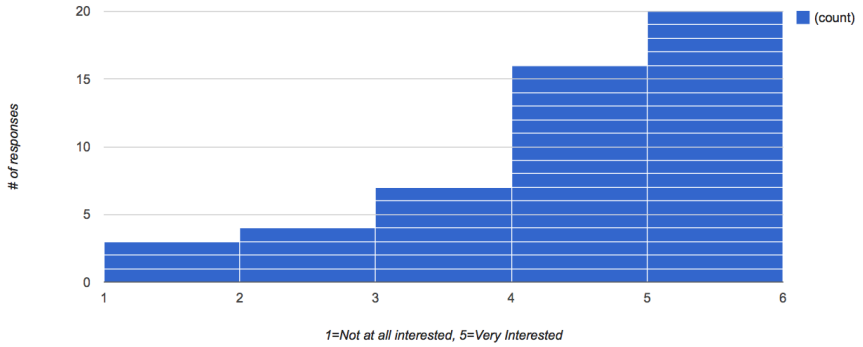
1 2 3 4 5

Very Uncomfortable ○ ○ ○ ○ ○ Very comfortable

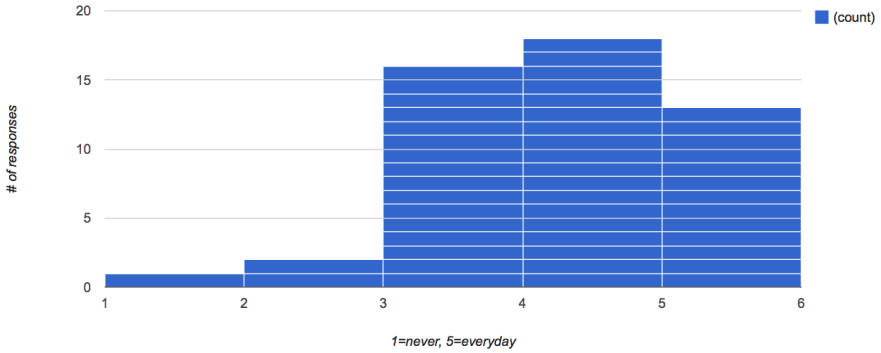
How comfortable are you with having others see the thank yous, acknowledgements, compliments and encouragement you have received?



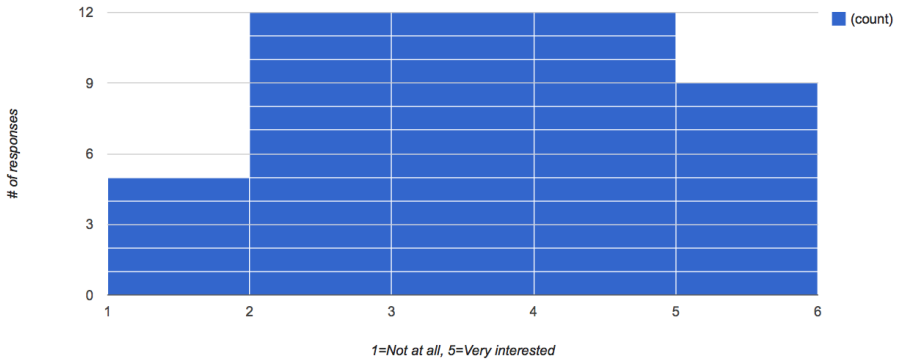
How interested are you in reading thank yous, being acknowledged, receiving compliments or encouragement from others?



How often do you thank, acknowledge, share inspirational quotes, compliment or encourage others?



How interested are you in seeing whether your friends have given others thank yous, acknowledgements, compliments or encouragement?



User Testing after Iteration 2

To get some initial feedback on our app design, we conducted paper prototyping with three users. As this was the first iteration, we were missing many screens and had not fully developed all the interactions between screens. This user testing helped us think through interactions and the ordering of screens, as well as pay attention to small details that we had missed.

Some changes to be made included adding a confirmation page that comes after sending a message, changing the ordering of the target page and compliment page, and making the arrows for to and from clear. One user commented that the random compliment is confusing. In later versions of our mockups, we made these changes suggested by users, and eliminated the random compliment.

User Testing after Iteration 3

We tested six users using flinto of our third mockups. Users were confused about how to use the app and suggested that we provide a little instruction on how to use the app on the home screen. Other suggestions included adding a line about how giving positivity makes them happier, and quantifying how much positivity users have given so they could challenge themselves. One user mentioned that they like the idea, but would forget to use the app without reminders. Another feedback we got was that there seems to be a lot of overlap between profile pages, inbox, and community exchange, so maybe merging the inbox and user's own profile page could solve this problem.

The key was to simplify our app to reduce confusion caused by too many functions. We eliminated profile pages, and made all the changes that users suggested in iteration 4 except one. We wanted to give users push notifications when they have not sent a message that day, but we were not able to implement it.

User Testing after Iteration 4

We tested three people with our final version. One user suggested that we change the medals to some sort of competition, as ranking people with their scores would motivate users more. Also, some users were confused about what the streak and the medals were about. We thought this could be picked up quickly once a user actually used our app.

Future Work

Some of the other features we would implement if we had more time would be finding ways to allow users to customize the look of their Thank You. By this we mean that we would allow users to select different font types, font sizes and colors so they could have more creative control. Currently users can only type plain text Thank Yous. It would be nice to allow users to add emoticons or send photos that they could write their Thank Yous on so they could express their gratitude more creatively. As mentioned before, we could also add push notification feature in the future.

Another possible feature we might implement would be too add a competitive aspect to using this app. For example, users would compete against one another to see who could send the most Thank Yous over a fixed time period. This might motivate users to use our app more often and retain their interest.

Links

Try it out yourself at http://projectsmilecmu.appspot.com!

Pitch: https://www.youtube.com/watch?v=NkoURvDGwSI
Walkthrough: https://www.youtube.com/watch?v=J3kOTpP8GDU

Video files are also included with this handin.