



Team

- **Harrison Kwik (Westie)** - designer, writer, tester
- **Kimberly Lum (Boston Terrier)** - designer, writer, tester
- **Yujia Liang (Golden Retriever)** - designer, writer, tester

Problem and Solution Overview

Puppies require a lot of time and effort! For most puppy owners, raising a new pup can become overwhelming at times. Adolescent dogs require a lot of oversight, and it is easy to lose track of things, especially when an owner relies on their memory. Although owners can record information manually, tools such as written schedules are difficult to change dynamically and are inconvenient. Our design, Bork, helps ease this process by minimizing the analysis and tracking an owner has to do. Bork automatically detects health and wellness information through a specialized dog collar and relays that data to an owner's phone application. The Bork app is able to inform and notify owners based on the analysis it does on the data it receives, ultimately streamlining the puppy management process.



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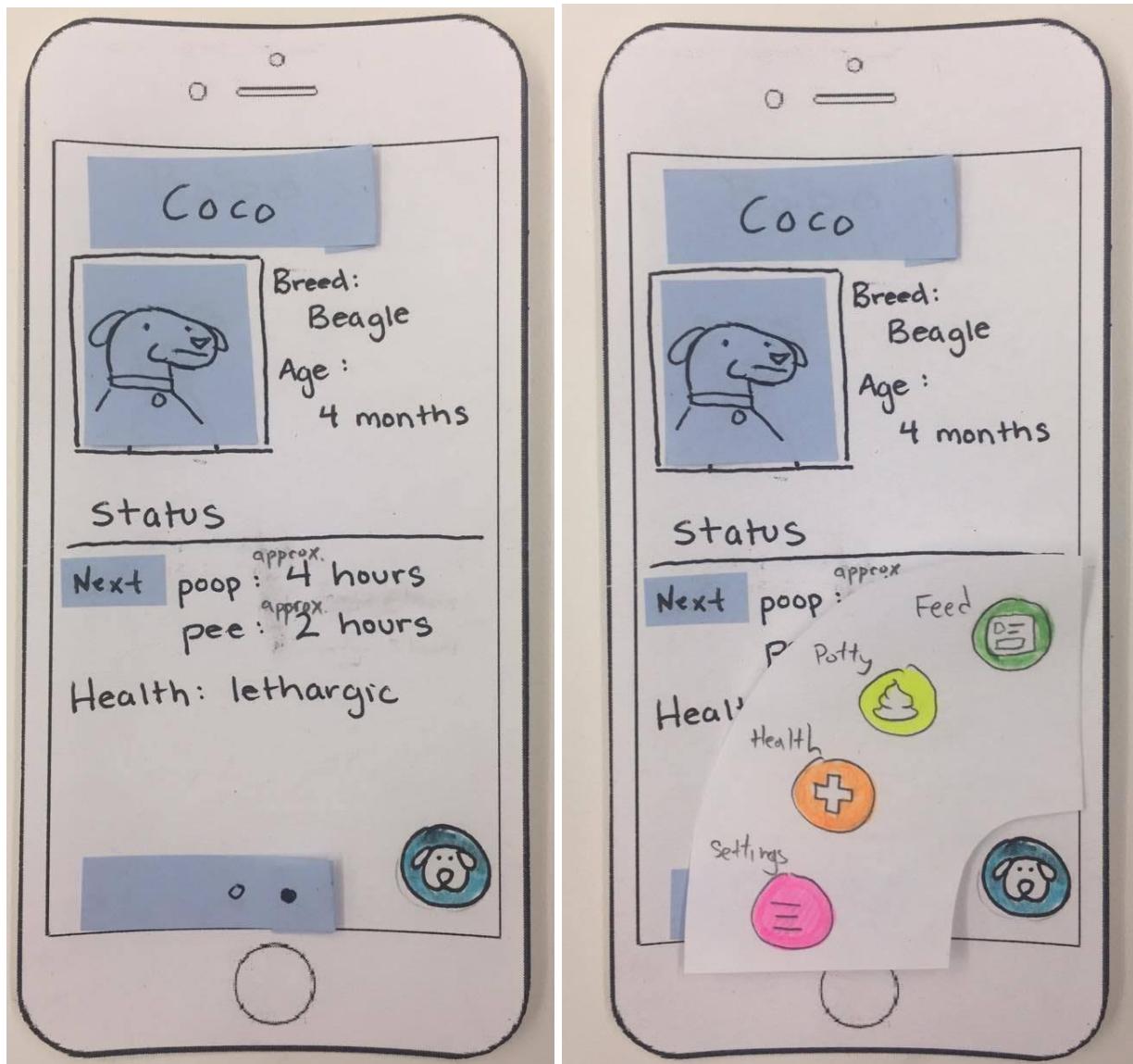


Initial Paper Prototype

Our paper prototype shows off our phone application, allowing our users to walk through our potty and health tasks.



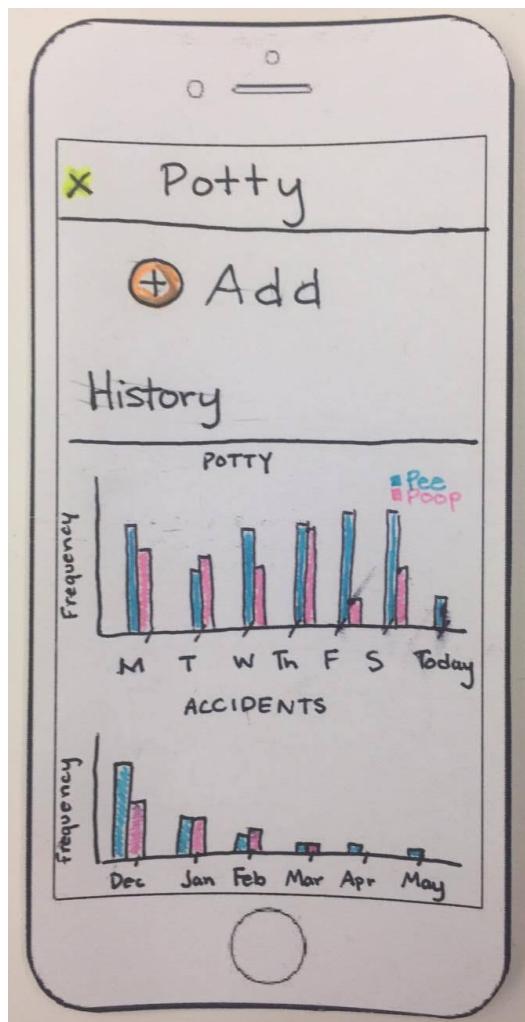
Critical Feature: Puppy Profiles. Main Page



The main page of the app, where a user can choose (by swiping left and right) which puppy profile they want to record information for. After clicking the puppy menu icon, the user is prompted to choose a task.



Task 1: Potty Schedule



The main page of the potty tracker, where the user can add a potty event and see past potty data.





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Screen 1: the screen for adding a potty task.

Screen 2: when the user selects the location input box, there are previous locations they've used for convenience; they can also type in a new one.

Screen 3: the user can also select type and size for the event, and indicate if it was an accident. If at any point the user clicks the yellow X, they will be returned to screen 1. They are also returned to screen 1 after the potty event is added (click the orange Add button).





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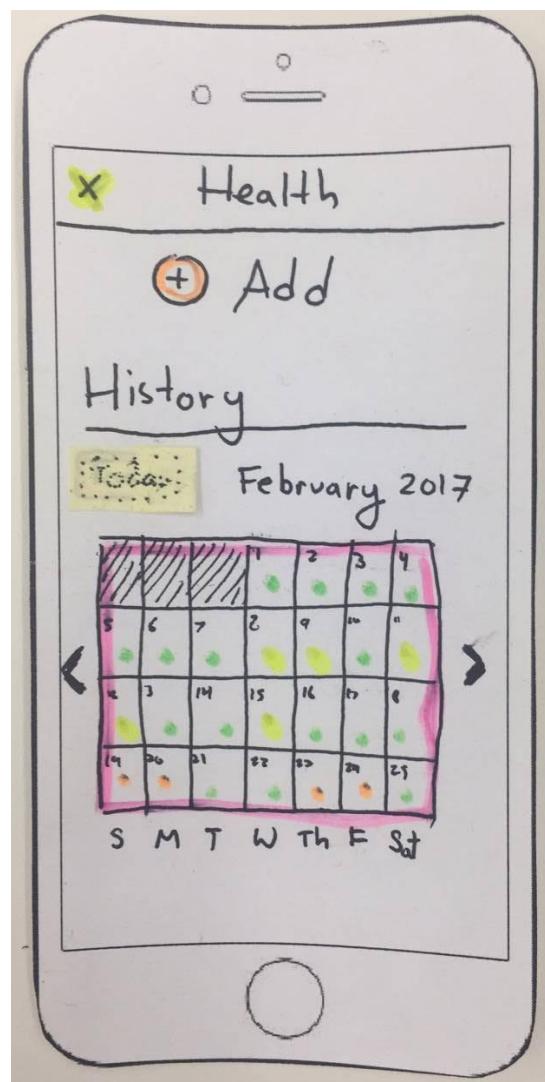
Screen 4: from the frequency screen, the user can view a more detailed graph, and select the granularity of the view.

Screen 5: users can select a day and potty type to view specific potty information about that day.

Screen 6: once a day and type is selected, the user can see how many times that day their puppy went to the bathroom.

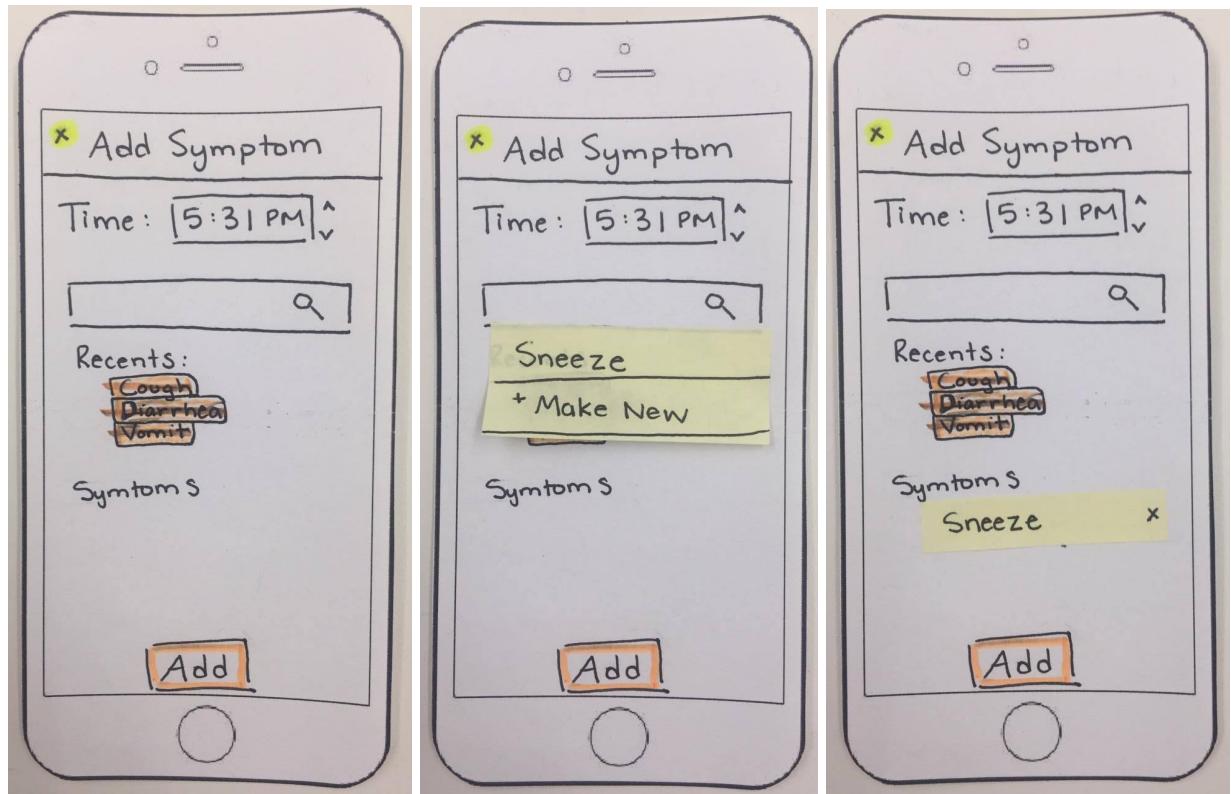


Task 2: Health Tracking



The main page of the health tracker, where the user can add a symptom and see past symptom data.



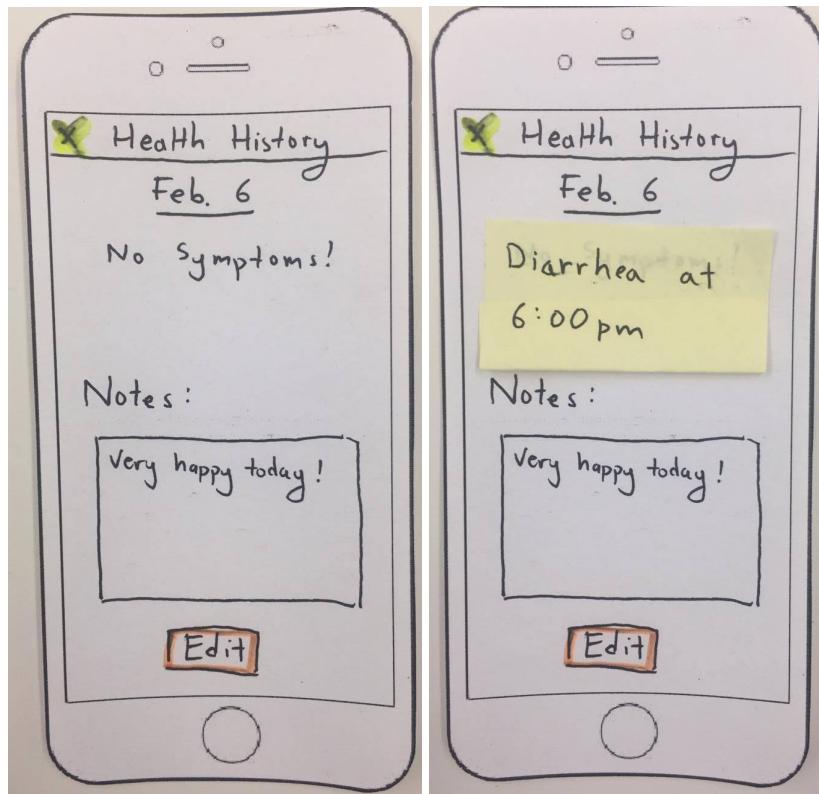


Screen 1: from the symptom adding screen, the user can adjust the time, input a symptom manually (if the collar does not pick it up) or select a recent symptom.

Screen 2: as the user, suggestions pop up, and they also have the option to make a new symptom.

Screen 3: after the symptom is selected, it is listed. Adding (or cancelling) returns the user to the main health screen.





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Screen 4: when a user selects a day on the calendar from the main health page, a summary history page comes up detailing the symptoms and other health notes the user's input.

Screen 5: an example of a summary page with a symptom.



Testing Process

We had six individuals perform heuristic evaluation on our prototype, as well as three others perform usability tests.

Heuristic Evaluation

We had member from two other teams evaluate our initial paper prototype. We performed this evaluation in the CSE lounge, and each test took roughly 15 minutes. This provided us with initial feedback on our application.

Usability Testing

For each usability test, Harrison was the computer, Kim was the facilitator, and Yujia was the observer. We gave each participant a brief description of our project, and the purpose of our testing. We then provided each participant with the tasks they were to complete, and took notes on places they hesitated, performed an unexpected action, or expressed confusion. At the end, we debriefed our participants and answered questions they had, allowing time for feedback from them.

We performed our first usability test on George, a CSE student at UW, in the ACM lounge. George is very familiar with how app interfaces should work and flow, and the lounge was quiet and had plenty of table space to work on. It was challenging to avoid giving feedback to George, and sometimes to keep up with George. He caught on to the process very quickly, often moving faster than Harrison could keep up. Afterwards, we noticed that a few of our tasks could be done in two different ways, so for future tests we split these former tasks into two parts, to test both routes.

We performed our second usability test on Marsha, another CSE student at UW, in lab 002. Marsha is also familiar with interfaces, and the lab gave us a neutral setting to meet at. As before, we introduced our test and expectations, but this time provided the tasks in written form.

We performed our final usability test on Ted, a music performance major at UW, at Suzzallo cafe. This provided us a relatively quiet and open space. We chose Ted because he's part of our target audience; his family owns a puppy. Suzzallo was a comfortable meeting place for Ted, with table space.



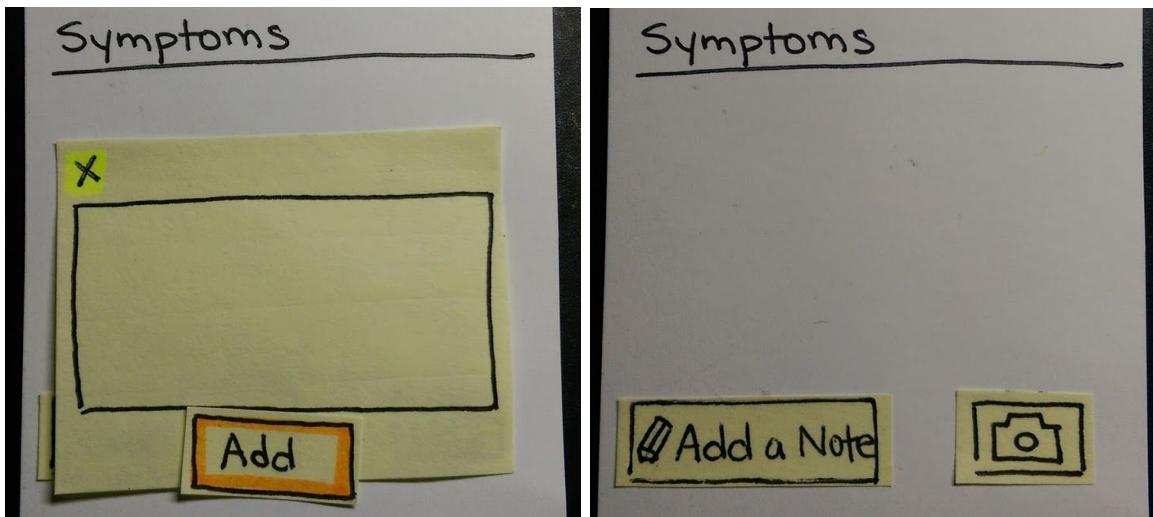
Testing Results

Results from Heuristic Evaluation

1. Missing Notes Option: H4 (Consistency), Severity 3

We added a notes section when viewing a symptom, but we didn't provide a notes section when adding a symptom.

Revision:

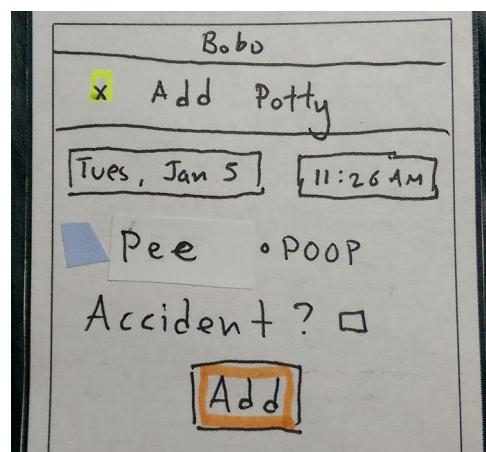


We added an option to include a note from the "Add Symptom" screen.

2. Premature Addition: H5 (Error Prevention), Severity 4

If a user does not fill out any of the details of a potty event, they can still add it.

Revision:

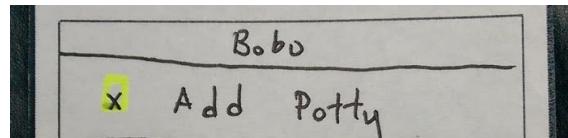


We modified the Add Potty screen to be pre-filled based on a previous menu, making it impossible to add a blank event.

3. Ambiguous Profile: H6 (Recognition vs. Recall), Severity 4

Once a user selects a dog profile to add potty/health information for, any identifying information about the dog disappears on subsequent pages. The user must remember which dog profile they're editing, which is a burden.

Revision:

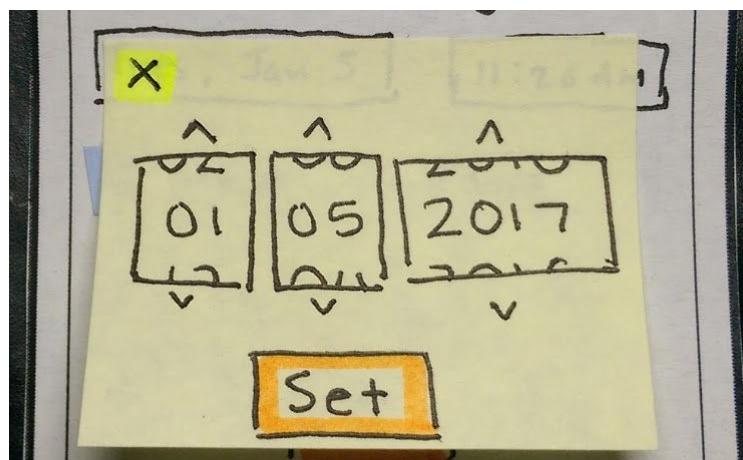
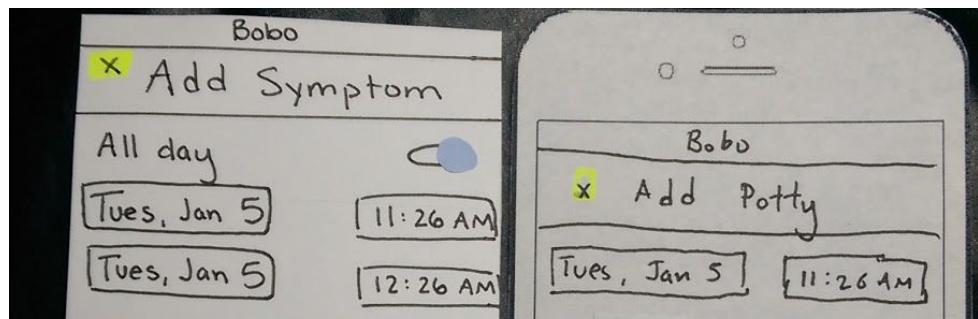


For every screen after a dog profile is selected, the dog's name is displayed at the top.

4. No Date Option: H2 (System and the Real World), Severity 4

Potty and health have no option for selecting what day it is, the app assumes it's the current day.

Revision:



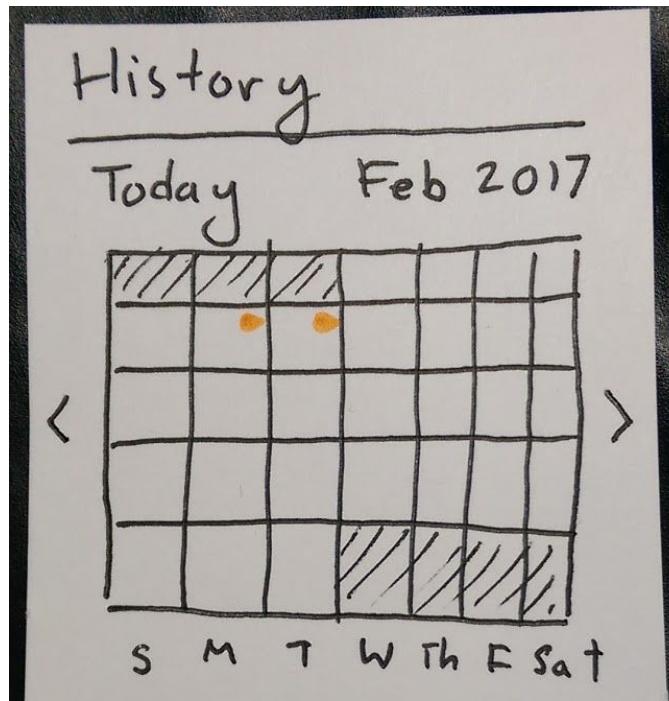
For adding and editing potty and health events, we added an option to choose what date the potty/symptom event occurred on.



5. Ambiguous Colors: H4 (Consistency), Severity 2

Our health calendar had color coding but no key or legend.

Revision:

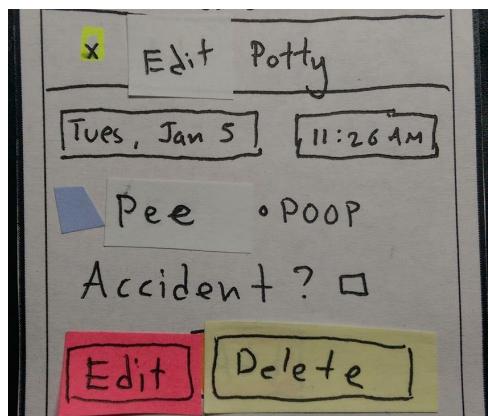


After looking at other apps, we decided to remove our color-coded dots, and leave symptom-less days blank, marking only days with symptoms.

6. No Delete, Edit Option: H3 (Control), Severity 4

Users cannot edit or delete potty events, and cannot delete health events.

Revision:



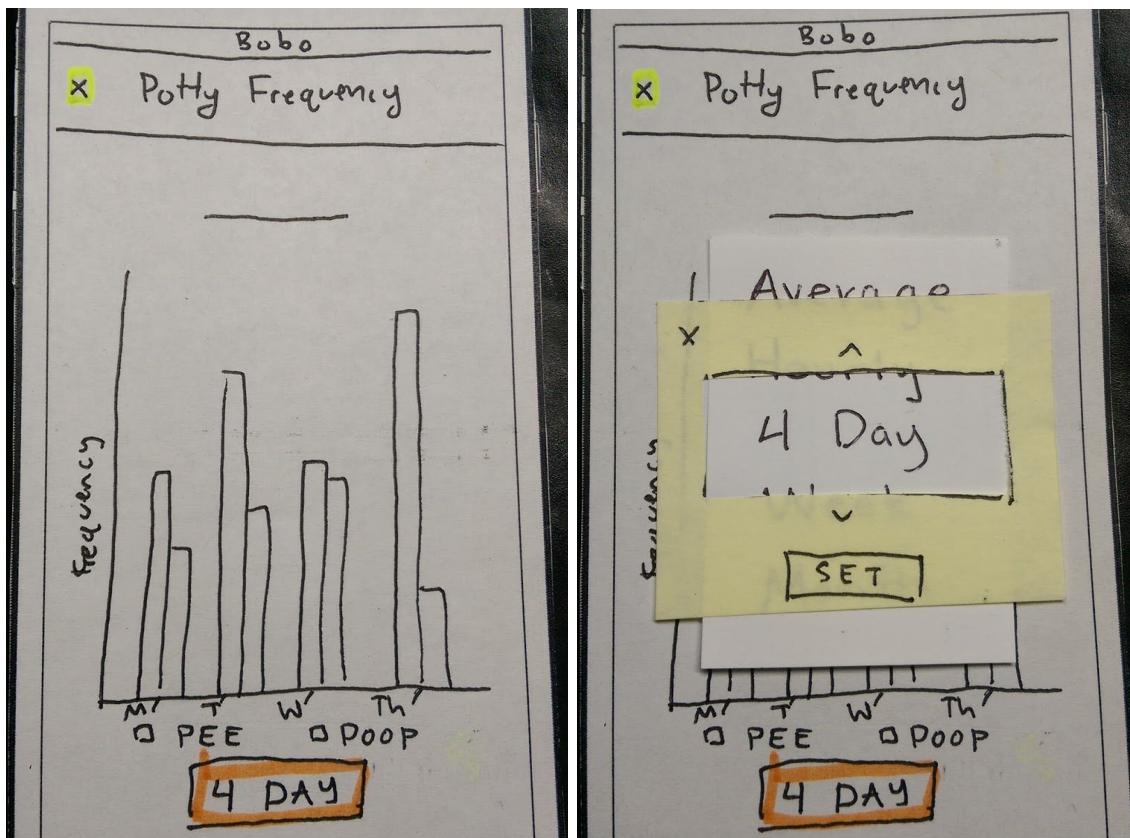
For logged potty and health events, we added edit and delete buttons.



7. Unintuitive Range: H6 (Recognition vs. Recall), Severity 2

It is unclear how to change the viewable range for graphs.

Revision:



We made it more clear that the user could select the range x-axis scale, and provided a scrolling menu of range options.



Results from Usability Test

1. Misunderstanding of Potty Data: Severity 1

When asked to view the times during the day the puppy is most likely to pee, George navigated to the event feed as an indicator of when the puppy should be let out and interpreted the past event history as a schedule.

Revision: we renamed the event feed to “event history” to make it clearer that the items listed are past events.



2. Health Calendar, Potty Graphs as a Buttons: Severity 2

It wasn't apparent from our drawings that the calendar and graphs were pressable. Therefore, George used the feed below the calendar and graphs to navigate events and information instead. He later verbally stated that the fact the app was on paper made it hard to tell what was clickable and what wasn't. Marsha and Ted reiterated this, also demonstrating trouble noticing that these were buttons.

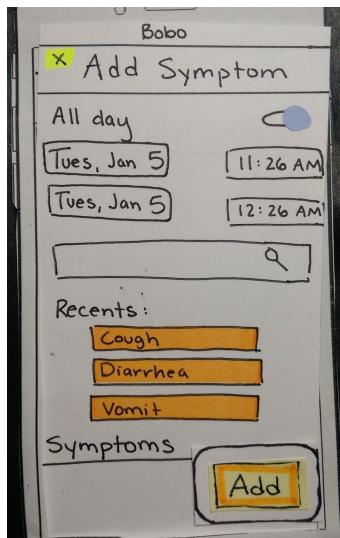
Revision: we added highlighted outlines (like our other buttons) to make it more clear that the graphs and calendar could be tapped.



3. Add Button at Bottom: Severity 1

On scrolling screens, George would tend to press buttons not on the phone “screen” but on the paper peeking out from behind the screen. For especially long screens, he desired a floating “Add” button.

Revision: we temporarily added a floating Add button, and will gauge other participant's reactions to this.



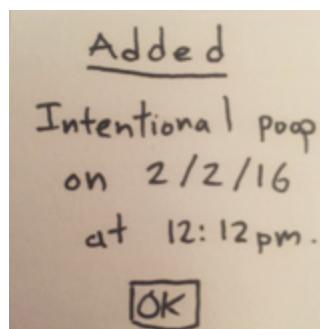
4. Overall Clarity: Positive Incident

George commended the layout of the pages, saying that he felt like a user could figure out and navigate most of the app in five minutes.

5. Entry Error: Severity 3

When adding a potty entry for a pee accident, George initially submitted the entry incorrectly. He did not notice his error at first and likely would not have noticed at all if the prototype had been non-paper.

Revision: we added a brief pop-up that shows up after an addition or edit that shows the user what they just submitted.



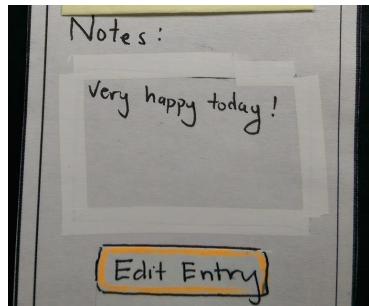
6. Dog Profiles: Positive Incident

George was able to quickly understand that the home page with the dog profiles was swipeable. He had no issues figuring out how to switch between dog profiles on his own.

7. Unclear Edit Button: Severity 2

Marsha thought the edit button on our health entries was just for the notes box and not the whole entry.

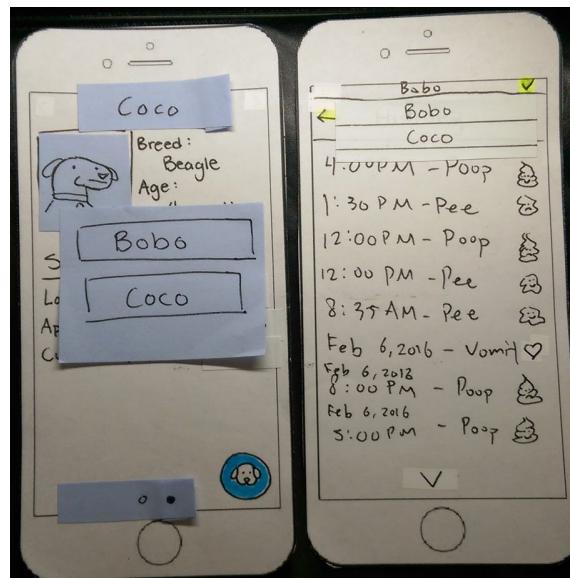
Revision: we clarified the label of our button to read “Edit Entry,” and removed the box around the note, in order to change the idea that it alone was editable.



8. Tedious Profile Switching: Severity 3

By the time George and Marsha had participated in our test, it became clear to us that switching between dog profiles took too much navigation. Ted also expressed confusion about changing dog profiles, attempting to use the dog name and picture to switch profiles.

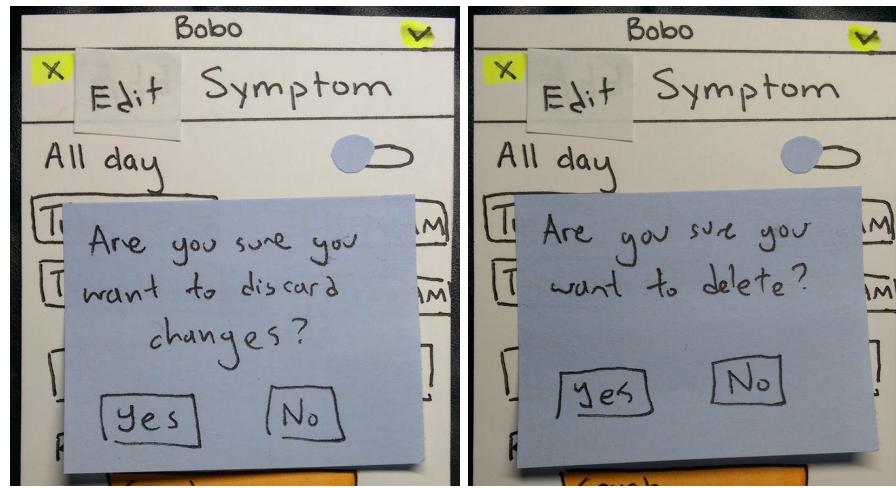
Revision: we added the option to change dog profiles by tapping the name, and also implemented a drop-down from any screen to change profiles.



9. Confirming Edits: Severity 3

Ted misunderstood the wording of our Edit button, assuming that changes would be automatically saved.

Revision: we added confirmation prompts when taking actions such as cancelling or leaving edits, and deleting entries.



Results from Design Critique

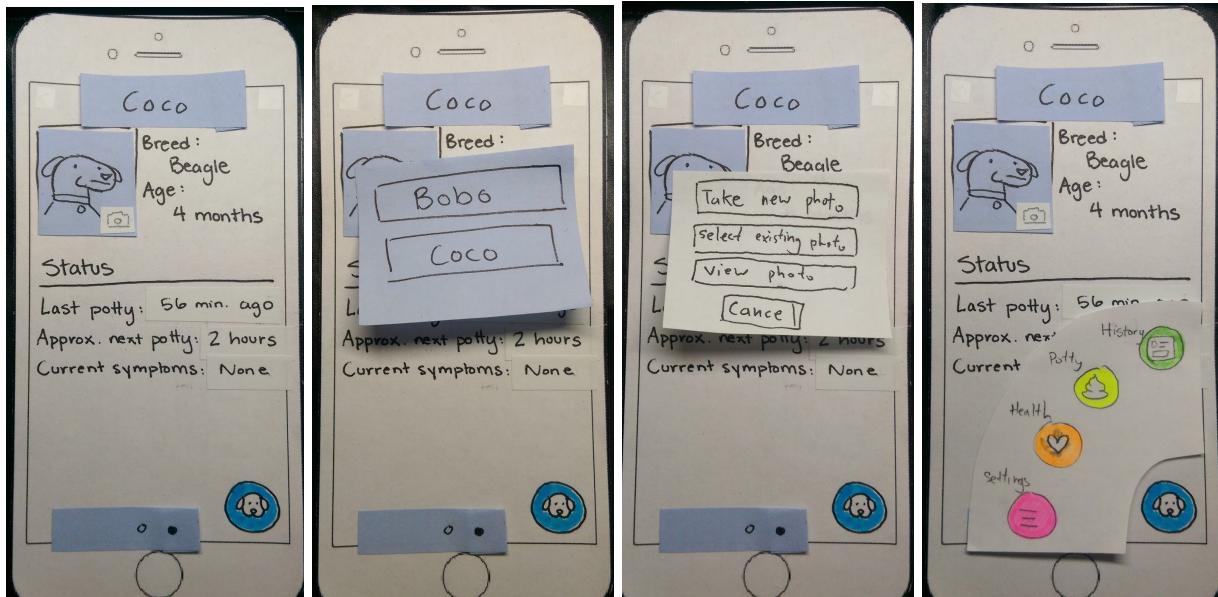
As a result of the critique we received in section, we made minor functionality and aesthetic changes. We changed the potty menu to have accident and intentional options, instead of pee and poop. We also allowed users to color-code their health events themselves. We also removed all mentions of “feed,” converting those labels to “event history” and “history.”



Final Paper Prototype



Critical Features: Home Screen, Feed

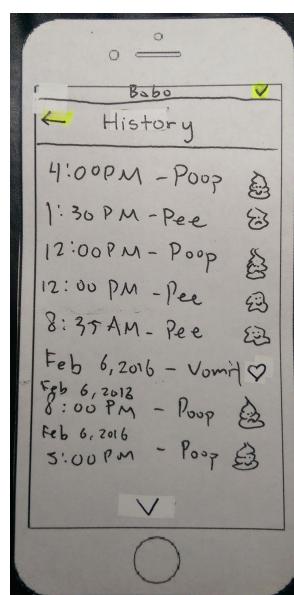


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Screen 1: the main page of the app, where users can edit their puppy profiles and access other tasks.

Screen 2: by tapping the name at the top, the user can select which profile they want. They can also achieve this by swiping.

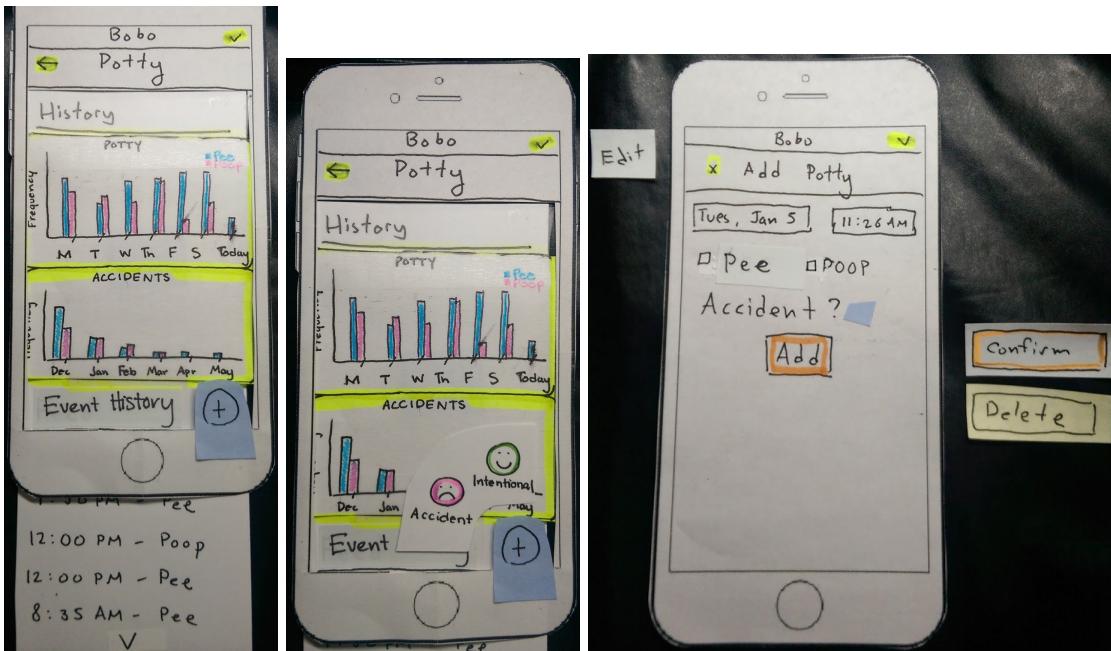
Screen 3: by tapping the edit photo button, users can add or replace their puppy's photo.

Screen 4: tapping the puppy icon brings up a menu of options, including both of our focus tasks.

Screen 5: the consolidated history of potty and health activity.



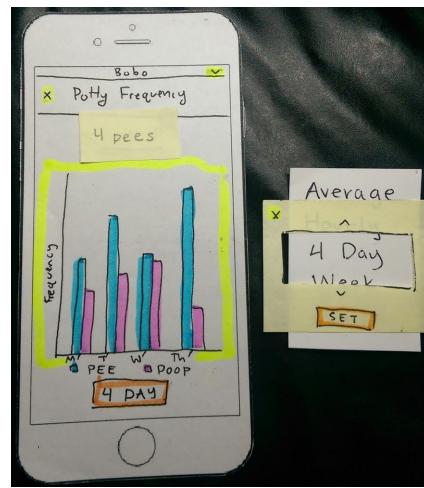
Potty Task



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Screen 1: the main page of our potty screen. Users can view analysis of their potty data using the graphs, recent events, or add an event.

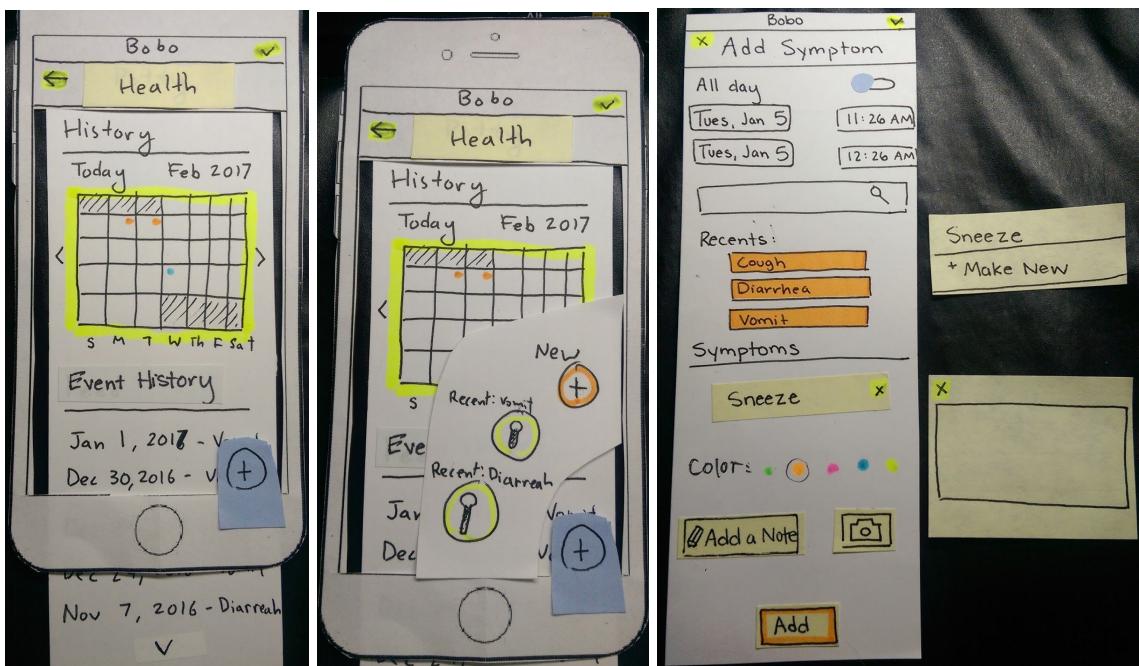
Screen 2: by pressing the add button, users can add an intentional or accidental potty event.

Screen 3: the screen for adding a potty event. A similar editing screen comes up when a user chooses a past potty event, allowing them to confirm changes or delete the event.

Screen 4: users can view statistics regarding past potty events/accidents, choosing the view granularity.



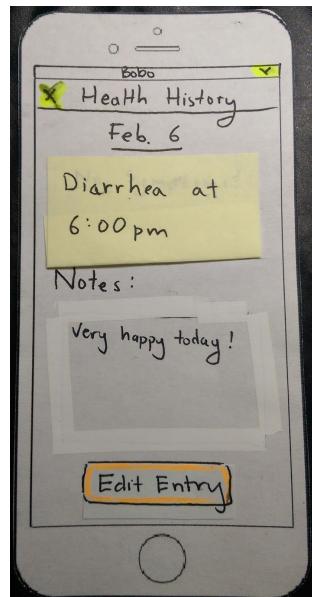
Health Task



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Screen 1: the main page of our health screen. Users can view past events using the calendar or feed.

Screen 2: by pressing the add button, users can add an event or quick-add a recent symptom.

Screen 3: the screen for adding a health event, which users can color-code. A similar screen comes up when a user chooses a past health event, allowing them to confirm changes or delete the event.

Screen 4: selecting a past event brings up a summary of symptoms.



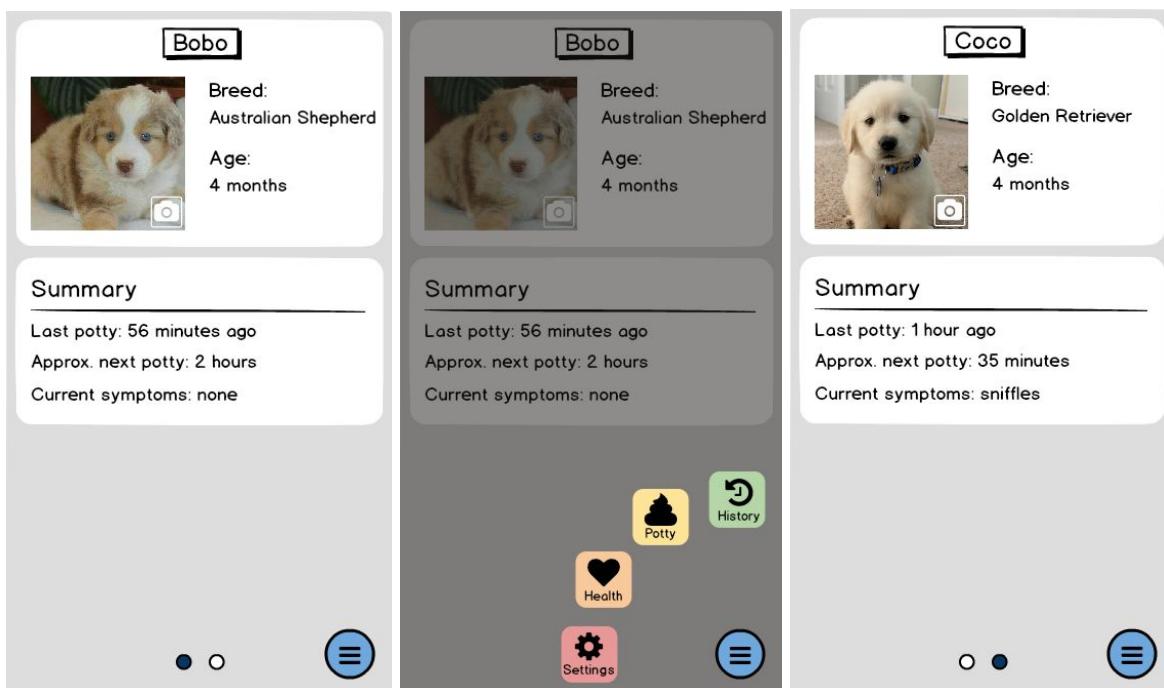
Digital Mockup

Decisions

We decided to only allow people to switch puppy profiles from the main menu, health screen, and potty screen, removing the ability from adding and editing screens. This simplifies the expected behavior when a user switches away from one of these screens. Other than this, we stayed faithful to our paper prototype. Minor changes included moving buttons and icons slightly, to match what we saw in other apps, to make the user experience consistent.

Digital Mockup Overview

Visit <https://invis.io/PGAMEAR2M> to view our interactive digital prototype.



Coco



Breed:
Golden Retriever

Age:
4 months

Summary

Last potty: 1 hour ago
Approx. next potty: 35 minutes
Current symptoms: sniffles

Action Buttons

- [Take new photo](#)
- [Select existing photo](#)
- [View photo](#)
- [Cancel](#)

Bobo

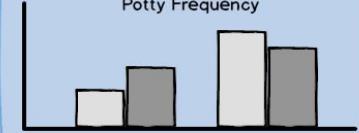
History

Feb 7, 2017	
😊	4:01PM - Poop
😊	1:30PM - Pee
😊	12:00PM - Poop
😊	12:00PM - Pee
😊	8:35AM - Pee
Feb 6, 2017	
❤️	6:00PM - Diarrhea
😊	8:00PM - Poop
😊	5:00PM - Poop
😊	1:20PM - Pee
😊	12:30PM - Pee
😊	9:00AM - Poop
Feb 5, 2017	
😊	7:30PM - Pee
❤️	4:40PM - Cough
😊	1:30PM - Poop
😊	1:30PM - Pee
😊	8:45AM - Poop

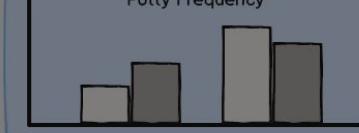
Bobo

Potty

Potty Frequency



Accidents



Event History

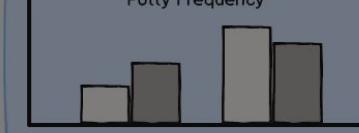
Feb 7, 2017

😊 4:01PM - Poop
😊 1:30PM - Pee
😊 12:00PM - Poop
😊 12:00PM - Pee
😊 8:35AM - Pee

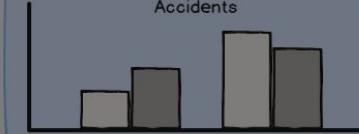
Bobo

Potty

Potty Frequency



Accidents



Event History

Feb 7, 2017

😊 4:01PM - Poop
😊 1:30PM - Pee
😊 12:00PM - Poop
😊 12:00PM - Pee
😊 8:35AM - Pee

 Intended
 Accident




Bobo

< Add Potty

Tues Jan 5 11:26 AM

Summary
Intended pee added for Jan 5 at 11:26am.

Done

Add

Bobo

< Edit Potty

Tues, Feb 7 1:30 PM

Pee Poop
 Accident

Confirm Delete

Bobo

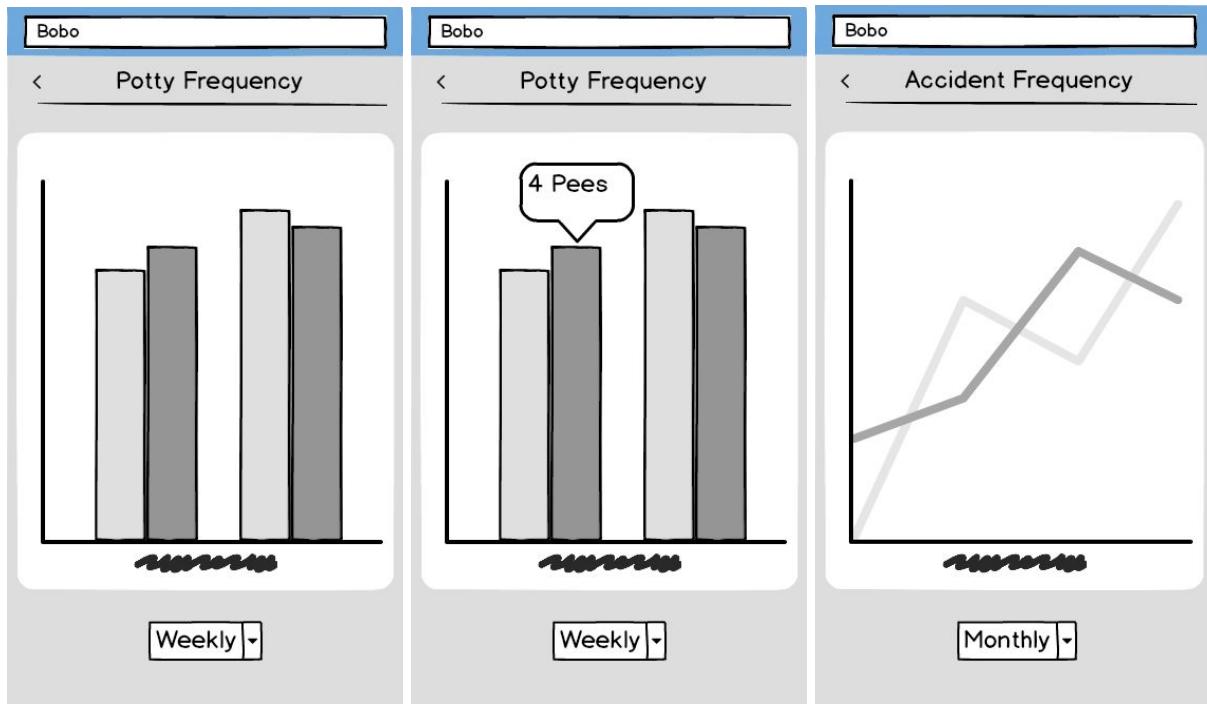
< Edit Potty

Tues Feb 7 1:30 PM

Alert
Are you sure you want to delete this entry?

No Yes

Confirm Delete



Health

S	M	T	W	T	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	1	2	3	4	5
6	7	8	9	10	11	12

Event History

Feb 6, 2017
6:00PM - Diarrhea

Feb 5, 2017
4:40PM - Cough

Jan 1, 2017
All day - Vomit

Dec 30, 2016
2:30AM - Vomit

Dec 25, 2016
4:50PM - Cough

Health

S	M	T	W	T	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	1	2	3	4	5
6	7	8	9	10	11	12

Event History

Feb 6, 2017
6:00PM - Diarrhea

Feb 5, 2017
4:40PM - Cough

Jan 1, 2017
All day - Vomit

Dec 30, 2016
2:30AM - Vomit

Dec 25, 2016
4:50PM - Cough

Add Symptom

All day

Tues, Jan 5 Tues, Jan 5

Recent:

- Cough
- Vomit
- Diarrhea

Symptoms

none!

Color: ● ● ● ● ●

Add

Add Symptom

All day

Tues, Jan 5 Tues, Jan 5

Recent:

- Cough
- Vomit
- Diarrhea

Symptoms

none!

Color: ● ● ● ● ●

Add

Add Symptom

All day

Tues, Jan 5 Tues, Jan 5

Recent:

- Cough
- Vomit
- Diarrhea

Symptoms

Sneeze

none!

Color: ● ● ● ● ●

Add

Bobo

< Add Symptom

All day

Tues, Jan 5 11:26 AM

Tues, Jan 5 12:26 PM

search

Recent:

- Cough
- Vomit
- Diarrhea

Symptoms Edit Note

Sneeze

There was snot...everywhere...

Color: ● ● ● ● ●

Add

Bobo

< Add Symptom

All day

Tues, Jan 5 11:26 AM

Tues, Jan 5 12:26 PM

search

Summary
Sneeze added for Jan 5 from 11:26am to 12:26pm.

Done Diarrhea

Symptoms Edit Note

Sneeze

There was snot...everywhere...

Color: ● ● ● ● ●

Bobo

< Add Symptom

All day

Tues, Jan 5 11:26 AM

Tues, Jan 5 12:26 PM

search

Alert
Are you sure you want to discard your entry?

No Yes

Diarrhea

Symptoms Add Note

none!

Color: ● ● ● ● ●

Add

Bobo

< Health History

Feb 6

Symptoms

Diarrhea at 6:00pm

Notes

Still very happy despite symptoms!

Photos

none!

Edit Entry

Bobo

< Edit Symptom

All day

Mon, Feb 6 6:00 PM

Mon, Feb 6 6:05 PM

search

Recent:

- Cough
- Vomit
- Diarrhea

Symptoms Edit Note

Diarrhea

Still very happy despite symptoms!

Color: ● ● ● ● ●

Confirm **Delete**

Bobo

< Edit Symptom

All day

Mon, Feb 6 6:00 PM

Mon, Feb 6 6:05 PM

search

Alert
Are you sure you want to delete this entry?

No Yes

Diarrhea

Symptoms Edit Note

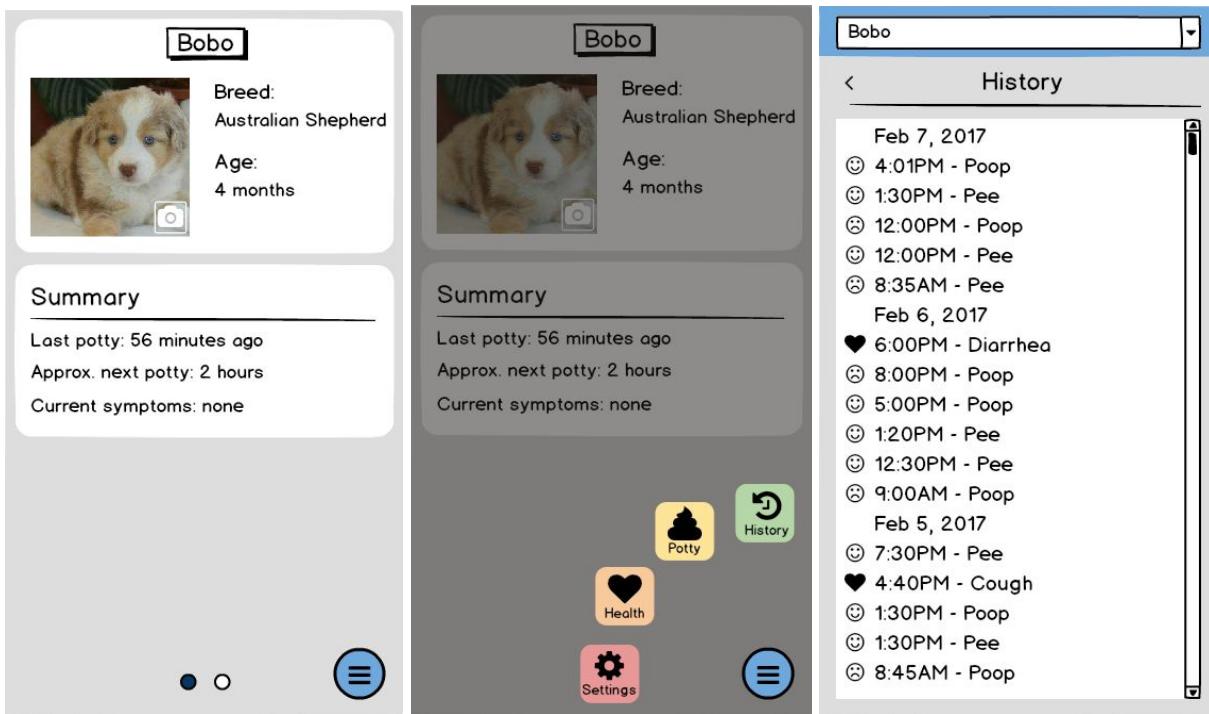
Diarrhea

Still very happy despite symptoms!

Color: ● ● ● ● ●

Confirm **Delete**

Critical Features: Home Screen, Feed



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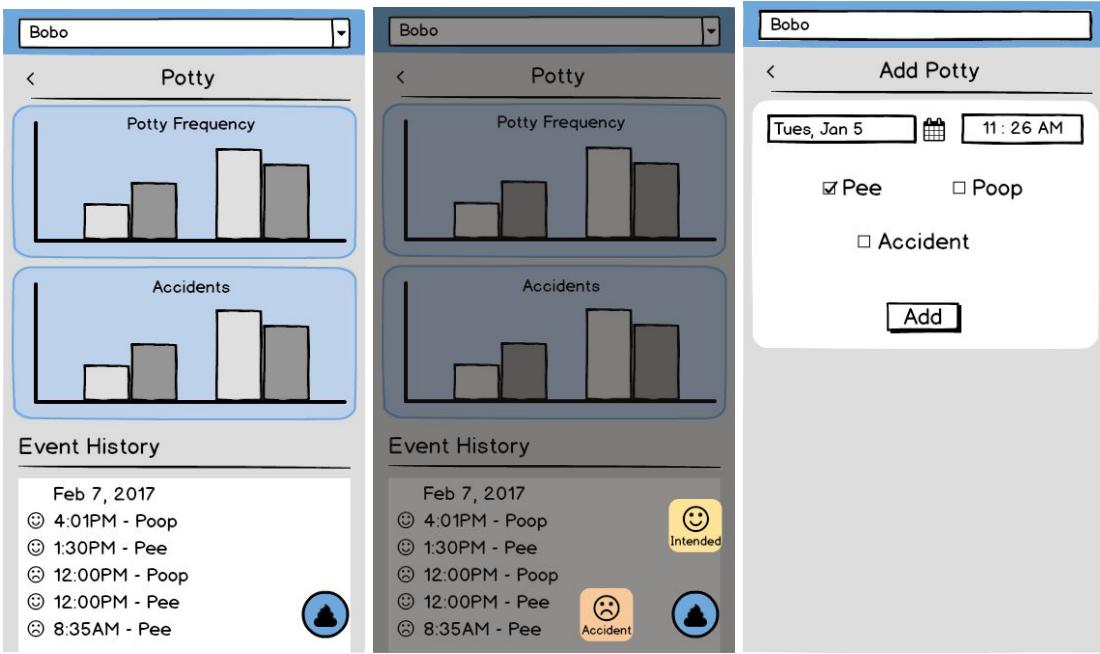
Screen 1: profile screen.

Screen 2: selecting the menu button reveals more task options.

Screen 3: the feed screen; selecting the name drop-down at the top allows you to change profiles.



Potty Task



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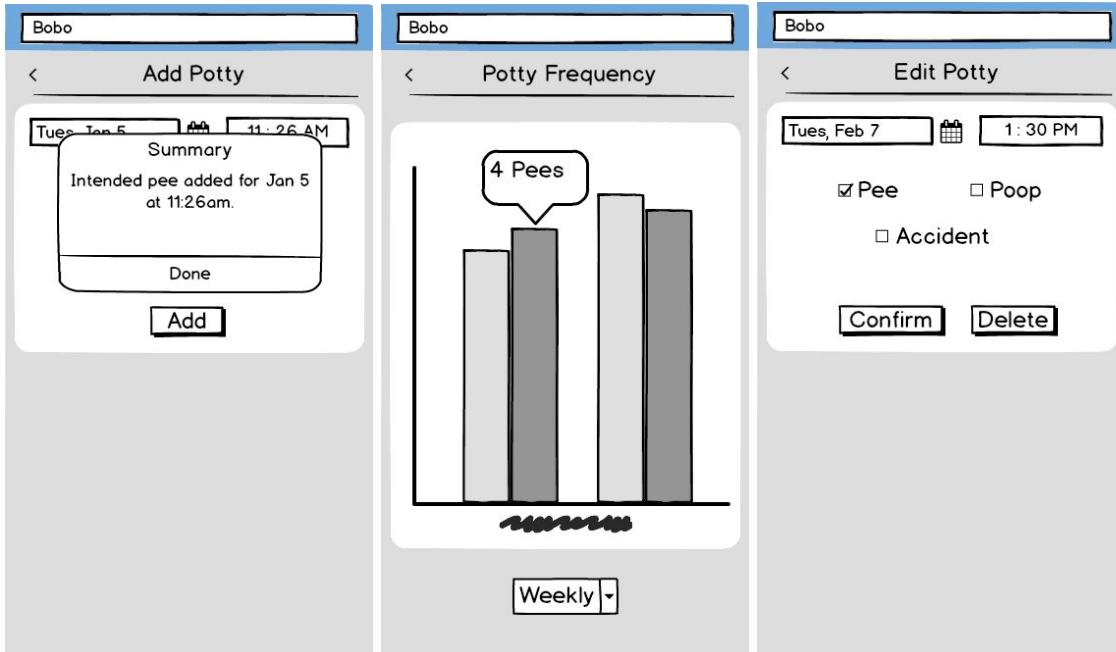
3

Screen 1: the main potty screen.

Screen 2: selecting the potty menu lets a user quickly add an accidental potty event or an intended potty event

Screen 3: adding a potty event. The user can change the date, time, type (one or both), and whether or not it was an accident (pre-selected based on what the user chose on the menu on screen 2).





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Screen 4: after a user clicks add, a confirmation screen comes up. A similar looking alert comes up if the user deletes an event from the edit screen.

Screen 5: from the main screen, selecting one of the graphs brings up previous potty data. For the frequency graph, clicking one of the bars tells the user how many times the puppy went potty that day. The user can choose other graphs to view as well.

Screen 6: editing a potty event is similar to adding one, but this time we ask them to confirm changes or delete the event.



Health Task

The figure consists of three side-by-side screenshots of a mobile application interface:

- Screenshot 1 (Left):** The main "Health" screen for a user named "Bobo". It features a calendar for February 2017 at the top, followed by a "Event History" section listing events like "Feb 6, 2017 6:00PM - Diarrhea" and "Feb 5, 2017 4:40PM - Cough". A blue heart icon is located on the right side of this section.
- Screenshot 2 (Middle):** A "Health" screen showing the same calendar and event history. This version includes a "New" button with a plus sign and icons for "Diarrhea" (yellow circle with a circle inside) and "Cough" (yellow circle with a heart inside).
- Screenshot 3 (Right):** An "Add Symptom" screen for "Bobo". It shows a list of recent symptoms: "Cough", "Vomit", and "Diarrhea". Below this is a "Symptoms" section with an "Add Note" button and a camera icon. A note for "Tues, Jan 5" at "11:26 AM" is shown. At the bottom, there's a color palette with five colored dots (green, yellow, blue, purple, red) and an "Add" button.

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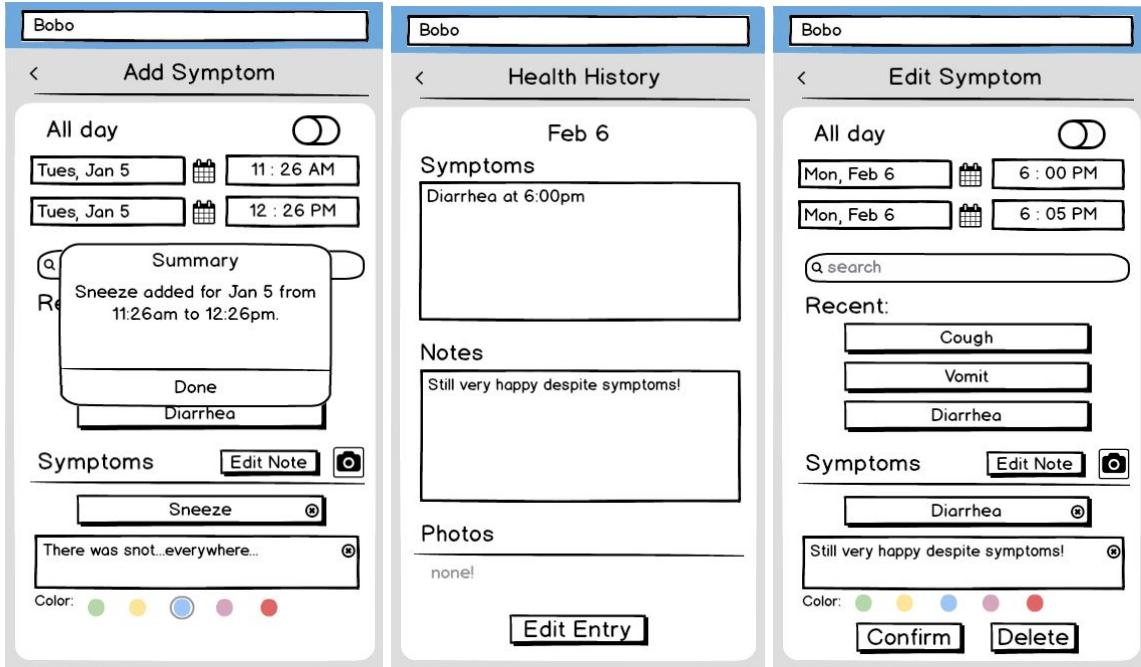
Screen 1: the main health screen.

Screen 2: selecting the health menu allows users to add a new symptom, or add a recent symptom.

Screen 3: adding a symptom allows users to change the date, duration (all day or a specific time range), search for symptoms or choose a recent one, add a note, take a picture, and color-code the event.

Symptoms, notes, and pictures will appear below the Symptoms label.





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Screen 4: adding a symptom will bring up a confirmation screen. Discarding or deleting an event will also display a prompt.

Screen 5: viewing a past symptom using the calendar or event history feed brings up this screen. From here, users can edit previous entries if they choose.

Screen 6: editing a symptom looks similar to adding a symptom, with confirm and delete options instead.



Discussion

We are quite proud of the digital mockup that we reached. Before this class, none of us had much design experience, so the idea of going through the entire design process from scratch was quite daunting. At no point throughout the quarter, however, did any of us feel unable to complete a step in the design process. It was a pleasant surprise for us to discover that being able to reach a good design does not hinge on artistic skills or any specific innate abilities; instead, good design can be achieved through well-planned ideation and iteration, something almost anyone can do. Looking back at our initial sketches, it is hard to believe how far we have been able to come!

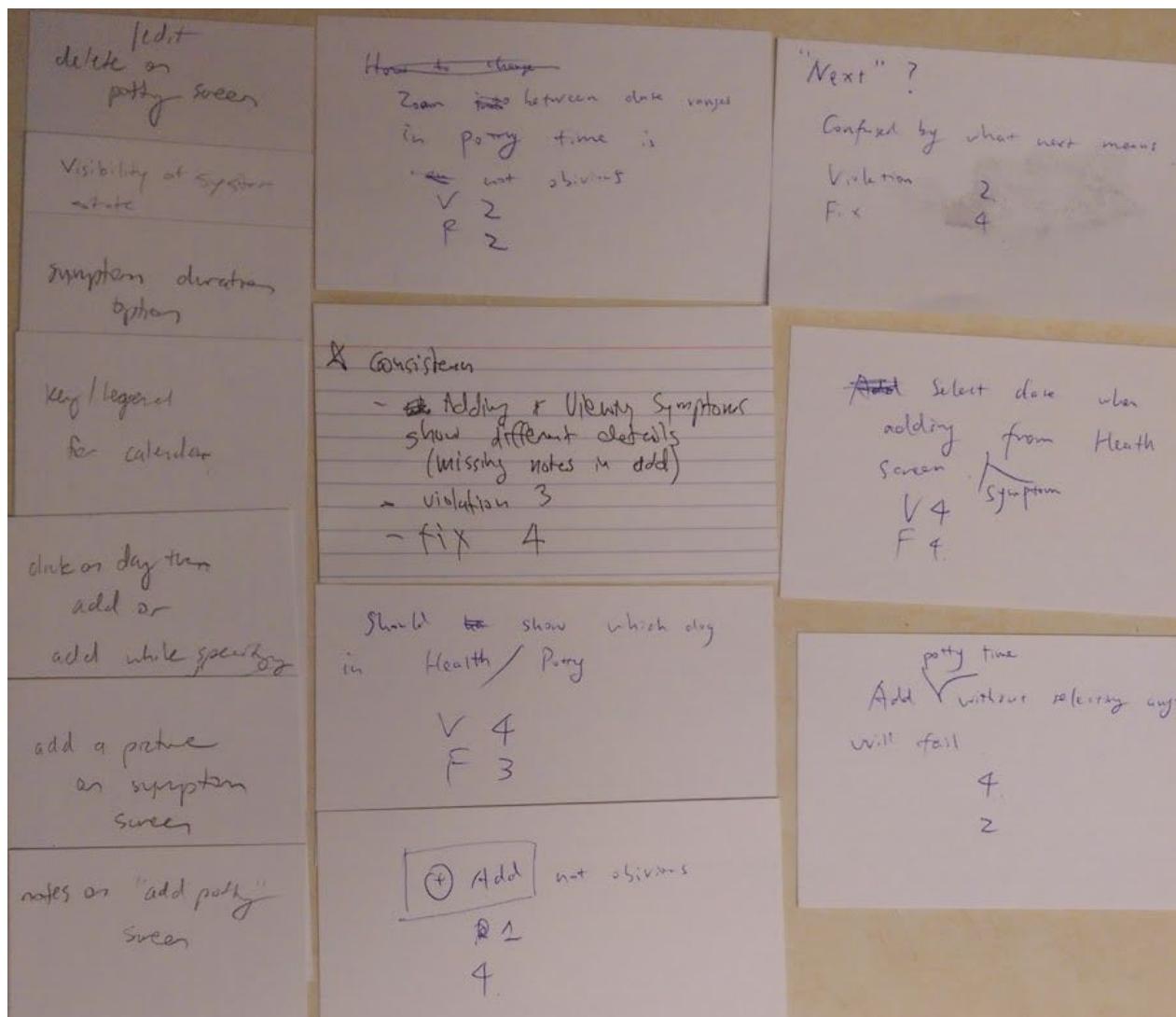
This project has cemented our faith in the importance of teamwork when it comes to working in a group - as cliche as that might be. Completing assignments and milestones together, not just divvied up into segments, ended up being more useful than we expected. Meeting as a group allowed each of us to have a complete understanding of our tasks and design, which helped our project stay cohesive throughout each step of the way. Overall, working in teams, as opposed to individually, was a notably valuable part of our design process, and we will be using the coordination skills we have learned from this project as we move forward academically and into our careers.

The design process: from paper prototype to heuristic evaluation, usability testing, to final paper prototype and to the digital mock-up, helps us make gradual progress towards our final design. During our initial paper prototype, it took us a long time to come up with our initial design, we spent lots of time on the button design and our application layout. However since we were using paper to design our prototype, we found we can easily try out different ideas. Then after each heuristic evaluation and usability testing, we revised our design according to the feedback given by the applicant. This iterative design process helped us to notice the limitations of our design and draw our attention to the things we ignored before. Talking to the applicant also helped us to come up an effective revision to our design. Though the paper prototype was not very efficient when for the usability tests (we need to move different pieces of paper around), the paper prototype gave us freedom to change our design and try different combination of the icons and menus in our application. During the last stage of developing our digital mockup, we also found that we were benefited from our previous design process: having a design prototype in head, we were able to quickly make our digital mock-up.

Though we did not change the two tasks after the two usability test, we were glad we did the usability tests with participants from different background to help us reach a better design. And we think it would be better if we can have few more usability tests after our digital mock-up so we can receive a more precise feedback for our final design.

Appendix

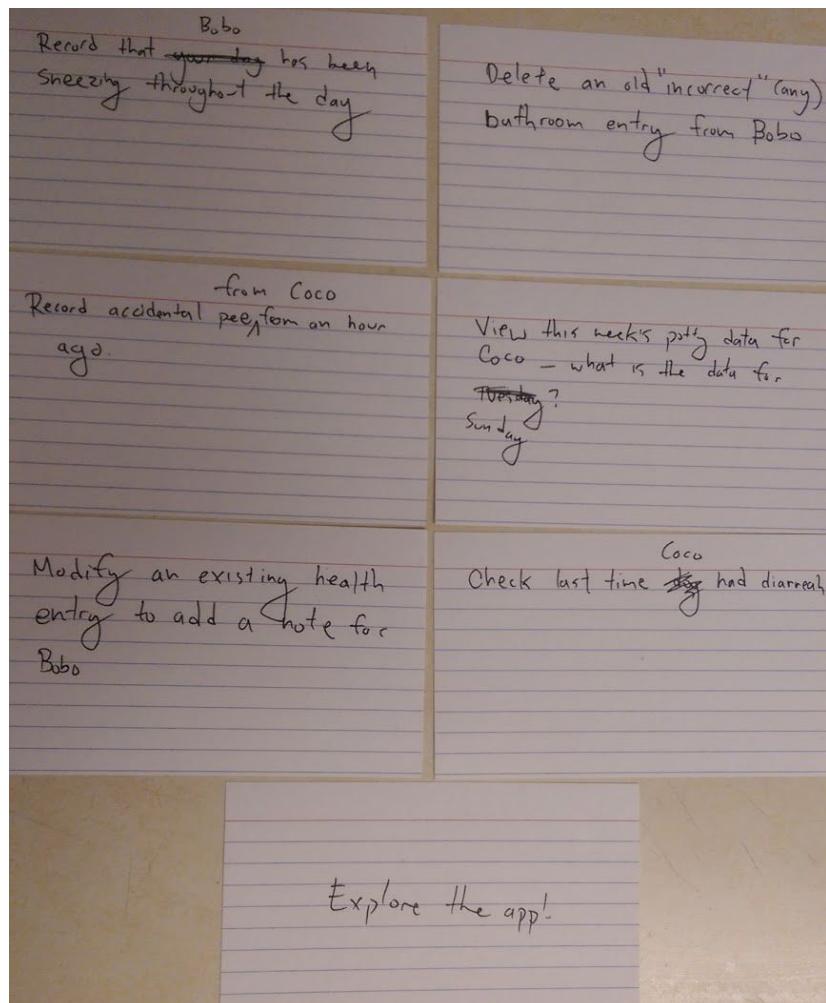
Heuristic evaluation violations:



Usability test format:

1. Introduction and instructions
 - Brief introduction of our project and application
 - We are testing the design, not you
 - Vocalize your thought process
 - We cannot answer questions you have until the end
 - For each task, complete it as best you can
2. Hand the participant the stack of task cards, observe them walk through them
3. Once finished, answer questions the participant had, and ask for feedback

Usability test written tasks:



Usability test critical incidents:

<p>3) add note health Boko puppy → health chooses random one, edit - add note, draws - pause, exits completely</p> <p>6) sunday potty info coco - feed, looks for Sunday, assumes 6th is Sunday, sees info (not in order) - goes back → potty, looks at graph</p> <p>Explore</p> <p>clarity dog, swipe → click name in profile "edit" confusing to add or active delete note adds recent symptoms potty graph → hourly ✓ feed confusing → into not theme that was expected</p>	<p>(b) ✓</p> <p>confused with - feed" - feeding</p> <p>click on 'Date' = can change date? -Edit" looks only for the notes. Choose History instead of clicking ^{in notes}</p> <p>(c) each time change dog. go back to the home page first.</p> <p>(d) confused whether click on the data → to see specific data. didn't click on Tuesday -for more details</p>
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