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## Mingo!

### Low-fi Prototyping and Pilot Usability Testing

#### Introduction

##### *Mission Statement/Value Proposition*

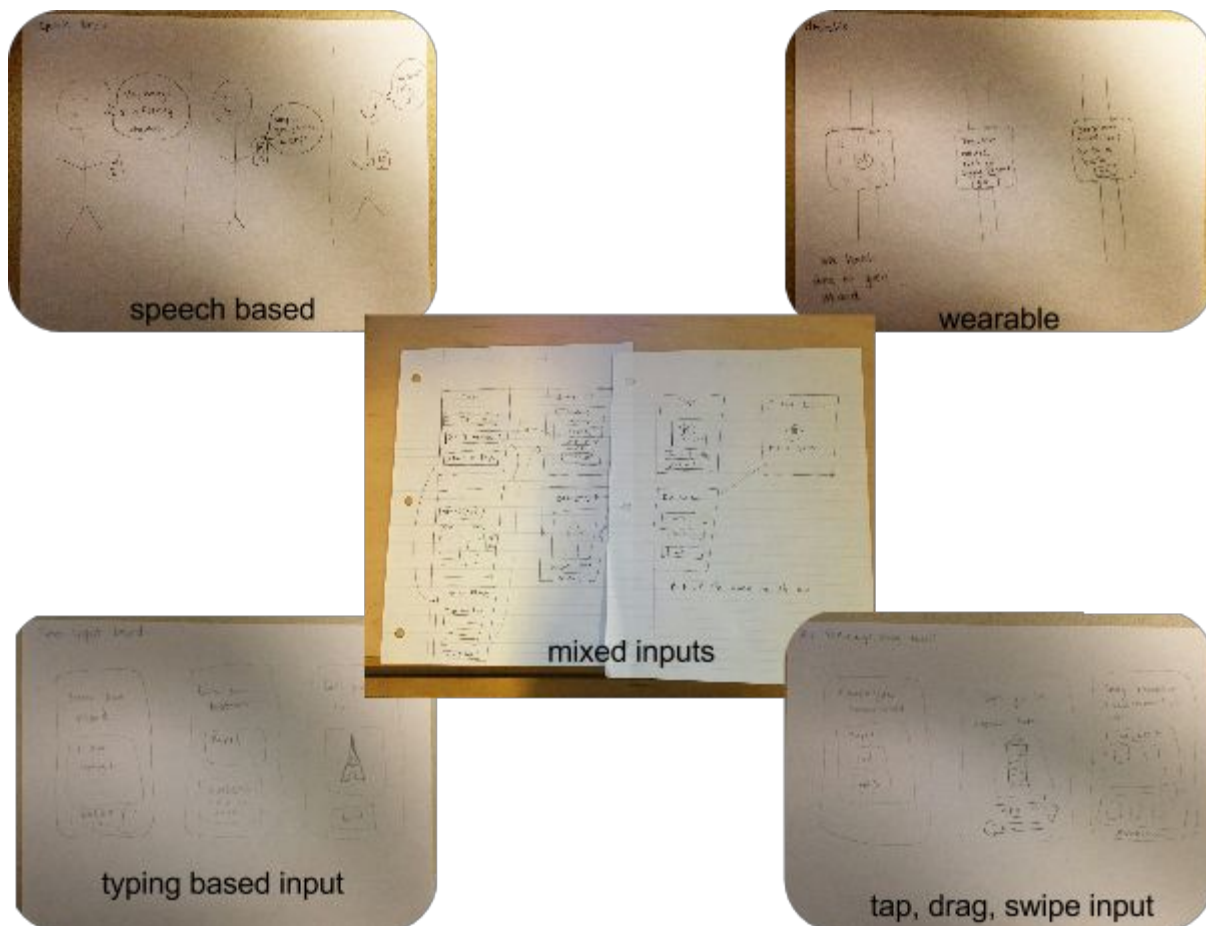
Mingo: Make every mood a travelling mood.

##### *Problem/Solution Overview*

Travellers often experience 'travel burnout' due to intensely packed, rigidly structured, and numbingly repetitive schedules. Mingo aims to prevent 'travel burnout' by taking a traveller's current mood into account when planning an activity. Mingo keeps travel fresh and spontaneous, allowing users to experience popular sights in new ways while also suggesting lesser known sights and experience that help mix up the pace and tone of a trip.

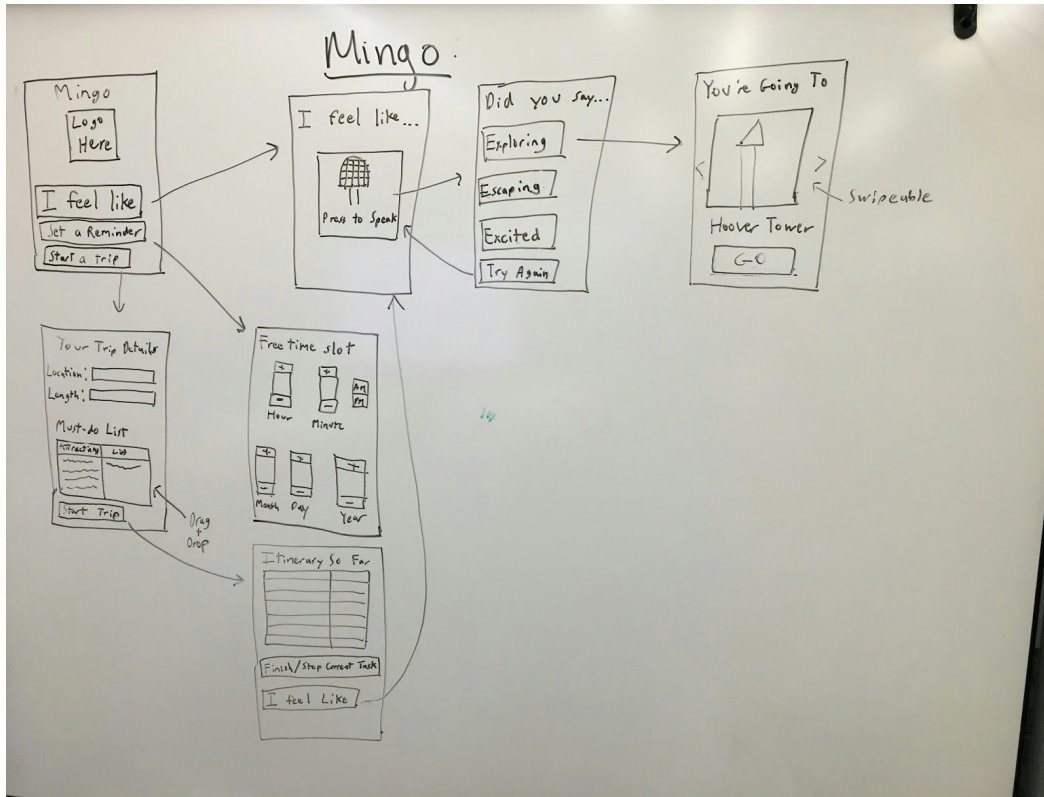
#### Sketches

*Concept Sketches* (see appendix A for higher resolution images)

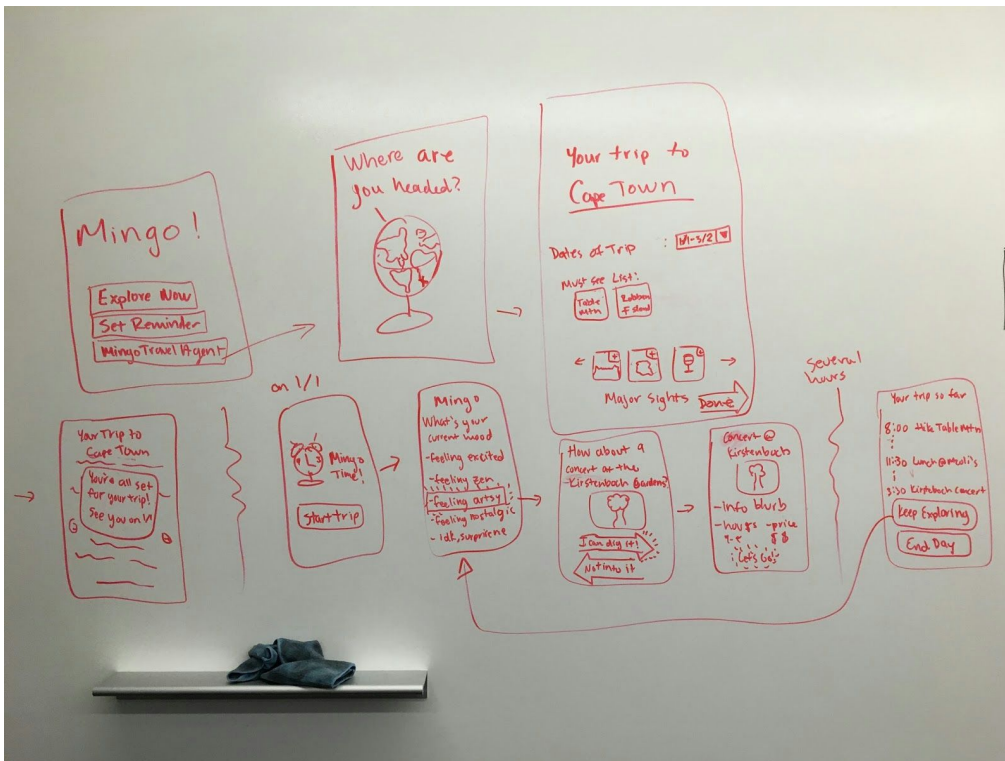


## Top Two Sketches Storyboarded

### Sketch 1: Mixed audio and tactile input



### Sketch 2: Tap, drag, pinch, and swipe input



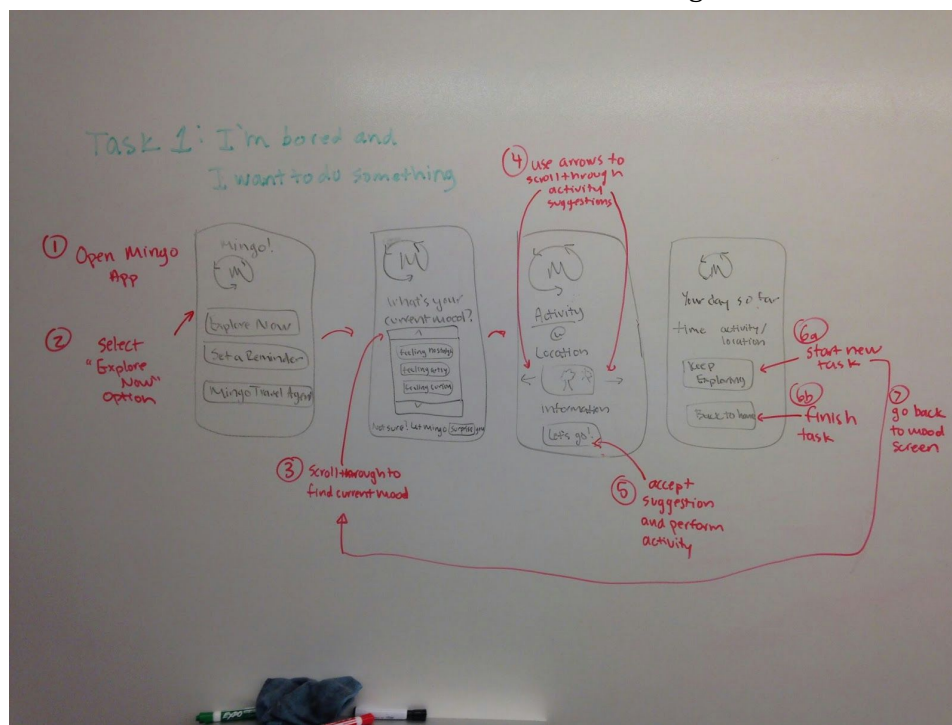
## Selected Interface Design

### Reasoning for Selection

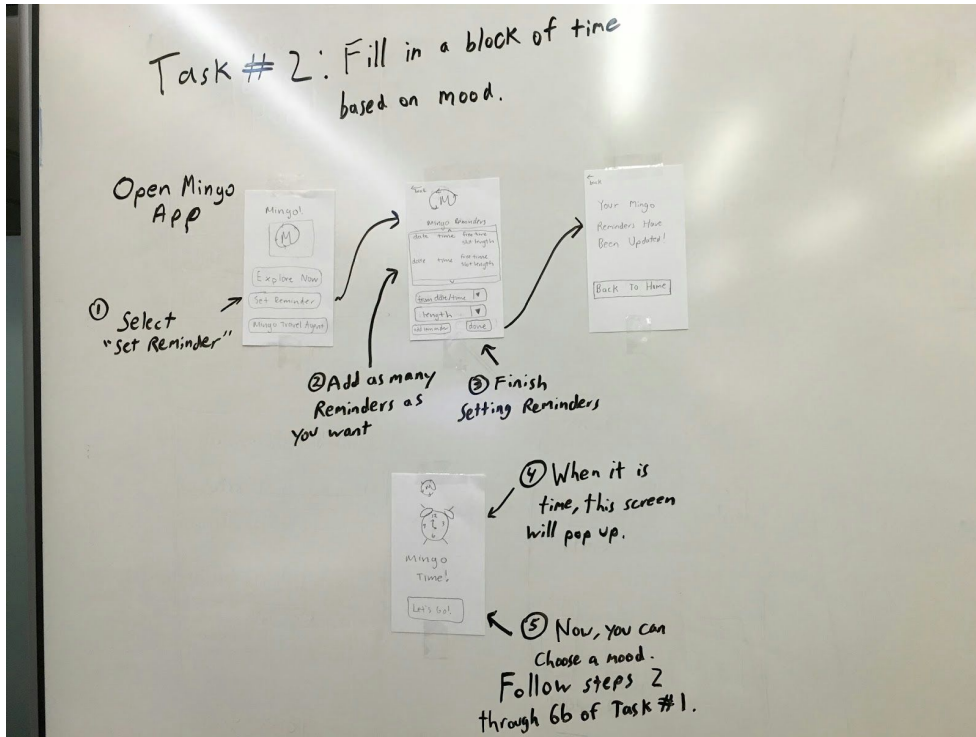
We chose to move forward with the tactile input design mainly due to the viability and convenience of the input method. The current technological limitations of voice input led us to believe that an audio based design would make the input process less accurate and frustrate users. Furthermore, describing your current mood without the help of prompts or suggestions can often be difficult. The tactile input design presents the user with a finite list of moods that he or she must choose, facilitating the mood selection process.

Storyboards for 3 tasks (see appendix B for higher resolution images)

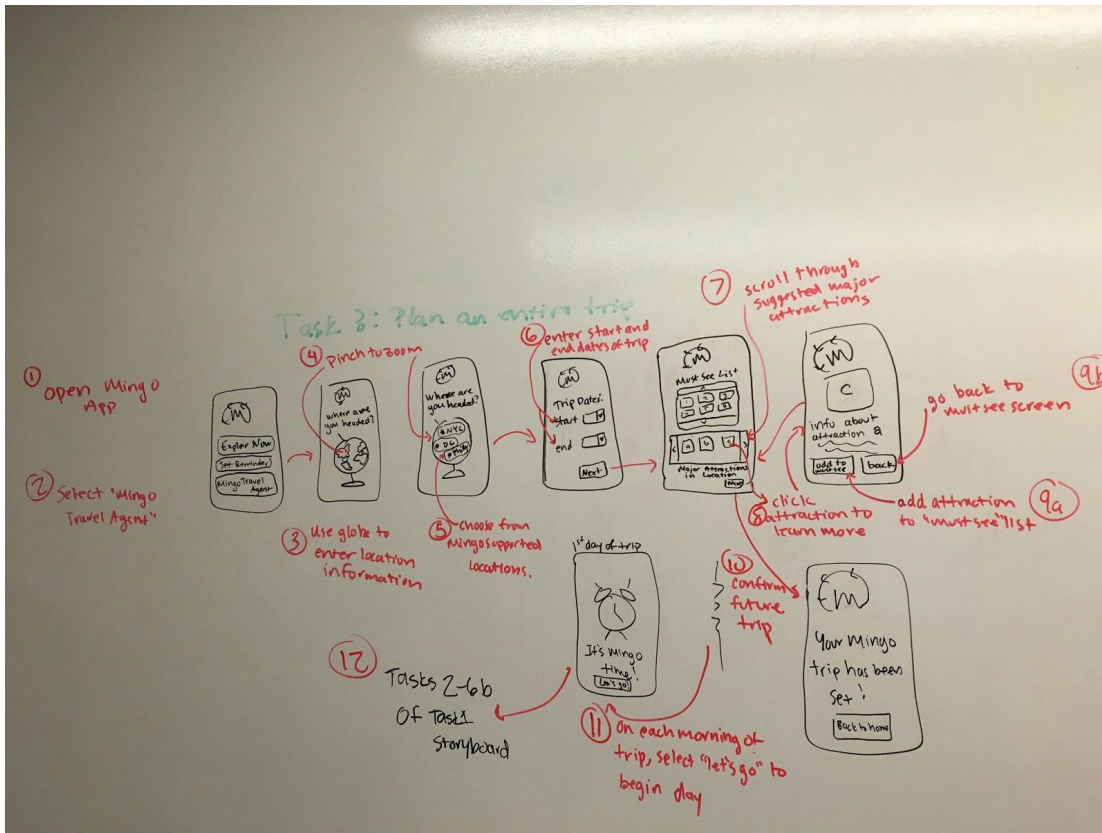
### Task 1: I'm bored and I want something to do



## Task 2: Fill a block of time



## Task 3: Plan a trip



## Prototype Description

### *Overview*

Our low-fi prototype of the Mingo application was a simulated iPhone application on a series of index cards. All user input for the prototype was touch input, either in the form of tapping, swiping, or dragging. The touch input would move users through various visual screens. We chose to create an electronic version of the paper prototype using the iOS POP application, enabling us to link the pages of the prototype together dynamically. We used POP in order to give users a more concrete sense of the flow of the application. (See Appendix C for the entire paper prototype system)

### *Task Execution*

*Task 1: The user is bored and wants to engage in an activity that complements her mood.*

In this task, the user is bored and uses Mingo to find something to do. The user begins by opening the application, landing on the Home Screen (figure 1a), and tapping the 'Explore Now!' icon. This brings the user to the Mood Screen (figure 1b), in which the user can scroll and select the mood most closely matching their current mood. Afterwards, the user is brought to the Activity Suggestion Screen (figure 1c). The user can either accept the suggested activity by tapping the 'Let's Go!' icon, or use the arrows. If the user uses the arrows to scroll through, he is then taken to the Activity Rejection Feedback Screen (figure 1d) and prompted to explain why he did not want to engage in that particular task. After tapping one of the 3 options 'Not feeling it right now,' 'Been there, done that,' or 'Not my type of thing,' the user is brought back to the Activity Suggestion Screen with a different activity suggestion. Once the user taps the 'Let's go button,' the user is meant to simulate engaging in the selected activity, after which, he is brought to a Past Activities Screen (figure 1e) that details all of the activities the user has engaged in that day. The user then has the option to tap the 'Keep Exploring' icon, which would take the user back to the Mood Screen and start another activity, or tap the 'Back to Home' icon, which takes the user back to the Home Screen.

Figure 1: Task 1 task flow



figure 1a

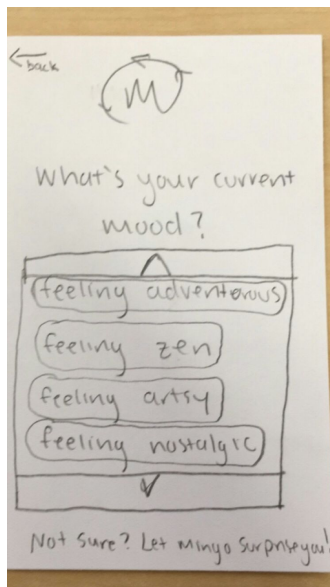


figure 1b

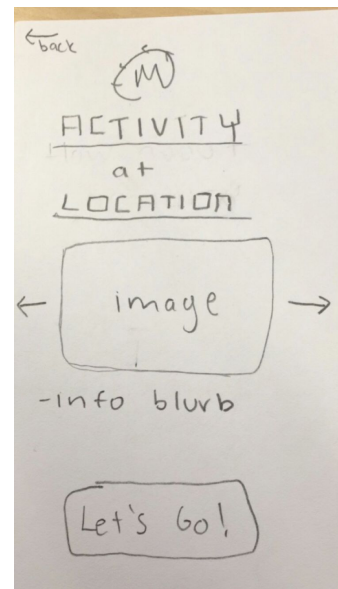


figure 1c

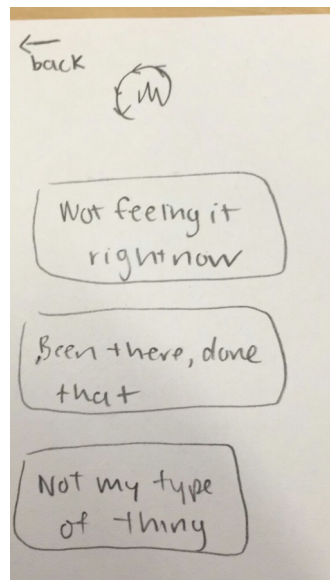


figure 1d

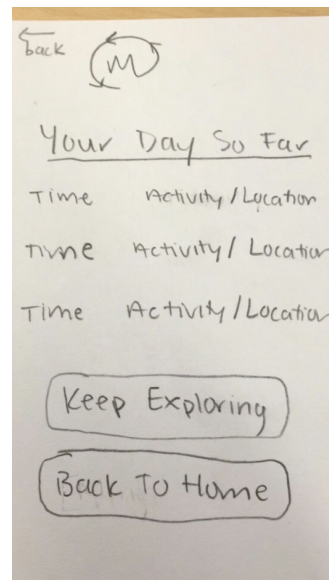


figure 1e

*Task 2: The user wants to set a reminder to engage in a mood based activity at some later point in the day.*

In this task, the user wants to set a reminder to use Mingo at a later date. From the Home Screen (figure 2a), the user taps on the 'Set a Reminder' icon. This brings the user to the Reminders Screen (figure 2b), in which the user can view and edit past reminders as well as add new

reminders (using the 'Add Reminder' icon) by inputting the starting date and time (using the 'From date/time' drop down menu) as well as the length (using the 'length' drop down menu) of any free blocks of time. The user then taps the 'Done' icon and is moved to the Reminder Confirmation screen (figure 2c). At the beginning of a block of free time, the Mingo Alarm screen (figure 2d) appears, and upon clicking on the 'Let's Go!' icon, the user is taken to the Mood Screen and continues through the flow described in task 1 (figures 2e - 2h).

Figure 2: Task 2 task flow

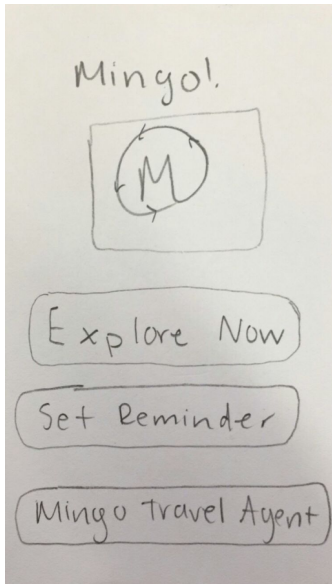


figure 2a

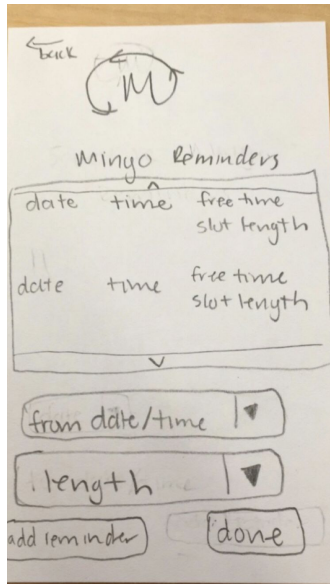


figure 2b

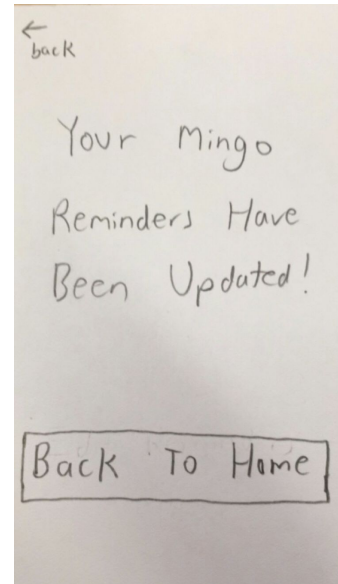


figure 2c

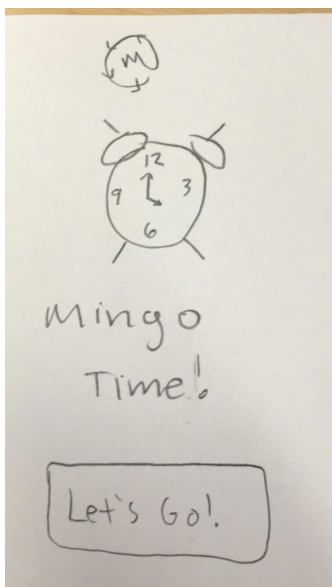


figure 2d

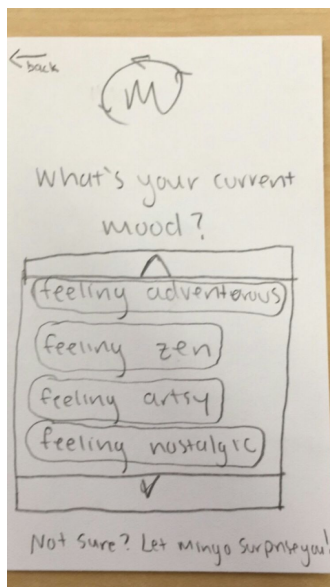


figure 2e

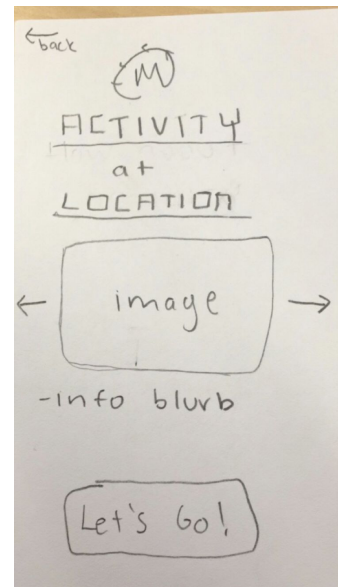


figure 2f

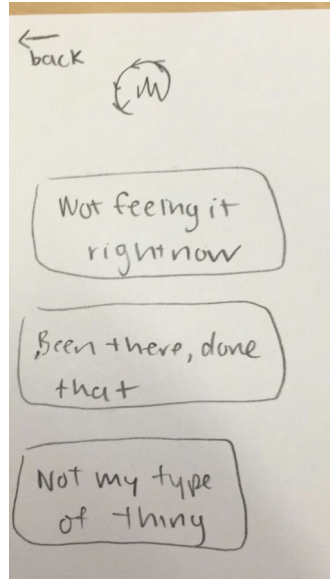


figure 2g

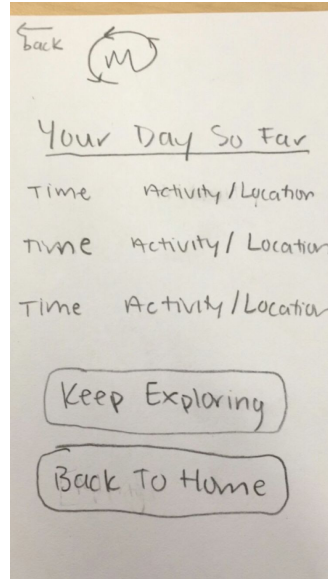


figure 2h

*Task 3: The user wants to have a spontaneous trip based on his mood while also not missing out on key attractions.*

In this task, the user wants to have a spontaneous trip, but also wants to ensure that he does not miss out on key attractions. From the Home Screen (figure 3a), the user taps on the 'Mingo Travel Agent' icon. This brings the user to the Location Screen (figure 3b). The user can use pinching and spreading motions on the globe to zoom, and once the user taps on a location on the globe, he is taken to the Trip Dates Screen (figure 3c) in which he uses the Start and End drop down menus to enter the dates of his trip. The user then taps the 'Next' icon and is taken to the Must See List Screen (figure 3d). Here, the user can scroll through major attractions in the planned location. Tapping a major attraction takes the user to the Attraction Information Screen (figure 3e) where the user can read more about the specific attraction. The user can use the 'Add to Must See List' icon to add the location to his must see list, or can simply use the 'back' button to return to the Must See List Screen. The user then hits the 'Next' icon which takes him to a Trip Confirmation page (figure 3f). On the date of the trip, the Mingo Alarm Screen (figure 3g) appears, and upon clicking on the 'Let's Go!' icon, the user is taken to the Mood Screen and continues through the flow described in task 1 (figures 3h - 3k). To get through each day, the user continually taps the 'Keep Exploring' icon that appears on the Past Activities screen at the end of each activity.



Figure 3: Task 3 task flow

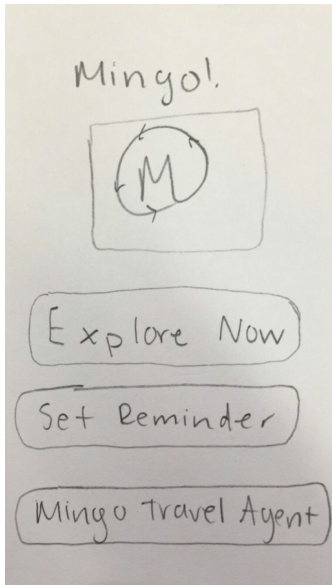


figure 3a

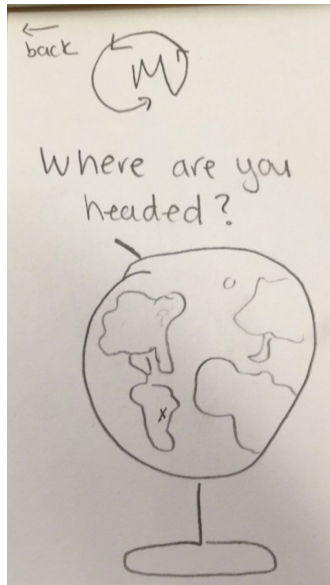


figure 3b

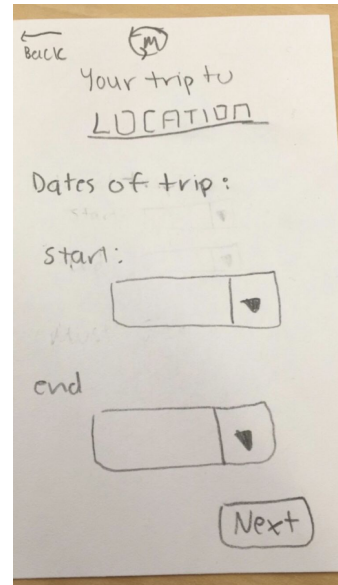


figure 3c

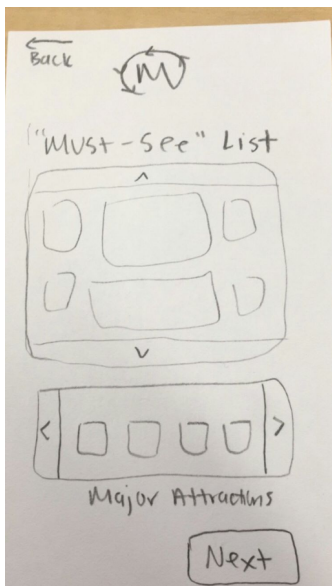


figure 3d

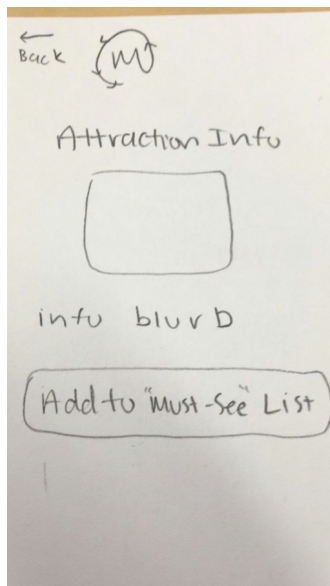


figure 3e

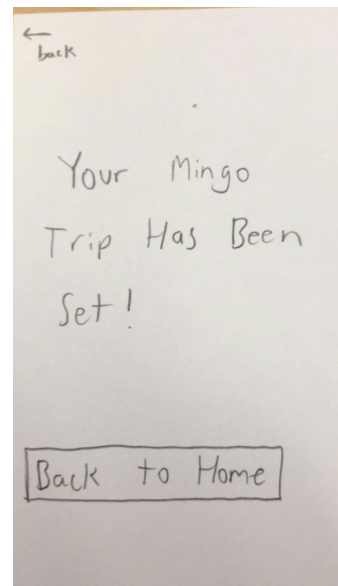


figure 3f

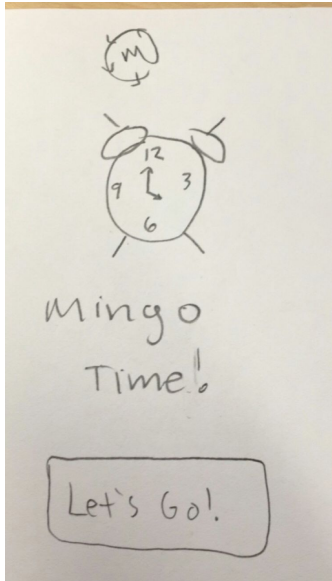


figure 3g

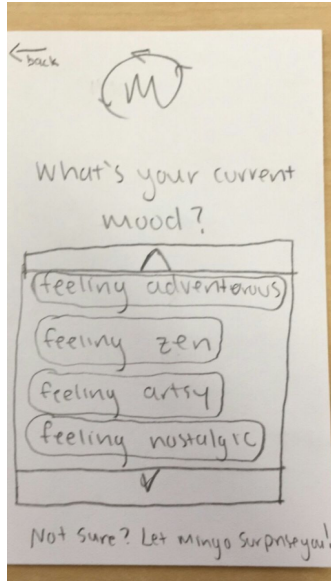


figure 3h

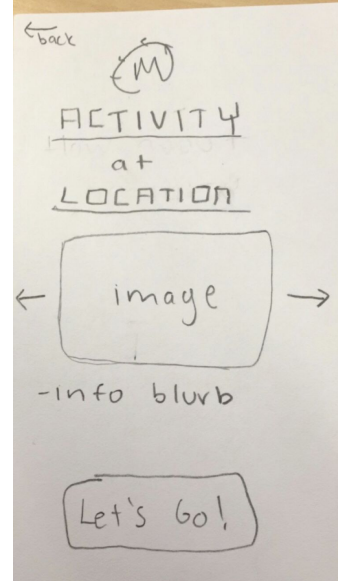


figure 3i

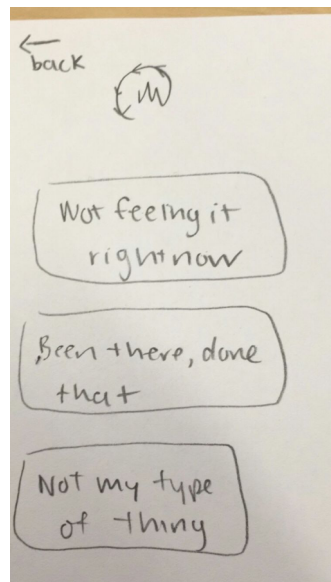


figure 3j

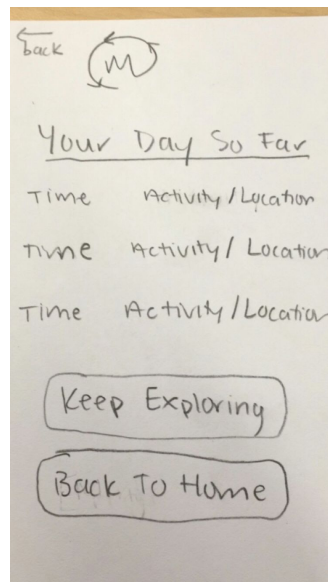


figure 3k

## Method

### *Participants*

We selected 3 participants to test our low-fidelity prototype. All three participants were found sitting outside Tressider. The first participant, Peter, was a middle-aged startup entrepreneur from Boston that travels extensively. The second participant, Davyde, was the Co-founder of a small wealth management firm from Canada, who also travels extensively for business. Davyde also recently returned from his honeymoon in Japan. Finally, we met a Stanford Alumnus named Jason who travels for business, but also takes family vacations to new locations twice a year. No compensation was offered to any of the participants.

### *Environment*

We chose to recruit at Tressider since we believed it was to best place to find a willing, non-Stanford student participant, with enough time to test our prototype. Two of the participants sat at a table, where we could sit around the participants and observe their actions. The third participant sat on a bench, so we had the facilitator sit next to the participant and the notetaker stand behind the participant. The use of POP instead of paper prototyping made it significantly easier to test the participant sitting on a bench.

### *Tasks*

All participants were asked to perform three tasks. The first task was to successfully obtain a suggestion based on their current mood. The second task was to set a reminder for a specified time. The final task was to plan out a complete trip using Mingo. (More information on how the tasks were phrased can be found in Appendix D)

### *Procedure*

For all interviews, Kevin served as the facilitator and Minymoh played the role of the notetaker. Since POP was used, we did not need a “human computer”. The participants were selected based on “approachability” (sitting alone, not busy etc.). Once a participant agreed to participate, we proceeded to introduce ourselves and our project. We gave a quick demo of the POP application and then presented participants with their first task. The participant was given the other two tasks sequentially upon completion of the first. Minymoh noted instances in which participants made errors, paused an extended period of time due to confusion, or gave vocal feedback (questions, confusion, etc.). At the end of the test, we asked each participant for more feedback (what they liked, what they would improve) clarify any lingering concerns about their experience..

### *Test Measures*

For each participant, we wanted to measure how easy it was for them to use the application. To perform this measurement, we recorded the following observations:

- How quickly a participant was able to complete the task
- How many mistakes were made
- How intuitive the participant found each screen
- Any suggestions or comments offered either during or after the test

Using these observations, we could deduce which parts of the prototype was easy to use and intuitive, as well as which parts needed more work.

## Results

### Peter

*Task 1:* Peter understood the first task very well. For the most part, the task flow came naturally to him. He was confused, however, by the action of scrolling through suggested activities. Given the arrows next to the image of a suggested location, Peter expected to be able to scroll through many suggested locations seamlessly and was put off when the Activity Rejection Feedback Screen appeared each time he tried to view a new suggestion. He voiced concerns about activity suggestions taking more time than he may have had in that moment.



Peter scrolls through suggested activities

*Task 2:* While the overall concept of the second task was not initially clear to Peter. He initially thought that the process of setting a reminder would also involve planning out an activity. Rather than setting reminders to use the app, Peter was trying to set reminders for activities planned in the future. Once Peter better understood the task, he was able to complete it with ease. The only confusion that remained was in the fact that he had the capability to add more than one reminder at a time.

*Task 3:* Peter understood the third task, though he did note that the 'Mingo Travel Agent' icon could be confusing if one did not know the task ahead of time. He was able to easily navigate through setting the trip location and the trip dates, but he was initially a little confused by the concept of the 'must-see list.' He eventually figured out that he was meant to add desired attractions to his own list when he saw the Attraction Info Screen with the 'Add to Must See List'

icon. One concern Peter voiced once he'd finished the task was how the application would ensure that the must-see attractions made it to one's itinerary. He suggested that we somehow remind the user that they had a must-see list to fulfill. Furthermore, Peter noted that while the app is focused on engaging with a user's current mood, it was perhaps missing out on the ability to *influence* the user's mood through certain activity suggestions.

## Davyde

*Task 1:* Davyde fully understood the first task. He too had trouble with scrolling through the suggested tasks on the Suggested Activities Screen. His familiarity with the swiping functionality in apps like Tinder led him to expect a tap to the right arrow to lead to an acceptance of the activity and a tap to the left arrow to lead to a new activity suggestion. He suggested doing away altogether with the arrows and implementing a more explicit swiping functionality or to explicitly put the word 'No' somewhere on the Suggested Activities Screen.

*Task 2:* While Davyde had no trouble understanding the concept of the second task, he believed that the very act of scheduling reminders went against the *flâneur* vibe of the app. He breezed through the task, but made it very clear that he thought we should remove this functionality from the application. He noted that on his honeymoon, "the question was always 'what do we want to do next' and never 'what do we want to do later.'"



Davyde explains Modernism in Paris

*Task 3:* Davyde loved the concept of the third task and excitedly went through the flow. He had no issues, and very easily navigated through the Must See List Screen. He knew exactly why he was on that screen, and the action of adding attractions to the list came very naturally to him.

## Jason

*Task 1:* Jason understood the first task clearly. While he understood how to navigate the Mood Screen, he did not like being limited to the moods listed in the app. Though he understood that

there were more moods than those shown available to choose from, he noted that he felt restricted by having to choose from what was available and would have liked to be able to enter a mood. While Jason was also initially confused by how to scroll through the suggested activities, he was glad to be taken to the Activity Rejection Feedback Screen where he was “finally being asked for some sort of feedback.” He also noted that he would have wanted to rank activities and locations on the Past Activities Screen. While he appreciated the concept of the app, he longed for a more personalized experience when executing the task flow.



Kevin facilitates Jason's Mingo test experience

*Task 2:* Jason fully understood the second task and completed the entire flow without any errors. A frequent business traveller, Jason noted that he appreciated the reminder functionality as it would allow him to make more out of his business trips if he was being reminded to do something fun and spontaneous rather than just going back to a hotel between meetings. He also noted that the Mingo reminder would stand apart from other work related reminders in a positive way.

*Task 3:* Jason understood the third task and completed the task flow with no errors. He noted that part of the information he would like to see on the Activity Information Screen would be ratings and reviews of the attractions written by other travellers using the app. He also noted that he would want some way to share his itinerary with others after every day of travelling.

## **Discussion**

The biggest issue with our low-fi prototype was the Activity Rejection Feedback Screen, which seemed to confuse our users. Because of the lack of context, this screen interrupted the flow of the task. To address this issue in the next prototype, we may try to create a way to solicit feedback without having an entirely new screen.

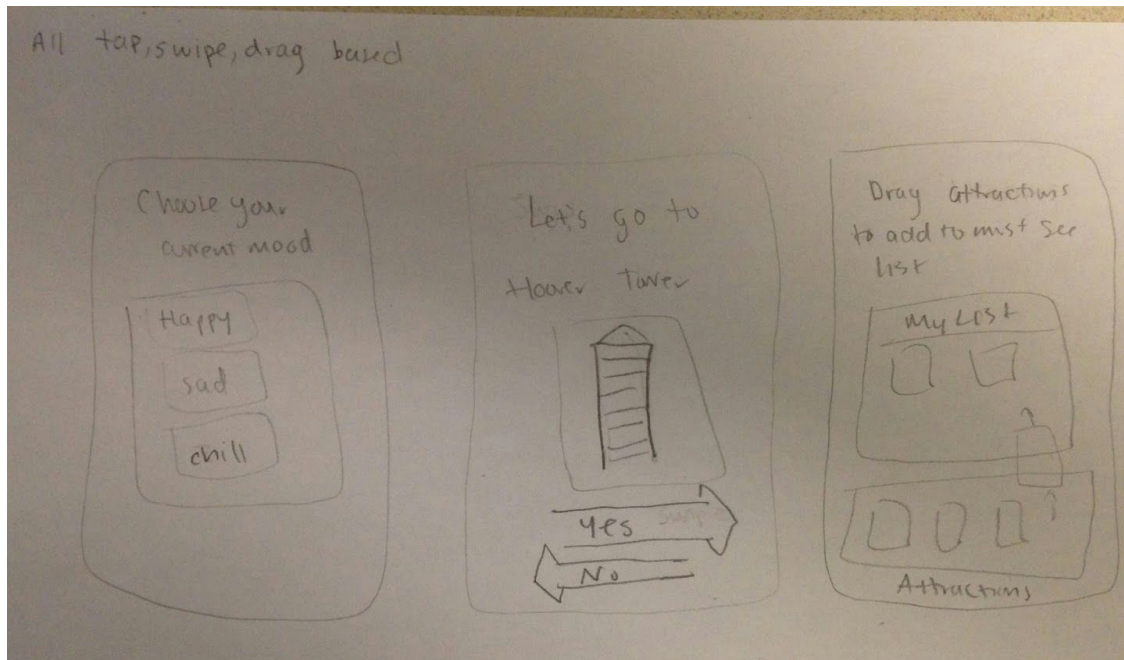
The reminder functionality was another weakness of this prototype. It was unclear to some and deemed unnecessary by others. Our next prototype will try to clarify functionality by more clearly labelling icons. Several features received some conflicting responses (such as having a search box for moods, the alarm feature being unnecessary etc.), and these features will be further tested with the next prototype.

One important thing that experiment could not reveal was the overall functionality of the application itself (in contrast to just the user interface). It would have been nice to test a functioning application (ability to search map and get real suggestions) to determine the usefulness of the tools and suggestions offered by the application.

**Word Count: ~2490 (not including image titles, figure names, and section titles (~170 words))**

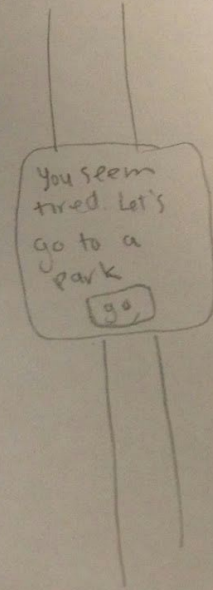
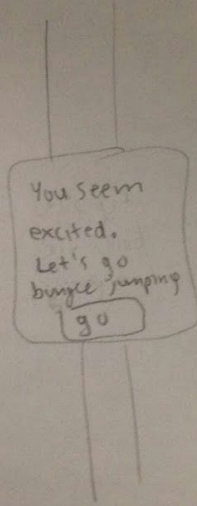
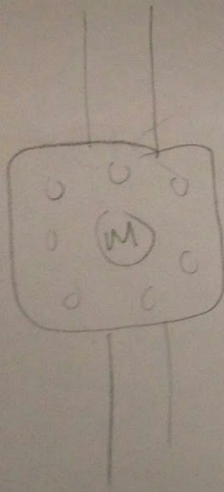
## Appendices

### Appendix A: Concept Sketches



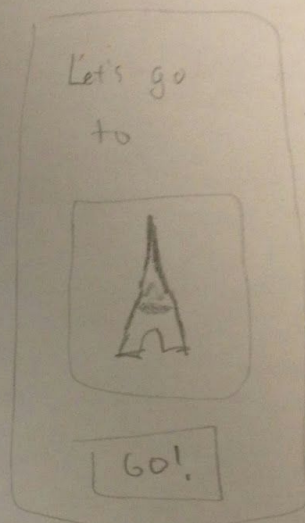
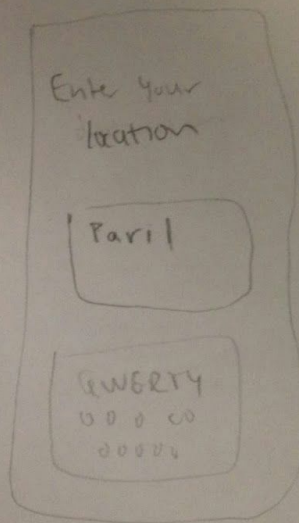
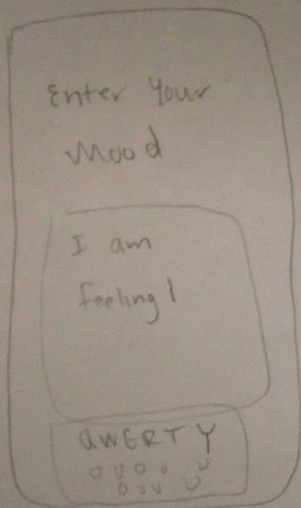


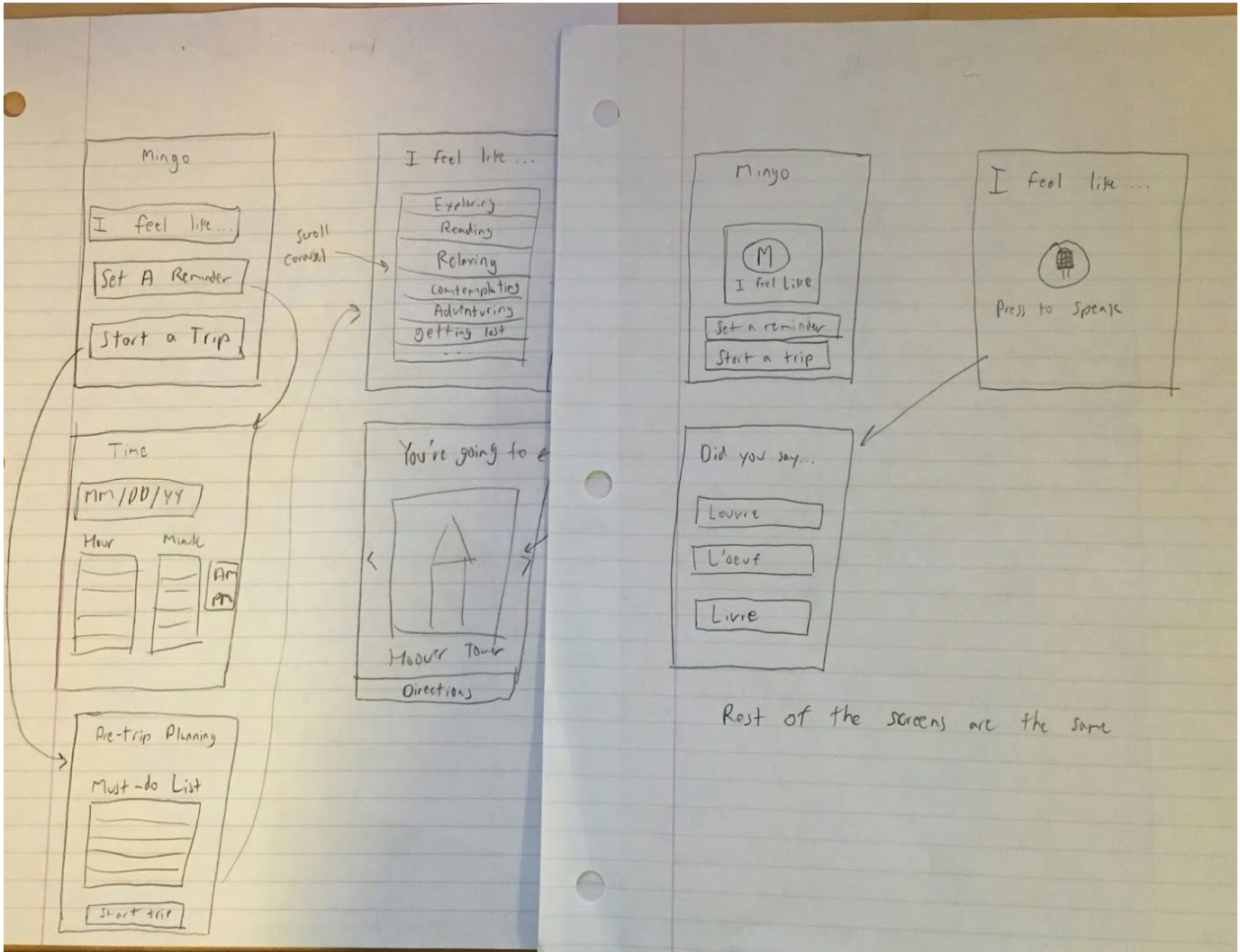
Wearable



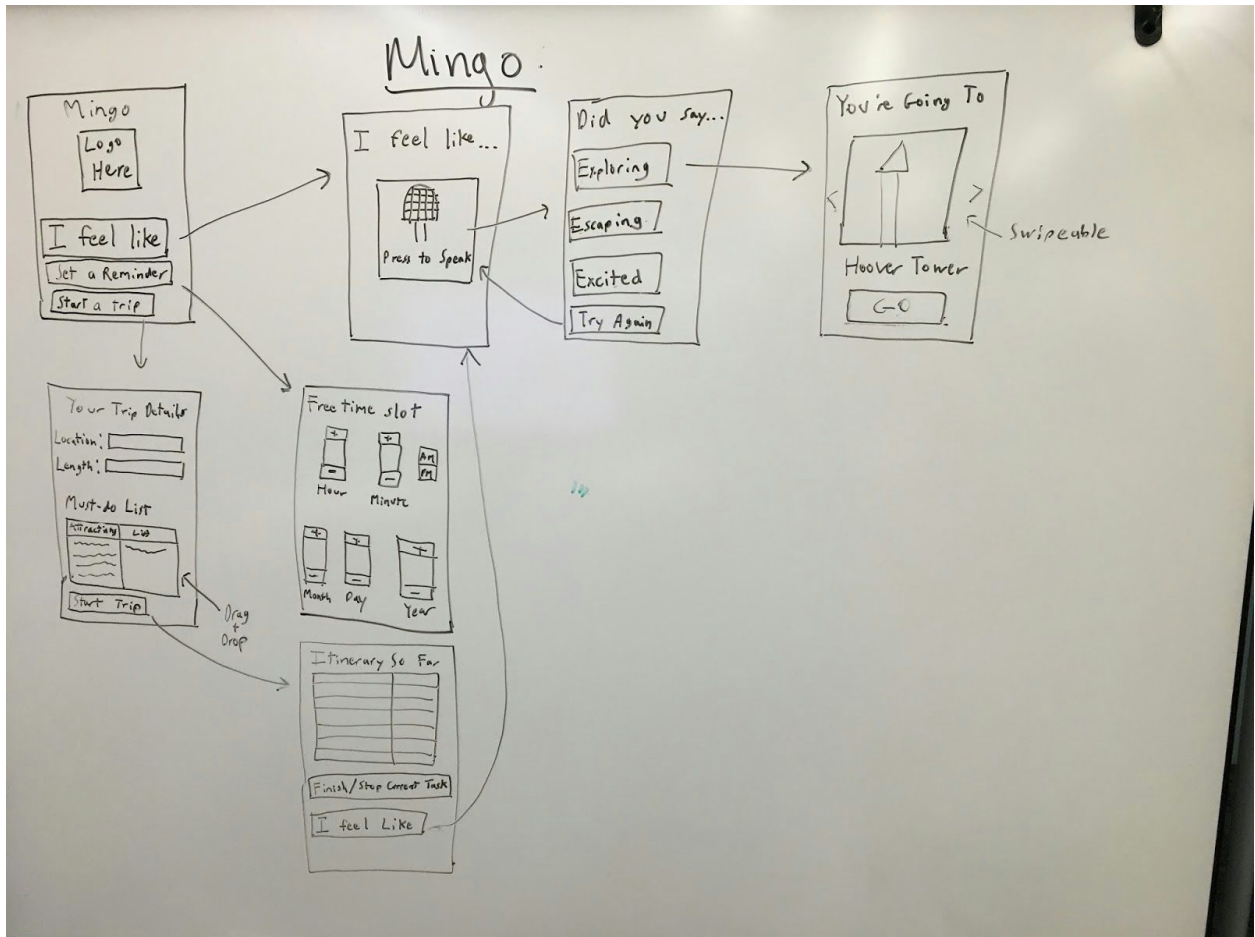
use health data to guess mood

Text input based

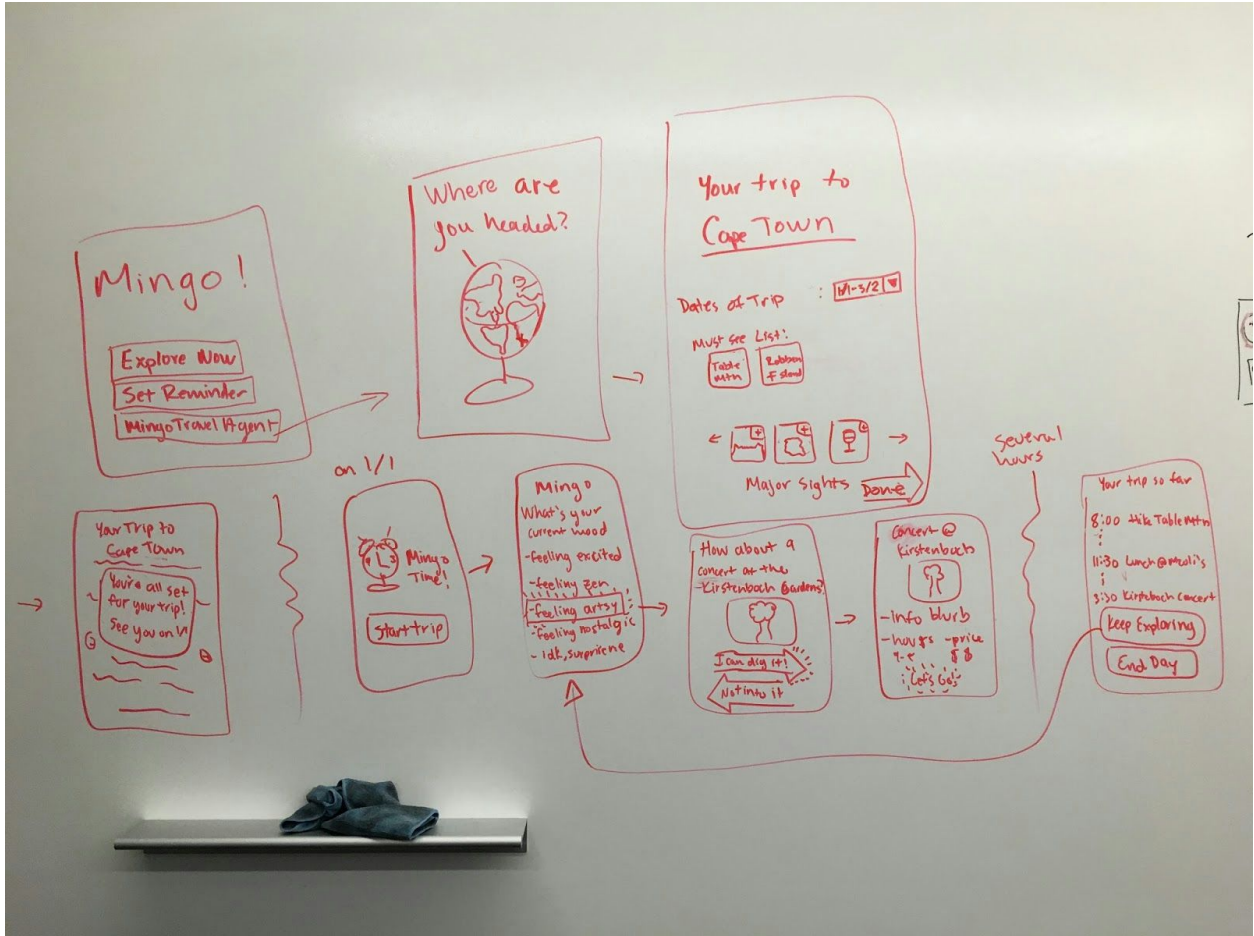




## Appendix B: Storyboards

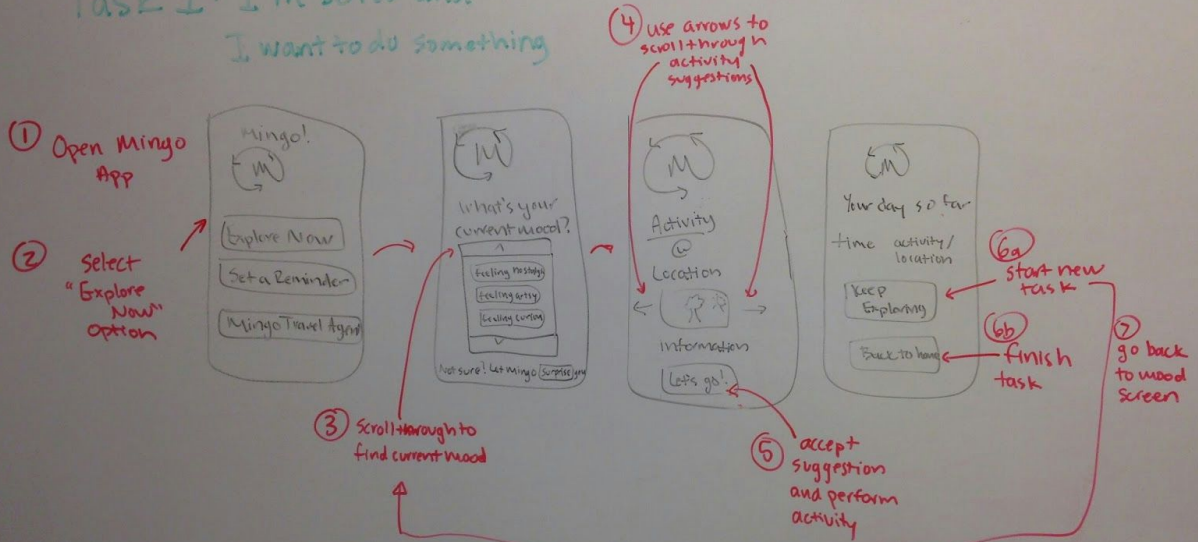


Sketch 1



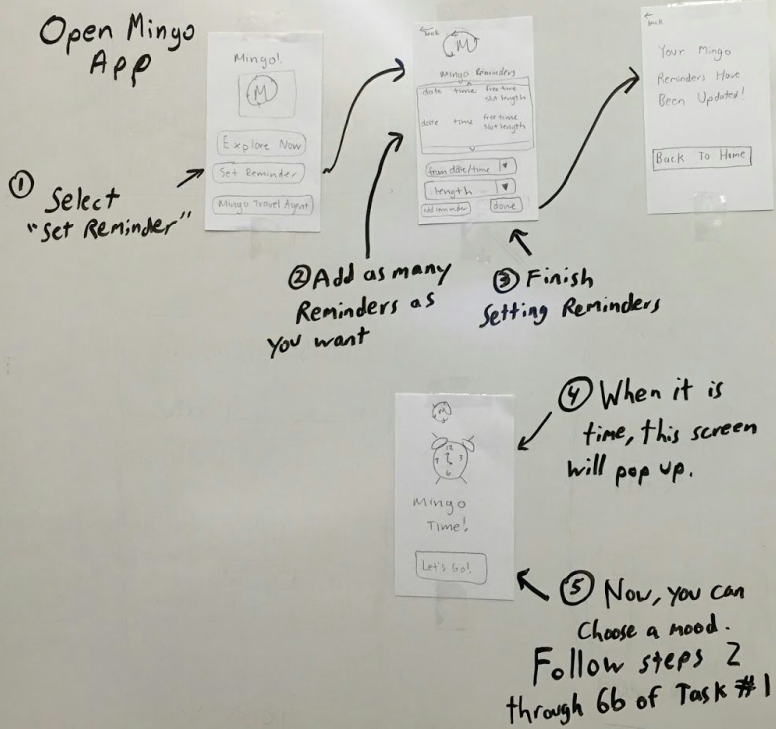
Sketch 2

# Task 1: I'm bored and I want to do something

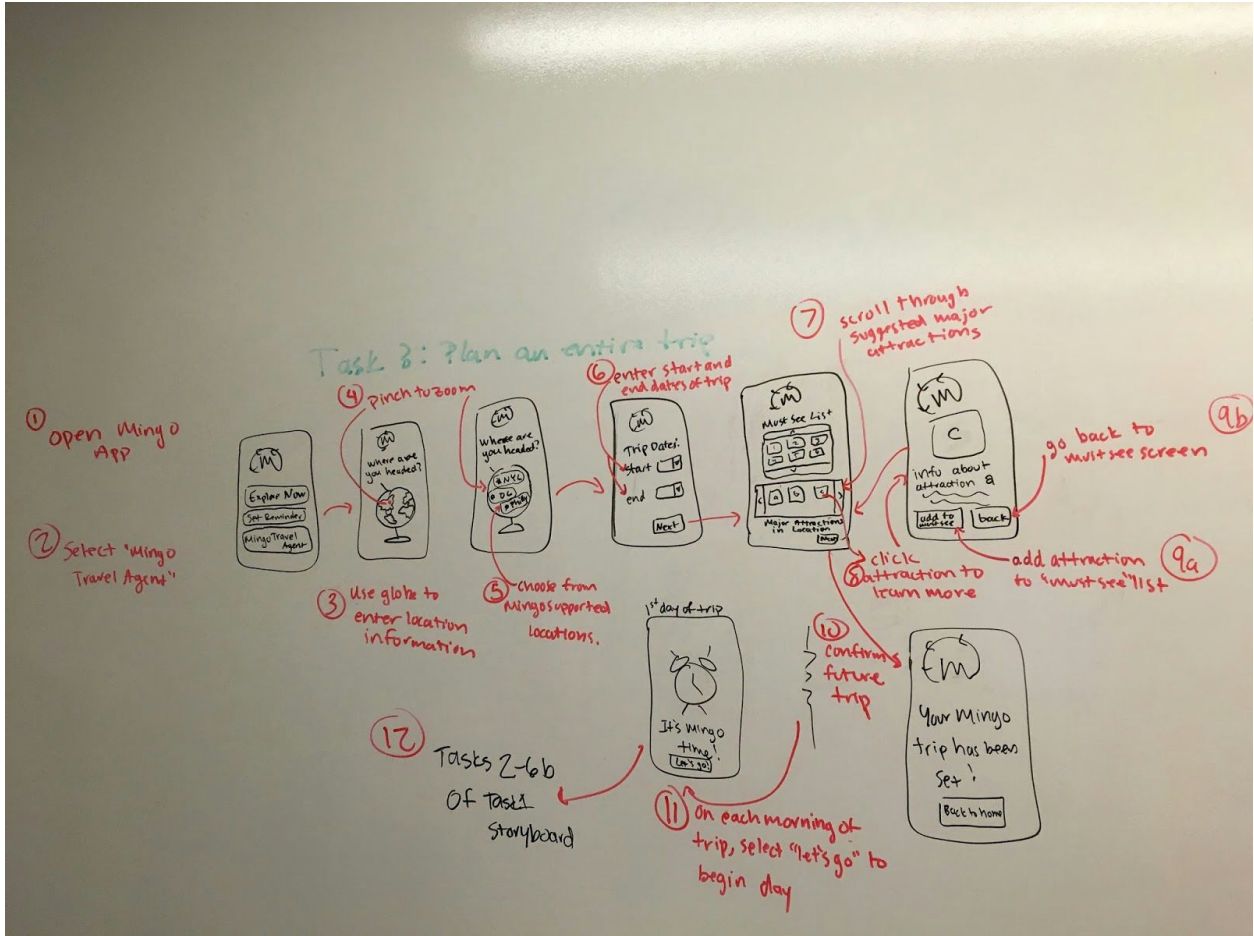


Task 1 UI Storyboard

# Task # 2: Fill in a block of time based on mood.



Task 2 UI Storyboard



Task 3 UI Storyboard

**Appendix C : Entire paper prototype system for all tasks**





## Appendix D: Interview Script

**Task #1: (Simple Task) The user is bored and wants to do something based on their current mood.**

*Let's say you've got a free day to yourself. You haven't planned anything out, and all of your friends and family are busy. You're bored out of your mind and you want to find something to do. Can you show me how you would use Mingo to remedy your situation?*

**Task Two: (Medium Task) Productively fill a block of free-time based on your mood.**

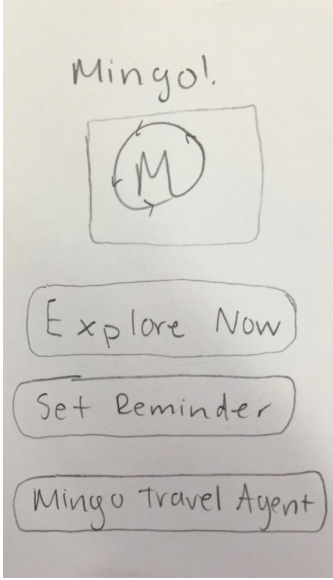
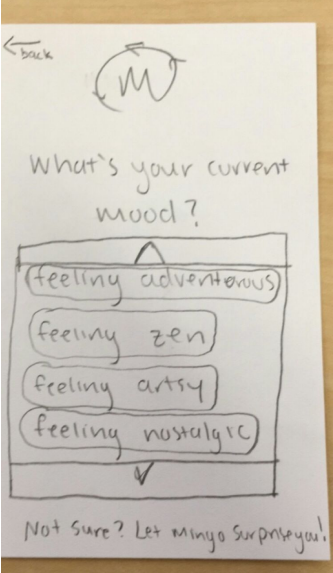
*Let's imagine that you're at a conference in a city you've never been to before. You've got meetings and events all day and night, but you know that you have a block of free time today from 4:00PM to 6:00PM and you want to do some exploring around this time. You're a little scatterbrained due to the hectic nature of the conference, so you want to make sure you don't forget to use your free time to explore. How would you use Mingo in this scenario?*

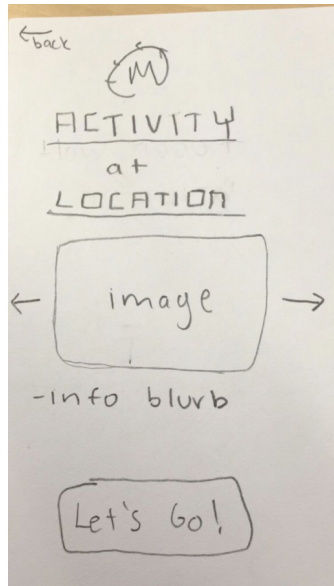
**Task Three: (Complex Task) Plan and entire trip based on your mood.**

*Now imagine that you are going on a trip somewhere new. You want this trip to be as spontaneous as possible, but you also don't want to miss out on any major attractions. Can you show me how you would use Mingo to make this happen?*

## Appendix E: Interview - Notes and Data

**Note: All the participants were very comfortable with their test results being shared directly, none of them wanted to sign the confidentiality consent form.**

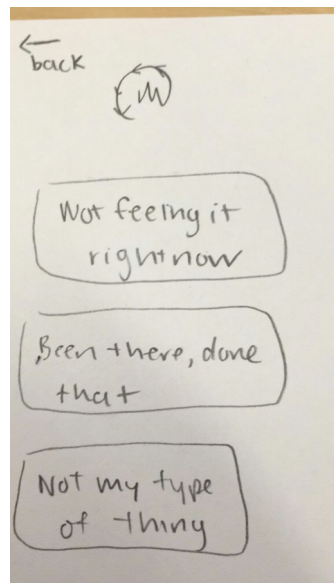
Task 1: Peter - 5 min, Davyde - 2 min, Jason - 3 min	
	<p><u>Screen 1</u></p> <p><i>Expected behavior:</i> tap “Explore Now”</p> <ul style="list-style-type: none"><li>● Peter: No problem</li><li>● Davyde: No problem</li><li>● Jason: No problem</li></ul>
	<p><u>Screen 2</u></p> <p><i>Expected behavior:</i> scroll through moods and tap on a mood</p> <ul style="list-style-type: none"><li>● Peter: No problem</li><li>● Davyde: No problem</li><li>● Jason: Understood and performed expected behavior, but wanted to be able to input his own moods</li></ul>



### Screen 3

*Expected behavior:* tap 'Let's Go!' or tap an arrow for a different suggestion.

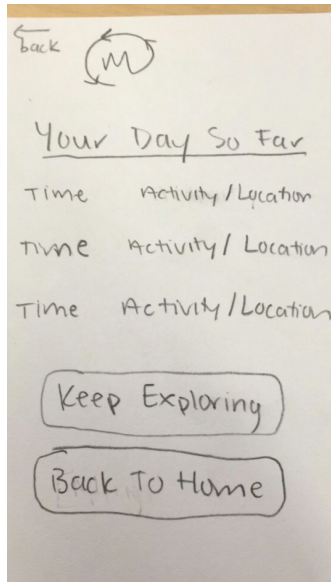
- Peter: Confused by arrows next to image
- Davyde: Tried to swipe rather than tap arrows
- Jason: Confused by arrows next to image



### Screen 4

*Expected behavior:* tap one of the three icons

- Peter: did not understand why screen had come up in the first place, but did follow expected behavior
- Davyde: No problem
- Jason: No problem. Liked that he was being asked to give feedback



### Screen 1

*Expected behavior:* tap "Back to Home"

- Peter: No problem
- Davyde: No problem
- Jason: No problem executing expected behavior, but wanted some way to rank past activities and locations and wanted a way to share his itinerary with others

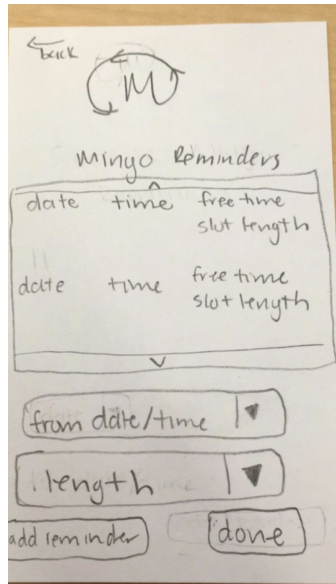
Task 2: Peter - 4 min, Davyde - 2 min, Jason - 2 min



### Screen 1

*Expected behavior:* tap "Set Reminder"

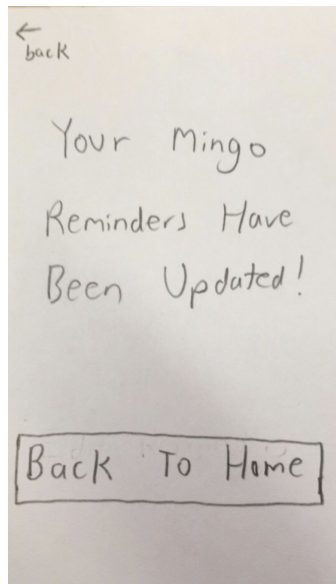
- Peter: No problem
- Davyde: No problem
- Jason: No problem



## Screen 2

*Expected behavior:* use 'from date/time' and 'length' drop down menus and tap 'add reminder' to add a reminder. tap 'done' when finished adding reminders

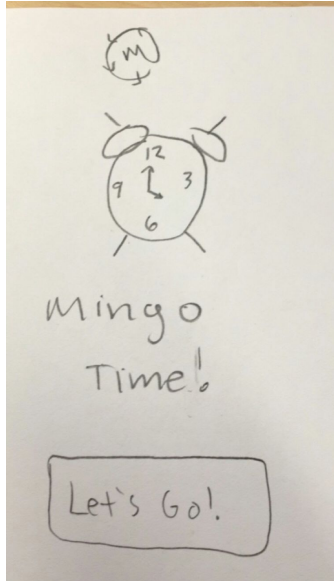
- Peter: Did not understand that he was inputting blocks of free time. Did not grasp that he could set in multiple reminders.
- Davyde: No problem executing expected behavior, but did not like this functionality as it ruined the whole spontaneous vibe of the application
- Jason: No problem



## Screen 3

*Expected behavior:* tap "Back to Home"

- Peter: No problem
- Davyde: No problem
- Jason: No problem

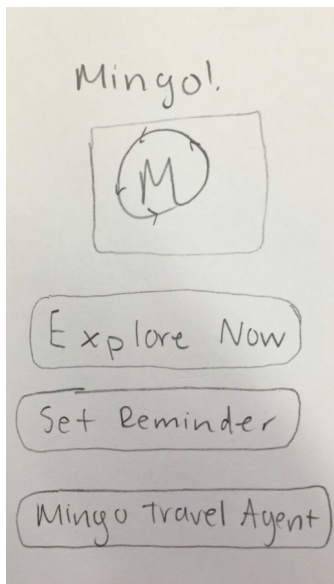


#### Screen 4

*Expected behavior:* tap "Let's Go!"

- Peter: Didn't initially understand that tapping 'Let's Go!' would bring him back to mood screen as he expected to have already planned out a task by the time the alarm when off
- Davyde: No problem
- Jason: No problem

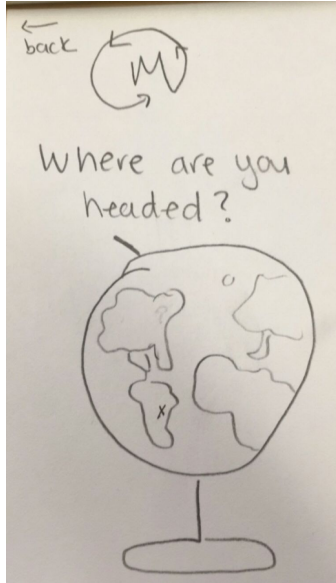
Task 3: Peter - 5 min, Davyde - 2 min, Jason - 3 min



#### Screen 1

*Expected behavior:* tap "Mingo Travel Agent"

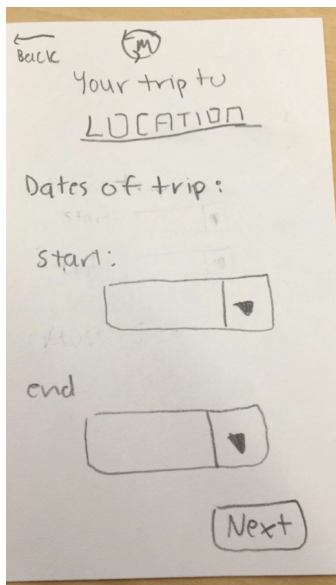
- Peter: initially a bit confused by the 'Travel Agent' name
- Davyde: No problem
- Jason: No problem



## Screen 2

*Expected behavior:* use globe to zoom and tap location

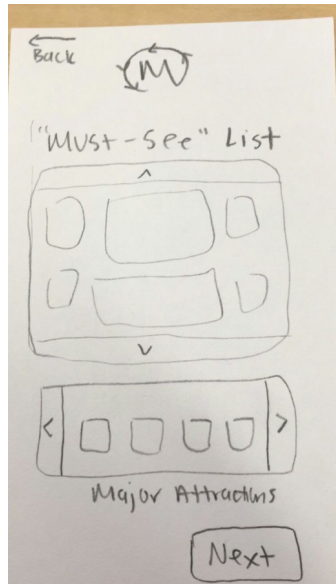
- Peter: No problem
- Davyde: No problem. Even fake spun the globe and used pinching and spreading motions to find Prague on this fake map
- Jason: No problem



## Screen 3

*Expected behavior:* input start and end dates of trips and tap 'next'

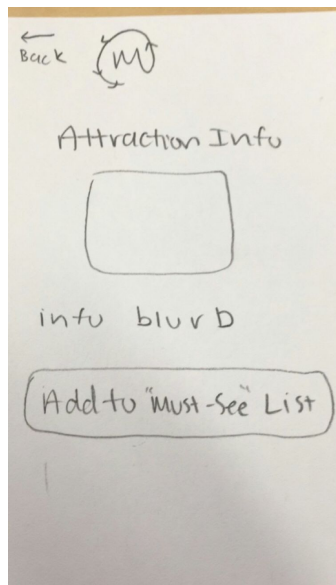
- Peter: No problem
- Davyde: No problem
- Jason: No problem



#### Screen 4

*Expected behavior:* scroll through existing must see list, scroll through major attractions list, tap on an attraction, or tap next

- Peter: Did not initially understand why he would be populating the must see list. Tapping on an attraction icon to get more information was not his first instinct
- Davyde: No problem
- Jason: No problem

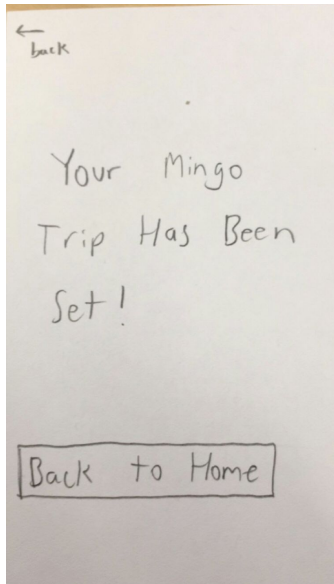


#### Screen 6

*Expected behavior:* tap "add to must see list" or tap the 'back' arrow

- Peter: No problem
- Davyde: No problem. Thought this was much cooler than having to pull out *Lonely Planet* every couple of hours
- Jason: No problem executing expected behavior, but would have liked to see user generated ratings and reviews in the info blurb

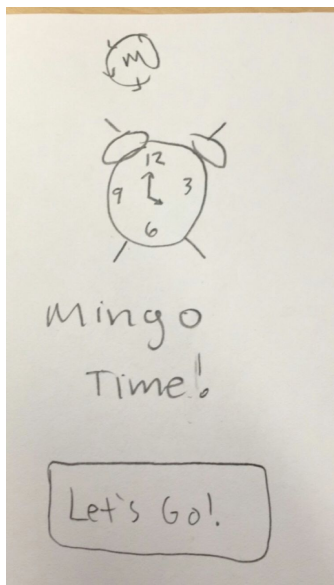




### Screen 7

*Expected behavior:* tap "back to home"

- Peter: No problem
- Davyde: No problem
- Jason: No problem



### Screen 8

*Expected behavior:* tap "Let's Go!"

- Peter: No problem
- Davyde: No problem
- Jason: No problem

All participants also used the 'Keep Exploring' on the Past Activities screen to continue with their spontaneous days.