

# AQUEOUS



## TEAM

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## PROBLEM AND SOLUTION OVERVIEW

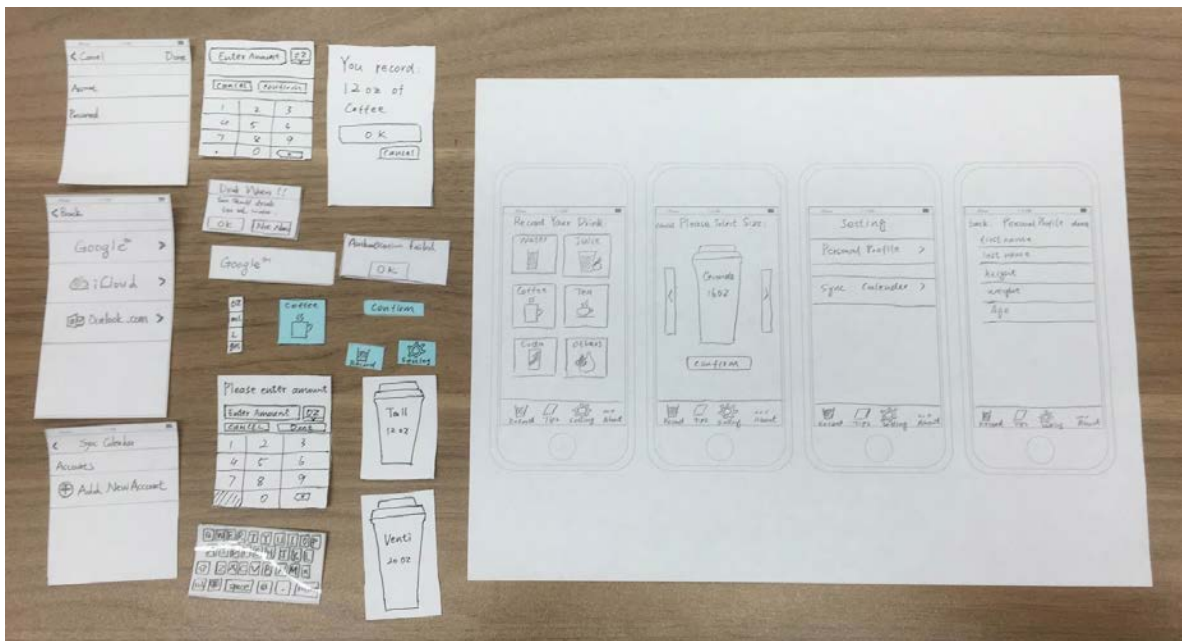
People with busy schedules and preoccupied minds often forget to drink enough water throughout the day, even if they know how important water is for their health and for maintaining proper body function. Some people have tried to manually track their water intake or use alarms to remind themselves to drink water periodically, but these methods are inconvenient and intrusive to daily life. There are also other factors that affect the amount of water each person needs to drink in a day, such as body type, diet and exercise, current health (mental and physical), environment, and many more. Our challenge is to create a design that promotes hydration for a healthier life and changes people's relationship with drinking water. We have come up with the combination of a smart water bottle with special sensors and a smartphone application that allows users interaction as a solution to this problem. The focus of the design is on the phone application with the water bottle as a major supplement to its functionality. The water bottle will track details of the user's water intake, display simple information about the user's hydration, and provide passive reminders to drink water. While the phone application gives the user more power to interact with and interpret their hydration data and integrates other aspects of their lives to provide appropriate reminders to drink water.

## INITIAL PAPER PROTOTYPE

Our paper prototype features two parts. The first part is the prototype of the smartphone application, the other one is the prototype of the smart water bottle. The mobile app prototype will walk users through the details of completing each task and other interactions involved with them. The bottle prototype will also have some interaction with the users.

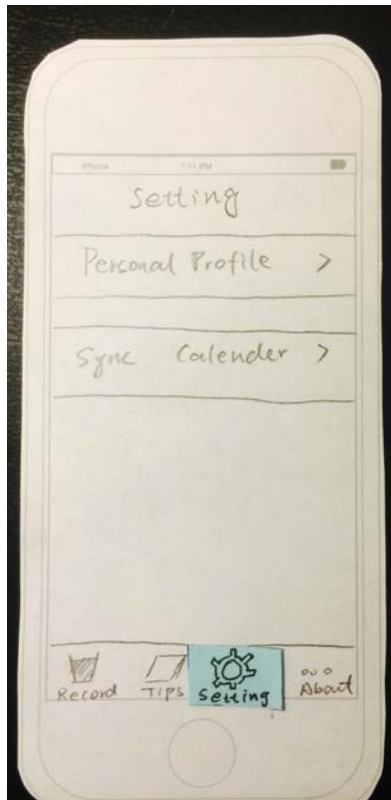


Prototype of smart water bottle



Prototype of smartphone app

## Task 1: Set Up Smart Reminders



Screen 1.1



Screen 1.2



Screen 1.3

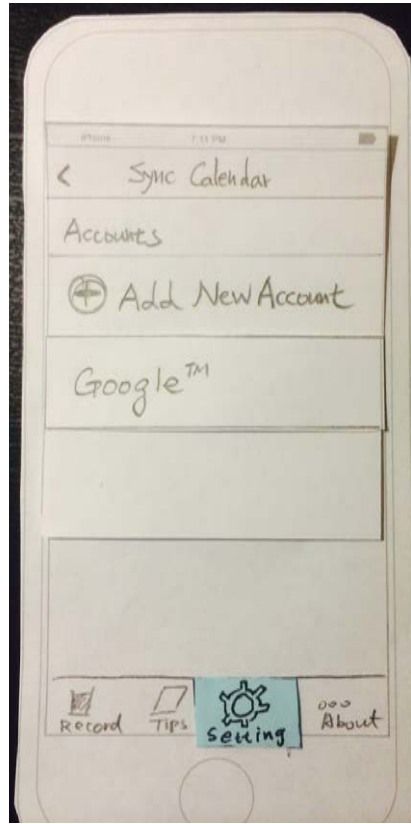
Screen 1.1: When clicking the “Setting” page, the “Setting” icon will be highlighted in blue color and the user will see the setting page. User can then click “Sync Calendar” and application will show next screen. (Screen 1.2)

Screen 1.2: In order to synchronize a new calendar, user can click “Add New Account” and application will show next screen. (Screen 1.3)

Screen 1.3: Application will show three supported calendar services and user can click one of them. In this task, user will click “Google” calendar and application will show next screen. (Screen 1.4)



Screen 1.4



Screen 1.5

Screen 1.4: User inputs authentication information about his or her calendar service and clicks "Done". After successful verification, application will go back to "Sync Calendar" screen.

Screen 1.5: Application will show a new added calendar service.

## Task 2: Record Water Intake



Screen 2.1



Screen 2.2



Screen 2.3

Screen 2.1: The home screen of the app, at the menu bar on the bottom, the current page will be highlighted ( now the record page is being showed). After clicking on one of the beverage choices (coffee, for example), user will be taken to screen 2.

Screen 2.2: In this page, user can select the size of the beverage they just chose. The default size for coffee is 16 ounce.

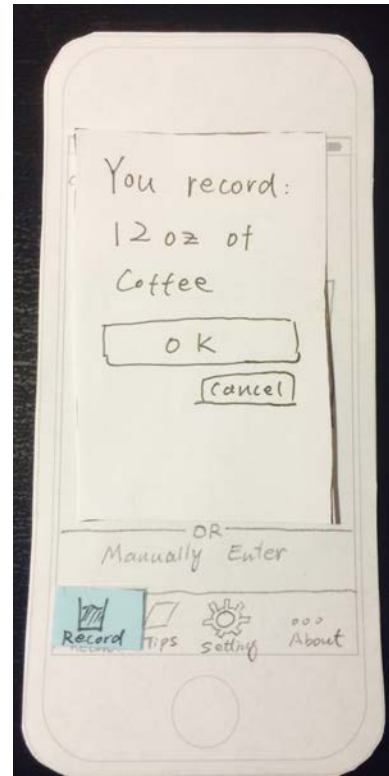
Screen 2.3: User clicks on the caret on the right, the cup size will increase to 20 ounce (venti size).



screen 2.4



screen 2.5



screen 2.6

Screen 2.4: User clicks the caret on the left, the size will decrease to 12 ounce (tall size).

Screen 2.5: After user decides the exact size, they can click “confirm” to record this drink, the confirm button will be highlighted in blue color.

Screen 2.6: After user logs a drink, a notification will pop up indicating user that he or she has just logged a certain drink. User can click “OK” and will be brought to home page then. If they click “cancel”, they will be brought to the size select (screen 2.2) page again.

## TESTING PROCESS

### Method Overview

For each of the tests, we provided some background on our project and explained what the participants should be doing during a usability test. Then, we described each task we wanted the participant to perform before letting him use the application. While the participant was exploring and completing the tasks, we did not answer questions or provide help unless it was absolutely necessary. After both tasks were ended (possibly incomplete), we debriefed the participant, explaining to them the path we were looking for in the tasks and asked them if they had any more thoughts, concerns, or suggestions about the application. For the first test, Ethan was the computer, Cindy was the observer, and both Ethan and Cindy played the role of the facilitator. For the second and third tests, Ethan was the computer, Cindy was the facilitator, and Maggie and Rick were the observers/notetakers.

### Participants

Our first usability test participant was Eric. Eric is an undergraduate student at the University of Washington studying Computer Engineering with a minor in Political Science. Eric represents our typical user, a busy college student who has a full schedule, but is active and wants to stay healthy. He goes running very often and is training for a half-marathon. When he runs, he carries a soft water bottle with him. During the day, Eric usually brings a water bottle in his backpack but rarely drinks from it or fills it up when it is empty. He mostly drinks water from water fountains around campus or when he gets back to his apartment. Eric knows that he should drink more water, especially to stay healthy for his half-marathon, but doesn't feel motivated to throughout the day when he is taking classes. Eric is a great target user for our design since the water tracking feature will let him know how healthy he has been in preparation for the half-marathon and the smart reminders will be able to remind him to drink water when he is at school but not at his apartment where he already drinks enough water. We conducted the test in By George Cafe, a place where many students go during breaks and where users of our product might be checking their phones and exploring the application.

Our second usability test participant was Stephen. Stephen is an also undergraduate student at the University of Washington studying Computer Science and Spanish. Stephen is a busy college student with many classes who bikes to school and really likes outdoor activities. Stephen always carries a water bottle with him and is generally good about drinking water throughout the day. Stephen does want to cut down on the amount of coffee and soda he drinks to be healthier. Stephen is also a great target user for our design, especially for the water tracking feature since he can see a log of the different kinds of beverages he consumes over time. The application's reminders will also remind him to drink more clean water. The test with Stephen was conducted in Mary Gates Hall. Much like in the first usability test, we chose this location because it is a place where students go to study or spend time before their classes.

Our third usability testing participant is Gary. Gary is an undergraduate student of HCDE department at the University of Washington and a part-time employee at Symetra. Gary is very busy with his class schedule and work, but still pays a lot of attention to stay healthy. Gary works as a front-end developer at work, so he is also very tech-savvy. He carries a water bottle with him throughout the day and drinks the most when he first wakes up and after working out. Gary goes swimming and running often, but because it is hard to keep drinking during those activities, he feels very tired and possibly dehydrated afterwards. At work, free beverages are provided to all the employees so Gary finds himself drinking a lot more soda and sports drinks. The product we designed would be great for a user like Gary since it will help him keep track of what he is drinking at work and remind him to drink water when he is exercising and needs to stay hydrated. The usability test took place in the first floor of Allen library, where many students often go to study and have group meetings.

### **Summary**

We did a good job of having participants speak their thoughts out loud and learned a lot from their thought processes. After the first usability test, we moved slower through the process to give observers sufficient time to take notes. We also gave some more background on our project and described the product more thoroughly so the participant can feel like an actual user of the product. Through each usability test, we had the most difficulty with our second task and the format of the notification settings page. Other changes to our prototype were mainly on system feedback, simplicity, and ease of use.



## TESTING RESULTS

### Heuristic Evaluation

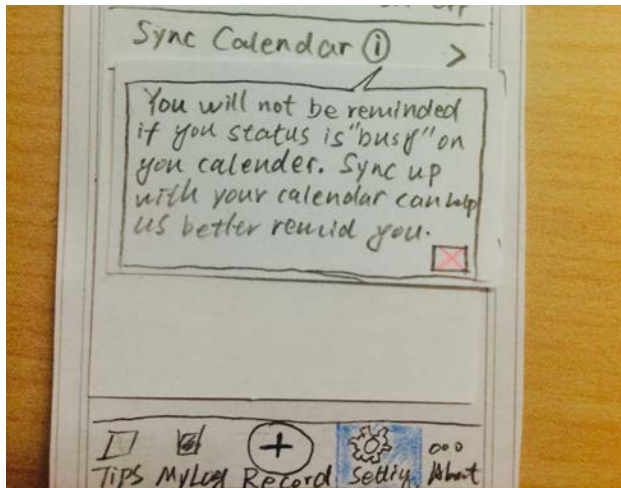
Our group identified several problems during our heuristic evaluation sessions. The major problems about our first version of paper prototype are:

- 1) Poor documentation and help, purpose of syncing calendar unclear
- 2) Users don't have total control and freedom with the system
- 3) Users don't have visibility of system status
- 4) Match between system and the real world is not good.

Basically, this version of paper prototype has some typical violations of heuristics, and we did several modifications to refine the prototype.

### Modifications and Changes

#### 1. Purpose of syncing calendar unclear



Revision:

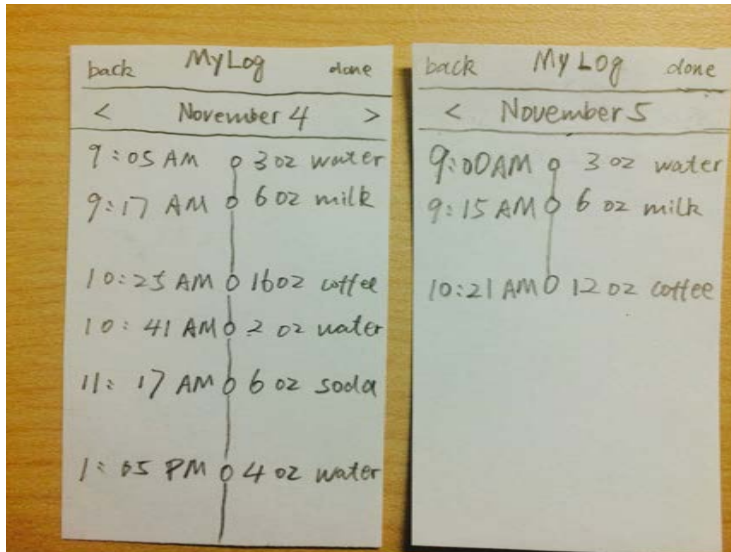
The revision we did is adding a “information” icon after the “Sync Calendar”. This design will give users documentation to help them understand why they want to sync their calendar in the reminder setting.

#### 2. Missing Default Reminder Setting

Revision:

We add a interface of the default reminder in the reminder setting that allows user to interact with it. Users can set up how often they want to be reminded to drink water, and the start and end time of the reminder. Also, there is a radio button to allow users to turn on/ turn off the default reminder.

### 3. Missing Water Log

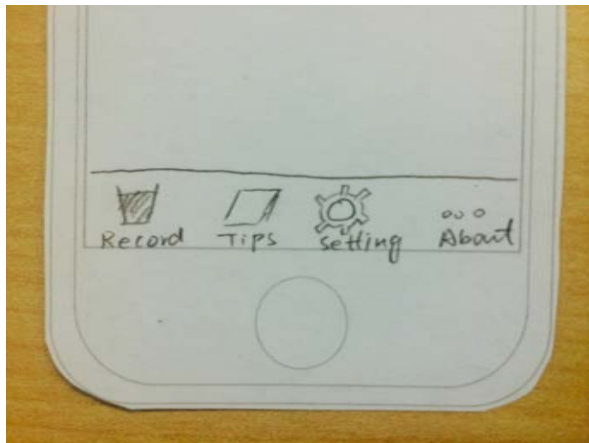


Revision:

We add a page called MyLog in the menu bar to provide water logging history to users. So users will be able to see today's water log history, and they can also go to other day's.

### 4. Menu Design Not Match User Behavior

Revision:



Before



After

We change the bottom menu bar, putting the record menu in the middle of menu bar, since the record task will be used frequently and it is more convenient and easier for users to click on the record button following real-world conventions, making the menu bar appears in a natural and logical order.

## Usability Testing

### Test 1

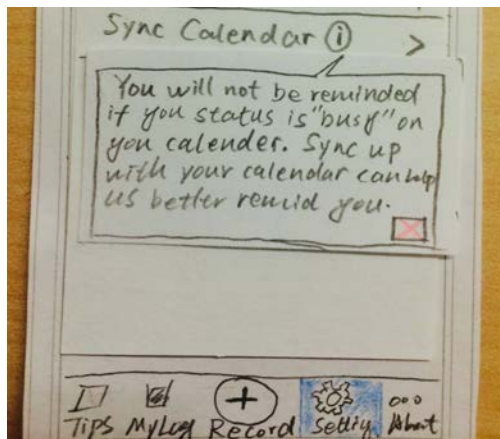
After our first usability testing, we can see some improvement from the last version of our paper prototype, but there are some designs that we still need to improve. The biggest problem about this version of paper prototype is still the settings page. Our participant didn't understand the purpose of "sync up with calendar", and he didn't notice the "information button" we added from first revision.

Another problem is that our participant noticed that there are some unnecessary UI elements in the design that need to be fixed. So we still need to modify the design of setting page, and some UI elements design. We also received positive feedback from our participant about the timeline display in "MyLog" page, and we decided to keep that design for our next usability test.

#### 1. Purpose of syncing calendar (still) unclear

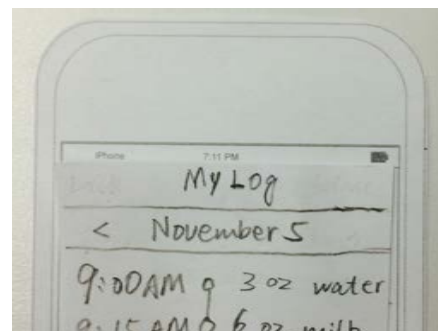
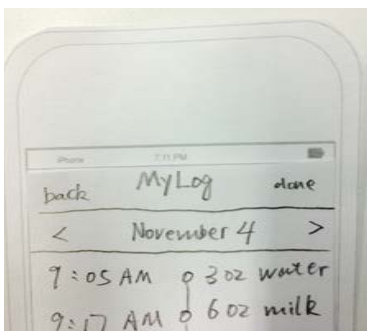
Revision:

We added some documentation below the area where users click to sync up their calendar to inform them of its purpose.



#### 2. Unnecessary "back" and "done" buttons

Revision: We removed "back" and "done" button on pages that did not need them to reduce confusion.



### 3. Missing automatic water bottle sync status

Revision: We added a banner screen that appears for a couple of seconds, letting users know that the application received their drinking information.



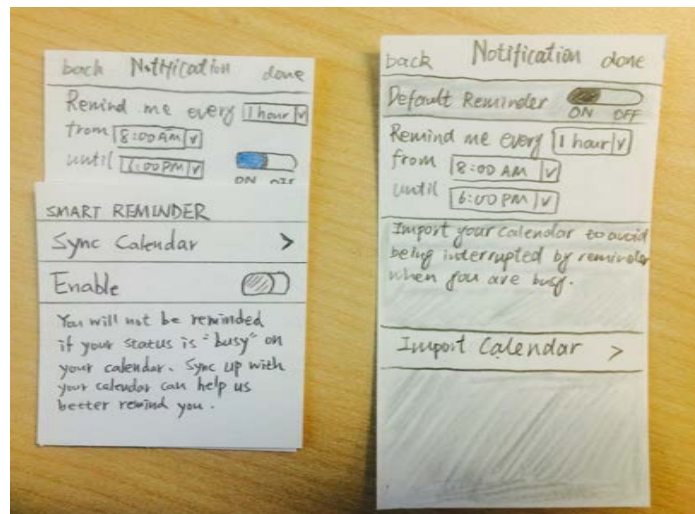
## Test 2

Our second usability testing went well, and we can see that our design is getting better as we keep modifying based on user evaluation and usability testing results. For this version of paper prototype, the major problems we found are documentation and naming. The documentation on reminder setting page is still confusing to our participant, and some of our wordings in design are not perfectly clear.

### 1. Purpose of syncing calendar unclear

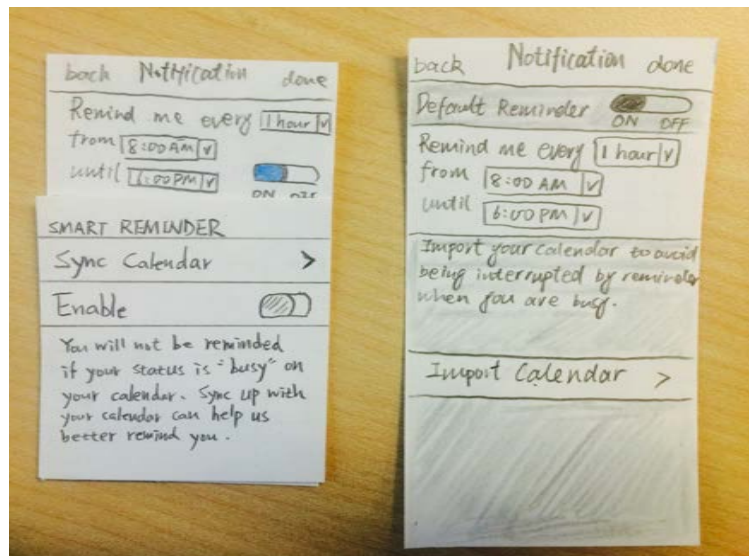
Revision:

We renamed the option to "Import Calendar" instead of "Sync Calendar" because it more accurately represents how the app is using the calendar. We also added some documentation below the area where users click to import their calendar to inform them of its purpose.



## 2. Confusing Default Reminders with Smart Reminders

Revision: We moved the setting options for Smart Reminders into a sub-page called “import calendar” to keep it separate from Default Reminders options.

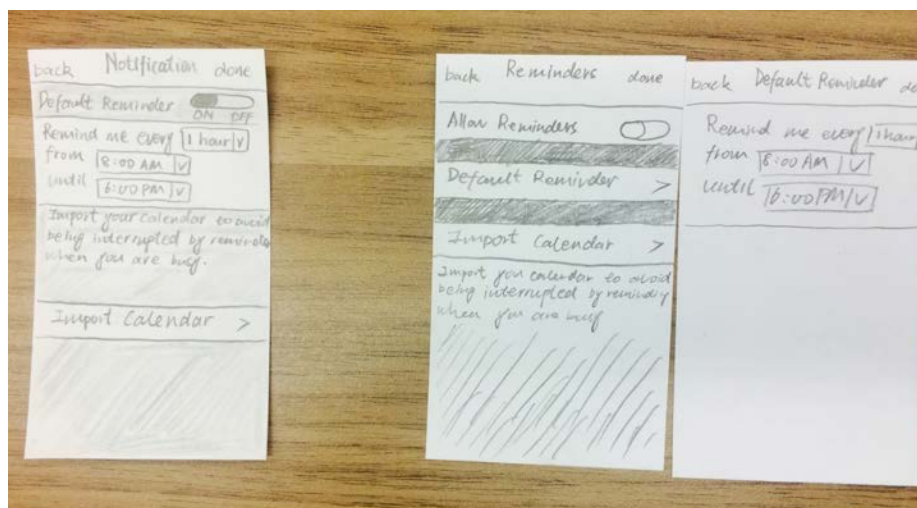


## Test 3

After three iterations of redesign and refinement, our third usability test went very well. This time, we finally solved the unclearness of reminder setting page. Although we didn't discover any major problems of our paper prototype this time, we got some useful feedback and insights from the third test. Our menu bar is based on iOS design conventions, and our third participant (an Android user) didn't figure out how to use that at the beginning. Also, we had the feedback that the design for reminder setting page is too cluttered.

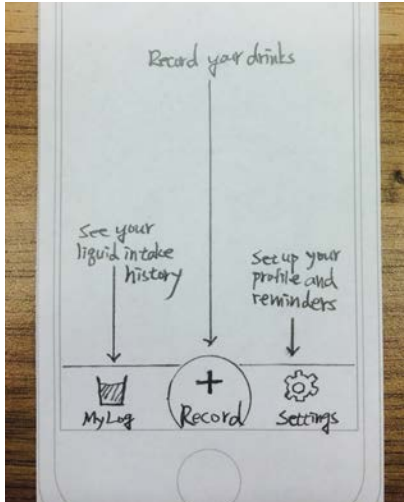
### 1. Confused About Menu Bar

Revision: On the setting page, we moved the default reminder setting to a sub-page, so users will not see details about that on the reminder setting landing page. Instead, they will see three two selection bars, and a radio button, which looks much cleaner than before.



## 2. Reminder Settings Page Too Cluttered

Revision: We added a simple tutorial overlay that shows users how to use the menu bar, and where to go for certain tasks that could be helpful. This page will be shown to users on their first time opening the app.

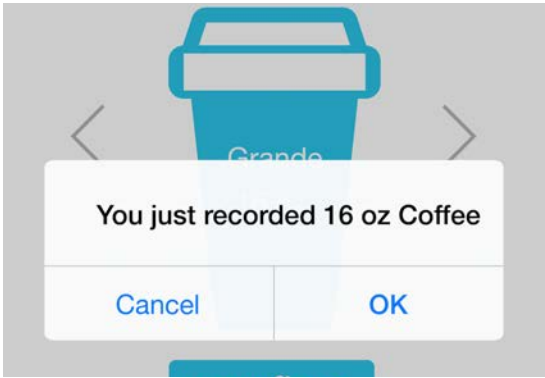


# Digital Mockup Design Critique

After we finalized our paper prototype design, we turned that into a digital mockup and participated in a group critique session in our class section. We received some positive feedback for our digital mockup, as well as some modification suggestions. Basically, the suggestions are all about grammar problems in our design. But we also found that the design of the settings icon in menu bar is not consistent. So we refined the menu bar icon design, and corrected our grammar errors.

## 1. Grammar problems

Revision: we change the wording in notification pop-up to be past-tense. Also, we use “settings” instead of “setting”



## 2. Settings icon design

Revision: For the settings icon, we use color-fill instead of color-stroke to keep it consistent with designs of other two icons.



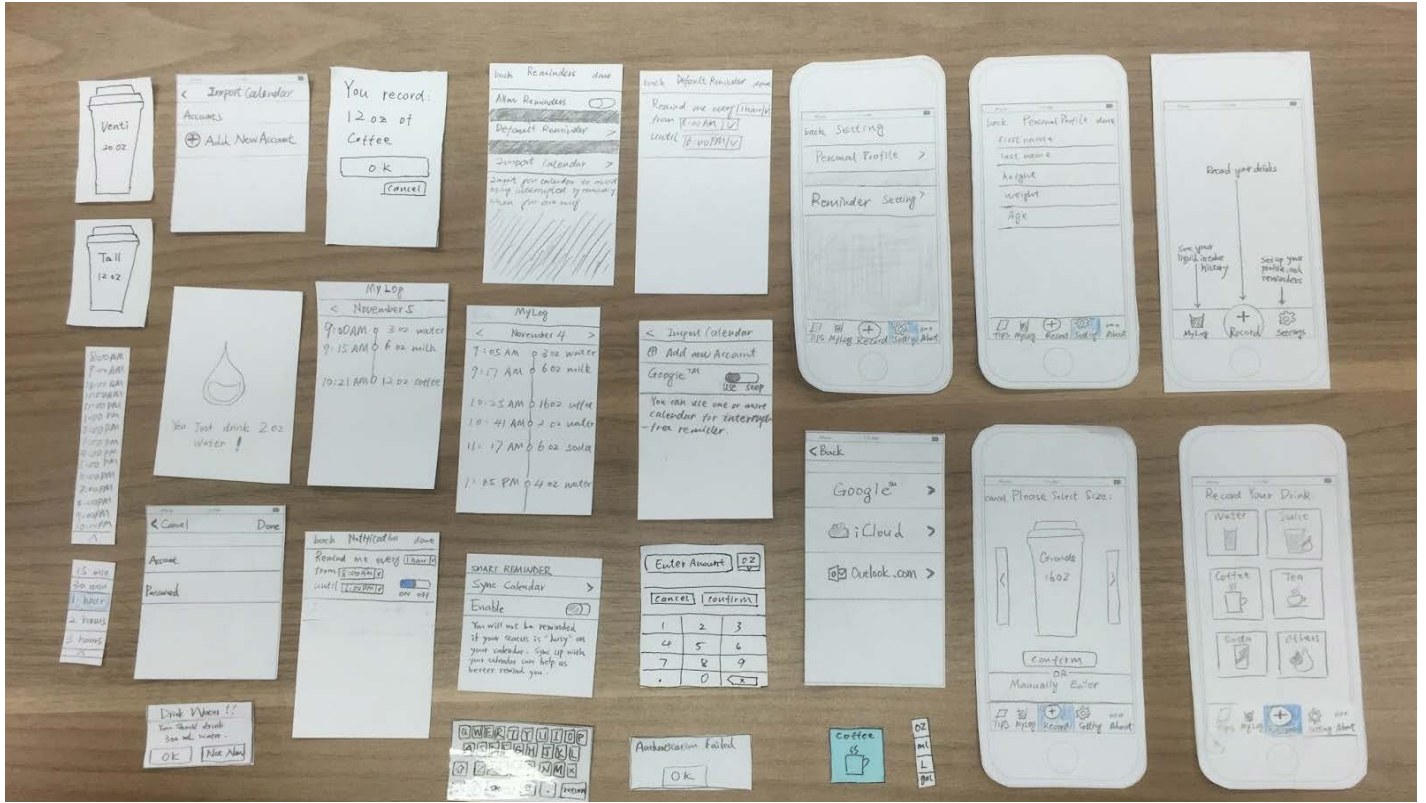
before



after

# FINAL PAPER PROTOTYPE

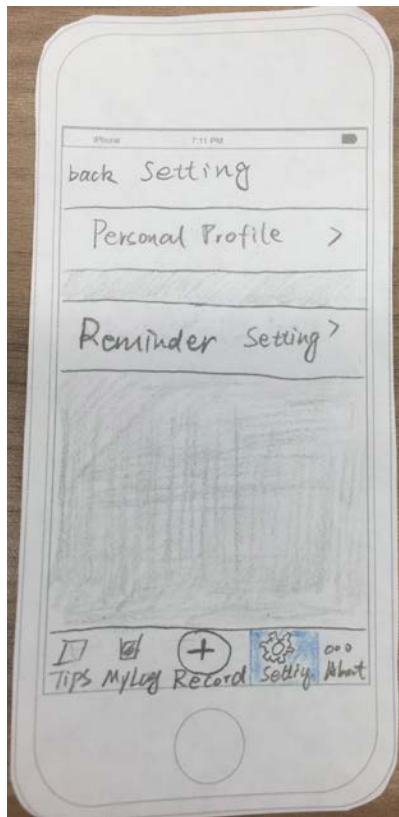
## critical aspects of design



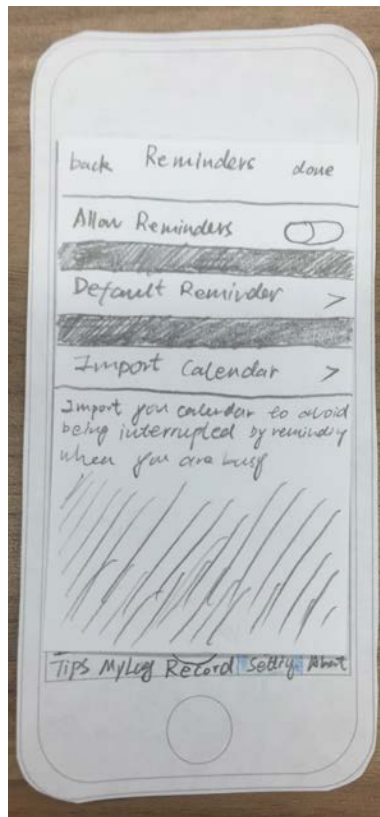
Overview Image



## Task 1: Set Up Smart Reminders



Screen 1.1



Screen 1.2

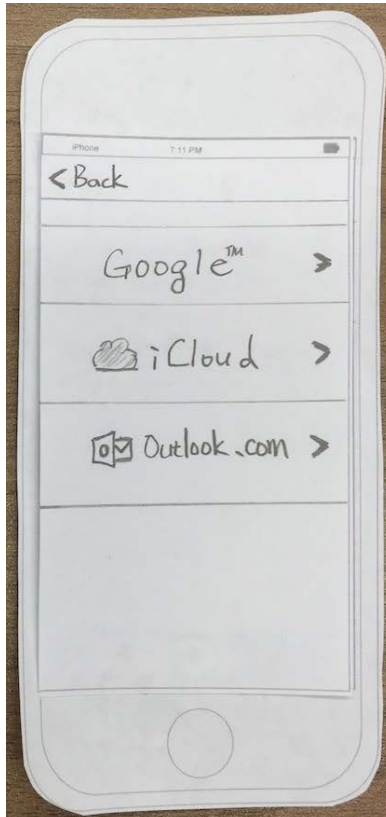


Screen 1.3

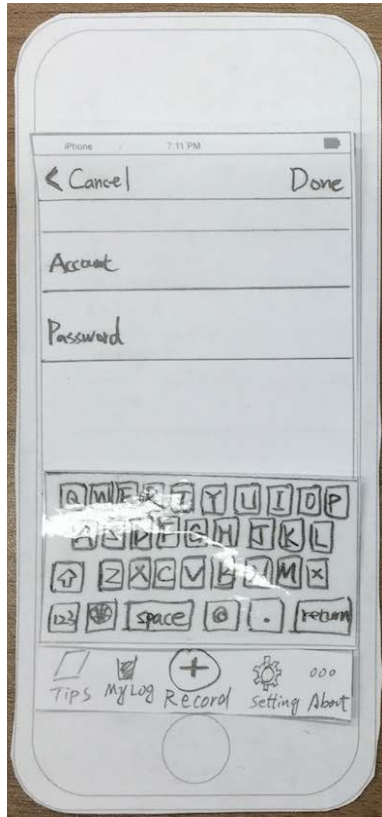
Screen 1.1: When clicking the “Setting” page, the “Setting” icon will be highlighted in blue color and the user will see the setting page. User then clicks “Reminder Setting” and application will show next screen. (Screen 1.2)

Screen 1.2: Application shows the “Reminder” screen. User can set a default reminder which can be customized with interval, starting time, stopping time and enable status. User can also clicks “Import Calendar” to enable “Smart Reminder” and application will show next screen. (Screen 1.3)

Screen 1.3: In order to import a new calendar, user clicks “Add New Account” and application will show next screen. (Screen 1.4)



Screen 1.4



Screen 1.5



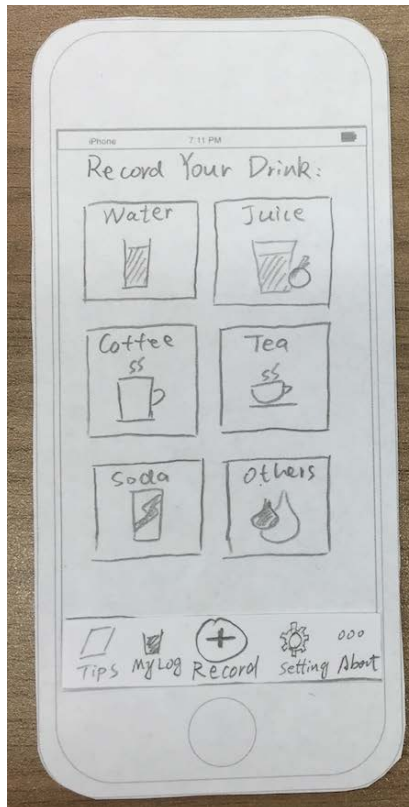
Screen 1.6

Screen 1.4: Application shows three supported calendar services and user clicks one of them. In this case, user clicks "Google" calendar and application will show next screen. (Screen 1.5)

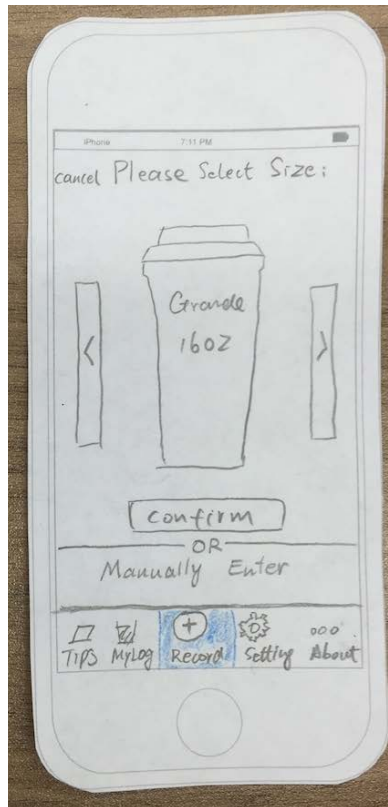
Screen 1.5: User inputs authentication information about his or her calendar service and clicks "Done". After successful verification, application will go back to "Import Calendar" screen.

Screen 1.6: Application shows a new added calendar service, add user can use the toggle button next to the calendar name to turn on or off the smart reminder.

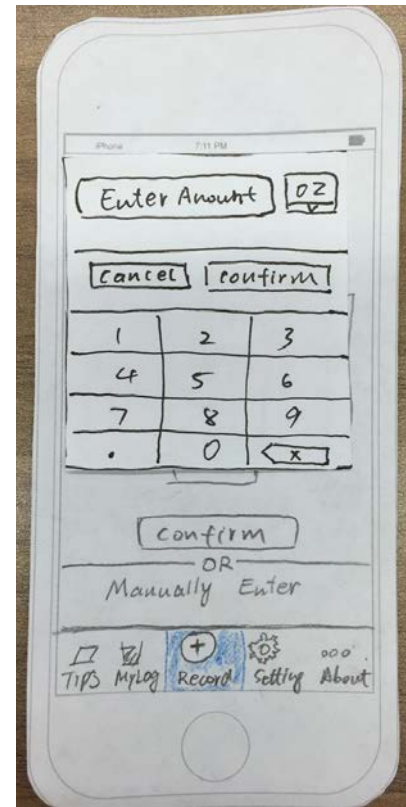
## Task 2: Record Water Intake



screen 2.1



screen 2.2

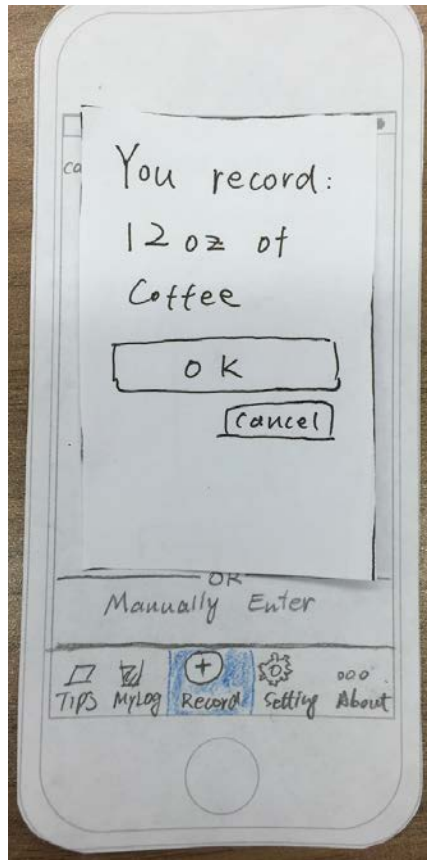


screen 2.3

Screen 2.1: The home screen of the app, at the tab menu on the bottom, the current page will be highlighted (now the record page is being showed). After clicking on one of the beverage choices (coffee, for example), user will be taken to next screen (Screen 2.2).

Screen 2.2: In this screen, user can select the size of the beverage they just chose. The default size for coffee is 16 ounce. User can also manually input what he or she is drinking by clicking "Manually Enter".

Screen 2.3: User manually inputs the amount of water and then clicks "Confirm" to log the record.



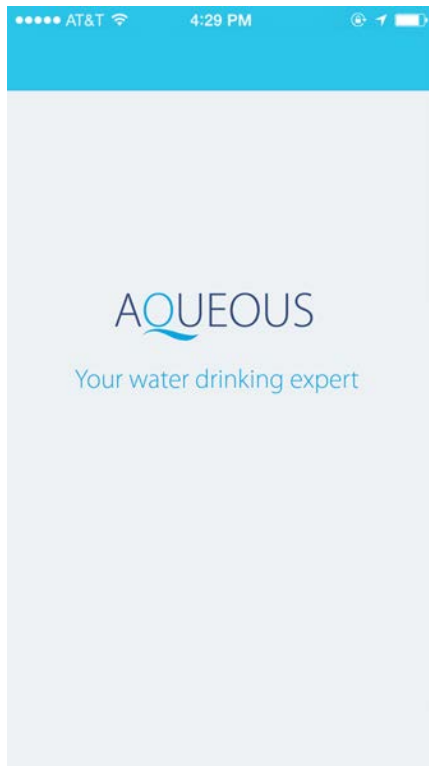
screen 2.4

Screen 2.4: Application will show a confirmation dialog. User can click "OK" to log the record or click "Cancel" to back to previous screen.

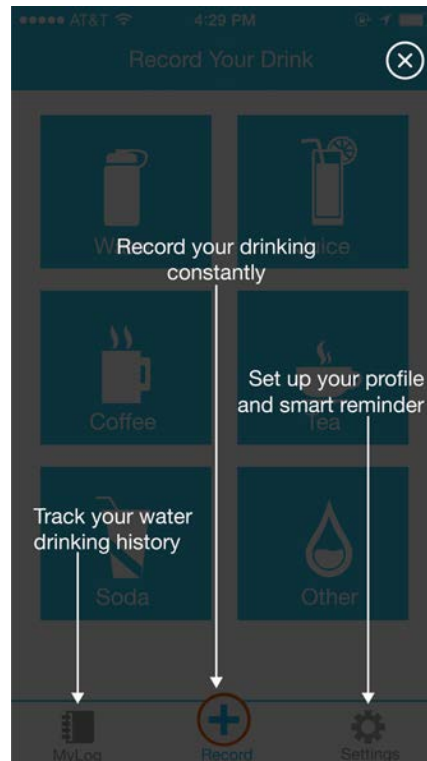
## DIGITAL MOCKUP

In the digital mockup, we tried to give our potential users a general idea of what the interaction of the application will be like. We refined each screens of our paper prototype and made them more realistic when walking through each scenario. Moreover, we added a tutorial overlay to help users understand each function when opening the application in the first time.

### Task 0: Application Introduction



screen 0.0



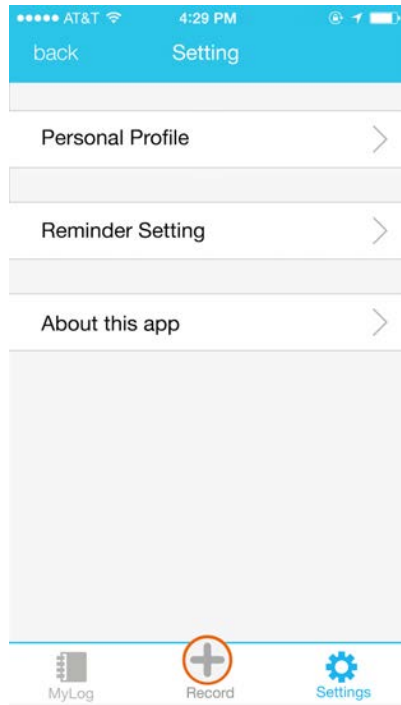
screen 0.1

Screen 0.0: Application splash screen.

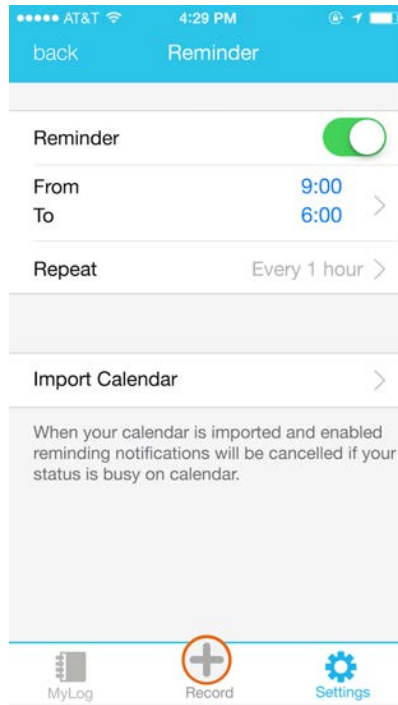
Screen 0.1: Tutorial Wizard - introduce main functions of the application.

## Task 1: Set Up Smart Reminders

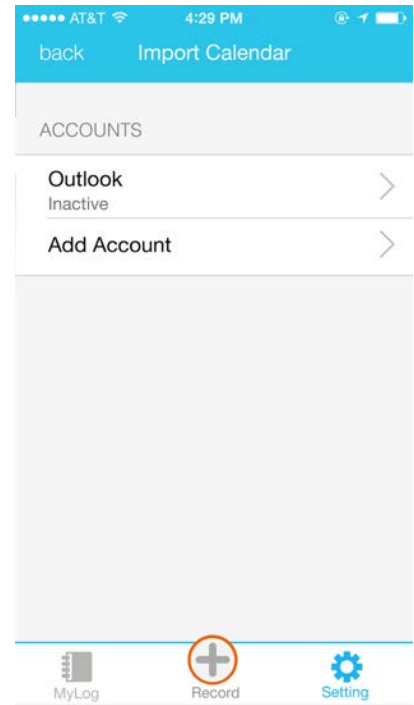
In the first task, the application provides a smart way to remind users to drink water at the most appropriate times by importing their calendar. This way, the application can know user's schedule to avoid sending an intrusive notification when users are busy.



Screen 1.1



Screen 1.2

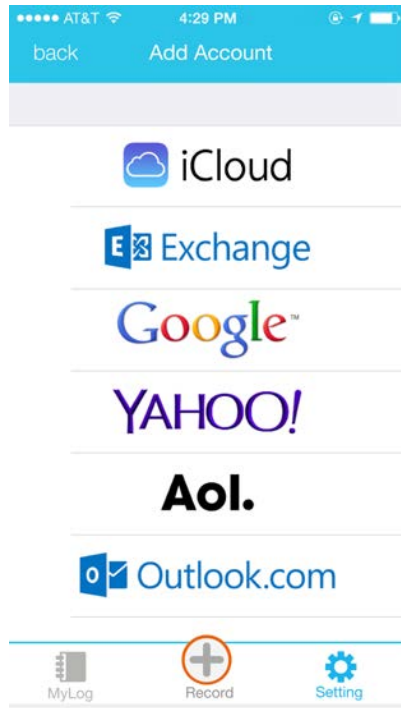


Screen 1.3

Screen 1.1: When user clicks the “Setting” tab, the “Setting” tab will be highlighted in blue color and the user will see the “Setting” page. User can click “Reminder Setting” and application will bring user to next screen. (Screen 1.2)

Screen 1.2: Application will show the “Reminder” page. User can set a default reminder which can be customized with interval, starting time, stopping time and status. User can also click “Import Calendar” to enable “Smart Reminder” and application will bring user to next screen. (Screen 1.3)

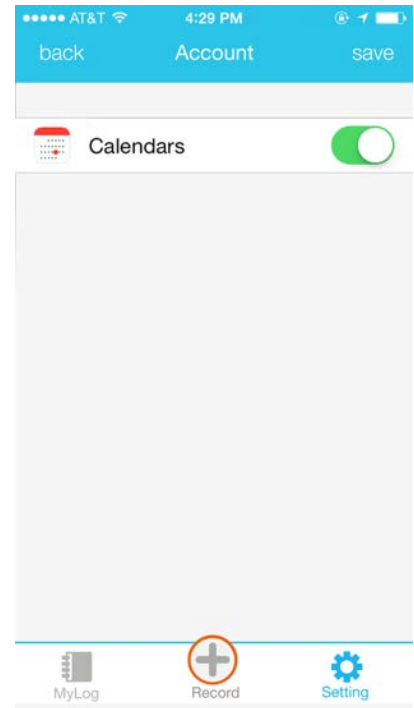
Screen 1.3: In order to import a new calendar, user can click “Add Account” and application will bring user to next screen. (Screen 1.4)



Screen 1.4



Screen 1.5

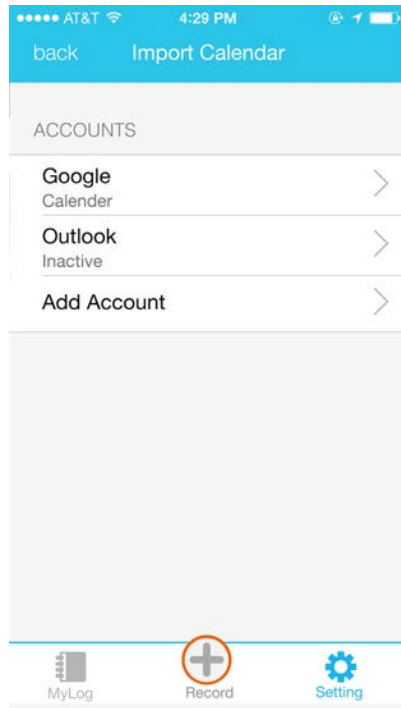


Screen 1.6

Screen 1.4: Application will show supported calendar services and user can clicks one of them. In this task, user would click “Google” calendar and application will bring user to next screen. (Screen 1.5)

Screen 1.5: In this screen, user can input authentication information about his or her calendar service and click “Next”. After successful verification, application will bring user to next screen. (Screen 1.6)

Screen 1.6: Application will show a radio button that user can turn on or off this calendar service. User can click “Save” to complete this task and application will bring user to next screen. (Screen 1.7).



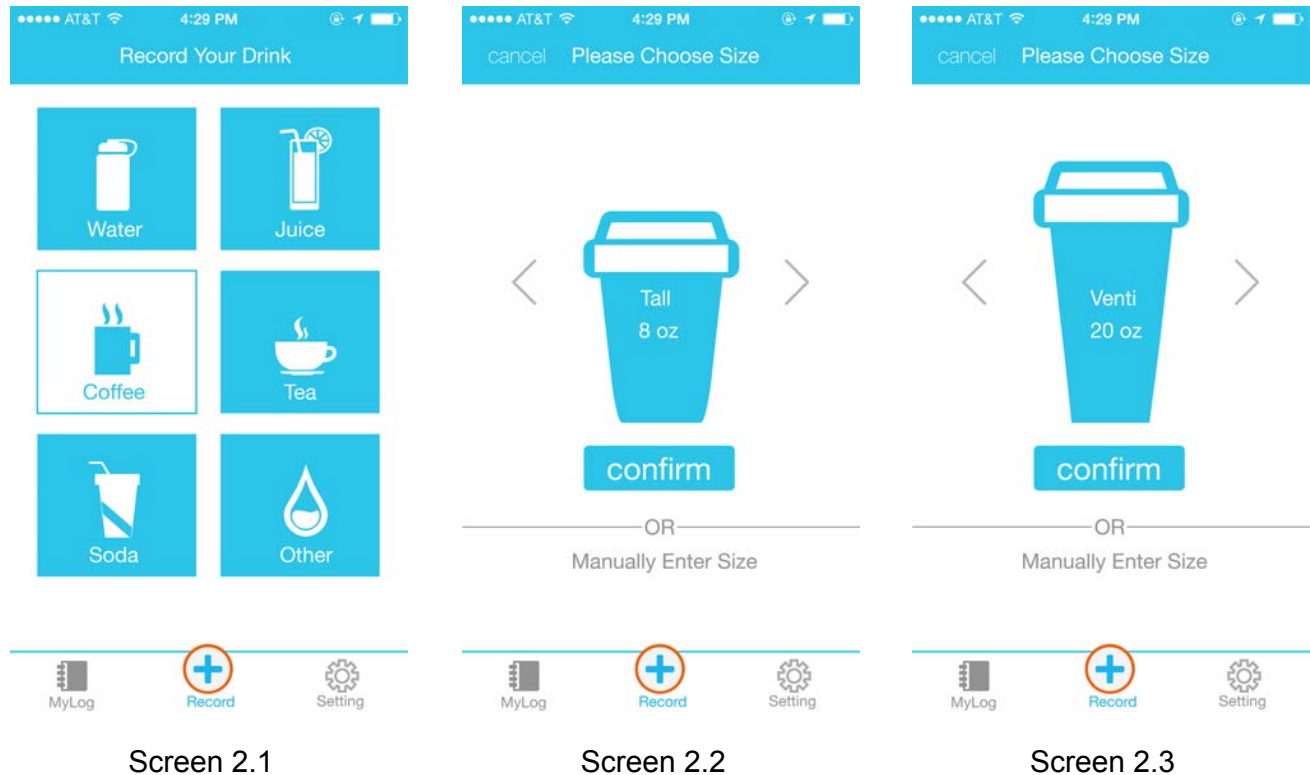
Screen 1.7

Screen 1.7: Application will show a new added calendar service in this screen.



## Task 2: Record Water Intake

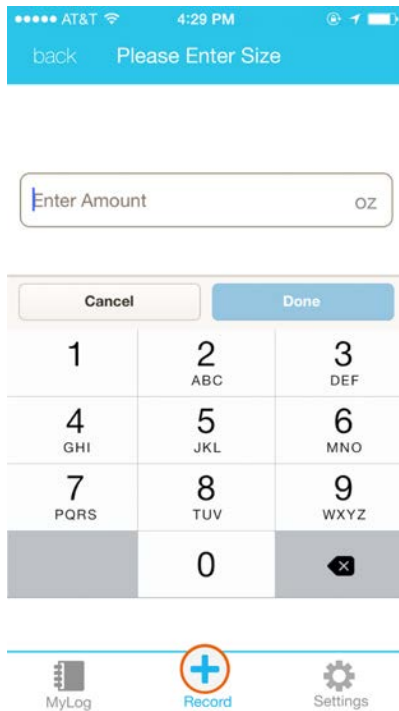
In the second task, the application provides a quick and handy function for users to record their beverages consumed outside of the smart water bottle. Users can quickly click from several built-in drinks and choose from the predefined sizes to accomplish this task. Besides the default settings, the applications also provides a manual input function for users to log the precise amount of their beverage.



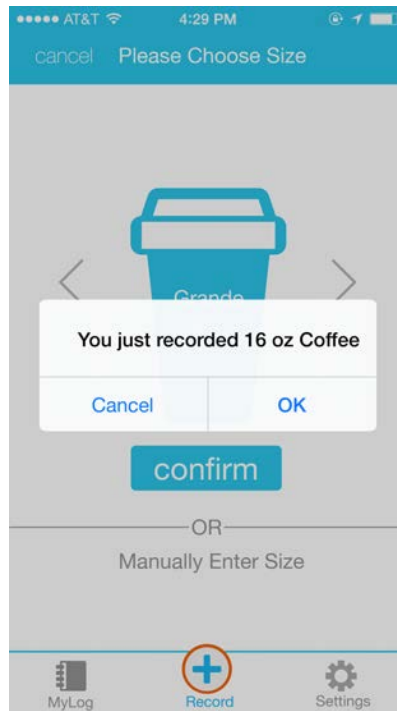
Screen 2.1: User can start to record his or her beverage In the home screen. In this task, user would click on “Coffee” button and application will bring user to next screen. (Screen 2.2)

Screen 2.2: In this screen, user can select the size of the beverage they just chose. The default size for coffee is 16 ounce. User can click on the caret on the left, the cup size will decrease to 8 ounce (Tall size).

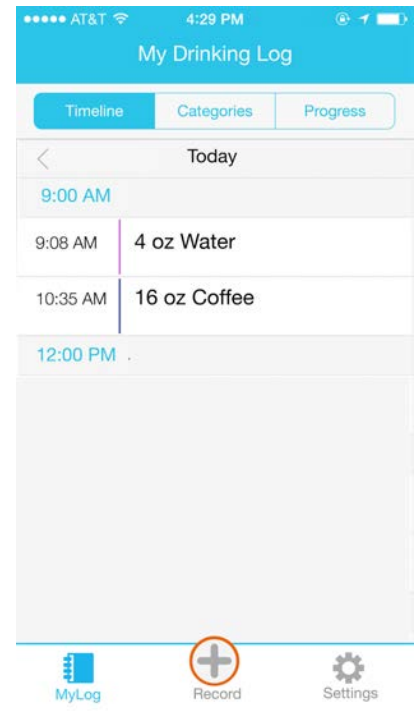
Screen 2.3: User can also click on the caret on the right, the cup size will increase to 20 ounce (Venti size). Moreover, user can manually input the amount of his or her beverage by clicking the “Manually Enter Size” button and application will bring user to next screen. (Screen 2.4)



Screen 2.4



Screen 2.5

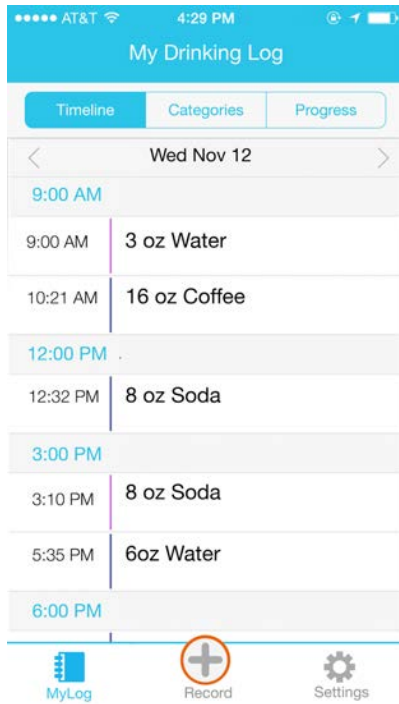


Screen 2.6

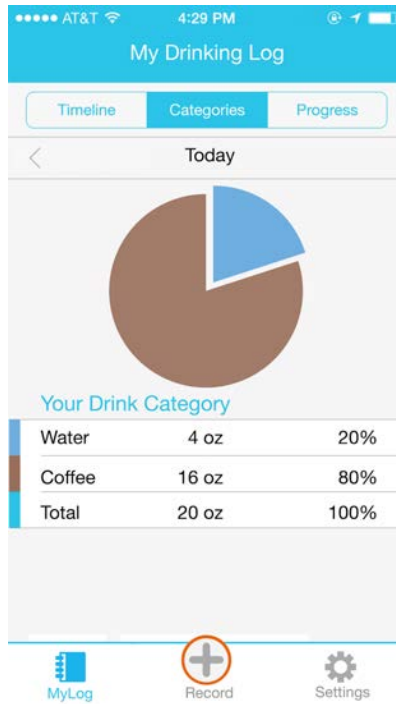
(Optional) Screen 2.4: In this screen, user can manually input the amount of his or her beverage and then click “Done” button.

Screen 2.5: User can then click “Confirm” to record this beverage and application will show a message to inform user. User can click “OK” and application will bring user to next screen. (Screen 2.6)

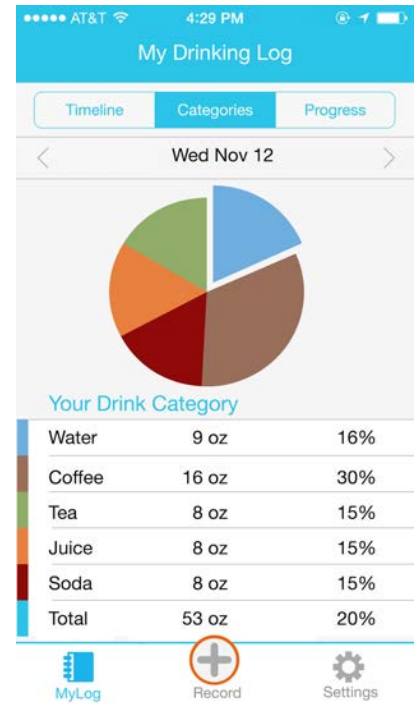
Screen 2.6: In this screen, application will show today’s “My Drinking Log” including the record that user just input. User can also review history logs by clicking the left caret icon and application will bring user to next screen. (Screen 2.7).



Screen 2.7



Screen 2.8



Screen 2.9

Screen 2.7: In this screen, application will show yesterday's drinking logs. User can review his or her beverage distribution by clicking the "Categories" tab in the upper tab bar and application will bring user to next screen. (Screen 2.8)

Screen 2.8: Application will show today's beverage distribution. User can also review history beverage distribution by clicking the left caret icon and application will bring user to next screen. (Screen 2.9).

Screen 2.9: In this screen, application will show yesterday's beverage distribution.

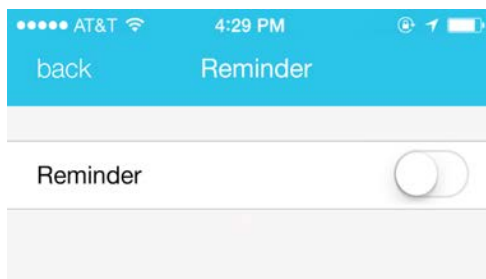
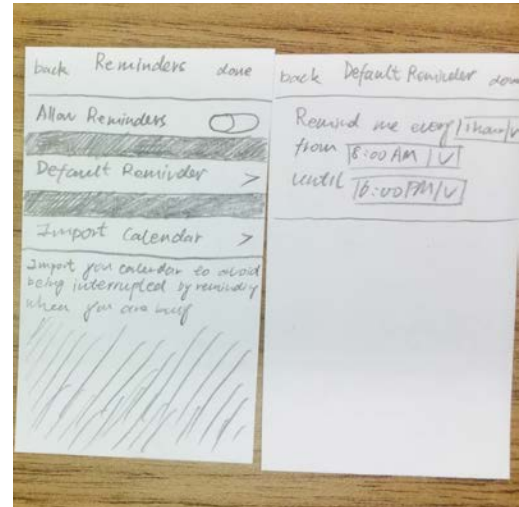
## Design Changes

Our group didn't make many changes from our final design of paper prototype. Below are two major changes we did to our digital mockup.

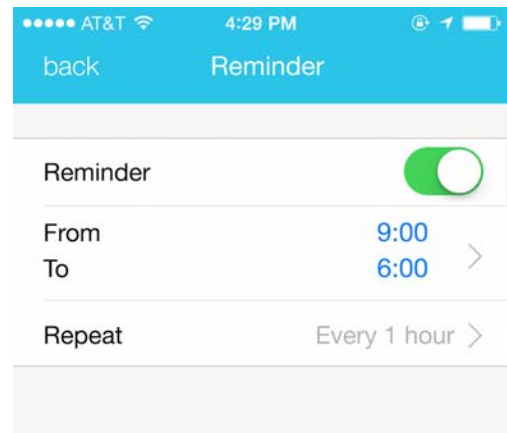
In the setting page of our final paper prototype design, we moved the default reminder setting to a sub-page, so users will not see details about that on the reminder setting landing page. Instead, they will see three two selection bars, and a radio button, which looks clean.

For the digital mockup implementation, we redesign the reminder setting page. When users click off the reminder radio button, the details of the default reminder setting will disappear. When the radio button is on for reminder, then the details of setting will show up. So user don't need to create another sub-page for the default setting, and the page still looks very clean.

This design can also be seen in iOS setting design, which is another reason for this redesign.

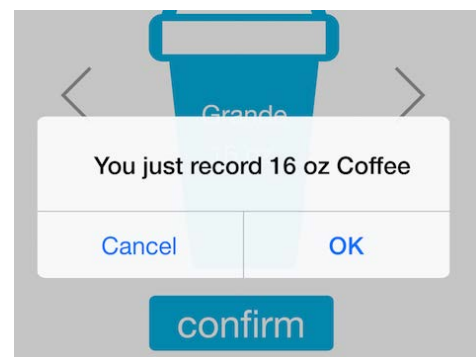


Default reminder OFF



Default reminder ON

Another change we did is the design of notification pop-up. In our paper prototype, we designed the pop-up to be a full screen notification. But in our digital mock up, we decided to follow the iOS design guideline, and use the design of default iOS.

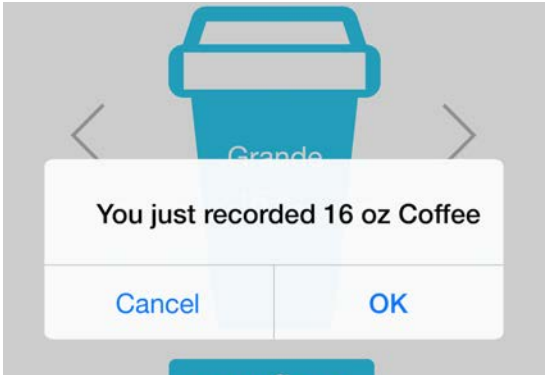


## Changes in Response to Critique

We received some positive feedback for our digital mockup, as well as some modification suggestions during the group critique session. Basically, the suggestions are all about grammar problems in our design. But we also found that the design of the settings icon in menu bar is not consistent. So we refined the menu bar icon design, and corrected our grammar errors.

### 1. Grammar problems

Revision: we change the wording in notification pop-up to be past-tense. Also, we use “settings” instead of “setting”



### 2. Settings icon design

Revision: For the settings icon, we use color-fill instead of color-stroke to keep it consistent with designs of other two icons.



before



after

## DISCUSSION

This is our first time doing the usability testing and iterative design. In general, we think the process of iterative design is very effective and powerful to design an application. One of the greatest ideas we learned from the process of iterative design is that our initial design is always not the best design and it is important to get reliable feedback from users. At first, we spent hours working on our first paper prototype thinking about elements and structures in every screen and tried to make everything perfect. When presenting our first paper prototype to users for their feedback, we find that there are many problems we never would recognize. Like adding a page called MyLog in the menu bar to provide water logging history to users. It appears that it is probably preferable to improve our design by getting more reliable user feedback.

Through heuristic evaluation sessions, we revealed several essential problems of our application including unclear meaning of sync calendar, missing control with the system and losing visibility of system status. We then modified the paper prototype according to these findings and generated a robust frame for our application. After this construction stage, we then went further into next step, usability testing, to get feedback from our potential users and try to refine our application based on these results. We did uncover some flaws and misunderstandings in these testings, and basically the major problem was that users did not realize the purpose of "Sync Calendar". We made several modifications including changing wording, distinguishing from default reminder and reconstructing the setting stratification to improve the understanding of this function. Finally, the result seemed to be good, at least for the last participant, and then we started to finalize the design and convert it into our digital mockup.

For our tasks, we added some more descriptions of the task scenarios so they participant will feel like they have more reason to complete the task. The tasks themselves also became slightly more specific so our participant can better know when they have correctly completed the task at hand, but did not give too many details away on how to navigate through the application. In the first task, we did not explain where personal profile and smart reminder configurations were located so we can test how the participant tries to find it themselves. We told the participants what the general purpose of smart reminders in the introductory description of the product, but did not specify how exactly the smart reminders worked. This way, they understand that smart reminders is a fundamental part of the product and we could still test the clarity of the different features in the application. Before, we did not explain the purpose of smart reminders very well and some usability test participants actually failed to complete the first task because they did not fully understand why they needed to set up this feature or did not know how the smart reminders were different from default reminders. In the second task, we specified that the participant needs to log a 16 oz coffee he just drank and also wants to check his previous records for multiple days. The participant knows exactly what he needs to enter into the application and it test the functionality of the recording feature to a greater capacity since the user needs to explore more in specifying the details of his drink.

Checking water logs is also an important part of recording water intake and asking participants to see their water logs for multiple days lets them explore that area of the application.

We think we could have used more iterations upon our design. In our iterative model, it will be better if we can do some more usability testing on our digital mockup design to get more useful feedback and suggesting. The digital prototype will give users a better understanding of the interface and interactions, so we might receive different feedback from users if we are using that for usability testing. So it would be better to have more design iterations for our design.

## APPENDIX

### **Aqueous Mobile App Usability Testing Plan**

Purpose: The purpose of this usability study is to examine the usability of Aqueous mobile app

To be more detailed, here are a list of things we are planning to include:

- Recruitment students or employees who have busy schedules.
- Introduce them to the Aqueous app.
- Have each participant complete a list of tasks on the Aqueous paper prototype.
- Take notes during each study session while observing the participants and their interaction with the paper prototype.
- Interview participants after each study to get more in-depth knowledge about how the paper prototype works for them.
- Modify the current paper prototype based on feedback and iterate.

Research Questions

- How intuitive is the design of paper prototype for participants? (wording, flow, etc.)
- What aspects of the prototype design are useful or not useful for participants?
- What is the best way for users to interact with the app

Participant Profile

We are planning to recruit people who are generally very busy with their schedule (full time/ part time employees, students, etc) but want to keep up a good habit of drinking enough water. Participants do not have to be existing users of a similar product but they should be comfortable using a smartphone. There should be no restrictions on the participant's age, gender and ethnicity.

### **Mobile Adoption Usability Study Kit**

Study Equipment

- Laptops.
- Aqueous paper prototype kit
- Hard copies of consent forms and tasks/scenario.
- Note taking tools.

Roles

- Facilitator: conducts interviews and tasks
- Observer/Note taker: takes notes, and records critical incidents during interviews and task scenarios.
- Computer: Interact with users using the paper prototype



## **Facilitating Script**

*“Hello, welcome! My name is \_\_\_\_\_. I am the facilitator of this session and I will be walking you through this session today. Thank you again for agreeing to participate in this usability study session. As you can see, there is also a note-taker and a “computer” here. The “computer” will be helping me keep this session running smoothly and interact with you using the paper prototype we developed.*

*Today we are asking you to complete a set of tasks. Our goal is to study the usability of our paper prototype of our mobile app called Aqueous, and to understand how easy or difficult they are to interact with.*

*This session today should take about 20 minutes to complete. With your permission, we will be recording your interactions as well as our conversation for data analysis later. However, your name will not be associated or reported with the data or findings from this study.*

*During this study session, you will be completing some tasks by following the task scenario sheet in front of you. Please try to think out loud as you are completing the task. (Explain think out loud if necessary). Please feel free to ask for clarification if you find any confusion on the tasks.*

*I just have a few things for you to keep in mind during the session:*

- This is not an evaluation of you; you are evaluating our paper prototype design. So don't worry about making mistakes or messing up.*
- There is no right or wrong answer. I just want to know how this paper prototype works for you.*

*Do you have any questions before we begin? Also, if you need to take a break at any time just let me know.”*

## **Task Script**

*“I will now give you 2 tasks to complete. For each task, I will explain it to you then let you attempt to perform the task. Whenever you believe you have completed the task, let me know by saying ‘Done.’ If you get stuck and need a hint, let me know. It is completely fine if you cannot complete a task; please just let me know when you want to abandon the task. There may be points where I may ask you to stop the current task and move on. Please do not feel rushed; complete the tasks at your own pace. Do you have any questions before we start?”*

## Task Scenario for Participants

Task 1: You just downloaded and installed the Aqueous app on your phone. Please set up your personal profile and smart reminders using the app.

Task 2: You just finished drinking a 16 oz coffee. Please use the Aqueous app to record your coffee and check out your drinking progress for today and yesterday.

## Critical Incidents

### 1. “Notification Settings” not visible

When trying to complete the task of setting up his reminders, Eric successfully clicked through “Settings” and then “Notification Settings” to get to the page where he can modify his reminders and set up “Smart Reminders”, but he voiced that he thought the page was hidden and it wasn’t very clear that was where he had to go

### 2. Purpose of syncing calendar unclear

Eric and Stephen both did not know what the purpose of syncing up their Google calendar with the application was. Both participants initially thought the application was going to add events onto their Google calendar for reminders to drink water and did not like that feature. Stephen actually ignored the “Sync Calendar” option completely and failed to complete our second task.

### 3. Missing automatic water bottle sync status

After drinking from the Smart Water Bottle, Eric did not know if his water consumption was actually recorded. He was looking for some kind of notification telling him that the application received the information.

### 4. Impressed with “My Log”

When Eric saw the “My Log” page, he liked the timeline style and the ability to see what he drank throughout the day or on previous days. He liked the ability to scroll through the timeline and thought it was very convenient

### 5. Add a calendar to My Log Page

Eric tried clicking on the “My Log” page and expected to see a different view of the water log, like a calendar. He wishes that he could see his water log over a different period of time rather than day by day.

### 6. Unnecessary “back” and “done” buttons

In the “My Log” view, Eric did not see the purpose of having both a “back” and “done” button, or either of them for that matter, when he is just viewing his water log.

### **7. Confusing Default Reminders with Smart Reminders**

Stephen had trouble telling the difference between the setting options of the default reminders and the smart reminders. Since smart reminders is like a sub-component of all reminders, it does not make sense to display them at the same level.

### **8. Reminder Settings Page Too Cluttered**

On the settings page, Gary got lost by all the text and details. He saw that the default reminder was on and thought he had finished the task to set up smart reminders (which he didn't). He later commented that it would be nice if we made the page more simple.

### **9. Confused About Menu Bar**

Gary got confused about the menu bar after he opened up the app. He didn't realize know that this menu bar is designed as a tab-based bar, that he can tab to change pages. Gary is also confused about where to go for reminder settings and waterlogging.

## Checklist

1. **Title**
  - A short, creative, and marketable title capturing the key idea.
2. **Each Team Member's Name and Role**
3. **Problem and Solution Overview:** (1 paragraph)
  - A concise statement of the problem you are tackling and a brief synopsis of your proposed solution. Consider updating this from your previous report to reflect the scope of your final design.
4. **Initial Paper Prototype:** (1 page)
  - Present your original paper prototype, as a baseline against which this report will present your iteration. Convey the critical aspects of your **design**, including your **two primary tasks**.
5. **Testing Process:** (1 page)
  - Present your testing process, including your **method** and your **participants**. This process probably evolved some in the course of your project. For your report, present a retrospective on how you **refined** your design.
6. **Testing Results:** (2 pages)
  - Summarize the results of your paper prototype testing and refinement. Present what you learned about each version (1, 2, 3) of your prototype and what changes you made as a result. This will include changes from your **heuristic evaluation**, **usability testing** (1, 2, 3), and **design critique**.
7. **Final Paper Prototype:** (1 page)
  - Present your final version of your paper prototype, as you did for your initial paper prototype above. Convey the critical aspects of your **design**, including your **two primary tasks**.
8. **Digital Mockup:** (1 page)
  - Present your digital mockup. Convey the critical aspects of your **design**, including your **two primary tasks**. Briefly discuss any **changes** you needed to make as you switched to your digital tools instead of paper. Briefly discuss any changes you made in response to **critique**. Include **descriptions** of how your design supports each of your primary tasks (e.g., one paragraph per task).
9. **Discussion:** (1 page)
  - Reflect upon and discuss your project and your results. For example:
    - What did you learn from the process of iterative design?
    - How did the process shape your final design?
    - How have your tasks changed as a result of your usability tests?
    - Do you think you could have used more, or fewer, iterations upon your design?
10. **Appendix:**
  - Attach copies of **all materials** involved in your testing. Includes any instructions or task descriptions you handed out or read aloud to your participants. Include identified **critical incidents** from your usability testing. The appendix materials and screenshots do not count in your page limit.