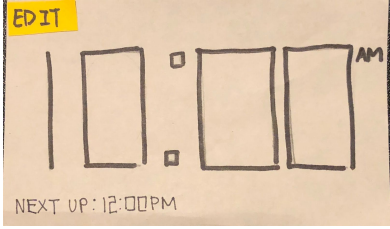
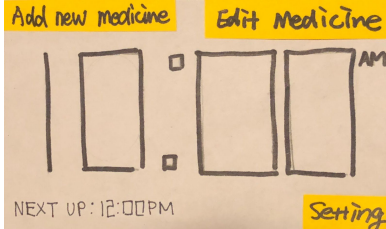
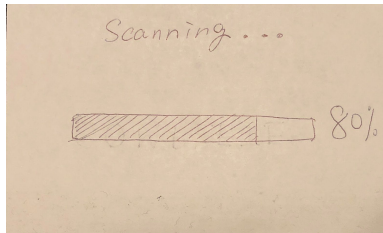
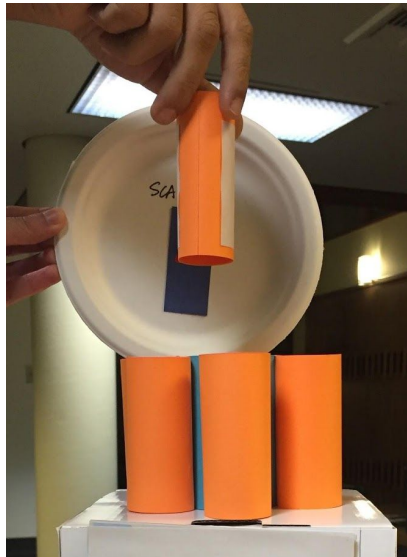


3c: Usability Check-In

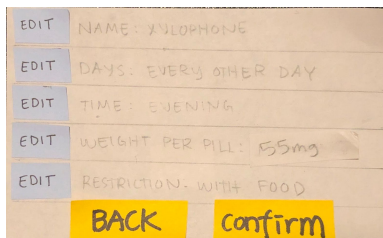
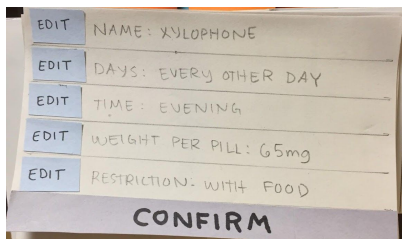
Issues Identified From Heuristic Evaluations

| Before | Revision | Feedback from Eval (include heuristic or believability issue, severity) |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>Consistency and standards (severity 2) One group during the heuristic evaluations brought up the fact the “EDIT” button on the home screen might be confusing because the user does not know what exactly they are editing.</p> <p>We now propose to have three buttons total: “SETTINGS” (to change current time and preferences), “EDIT MEDICINE” (to edit existing medicine info), and “ADD NEW MEDICINE”</p> |



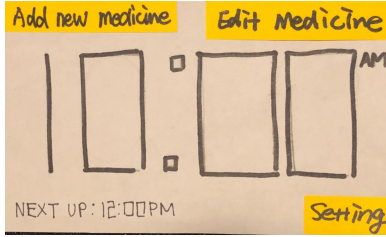
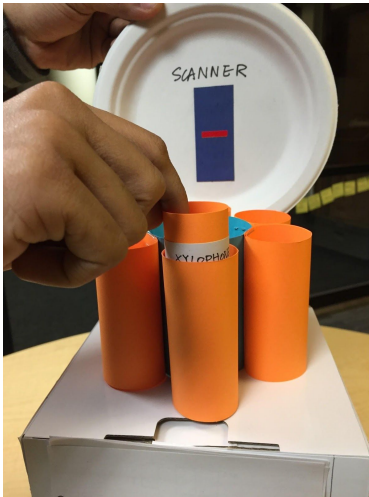
Visibility of system status (severity 2)

There is currently no progress indicator when a new medicine bottle is being scanned in by the system. We propose adding a progress indicator to the UI screen in order to give the user more peace of mind and insight into the scanning process.



User control and freedom (severity 3)

Currently, when entering in new medicine there is no back button if a user wants to go back and change information that has been entered, or if they have inserted the wrong medicine bottle. Therefore, we are including a back button in our new iteration of the design for ease of use and helping users recover from errors.



Error prevention (severity 3)

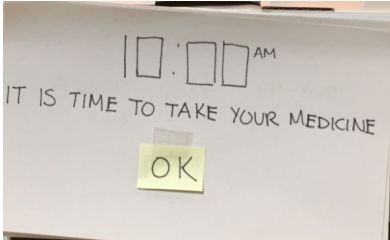
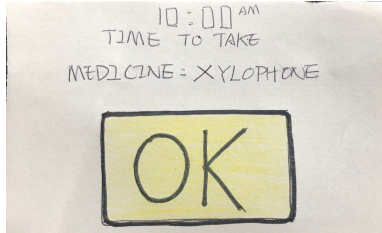

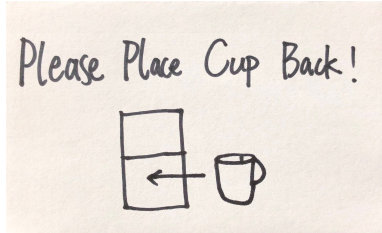
An issue was brought up -- what if the user puts in a medicine bottle without prompt from the UI screen? We propose to just have the lid be locked unless the user hits "edit medicine" or "add medicine" in order to minimize errors.

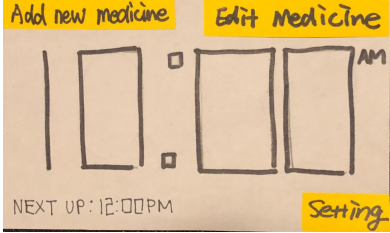
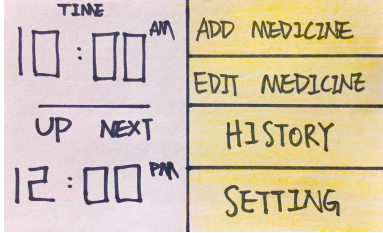
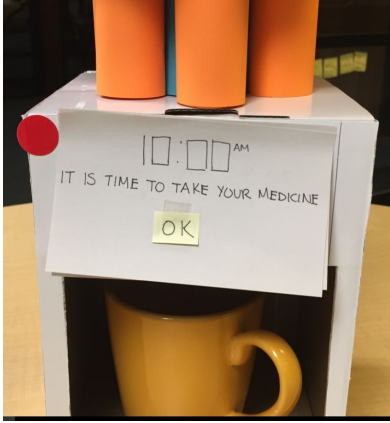
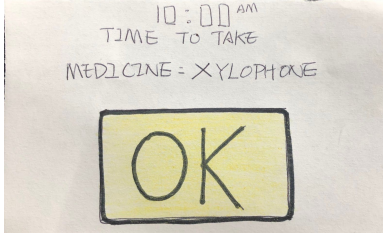
First Usability Test

Our first usability test involved a 26-year-old male college student. While ideally we would have liked to find a caretaker or an individual with memory loss to perform the test, we had limited time and resources. This particular participant is not very familiar with technology and UI/UX design, so we thought he would be an acceptable candidate for testing. The test was performed at the participant's home, since the design context for the product is mainly home use.

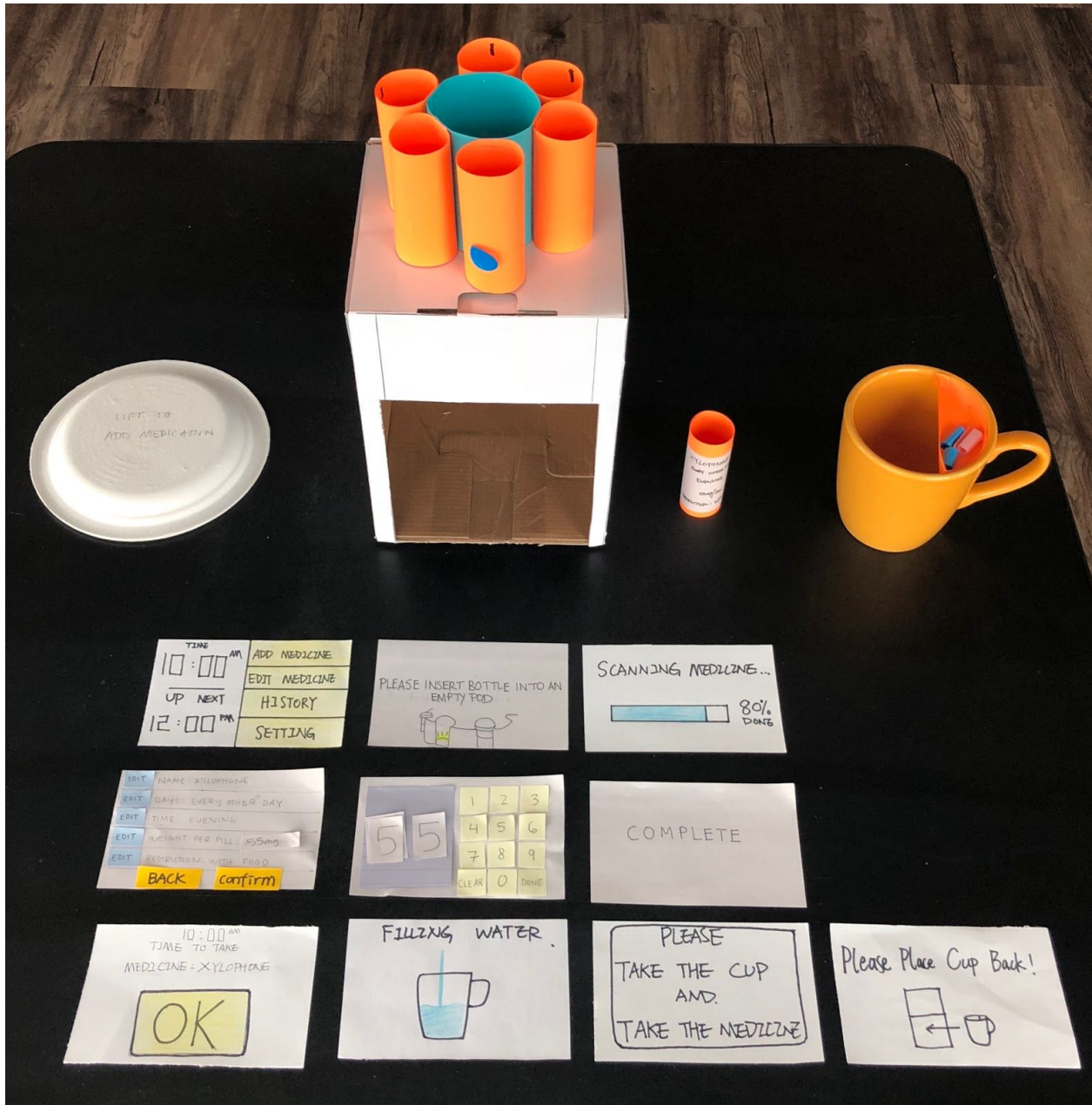
Will conducted the test as the recorder, operator, and notetaker. The participant spoke aloud when participating in the usability test, which involved two phases: (1) scanning, reading, and displaying new medication data, and (2) alerting the user to take pills. From this test, we identified some higher level issues than the heuristic evaluations.

Issues Identified From Usability Study

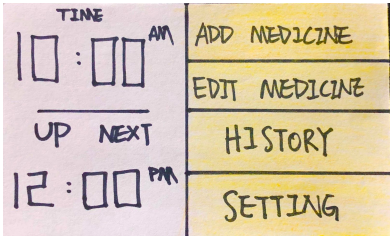
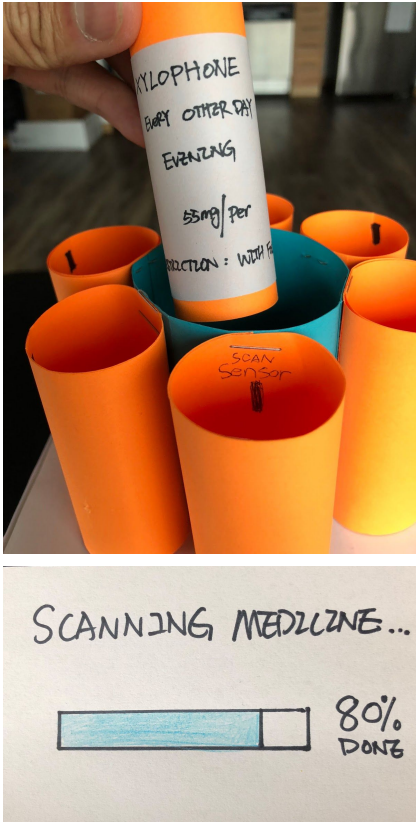
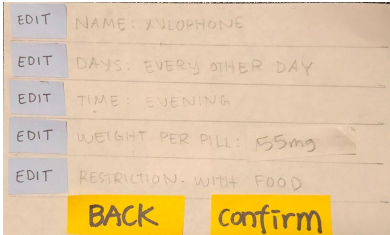
| Before | Revision | Feedback from Eval (include heuristic or believability issue, severity) |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>Efficiency of use (severity 2) Currently, some of the buttons and font sizes may be too small for seniors to read. This can be easily fixed by making them larger.</p> |
|  |  | <p>User control and freedom (severity 4) Despite the machine telling them to return the cup, the senior may still forget to place the cup back or want to remove the cup to wash it. Without the correct cup, the user cannot take the pills next cycle. Notifications to place cup back should be more prominent.</p> |
| <p>Currently, the system speaks</p> | <p>Make spoken instructions into</p> | <p>Flexibility of use (severity 2)</p> |

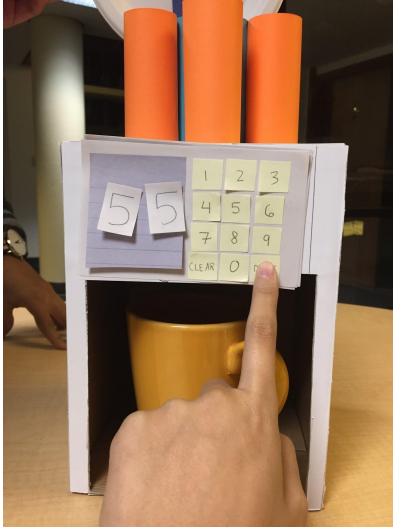
| | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>out instructions but does not accept voice commands as input.</p> | <p>a simple VUI that can help user set up and edit medicines.</p> | <p>Some people may prefer speaking commands rather than trying to figure out a graphical interface. A simple VUI should be implemented for those users.</p> |
|  <p>Hand-drawn sketch of a medicine machine interface. It features two columns of pill dispensers. Labels include 'Add new medicine' and 'Edit Medicine' at the top, and 'Setting' at the bottom right. A digital display shows 'NEXT UP: 12:00PM'.</p> |  <p>Hand-drawn sketch of a menu interface. It shows a digital display with 'TIME 10:00 AM' and 'UP NEXT 12:00 PM'. To the right is a menu with four options: 'ADD MEDICINE', 'EDIT MEDICINE', 'HISTORY', and 'SETTING'.</p> | <p>Recognize and diagnose errors (severity 3) Caretakers may want a record of which pills were dispensed when, just in case. This feature will be added to the GUI.</p> |
|  <p>Photograph of a physical medicine machine. It has three orange pill dispensers on top. A white panel on the front features a digital display showing '10:00 AM', the text 'IT IS TIME TO TAKE YOUR MEDICINE', and a yellow 'OK' button.</p> |  <p>Hand-drawn sketch of a notification screen. It displays '10:00 AM TIME TO TAKE MEDICINE = XYLOPHONE' and a large yellow 'OK' button.</p> | <p>Visibility of system status (severity 3) Although our research found that many seniors stay on one floor within their own homes, there is a chance that they still may not hear the notification. Notifications to take the medicine should be more prominent.</p> |
| <p>n/a</p> | <p>While this is a great point to consider, addressing it directly would be a level 1 difficulty.</p> | <p>Flexibility of use (severity 4) Some seniors may want to have the pills taken to them, rather than having to find the machine to use it.</p> |

Current Prototype (updated based on two heuristic evaluation)



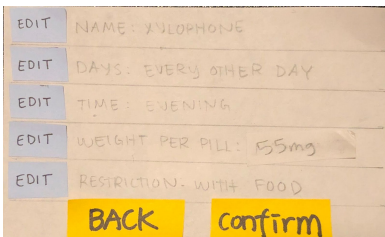
Task 1: Scanning, Reading, and Displaying New Medication Data

| Task | Description |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Step 1 On the home screen, the user presses “Add Medicine” button.</p> |
|  | <p>Step 2 The lid opens and user puts the medicine bottle into a pod. A progress bar appears while the machine is working.</p> |
|  | <p>Step 3 User looks over scanned information to find any errors, or select “Back” to stop inputting. VUI will narrate the information.</p> |



Step 4

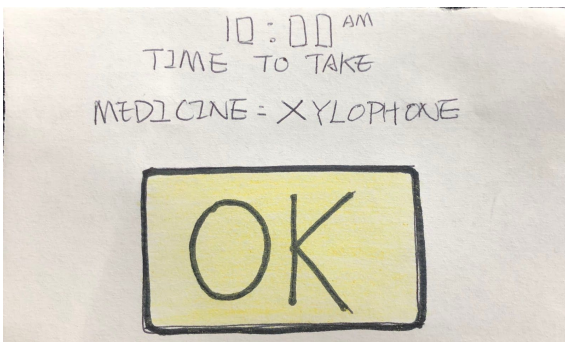
User can edit any of the scanned information on the screen or by voice.



Step 5

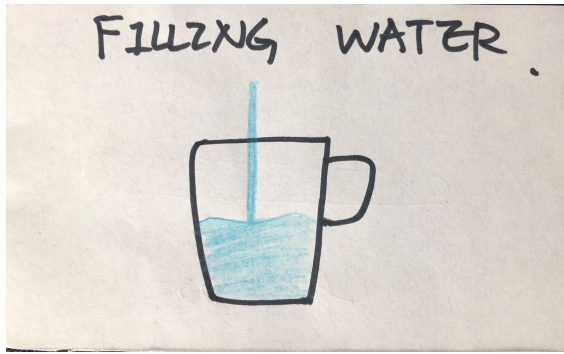
User selects "confirm" when all the information is correct.

Task 2: Alerting the User and Taking Pills



Step 1

When it is time to take medicine, the screen will flash and the voice will alert the user to take medicine. The user presses OK to begin the process.



Step 2

The machine will dispense the water and pills into the compartment in the cup below.



Step 3

The screen and voice will tell the user to take the cup and pills.



Step 4

The screen and voice will tell the user to place the cup back.



Step 5

The system informs the user that the process is complete.

Future Plans

Ideally, we would like caretakers and individuals with memory loss to perform usability tests for our product. However, with such a short time given to perform the tests, we may not have access to these users. Therefore, our alternative is to find people who do not study technology or work in the technology industry to help test out our product. The worst-case scenario is that we would just get other college students to test our product.

Our goal for future usability tests is to make sure that our design is intuitive and is easy to use for users who are not familiar with technology and are using our product for the first time. We will try to approach future tests without giving the participants guidance, so we can see how the user will interact with the product without help or prompting. We want to make use of the product as painless and effort-free as possible.

As for planned roles, we will try to rotate roles so that each of us is occasionally the notetaker, the one operating the paper prototype, and so on. We want to switch around to different roles to make sure that we all gain experience in each role. In the future, we may also all take notes in order to eliminate any possible bias and to accumulate different perspectives.