DemenCare

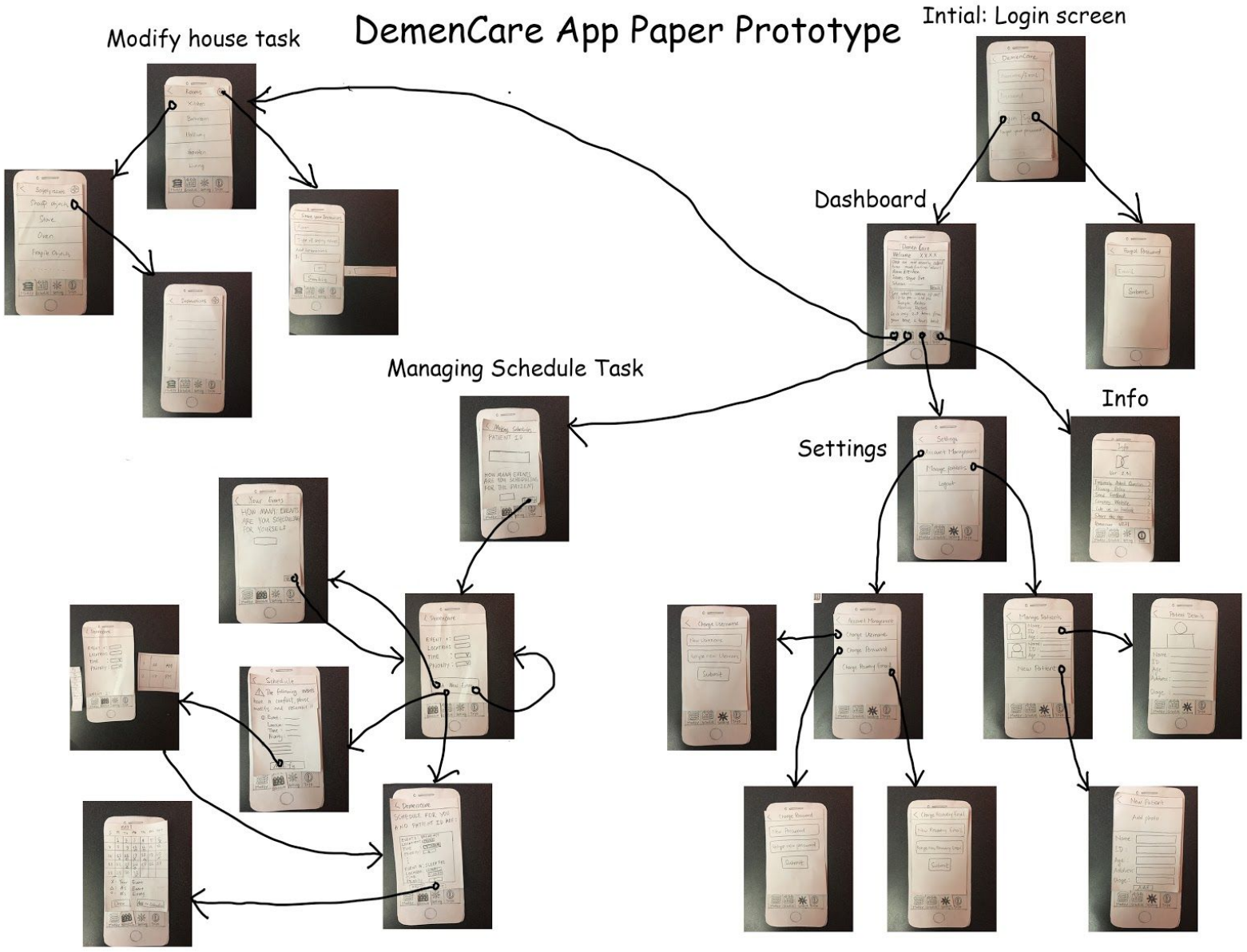
Each Team Member's Name and Role:

Haoyi Qu	Researcher and Project Manager
Sandip Samantaray	Researcher and Designer
Quan the Tran	Researcher and Documenter

Problem and Solution Overview:

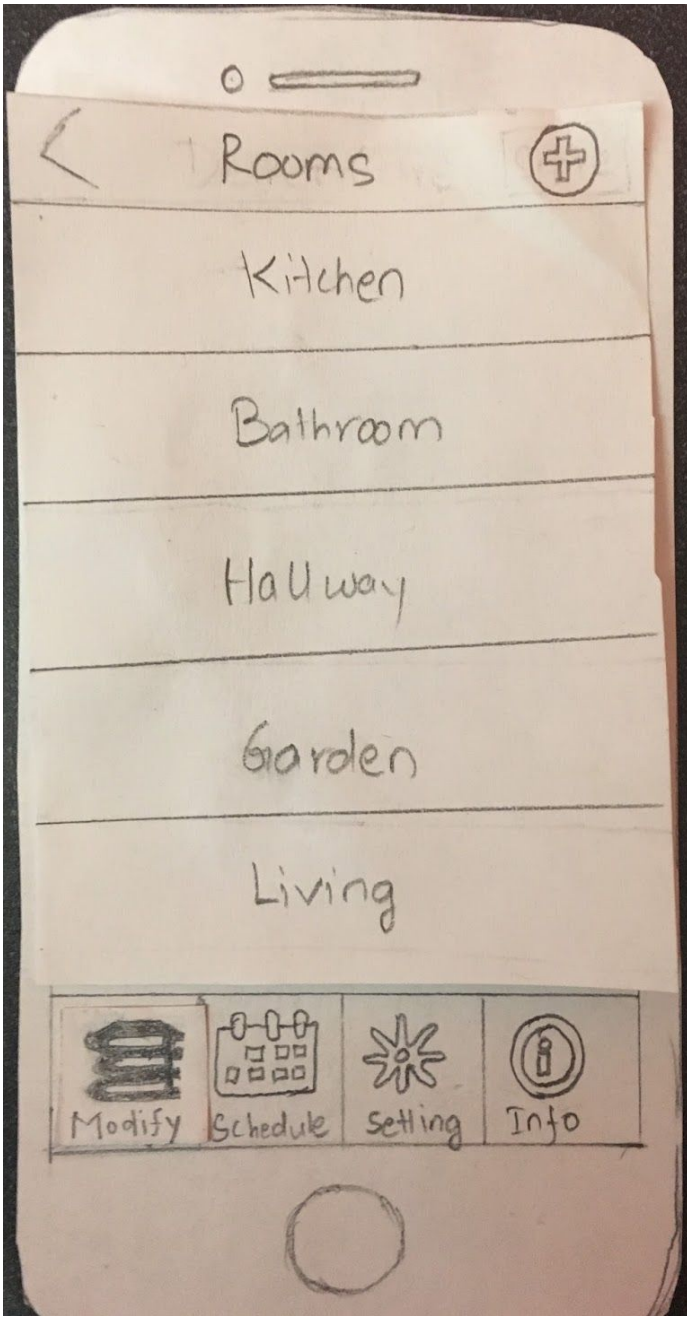
Our design is focused towards the people who assist the elderly people suffering from Dementia. Our target group not only assists the patients in their daily chores but also have to tackle with the safety issues of the patients. Therefore, they have to get acquainted with the house and need to keep checking that the patients do not put themselves in danger during night or while using kitchen. Moreover, while taking care of the patients, they hardly get time for themselves which also affects the relationship between them and the patients. Moreover improper scheduling can lead to more stress and frustration for our target group. Therefore, we are trying to come up with a smartphone application that will be assisting the caretakers by managing their and the patients' schedules. With the varying schedules of the patient, the app will organise and blend in the caretaker's schedule, thus improving their relationship with the patients. The app will also provide a platform for the caregivers to share their own experiences to others about how to modify the house, thus improving the safety of the patient even when the caregiver is not around them.

Initial Paper Prototype:

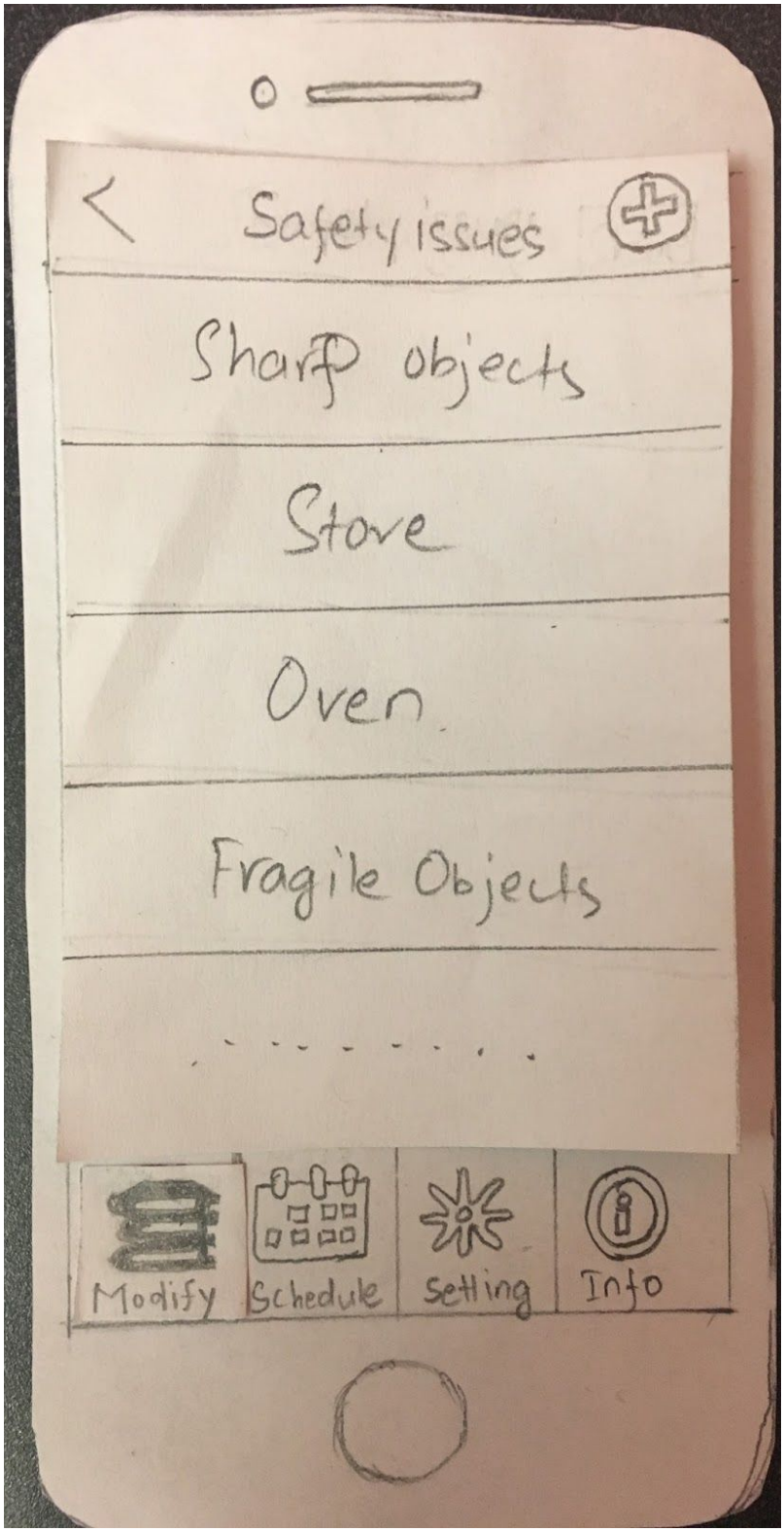


Task 1: Provide platform to share home modification experience

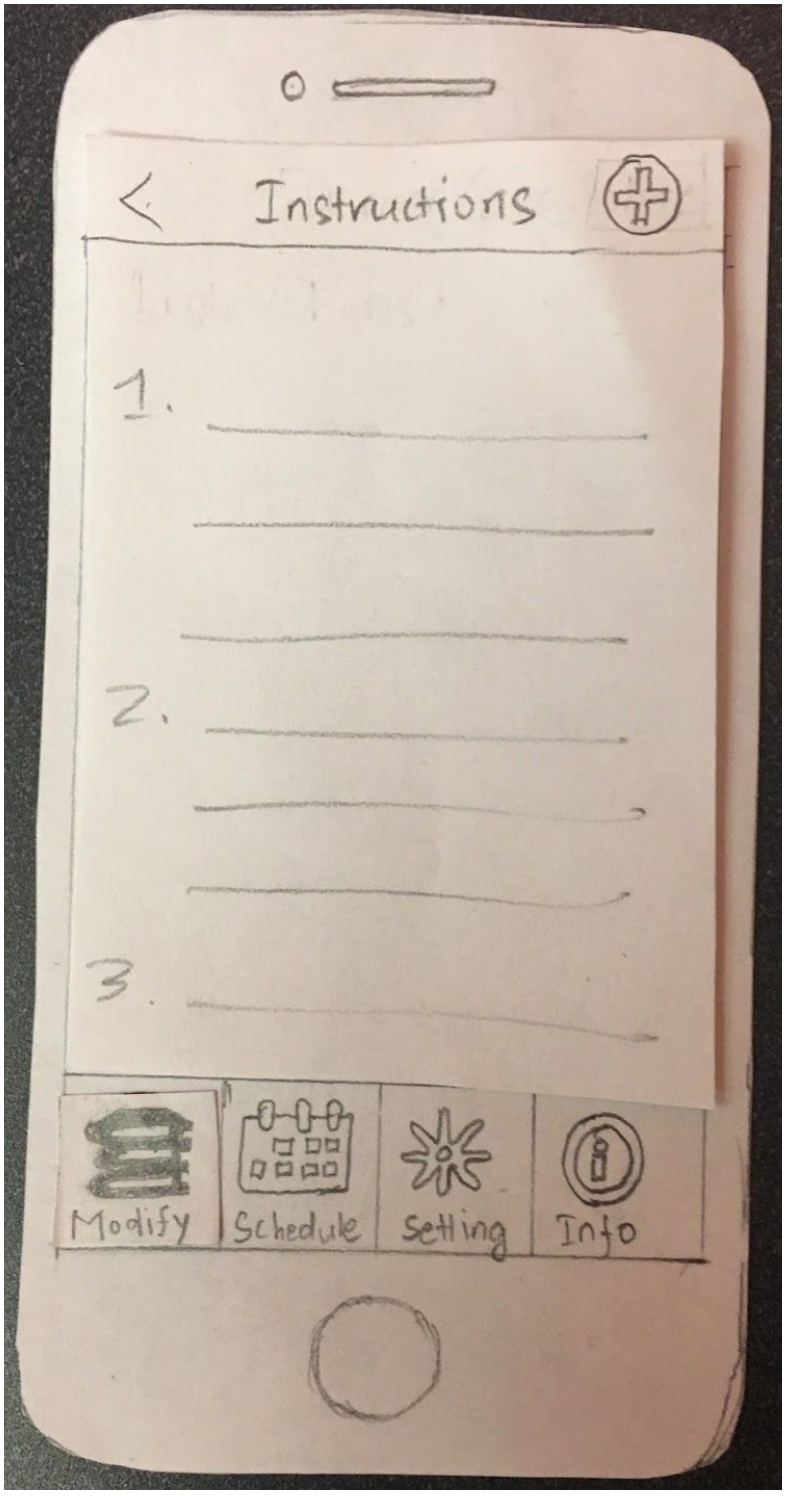
Task 1.1: Select the rooms for which you want to look for safety issues



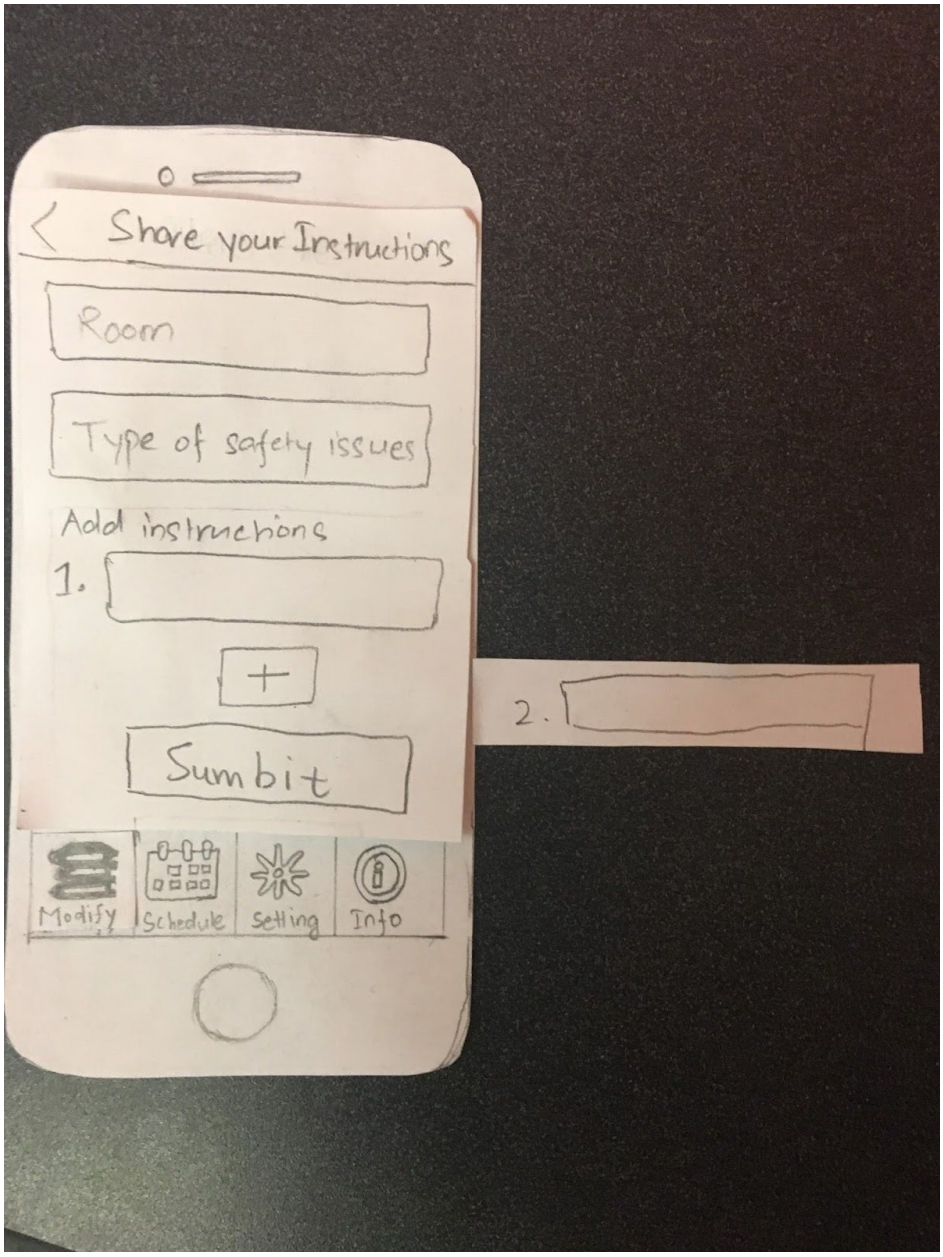
Task 1.2: Select the type of safety issue you are looking for



Task 1.3: Read the given instructions and modify the house.

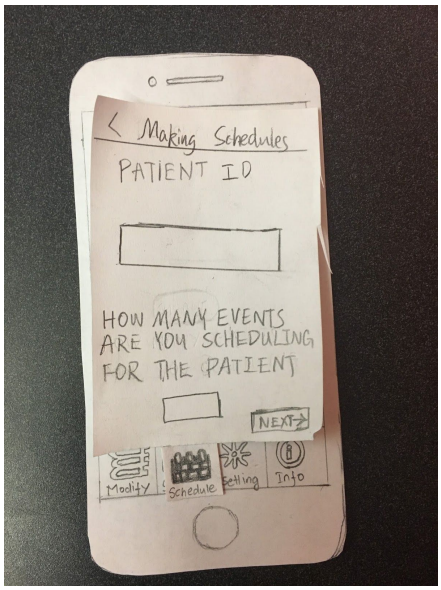


Extra task 1: Add and share your own instructions.

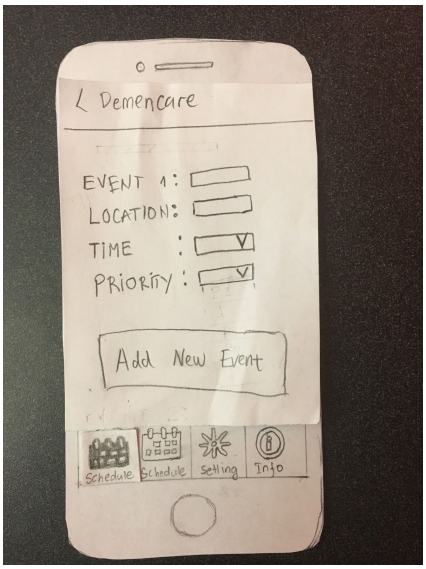


Task 2: Scheduling time for patient

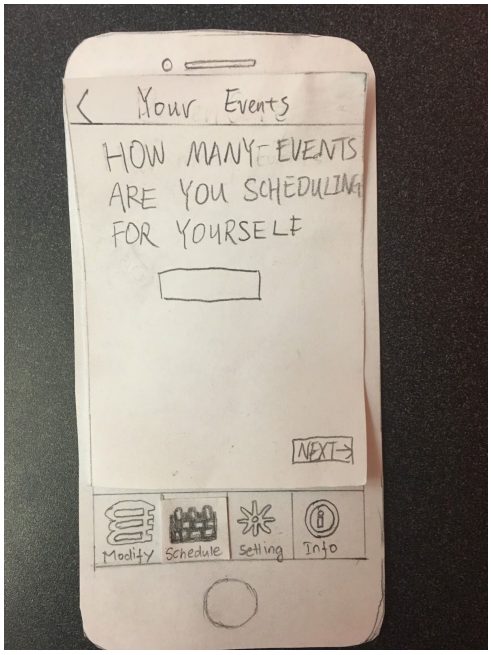
Task 2.1 Enter the patient ID which is previously stored in the account and enter potential numbers of events the user is scheduling for the patients.



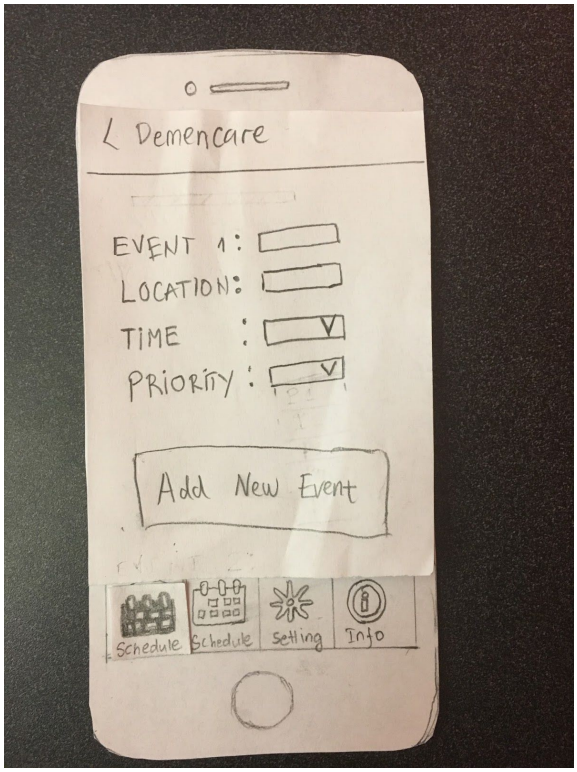
Task 2.2 Edit the event info for each event, the user can add new events if they want



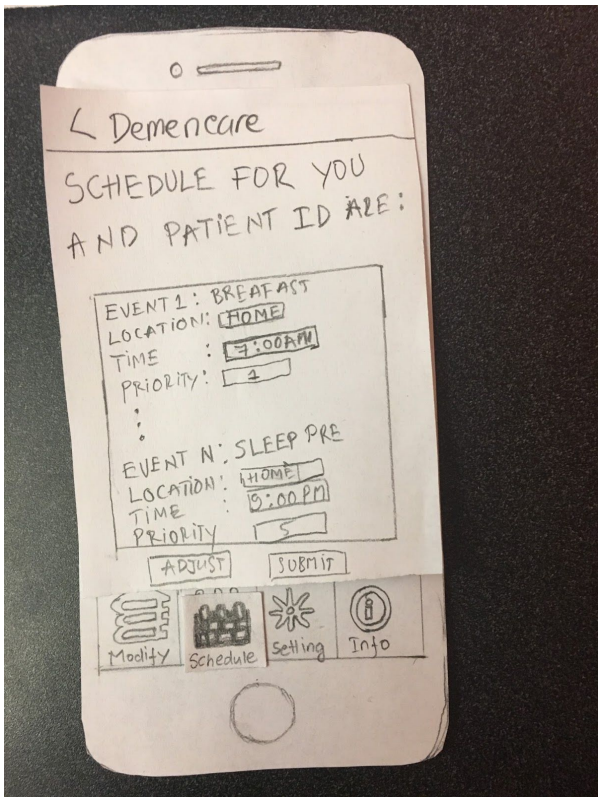
Task 2.3 Then the user enters his or her personal events to let the app schedule the patient’s schedule based on the user’s.

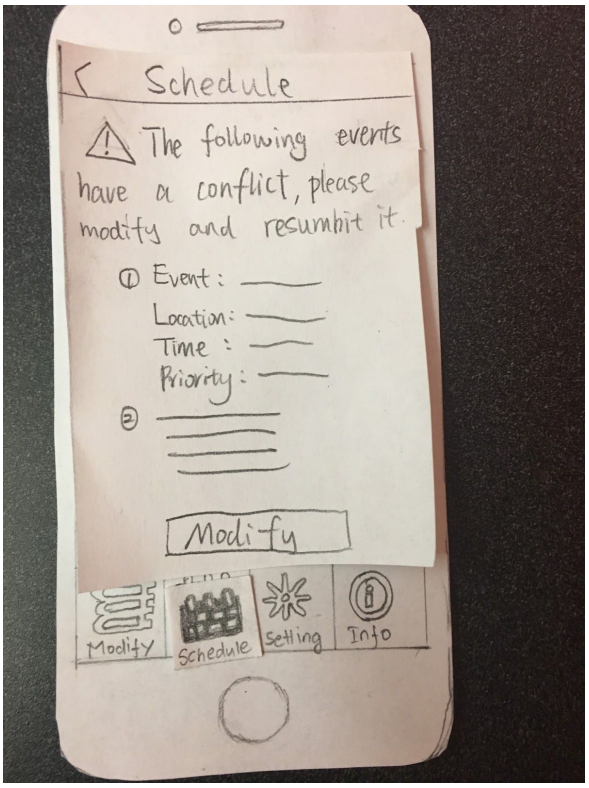


Task 2.4 Then the user keeps editing his or her info and can add new events as they want

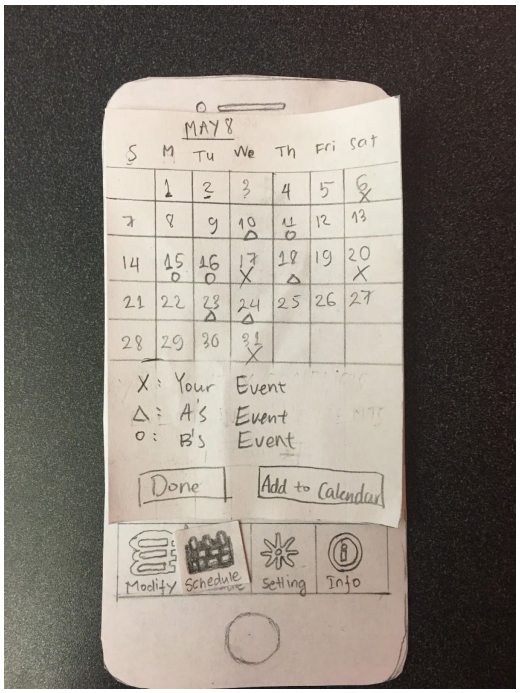


Task 2.5 The app will generate a summary for the user to check his or her input info and will alert the user of schedule conflict if any





Task 2.6 At last, it will generate the schedule and the user can add it to his or her calendar

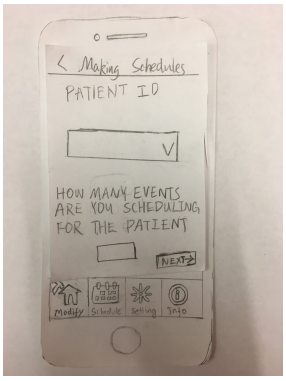
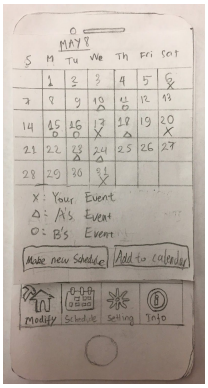
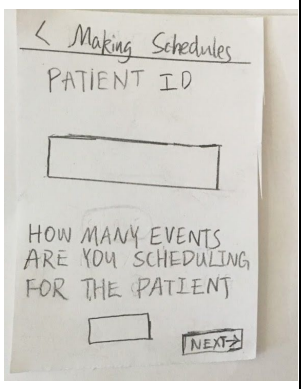
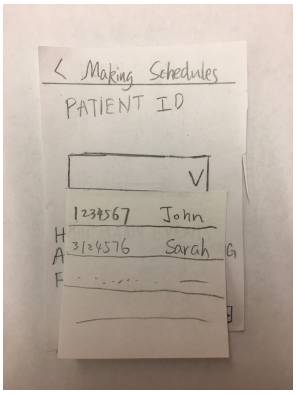
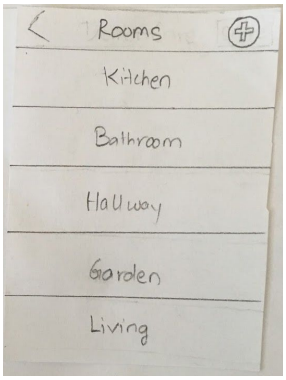
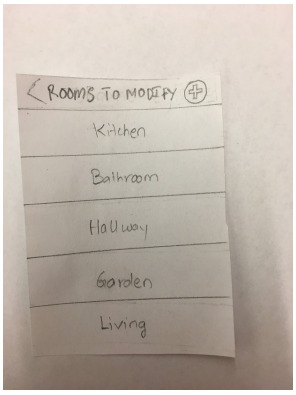


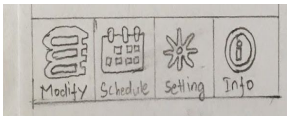
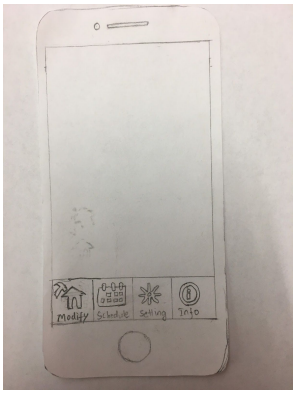
Testing Process:

During the testing period, we conducted heuristic evaluation and usability test. We completed the evaluation with another group which includes Cameron D Louis, Louis Phan and Tony Quach. In that test, we asked them to navigate through the interface freely and identify any problems they encountered. After the evaluation, we designed specific tasks for the future tester to achieve relating to our implemented function. We hope this change could help us identify more deficiency in our designs. For the first usability test, we conduct our test in CSE building lab 006. The participant is Vikins, one of the CSE student. We inform him the general information what we want to accomplish in our apps before the test. We lay out the prototype and tell him that he in a situation of a caregiver that need to gain information on safety issues for home modification, and saving time between caregivers and patient. We record the every critical moment as we went through the test. Our second usability task was performed on Paul, a caregiver whose patient is only at his very early stage of dementia. The test was conducted at his office. The highest degree of Paul is community college graduate. Although he has a smartphone, he does not use it that often. The most frequent thing he does with the phone is calling and messaging. This is one of his fewest chances to use an app on the phone. Our test protocol is providing the background and function of this design to the tester and then let him freely discuss everything. We paused to ask questions like "What, if any, looks confusing or difficult to understand in this page?" when he was staring at the design for a long time. Haoyi is the computer, Quan is the note taker and Sandip is the facilitator. This test was done on Mary, a busy white collar worker who has children to take care of. Although the subject is different from our focus group, her task is pretty similar to one of what we want to achieve here, the scheduling task. The test is taken place at her house. As an office lady, she uses her phone very often and downloads many apps to help her manage her everyday life. During the test, we walked her through the functions of our app and then let her freely discover it. We told her to feel free to ask us if anything is wrong to her during the test. In this test, Haoyi is the facilitator, Quan is the computer and Sandip is the notetaker.

Testing Results:

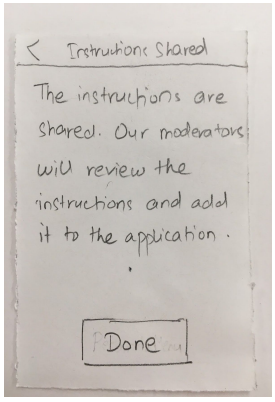
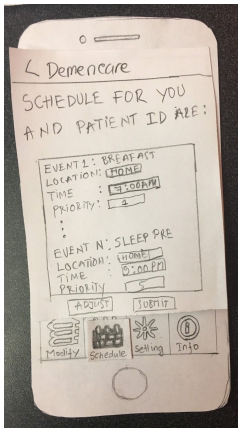
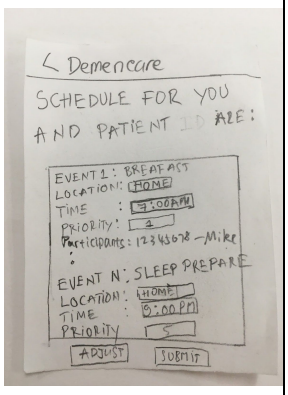
Results from Heuristic Evaluation:

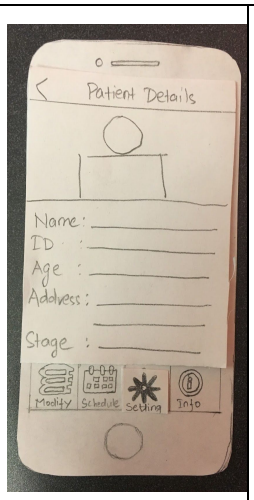
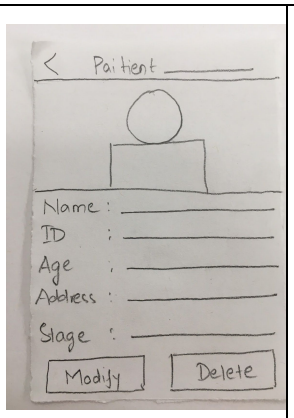
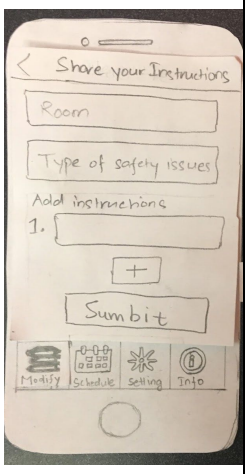
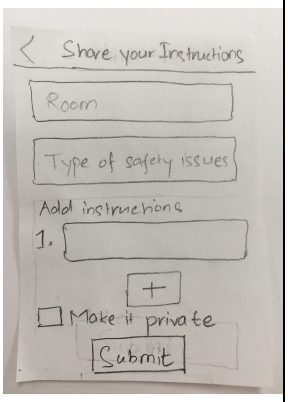
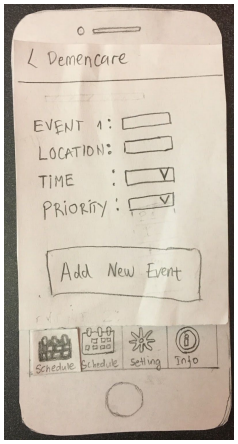
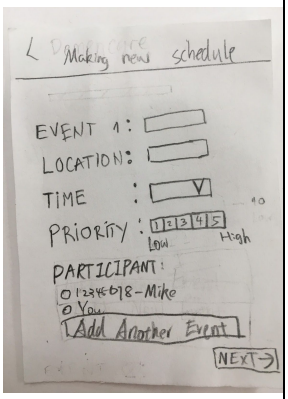
	Actual prototype	Identified issue	Revised prototype	Explanation
1.		Violates consistency and standards. The schedule button here is meant to let the caregivers make schedule. But evaluators mentioned that the user may think it as a button to show the current schedule. **Severity rating:** 2/4		We have change the layout of the schedule to making clear that this “make new schedule”, and help user navigate easier.
2		Violates Recognition rather than Our evaluators mentioned that the “Patient ID” here requires the user to memorize them. However, they could have done this easily with a list of ID they already saved in the account. **Severity rating:** 3/4		We make the drop down list of patient ID that including all the current patient ID if any for the user to pick from. However, user still need to create new users if the list is empty.
3		Violates Match between system and the real world. This is the page after the user clicked the “modify” button, it will show a list of rooms for the user to chose. But our evaluators find the title “room” confusing since this page is right after we clicked modify.		The words “Rooms” made the evaluators confusing, we revise it to “ROOMS TO MODIFY” since this function asked the user to pick the rooms or areas they need to modify.

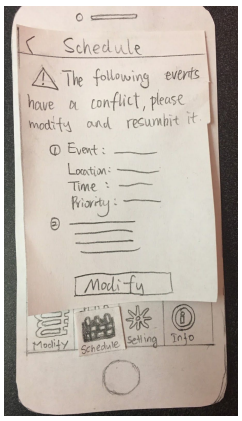
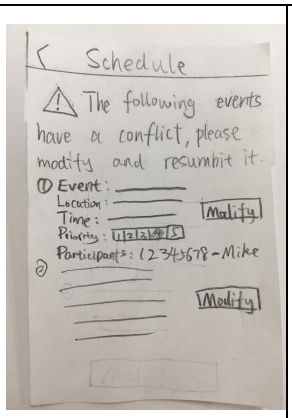
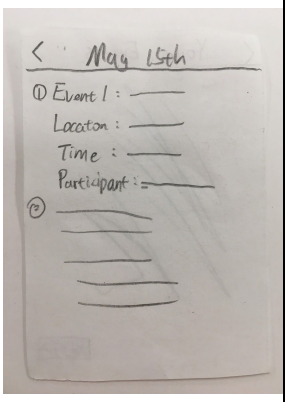
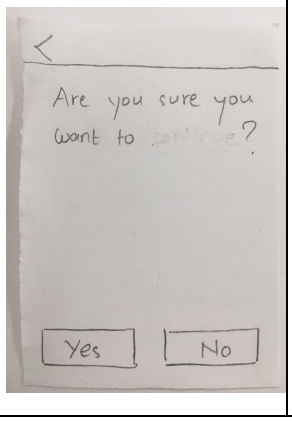
		Severity rating: 1/4		
4		Violates Match between the real world and system. Our evaluators mentions that the modify buttons here is confusing at first. Our task is to provide caregivers with resources of home modification, but the “modify” here seems to let users modify their account. **Severity rating:** 2/4		We have change the home button of “MODIFY” since user confusing of button. We found the home and tools symbol make more meaningful and can easy to map to home modification of real world.

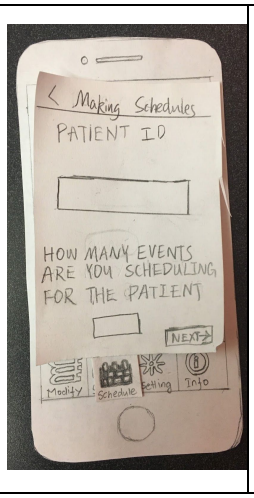
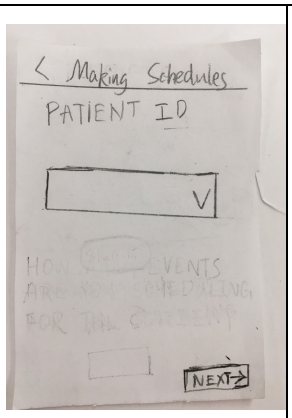
Results from Test 1:

For the first usability test, we learned that some function and steps lack features such as a keyboard, back button, or confirmation of email after sharing of the instruction with patients. There are also some function that he feels confusing as events of patient versus events of caregivers. Besides, there are also some things essential that we forget to include a blank calendar and new users. One feature is priority make the interviewee found confusing, but after we explain to him, he found it is crucial, so we keep it. We have included the revision and reason on our table below.

	Actual prototype	**Identified issue**	**Revised prototype**	**Explanation**
1.	N/A	Missing confirmation screen after the user shares their instructions to the database. **Severity rating:** 2/4		We have added a new screen that confirms that the database has received their instructions.
2		Confusing title in the part “AND PATIENT ID” and events not categorized to the users. **Severity rating:** 3/4		We modify the title of the page and add the name of the participants, whose schedule is being created.

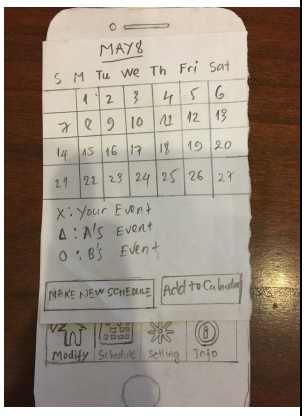
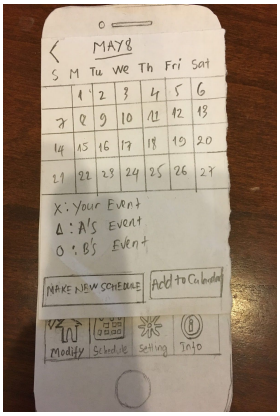
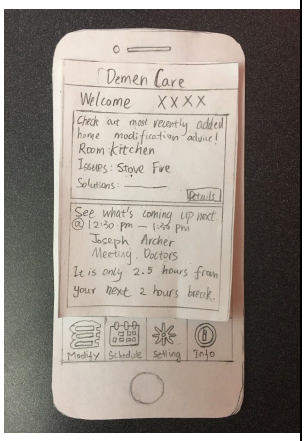
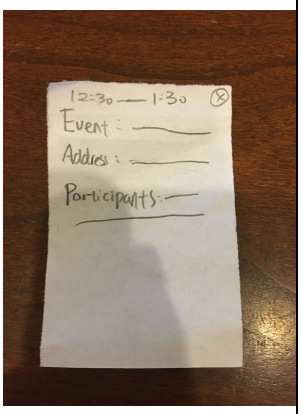
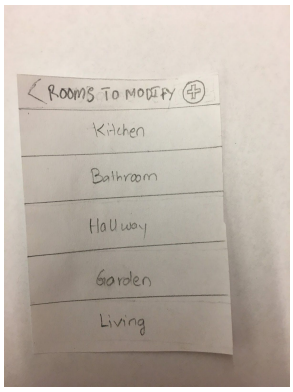
3		Unable to modify or delete the patient details from the patient management section. **Severity rating:** 1/4		We have added the required buttons to modify the patient details and delete the patient completely from the management.
4		Unable to allow the user to create a private(offline) set of instructions specific to their home safety. **Severity rating:** 2/4		We added a check button that will allow the users to specify if they want to share the instructions online or keep it to themselves.
5.		Ambiguity about the priority section and unable to specify the participant of the event. **Severity rating:** 2/4		We added a scale for the priority so the user understands how to prioritize their task. We also added a list of participants for the event.

6.		Unable to modify a specific schedule from the conflict. The name of the participant of an event is not visible. **Severity rating:** 3/4		We added modify button to each event. We are also displaying the participants of each event.
7.	N/A	**Severity rating:** 1/4		We added the new summary of schedule for the patient since this screen need to show up when the user click on the day.
8.	N/A	Missing confirmation page for various submissions. **Severity rating:** 2/4		We have added a dynamic confirmation page that will display the text along with a word at the end like “submit”, “delete” or “continue” depending on the type of submission.

9.		Excessive option for the users while choosing the number of schedules to create since the next page contains a button to create an extra schedule, thus making the quantity section of events on this page not necessary. **Severity rating:** 2/4		We removed the section to add the quantity for the number of events we are inputting for the patients.

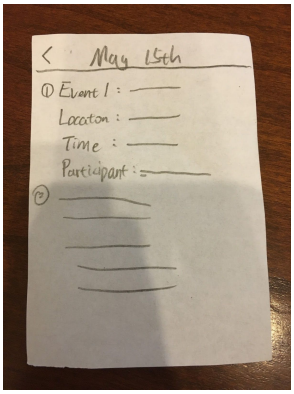
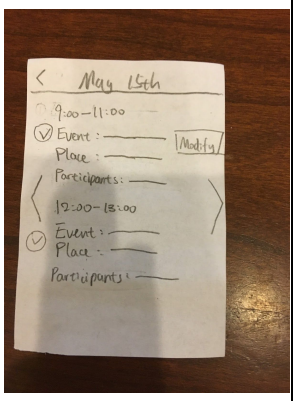
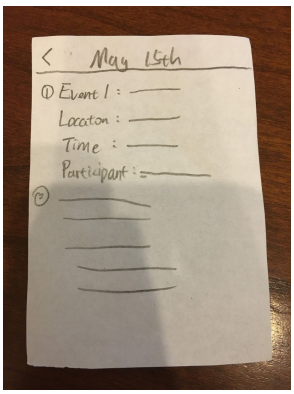
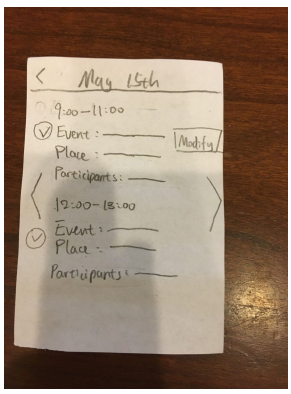
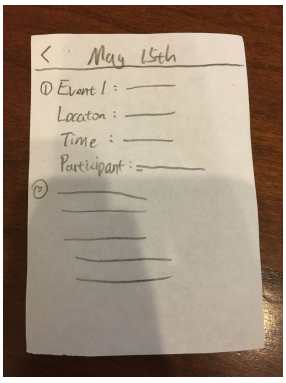
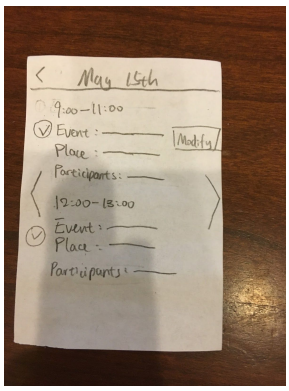
Results from Test 2:

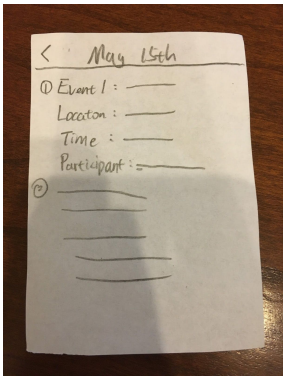
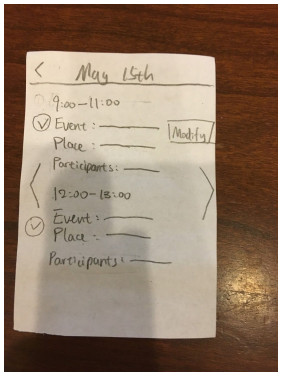
During the test, the subject found the sharing own experience button confusing and expects some pop-ups when clicking at certain places. We have included some new pop-ups when clicked.

	Actual prototype	**Identified issue**	**Revised prototype**	**Explanation**
1.		This is the page after the user clicked the schedule button. At this page, the tester finds out that there is no way to go back to the homepage **Severity rating:** 2/4		We added a back button to this page so that the user can go to the home page directly.
2		The user wants to click on the coming-up event to see more detailed information. But we didn't have this implementation **Severity rating:** 2/4		We add a pop-up when that area is clicked so that the user can know more about that event.
3		The user thinks that plus button is a screw in the context of home modification. **Severity rating:** 1/4	N/A	The real app view of this plus button will resemble plus more.

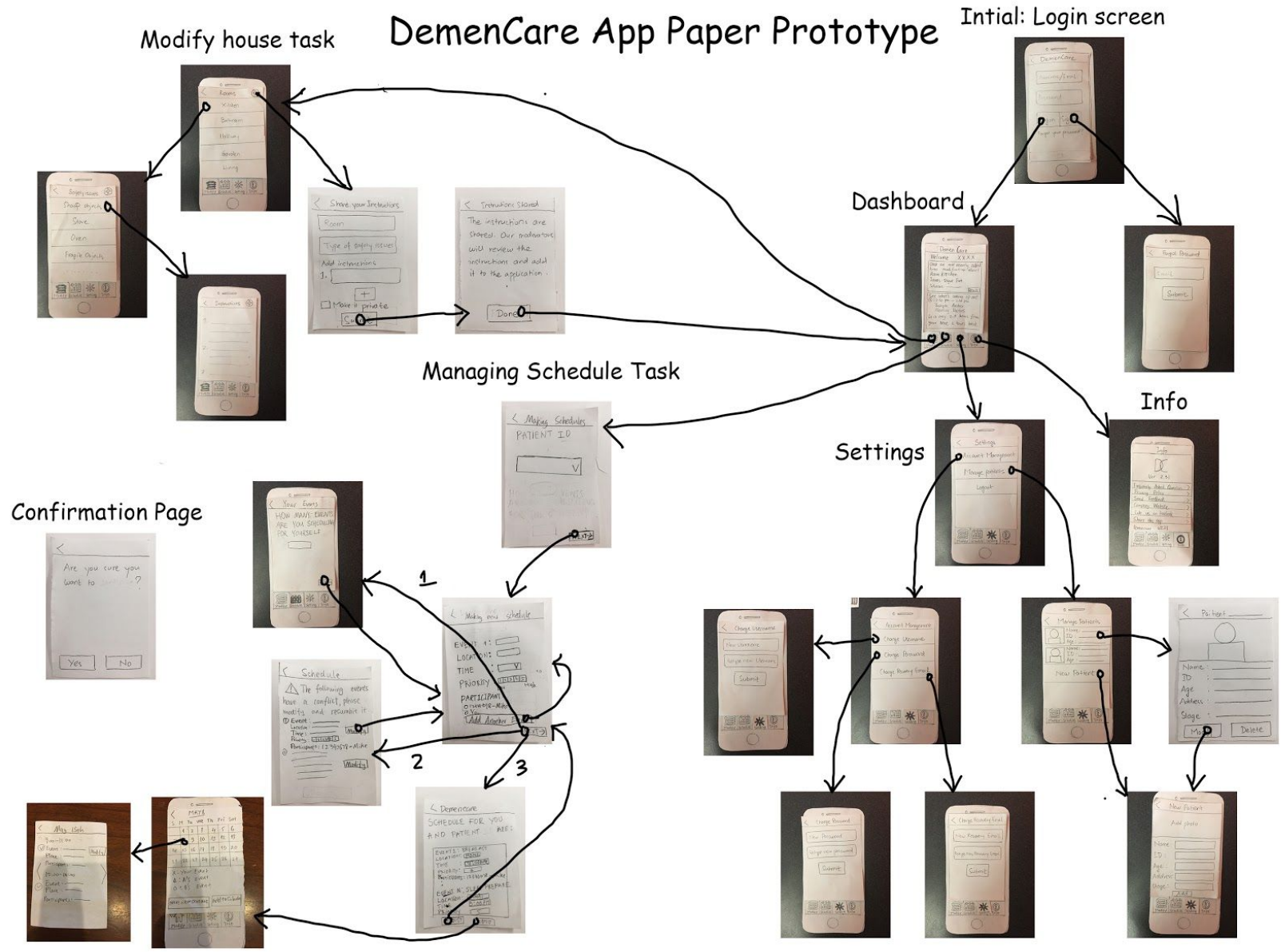
Results from Test 3:

During the test, she found some problems mainly regarding the scheduling functions including not able to switch between different days, undefined order of event and not able to edit event at certain date. We tried to implement those functions in the revisions.

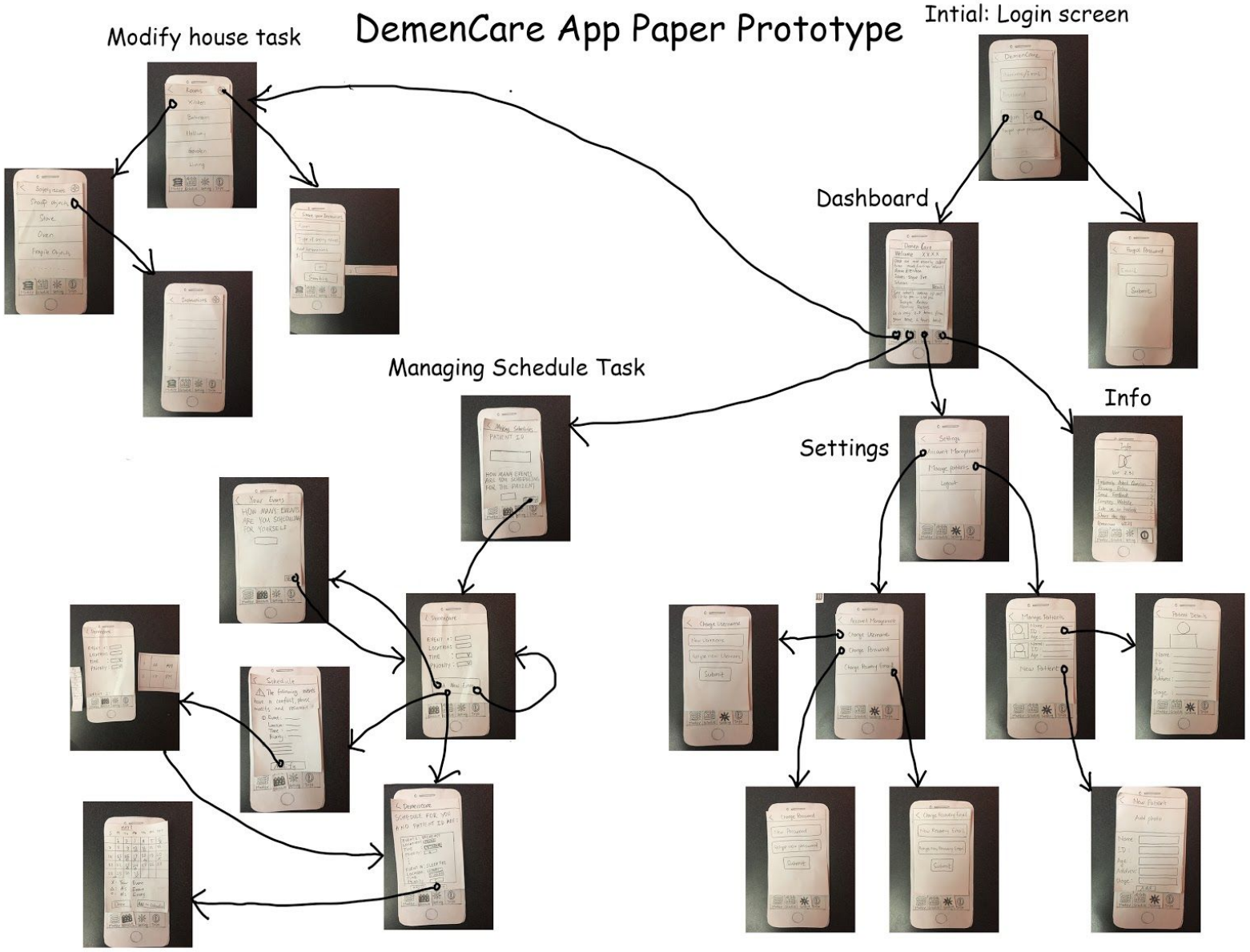
	Actual prototype	**Identified issue**	**Revised prototype**	**Explanation**
1.		The tester is confused about the order of different events **Severity rating:** 2/4		We define the order of the events in the order of scheduled time so that the user will know what happens next.
2.		The tester can not edit detailed information of certain event at this page. **Severity rating:** 3/4		We add a modify button so that the user could change each event as he or she wants to do so.
3.		The tester wants to go to the next day by simply swiping the screen instead of going back and select it from the calendar. **Severity rating:** 3/4		We implement this function so that the user can simply go back and forth by simply swiping the screen.

4.		The tester wants to mark the things that are already finished **<u>Severity rating:</u>** 2/4		We add a check button so that the user can check completed event after they finished it.

Final Paper Prototype:

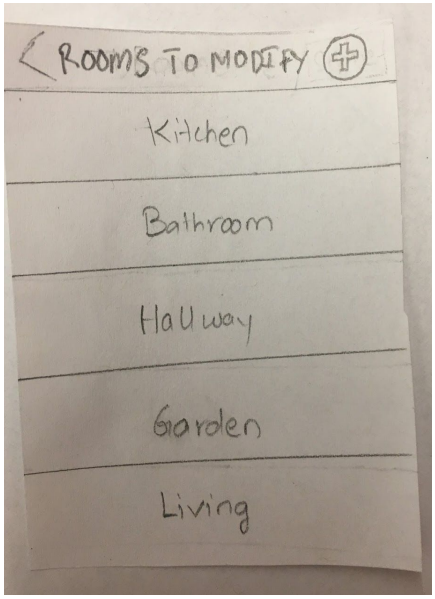


DemenCare App Paper Prototype

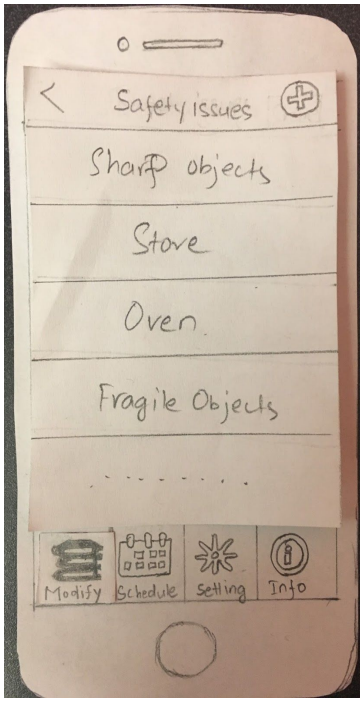


Task 1: Provide platform to share home modification experience

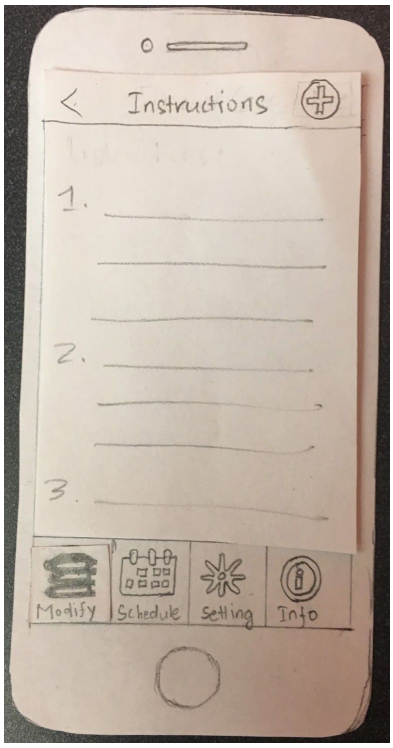
Task 1.1: Select the rooms for which you want to look for safety issues



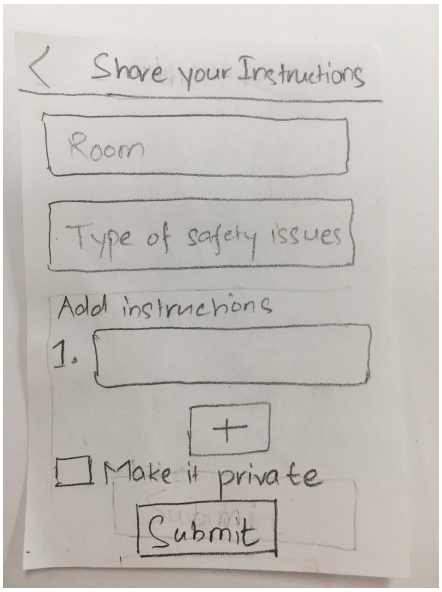
Task 1.2: Select the type of safety issue you are looking for



Task 1.3: Read the given instructions and modify the house.

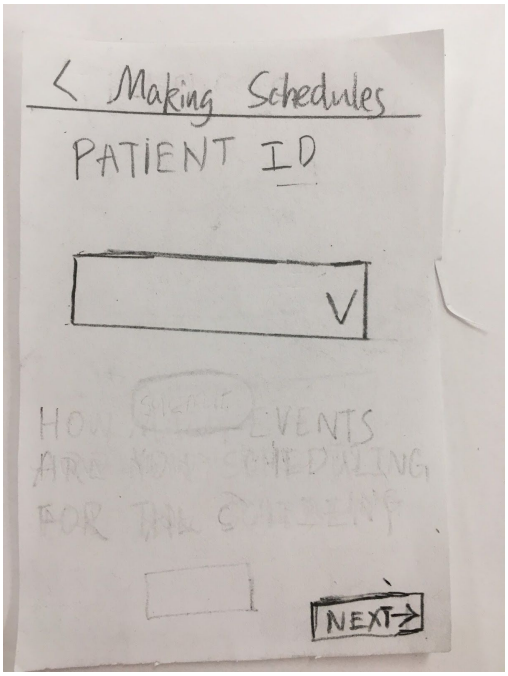


Extra task 1: Add and share your own instructions.

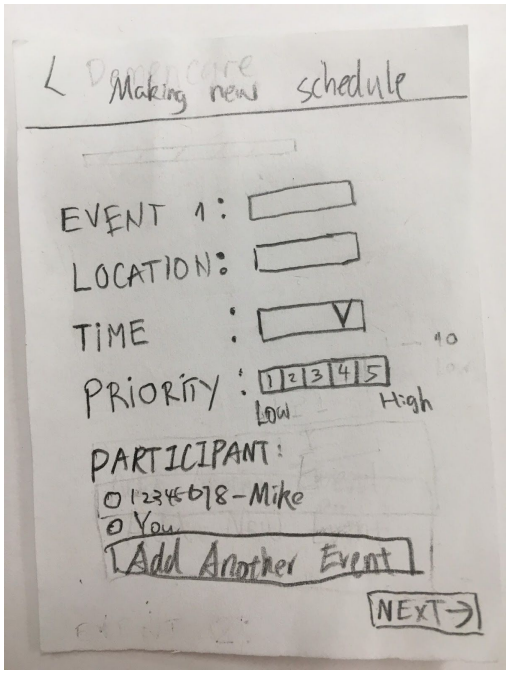


Task 2: Scheduling time for patient

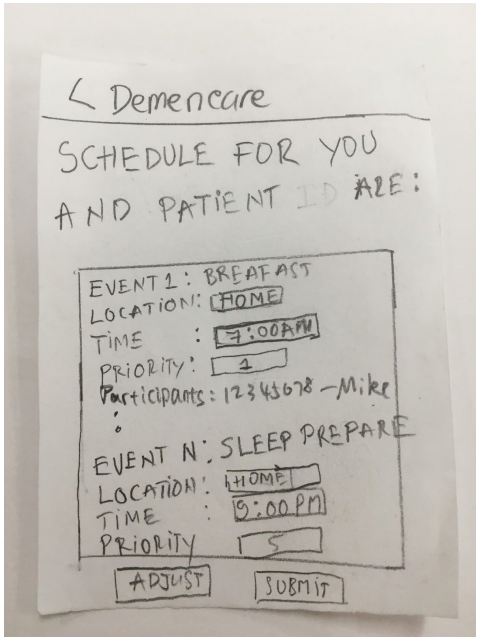
Task 2.1 Enter the patient ID which is previously stored in the account you want to make schedule.

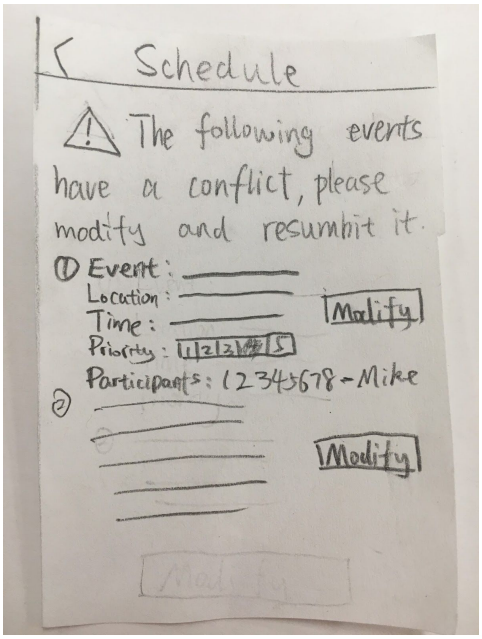


Task 2.2 Edit the event info for each event, the user can add new events if they want

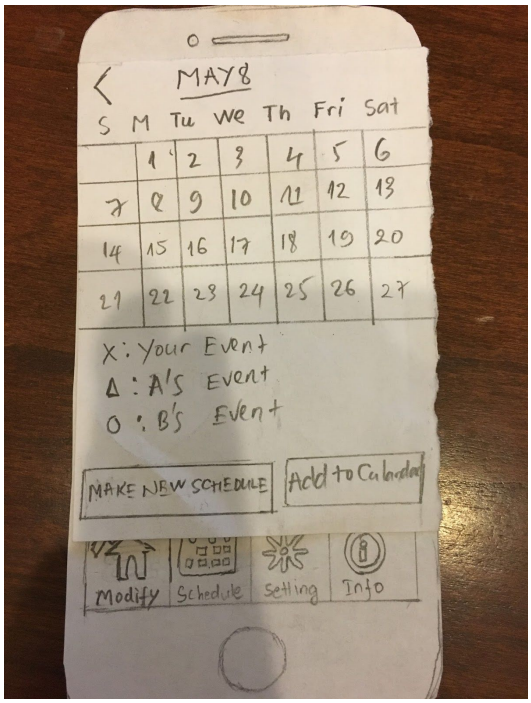


Task 2.3 The app will generate a summary for the user to check his or her input info and will alert the user of schedule conflict if any





Task 2.4 At last, it will generate the schedule and the user can add it to his or her calendar

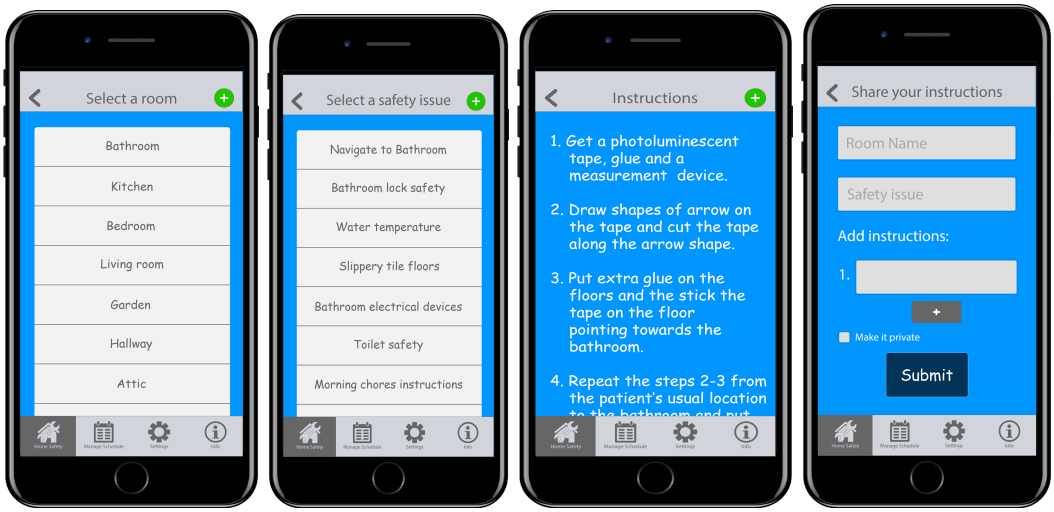


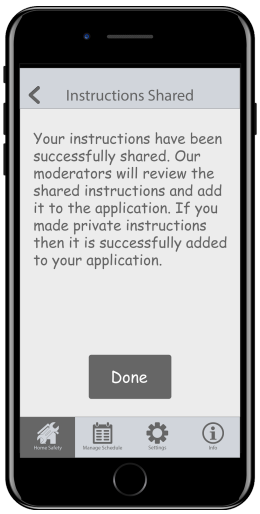
Digital Mockup:

Digital Mockup Overview

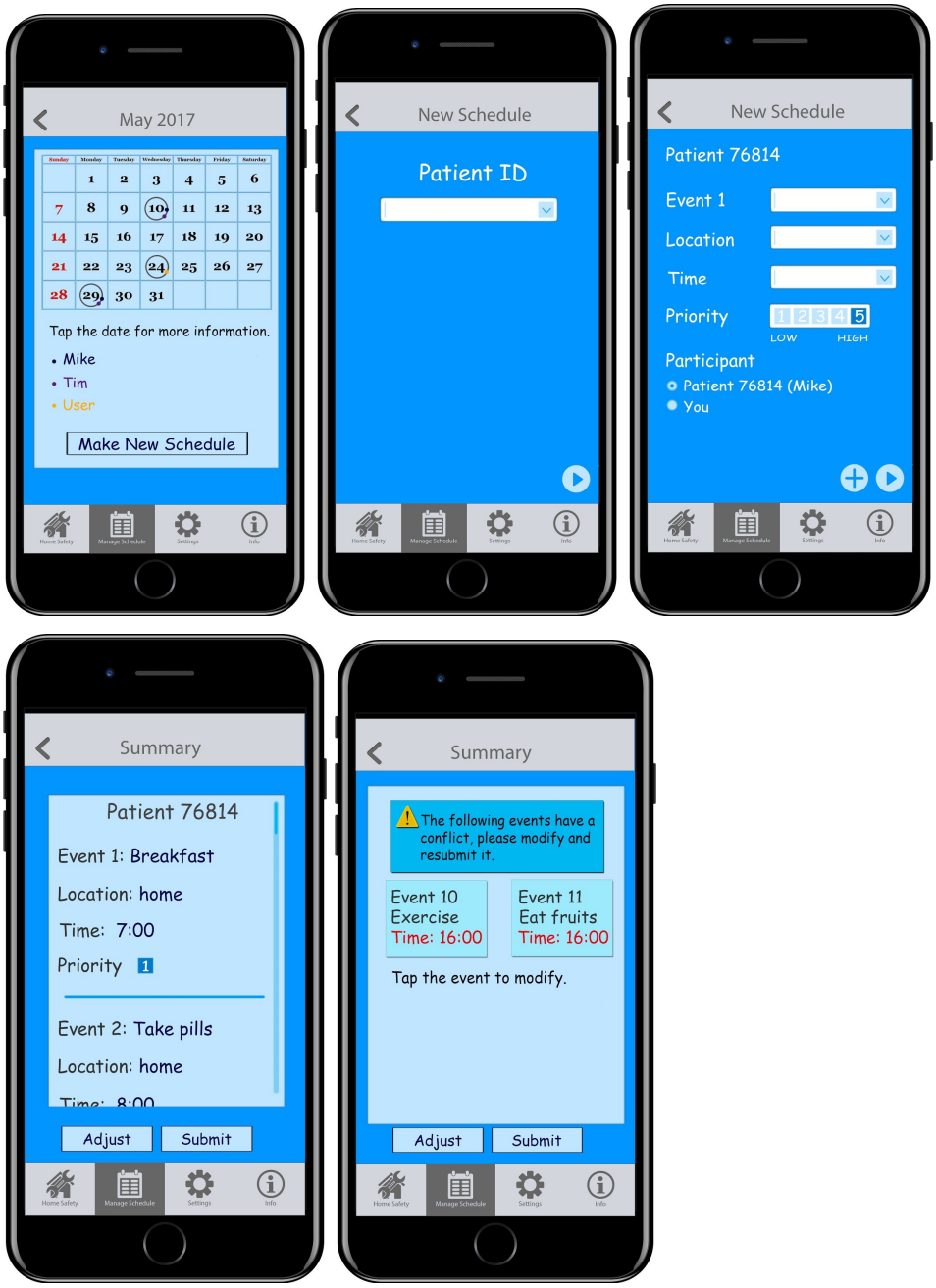
Interactive app: https://invis.io/QXBSBJT4Z

Task 1: Add and share safety instructions for house modifications to enhance patient's safety

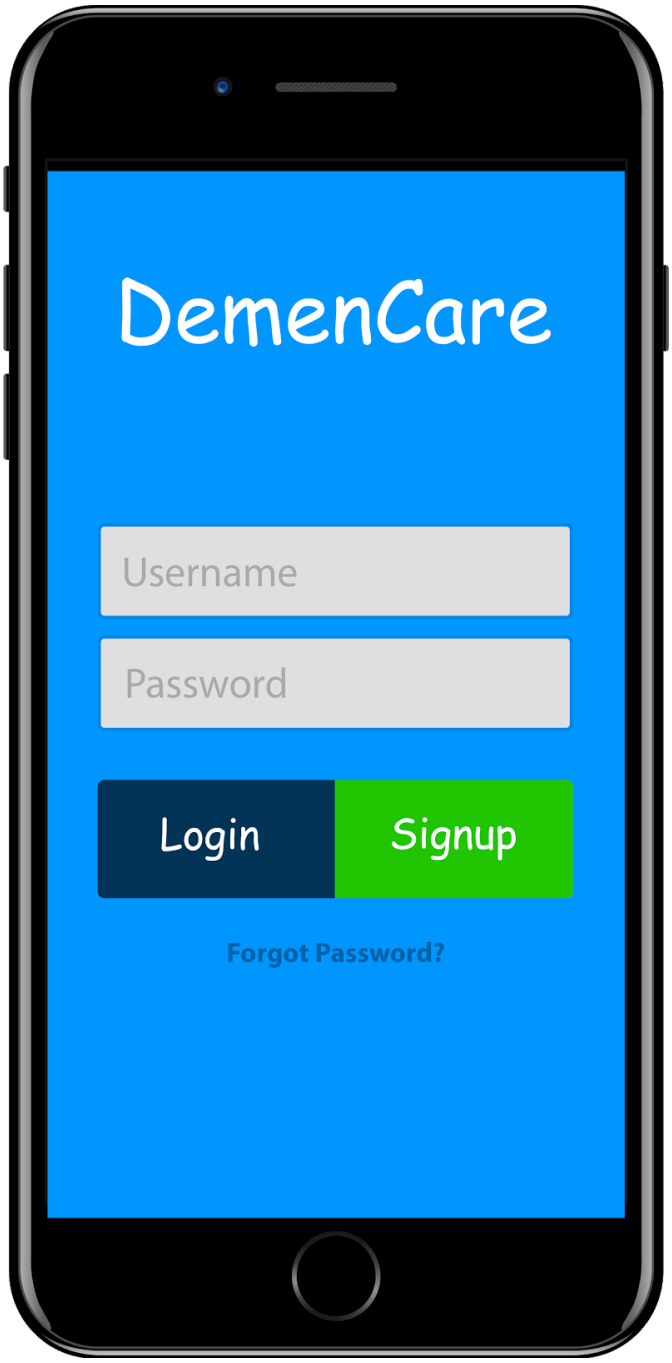




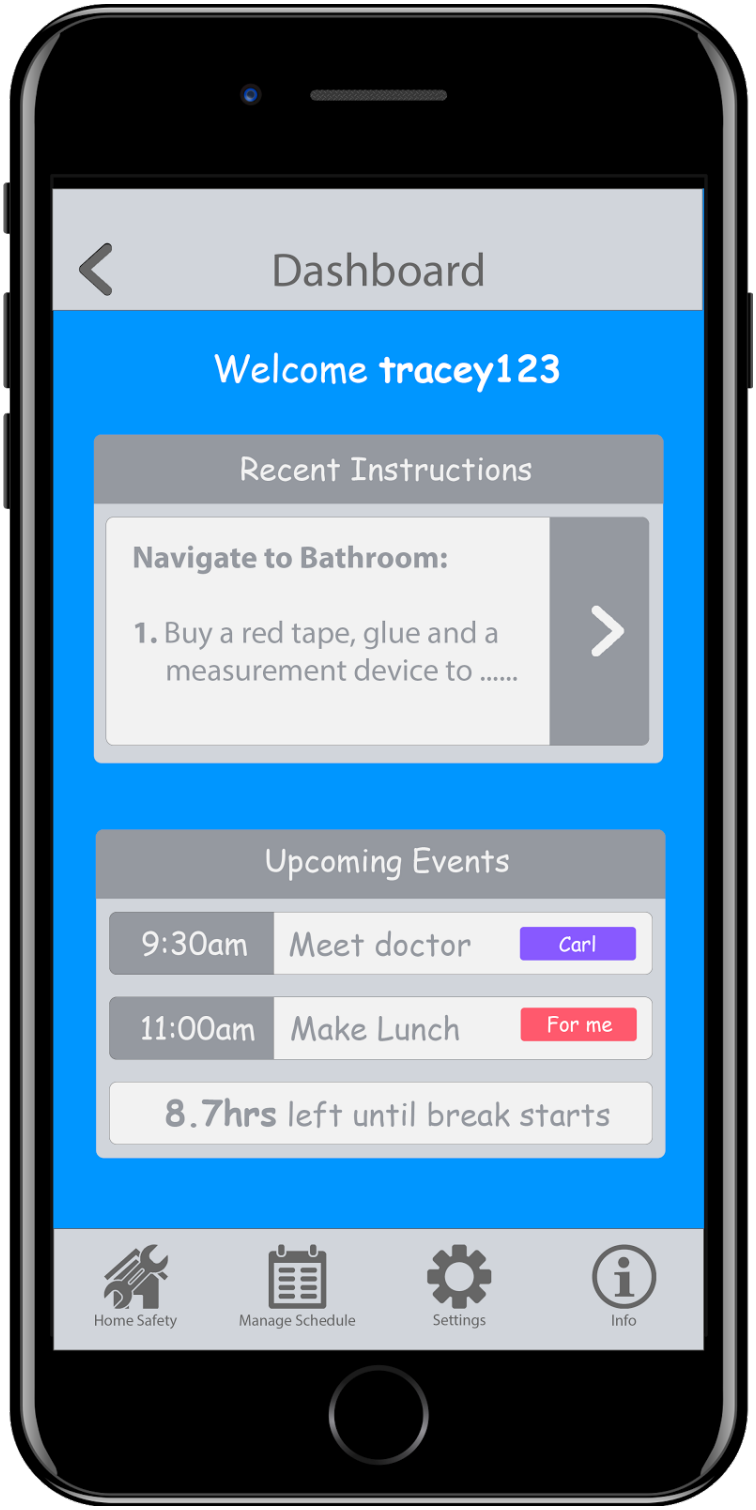
Task 2: Managing conflicts between patient and caregiver schedule.



Initial Login Screen: User input the password and username to login apps or user can sign up if they are first time user.

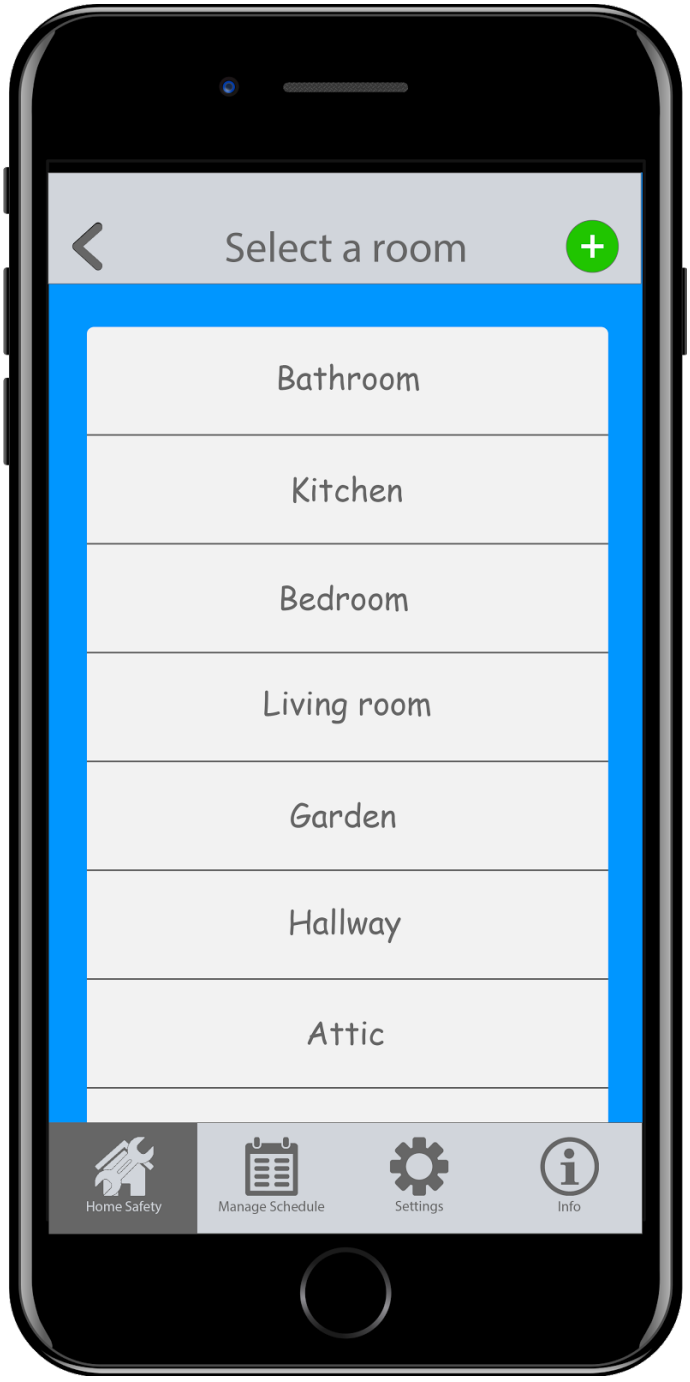


Dashboard: Show the recent instructions of based on user history, blank if new user.

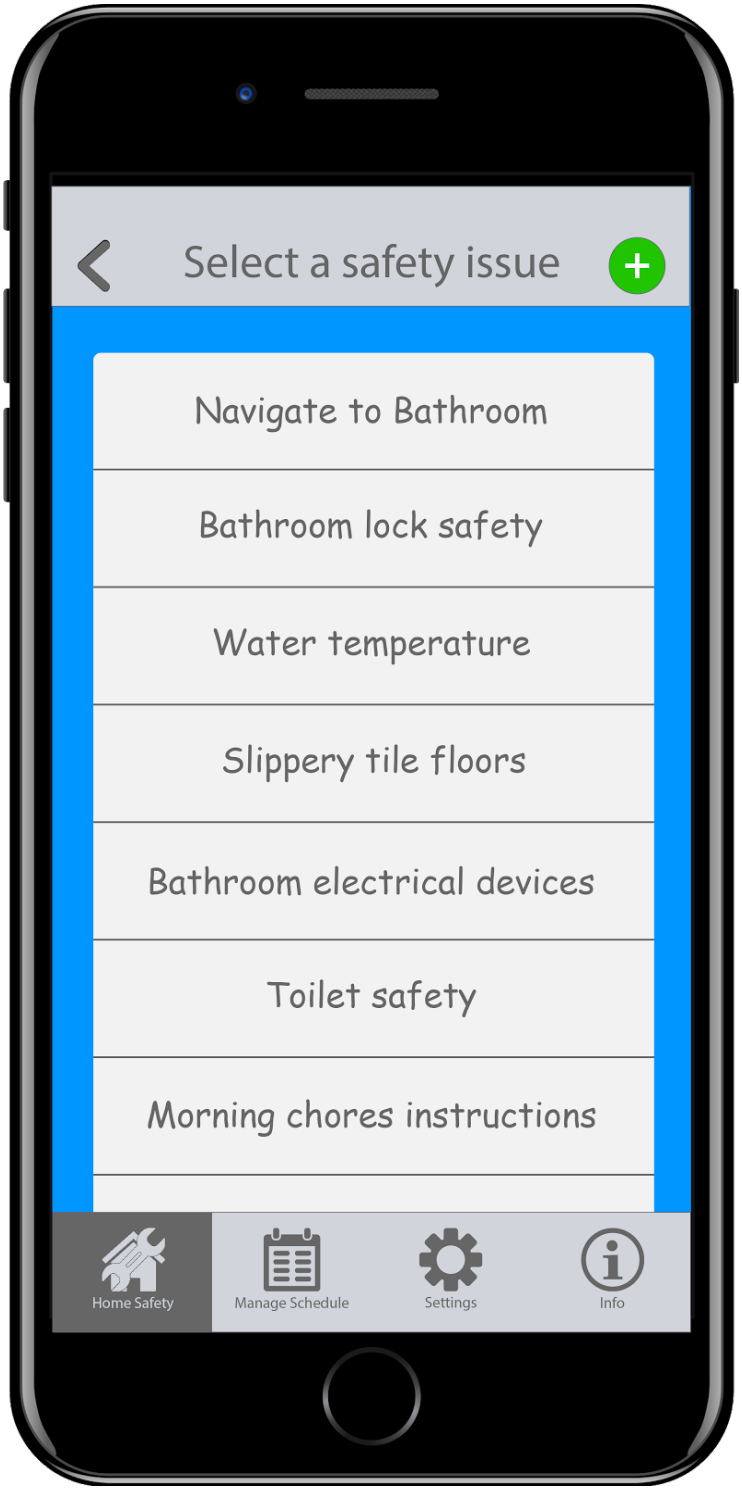


Task 1: Add and share safety instructions for house modifications to enhance patient's safety

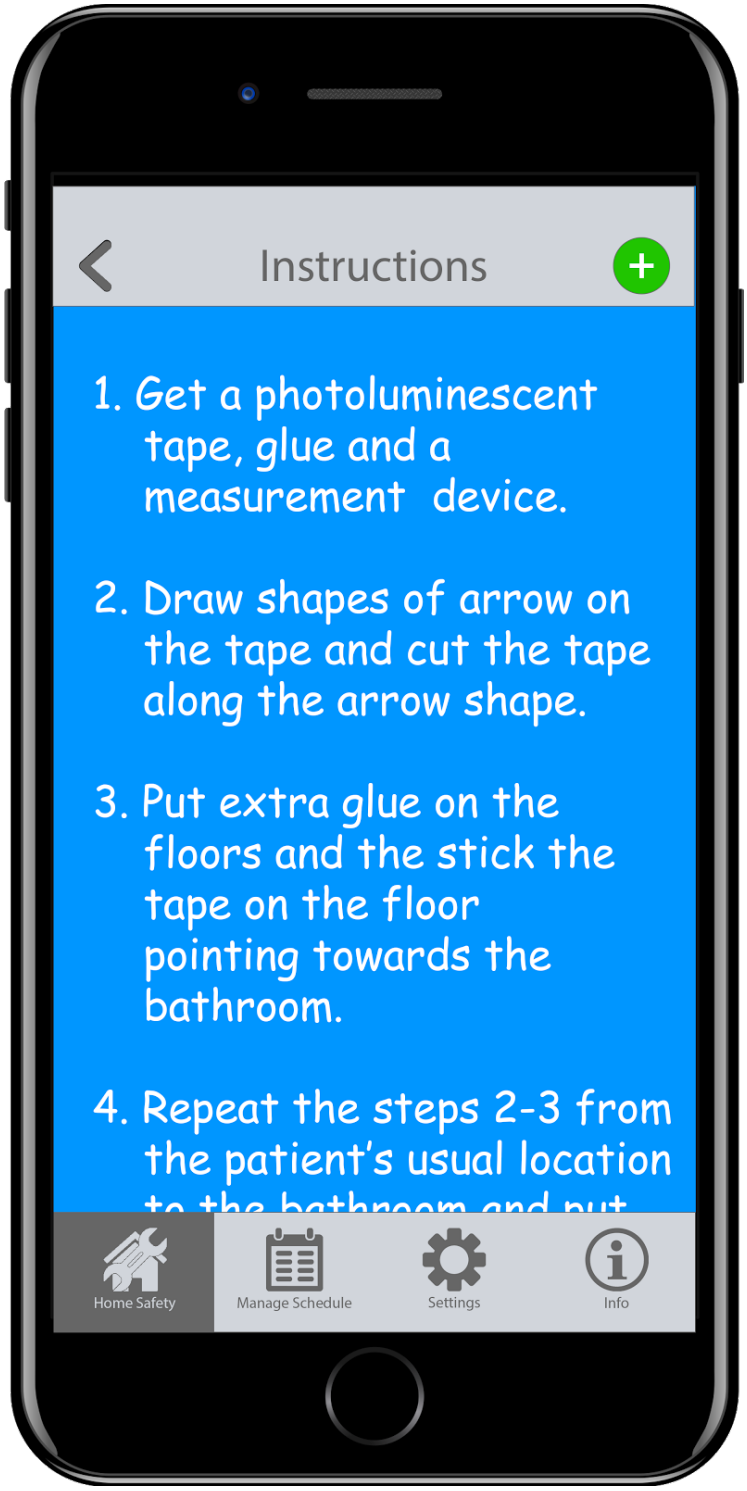
Task 1.1: Select the rooms for which you want to look for safety issues



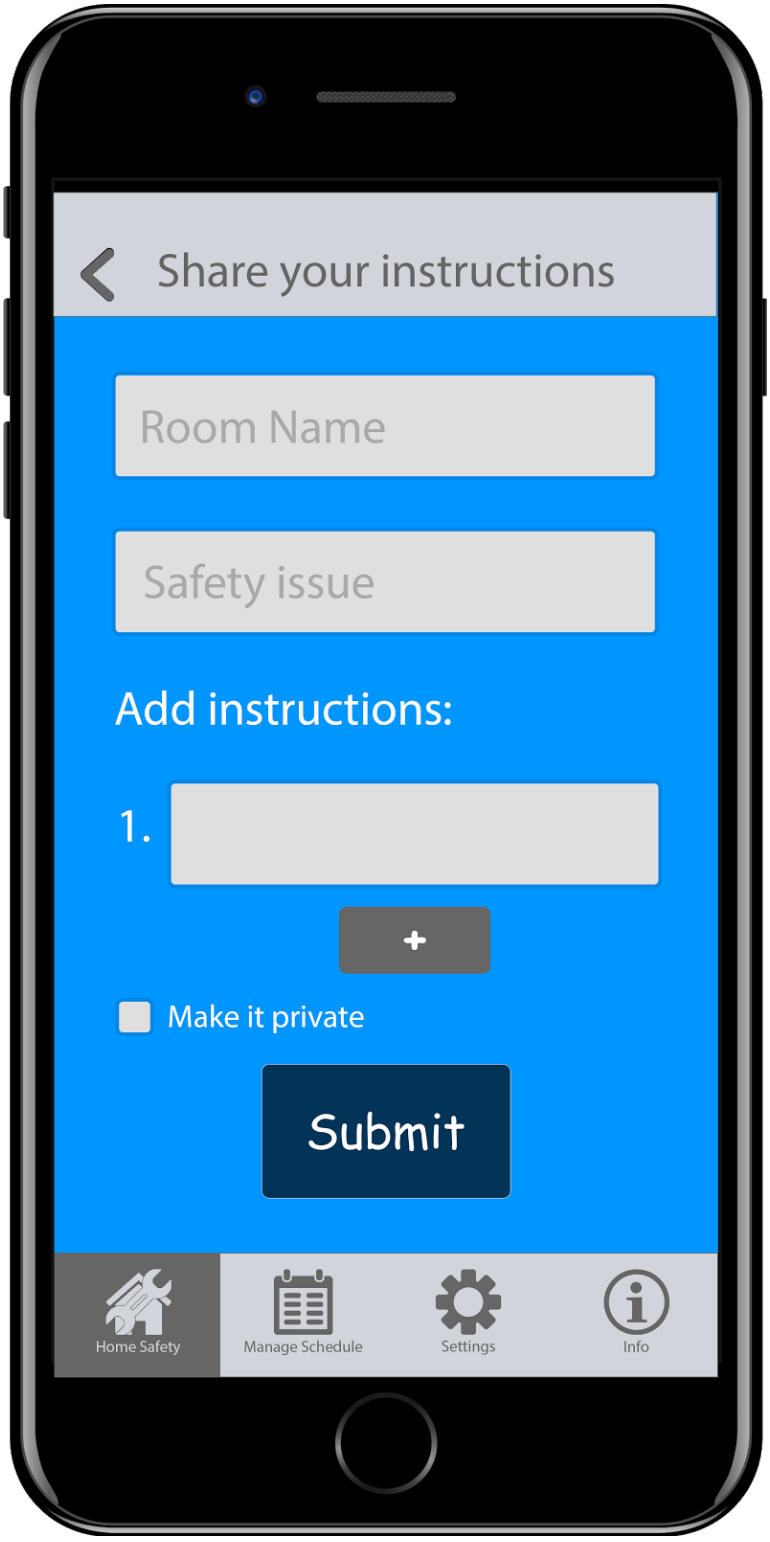
Task 1.2 Select the type of safety issue you are looking for



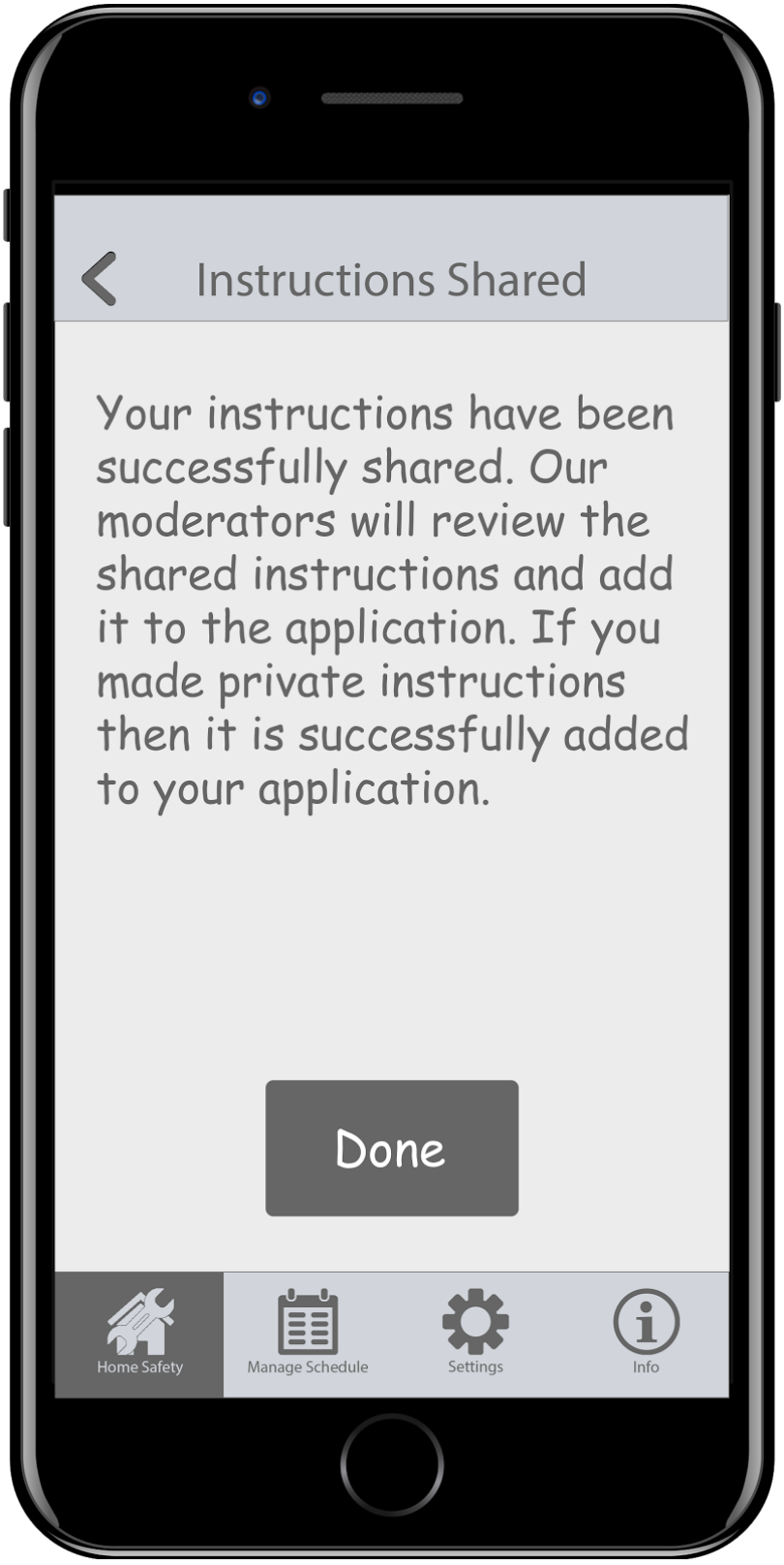
Task 1.3: Read the given instructions and modify the house.



Task 1.4 : Add and share your own instructions.

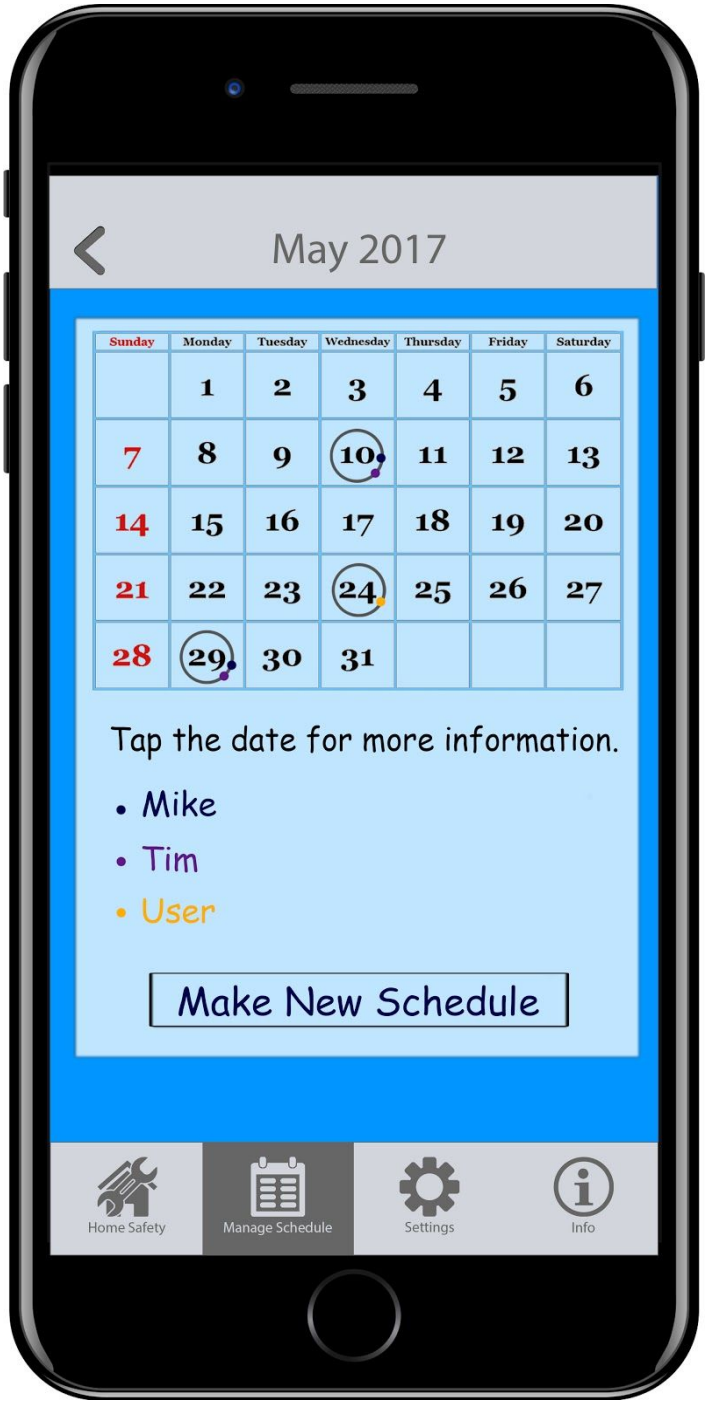


Task 1.5 : Show instructions share screen

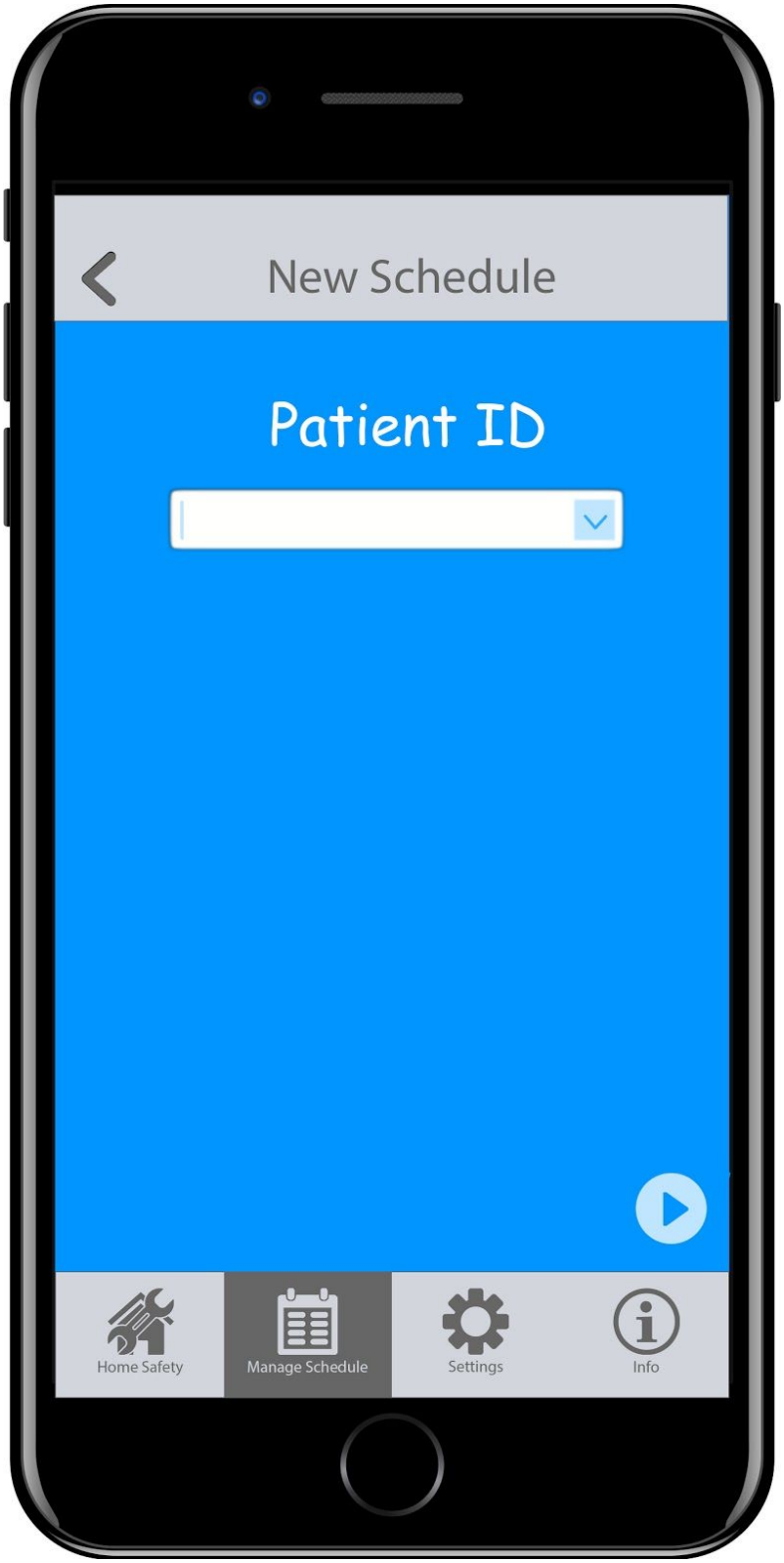

Instructions Shared
Your instructions have been successfully shared. Our moderators will review the shared instructions and add it to the application. If you made private instructions then it is successfully added to your application.
Done
Home Safety
Manage Schedule
Settings
Info

Task 2: Managing conflicts between patient and caregiver schedule.

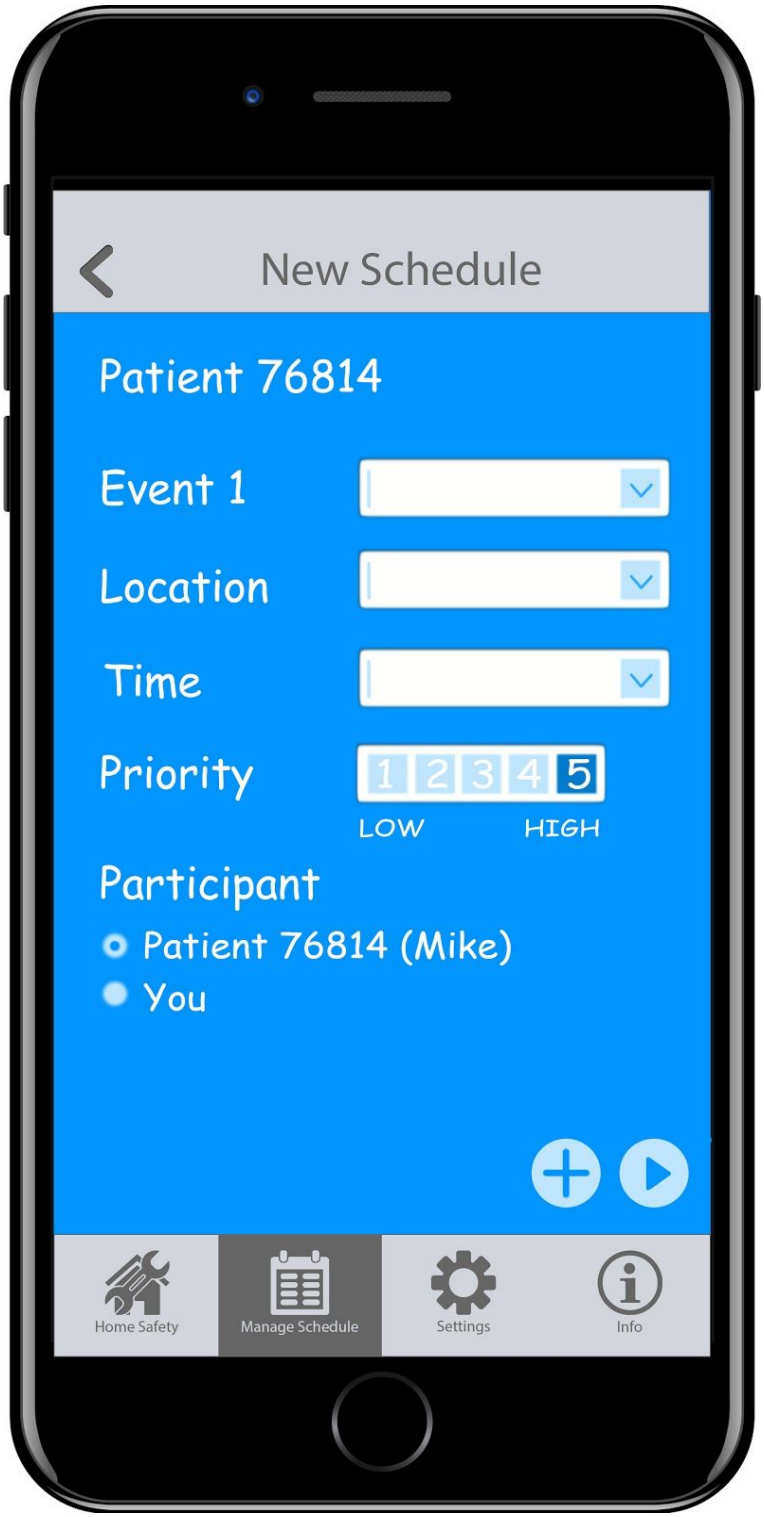
Task 2.1 Show the day and calendar to user that has patient's name and schedule marked up if any. The user can make new schedule by pressing the make new schedule button.



Task 2.2 Enter the patient ID which is previously stored in the account and enter potential numbers of events the user is scheduling for the patients.



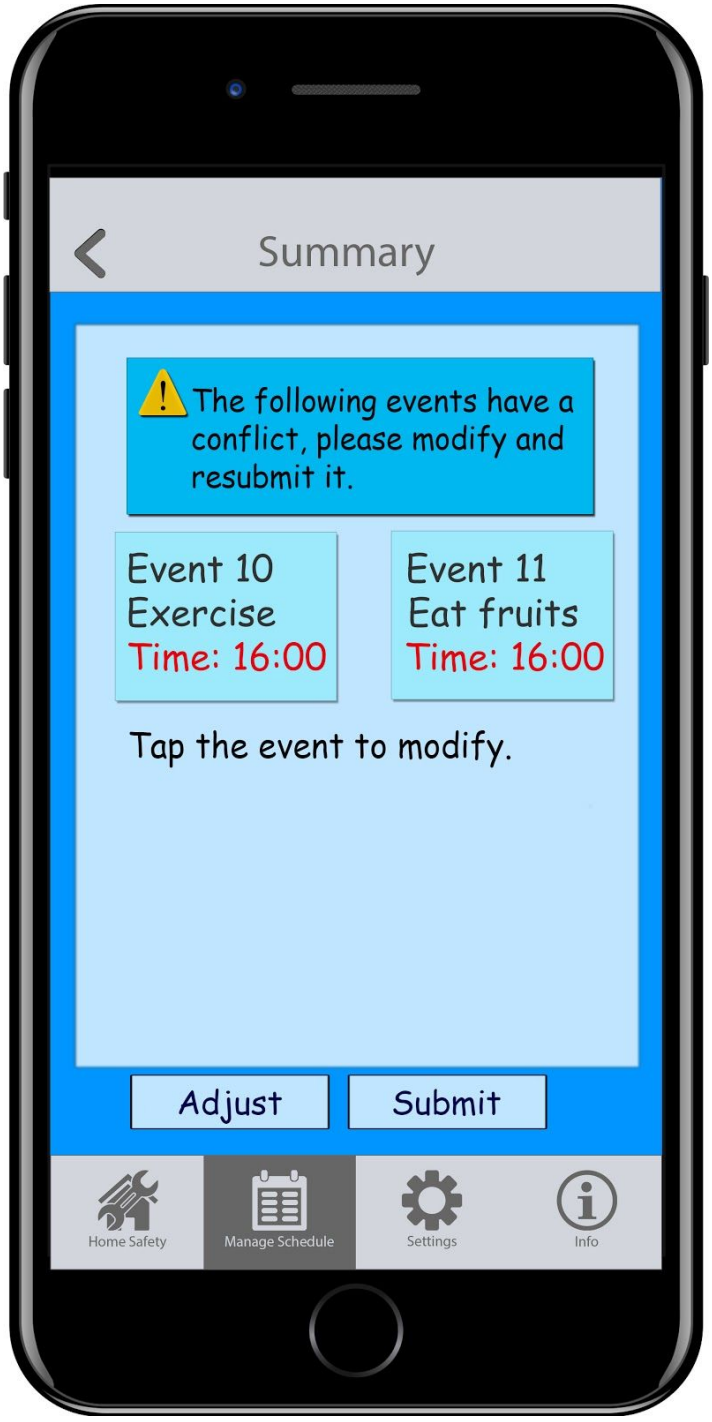
Task 2.3 Then the user keeps editing his or her info and can add new events as they want



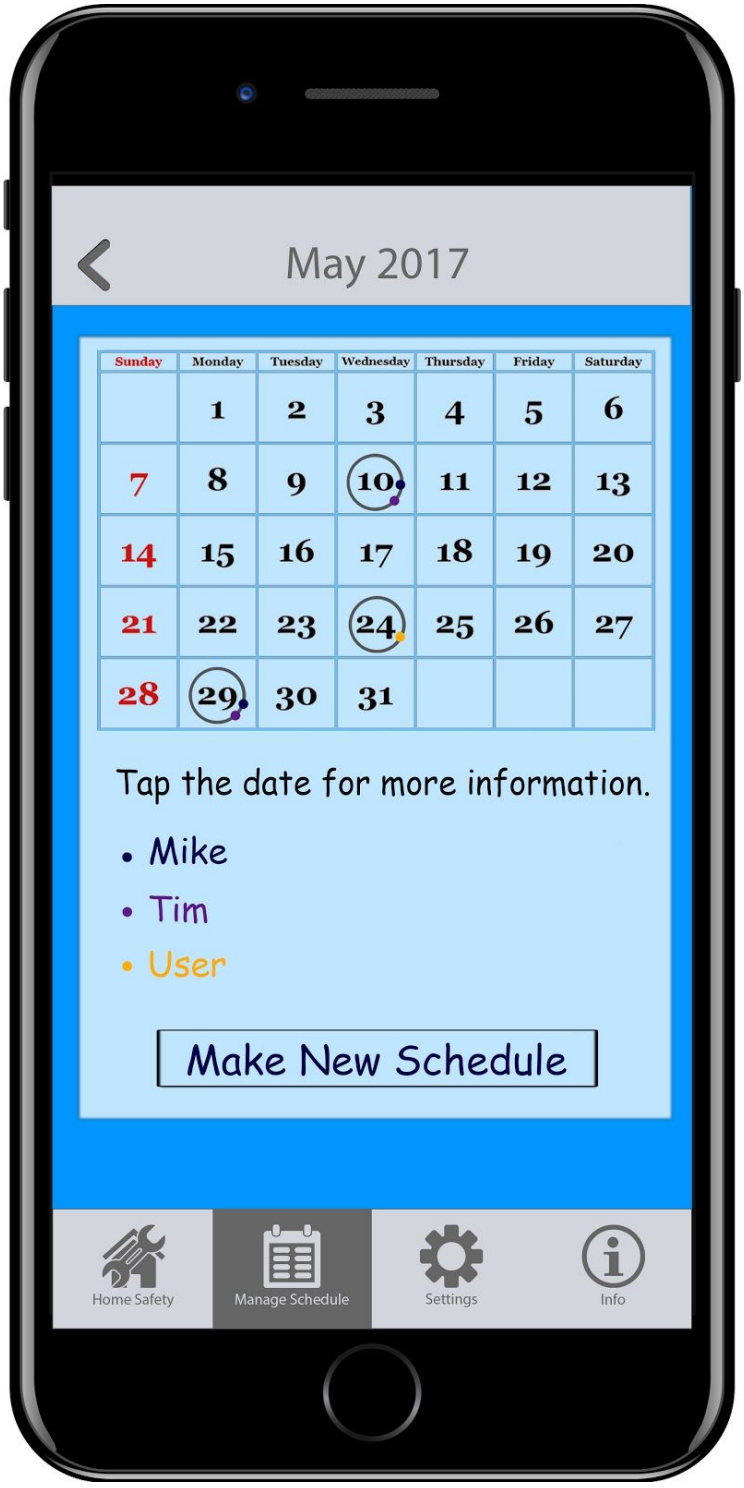
Task 2.4 The app will generate a summary for the user to check his or her input info and will alert the user of schedule conflict if any

Task 2.4.a No conflict

Task 2.4.b. Conflict schedule, need to change



Task 2.5 At last, it will generate the schedule and the user can add it to his or her calendar, or make another schedule



Change and Revisions

Our design makes small changes and revision to the tasks as well as the appearance of the implementation of the digital mockup. We changed the interface for the dashboard. We replaced the details button in the schedules tab with a bigger button and an arrow on it for better accessibility. We also changed the schedule tab to display time for the upcoming events along with the participants of the event. In the schedule task implementation, we changed the label of an event to the given date since it was more user-friendly. For a new schedule, we moved the add button closer to the next button so that the user is aware of the add button and its consistency with the next button. We also changed the image of the next button to make it more precise. We also added a tap feature that will let the user edit an event thus improving the flexibility to change an event.

Moreover, we made some major changes to make the app more design friendly after receiving feedback from our usability testing. We have included the login screen for the design, so the user's privacy is secured along with the information. In case there is a new user, they can sign up for a new account. We have also implemented the welcome screen dashboard to show information related to the two tasks. Besides, on task 2, we removed the screen asking for an input of how many events the user need to make. This change was made after receiving feedback from the user from the usability test. They critiqued that usually they do not know the number of events they need to schedule. They also wished to be able to add schedule from any point of the application.

In our design, each task has its own starting buttons. For the first task which is providing a platform for the caregivers to share home modification experiences, we have implemented a modify button so that user can click to enter the forum. After that, the user can clearly find out tips about different rooms tackling different problems. We have also implemented an add button to let user share their own experiences.

For the second task, we implemented a calendar and make new schedule button so that the user can look at his or her schedule while making new one. The interface is very clear so that the user can easily find out what to do next. We have warning page for the conflict schedules and different marks for schedules of different patients.

Discussion:

During the process of this design project, we learned how to conduct different kinds of tests to get crucial feedbacks regarding our designs. Throughout the process, we have conducted heuristic evaluation and usability tests to collect information both from other skilled designers and our target user. We also learned how to filter the useful feedbacks from many. Least but not last, we now knew how to optimize our test questions through iterative tests to maximize the probabilities of finding errors and prompt the interviewees for information we need during the fast-paced and pressing interviews.

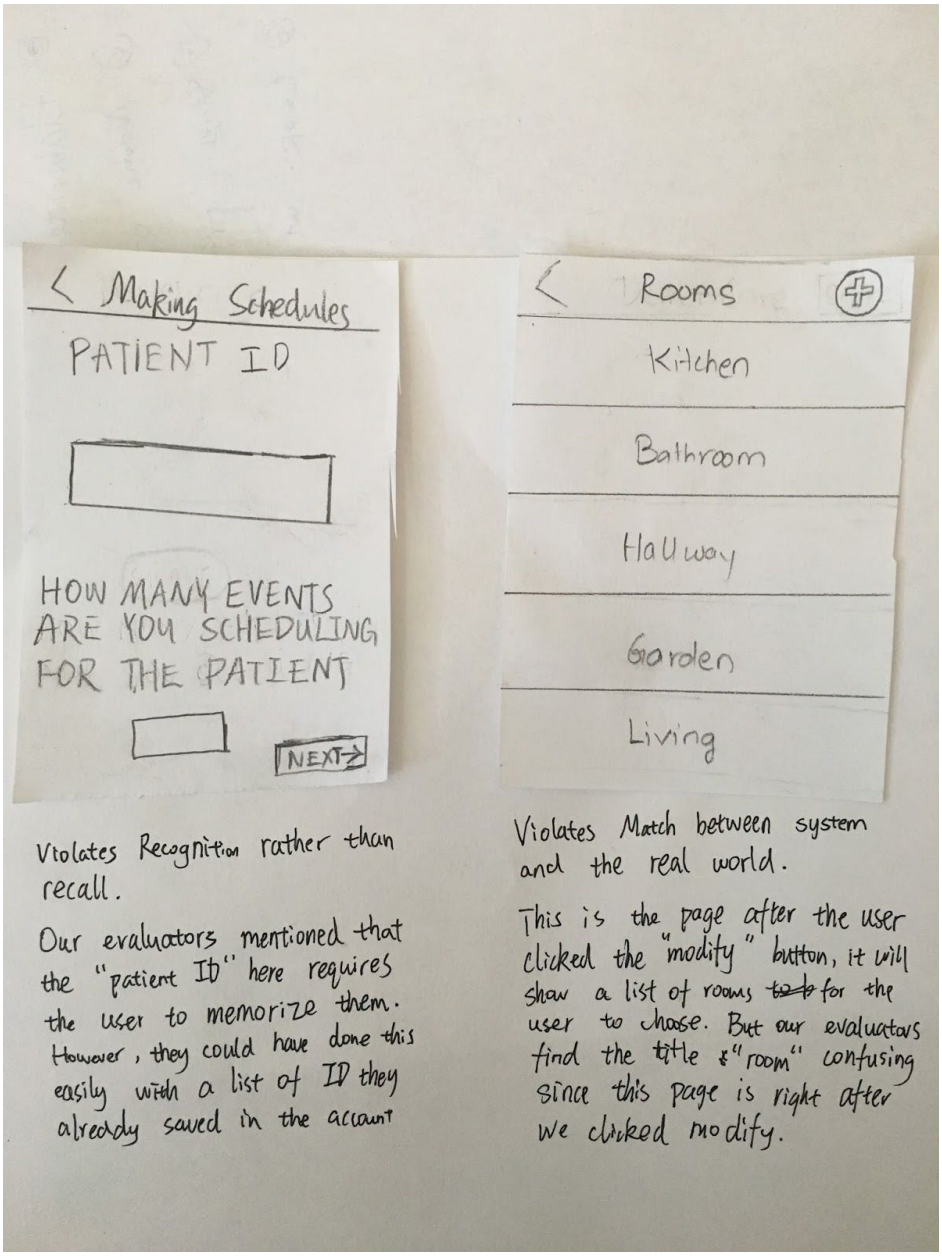
Our final design is very different from our initial one and those changes are accomplished through the process of researching and testing. From the beginning, we are thinking of a wearable device. But as we were doing researching and interviewing the user group and other stakeholders, we learned that this design might seem insulting to the user. So we immediately moved our design to the smartphone to solve this problem. Our target group then changes from the patient with dementia to their caregivers due to the limited technology knowledge of our original target group.

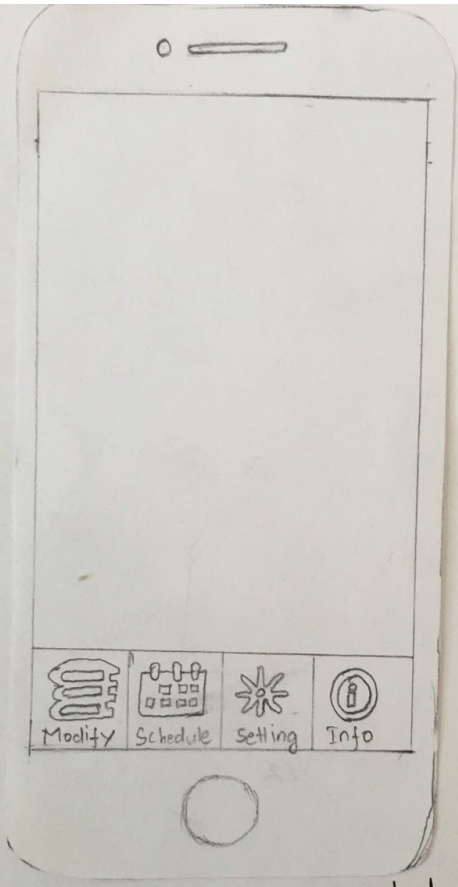
Due to limit of the medium we use for our design, our original tasks of monitoring vitals and locations have also changed to providing a platform for the caregivers to share the home modification experiences and helping them make schedule for the patients. Throughout the usability tests, we did not alter our tasks since it was proved necessary and helpful based on the results of the usability tests.

We think we could have used more iterations for our design to get more direct feedbacks from our target group. Unfortunately we can not achieve this during this quarter due to the overwhelming short time for the tests.

Overall, we are satisfying with our design and proud of it. We believe that this design could bring convenience and help to those caregivers who can not fully manage the caring activities.

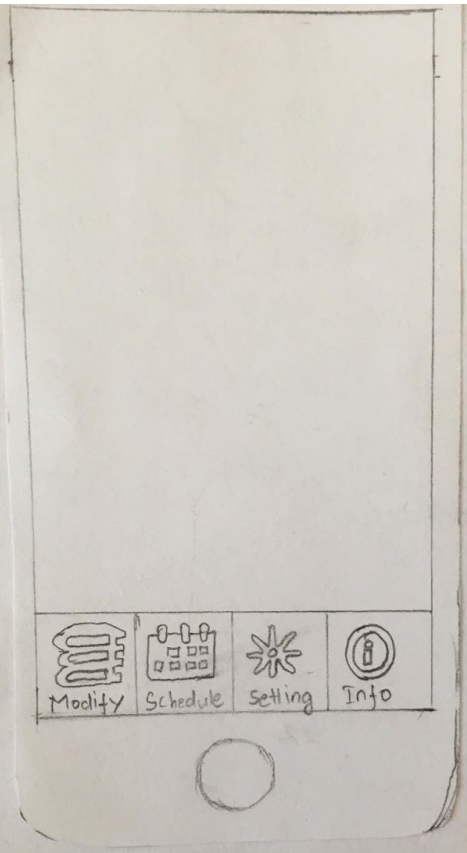
Appendix:


< Making Schedules
PATIENT ID
HOW MANY EVENTS ARE YOU SCHEDULING FOR THE PATIENT
NEXT
< Rooms
Kitchen
Bathroom
Hallway
Garden
Living
Violates Recognition rather than recall.
Our evaluators mentioned that the "patient ID" here requires the user to memorize them. However, they could have done this easily with a list of ID they already saved in the account
Violates Match between system and the real world.
This is the page after the user clicked the "modify" button, it will show a list of rooms ~~to~~ for the user to choose. But our evaluators find the title "room" confusing since this page is right after we clicked modify.



Violates Consistency and standards.

The schedule button here is meant to let the caregivers make schedule. But evaluators mentioned that the user may think it as a button to show the current schedule.



Violates Match between the real world and system.

Our evaluators mentions that the modify buttons here is confusing at first. Our task is to provide caregivers with resources of home modification, but the "modify" here seems to ~~boot~~ let users modify their account