

CS4163/6610 – Milestone 2

SECTION 1. ADMINISTRATIVE INFORMATION

Project Title: **AI-momentous: An Alzheimer's helper app**

Date: 03-11-2019

1.1 **Team Name: Absolute contagious**

1.2 **Team Members :**

Name	Banner ID	Work Done (%)
Sithara Jayachandran	B00824470	25%
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Miles Redgate	B00705540	25%
Total		100%

SECTION 2. DATA ANALYSIS, PROTOTYPE DESCRIPTION AND PROTOTYPE EVALUATION

2.1 DATA ANALYSIS

2.1.1 Purpose

Our objective is to build simple and easy to use app that helps alzheimer's patients remember events, help patients stay connected and engaged with friends and family, and recognize faces of friends. This app aims to help users solve simple issues of their lives. As there is no cure for alzheimer's disease, we hope to still improve their quality of life for as long as we can.

This paper outlines the results of our initial study and the evaluation of our prototype. Our initial study was to evaluate a paper prototype of our creation, resulting in very similar studies, however, we aimed to improve our prototype for the second evaluation based off of the feedback from the initial study.

2.1.2. Study Description

The study was conducted with our classmates during and at the lab locations using our low-fidelity paper prototype. To start, participants were explained the context of the study, what is being examined, the general guidelines that the participants have to follow while taking up the interview and the mode in which the interview will be conducted is also explained to them. After they have agreed to these terms we will proceed with the study. We first collected basic data about them, pertaining to demographic information to help reveal more data from the data we will collect later. The users were then asked to complete a series of tasks with our prototype while we observe their

interactions with it, for either confusion or when they have done something right or wrong. The tasks we asked them to perform were, finding out who Uncle Ben is, finding out what a reminder/notification is about, contacting the doctor and setting a reminder for an event. The participants will then be asked a set of both open and closed ended questions pertaining to the application's prototype designs and features (appendix A). Their feedback recorded for future iterations of the app. The overall time that a participant is expected to spend is around 10-15 minutes for the entire study. This was study to be a within subject study, as given the expected small sample size, we would like to get the most information out of our participants as possible. As our app deals with people suffering from memory loss, there's the potential for each interaction to be a "new" interaction for each user. Therefore the order effect can have a harmful effect on our study as a user is likely to remember details of our app from performing previous tasks, e.g. remembering menu items from the last task, therefore already having an idea of what to do for the current task. To deal with this we gave each participant the tasks in a different order, so that we can better evaluate the first impressions of as many different parts of our app as possible.

2.1.3 Analysis Process

We were able to obtain a relatively small sample size for our study, so the data analysis process will be very simple. Basically we will examine our data collected for any outliers, or any feedback that doesn't suggest either that the prototype is good or that there is no issue with a component of the prototype.

2.1.4 Data Analysis/Results

Task	Observed Data	Feedback
Who is Uncle Ben	One participant clicked on contacts first (as opposed to people)	There's a lot of mental model overlap between contacts and people
What is this notification	One participant clicked on notification slide, rather than on "what is this?"	One participant felt there should have just been more info in notification (i.e. not need to click on "what is this")
Create a reminder for an event	A couple participants were confused on to go to events or reminders feature of app	One of these participants suggested simply combining these two features
Contact the Doctor	A couple participants showed confusion on whether to go to emergency or contacts.	One participant didn't like that emergency was just a shortcut to a subsection of contacts, would rather it be a separate screen.

Questions and results:

1) On a scale of 1-5 (1 being very difficult and 5 being very easy), how difficult was it to accomplish the tasks given in this study?

Average of 3.7

2) Where there any tasks that stood out as more difficult than the rest? Easier?

Tasks of who is uncle ben, what is this notification and create a reminder for an event were all flagged as more difficult. No participant noted a particularly easy task

3) Is there anything about this app that you would change design wise?

One participant suggested that as a patient's alzheimer's progresses, the app simplifies, e.g. in stage 3 alzheimer's, the app only consists of people, contacts, and emergency. Another participant suggested to combine the reminders and events features into one.

4) What about features that would benefit the app or current features that hinder it?

One participant brought up contacts vs emergency again for contacting the doctor.

5) On a scale of 1-5 (1 being not at all useful and 5 being very useful), how useful do you think our app would be for helping those with alzheimer's?

Average of 3.7 here, though one participant noted that in its current state they would have given it a lower score, but they assigned it a 4 based off of the concept of it.

6) Other thoughts?

One participant said the app was too complicated in its current form. Another participant said it was not clear what identify was used for from the home screen.

Analysis:

A couple notable trends that can be observed right away from, there's a lot of mental model overlap in our app, notably events and reminders, people and contacts and emergency and contact.

However, feedback on the usefulness of the app for those with alzheimer's was fairly high. Though due to concerns of ecological validity, this should be taken with a grain of salt.

Looking at the flagged difficult tasks, both finding out who uncle ben is and creating a reminder could both be due to overlap mentioned earlier, though having trouble with notifications different from them. Though the reasons for this is unknown, it could be that the notifications do not contain enough info in them, but it could also be an artifact of the study medium, perhaps on an actual smartphone people would have more context knowledge of how to interact with the notification.

Identify was noted as not being clear what it was for from the home screen, this is a problem shared with both people and contacts as since they overlap in participants mental models, the distinction between them is not clear right away. Unfortunately we do not feel there is much more

we can do to separate these from the home screen. However, we feel that it will be obvious what identify is for (or not for) when users load up that feature and their camera turns on.

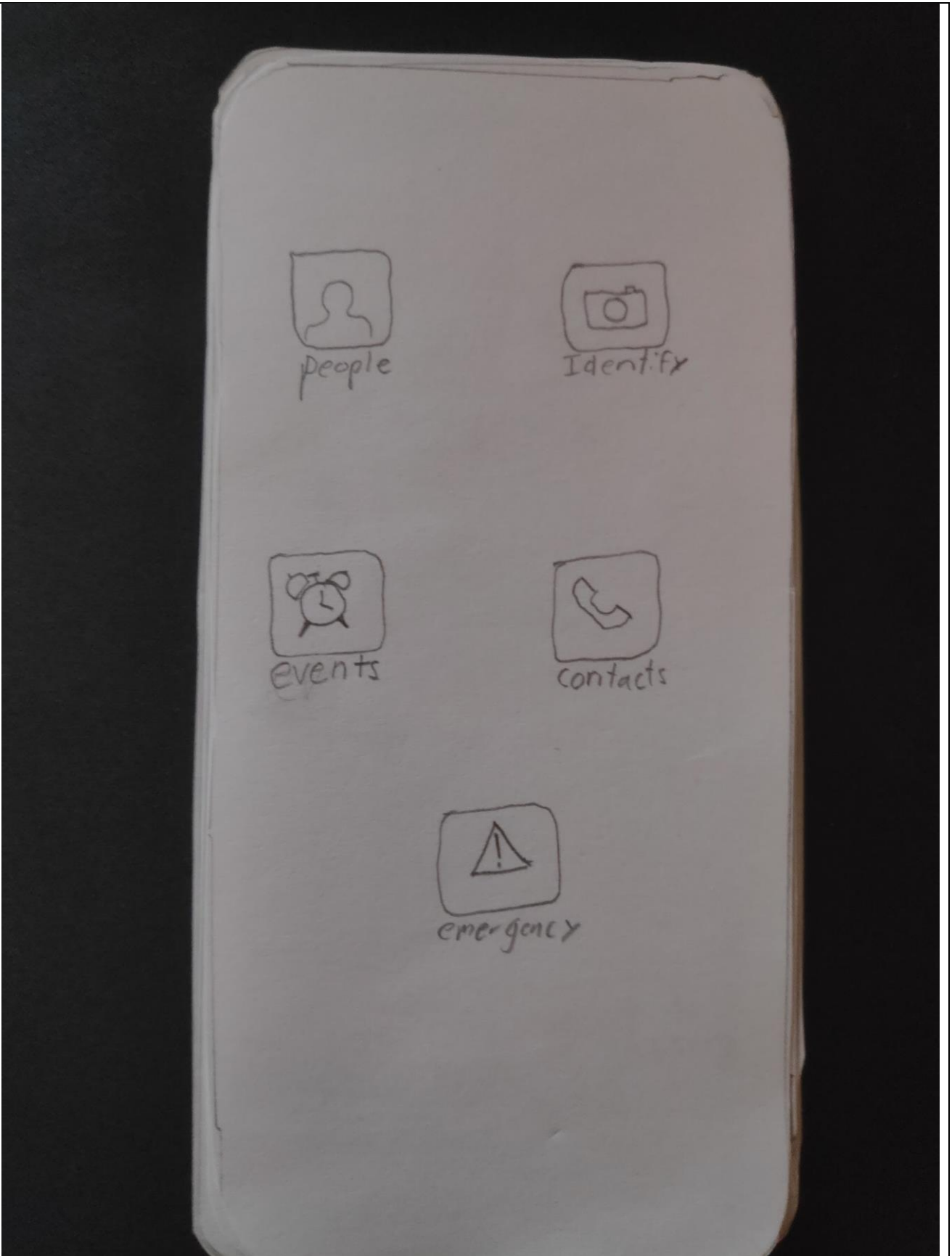
2.1.5 Guidelines and Suggestions

From analysis the results and problems with our app, we have come to these suggestions on what to change with our prototype.

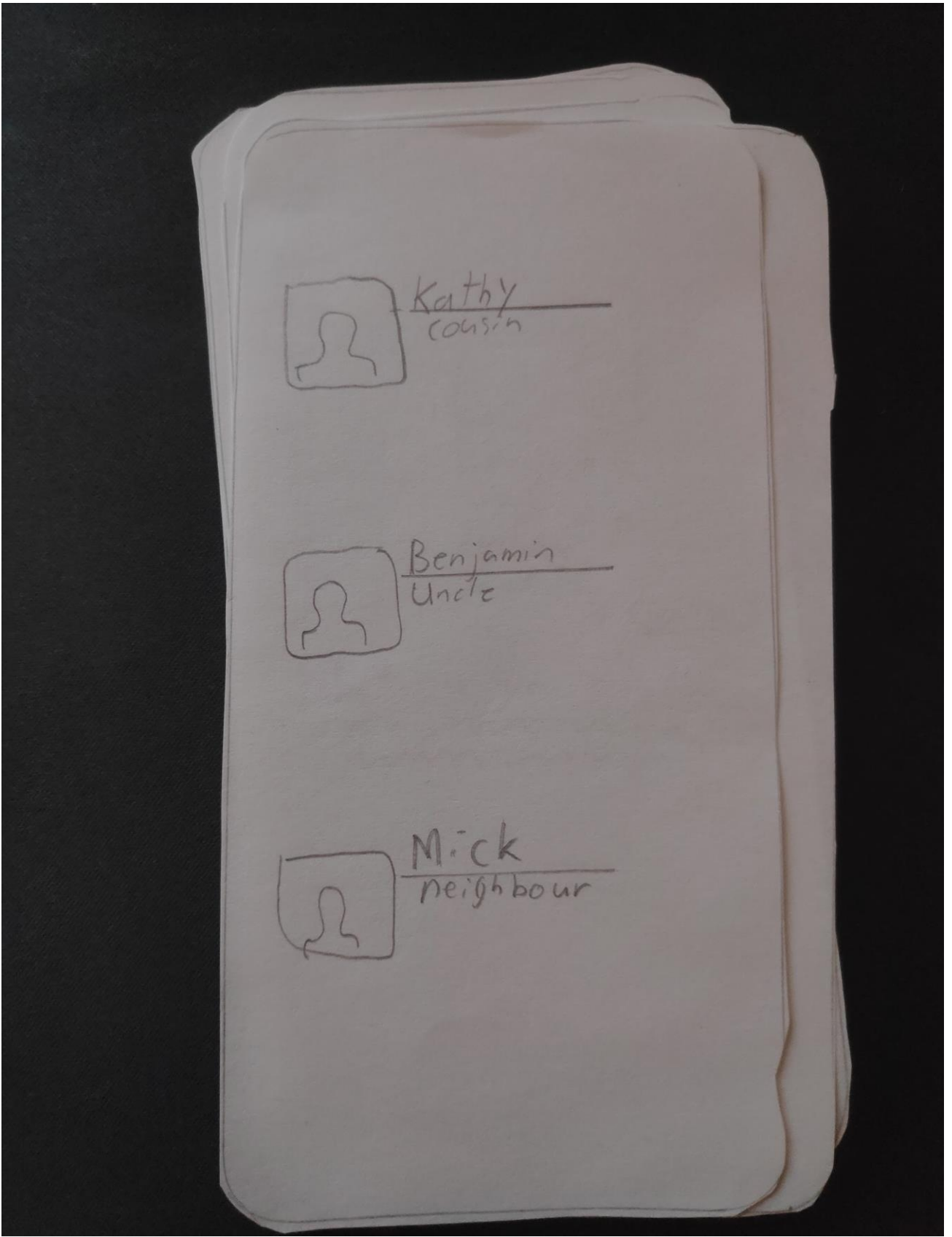
1. Combine events and reminders
2. Separate emergency and contacts pages
3. Allow notifications to have more optional description text
4. Add a link from a person's contact page to their people page

2.2 Prototype Description

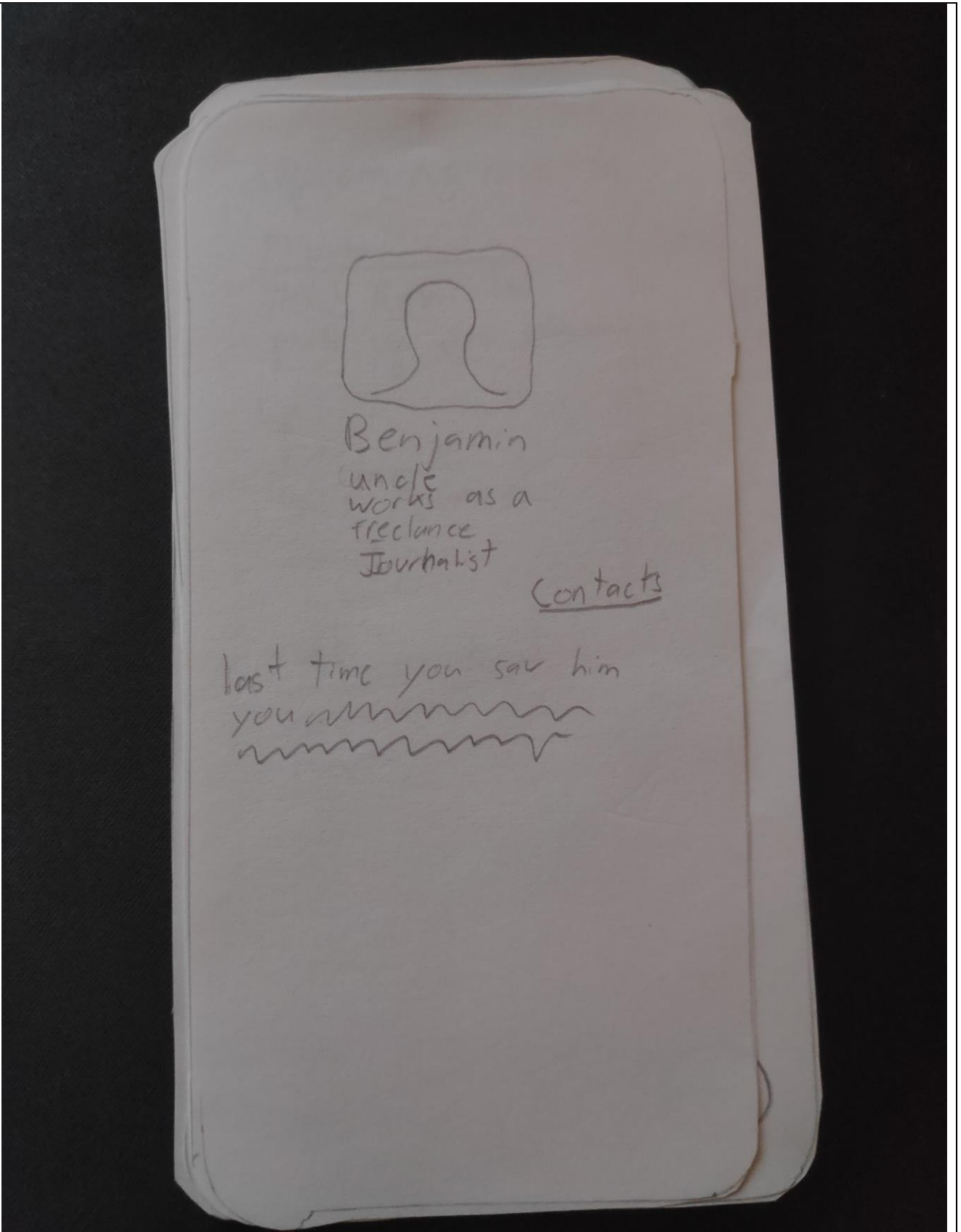
2.2.1 Prototype Description



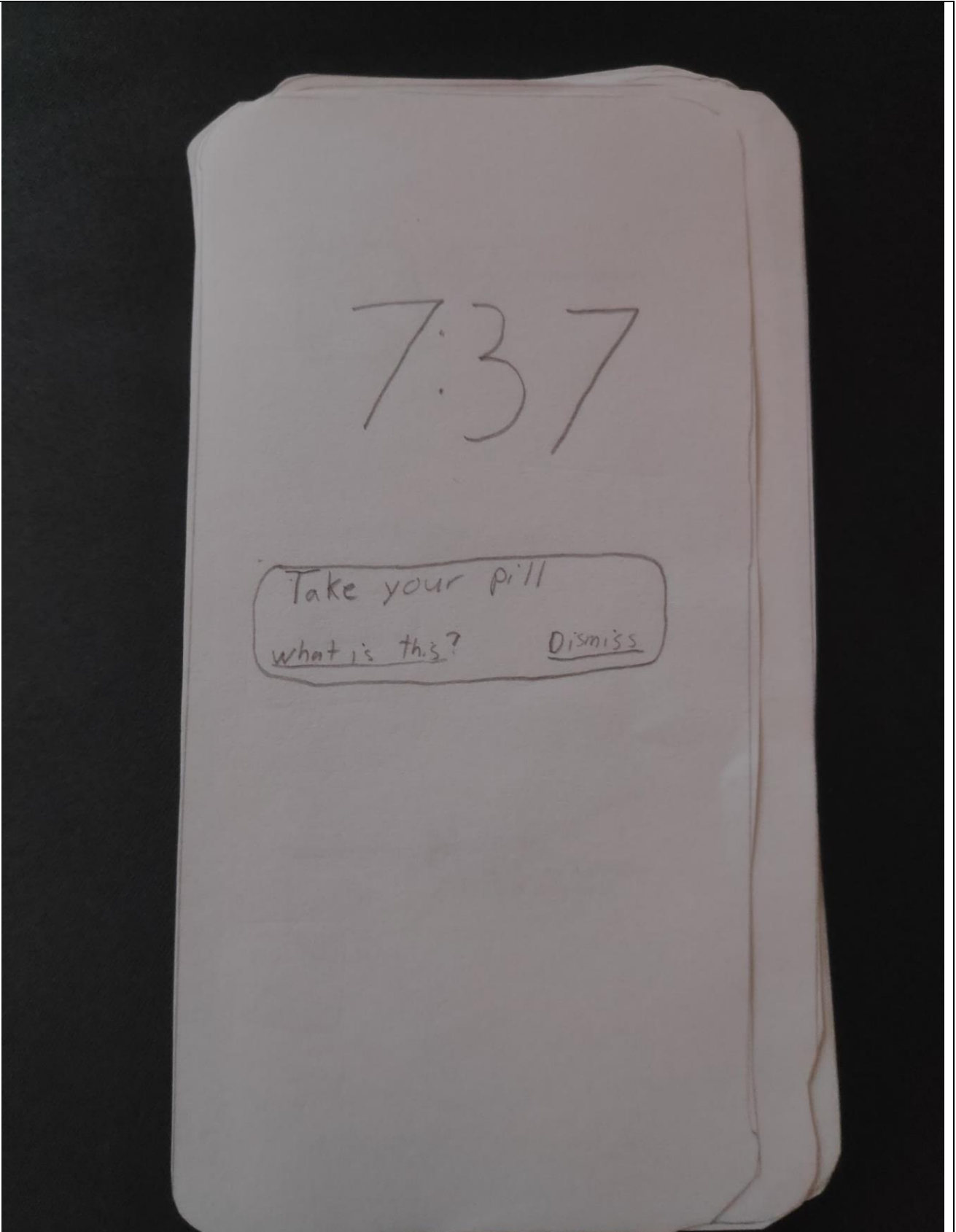
Home page of our app. Notable things on this screen is that we have combined the reminders and events that were on the original prototype.



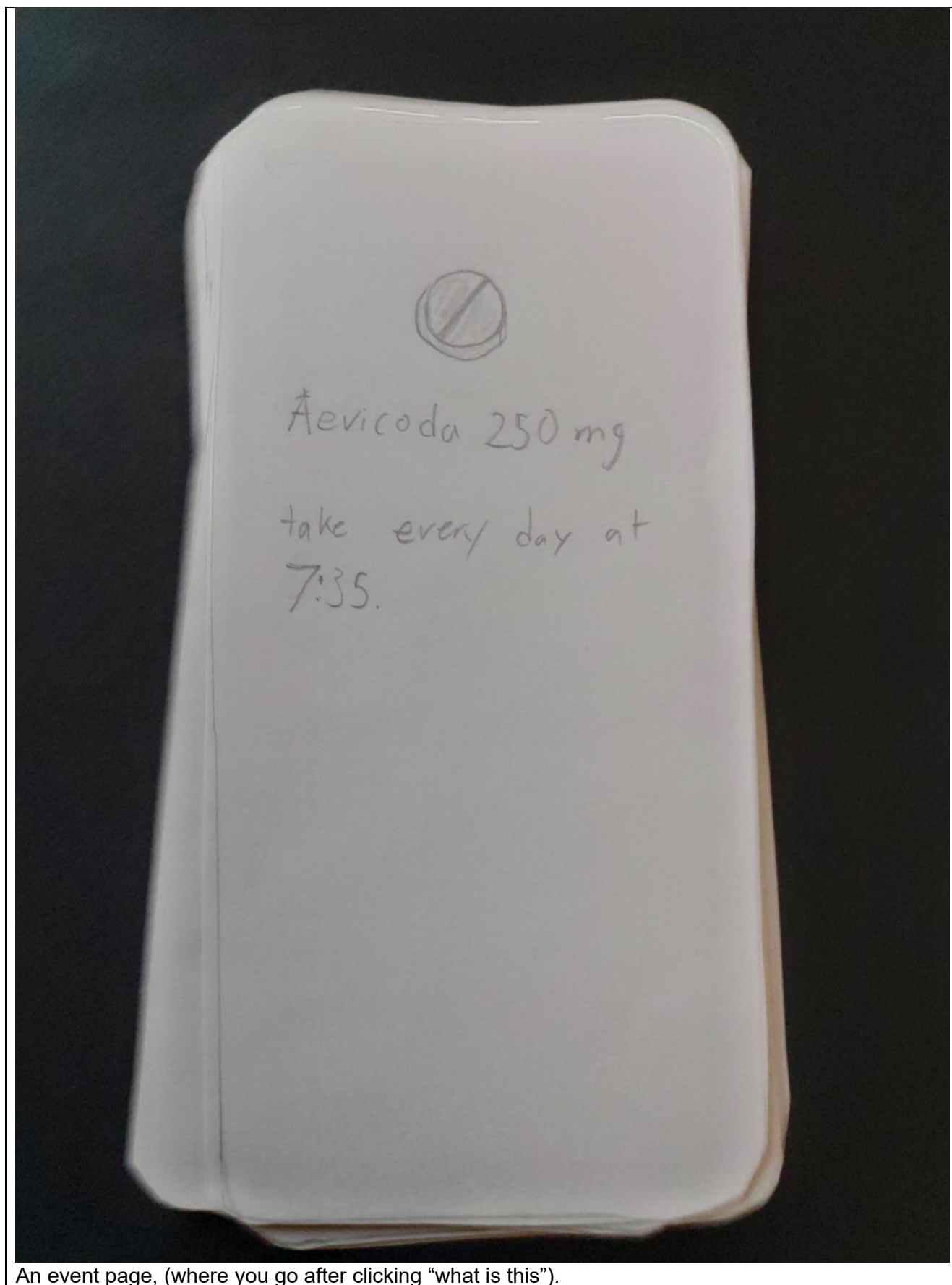
"People" page, we tried to keep the information limited on this page, we decided that anything other than a person's relation to the user was too much, in accordance with the 8th principle of HCI.



A "person" page, (not a contact page).



How we choose to display notifications, While one of the guidelines was tweaking these to display more info, we're unsure how to do this with a paper prototype and we will implement this in a later higher-fidelity prototype.



An event page, (where you go after clicking "what is this").

Contacts

Emergency

Dr. Polonius

Ambulance

Fire Department

A

Amy

~
~

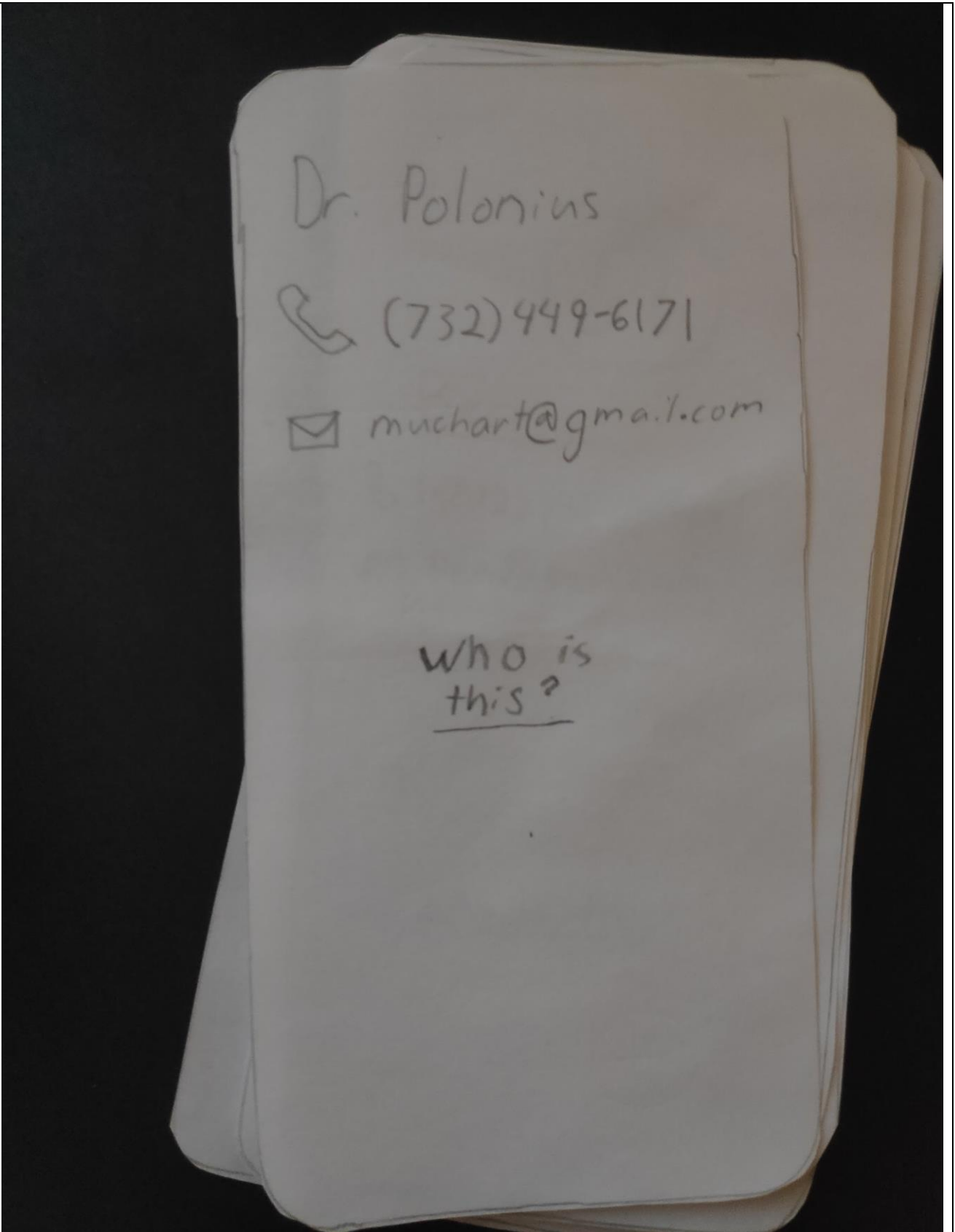
~

B

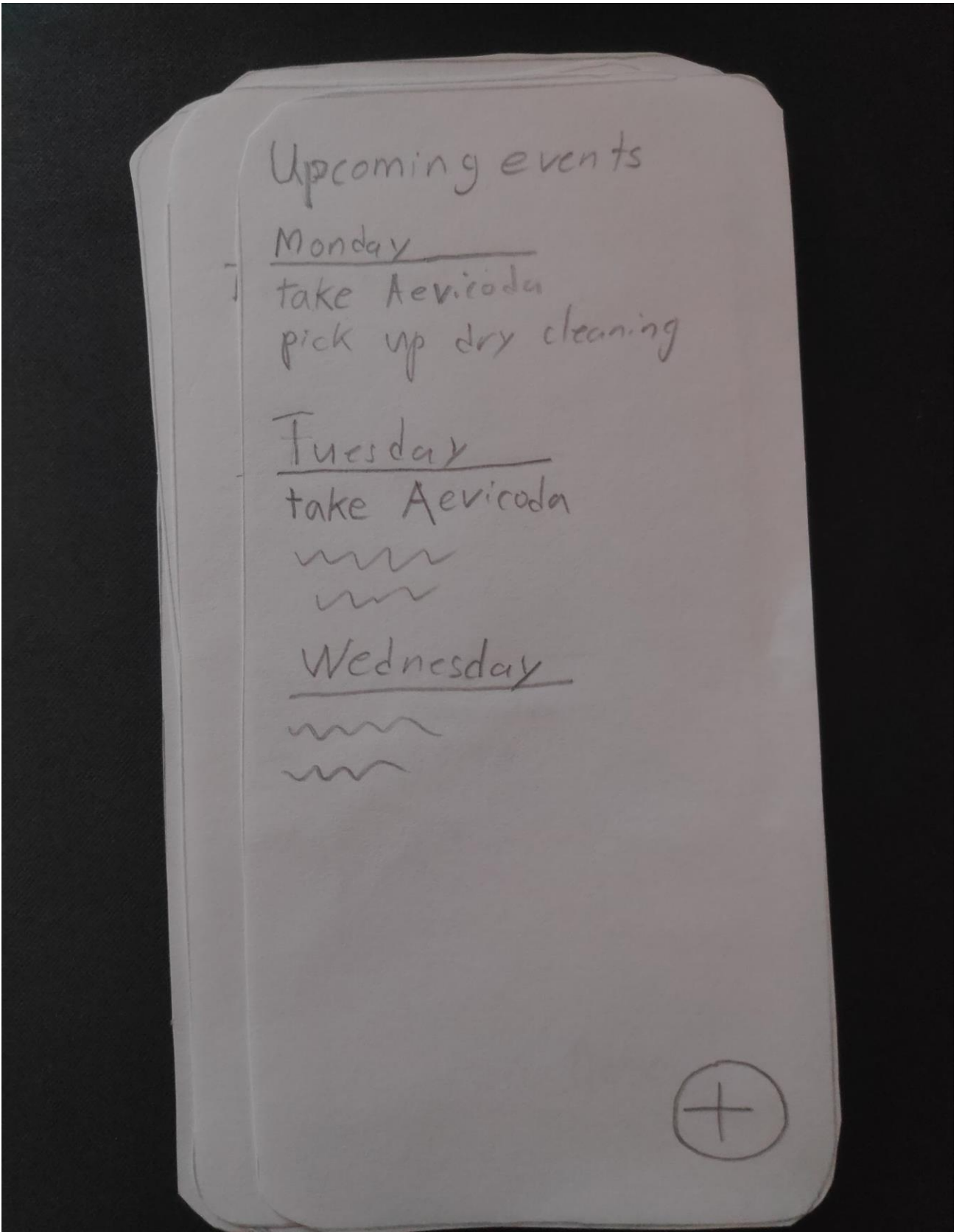
Ben

~

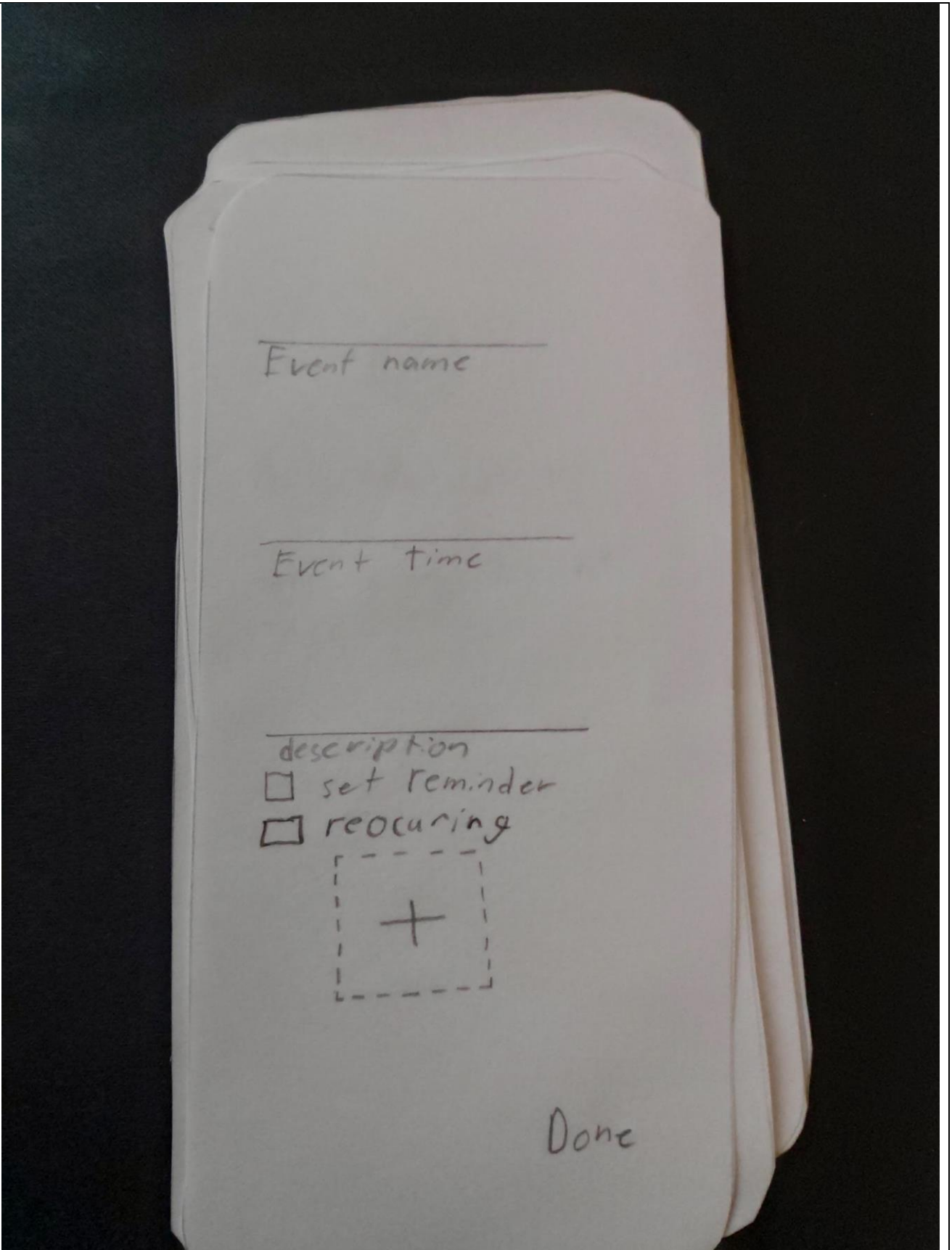
Contact page.



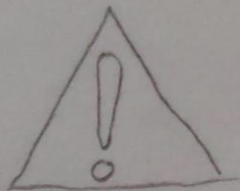
A person's contact page, as per our guidelines, we have added the "who is this" as per our guidelines.



The events page, where you can create an event.



The create event screen, here we added a reoccurring checkbox on this screen, as this was the only major difference we could think of between events and reminders, which we combined.



Emergency

911

Dr. Polonius

Finally, the emergency screen, new for this prototype as previously it was only the subsection seen in the contact page.

2.3 Evaluation of Prototype

2.3.1 Research Questions/Hypothesis

Hypotheses: By providing constant reminders and tracking the user's day to day activities, as well as support for minor struggles they might encounter, an app can help reduce the negative effects of Alzheimer's.

Research questions: 1) Does using this kind of mobile app on a daily basis have a positive impact on people suffering from Alzheimer's?

2) Will looking at pictures of the patient's acquaintances help them to remember their connection with them?

We initially had a third research question on how useful mental stimulating games could be for helping with the cognitive decline of patients, however we have dropped this as we feel it's not something we can either prove or disprove or be implemented into a prototype within the confines of this course.

2.3.2 Study Details

As our first study was an evaluation of a prototype we had created, the study details remain the same as what is outlined in section 2.1.2 of this paper, though this time we will not collect demographic information.

2.3.3 Participants

The participants for this study will be students of this course available during the lab time, the only criteria they must meet is to be familiar with using mobile operating systems (e.g. android or iOS).

2.3.4 Data Details

We plan to monitor their performance for quantitative objective data such as how many right or wrong "clicks" they make on our prototype. As well as qualitative objective data such as any moments of frustration when using the prototype, notable moments of hesitation. We have no plans to gather background data on participants, as we don't anticipate getting enough participants to be able to infer meaningful data from their responses and interactions in relation to their background data. We would like to collect info such as how quickly they complete a task (timed), however, using a paper prototype means that this data can be unreliable since moving through the prototype is not automated and takes a different amount of time for each task regardless of user interactions, making it hard to obtain meaningful information in this way.

All data will be collected on paper and shared through online tools with limited access to only group members.

2.3.5 Results, Discussion, and Implications:

Task	Observed Data	Feedback
Who is Uncle Ben	A couple participants went through contacts for this, but since adding the "who is this" to a contacts page, this wasn't an issue	
What is this notification	One participant clicked on slide not "what is this"	Again, one participant wanted to just have info in the notification.
Create a reminder for an event	No problems	One participant noted that the form for events could be a bit much simpler things such as fetching laundry when it's done.
Contact the Doctor	One participant went through emergency instead of contacts (not an issue, just not the expected path)	

Questions and results:

1. On a scale of 1-5 (1 being very difficult and 5 being very easy), how difficult was it to accomplish the tasks given in this study?

Average of 4.

2. Where were there any tasks that stood out as more difficult than the rest? Easier?

Notifications and creating a reminder were flagged as more difficult on this prototype.

3. Is there anything about this app that you would change design wise?

One participant suggested this app could be reduced to People and Identify and the rest of its functions could be achieved through integration with other existing apps.

4. What about features that would benefit the app or current features that hinder it?

Users felt the app was pretty complete as is.

5. On a scale of 1-5 (1 being not at all useful and 5 being very useful), how useful do you think our app would be for helping those with Alzheimer's?

Average of 3.7.

6. Other thoughts?

None.

Notifications remained an issue, as expected as they were not changed. We might need to rethink how event's/reminders work, as pointed out, it's a bit complex for simple reminders.

2.3.6 Future work:

Moving forward we will have to consider how to handle notifications with our app, trying to strike a balance between allowing those who know/remember notifications to have easier simpler actions and those don't be able to figure out what to do with them.

2.4 ATTACHMENTS

Appendix A – Interview Questions

1. On a scale of 1-5 (1 being very difficult and 5 being very easy), how difficult was it to accomplish the tasks given in this study?
2. Where there any tasks that stood out as more difficult than the rest? Easier?
3. Is there anything about this app that you would change design wise?
4. What about features that would benefit the app or current features that hinder it?
5. On a scale of 1-5 (1 being not at all useful and 5 being very useful), how useful do you think our app would be for helping those with alzheimer's?
6. Other thoughts?

Appendix B – Study Script

We are attempting to create a helper app for people with alzheimer's. During this study we will ask to perform a series of tasks involving our prototype, during which you will be observed on your performance. Afterwards we will conduct a brief interview of your experience with our prototype.

Please feel free to vocalize any thoughts you might have during the study about the prototype.

So if you are ready, let's begin.

For the first task, please find out who uncle ben is.

(observe)

Next, I need you to find out what this notification is about.

(observe)

Next, I would like for you to contact the doctor.

(observe)

Finally, I need you to create a reminder for an event.

(observe)

Thank you for that, we will now move on to the interview section (Appendix A).

That is all we have for you today, thank you again for participating in this study.