MyMood
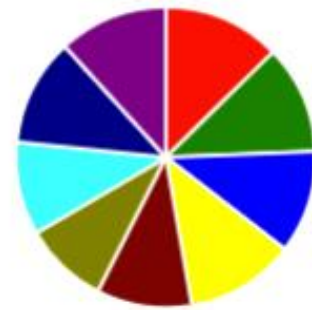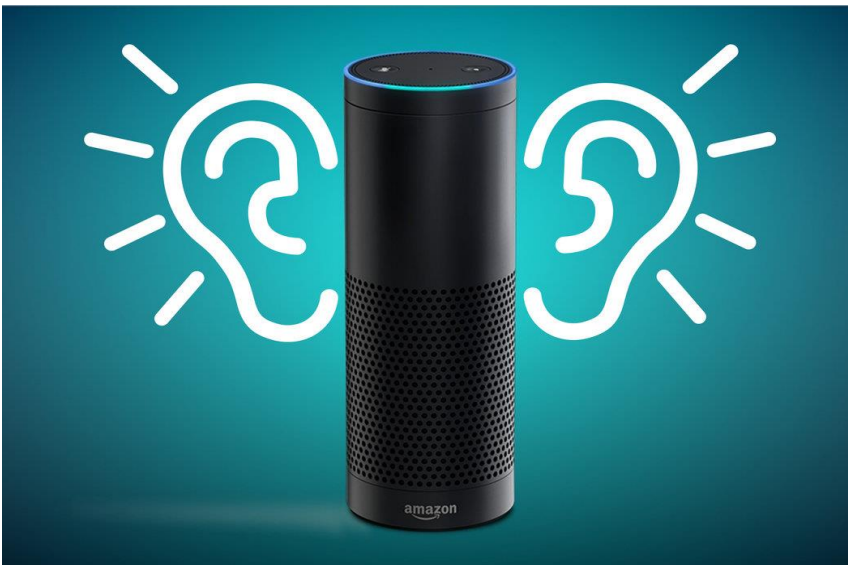
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Part 1 – Basic Info

1.1 App details

Data, data, data. The term is ubiquitous nowadays, and the public is bombarded with stories of government agencies amassing sensitive data or of big corporations wielding huge datasets to their benefit. It's everywhere, even in the realm of sharing our emotions. Today's media saturation affords us greater ease and transparency of emoting, but it comes at the cost of privacy. We want to share our emotions in the midst of our busy lives, while harnessing power of technology to gain insight from our private data.

MyMood offers an accessible, personable interface to record emotions and provides an accompanying log and stats. Through Alexa, users can quickly note their mood and the activity they have done, whenever convenient. MyMood gives appropriate feedback through encouragement, quotes, congratulations, and more. Test users enjoy this level of engagement, which VUI is well equipped to serve, when they are recording something as personal as their feelings. Later, users can access all their entries sorted in various ways, complete with visualizations in GUI or stats in VUI, to get a wide range of views into their moods.

1.2 Target users

[Since our application is a different idea from the previous assignments, we are writing a bit more to give you a better idea of our project.]

The primary user is someone who specifically needs to track their moods, especially patients of mental disorders such as major depression, anxiety, and OCD. Such a user would be more encouraged to track their progress with our conversational interface, which also logs in a way that is easy to share with a mental health care provider. Our secondary user is a busy young adult looking for insight into their moods and associated activities. MyMood provides a welcoming, personable interface to accommodate both the serious and casual user.

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1.3 Description of tasks

1.3.1 – "Easy level" task - Accessing entries for specific days

Accessing entries for specific days: Users can look at all their entries recorded on a specific date. On the GUI, the user types the dates in a search to pull up entries. The VUI asks the user for specific dates and walks the user through a log of entries.

1.3.2 – "Medium level" tasks - Accessing statistics

Accessing statistics: The user can query mood stats over a time period recorded in their journal. Through the Alexa skill or GUI, users choose a specific time period -- a date, week, month, or year -- to get the number of times a mood was expressed and activities associated. Alexa reports stats based on the circumplex model of emotion while the GUI provides pie charts showing every voiced emotion.

1.3.3 – "Hard level" tasks - Adding a journal entry

Adding a journal entry: The user tells Alexa or inputs into the web app an emotion and an associated activity. Alexa responds verbally to the user's moods. While the basic entry is easy, users can control the amount of conversation by choosing new words to describe their mood or optionally having myMood lead a user through a series of questions.

Part 2 – Revised Interface Design

2.1 Changes in VUI

We have continued to consider the limitations of Alexa VUI. For our app, we must consider the inputs we can reliably take and the style of dialogues. Users already have an intuition about the types of responses to give. When prompted by Alexa to tell how they are feeling or what activity they have done, users usually give a one word answer. To ensure this ease of transaction across all our users, we have sketched a sample first-time configuration dialogue that would guide the user. However, as it is just a one-time welcome message, we did not implement it in our prototype. (Fig. 1)
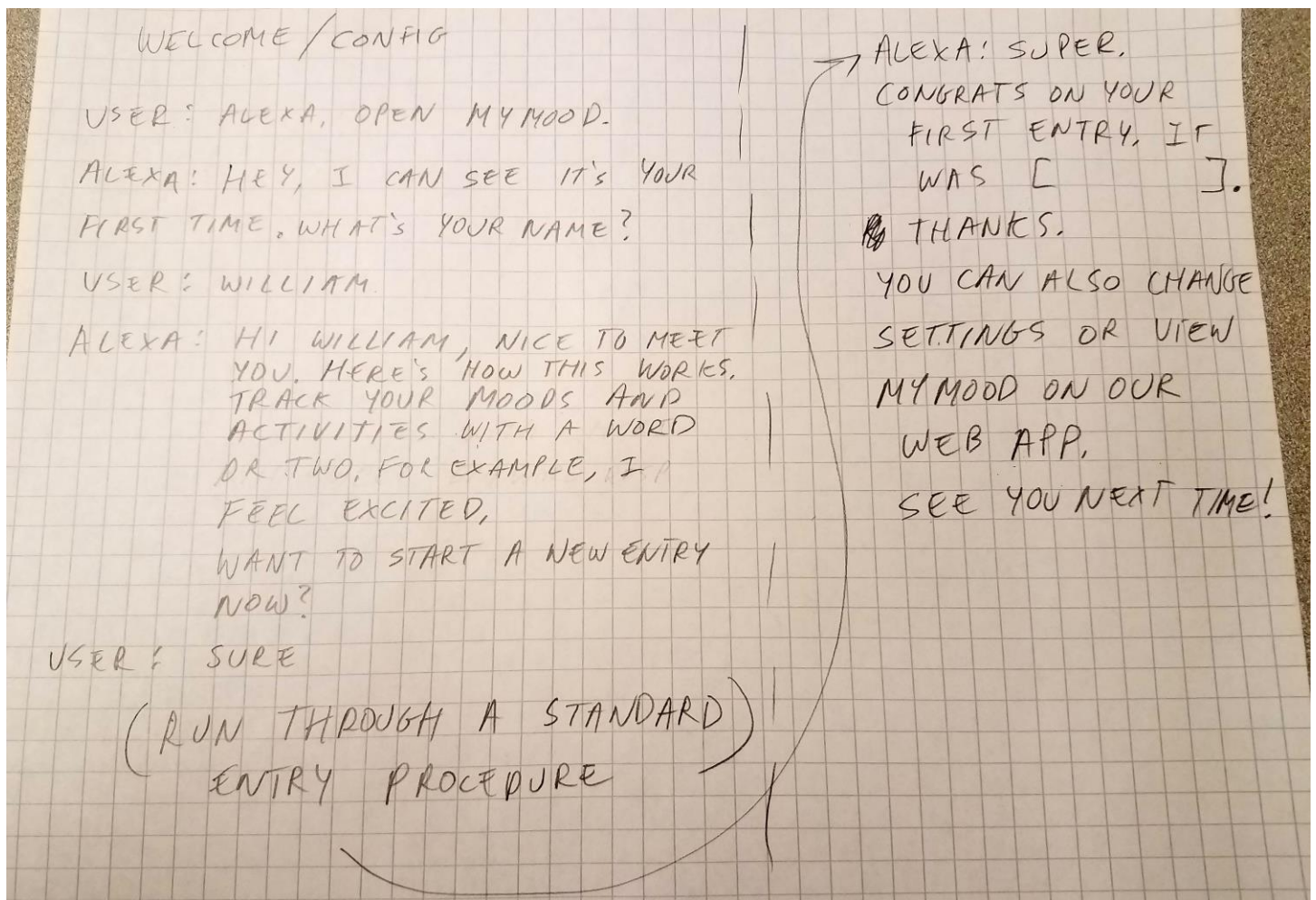

Fig. 1 – First-time config. dialogue

User testing of our low-fi prototype yielded two crucial insights, around which we have oriented our revisions. The first insight is that users have a critical need to own their own words. They expected a diary to record the specific words they used. The second insight is that users highly value the conversational aspect of the app. We decided to craft a solution that both increases the personability of the app and solves another problem users stated, that perhaps they may be uncertain about their mood and need MyMood to help them figure it out.

To address the first concern, the fundamental change we made is to accept any mood through the VUI. If MyMood does not recognize the word the user said as an established mood in the database, Alexa will confirm with the user what that new word is and add it to the database. This change is reflected as a side routine in the new dialogue flow. (Fig. 2). Another change we made is to add accessing all entries on a specific date. This addition allows users to hear their logs in their own words. Previously, we only had an access of overall stats. Users enjoy this new task because it's more personal and intimate. (Fig. 5)

To address the second concern, we put a lot more emphasis on the conversational feedback of MyMood. After the user states their mood, Alexa responds with a quote tailored to that emotion. (Fig. 2) In the low-fi, this feature was optional and tested on some while ignored with others. With this prototype, we selected several sample quotes. Another major revision to our application was a whole new chain of dialogue if the user wants help identifying their mood. In the design process, we dubbed these the 'leading questions'. These 'yes or no' questions allow for simple banter great for VUI that engages the user sensitively without being burdensome. (Fig. 4)
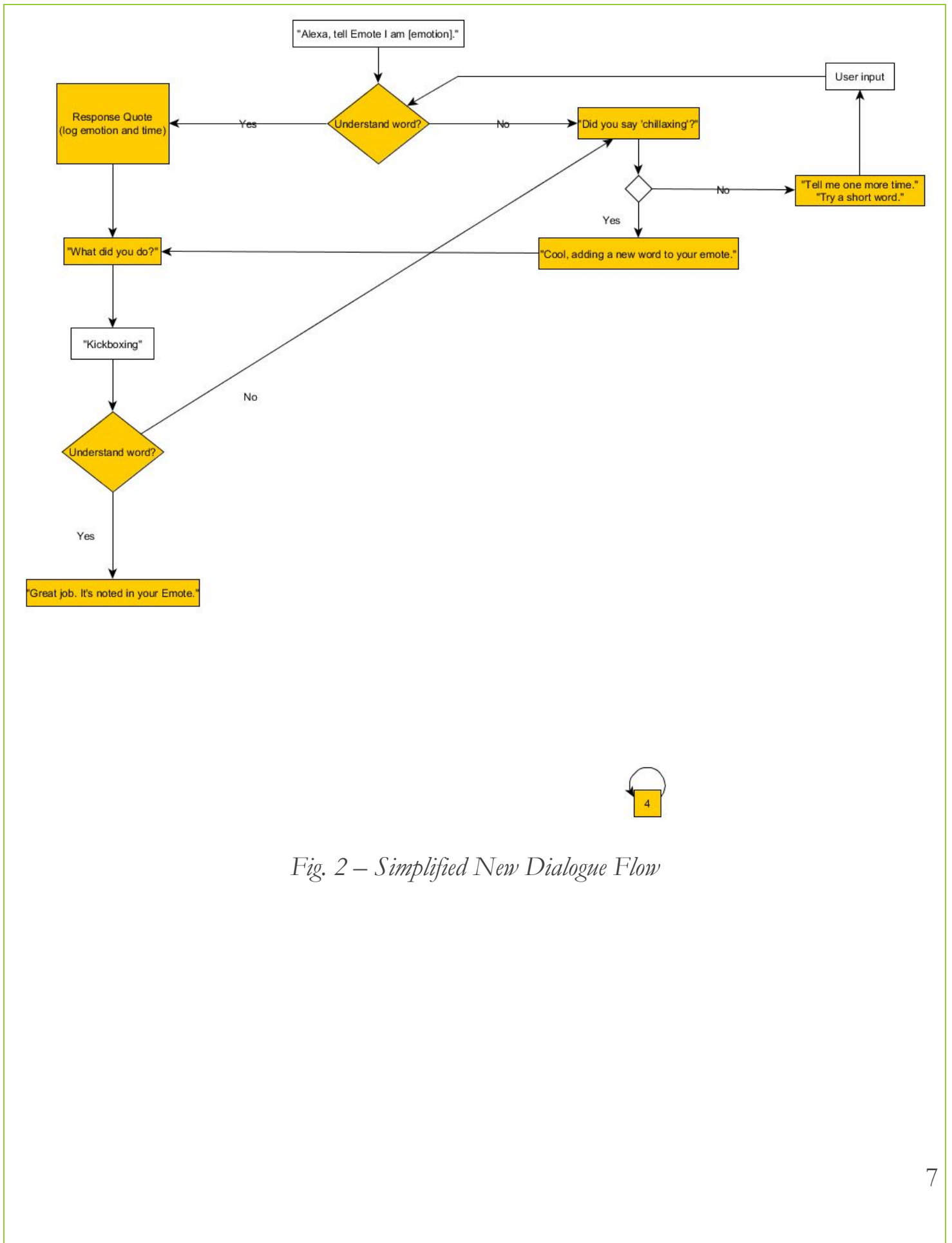
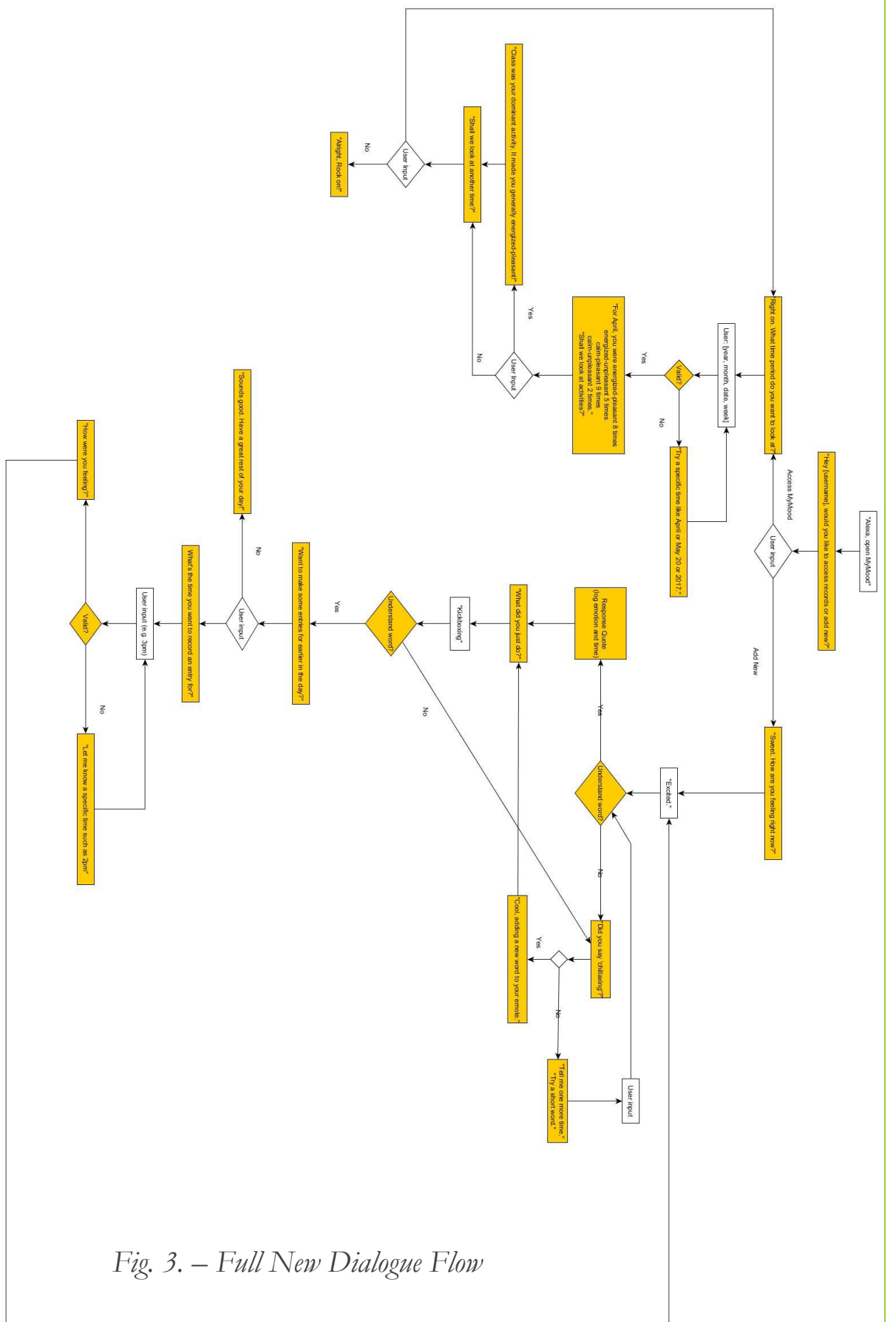*Fig. 2 – Simplified New Dialogue Flow*

"Alexa, open MyMood"

"Hey [username], would you like to access records or add new?"

User input

Access MyMood → "Right on. What time period do you want to look at?"

Add New → "Sweet. How are you feeling right now?"

User [year, month, date, week] → Valid?

Valid?
- Yes → "For April, you were energized-pleasant 8 times, energized-unpleasant 5 times, calm-unpleasant 2 times, calm-pleasant 9 times." "Shall we look at activities?"
- No → "Try a specific time like April or May 20 or 2017."

"For April..." → User Input → Valid?
- Yes → "Class was your dominant activity. It made you generally energized-pleasant!"
- No → "Shall we look at another time?" → User Input
  - Yes → (loops back)
  - No → "Alright. Rock on!"

"Excited." → Understand word?
- Yes → "What did you just do?" → "Kickboxing" → Understand word?
  - Yes → "Want to make some entries for earlier in the day?" → User input
    - Yes → "What's the time you want to record an entry for?" → User input (e.g. 3pm) → Valid?
      - Yes → "How were you feeling?"
      - No → "Let me know a specific time such as 2pm"
    - No → "Sounds good. Have a great rest of your day!"
  - No → "Did you say 'chillaxing'?"
    - Yes → "Cool, adding a new word to your emote." → Response Quote (log emotion and time)
    - No → "Tell me one more time." "Try a short word." → User input
- No → "Did you say 'chillaxing'?"

Response Quote (log emotion and time)

Fig. 3. – Full New Dialogue Flow

Some other changes: We changed the invocation from "Diary" to "MyMood", which better conveys to the user the purpose and use cases of the application. The VUI also unambiguously focuses on mood entry. While the low-fi allowed for either mood or activity to be entered first, the new flow asks how the user is feeling first. (Figure 3). The new flow also guides the user through a diary entry much more smoothly. If they are not adding on-the-fly, we ask what time the entry is meant for first. (Figure 3).
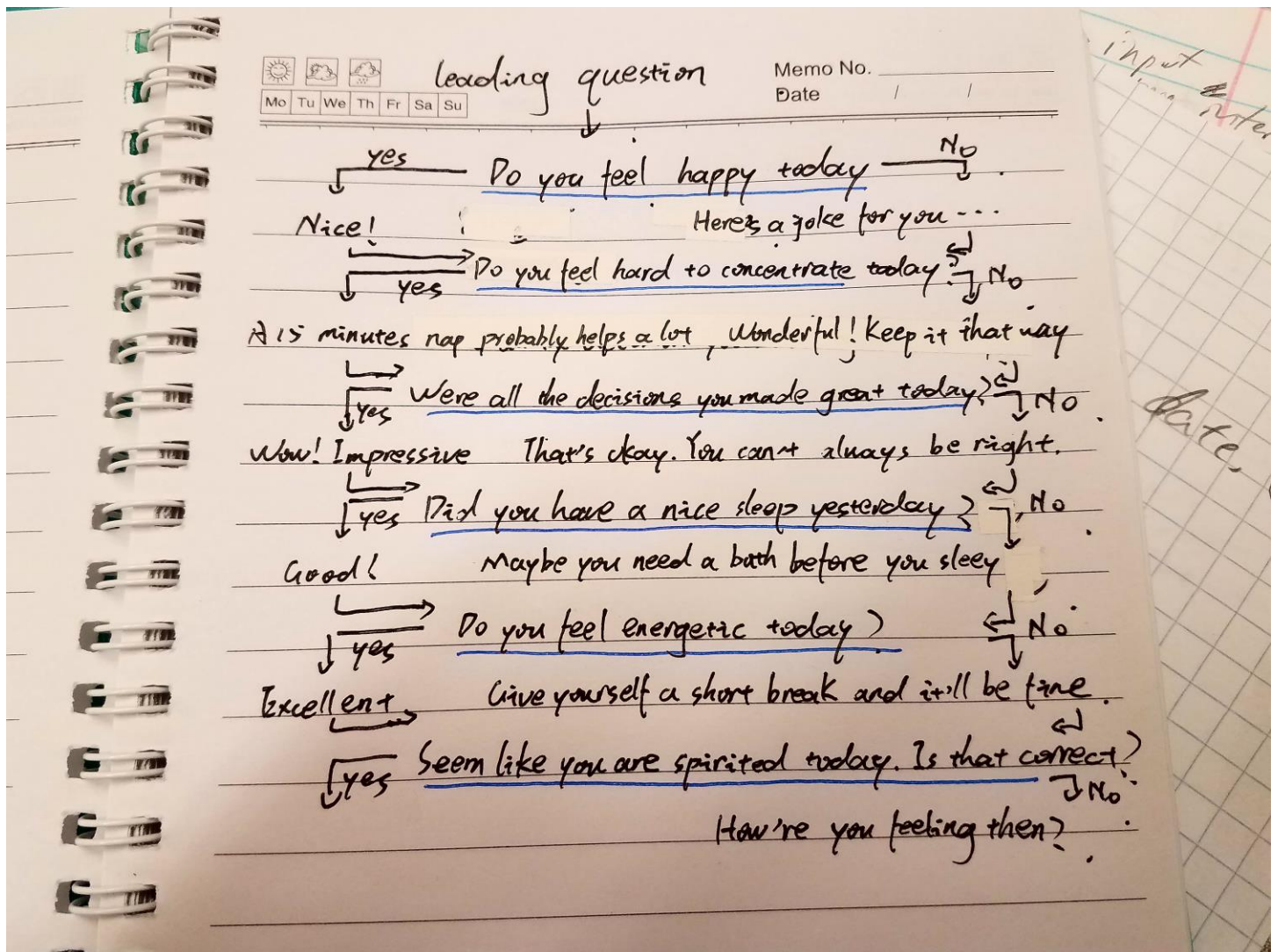
Fig. 4 – Leading Questions Dialogue
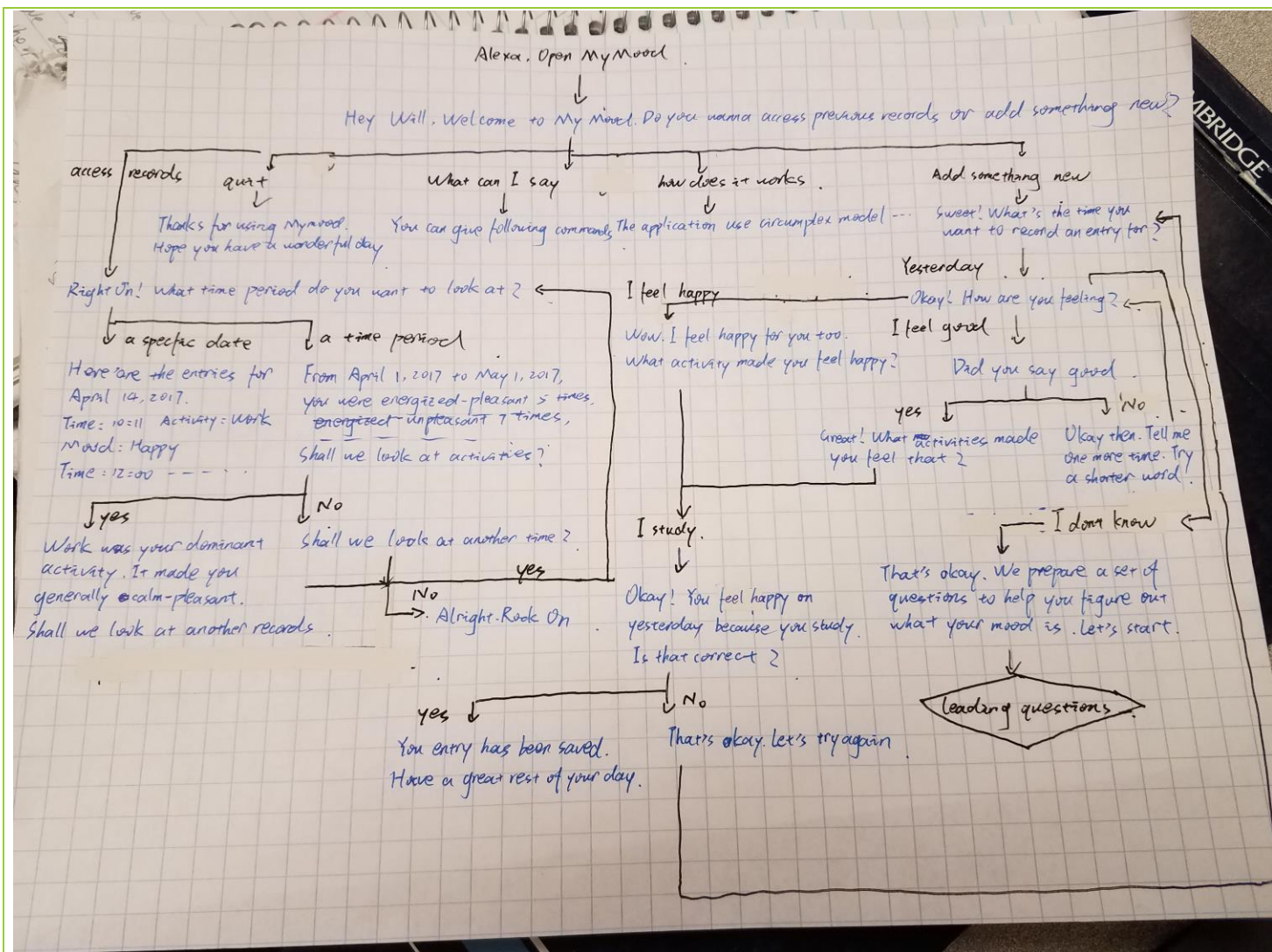
Fig. 5 – Flow diagram of proposed initial config. Dialogue

2.2 Changes in GUI

#1 We changed our GUI from a mobile app to web app. This transition afforded the greatest flexibility across multiple platforms. Specifically, through web apps, the input methods are portrayed through the user's native interface, be it through a mobile device or computer. The url is http://www.tkbala.com/myMood/.

#2 Our previous GUI had a main menu page. We replaced it with an always accessible side menu. Users can move between sections much quicker and with less clicks. The content is always central and we reduce the pages the user has to sort through. The side menu is static and collapsible, responsive to mobile devices. (Fig. 6a and b)

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#3 For mood entry, the GUI displays 9 icons for recording emotion instead of 4. Also, we removed a slider from 1 to 10. This change brings greater consistency between VUI and GUI options. Users have more choices without it being overwhelming. (Fig. 7)

#4 We made a conscious effort to give the user more choice in the VUI. We reflect this change across the interfaces by allowing users to input an activity not present in the database. There is a new icon recognizable as generic along with a textbox for custom names. (Fig. 8)

#5 The GUI has more robust input sanitizers. The user can access settings through the menu and edit activities. The database can handle a variety of inputs.

#6 We added a search entries feature which replaces our calendar interface. It answers our users' need to see their log as specific entries, not just aggregated stats. This search bar is flexible and fully functional. It accepts days, dates, times, months, and years. In real-time, it displays the corresponding entries in log format. We partition the aggregation visualizations to the stats section, creating more functions with clearer delineations. (Fig. 9)

#7 A small, non-intrusive popup confirms the completion of an entry. It replaces the low-fi model's one whole screen dedicated to this function. (Fig. 10)
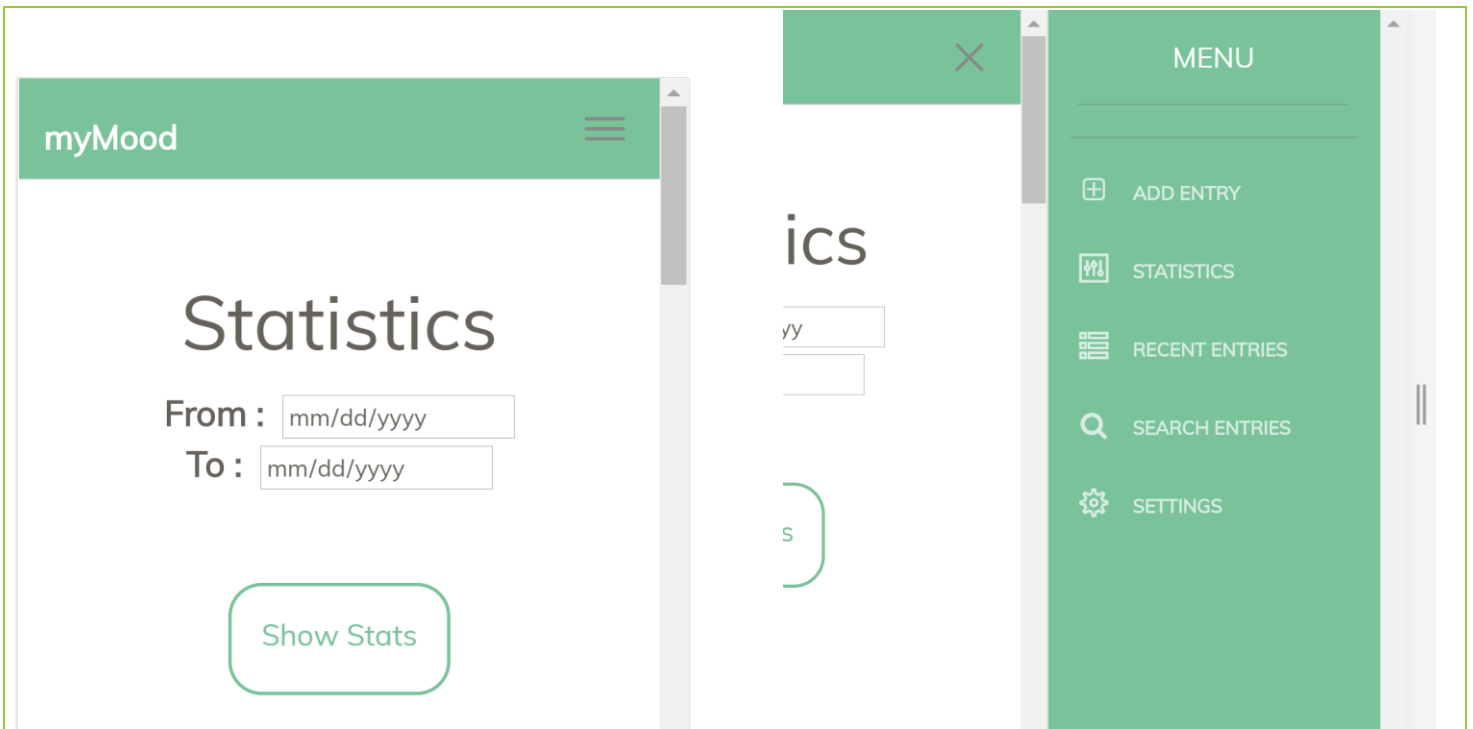
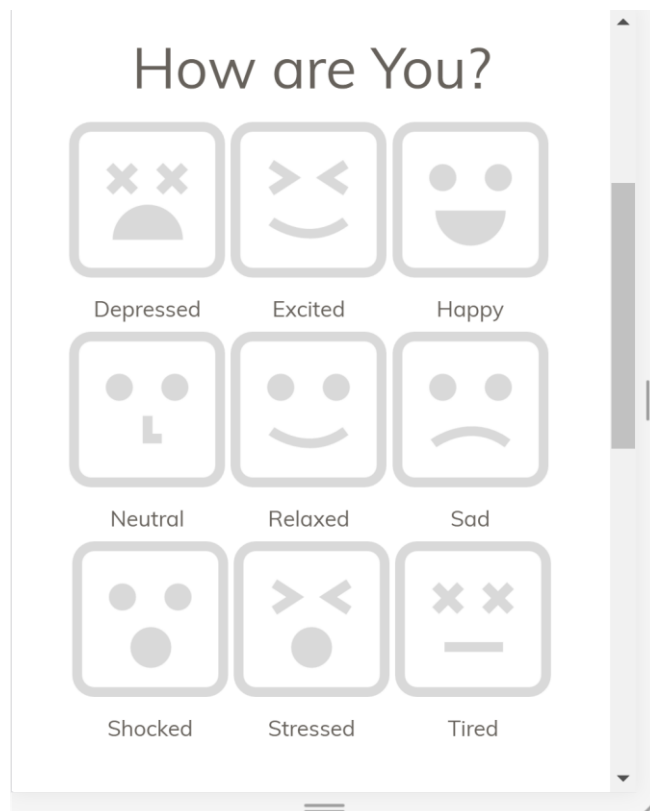*Fig 6 –Collapsed side menu in mobile a) Collapsed (L) b) Expanded (R)*
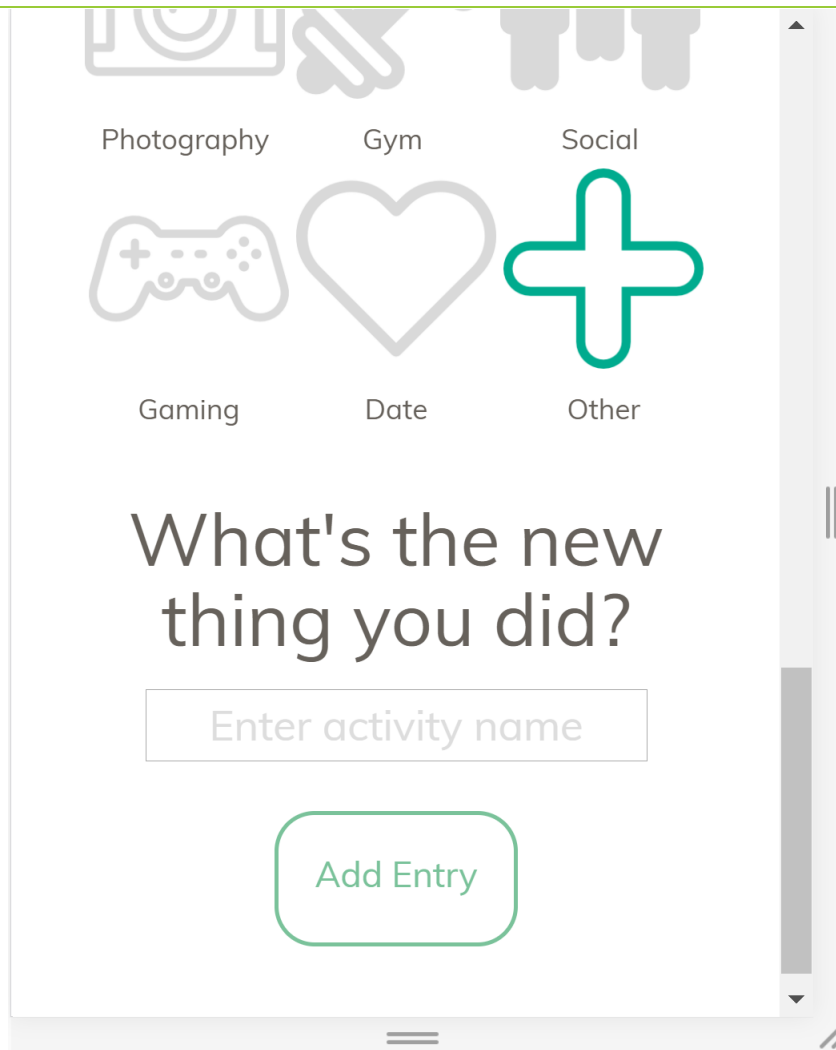

Fig. 7 – Mood Entry Interface

Photography   Gym   Social

Gaming   Date   Other

What's the new thing you did?

Enter activity name
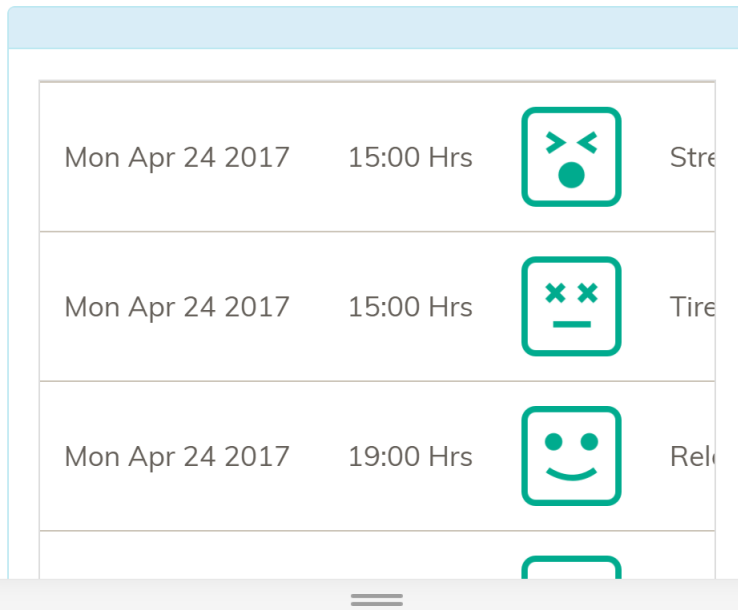
Add Entry

Fig 8 – Mood Entry Interface (contd.)

Fig 9 – Search/Access Entry Interface

www.tkbala.com says:

Activity added successfully :-)

OK

Study

Work

Cook

Photography
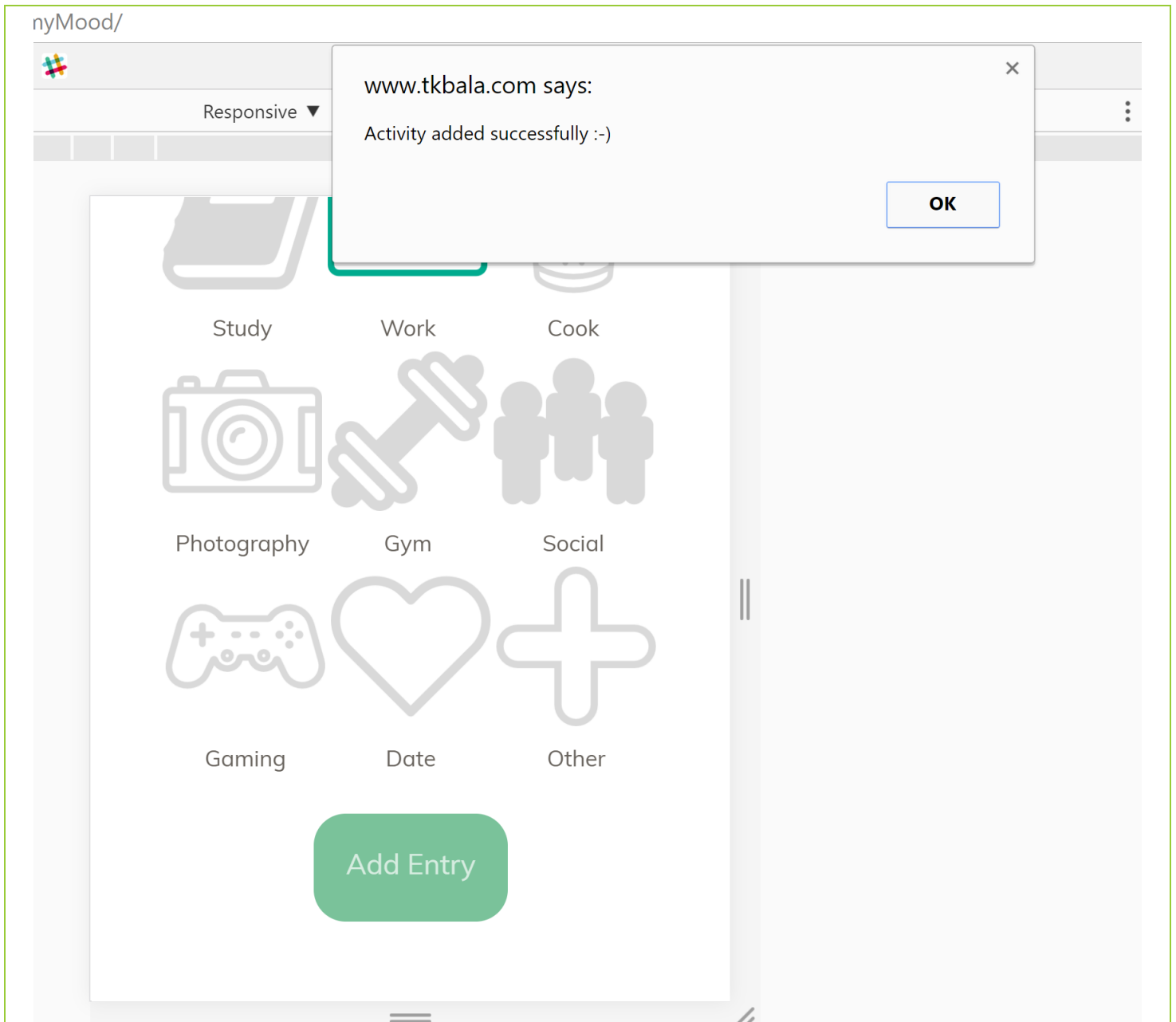
Gym

Social

Gaming

Date

Other

Add Entry

Fig 10 – Pop-up for confirmation of successful entry

Part 3 – Prototype Description

3.1 – Prototype Overview

Our interactive prototype of MyMood reflects a better understanding of our users' needs. It refines old features and adds new functions, transitioning from yED and Figma to Alexa and a web app. We have implemented voice routines that demonstrate the core tasks described above and a GUI that simulates the result of a year's worth of mood entries. Following a T-shaped design, we generally stray away from the work content creators would fill in. The skeleton to support the main tasks of adding entries and retrieving them shows our particular interface design choices.

The voice interface consists of adding entries and accessing the records or statistics. The low-fi prototype split adding entries into two separate tasks, an on-the-fly recording and an end-of-day sequential journaling. User testing revealed high value attached to quick and easy interactions. We simplified the whole process to suit voice interface better. For example, we stick to short answers and ask them explicitly of the user. All the recordings seem like on-the-fly recording which saves the user time. Words that our application does not recognize are quickly confirmed with the user and added to the database. This new procedure shifts the work of categorizing emotions and crafting responses to some black box team or system that checks the database for new entries. There are two benefits to this. Professionals dedicated to this task create higher quality content, such as understanding how to categorize emotions correctly according to the circumplex model. The user can do what's natural and say any right feeling, without being bothered by what our database does not yet hold. It reduces non-standard, awkward interactions. Refer to Fig. 1 and 3 to see the dialogue logic implemented in this iteration. Now, some users prize the conversational aspect of this personal exchange with Alexa. We added a new dialogue called *leading questions* that walks the user through simple yes-or-no questions if they can't identify their mood. This routine is technically non-standard since it doesn't accomplish the main tasks. However, it creates personality

and relatability of myMood. Successive iterative testing can help select the questions that users respond well too. This feature seeks to take advantage of the anthropomorphic power of Alexa. See Fig. 4 to see a sketch of this dialogue. Last, MyMood offers the retrieval of the user's data. Our low-fi prototype only supported the generation of statistics. Users enjoyed the summary, so this feature is largely untouched. The categorization of their moods into four quadrants leads to an insightful yet succinct report. What's new is retrieval of the actual logs for a day. Like a diary, users value going back and seeing the entries in their original form. Therefore we added this method of accessing records. See the left side of Fig. 2.

The graphical user interface supports these same main tasks and offers some extra functionality only where voice UI would be impractical. For example, when adding entries through the GUI, there are a range of 9 icons to choose from. (Fig. 7) Remaining consistent with the VUI's affordance of unlimited new user created data, users can type in a custom field with a generic icon. (Fig. 8) These icons and other customizations too tedious to do over Alexa are accessible through the settings page. (Fig. 12) The recent entries page gives a scrollable list that's easy to look through but hard for the VUI to recite. (Fig. 11). Searching entries gets much more expansive when one can type text. (Fig. 9). Users can sort based on a full set of time fields. The statistics page offers a pie chart. This chart is a convenient way to visualize all the emotions logged over the chosen time period. A voice UI would have to recite all the different emotions, which is impractical. (Fig. 13).

The GUI has relatively discrete buttons and inputs, so non-standard interactions are not an issue. The VUI may encounter application failure during this current iteration if the time period has not been created in the database or if Alexa keeps mistaking a word. For example, Alexa has been shown to consistently mistake 'great' for 'grateful'. Not all the various time inputs are sanitized, so Alexa may balk. These non-standard interactions would bother an end-user but boil down to testing and implementing a wide range of inputs or creating a more friendly safety net. The actual streamlined quick entry process and straightforward retrieval based on time period are design choices that scale toward minimizing error. This is an improvement over the low-fi that had far too much

flexibility of order of input coupled with error-prone methods of trying to analyze and categorize complex user statements.
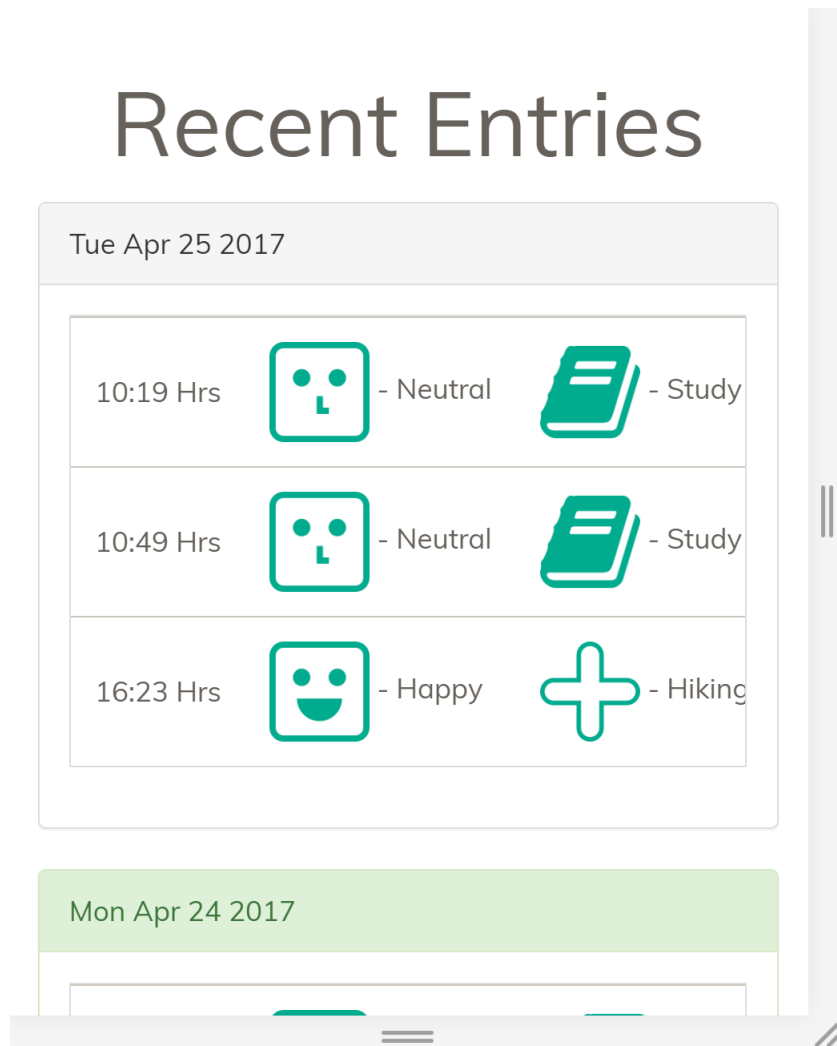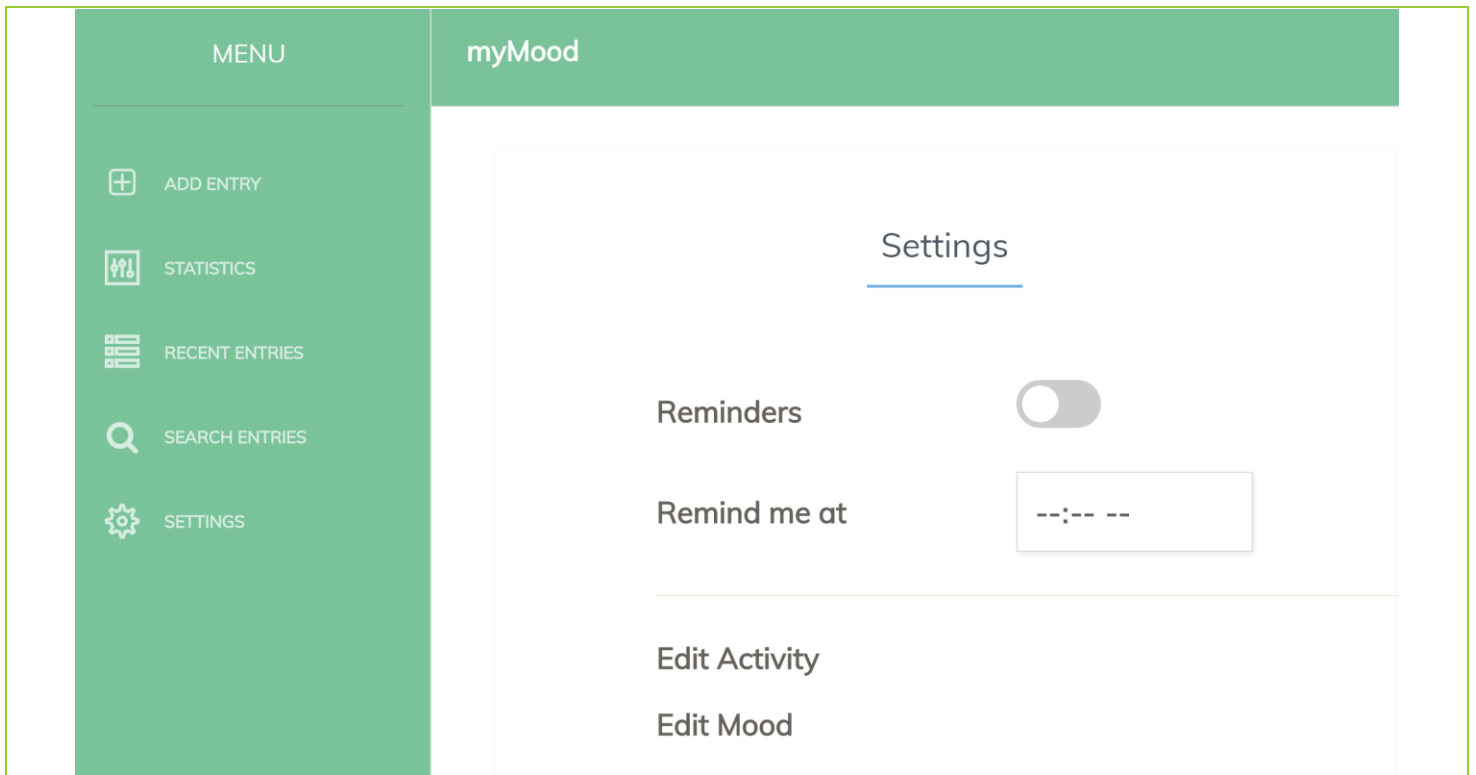

Fig. 11 – Scrollable recent entries list
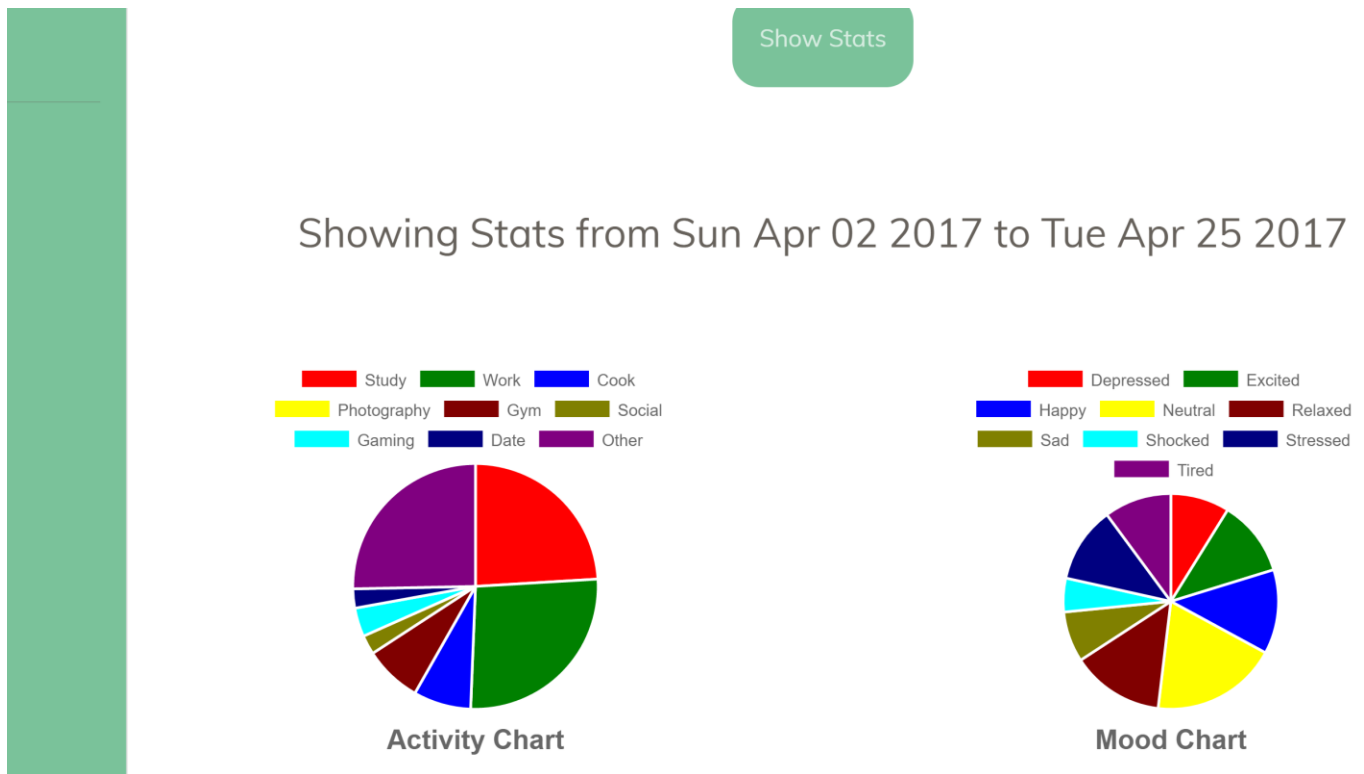
Fig. 12 – Settings page

Fig. 13 – Statistics Page

3.2 What was left out and why

1. We don't have quotes for every single emotion and answer to our leading questions. We leave out the majority of this work due to time constraints, but we have implemented a few for the purposes of demonstration. Qualified professionals can find or craft a plethora of relevant and responsive quotes to emotions. Users enjoy the conversational aspect, especially in an interface like ours which gets personal.

2. For accessing the journal, the user can choose a wide range of time periods, such as any specific date, week, month, or year. They can also use utterances like "2 years *ago*". We have chosen to implement just a few. The interaction can be judged without all of these utterances to pinpoint the time period accounted for.

3. Our app at this stage does not support multiple users. Implementing this feature would involve account linking through the GUI interface which is outside the scope of this class. All the necessary interaction features to demonstrate the function of the app is there for one user to operate. Concomitantly, we left out some aspects of user configuration. A useful user attribute would be time zone to correctly parse the timestamp from the Amazon Lambda request.

4. Our user activities aren't grouped together in the database if the words are in different tenses. Programs to analyze the common roots of words exist and need only be chosen and applied.

5. The user cannot input a past time for an entry yet. The code can process the current time to associate with an entry. This functionality is sufficient to show diary entry.

6. We successfully retrieve entries from the database, which has been filled with sample randomized entries. However, our POST requests to the database are not completely functional. The code logic works but the kinks with syncing with lambda libraries, etc. is being worked out.

7. The next iteration of the GUI will refine the adding entries process to fit user needs. The icons that show up will reflect the user's most common or favorite entries in the database.

8. The settings menu does not impact the main tasks, so it was not fully implemented.

9. The GUI has all the code for arbitrary user mood additions -- as reflected in the activities entry code, but it is not fully supported yet.

3.3 Wizard of Oz techniques

When a user inputs an emotion we do not have in our database, we confirm it with the user by repeating their exact words. The black box aspect is the database's categorization of input according to the circumplex model of emotions. This black box would be a team that receives an update of a new addition to the database. This team would then use qualified psychologists or a proven algorithm to properly categorize the emotion. Low-fi prototype testing revealed that users place high value in a journal if it records their actual words.

3.4 Prototype Videos

The three primary tasks in the GUI - https://youtu.be/ZqzhzO1JiOk

Task 1 - Adding entries in the VUI - https://youtu.be/ywF1hoAm_Cs

Task 2 - Accessing a particular day entry VUI - https://youtu.be/utOj2x3Z4BQ

Task 3 - Accessing stats in the VUI - https://youtu.be/UHEmo4kdZiw

3.5 Summary

In summary, our interactive prototype has limitations in supporting a wide set of inputs. The voice interface does not have content for every mood and doesn't deal well with random, non-standard utterances. However, it displays the complete function from the user side. All tasks can be performed with the right type of input. Both recognizable and novel words can be added easily, and the user can have a conversation with MyMood. The retrieval of stats from the database is rock solid.

Part 4 - Story Boards

4.1 - Scenario 1: On the flight Entry while Driving

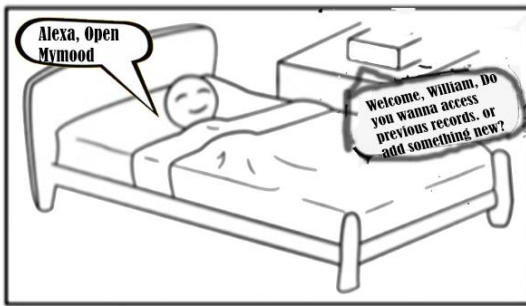William leaves school

Getting onto his car

Traffic jams

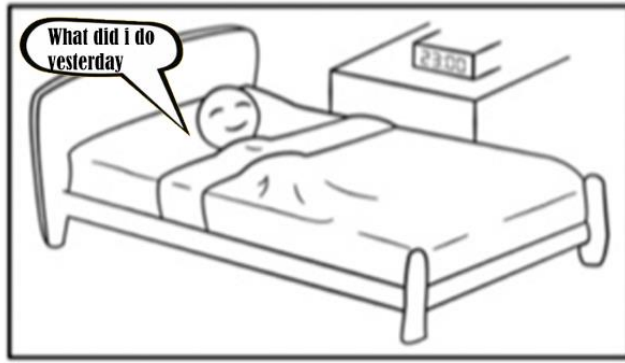Start of on the flight Entries
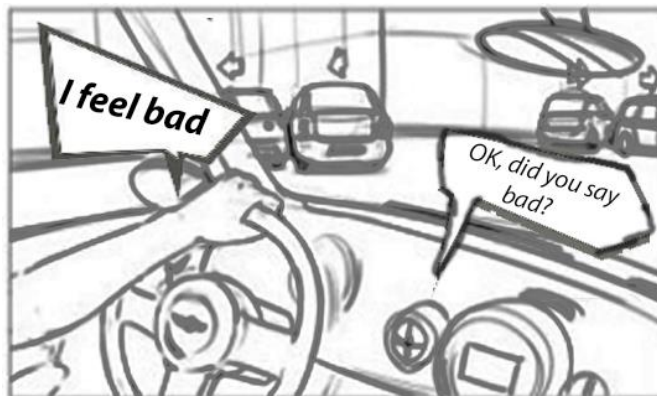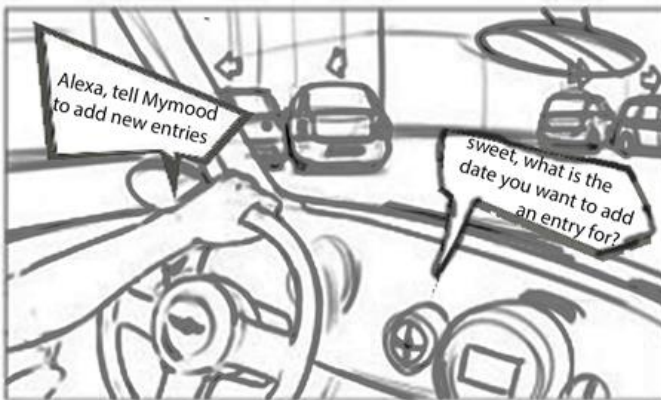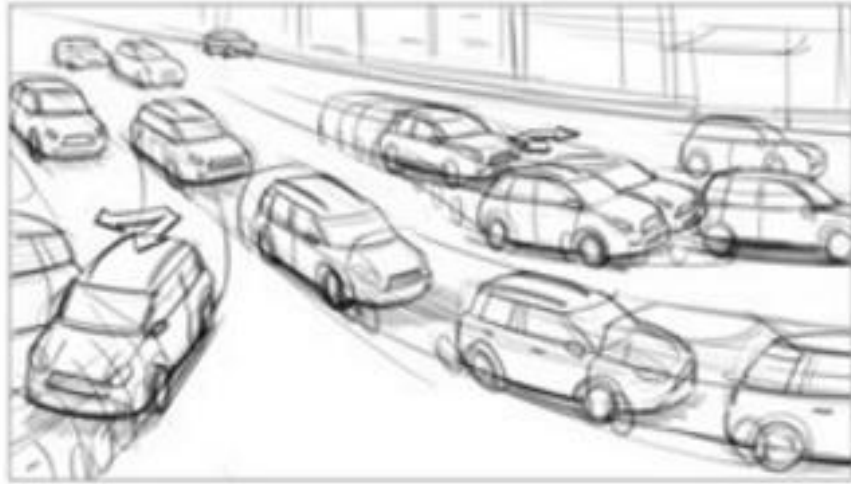
Start Driving, end of story.

4.2 - Scenario 2: Access Record on a Particular Date
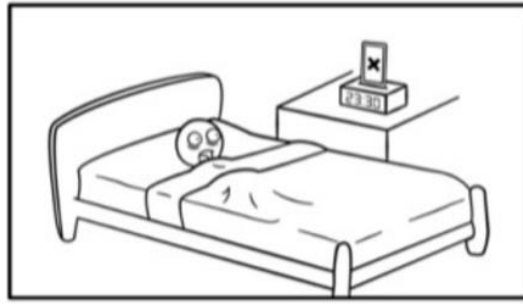

Time to go to bed
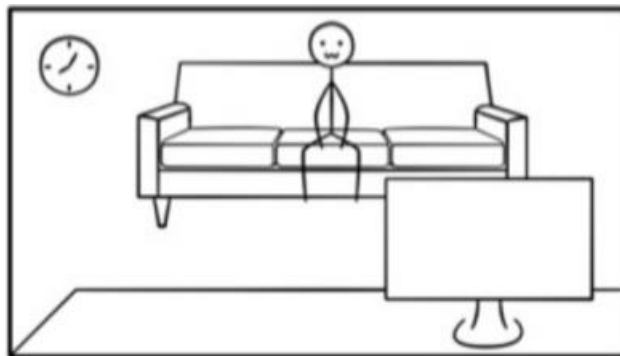
Bedtime review of previous Entries
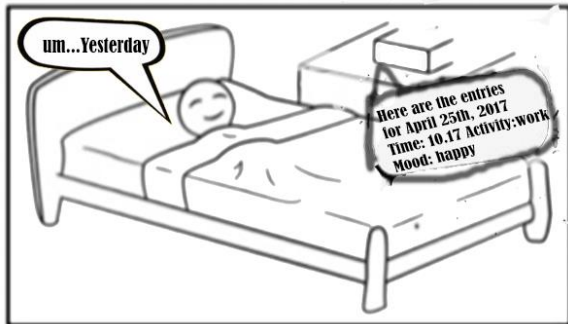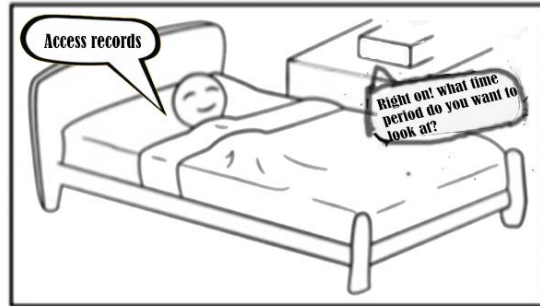
END OF
ACCESS ENTRY

4.3 Reminder for taking dairy wake William up

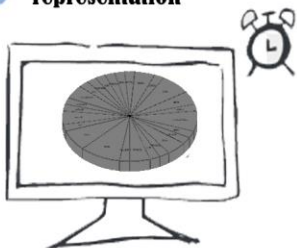And he stayed up until morning

4.4 Scenario 4 – With physician
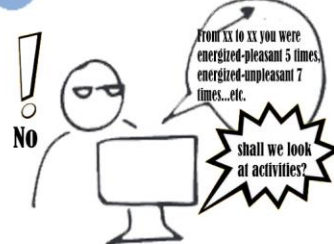
Part 5 – Documentation of code not written by team

- Getting form field on radio check - https://css-tricks.com/exposing-form-fields-radio-button-css/
- Website template from www.creativetim.com (MIT open licenses)
- Scroll to reference - http://flesler.blogspot.com/2007/10/jqueryscrollto.html
- Chart.js for generating piecharts - http://canvasjs.com/html5-javascript-pie-chart/
- Using images in radios - https://gist.github.com/rcotrina94/7828886
- Icon references - flaticon.com

Part 6 - Contributions

Tasks were divided as follows

Member	Tasks	% Contribution
Bala	GUI coding, Video	28.3
Michael	Dialogue design, Report, Video	28.3
William	VUI coding	28.3
Tailai	VUI help for William, Story Board	15

Reference – Images

Some Icons were taken from www.flaticon.com

Images in the cover page were obtained from

> https://static01.nyt.com/images/2015/06/25/business/GADGETWISE/GADGETWISE-master1050.jpg