INFO / COMM 3450 / INFO 5355 2021S

Assignment 4 (Group Assignment)

User Interface Design and Testing

Instructor: Qian Yang (qy242)

Through the iterative process of designing and prototyping, your group has identified one promising design idea that will move your user group to a better future. In this final assignment, you will (i) give realistic, detailed user interfaces to your design, (ii) implement a high-fidelity prototype using Figma that delivers a full user experience, and finally (iii) carry out a final user testing study with your user group. This is the last stop at your "double diamond" user-centered design process.

Assignment release: May 3rd, 2021 (Monday)

Assignment due: **May 17th, 2021 noon EST** (Monday)

Learning goals

- Designing and prototyping user interfaces using Figma
- Design evaluation via heuristic evaluation and think-aloud studies

Suggested Timeline

- **Before assignment starts (May 3rd MON)**: Each group should have selected their final design idea and confirmed their choice with the instructor/their group mentor. See detailed instructions in Week 13 section slides.
- **ASAP**
  - Finish the Preparation part - **Set the interviews to be more than 3 days ahead of the assignment deadline,** so that you will have some time to write up their reflections.
  - Discuss and plan project presentation: **On May 12nd WED**, each group will share their project with the rest of the class. Plan ahead and consider: In addition to storyboards, what work-in-progress artifact(s) will your team show (sketches? Figma file? Pre-recorded video of the prototyped interaction?)? What kinds of feedback from other students & TAs would be most helpful to you?
- **By the end of the first week (May 10th MON)**: All group members have agreed on a set of high-fidelity UI designs (Part 1 & 2) and assigned responsibilities that each member must complete to complete Part 3 & 4 in time.

Submission Instruction

Make a copy of this google doc and save it to your own gDrive. Follow the instructions and edit this file. After you have completed all the tasks, **save the file as a pdf** and submit it to Canvas. **Make sure all your external urls are valid.**

Lead TA of the Assignment: Martha Brandt (msb424). If there is a math error in your grades, please contact the lead TA. For all other questions, post on Piazza.

Rubric

- **Q1 UI sketching - completeness (4 pts)**
- **Q2 Heuristic Evaluation/justification (4 pts)**
  The students have completed heuristic evaluation and their design (Q1.2) has no violation of these criteria.
- **Q3 Figma Prototype - completeness (4 pts)**
  The Figma prototype illustrated the detailed, realistic UI designs of at least 3 screens, each represented a key functionality of the design concept.
- **Q3 Figma Prototype - evidence of understanding (5 pts)**
  The students utilized UI design patterns when appropriate; The students gave thoughtful considerations to when standard design patterns do *not* apply.
- **Q3 Figma Prototype - novelty (4 pts)**
  The interaction design (i.e. sequences of UIs) is meaningfully different from existing solutions of the user problem.
- **Q3 Figma Prototype - interactivity bonus (up to 4 pts)**
  The Figma prototype design is particularly thoughtful, interactive, or novel, thereby deserving extra credits.
- **Q4 User Evaluation - interview and notes - completeness (4 pts)**
  The participant was able to complete the task using the UI prototype. (Minor confusions or deviations from the “happy path” is ok.)
- **Q4 User Evaluation - evidence of understanding (5 pts)**
  The students’ observation and reflection identified meaningful insights. At least some of the insights are actionable from an interactions design perspective (i.e. what designs they might find helpful; what they might find *not* helpful, how they would react to certain product behaviors).
- **Team member contribution**
  Each team member’s grade will be adjusted based on group member’s peer evaluation and group mentor’s feedback on their level of participation.

Preparation

1) Scheduling User Testing Sessions

This assignment focuses on user interface (UI) designs. At the end of this assignment, you as a group will share UI designs with your target users and get their feedback. Considering that recruiting user study participants and scheduling can take a long time (especially towards the end of the semester and the finals week), you should do so as early as possible.

Each project group will schedule 1 user testing session. The participant should squarely fit the inclusion/exclusion criteria of your target user group. The participants can be the same ones as the participants in your previous contextual interviews or prototyping interviews. **The interview typically lasts for 15-30 minutes**.

2) Teamwork Distribution

Read through the instructions and discuss team member responsibilities and schedule team meetings as soon as possible.

Assignment Background

To provide some context for the grading TA, please copy-paste the following from your previous assignment.

~ Copy & paste from the previous assignment ~

The preferred future

People recovering from eating disorders can find ways to consistently maintain healthy eating habits independently after recovery without relapsing

Target user group

People who are recovering from eating disorders

Functional goal(s)

The computational technologies should enable individuals recovering from eating disorders to find healthy, consistent ways to independently maintain recovery and prevent relapse

Contextual factors

- Unaware or unhelpful friends and family
- Inaccessible professional help affecting

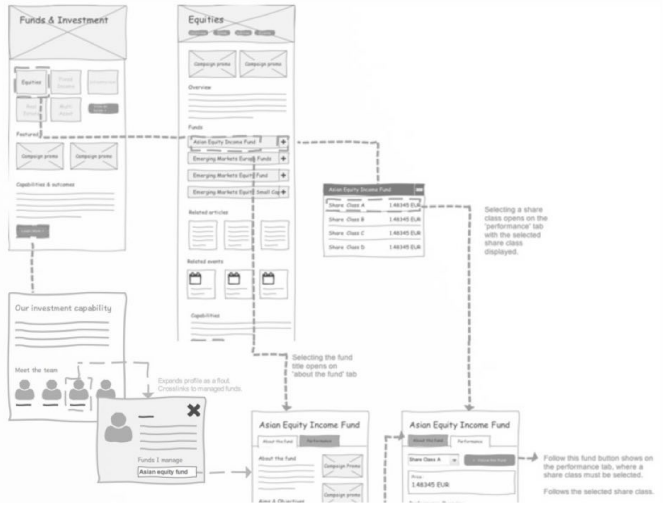
- Individual recovering from eating disorder struggling with other mental illnesses or problems as well
- Financial constraints affecting food choices that are possible during recovery
- Social surroundings and unavoidable interactions posing challenges often, during recovery

The design idea that the group has chosen to pursue

- People recovering use a *calendar mobile app* that could help track their progress or habits by a simple color system and also receive relevant social support and recommendations based on said progress.The user can log their progress in everyday and can look back to easily see the general big picture of their progress, thoughts and feelings, and other recovery trends. There will be a section on the mobile app for the user to journal their feelings- these journal entries are then analyzed and the app will recommend activities or habits along with resources for the user to explore to improve their emotional well-being. A social component to the app will allow the user to share their progress and receive suggestions from other users who are or have been through a similar journey.

Part 1. User Interface Design

In the previous assignments, you have envisioned how the envisioned interactions with users unfold over time, in real-world contexts. Now, you will give concrete user interface wireframes for these interactions.



Step 1. UI Wireframing.
Follow the step-by-step guide here and sketch the wireframes using paper and pen (or other comparable "fast-and-dirty" sketching tools e.g. PowerPoint. No Figma at this stage -- It's not "fast and dirty" enough.)

Iterate on these sketches until all group members are satisfied with the design. The last draft here should look something like the Figure in the UI Wireframing Guideline: It should include detailed UI elements (e.g. buttons, forms) though some of these elements can be placeholders (e.g. icons, images, or texts). The wireframe should also include interaction details (e.g. which UI elements are clickable, what the user will see after the click).

A user should be able to follow the arrows across screens to complete the outlined user tasks (i.e. the "happy path".) For each task, identify the "happy path", including

- a clear starting point (e.g. a landing page)
- a clear endpoint that defines success in completing the task
- Between the starting and endpoints, the actions to be performed by the participant and the responses of the system

Give each screen a name (E.g. "landing screen", "404") and make sure that all screens are reachable from the landing screen or screens connected to the landing screen.

FAQ: How many tasks/screens should the wireframes cover?

There is no magic number. But a few rule-of-thumb:

- If your group has X members, your wireframe should include at least X number of screens in your wireframe, but no more than 3X. **You are emphatically cautioned against biting off more than you can chew!**

- The screens you choose to prototype should capture the most interesting task(s) that your design aims to support. This can include, for example, interactions that handle unexpected user inputs. If your wireframes have covered interactions such as registering or logging in user accounts, you have gone further than our expectations.
- It is ok that some user interactions on your UIs would lead to 'stubs' for sub-tasks you are not prototyping/implementing at this time (e.g., certain actions may return some kind of 'Under development' message). Your wireframe (specifically, the arrows connecting different screens) should illustrate which screens would lead to "dead-end" interactions.

***** Your Task Q1.1 *****

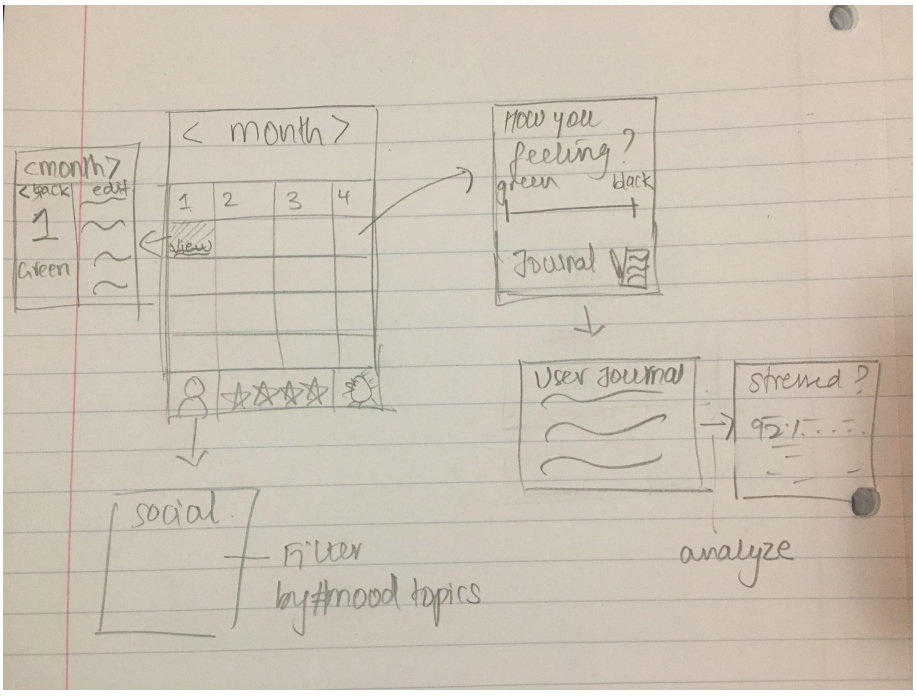
Briefly describe the 3-5 tasks you chose to focus on (e.g. read emails, reply to emails, check sent emails.)

- Easily log and see a visual representation of recovery progress
- Journal feelings and thoughts to maintain mental health
- Access personalized resources and recommendations that would help improve emotional health
- Receive social support from and connect with others who are going through or have been through a similar experience

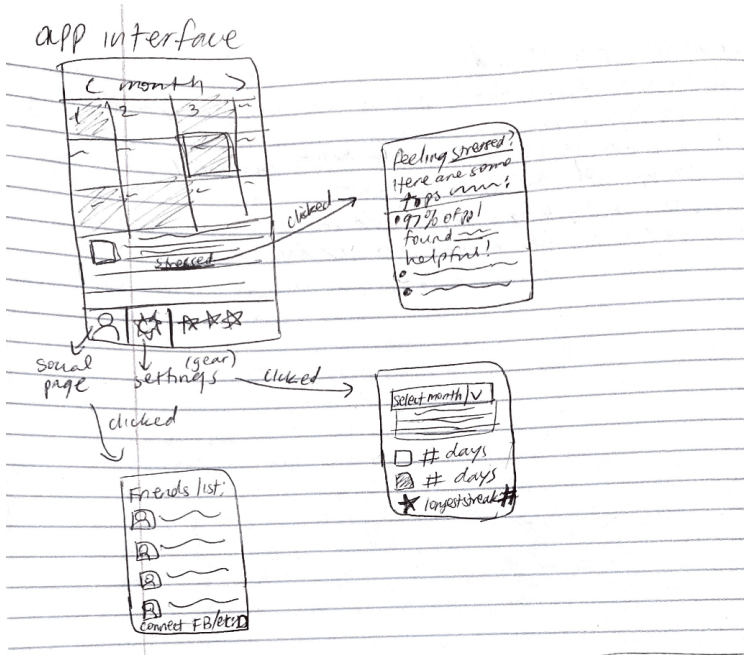
UI Wireframe Sketches

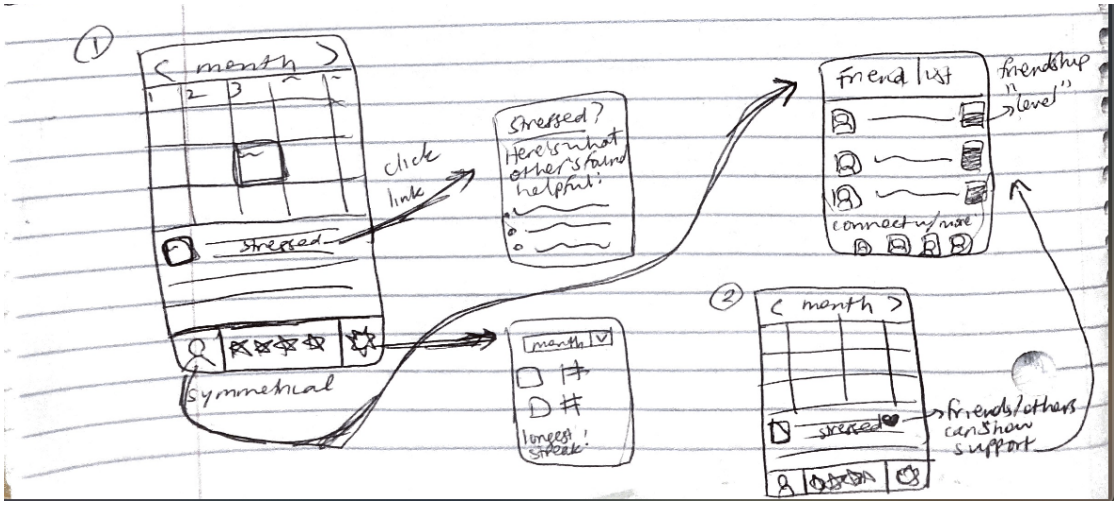
Insert all UI wireframe drafts here (including the early, sketchy drafts -- We want to see the evolution of ideas through fast-and-dirty sketches here.)

Iteration 1

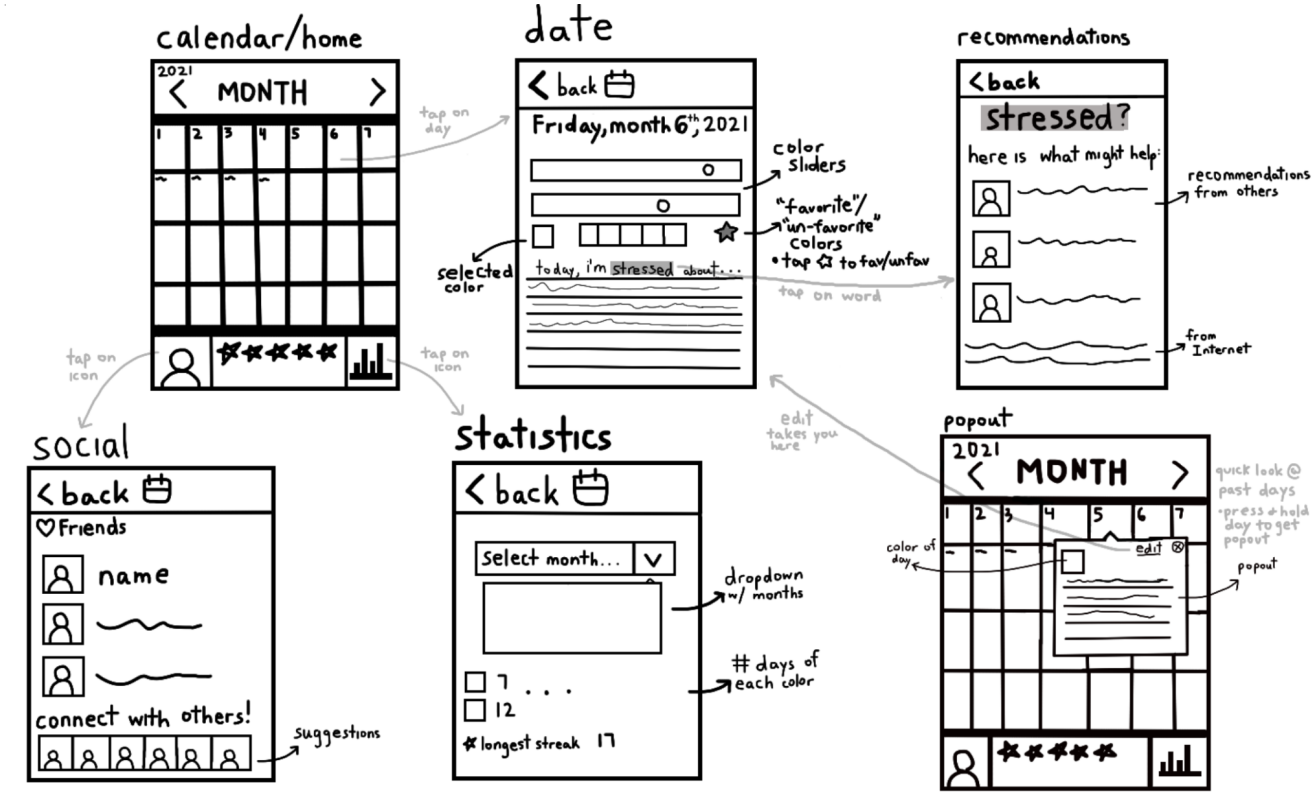


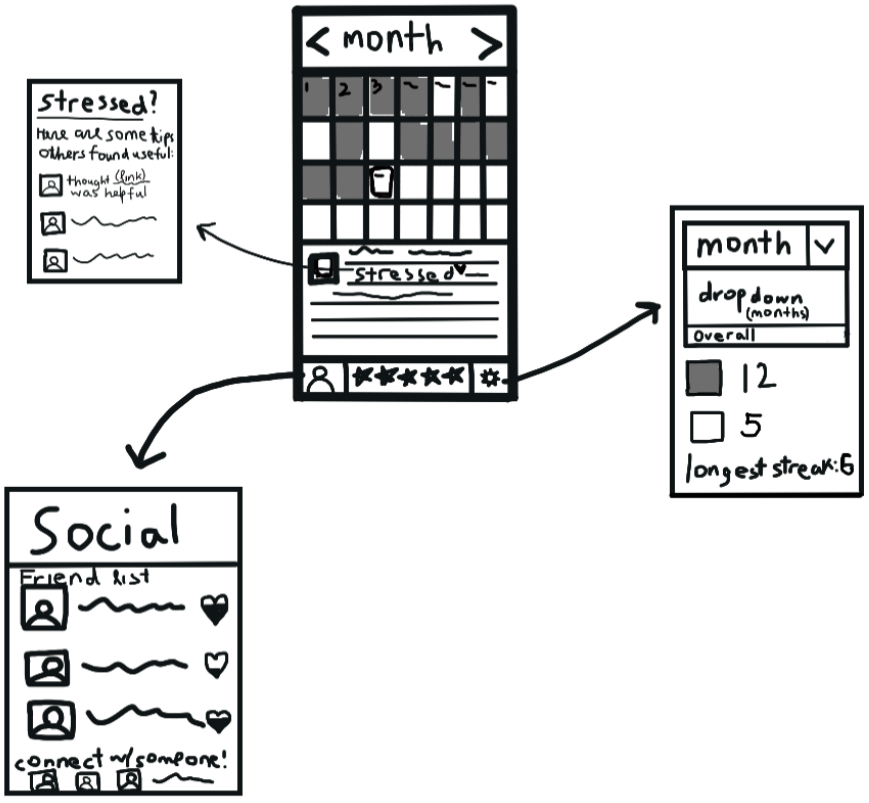
Iteration 2





Iteration 3


calendar/home
2021
MONTH
1 2 3 4 5 6 7
tap on day
date
back
Friday, month 6th, 2021
color Sliders
"favorite"/ "un-favorite" colors
• tap ☆ to fav/unfav
selected color
today, i'm stressed about...
tap on word
recommendations
back
stressed?
here is what might help:
recommendations from others
from Internet
tap on icon
tap on icon
social
back
♡Friends
name
connect with others!
suggestions
statistics
back
Select month...
dropdown w/ months
7 . . .
12
days of each color
longest streak 17
edit takes you here
popout
2021
MONTH
quick look @ past days
• press & hold day to get popout
color of day
edit
popout


month
stressed?
Here are some tips others found useful:
thought (link) was helpful
stressed
month
dropdown (months)
Overall
12
5
longest streak: 6
Social
Friend list
connect w/someone!

Step 2. UI design

Add contents and details (e.g. colors, icons, images) to your latest paper-pen UI wireframes.

- **Add colors:** Apply well-tested and established color palette (e.g. Material Design color palette, Adobe CC color wheel) rather than designing your own. These color palettes have been tested for accessibility (i.e. they are usable for color-blind users and users with certain visual impairments.)
- **Add realistic texts, icons, and images:** For example, social networking interfaces should include realistic user profiles; a food-ordering system should include realistic menu items; a project that has maps should show details in the map and how it changes based on the user's (simulated) location. The simulated contents should be detailed enough to allow users to make realistic interactions. Having this level of detail will be important to let you discover where the interface is confusing.

The deliverable expected at this stage (Q1.2) should look very similar to the last draft of your UI wireframes (Q1.1), except that the UIs now should have colors and have replaced placeholder texts/icons/images with realistic ones.

***** Your Task Q1.2 *****

Insert your high-fidelity UI sketches here. You can choose to insert an URL here that links to your design (pdf, powerpoint, miro, etc.) if you prefer.

Annotate each UI with (1) its name and (2) a brief description of the task it helps the user to perform. A few words is sufficient.

Google-slides:
https://docs.google.com/presentation/d/1Imu08nBVdKcnnSC33inyztI3aCHib6udI1aGO7LNJ9g/edit?ts=6091f99d

Calendar/home: This is the "main" screen. Here, the user can view their month and easily/visually see their recovery process via the different colors. At the bottom, there are buttons for getting to the social and the statistics page, as well as stars that will increase by one for every "good" day. The stars will also allow the user to easily see recovery progress.

Input feelings: This is the screen that the user can select colors that indicate how their day went, typed in by the user. After selecting a color with the slider, they can manually type in what that color would indicate, as well as "like", or favorite the color via the heart icon, which they would just tap to favorite/unfavorite. With a list of their "favorited" colors, users can use colors that they've selected before. This screen also contains an area for users to journal in their thoughts or feelings, and an algorithm or AI will underline certain key words that can then be clicked for recommendations. The cancel button would allow users to easily delete the whole entry if they wanted to redo it.

Recommendations: This is the screen that users will be directed to when they click on the underlined words from their journaling. This page will offer recommendations for whatever the underlined word may be, with the primary recommendations coming from other users of the app, and the bottom having recommendations that came from the general Internet. The recommendations from other users will include a link to whatever helped them, if applicable.

Social: This page is for the user to manage the social aspect of the app. It will include a general social feed for them, including updates from friends, as well as other people that the user might want to connect to. This page also contains the star system from the calendar page, just as an indication and reminder of their recovery progress.

Statistics: This page allows the user to view their statistics for any month, whether that be the one they are currently on, or another previous month. It will have the number of each day of a color for the selected month, as well as the longest star streak that the user has had that month. Next to the labels for the different colors, users can click on "view recommendations" to see the recommendations that were given for that feeling/emotion/thought

Popup: This is not an entirely new screen, but rather what the user would see if they pressed and held down on any previous day on the calendar/home screen. A popup would appear, showing a brief overview for that previous day, including information like the selected color and what they may have journaled. Should they wish to edit this day, the user can press the underlined "edit", which would send them back to the input feeling screen for the day that the popup is for. Users can choose to view the whole entry in the popup.

Part 2. Heuristic Evaluation

Before investing more time into implementing your UI designs, you will conduct a simple evaluation among team members yourselves and ensure that your interface follows basic usability requirements.

Individual heuristic evaluation: Each member will carry out a heuristic evaluation on one of the tasks/courses of interaction. Specifically, each member will evaluate each UI one-by-one on the following criteria:

1. **Keep users informed** about its status *appropriately* and *promptly*.
2. **Show information in ways users understand** from how the *real world* operates, and in *the users' language*.
3. **Offer users control** and let them undo errors *easily*.
4. **Be consistent** so users aren't confused over what different words, icons, etc. mean.
5. **Prevent errors** – a system should either *avoid conditions where errors arise* or *warn users before they take risky actions* (e.g., "Are you sure you want to do this?" messages).
6. **Have visible information, instructions,** etc. to let users recognize options, actions, etc. instead of forcing them to rely on memory.
7. **Be flexible** so experienced users find faster ways to attain goals.
8. **Have no clutter**, containing only relevant information for current tasks.
9. **Provide plain-language help** regarding errors and solutions.
10. **List concise steps** in lean, searchable documentation for overcoming problems.

Each member should work independently---without collaborating with the other group members---to inspect the UI designs and identify problems. Each member can make a copy of this worksheet and document the design problems each of them identify.

- Location of problem: which screen/UI and which UI element on that page

- Problem description: a few words or a sentence
- Violated heuristic: If the design problem violates multiple heuristics, choose one heuristic that is most evidently violated.
- (Do not suggest solutions or decide if problems should be fixed or not)

Group discussion: After all group members have completed the individual inspection, get together as a group and combine the design problems you identified into one spreadsheet. Merge repeated problems, discuss severity and solutions. Revise your designs accordingly.

***** Your Task Q2 *****

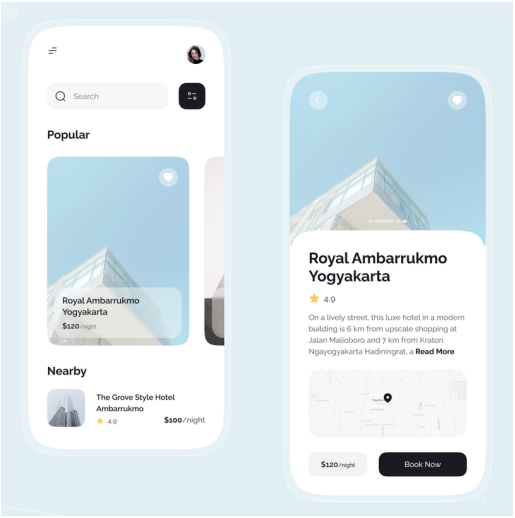
<Link to the group heuristic evaluation sheet here>.
https://docs.google.com/spreadsheets/d/1orp_H5WiGJ1Mn_Fu-qi16qbwjkysxlCgwxsnUcSLpa8/edit?usp=sharing

Please revise the designs in Q1.2 directly. No need to put your designs here.

Part 3. UI Prototyping with Figma

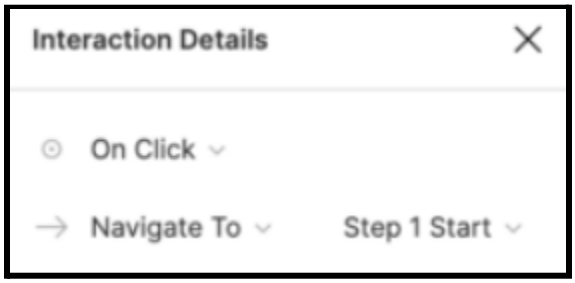
Now that you have thought through the UI designs that will enable 3-5 user tasks and fixed common usability problems, you can now commit to making an interactive, high-fidelity UI prototype! Use Figma to create this prototype and to simulate the interactivity between the system and users. The final Figma prototype should include realistic UI details, including simulated user inputs, images, etc.

We strongly encourage you to use Google material design Figma template or other UI design patterns in this step. **The focus here is for you to consider when design patterns do NOT apply and how to improve on those cookie-cutter patterns.**



(An example)

Adding interactivity to the prototype. Finally, add animation to the UIs and make it interactive. Adding interactivity on Figma should be pretty straight forward. If you need help, read the detailed instructions here, post on Piazza, or contact the lead TA Martha Brandt @msb424.



Only this minimal level of interactivity is required. -- The user should be able to follow the "happy paths" by clicking through the UIs. We do NOT expect you to make fancy hover effects, animations, or custom-made graphics.

***** Your Task Q3 *****

<Insert the link to your Figma file here>.

https://www.figma.com/file/oRZr2iwq5HPLsQK1bYo5az/A4?node-id=4%3A0

Part 4.Think-Aloud User Evaluation

At least two group members should be present during the user evaluation study. One as the main interviewer, the other as note-taker.

The interviewer can start the user evaluation by

- Briefly introducing the functional goal of this design to your participant
- Asking for content to record their interaction with the prototype (via recording the Zoom call or recording their screen)

For each user task that the prototype aims to enable, **the interviewer will describe the use scenario and task to the participant (No other instruction should be offered**. The interviewer should not describe how to complete the task. E.g. where to click.) The participant will be asked to think-out-aloud in the process of completing this task, e.g. what they are thinking? What information are they looking for on the screen? What confuses them?

Record the whole user study session. In addition, the note-taker will take notes on their observations.

- What worked well? Which sequences of interactions did the user follow that align with the envisioned “happy path”?
- Any deviations the participant takes from the “happy path” and signs of confusion they express
- Any participant comments that could potentially lead to design improvements (You do not need to make these improvements at this time.)

The final step: Group reflection. Collectively reflect on the user evaluation results and write down in bullet-point form your major takeaways.

***** Your Task Q4 *****

<https://cornell.box.com/s/ykp3h4dizys8bddtc8e4lyejazyk3t8o>

Task #1: Navigate to May 6th and try to favorite the selected color for May 6th

Task #1 Reflection (about 100 words)

- The user understood that they could click on the specific dates to access information and functionalities for each date in the calendar. The user also correctly realized that the heart icon indicated favoriting a color/emotion. Initially, we were worried about the user being confused about what the heart icon would mean, i.e whether the color for the emotion or the emotion for the color would be favorited. However, after doing the interview with the user, we realized that users are resilient and are able to figure out functionalities as long as the appropriate symbols are used to guide them. Hence, for this particular task, we will not be making any design changes since the user accomplished the goal of this task.

Task #2: Find recommendations for a stressful day

Task #2 Reflection

- This task was slightly more time-consuming for the user, but was still accomplished well. The user navigated to the journal section and to the underlined "stressful" word quite easily- the user seemed to hesitate a bit before clicking on the link however this was negligible. However, once the user navigated to the recommendations page, the user tried to click on various links. The prototype was not responsive for those actions, but this was a good indication that the user found the page intuitive and expected to interact with the page. Overall, the user's performance for this task was good and hence we will not be making any design changes.

Task #3: Try to get to your personal feed and find out who wants to join your Network

Task #3 Reflection

- The user was able to successfully navigate to the personal feed. Whilst the user attempted to find the page based on the recommendations page, the user was able to figure out the navigation by going back to the homepage and then clicking on the social icon- this indicates to us that perhaps we should make the social page more accessible. The user particularly struggled with the latter half of the task. While the user was on the social page, the user did not understand that the "friend requests" part of the page is relevant to the task. Therefore, the user was searching the whole page and was confused. This indicates to us that a design change where the "friend

requests” part of the social page is more salient would benefit the user’s navigational experience.

Task #4: Tell me how you felt on May 5th

Task #4 Reflection

- For the task of seeing how the user had felt on a previous day, May 5th, the user did not actually follow the envisioned "happy path". The intended path for the user was to hold down on the prior day (May 5th) to access the popup, from which the user could see the specified emotion for the color green. However, the user first tried clicking on the day, and tried to get to the input feeling screen, rather than holding down. When she was unable to do this, she stopped and instead just said that from the green color of May 5th, she could assume that the feeling was "pretty good, not bad." This means that the use of colors for users to indicate how they were doing were intuitive, but the intended action to reach the popup was not. If the user had done this task on her phone as a mobile app rather than using a computer, she may have been able to follow the "happy path", as people are more used to doing actions like pressing and holding down on phones, and not as likely to do this action using a mouse. Therefore, a design change to make the action of “clicking on previous dates to view emotions” more affordable, such as eliminating the hold-down action, would help the user achieve the intended experience.

Task #5: What is your current longest streak, and how many angry days have you had this month?

Task #5 Reflection

- For the task of finding the current longest streak and angry days she has had for this month, the user did not actually follow the envisioned “happy path”. The intended path for the user was to go to the statistics page by clicking the icon in the bottom of the home/calendar page. However, the user skipped that page and counted the number of colored days on the home page since. The user also saw the longest streak on the home page and thus did not navigate to the statistics page either. Maybe for the icon in the bottom, we should make it stand out more to attract the user's attention and evoke their interest to try it. Again, the user assumed red meant “angry,” which indicates that the action to view the pop-up from the home screen was not intuitive. The purpose of indicating the streak on the main page was to make this information readily accessible, so perhaps we will try to draw the user’s attention to that part of the page instead of forcing the user to count the days themselves.

Part 5. Team Members' Contributions

- For each team member, describe in 1-2 sentences what they personally did toward completing this assignment here.

- Hanna: I worked on the filling in the assignment background, doing wireframe sketches, and then the high-fidelity prototype for 3 screens. Also I helped develop the prototype on Figma for 2 screens and helped come up with tasks for the user interview, and finally helped do the group reflections for the think-aloud evaluation.
- Aryana: I worked on developing the initial wireframe sketch, followed by the high-fidelity prototype for 2 screens. I then developed the figma prototype for 2 screens (input feelings and statistics). I worked with my teammates to come up with tasks for the user interview and led the user interview. Finally, I collaborated with my teammates to write up the user interview evaluation.
- Yutong: I worked on the high-fidelity prototype for 1 screen. I developed the figma prototype for one screen (pop up). Then, I worked with my teammates to come up with tasks for the user interview and do the group reflections for the think-aloud evaluation.
- Edwin: I worked on developing the high fidelity prototype for 1 screen. I developed a figma prototype for one screen as well. I worked with my teammates to come up with tasks for the user interview and participated in the interview by being the primary note taker. Finally I helped do the group reflections for the think-aloud evaluation.

** Congratulations! You have reached the end of the assignment! **