memreprise

where music and memories meet

CS 147 Fall 2023
Harmonic Ties Studio
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Value Proposition

"where music and memories meet"

Team Member Names and Roles

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MSCS '24
Website, Frontend
Developer

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BSCS '23, MSCS '25
Frontend Developer

Problem and Solution Overview

Memreprise is a space that allows people to capture the musical moments of everyday life – where music and memory meet. People often have deep and emotional associations to their favorite music, regardless of their musical background. We realized that these deep associations with music are hard to quantify. Our mobile application allows people to make these associations quickly and creatively. Memreprise sends daily prompts to its users, asking them to log the song they're currently listening to. Included in their song post, users also record their associations to the song by selecting their emotions, their current activity, and their answer to a themed question of the day.

Needfinding

Recruitment and Interviewing Methodology

Our interviewees were initially recruited through word of mouth and cold-emailing individuals on Stanford campus, making our interviewees mostly students and current employees of Stanford. To broaden the scope of our needfinding, we posted on the Mountain View, San Francisco, and Bay Area subreddits and were able to recruit individuals without association to Stanford. Because our studio primarily focused on connections in the world of music, we looked for individuals spanning different musical backgrounds. Some of which included the following: recreational composers and artists, avid concert goers, and the typical, casual music listener.

After recruitment, we scheduled times to interview these individuals – locations varied from dining halls to cafes to even their own creative workspaces. We assigned two team members per interview and utilized the following structure in all of our interviews:

- Team member introductions – one notetaker and one interview facilitator
- Project and studio theme introductions
- Request 45-60 minutes and finalize consent forms
- Interviewee introduction: leading with hobbies and everyday activities

After the introductions, we found avenues in the interviewee's everyday life to ask about their connections to music, memory, and sound. We loosely followed a list of questions to allow for a personalized but focused conversation.

Who did we interview?

Michael Shanks

Professor of Classics at Stanford University
Resident Fellow at Ng Humanities House
– *"Time is not linear, it is looped...memory is haunting..."*

We interviewed Dr. Shanks because of the interesting insights we might find from his deep engagement with humanities through his work as an archaeologist. His older age and non-American identity also provided higher diversity in our demographics and helped us pinpoint our target audience for MemReprise.

Bryant Jimenez

Student at Stanford University

– "If I like a song, I'll like a song, even if it's outside my genre."

Bryant was our extreme user. He considers music as part of his identity and is a heavy listener of music. He has experience in composing and collaborating with other artists on SoundCloud. We feel his background in music composition may reveal interesting intersections between user needs and user passions.

Diana Jones

Program Coordinator at Stanford University

– "That song became a time capsule of my emotions at that time."

Diana was our moderate user. They see music as a backdrop to their daily work – especially tasks they can do passively. They also value bonding over music whether it's sharing an aux cord with friends or experiencing new genres at a bar with strangers. They also connect their music to cultural identity and home, making the intersection between music and nostalgia into the picture.

Joseph Lambo

Software Engineer at Google, San Francisco Resident

– "Music brings me to the good ole days…goofing off in college."

Joseph uses music primarily as an avenue to drown out the bustling world during his commute to work as well as during his work day at the office. Music plays the role of being a time machine, recollecting memories of "normal," more peaceful times of his life alongside his brothers in Nigeria.

Yifan Ding

Data Analyst, Mountain View Resident

– "My dream job is to be Sam Smith's dancer."

Yifan is an avid concert-attender, even attending concerts of artists she's never heard of before. She prefers to live in the moment while listening to music, expressing every emotion she feels. Her interview revealed lots of interesting ways for us to think about incorporating emotion-based journaling.
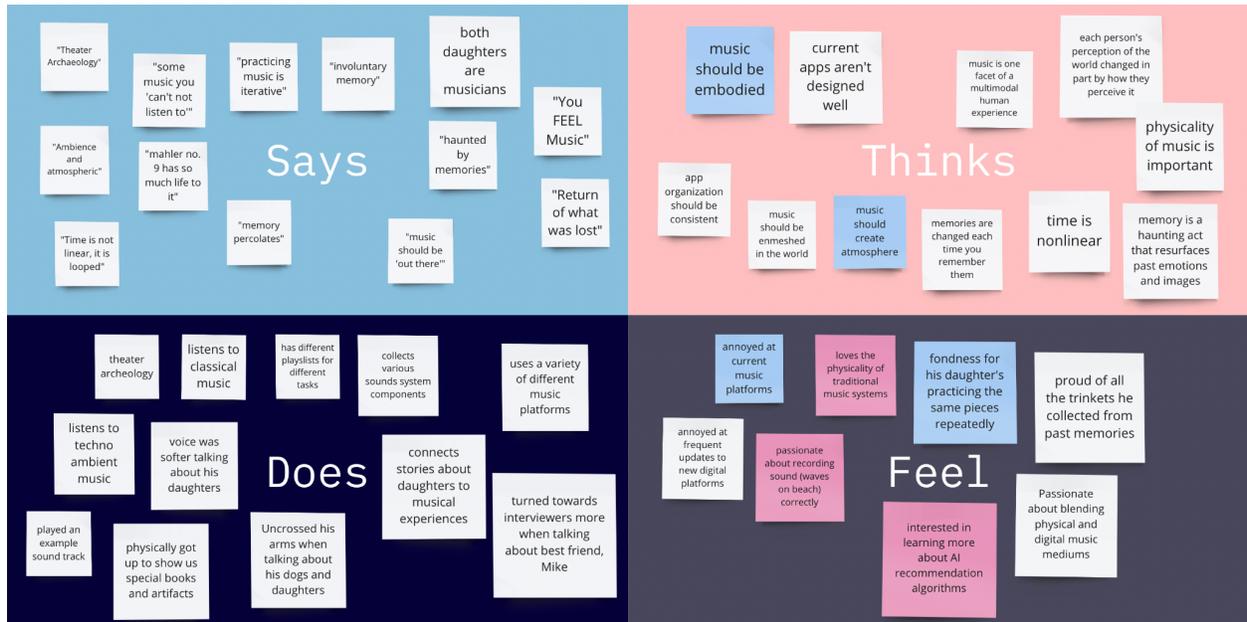
Insights: Contradictions and Surprises

Fig. 1: Empathy Map for Dr. Shanks

Insights: Need for multisensory exploration of the past
- Profound connection between sound, memory, and our perception of history
- Emphasis on music's role as a temporal and emotional bridge
- There's a need for intertwining sound, memory, and historical context by enabling a multisensory exploration of the past
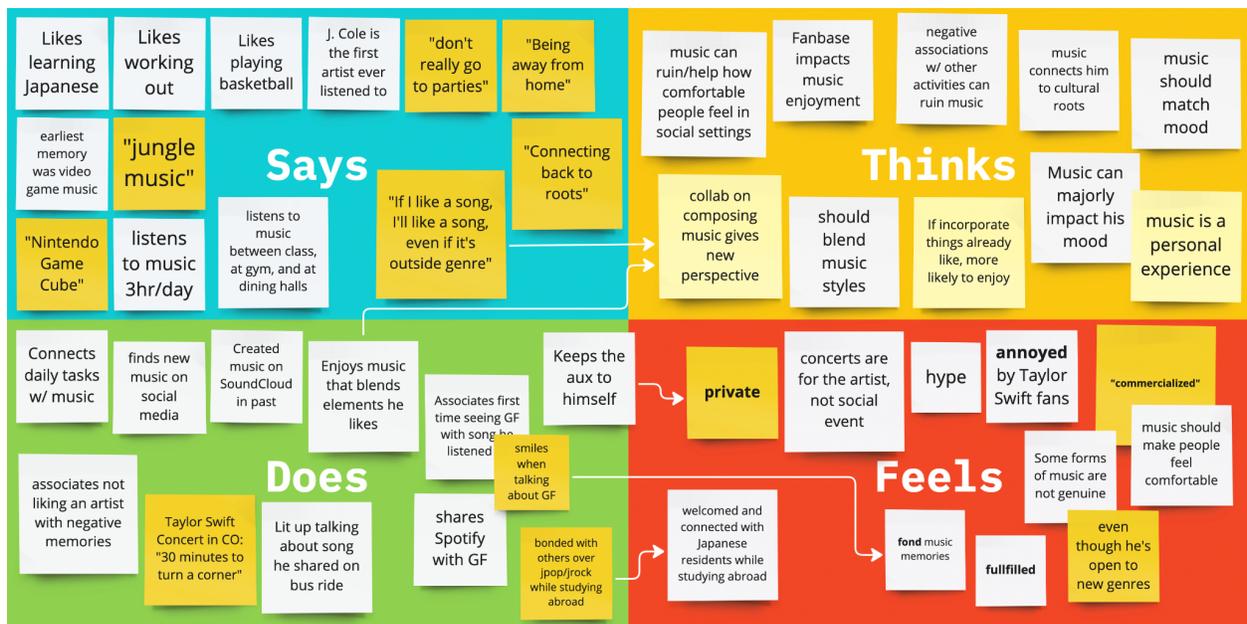

Fig. 2: Empathy Map for Bryant Jimenez

Insights: Need for avenues to empower exploration of diverse music genres
- Music was a cultural bridge and self-discovery tool for Bryant during his study-abroad experience in Japan.
- There's a need for avenues that empower individuals to explore and immerse themselves in diverse musical genres
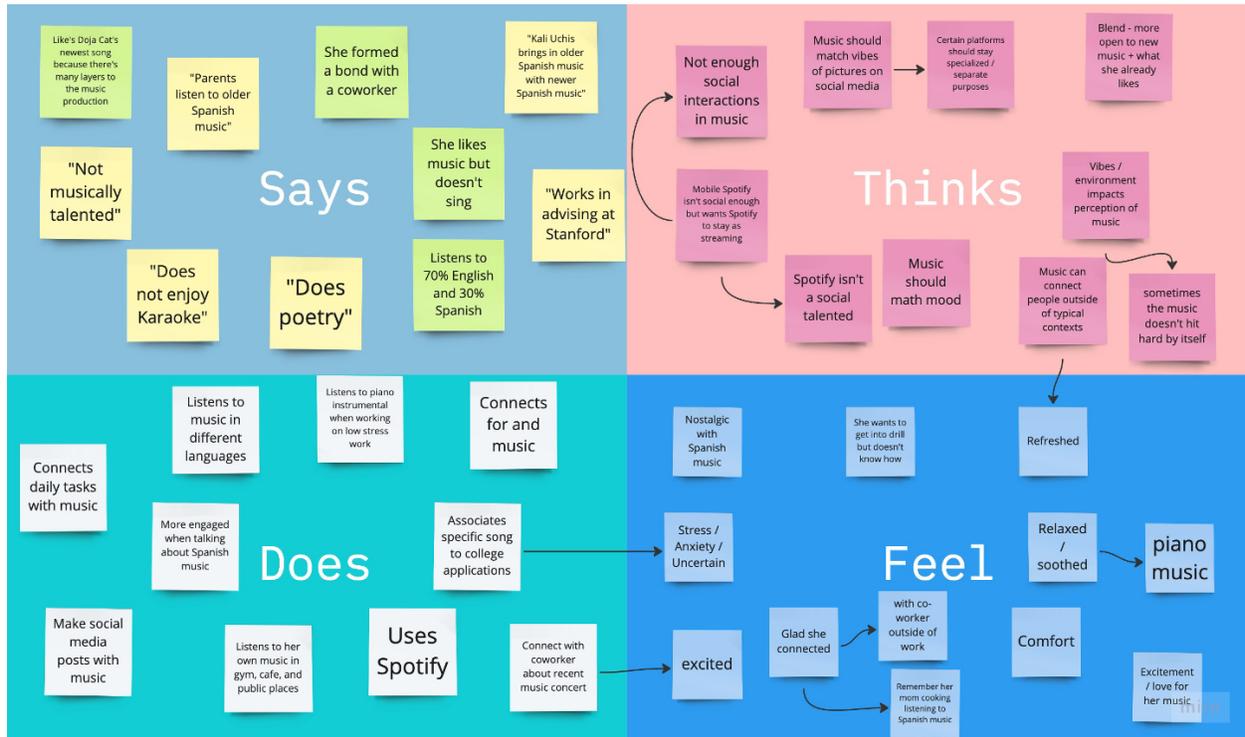

Fig. 3: Empathy Map for Diana Ross

Insights: Need for more social interaction through streaming apps
- Willingness to listen to new music is heavily influenced by the environment
- She feels refreshed when talking to others about music
- There is a need for more social interaction on music streaming apps without turning it into a social media platform

Insights from Yifan Ding and Joseph Lambo: Need for capturing moments of time through music and emotion
- Music has the power to transport its listeners
- A listener can have strong emotional connections to varied music, and have those deep connections persist over long periods of time

POVs and Experience Prototype

As a team, we split up the interviews to ensure that everyone had practice conducting research interviews. Each team member created a POV for their corresponding interviewees. As a whole team, we discussed and voted on which POV was the most insightful representation of each interviewee. From there, we voted on the POVs that would allow for strong HMW brainstorming and concluded with the POVs of Diana Ross and Joseph Lambo as our top POVs.

Point of View of Diana Ross:

We met Diana, a recent Stanford graduate with a background in psychology and education who is now working in an advising role. *Diana frequently* _uses music as a "backing track" for various activities in her life._

We were surprised to notice Diana's intricate relationship between music, nostalgia, and her emotions; in particular, she expresses how _certain songs evoke memories of distinct life events_, such as the stress of writing college applications.

We wonder if this means that music for Diana is more than auditory pleasure; it's a _sensory time machine_, bringing her back to particular moments, feelings, and memories.

It would be game-changing to make it possible for people like Diana to be _able to listen and annotate their feelings and memories_ associated with specific songs or genres.

Point of View of Joseph Lambo:

We met Joseph, a software engineer at Google, who lives in San Francisco but works in Mountain View. On _his long commute to work, he enjoys listening to music to pass the time_.

We were surprised to notice certain songs allowed him to _recollect a life that is "normal"_ with him and his brother back in Nigeria.

We wonder if this means feeling a connection of the past with music holds a large amount of weight on that memory and reminds one of an experience that they _felt was more normal than the life they currently live_.

It would be game-changing if we could connect people to their past experiences through music that would allow them to _reminisce and connect to the times they considered "normal"_.

Sampling of HMWs From Each POV

Our team allocated 4 quadrants for each member and created our HMW maps on Miro boards. We set a timer where we all brainstormed individually. Then, as a team, we voted and moved ideas around to group similar or interesting combinations of HMWs. These are the strongest HMWs from our brainstorming sessions.
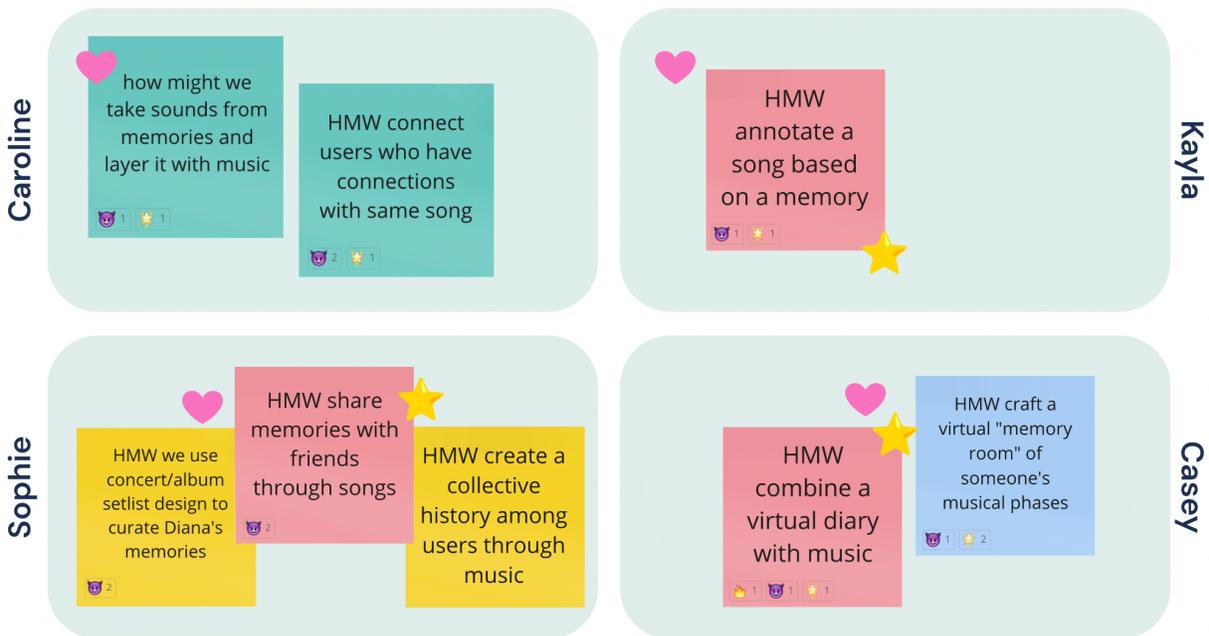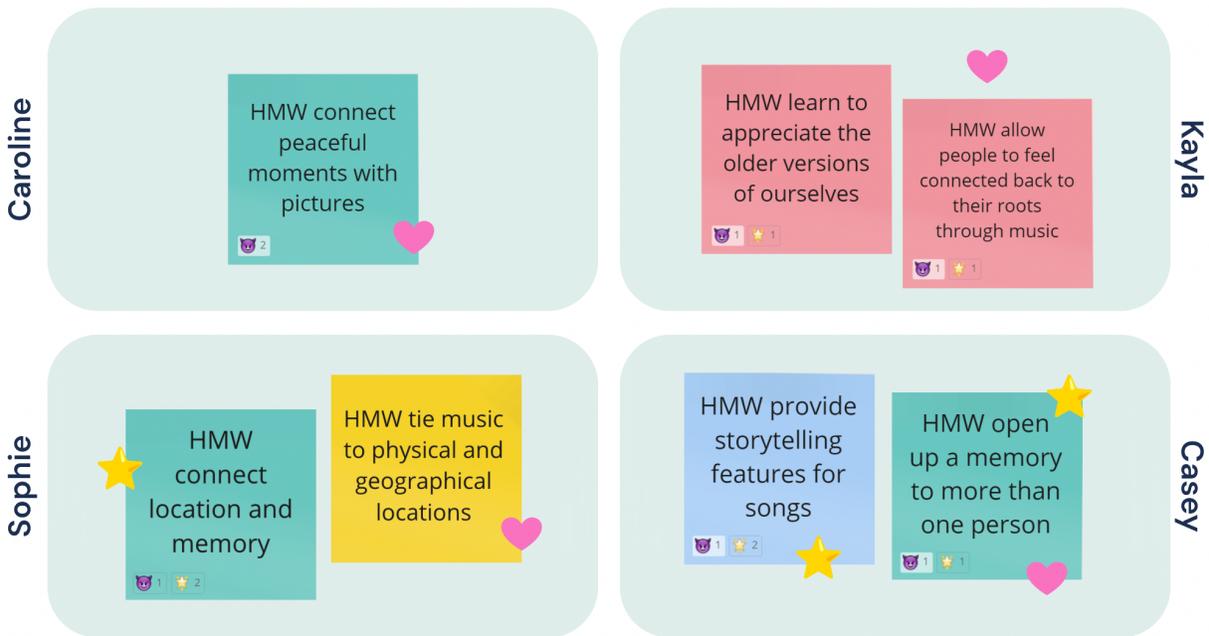

Fig. 4: Diana's HMW Map Highlights

Fig. 5: Joseph's HMW Map Highlights

Top 3 Solutions

1. **Reprise:** Stop what you're doing! Share the song you are currently playing! While sharing what they are listening to, users can also share how they are feeling, what they are doing, or where they are currently – capturing small moments of life that collectively become a memory lane in the future.

2. **SoundByte Memories:** Record memories and add depth to them by pairing it with voice notes, music, or sounds. Whether it's laughter from a joke shared, or a heartfelt reflection, make memories come alive with the personal narrations.

3. **Geo-Anchored Memory Capsules:** Pin memories and music to locations with geo-tags. Each memory capsule contains the essence of a moment: a song, photos, video, or voice note that encapsulates the emotions and events at that location. Every capsule serves as a multi-layered memoir of that place and moment. When users walk through an area, they can play and explore some of the tagged songs that represent that area.

Brief Description of Experience Prototypes

Bleu (better with time)
Fred again...
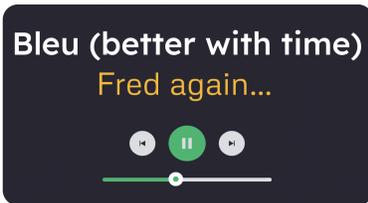
1. Reprise Experience Prototype:

Critical Assumption: People listen to music at least 50% of the entire day and are willing to share music.

Methodology + Set Up: We all walked up to random people around Stanford's GSB, GSE, and the School of Medicine and asked them the following questions:

1. "Hi! What are you listening to?"
2. "Does this song remind you of anything else?"
3. "Would you be interested in listening to what the last person shared?"

Implications: We realized that the majority of people were willing to share their currently playing songs. Every person was willing to listen to new songs. In addition to music, we also had individuals who were listening to podcasts and the news. Overall, we learned that people are curious! They want to know what is trending, and most importantly, are genuinely interested in listening to new music. We realized that music is not as private as we thought.

En Mi Cuarto
Jhayco, Skrillex

"It's not what I listen to but I don't like it or dislike it."
"Sounds powerful"
"Got a nice beat"

2. SoundByte Memories Experience Prototype:

Critical Assumption: People have strong sound-associated memories and people practice archival habits

Methodology + Set Up: Our team members walked up to people randomly at places like the bookstore and the Stanford Shopping Center – as an attempt to delocalize from the Stanford campus location. We asked these individuals if they had a favorite memory, and whether they recorded that memory with a song, video, or photo. This

method, unfortunately did not work well – especially since memories are usually private matters and sharing them with a stranger was not comfortable. We switched gears and turned this into a journaling format through Google Forms instead.

Implications: The results showed that people linked music to memories with varied emotions. There was also a cultural context of personal identity that tied memory and music. These were very strong emotional bookmarks. However, many memories are not recorded with video or audio so it's difficult to pursue this solution.

"'Like Get You' … my friends played for me during my first panic attacks."
"'Get Gone'… I listened on a plane ride on repeat after my mom told me bad news."

3. Geo-Anchored Memory Capsules Experience Prototype:

Critical Assumption: People keep track of where they are spatially when they listen to music. People go to varied, public places frequently.

Methodology + Set Up: Initially, our team tested this experience prototype in-person at the Stanford Medical School, GSB, Stanford Shopping Center, and the Stanford Bookstore. Again, it became difficult as people were not ready to be bombarded by college students asking about their most vulnerable memories and favorite geographical locations. We also switched this into being an online survey on song-location associations. This was a better approach towards testing people's willingness to journal or put into writing, their most vulnerable moments.

Implications: We realized that lots of people associated song-location memories with their home and families. These personal definitions of "home" and "family" varied between each person. However, the majority of these locations were not locations that would be accessible to the public. For example, "my grandmother's kitchen" would not be a space that others can see nor share in. Additionally, these spaces are so personalized that it would be hard to attempt to recreate the same emotions associated with them within the scope of a platform. Therefore, it would have been difficult to pursue this solution as well.

"A Chinese song called 'This Summer.' It reminds me of my choir practice room."
"'Street Lights' by Kanye West and my old bedroom…"

Design Evolution

Final Solution

The Reprise solution was our winner! Our team discussed the solution options by thoroughly going through the experience prototype results as well as considering ethical implications for each solution. We realized that Geo-Tagging relies too heavily on people traveling in varied public spaces. Additionally, the locations that people associated with songs and memories are not accessible to the general public. SoundByte relied too heavily on people recording audio, pictures, or videos of their most vulnerable and emotional moments. Generally, these moments are triggered by intangible elements that we would not be able to foster.

Here are some results that supported Reprise:

"What are you listening to?"

Our experience prototype showed that of the 10 people we walked up to, all 10 were willing to share what they were currently listening to. They were willing to show us the song title and artist, but were also more than willing to play the song out loud for us. This shows a 100% success rate on people's willingness to share.

"Do you want to listen to what the last person was listening to?"
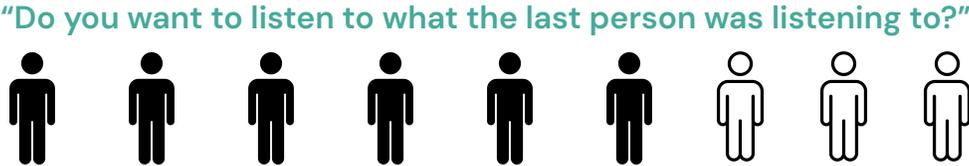
Subsequently, we asked 9 of the 10 people (aside from the first person) whether they would be willing to listen to what the last person was listening to. 6 of the 9 were open to listening to a new song without knowing who the last person was nor what genre the song was from. This shows that the majority are open to learning about new music and listening to snippets of music.

Tasks

Task 0: Log In or Sign Up (with Tutorial)

Our prototype testers expressed uncertainty about the functionality of the "reprise" button. Because *reprise* is strongly connected to our value of making memories from everyday moments, we added a tutorial as our task 0 for our new users when they sign up. This allows the new users to understand each part of our app before officially being apart of memreprise.

Fig. 6: Task 0 flow of logging in or signing up and going through the app tutorial.

Task 1: Share a song on memreprise.

One of the main values of memreprise is to be a space for users to record the small moments of everyday music–listening. Sharing a song on memeprise allows users to unlock songs that other users are posting within that day and feeds into the curiosity of our users.
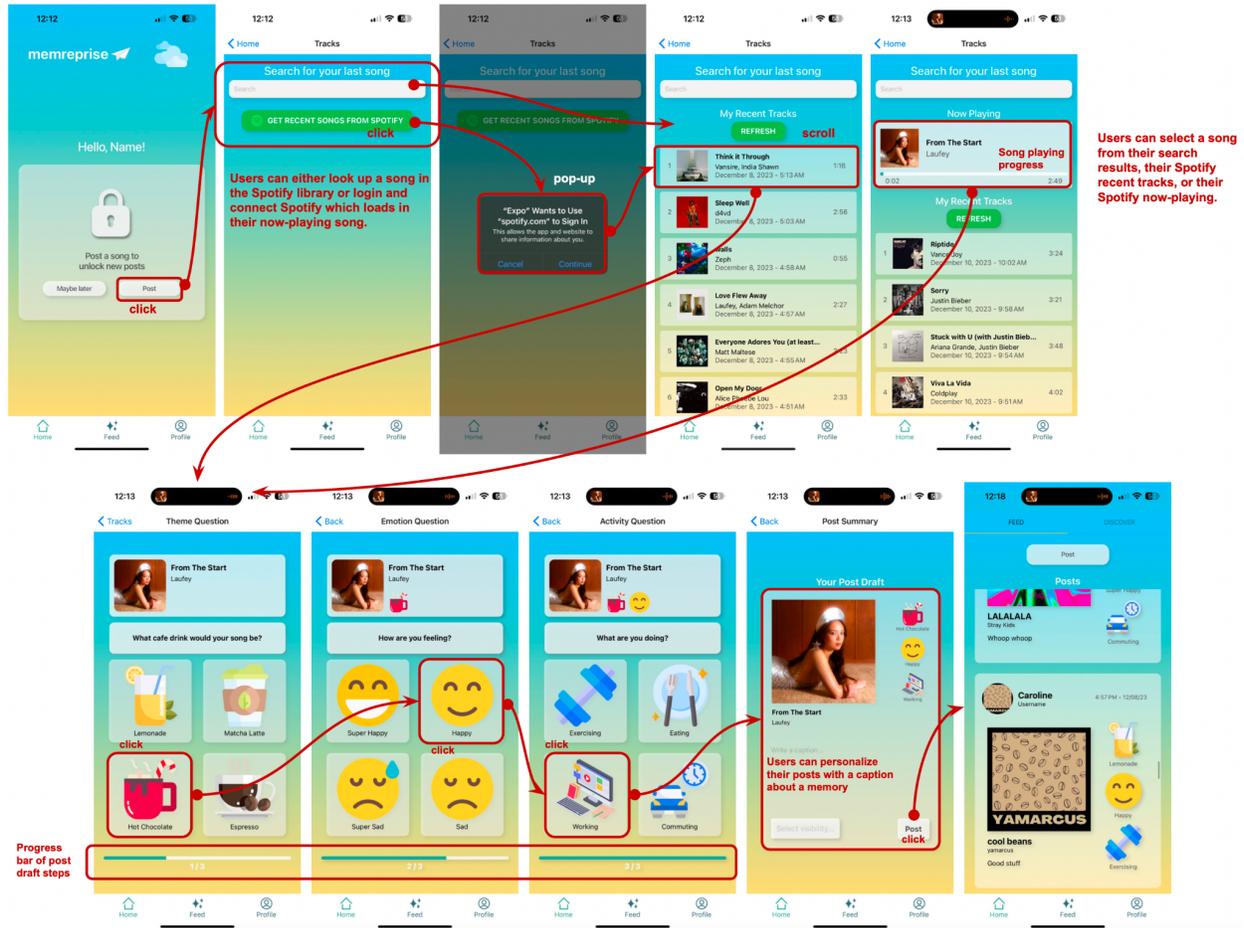

Fig. 7: Users have multiple ways to search up currently playing songs before personalizing the post.

Task 2: Discover music from other users with similar associations.

Users can discover new music based on similar associations from the feed tab. Users will automatically be on this page once they post a song for the day. The feed tab has two tabs apart of this page which are feed and discover. Feed allows the user to see what other people have posted while discover allows users to access a playlist of songs associated with the different categories we asked the users before they posted. For example, under the activity tab users will discover all the songs other users posted in regards to the activity working. Or if the user wants to discover songs under the activity exercising they can find that here. Once clicked on it, it will take them to spotify playlist! This is extremely important to the user base because it allows users to see what music others have posted in regards to the categories we provided them with, activity, theme, and feeling. It's also a great way for users to discover new music with categories that interest them.
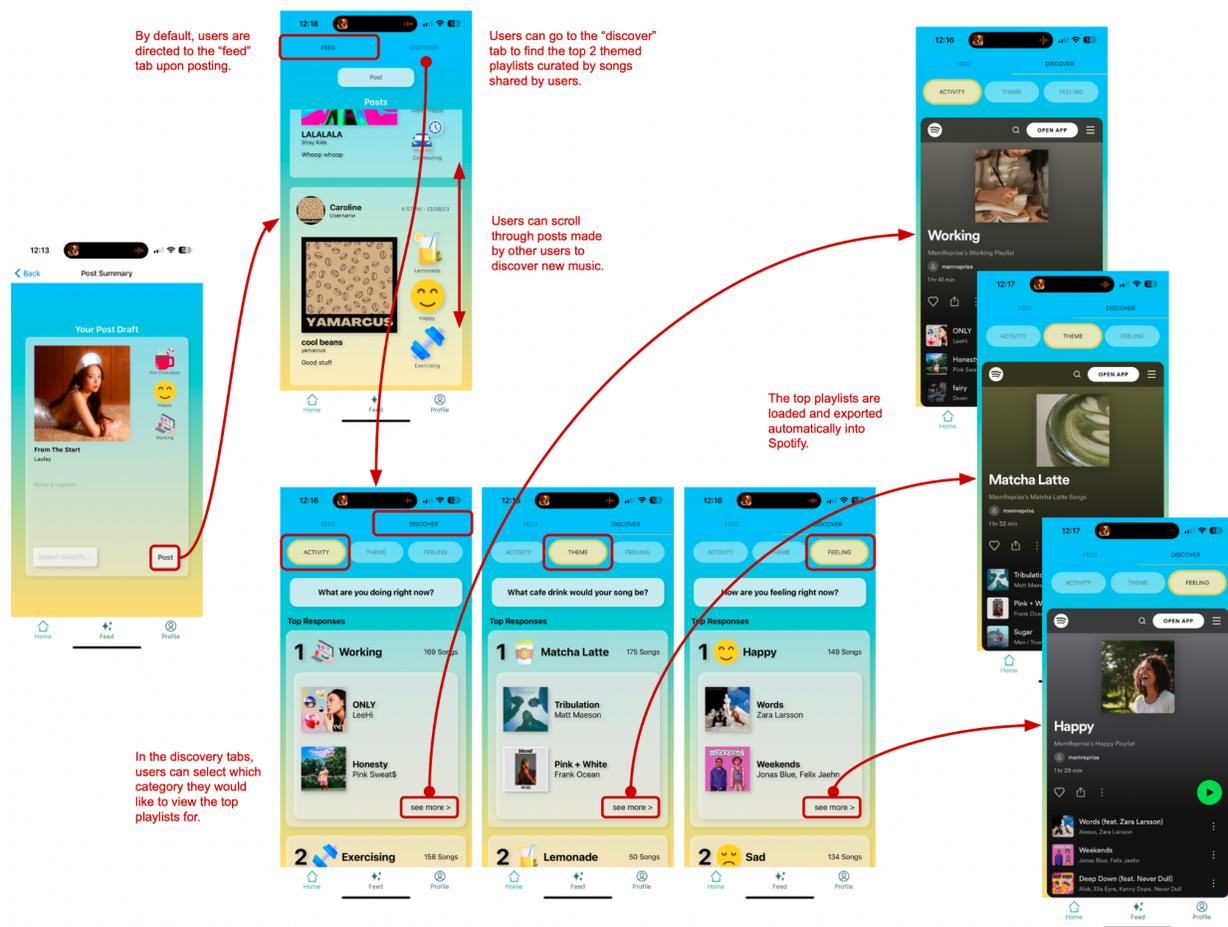

Fig. 8: Users discover new songs by exploring their feed or the discovery tab with themed playlists.

Task 3: Create personalized playlist from songs you previously shared.

The user's profile tab allows users to see their "reprise" which consists of previous music the users have posted. This page shows all of the songs users have posted which consists of the month, date and album cover of that song. The user also has the ability of filtering their music by time, activity or feeling. This is important to our users because it allows users to be able to access songs they have previously posted and filter them based on different categories.
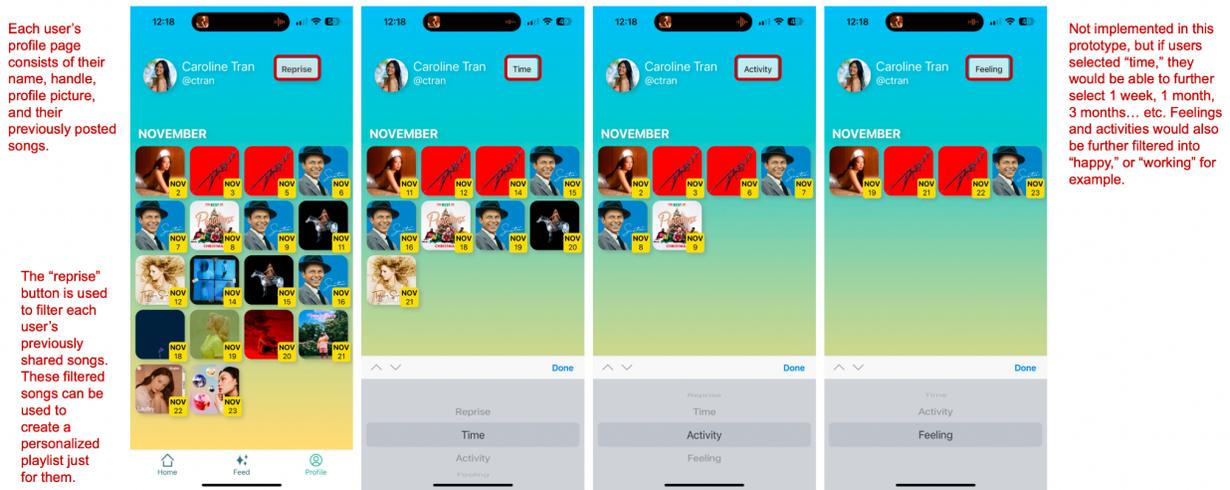

Fig. 9: The profile page for each user is a collection of past music they've shared.

Design Evolution Visualizations and Rationale
Low–Fi → Med–Fi

Lock Screen

Initially, the user was shown the incentive of posting, and the post draft at the same time. This was very overwhelming so after login, our main landing page would portray a lock that would better separate the user's goal and the post draft.
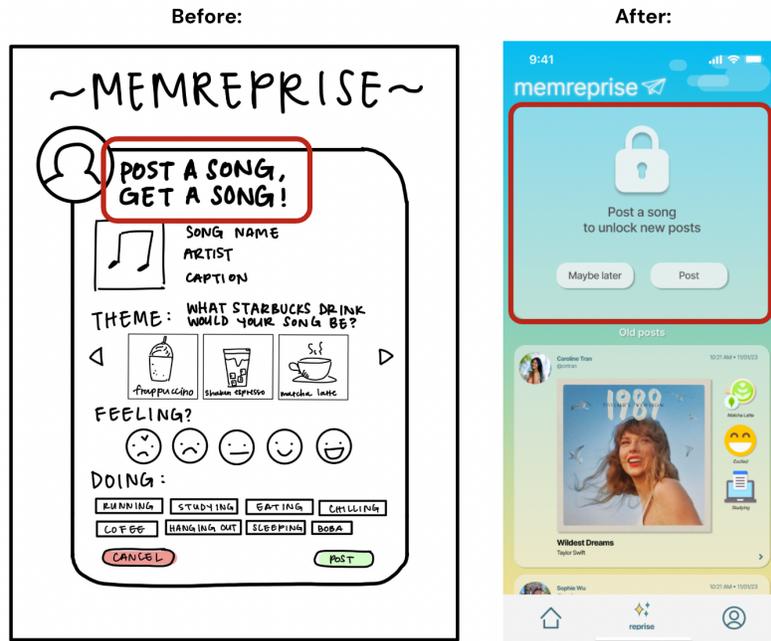

Fig. 10: Different wording to better emphasize user incentives

Split Up Post Screen

All parts of the post draft, including the song search-up, the caption, the themed question of the day, the user's emotion, and the user's activity, were all on the landing screen. Our prototype testers expressed confusion and slower reaction times to finding features. Therefore, we separated the song-search and then divided the post draft into multiple sections.
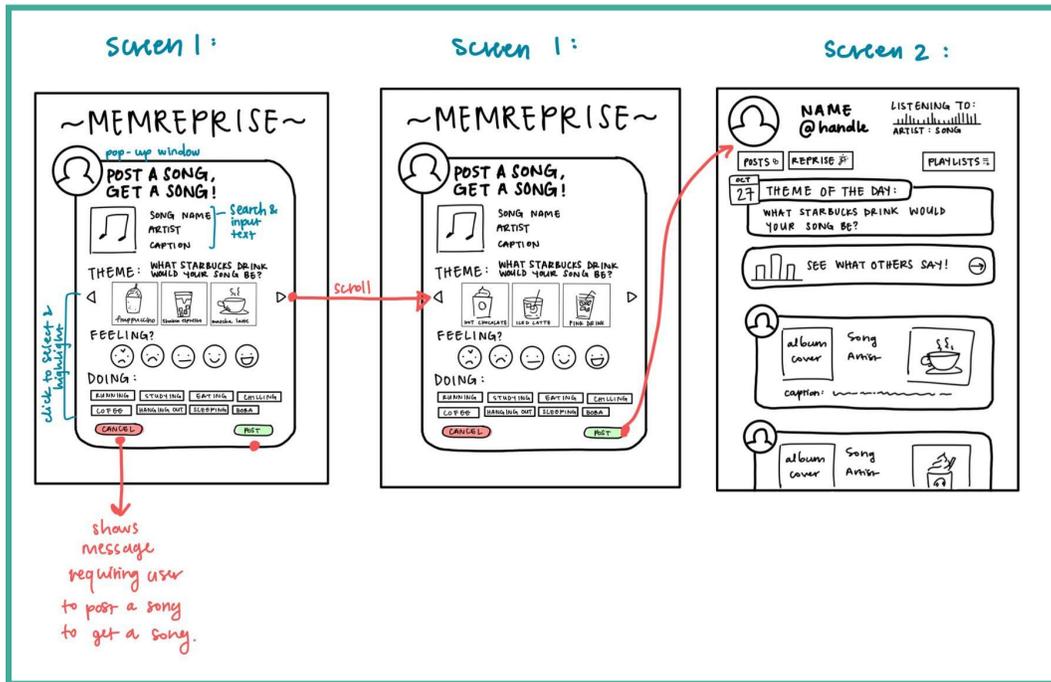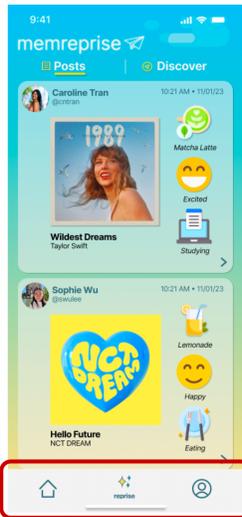

Fig. 11: The original posting process was overwhelming and the first read was unclear.

Fig. 12: The revised version separated the song search and post personalization.

Navigation Bar

The navigation to the Home Screen was dependent on a small house icon and a "back button" feature that was not clear nor efficient for the user. We added a navigation bar at the bottom in our med-fi prototype to address feedback from our prototype testers.

Fig. 13: Navigation bar for home page, reprise feature, and user profile

Sneak Peek to Top Themed Playlists

The "Theme of the Day" box was unclear on whether it was pressable or if it was just a static header to remind the users what the theme was. "See what others say" did not communicate what others were saying *about* so it was not interesting to testers.
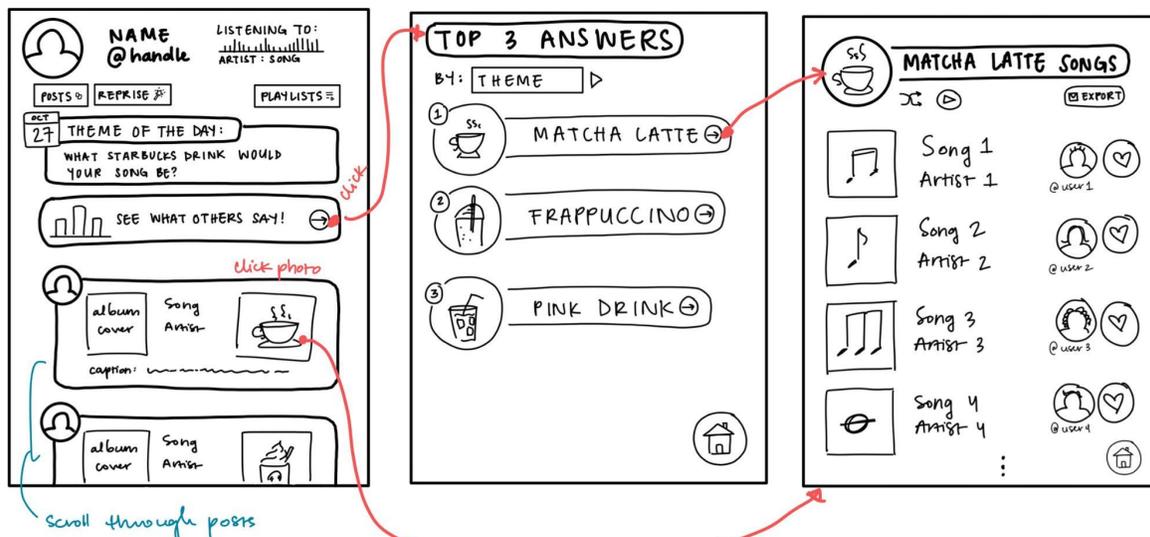

Fig. 14: Original navigation to the top charts was not clear on what the charts were for.
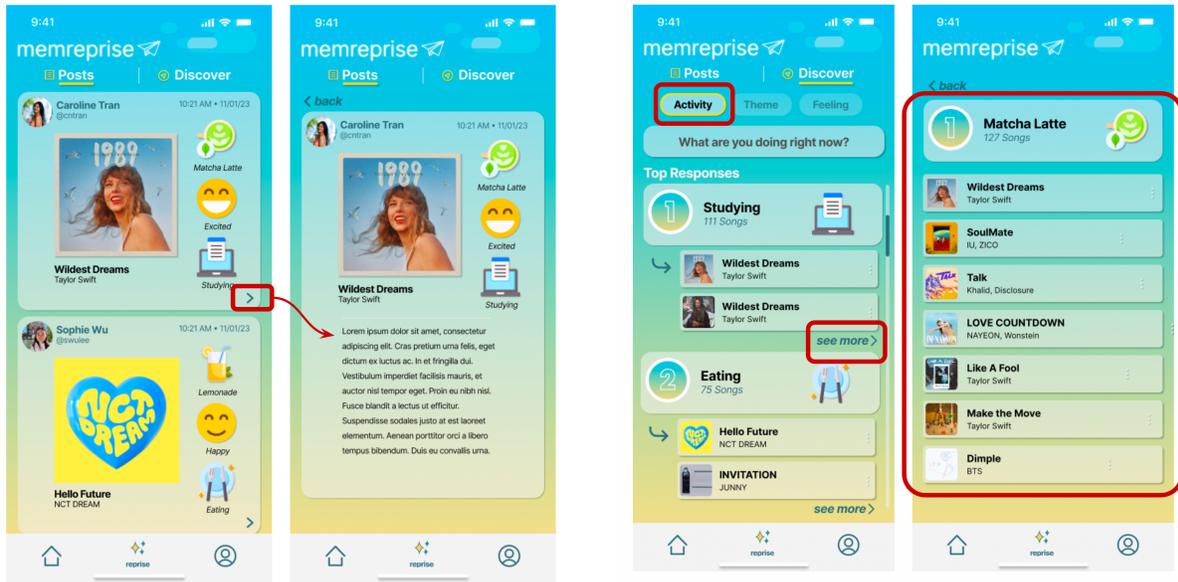
Fig. 15: The feed and discover playlists features are separated by tabs. The top categories are also separated by tabs and allow users to have a sneak peak into each playlist to encourage exploration.

User Archives and Profile Page

The reprise feature was hard to find and the relationship between the user's past posts and the reprise feature was unclear.
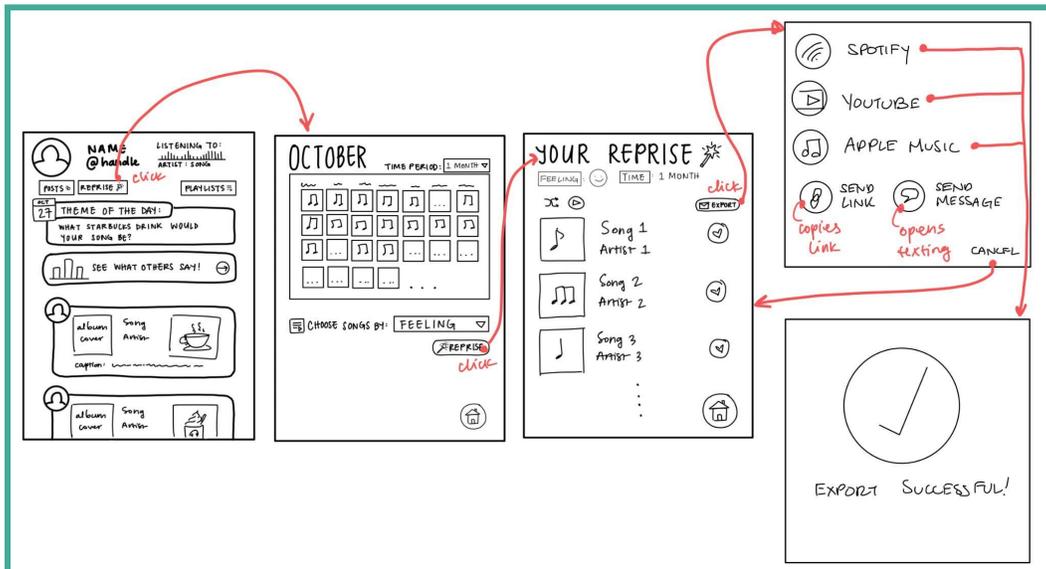

Fig. 16: The design for the reprise tab made it seem like a button.

Fig. 17: The reprise button automatically brings the user to their past song and creates a personalized playlist depending on their filter selections.

Reprise Filters

The reprise button seemed like a "generate" button before. It is redesigned to be more like a filter dropdown, better representing its intended functionality.
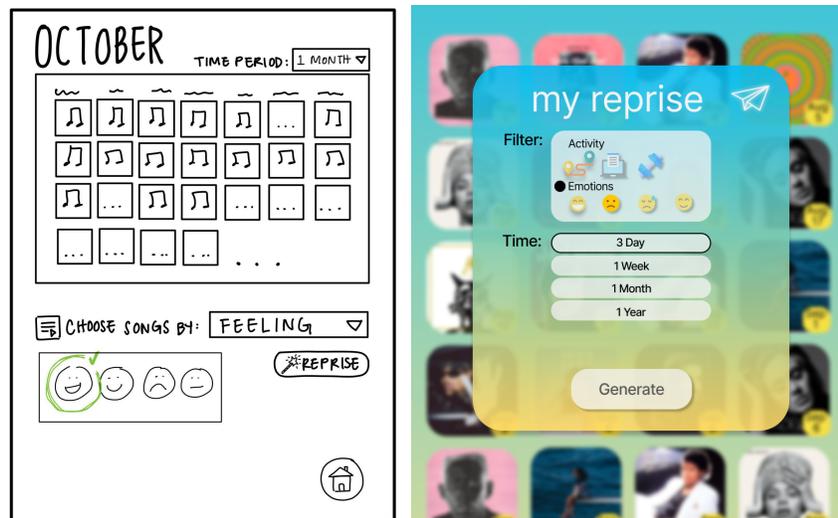

Fig. 18: Reprise filters are now in their own pop-up with a specific "generate" button.

Summary of Learnings and Decisions:

Our team took the feedback from our prototype testers to heart and applied it to our changes. As a team, we created a script as well as a notes template for our prototype testing sessions which highlighted our measurables. We measured the following key performance indicators to determine our decisions on changes:

1. <u>App Efficiency:</u> We monitored the time it took to complete each assigned task.
2. <u>Robustness:</u> We tracked error rates with points of failure or confusion.
3. <u>User Satisfaction:</u> We collected user satisfaction ratings and verbal feedback.

Here is a summary of changes our team reasoned through:

1. <u>Post Drafting:</u> Our critical incidents surrounding the post draft were consistently negative throughout the majority of our testers, so we decided to split up the functionality into communicating the app incentives, searching for the song, and personalizing the post.
2. <u>Music Discovery and Exploration:</u> Discovery and exploration of new music generally were positive critical incidents, so we kept similar flows. We cleaned up the design of the feature to make it more intuitive but kept the same functionality.
3. <u>'Reprise' Feature:</u> There was conflicting feedback, but we had extensive confusion surrounding "reprise". We decided to redesign the feature's placement completely.

Additionally, in our transition from medium-fidelity to high-fidelity prototyping, we carefully analyzed feedback from both prototype testers and heuristic evaluations. This included a detailed analysis of the heuristic evaluations, prioritizing issues based on their severity and impact on user experience, and led to significant improvements in the user interface and app functionalities. Through these iterative processes, we continuously refined our prototype to better meet user experience needs and expectations.

Med–Fi → Hi–Fi:

Once our medium–fi prototype was constructed, it was given to another team in our section for heuristic evaluation. Overall, the other team reported thirty–seven heuristic evaluations, eleven of which were severity 3. We did not have any severity 4 violations.

Each of the severity 3 violations are discussed below, grouped according to task.

Simple Task: Share a song on MemReprise

H1: Visibility of System Status (Severity 3)
- Description: There's no indication of privacy level and audience when posting.
- Fix: Add visibility setting selection menu in the "post summary" screen, where users finalize their post. Users can select between making their posts visibly to the public, only their friends, or only themselves.

Figure 19: (right) The original "post summary" screen.
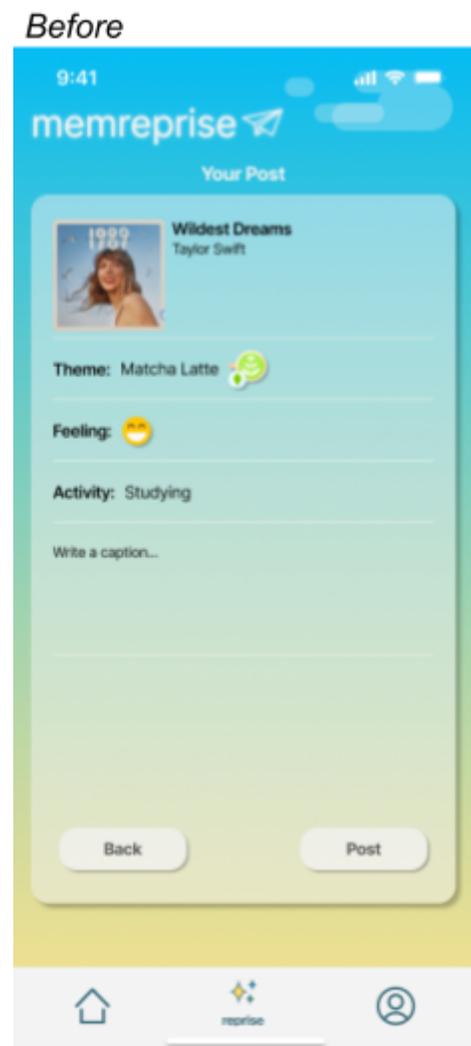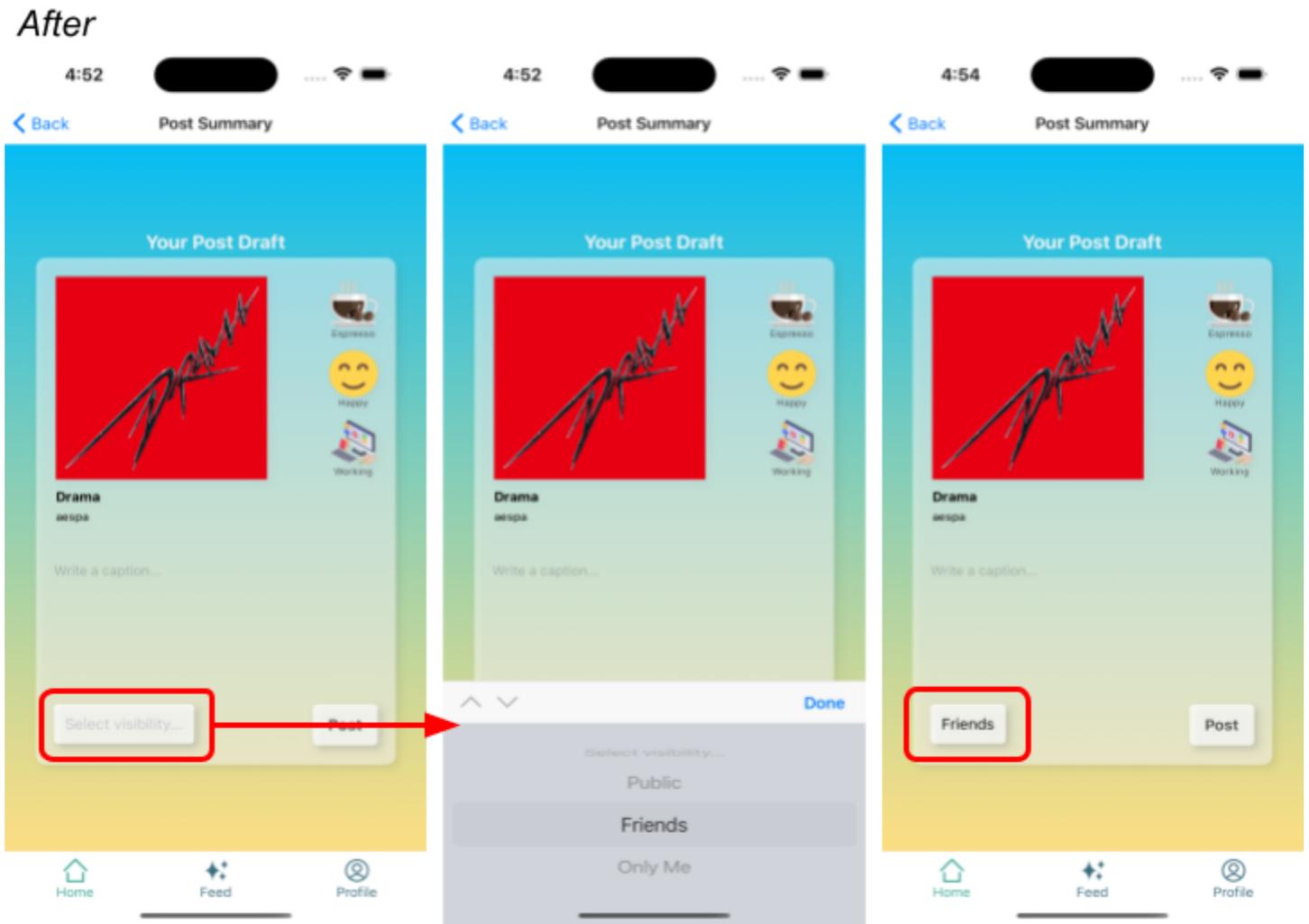
Figure 20: *Users can now select the visibility of their posts, which will be shown on the post summary.*

H3: User Control & Freedom (Severity 3)
- Description: Users don't have the freedom to view any content in the app without posting.
- Fix: Allow users to view old posts without posting for greater user freedom. This was not fully implemented in the final hi-fi prototype due to feasibility, but the UI change this entails is depicted as follows.
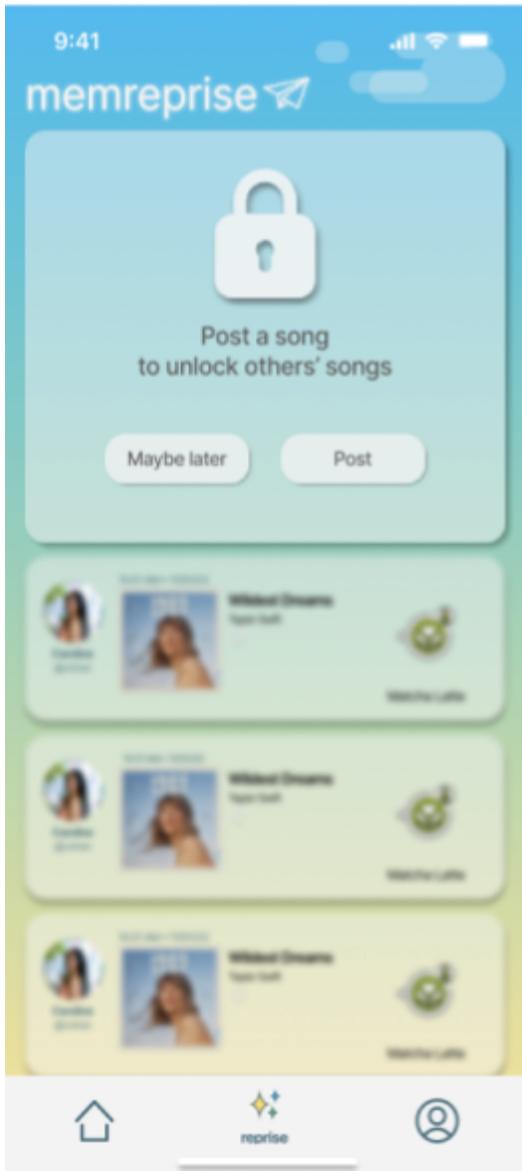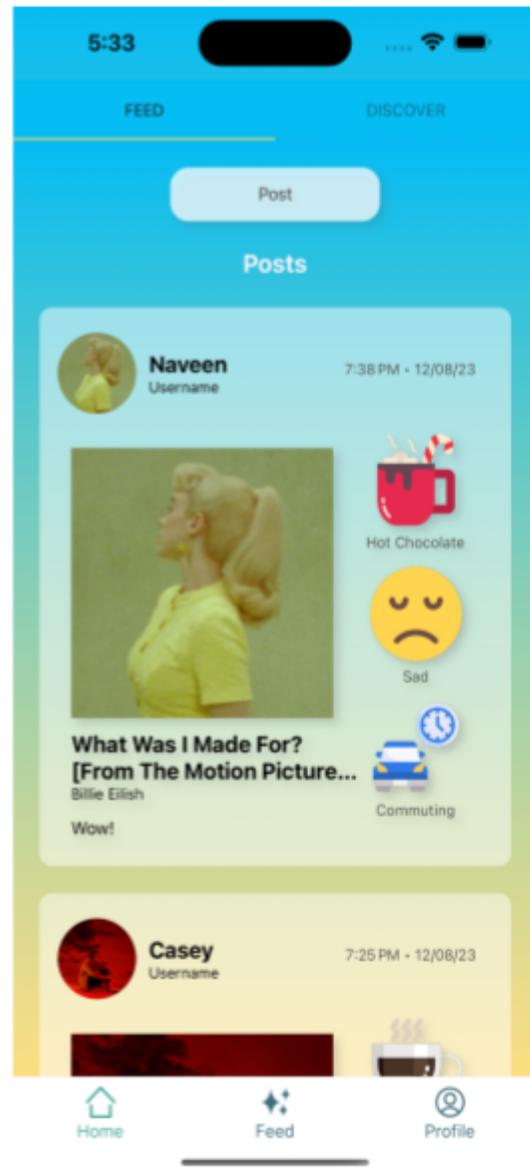
Figure 21: *Users can now access their feed without posting to see old posts.*

H6: Recognition Rather Than Recall (Severity 3)
- Description: Requiring the user to search for the song they last listened to requires recall rather than recognition.
- Fix: Connect to a user's Spotify account using the Spotify API to automatically load in a user's currently playing and recently listened songs for users to select from.
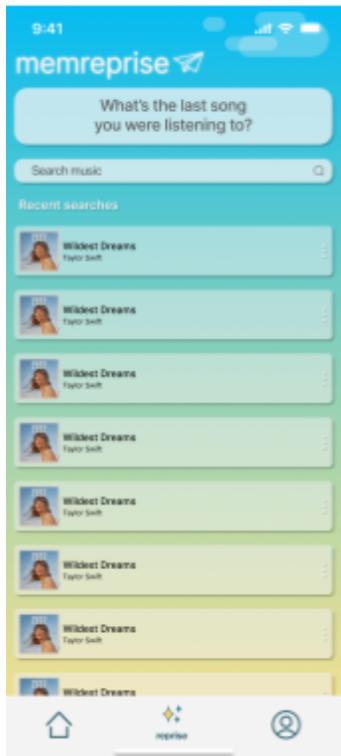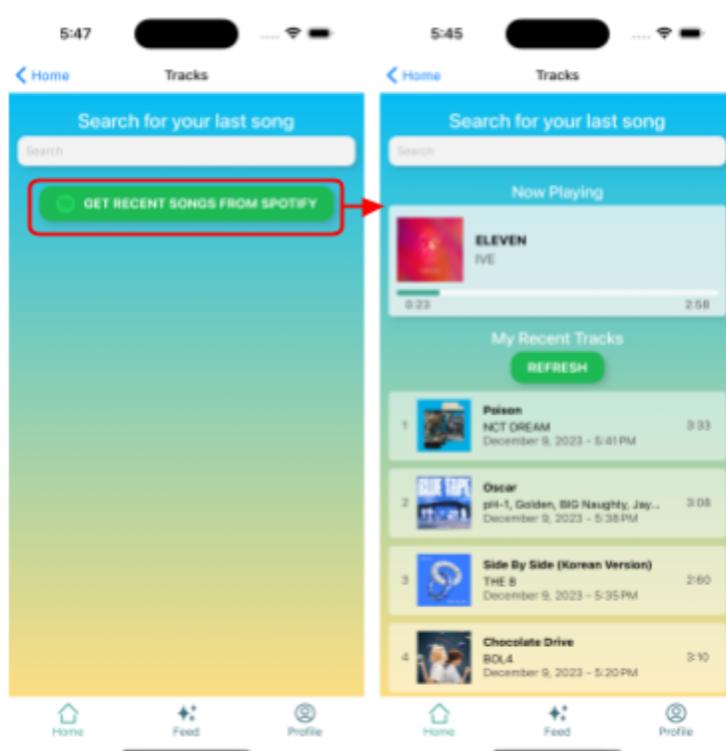
Figure 22: *Users now have an option to fetch their recent songs from their Spotify listening history.*

H10: Help & Documentation (Severity 3)
- Description: The first screen on the prototype prompts the user to post a song but doesn't explain to the user how to post.
- Fix: Provide a set of onboarding screens to new users that explains the posting process and various features of the app.
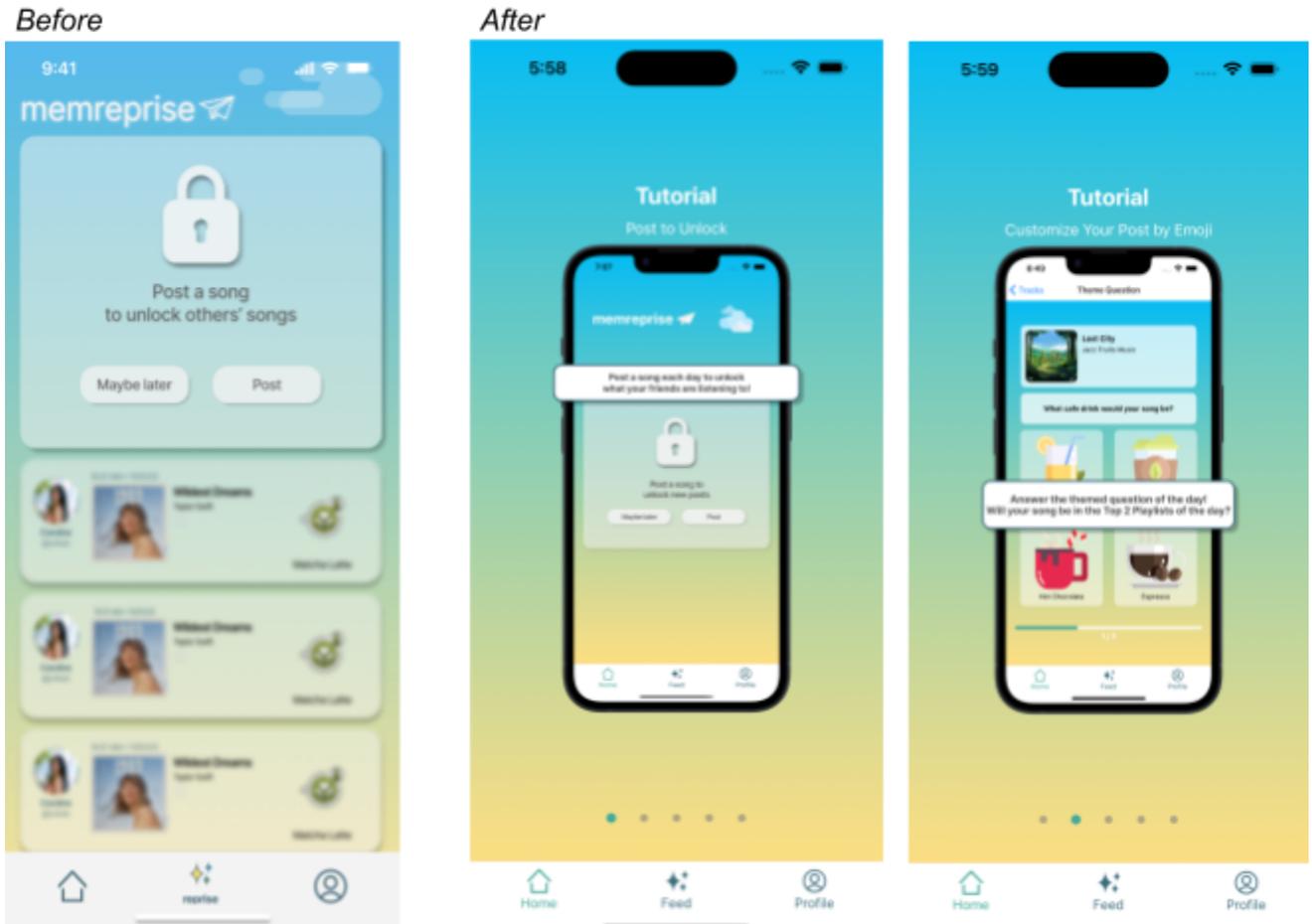
Figure 23: *(Left) The original landing page for all users in the med-fi prototype. (Right) The tutorial that is shown to new users in the hi-fi prototype.*

Moderate Task: Discover music from other users who have similar music associations.

H3: Match Between System & Real World (Severity 3)
- Description: Unclear that the tab labeled "Charts" was the place to go to discover music.
- Fix: Rename the "Charts" tab to "Discover" and label the curated, user-aggregated playlists under this tab as "Top Responses".
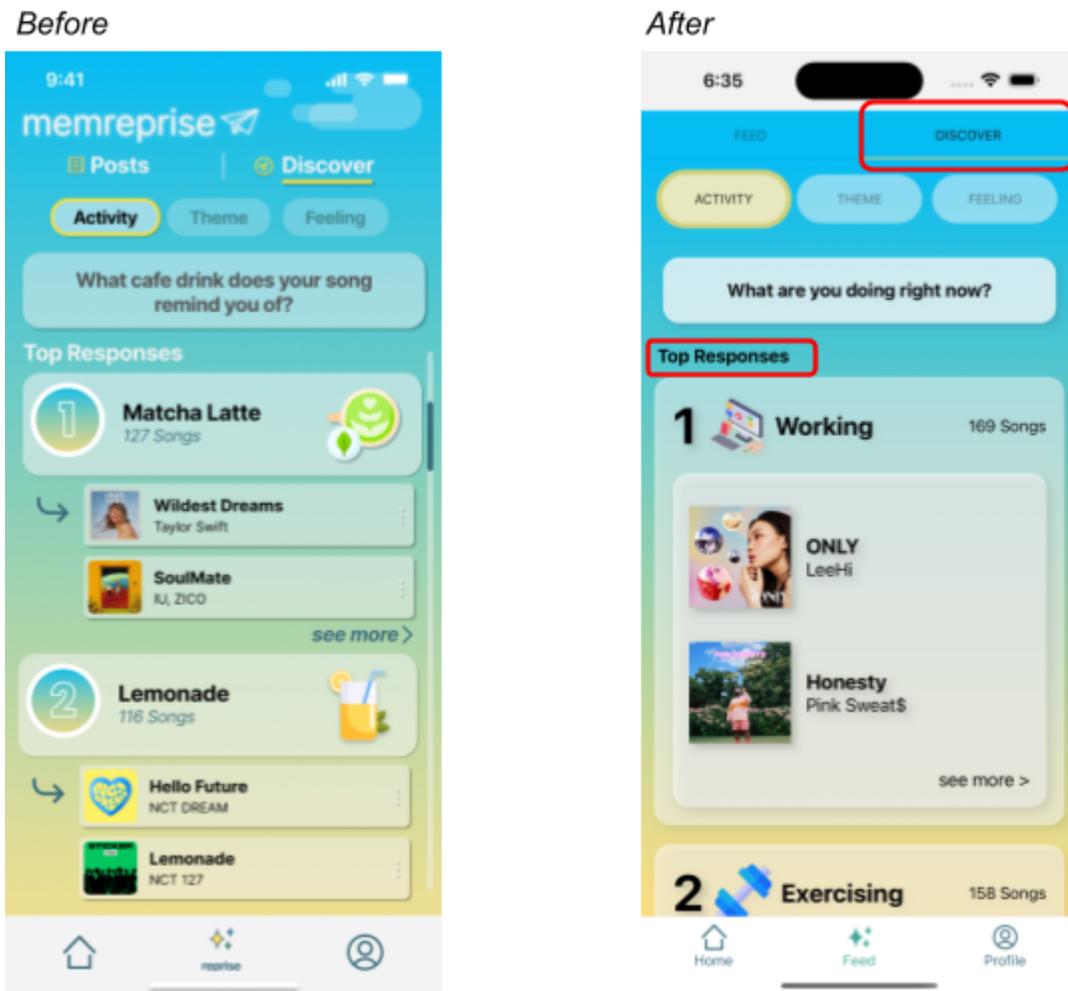
Figure 24: *The red boxes highlight the terminology and labeling changes.*

H11: Accessible Design (Severity 3)

- Description: The text size for artist names, user names, post dates, and captions on posts throughout this task flow are very small. Controls and interactive elements are also hard to hit.
- Fix: Increase and standardize the sizes of text and interactive elements across the app to make it easier to read and use.
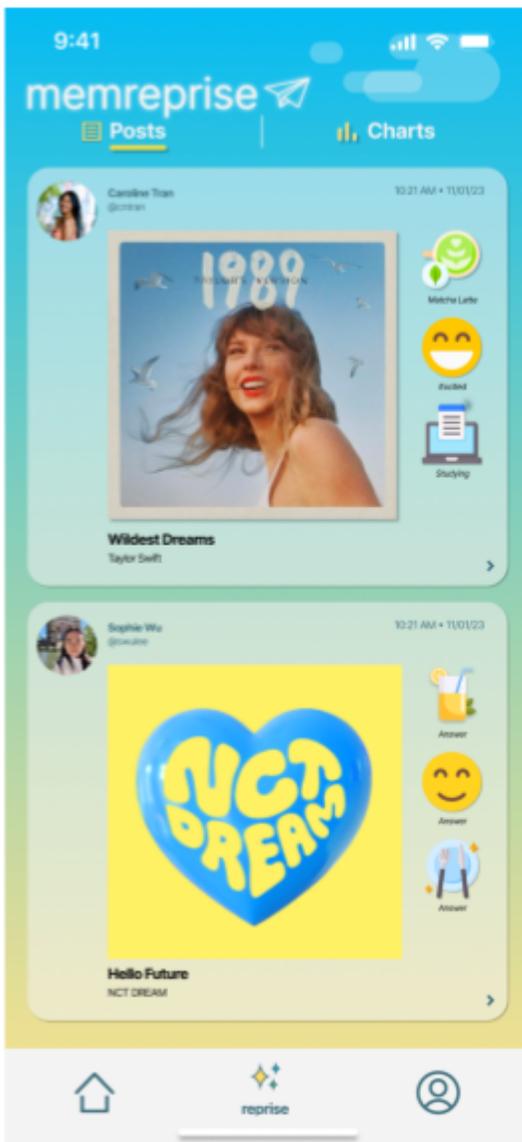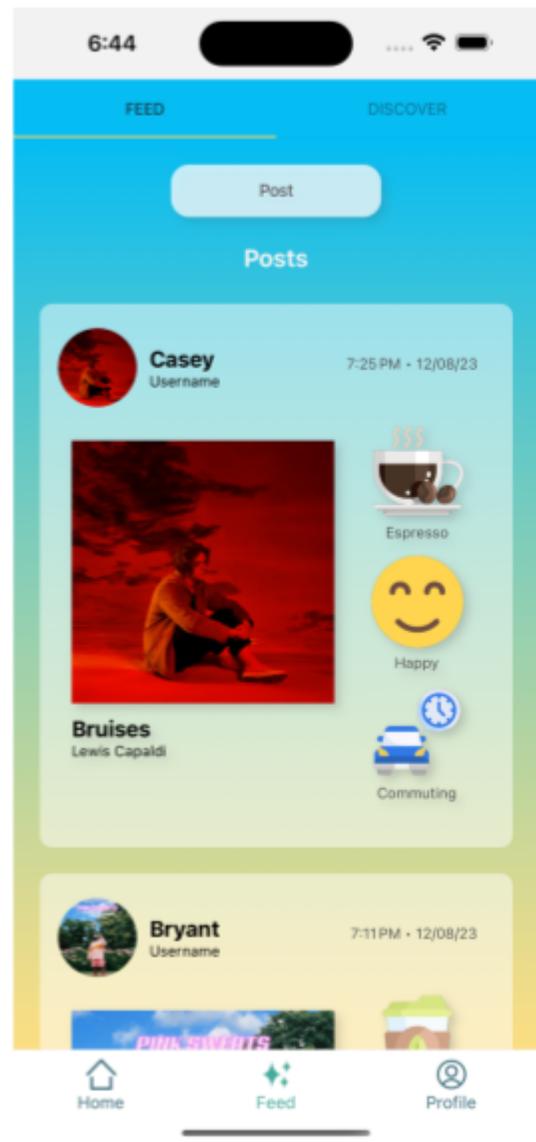
Figure 25: *Text sizes, icons, and images are made larger across the posts. Additionally, the user can now press anywhere on the post to view post details, instead of on a specific button.*

Complex Task: Create a personalized playlist from songs you recently shared.

H3: Match Between System & Real World (Severity 3)
- Description: The word "Reprise" in "My Reprise" may not be well known to users.
- Fix: Explicitly define what the "Reprise" feature does in the onboarding screens shown to new users. This was done to keep the word "Reprise" as a part of our branding.

Figure 26 (Right): The tutorial screen shown to new users explains what the "Reprise" button does.

H8: Aesthetic & Minimalist Design (Severity 3)
- Description: The calendar view of post history doesn't have a clear format or an organization indicative of a time sorted view.
- Fix: Remove the separate tabs for "Activity" and "Calendar" views; re-structure and add month and date labels to the calendar view.
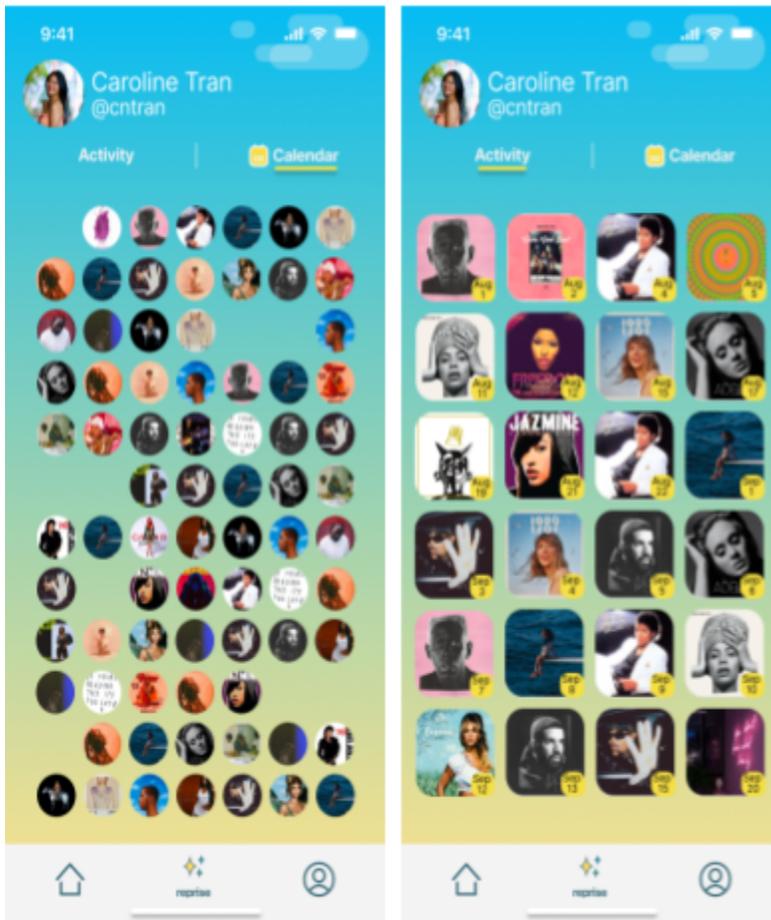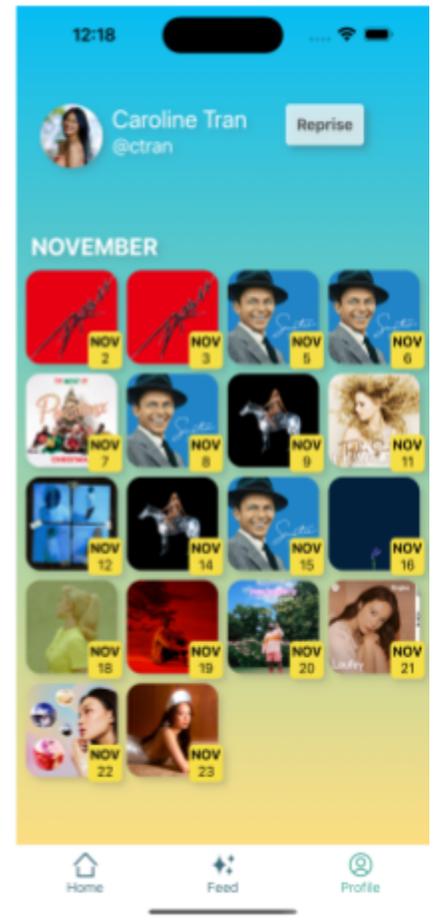
Figure 27: *(Left) The original "Calendar" and "Activity" screen respectively. (Right) The revised "Activity" screen that makes the chronological organization more apparent.*

Extra

H3: User Control & Freedom (Severity: 3)
- Description: Users cannot delete posts.
- Fix: This would be something we would implement if given the time and a fully fleshed out back-end. For our hi-fi prototype, because most testers are not using the app long term or going back to change their existing posts, we chose to focus on other features.

H7: Flexibility and Efficiency of Use (Severity 3)
- Description: The user is only able to access "Reprise" on certain pages.
- Fix: We ended up removing the 'Reprise" on the navigation bar entirely and localizing it to the "Activity" screen on the user's profile. The "Reprise" button now specifically works to filter and visually update the user's past activity, and so should not be accessible from other areas of the app.

Values in Design

There were overall four main values that we wanted to embody in MemReprise.

Authenticity
In serving the intersection of music and memories, we wanted first and foremost to ensure that users' music and memory logs are genuine reflections of their experiences. There were several key elements of the design that represented this, such as the inclusion of a visibility setting on posts. We saw in our needfinding process that often the most authentic reflections arose when users had a sense of control over the privacy of their thoughts. Having this feature allows users to document anything they'd like, and decide for themselves which ones are meant to be shared, and which ones are not.

We also wanted to have a space for users to express themselves in a long-form way, so we incorporated the ability to caption their posts however they wanted in addition to selecting given options for theme, activity, and mood. Our goal is that, when users feel that they have a few extra seconds to spare, or feel a particular memory deserves more elaboration, they have a convenient place to journal their true thoughts on their lived experience.

Inclusivity
MemReprise aims to create an environment all users feel welcome to share and explore. This is shown once again in the visibility settings—so users have confidence and control over how they are sharing their experiences—as well as both the theme question and user-contributed playlists. For the theme question in particular, we

imagined that there would be a large variety of questions that we would ask to users each day, so users would both be encouraged to think outside the box for associations they've never previously considered and to share ones that they connect to immediately. Moreover, because we ask all users the same theme questions each day and encourage users to look at the playlists based around these questions, the hope is that this facilitates sharing and exploration—discussing with friends why they thought a particular song had particular association, exploring playlists of songs centered around an answer—in a fun and easy way.

While we don't currently have any sort of moderation or content filtering in place, this would also be a major consideration moving forward to make MemReprise a safe place for all users.

Intuitiveness

Ensuring that the interface we were designing was easy-to-navigate and user-friendly was an important goal throughout our entire design process. Throughout the course of prototyping, we repeatedly changed our visual design, the layout of components, and the way certain features worked in order to make MemReprise as intuitive to use as possible. Functionality like pulling a user's song directly from their listening history on Spotify, having the curated playlists open up directly on Spotify, and redesigning the way a user's "Reprise" visually changes their post history was done to align better with user expectations. We also added a tutorial for new users to make sure all features are clear from the very start.

Playfulness

In addition to everything else, we designed MemReprise to be enjoyable and engaging. The act of documenting music and memories so users can both look back on their history and look forward to finding new things to listen to should be fun. Once again, this can be seen especially in the theme questions that ask users to associate their music in fun and novel ways (such as asking what cafe drink their song reminds them of) and the playlists that are organized based around the responses to this question. Memreprise poses the act of thinking about music and discovering new songs in this way as a unique, engaging experience in itself.

Given all of this, there did exist some tensions in values, notably between authenticity and playfulness. While we want users to be able to reflect deeply and

genuinely on their thoughts, there were times where this felt in conflict with keeping things light-hearted and playful. There was also the question of whether or not users would even want to use an app that required them write out their authentic experiences for whatever song they were listening to each day, or if that would be prohibitively time-consuming. In the end, we aimed to balance both values. Posting would both be fun with easy and quick-to-select choices to each of the three questions (theme, activity, and mood), but provide an option for users to expand more on whatever memory they were currently making in the caption. This way, we ensure that users would have a log of at least their emotions, activities, and songs over time, but wouldn't be blocked by the activation energy needed to write more about their experiences. At the same time, for experiences or songs that users want to elaborate on, it's simple to do so in the same place as everything else.

Final Prototype Implementation

Tools Used

- React Native
  - Description: A popular framework for building native apps using React, a JavaScript library.
  - Pros:
    - Cross-platform: Write code once, run on both iOS and Android.
    - Strong community and support.
    - Seamless integration with third-party plugins.
  - Cons:
    - Performance can be slightly lower than native apps (such as Swift for IOS)
    - Debugging can sometimes be challenging and reliant on console logs.
- Expo Go
  - Description: An open-source platform for making universal native apps for Android, iOS, and the web with JavaScript and React.
  - Pros:
    - Simplifies the development process.
    - No need for native development environment setup.
    - Instant updates and easy sharing of prototypes.
  - Cons:

- Limited to Expo's ecosystem; some native modules are not supported.
- Larger app size (e.g. node modules folder for dependencies).
- Figma
  - Description: A web-based UI/UX design application, known for its collaborative interface.
  - Pros:
    - Real-time collaboration features.
    - Intuitive interface with a low learning curve.
    - Extensive plugin ecosystem (e.g. for icons).
  - Cons:
    - Primarily focuses on front-end design, lacking integrated tools for backend development or full-stack prototyping.
    - Limited offline capabilities
- XCode
  - Description: Apple's integrated development environment (IDE) for macOS, used to develop software for iOS.
  - Pros:
    - Comprehensive toolset for developing Apple applications.
    - Integrated with Apple's ecosystem, ensuring smooth deployment.
    - Advanced debugging and simulation tools.
  - Cons:
    - Only available on macOS.
    - Can be resource-intensive.
- Android Studio
  - Description: The official IDE for Android development, offering tools for building apps on every type of Android device.
  - Pros:
    - Tailored for Android development with robust tools.
    - Emulator for testing apps on various Android versions and screen sizes.
    - Integrated with Google services.
  - Cons:
    - Resource-intensive and can be slow on less powerful machines.
    - Steeper learning curve for beginners.

- GitHub
  - Description: A web-based version-control and collaboration platform for software developers.
  - Pros:
    - Excellent for team collaboration and version control.
    - Integrates with many development tools and services.
    - Large community and extensive documentation.
  - Cons:
    - Can be complex for beginners.
    - Managing merge conflicts can be challenging and lead to bugs.
- VSCode
  - Description: A lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux.
  - Pros:
    - Highly customizable with extensions.
    - Integrated Git control and debugging.
    - Large extension marketplace.
  - Cons:
    - High memory usage with multiple extensions.
- Prettier Extension
  - Description: A code formatter that enforces a consistent style by parsing code and re-printing it with its own rules.
  - Pros:
    - Ensures consistent code formatting.
    - Integrates well with VSCode and other IDEs.
    - Supports many languages and frameworks.
  - Cons:
    - Opinionated formatting may not suit all developers.
- Spotify Developer API
  - Description: Provides access to Spotify's music catalog and user data, allowing developers to create apps that interact with the Spotify platform.
  - Pros:
    - Access to a vast music library and user data.
    - Well-documented with good support.
    - Enables rich music-related functionalities in apps.

- ○ Cons:
    - ■ Requires adherence to Spotify's terms and usage and rate limits.
    - ■ Changes in API can require updates in the app.
    - ■ Requires setting up client ID, client secret, and redirect URI for expo app.
- ● Supabase
  - ○ Description: An open-source Firebase alternative providing all the backend services you need to build a product.
  - ○ Pros:
    - ■ Easy to use and set up.
    - ■ Provides a suite of tools including database, authentication, and storage.
    - ■ Real-time capabilities.
  - ○ Cons:
    - ■ Being relatively new, it may lack some advanced features.
    - ■ Community and support are growing but not as extensive as more established platforms.

Wizard of Oz & Hard Coded Techniques Used

- ● **Login Credentials:**
  - ○ In the login and sign-up flow, the email and password fields are pre-filled and static, allowing user input but there is no back-end processing or verification. Only the user's name is stored in the Supabase database to display in posts. This streamlines the login for testing, showcasing the intended functionality without the complexities of actual account creation.
- ● **Visibility Setting:**
  - ○ Users can select a visibility setting (Public, Friends, Only Me) for their posts via a dropdown menu, but this choice doesn't impact the actual post visibility in the prototype, as all posts remain uniformly visible regardless of the selected option. This feature is included to demonstrate the interface, not to provide functional privacy controls.
- ● **Static Discover Tab**
  - ○ The content displayed in the discover tab, such as the playlists for each subcategory and the number of songs and top songs for those

categories is hard-coded as the playlists are pre-determined and not generated from the posts.

- **Preset User Profile Screen**
  - The user profile screen details such as the month or dates for post history and profile name and picture are pre-set and do not change or update in response to user actions. This technique helps in demonstrating the profile feature without the need to fetch from the live Supabase database.
- **Pre-Defined Playlist Generation**
  - Playlists are generated from a static set of songs and categories. These playlists do not adapt to user preferences or actions but are instead designed to showcase how playlist generation would work in the final app.
- **Fixed Theme/Mood/Activity Options**
  - The options available for users to tag their music, such as themed questions of the day, moods, or activities, are fixed and do not change over time. This approach simplifies the demonstration of how users can categorize and interact with music based on these tags.
- **Filtering past posts by time, activity, mood**
  - While the posts in the user profile dynamically update, the dropdown menu for filtering is hard-coded to show a fixed number of results and dates.

Reflection & Next Steps

Main Learnings

This course has allowed us to think critically on creating and designing a platform for people to come together with music. Specifically, allow users to connect their memories with music and share it amongst others. Our team learned how to do this throughout this 10 week course. Not only did we learn a lot about the design principles but we learned the design iteration and thinking process which we were able to apply to our project.

Our studio theme, Harmonious Ties allowed us to think critically of the needs of people in connecting with music. We learned in our section how music is portrayed to others and how people tend to share / discover new music. We learned a lot of

these critical findings through our needfinding interviews and our experimental prototypes. We learned as a group how important interviews were from the start which allowed us to ideate and understand how we can make a platform for people to connect deeply with their music. Throughout our needfinding interviews we were able to consolidate our findings onto an empathy map where we saw common themes between our interviewees which allowed us to learn more about our audience. From this we were able to discover that memories and music seemed to be a common theme between different interviewees. This whole process taught us so much about finding one's needs and wants when it came to connecting with music. Which ultimately allowed us to create memreprise. Our studio allowed us to also learn a lot about feedback as well. TuneTribes was the other team in our section and they truly taught us ways we can make memreprise. They provided us with a heuristic evaluation of our medium-fi prototype which helped us consider better design choices. They also provided feedback from our presentations each week that allowed us to also learn more about our project from an outsider perspective from the team.

When it came to the designing thinking process we learned an astronomical amount of information. The first thing was the design thinking process: Empathize, define, ideate, prototype, and test. We learned this process as a team and it allowed us to have a step-by-step process to create memreprise. One of the highlights we learned from the design thinking process was within define where we learned how observations + infer equals insights to our project. This was a game changing learning experience because this process allowed us to learn key insights on how people connected with music. More specifically, learning how to create a point of view with our interviewees definitely was a breakthrough moment for us. For more insights on our point of views see page 7. This was a process that definitely allowed us to learn a lot of game changing ideas we could build for our audience. Diana in particular was an interviewee where we learned that it would be game-changing if "people like Diana to be able to listen and annotate their feelings and memories associated with specific songs or genres." This was pivotal in our learning because Diana provided us with a point of view of creating an application that allows users to be able to post how they feel about a certain song they are currently listening to. The experimental prototypes were also a huge fun learning experience for us. It allowed us to see if people were willing to share their music, listening to a previous song users have shared, as well as see if people were willing to share memories

associated with a song. We never realized how much we could learn from going up to random people in our experimental prototype until doing it. Throughout our three experimental prototypes we discovered that people were willing to listen to other people's music and be prompted randomly to do so. We learned a lot from the experimental prototypes and allowed us to apply our learning to our final product.

The designing thinking process, harmonious ties, studio theme, and memreprise taught us a lot about design, people's needs with connecting with music and memories. Everything we learned in this course allowed us to apply this to our final project, memreprise, allowing people to share music and memories with others.

Next Steps

Further steps memreprise have discussed is first see how we can incorporate artificial intelligence within our app. We could use AI to understand more about our users, as well as understand better music recommendations to our users. AI is a great tool for recommendations and learning about a user so implementing that into our app would be something we would like to consider in the future.

If we had more time we also would like to consider an advisory system to prevent young teens accessing songs that are not appropriate to them. This would allow us to consider ages when people sign up and make sure songs that are being displayed to them are appropriate. This also relates to finding ways to also monitor our app to ensure people are not posting inappropriate or hateful posts. This monitor feature will be responsible for reading words from a post to ensure it doesn't contain any inappropriate language. AI would be useful here as well.

Last implementation we would consider if we had more time is how to make this accessible for people who do not have spotify. For instance, if someone would want to export the spotify playlist to apple music. This would allow us to consider more people who do not have spotify and make it more accessible to everyone!