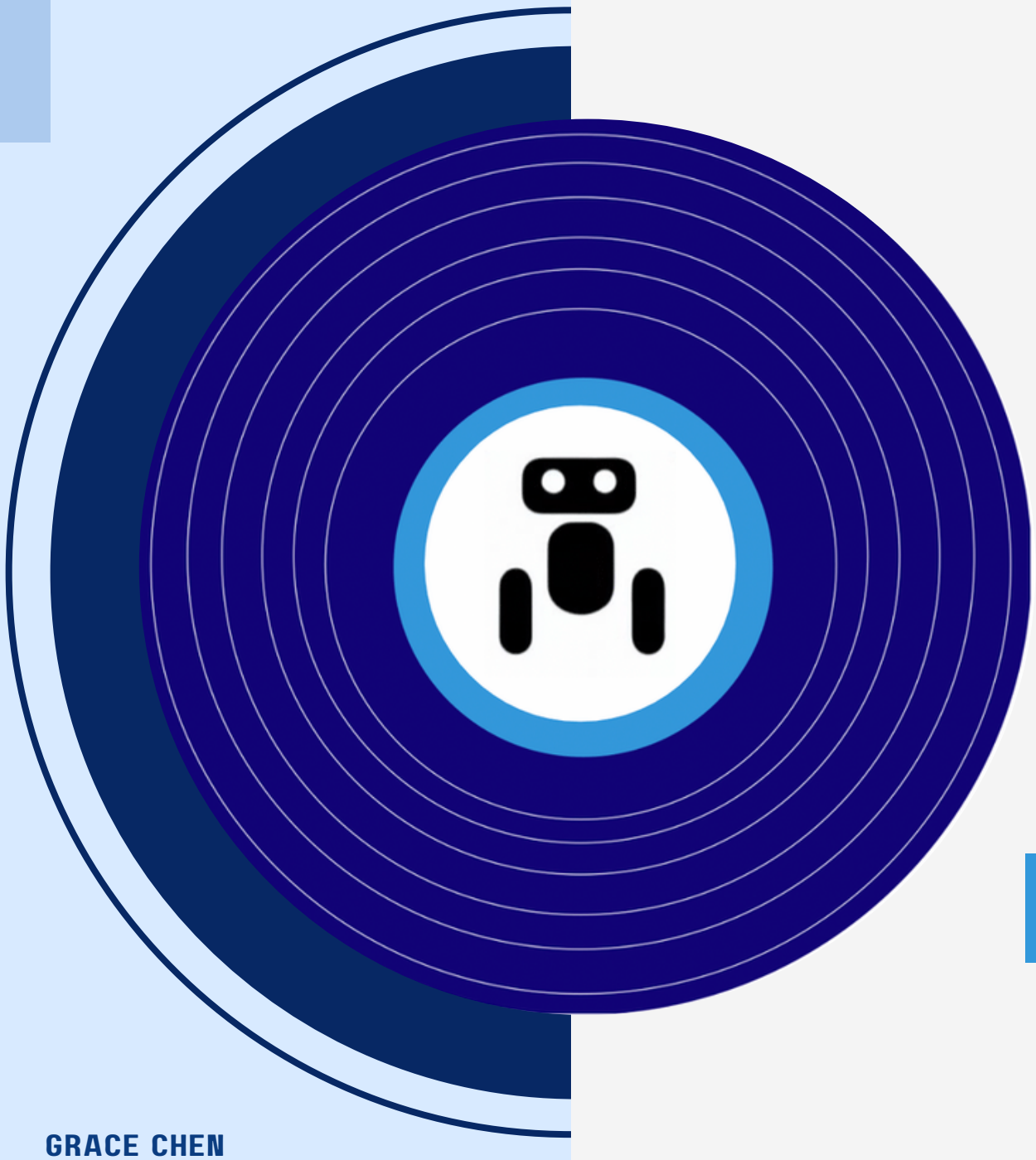
MOOD MUSIC

DELIVERABLE



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EXECUTIVE SUMMARY

We spend so much of our time scrolling, endlessly and mindlessly, searching for the perfect thing. We scroll through Spotify, Apple Music and search and search, never able to find the perfect song. There are so many choices now that even the endless process of finding a song can ruin a person's mood. Imagine skipping over that perpetual motion looking for a song that feels right rather than enjoying listening. Imagine an easier way, a way where you simply ask and the perfect song comes up for you. A system that is fun to use, that provides musical assistance to anyone frustrated with the scavenger hunt for music that fits their vibe.

The voice assistant cares about how you feel so that you can spend less time fighting the search bar and more time enjoying music curated just for your current feelings. Our system helps people save time, enjoy music, and not stress about their music choice. It verbally guides the user and listens to their feelings, which is the perfect way to discover and connect to new songs. Designed for the general public and anyone who enjoys music, Mood Music acts through Amazon Alexa so that you do not have to trudge through any search functions or distractions, and can simply relax and talk about your feelings and have the perfect song play for you.

Users invoke Mood Music by simply asking Amazon Alexa to start the application. When they first open the app, they are greeted with the voice of Alexa, ready to give any necessary guidance on how the function works. When users are ready to start, they begin talking about their day and how their day has made them feel. Mood Music will patiently listen and, using an API for an emotion-detecting NLP tool, detects the user's current mood. Sometimes, if a user is feeling a negative mood Mood Music will respectfully ask if the user wants to listen to a song that matches that negative mood, or if they would like to switch it up instead to an opposite positive emotion song. Mood Music will ask the user for a genre of music that they would enjoy, activating a song-finding API to curate the perfect song for the situation and mood.

Mood Music makes the song-searching method easier, less distracting, more personalized, and more fun! Our team hopes to help users connect more emotionally with their music, fostering better music search and listening experience at the same time! Music is a cathartic experience. Now, so if finding it.

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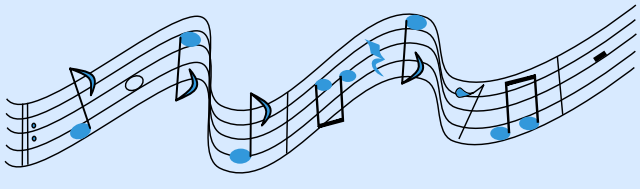


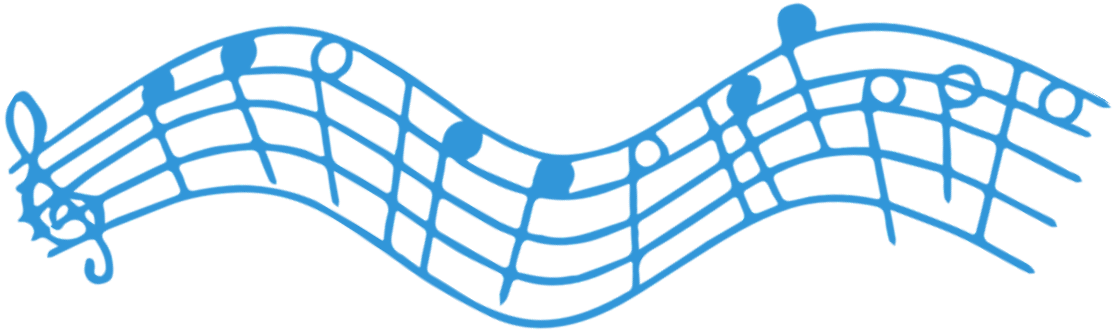
DESIGN CONSIDERATIONS

BRAINSTORMING & DOWNSELECTION

Our initial ideation session produced a copious array of possible Alexa speech recognition apps to develop. Ideas ranged from a schedule optimizer to a family game bot, and everywhere in between; however, concepts generally fit into one of three categories: Generation (e.g. automatic note-taking), Entertainment (e.g. a verbal chess bot), and Productivity (e.g. a kitchen organizing assistant).

After a series of discussions weighing the feasibility and utility of each idea, we ultimately decided to construct a music-centric app—one that would bring enjoyment. set an ambiance, or otherwise improve users' lives through sound. Our initial plan was to generate music by passing audio recorded from the user's surroundings on the Echo Dot through a series of filters and functions; however, early research refuted our initial assumption that we could freely record user audio through the requisite speech recognition interface (Voice Flow) to transform into song.

As a result, we pivoted from this generative music idea to a more entertainment-focused one: **a music app that uses speech-to-text to gather information about a user's feelings and play an appropriate song for the detected mood.**



BOUNDARIES & HAZARDS

We constantly managed many boundaries and limitations throughout the design process. The greatest one was the limitations of the Voiceflow program itself. We had difficulty integrating APIs into its system and getting the program to work as we wanted, and sometimes our program even acted differently between Voice Flow and Alexa. We had to learn the details of the Voice Flow system and how to properly integrate the various APIs and Spotify extremely quickly to understand what was even feasible. We were also hampered by requirements from Spotify's API, which expected us to be a real company with a website and made it impossible to implement certain features. Finally, the short timeline for this project significantly constrained us. Having constant mini-assignment deadlines made it much more difficult to dole out the necessary tasks and have enough time to focus on technical work. Our team worked hard to accomplish tasks in a timely manner while staying on top of everything. We met twice weekly and worked on our own time to make sure that the project came to fruition.

HAZARD MITIGATION

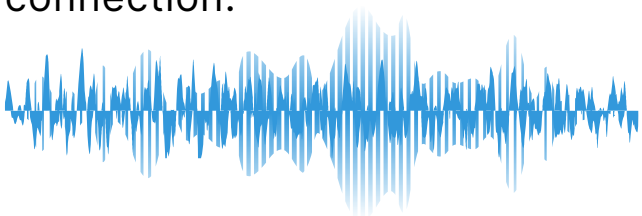
There are significant hazards associated with a product that asks users to talk about how they are feeling, as emotions are complicated and greatly differ from person to person. It is key that Mood Music listens to the user and does not try to force them into an emotion that they are not feeling, analyze why they feel that way, or judge them for their feelings, leaving any reflection on the user and the music. Our team recognizes the relationship between music with mental health and has tried our best to ensure that the user’s experience is open so that the user doesn't feel that their negative emotions are invalid. Our API accesses a large database of available songs so that many more users and feelings can be accommodated. Creating an environment where the user feels comfortable talking about their emotions is key to achieving our goal of helping people and improving their experience with music.

KEY FEATURES

Mood music's core goal is to improve the experience of music by listening to a user's emotions and playing music that suits their mood and their taste.

MUSICAL IMPORTANCE

Music is a pivotal part of our lives and can be an incredibly cathartic experience. Many people have strong emotional connections with music; we want the strengthen that connection.



MOOD IMPROVEMENT

Listening to music improves the mood of individuals. A 2019 study by the Canadian Center of Science and Education found that the effect of depression and anxiety is decreased with college students that listened to music regularly. These health improvements go hand in hand with the emotional experience music can provide.

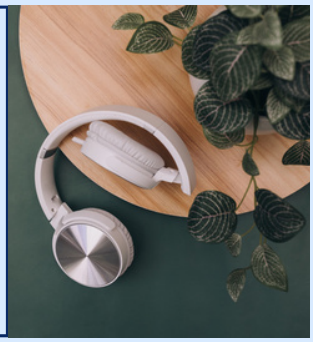
To accomplish these goals, Mood Music was designed to make an easy, comforting music experience that cuts out the stress and confusion involved with identifying the right song. We made the prompts given from our system clear and concise so that they are easy for anyone to understand. After our first user tests, we also changed a lot of the language to emphasize empathy and kindness in the phrases. We also ensured that the emotion detection and processing systems work well and produce music that fits the user's mood and preferences for as many inputs as possible. Some people might not understand their own feelings and would have difficulty choosing a song based on them. To handle this, Mood Music can properly analyze emotion from simple explanations and choose the perfect song after the user's confirmation of their detected mood of the person. Finally, we provided our users with a large range of genres to choose from, since no matter a person's mood, their preference for a song will largely depend on its genre.

OUR

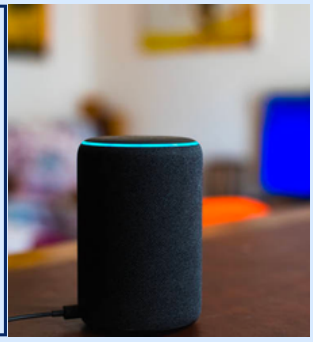
SUCCESS CRITERIA

Create a system that is fun and easy to use, that provides musical assistance to anyone who often finds themselves frustrated or distracted as they search for music that fits their current vibe.

The system plays music that matches the mood of the user. (90% of Tested listeners rate the experience positively, and 70% of users like a song they generate)



Curate a song that Fits the individual and Matches a genre that they prefer to better help improve their mood.



Make the song process significantly more convenient and efficient for users who aren't sure what they want to listen to and want to avoid the notification inundation that comes with opening their devices

STAKEHOLDERS

Individuals and groups who are impacted by Mood Music include:

- Students and other individuals who use the app
- Friends and neighbors within earshot of the Alexa running the app
- Spotify, the company providing access to the songs
- Voiceflow, the developers of the speech recognition system
- Amazon, the developers, and distributors of Echo Dot hardware and software
- As creators of the Mood Music vocal interface

TARGET DEMOGRAPHICS

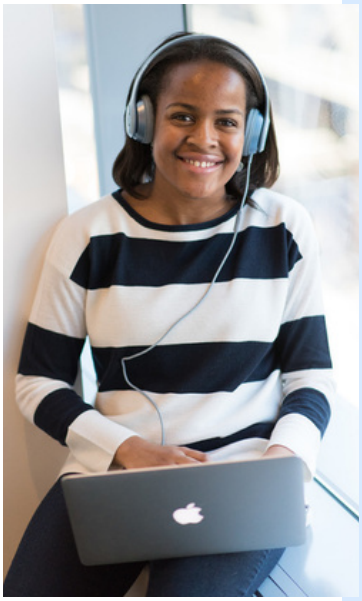
To maximize positive impact, we decided on a target demographic of individuals in their late teens to thirties who listen to music online. This group of individuals would likely be more technologically proficient in comparison to other demographics and would therefore be most open to the addition of a new Alexa app in their everyday lives. It is also likely that members of this group are old enough to have developed a taste in music, but also be open to exploring new songs and genres (specifically via the use of the Mood Music app).

USER PERSONAS

FRANK

Age: 20
Gender: Male
Music Taste: Likes hip-hop

Frank is an avid music listener and listens to music whenever he is studying, feeling down, or bored. However, nothing bores him more than scrolling through Spotify for ages searching for the right vibes.



CHRISTINA

Age: 25
Gender: Female
Music Taste: Likes pop and jazz

Christina loves listening to music while she is working, and it is largely a calming experience for her. However, she often finds herself easily distracted by other things on her phone while finding the right playlist. Occasionally, she also wants to liven things up by dancing to music she has never heard before.

Frank and Christina are part of our target user base. They are both technologically proficient and looking out for new features they can add to their Alexa. They love music for the emotional experience it provides them, but they're drowning in notifications that can take them out of their music experience. They want to find music efficiently and are open to exploring new types of music. All of these problems are solved and needs are filled with the Mood Music app!

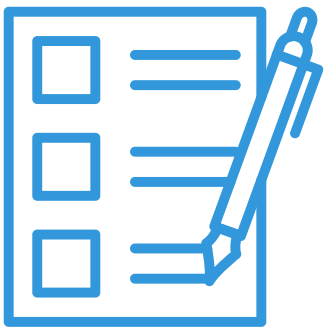
K-SCRIPT

Agent	Observable	Unobservable
Person	Alexa, open mood music!	
Alexa	Welcome to mood music: the easiest way to get music for your mood! Do you already know about what I do?	If the person responds yes, the alexa will move on, if no, the alexa will go over the instructions
Person	No	
Alexa	It's easy! You'll tell me about your day and favorite music genre and I'll figure out a song that will match your mood and fit your tastes!	
Alexa	Let’s get started.	Skips to here if the person already has experience
Alexa	How has your day made you feel?	The person can just talk about their day and an API will analyze emotion off their speech
Person	My day was awful and frustrating! I got cut off driving home and I forgot my USB drive back at the office.	API will recognize this as anger. If it doesn’t recognize a response, it will ask for more data.
Alexa	It sounds like you're having an angry day. Is that right?	*Sets {mood} to angry and {antimood} to happy*
Person	Yes, that’s right, I’ve been having an awful day!	If they answer no, it will ask for data on their day again.
Alexa	I'm sorry that your day is angry. Do you want me to play relatable angry music, or change things up with happy music?	
Person	I'd like some angry music.	No change to variables
Alexa	I understand, let's play some angry music! What genre do you think would make you feel best right now?	
Person	Pop would be perfect.	
Alexa	I'll play you a pop song to match your angry day now! If you don't like it, you can tell me to try again or start over.	Alexa will connect to a spotify playlist by searching {mood} + {genre} and randomizing a song in that playlist
Alexa	*Plays song*	

TESTING

PROCESS

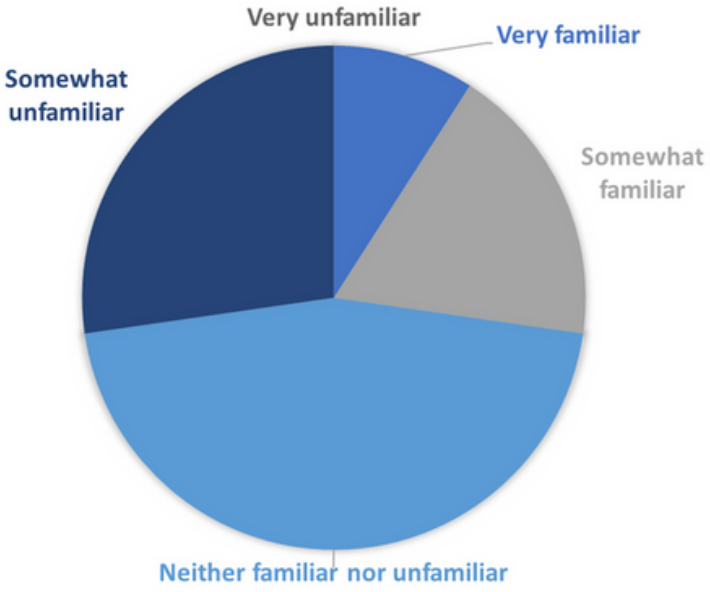
While developing our product, we completed two rounds of testing to gain insight into the user's experience with our app. For testers, we found a total of eleven college-aged students who often listen to music online through a variety of platforms and who have different levels of experience with using Alexa or other voice assistants, which allows us to see how easy our product is for users who are more and less familiar with Alexa. This included a range of 18 to 28-year-old male and female students. Through observing how each tester used and responded to our product, we got valuable feedback for adding features and fixing issues, gaining a better understanding of what we wanted our user experience to be. The details of this feedback can be found in the following sections.



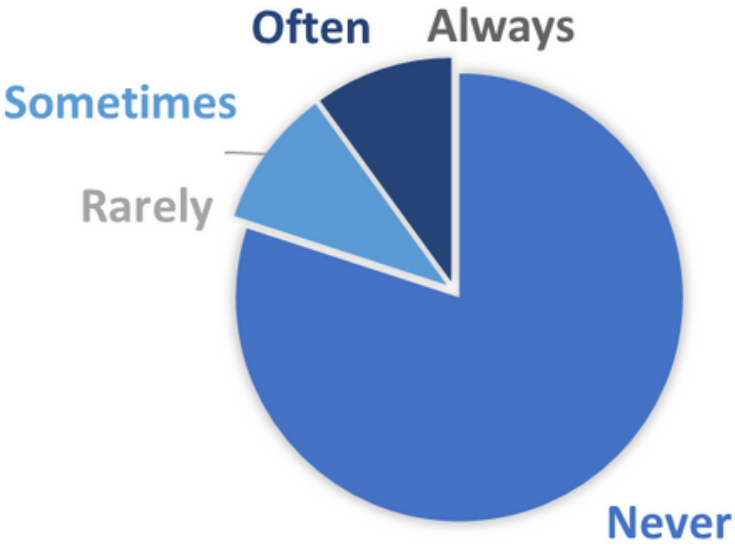
For the testing itself, we first gave the tester a pre-questionnaire for demographic, experience, and habit data. We then allowed them to use our Alexa function with little to no outside interference or distraction, rarely interfering and administering the test in a quiet and focused environment. After the user successfully completed the task of playing a song using Mood Music, we had them fill out a post questionnaire for them to share their feedback, thoughts, and suggestions. We also filmed their test, ending up with a lot of helpful information from each subject.

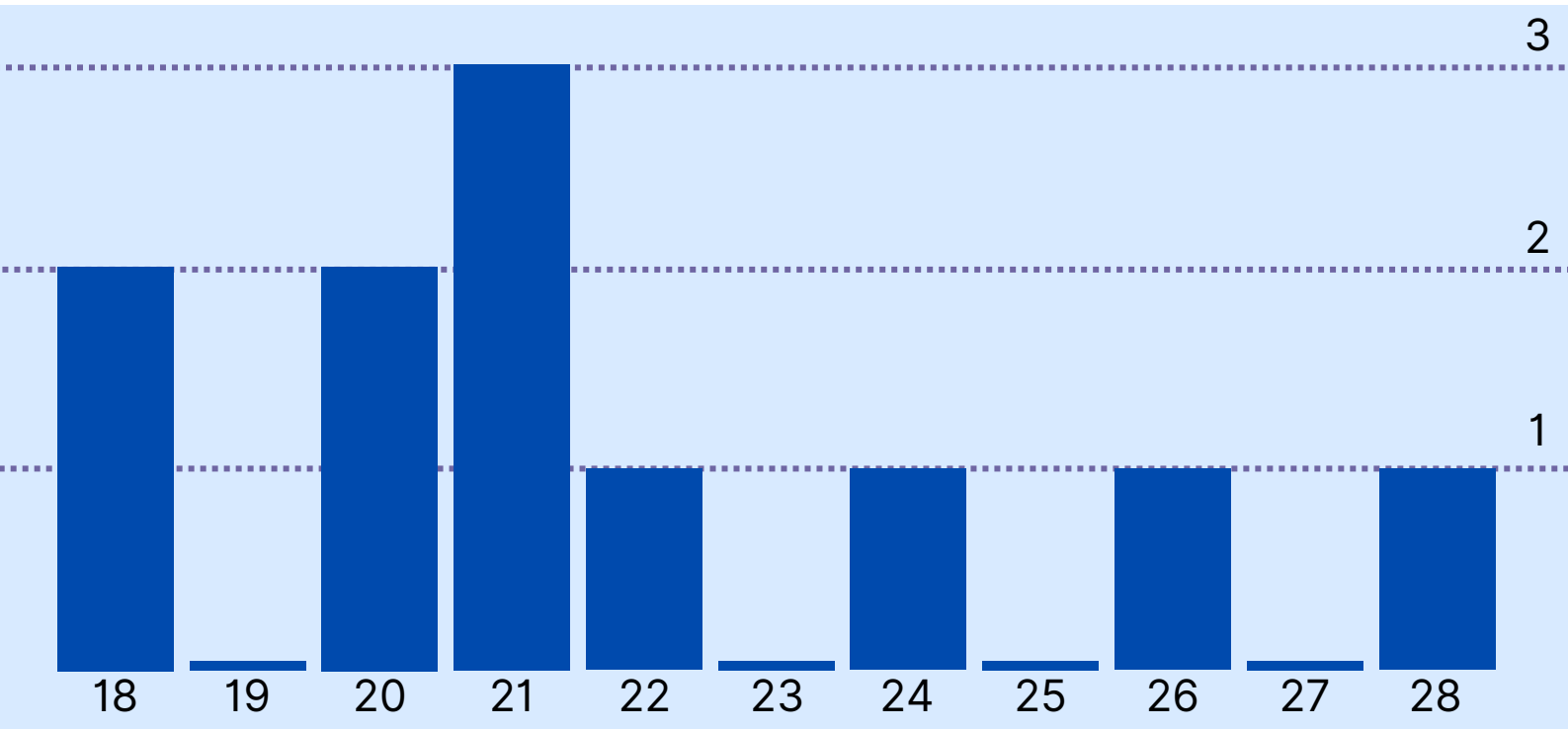
ABOUT OUR TESTERS

How familiar are they with voice assistants?



How often do they listen to music with an Alexa?

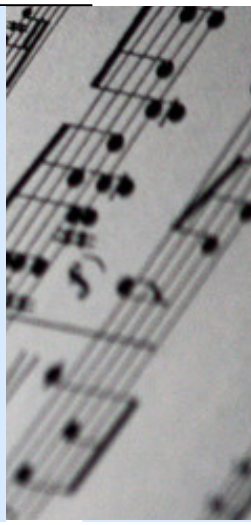




Testers By Age

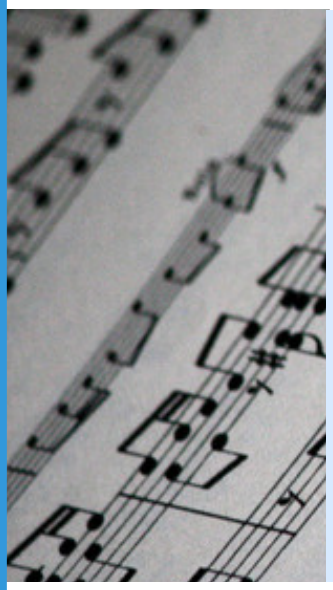
USABILITY TESTING 1

The first round of user testing revealed numerous critical problems in the user experience of our product. For instance, the interaction between the user and the app was slow, with the users reporting that it felt like a drawn-out interrogation instead of a quick conversation.



What was your least favorite part of the process?
"The speed at which the process went. It would be nice if it was a little quicker. "

Furthermore, during testing, we noticed multiple instances when the user began a response in the middle of a prompt due to a confusing pause or an unnecessarily long prompt sentence. We also noticed a variety of responses to our initial how are you feeling prompt, ranging from single words stating a specific emotion to a longer sentence about the user's day as a whole. This along with observed hesitation means that this prompt especially must be rewritten to be more clear. These are significant issues as they do not reflect our goal to create a simple and frustration-free experience, and highlight the need to be precise and intentional in every word our product uses.



Also, we did the first round of testing before uploading the program to Alexa, which added user hindrances like needing to press the spacebar to talk and being able to see our Voiceflow code, though after realizing this issue we dimmed the screen for the remaining testers.

If you could change one technical feature of this app what would it be?
"Getting to the music faster"

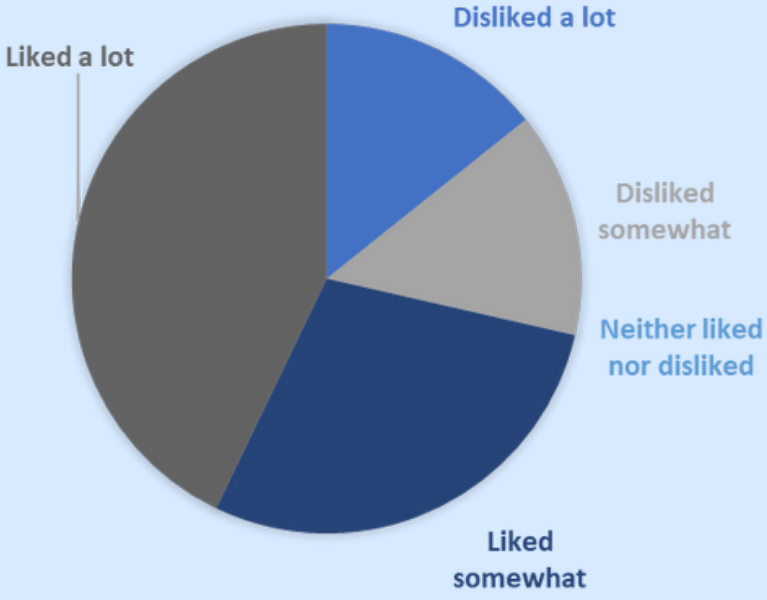
USABILITY TESTING 1

FUTURE IMPROVEMENTS & STRENGTHS

User feedback showed us exactly where to reword problematic prompts and improve question timing. Our users strongly felt that the process was a bit too long and complicated. It also showed the limitations of our product's breadth, demonstrating the need to add more emotions and genres, which three out of seven testers specifically mentioned as the first thing they would change about our product. We also realized some other functions to add, like the ability to skip songs and play a song based on the opposite positive mood when the user is feeling down.

Despite these flaws, the test was also encouraging. Six out of seven testers reported that the app successfully played a song that matched their mood, and five reported that the experience was entertaining, demonstrating that a polished version of our product would be enjoyable and useful. We also received positive feedback, with one user saying that they would use it to play music when they are feeling a certain way and can't think of any specific song, while another liked that they enjoyed the song and it fits their mood, but it was also something new. Furthermore, despite the clear technical issues, including multiple testers needing to restart the function, five out of seven testers described Mood Music as easy or intuitive, which is promising for a refined version of our product.

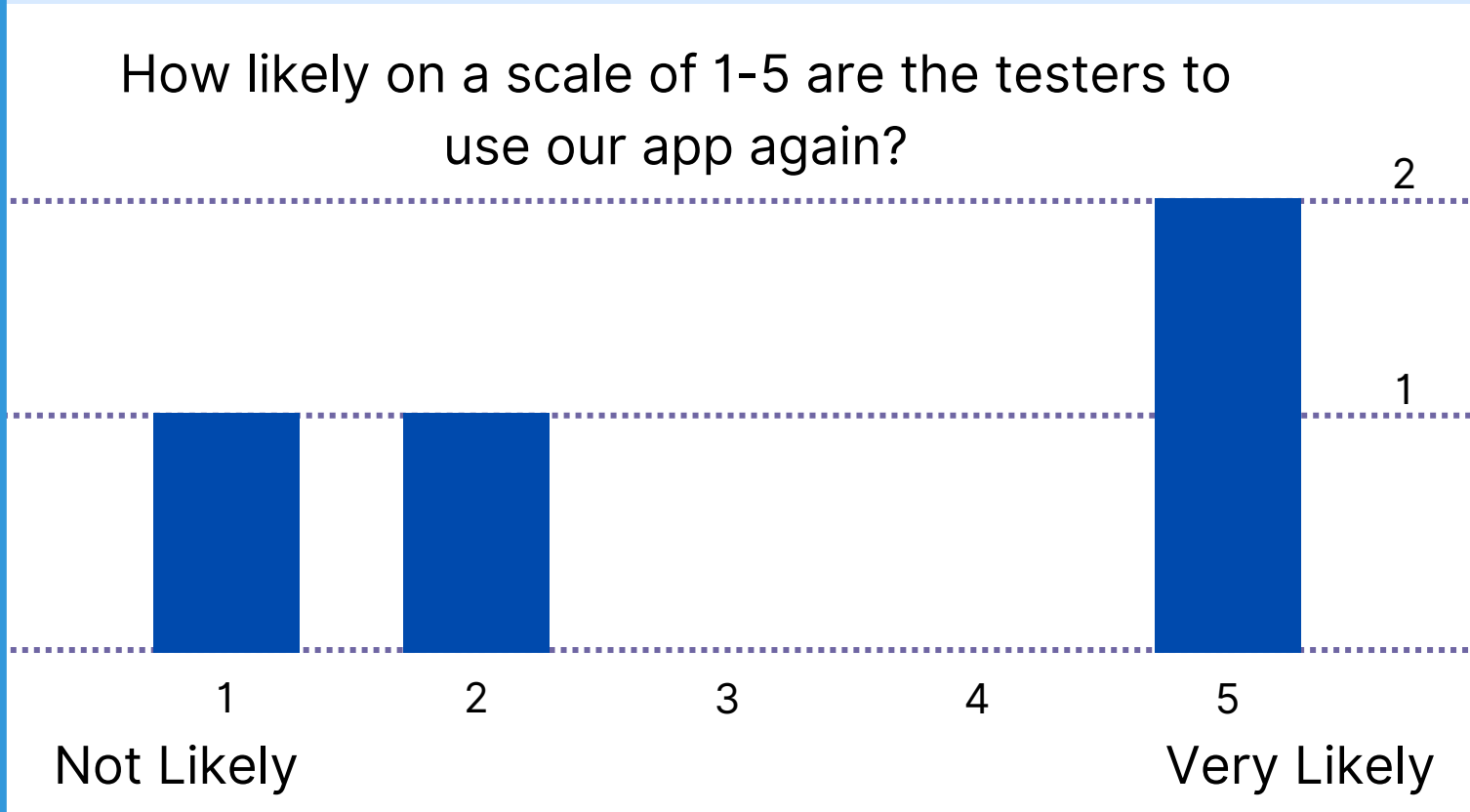
How did first-round users like the song Mood Music played for them?



USABILITY TESTING 2

The second round of testing showed a significant increase in efficiency and a decrease in programming bugs. Half of the tests this round showed an ideal use of our product and took less than one minute for music to play. At the same time, the testing showed steps where the prompts needed more clarity or a word or two that Alexa said didn't come across exactly the way we wanted and resulted in unnecessary and undesired user confusion. Also, for one tester, the Alexa stopped the app after two responses of silence, so we changed things to have the Alexa continue waiting and repeating, allowing more time for the user to think.

The number of detectable emotions also continued to be limited, although we had added more genres. We also saw greater polarization from testers and what they thought of the product. While this seemed to trend some from technological issues, it also revealed information about who is more likely to use our product. However, no users mentioned the length or complexity of the product this round, indicating we successfully streamlined the process to be as efficient as our users need.



USABILITY TESTING 2

One thing we noticed was that the users who reported spending the most time searching for music were more likely to report that they would use our app again. This data is fantastic news, as our product took significantly less time than the five minutes that half of the second round testers reported spending searching for music, showing our apps' usefulness and increasing efficiency. Furthermore, the tester who reported being least likely to use our product again asked during the test if they could just ask Alexa to play a specific song; this demonstrates the type of user whom our product is not really designed for--someone who knows exactly what they want to listen to and isn't interested in branching out.

TIME OUR TESTERS REPORT SPENDING SEARCHING FOR MUSIC

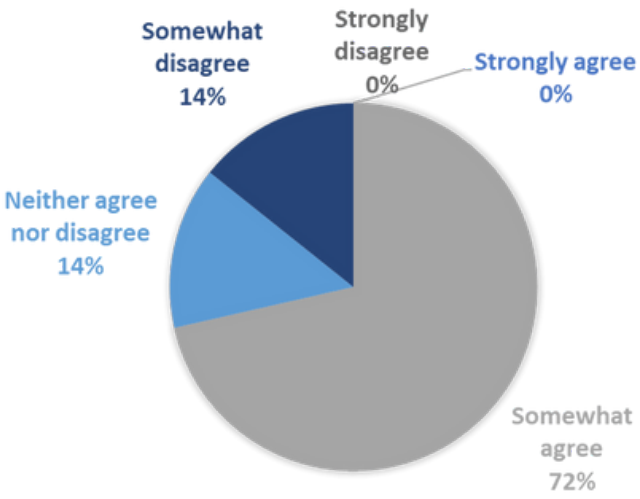
Overall, the second test showed vast improvements across the board, with testers describing our product as **"straightforward"** and **"personal"** with **"good mood matching,"** which is a large step above the first round's reports of Mood Music being drawn out and with few options. Other positive feedback includes that all of the testers reported positively on the song played for them and its mood-matching ability.

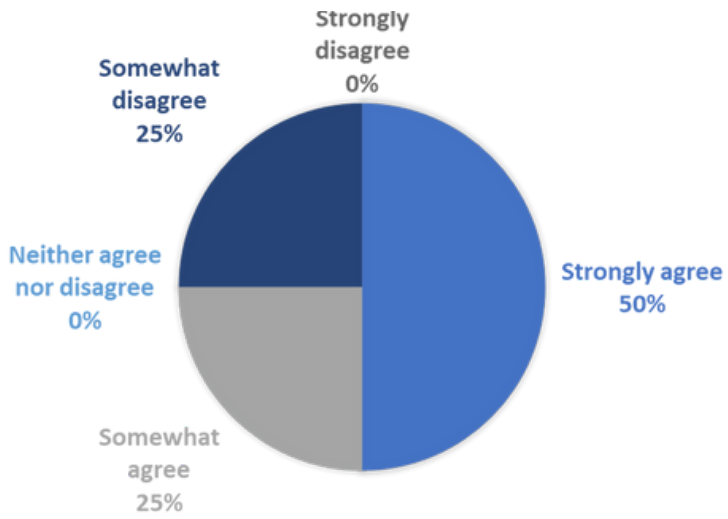
Both rounds of our testing process helped us dramatically develop and refine our product. The most transformational and unexpected insight was: to streamline the process and reduce user listening/speaking requirements. Otherwise, the most helpful insights were: to add skip/new genre features, to add more emotions and genres, and, of course, to fix technical difficulties.

FEEDBACK DATA

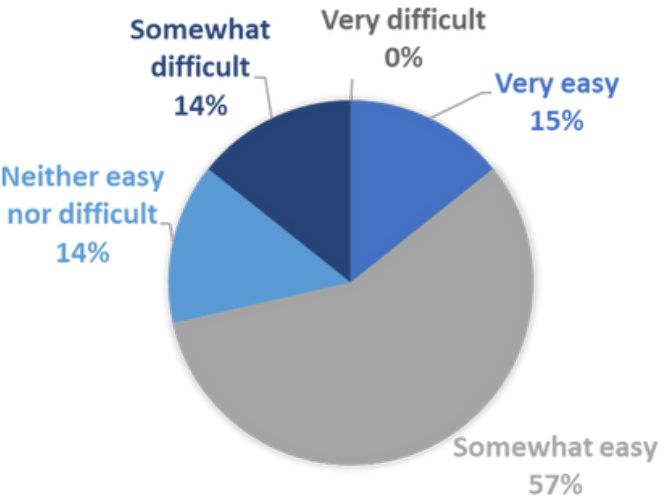
Useability Test 1 | Useability Test 2

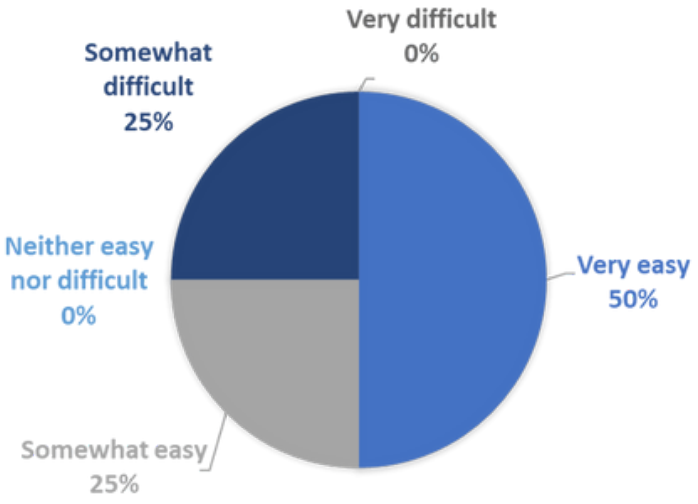
Prompt: Using the app was entertaining.





Prompt: How easy was the app to use?





After fixing technical problems, adding functional expansions, publishing to Alexa, shortening prompts, and improving wording clarity based on the results of test one, we can see improvement in the reported entertainment and ease of use experience of the testers using our app.

GROUP

REFLECTIONS

Our group comprised two juniors, one senior, and two first-year students with diverse backgrounds in education and music. We came together with the common goal to create a product that would allow others around our age to heal and destress after a long day with music. We sought to use technology to help our users deal with their emotions through an empathetic and convenient process.

We were able to create a product that could detect several emotions: happiness, sadness, anger, surprise, and tiredness. From this, we made sure to think about how a person could best benefit from music and we found them a playlist that matches their chosen genre that would bring music to either match or improve their mood.

Working with Voice Flow was a great learning experience for us, and, after getting over the initial barrier of a new technology, it was really fun exploring it and seeing what we could do with the variables and conditionals. Additionally, it was really interesting connecting the voice flow and the backend/API code. It was wonderful to see how we were able to use what other people made to build something better. Working with both Voice Flow and the API allowed us to learn a lot of technical skills that we weren't expecting to from this class.

We also learned a great deal about the practical steps for implementing the design process theory from semester one. We particularly enjoyed learning to design user testing experiences that provide valuable feedback and how to implement those improvements. As a whole, we are very proud of our product and hope that it is able to help others easily find the right music to process their day.

APPENDIX

Our appendix contains all nonessential information on our design process. This includes our team contract, initial brainstorming, documents describing our original product idea and our reason for pivoting, our design specifications, and details of our two user testing processes.

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TEAM CONTRACT

1. What are the goals of each Individual?

Grace: Making a product that I'm proud of and excited to work on while maintaining a calm working environment.
Elizabeth: Complete a project I can be proud of while learning a lot, especially about working well in a group while not adding too much stress.
Tom: Apply the steps of the design process to gain experience so that I can use it for future projects.
Jared: Learn to apply the design process, work well in a team setting, use speech recognition software, further develop my programming and audio processing skills, and complete a project that will be a valuable addition to my portfolio
Isabella: Complete a fun project while learning some new technical skills without overloading my schedule and while pulling my weight on the team.

2. What does the team need to accomplish to be successful?

- Create a complete and viable project that accomplishes the main goal to transform user input into music.
- Execute the design steps thoughtfully and correctly.
- Produce an interesting demonstration of a working product at the end of the class.

3. Then, what are the goals of the team?

- Create a functional product that we all understand, the class enjoys, and that fits the assignment requirements.
- Complete all sub-assignments well.
- Work well together. Maximize communication and honesty.

4. What obstacles might the team encounter in reaching our goals?

- Lack of experience in project medium may cause hiccups in development.
- Technical difficulties might slow both product completion and team understanding.
- People will get overloaded, communication tends to downtrend as time goes on
  - If group identity isn't formed, people might feel uncomfortable admitting they don't have time or weren't able to complete something.
- A relatively short timeline for the project might lead to complications.

5. How are you going to make decisions?

Ideally by a large majority. If the majority is small, continue discussing unless time is unreasonable.

6. What team Culture do we want to establish?

Friendly and supportive! Mentoring to an extent is highly communicative–especially with schedule changes or difficulties.

7. How will we establish Trust?

Honesty, timely communication, common goals, keeping up with work and tasks, and holding one another accountable

8. How often, for how long, and where will we work/meet?

- Weekly in-class/post-class recitation (1-3 hrs)
- Weekly over zoom on Sundays at noon (1 hr)
- As needed otherwise

9. How will we work together? (food/no food, music/no music, etc.)

- Food is okay, no music if distracting
- Music is permitted but not required
- Most of our collaborative work is discussing goals and assigning tasks
  - Try to keep work individual and then combine
-

10. How much total work is anticipated?

- Max 6 hours a week
  - 2 hrs class, 2 hrs meeting, 2 hrs individual work
- Make the Voice Flow and the audio converter

11. What will we do if someone doesn't follow through on a commitment?

- Talk about it at the next meeting, find out why/how we can support them, and pick up slack in whatever way is reasonable depending on the context

12. How will work be reviewed?

- In each meeting discuss what each member has done
- If high importance, dive deeper and make sure everyone has verified their work

13. How will we divide/distribute our work?

- Based on outside class workloads, technical abilities, and previous contributions to the group

14. How we will separate our Personal and Professional Relationships?

- If there's anything personal keep it out of meetings and projects and handle it on your own time
- Exercise **empathy** and **active listening** toward all group members

Common Sense

Let people know what's going on, assume best intentions, sanity checks whenever we decide something, explain the reasoning to everyone

BRAINSTORMING & DOWNSELECTION

DOWNSELECTION FROM GENERATED IDEAS

Meeting summary generator
Choose your own path story
Sentence completion, dictation, summary
Make music from microphone feedback ←
Anti-procrastination; maximize efficiency
Teaching

SYSTEM SHOULD

Have back-and-forth conversations between the user and the system.
Help accomplish a specific task, entertain the user, or give advice.
Have the potential for conditional branches.
Be something that your team is excited about!

The main purpose of our system:

Entertainment feature that records ambient noise in the surrounding environment or any user input and transforms it into music.

The user experience that we hope to create:

A fun novelty experience where users can experiment with different noises to see how the system develops music

1. The user says they want to make x-minutes or seconds of music
2. The device asks them to make some noise for x-minutes or seconds
3. After x-minutes device tells the user: one second... here's your song!
4. Device plays song
5. The device asks users if they like the song
    a. if they do not a new song is generated based on the same audio, return to step 4
    b. if they do, the original song is kept.
6. User is happy

How we intend to grow our system:

- Add the ability to prompt the user, record audio, and then perform convolution/filtering/layering on recorded audio
- Add more functionality, like media playback, MIDI output, or saving generated music to a cloud storage system
- Adding different genres?
- Connection to other apps (Spotify, apple music)?
- Create better songs based on feedback from users and iterate our product to improve

ORIGINAL DESIGN SPECIFICATION

Big Picture Goal:

Make music creation easily available to all individuals who want to create music from any sound or voice recording.

Our Goals:

Create a system that is fun and easy to use, and that provides musical entertainment to anyone.
The system creates music that is pleasant to listen to.
(90% of listeners rate the experience positively, and 70% of users like a song they generate)
Curate a song the individuals will find enjoyable

In order to accomplish these goals, we will need to ensure that the prompts given by our system are clear and concise and that they steer clear of technical jargon. We also need to ensure that the music recording and processing systems work well and produce music that is sonically pleasant (by some standard) for most if not all inputs.

ORIGINAL K-SCRIPT

Object	Observable Actions	Unobservable actions
Person	“Hey Jarvis, I’d like to make some music”	
Jarvis	“Great, do you already know about the song-writing process?”	If ‘yes’: Skip instructionsElse: give instructions
Person	“No”	Keywords: yes/no
Jarvis	‘It is very simple. I’ll ask you some questions about your song, record you making noise, and then turn that into music. Does that make sense; are ready to make some music?	
Person	“No”	
Jarvis	*Repeats previous prompt*	
User	“Yes, I’d like to make some music”	
Jarvis	‘Let's get started. Would you like a short, medium, long, or custom length song?	*Skips to here if use already knew about process**recognizes approval and moves past instructions*
User	‘Short song please’	Short = 30 seconds, Medium = 1.5 minutes Long = 3 minutes.If they did custom it would allow any number between 10 seconds and 5 minutes.
Jarvis	`Great, let's record a Short song. I will record you for 30 seconds when you say,“Jarvis, start recording”.’	*Recognizes <30 second> recording length and stores it*Minimum length is 10 seconds, maximum length is 5 minutes.
User	“Jarvis, Start Recording”	Every 30 seconds that there is no response Jarvis will repeat the previous phrase just in case the user did not hear or forgot the start word.
Jarvis	‘I’ll record you for 30 seconds in 3.. 2.. 1.. go!’	
User	*30 seconds of sound*	Will record the sounds for 30 secondsIf possible the google home/alexa will light up when recording
Jarvis	‘And that’s a wrap! Nice job, you have a great artistic ear. What genre of music would you like your audio to be turned into? You can tune it to pop, country, or rock.’	3 different options that will be coded.
User	‘Pop, please!’	Jarvis begins processing of music
Jarvis	‘Great. Here’s your <30 seconds> of audio turned into a <pop> song. *plays song*	Can make this longer if need more processing time
Jarvis	‘Did you enjoy that?’	
User	‘Yes’	If not they could tune it to another genre.**maybe make this function more clear and available
Jarvis	‘Would you like to name and save it?’	
User	‘Yes’	
Jarvis	‘What would you like to name your song?’	
User	‘Best song ever’	If name is a repeat then Jarvis will notify the user
Jarvis	‘Your song will be named “Best song ever”, if you ever want to play the song again, just ask! I hope to make more music with you soon, goodbye.	

PRODUCT PIVOT ANALYSIS

ISSUES WITH ORIGINAL PRODUCT

Since our original product idea hinged on recording our user's environment and applying audio modulations, it could only be functional if we had access to their audio. After significant research, we were able to determine that while Alexa could technically record audio given the right permissions, this was not technically feasible using the Voice Flow platform. Voice Flow only provides transcriptions of user audio, which would not be helpful given our product needs.

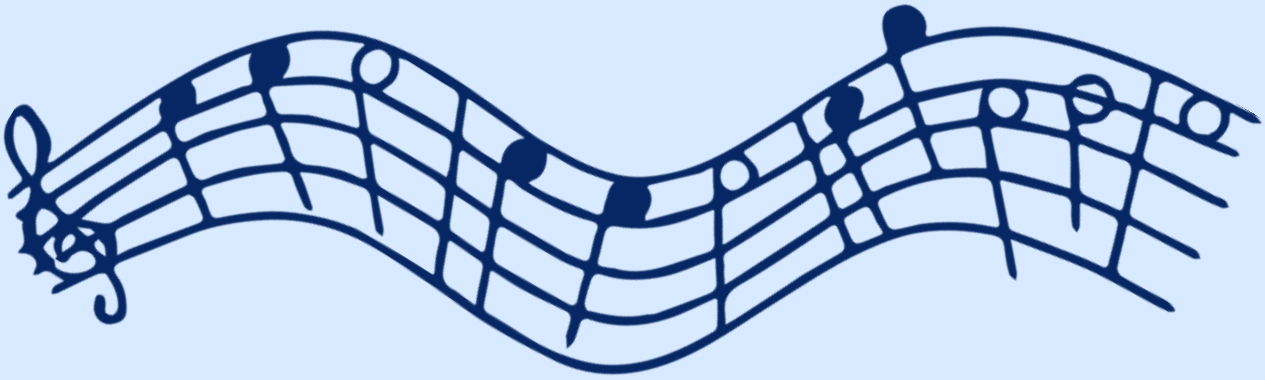
POTENTIAL SOLUTIONS

We spent some time determining how to deal with this issue. We suspected there might be some way to still get the audio we needed, but given the time constraints, we decided this was not an option. We then considered using not user audio to design a song but user words to write lyrics but struggled to find a quick way to implement this idea so that it would provide an easy and fun user experience.

LANDING ON MOOD MUSIC

From the beginning, our product had been about providing a unique music experience for the user, and we wanted to keep that spirit alive. Mood Music was the perfect compromise between this vision and technical feasibility. All members of the group had experienced difficulty picking music in the past whether due to distractions from their device or mental exhaustion. We knew this was an issue we'd be able to help ease relatively quickly and easily. While the unique experience of our original product focused on creating novel music, Mood Music focuses on finding the right song-even when the user isn't sure what that is.

CURRENT DESIGN SPECIFICATION



Big Picture Goal:

Analyze the user's emotions and play music based on how they are feeling.

Our Goals:

- Create a system that is fun and easy to use, that provides musical assistance to anyone who often finds themselves frustrated as they search for music that fits their current vibe.
- Hit a target demographic of young (teens - 30s), avid music players
  - Most technologically savvy (and thus comfortable using an additional app from their Alexa in their daily life)
  - Most open to new music
  - Most inundated with notifications and in need of a musical reprieve
- The system plays music that matches the mood of the user. (90% of listeners rate the experience positively, and 70% of users like a song they generate)
- Curate a song that the individuals will find that music fits their mood properly
- Convenient so that a person does not have to have a difficult time choosing music or facing their all their communications as they try to unwind.

In order to accomplish these goals, we will need to ensure that the prompts given by our system are clear and concise and that they steer clear of technical jargon. We also need to ensure that the emotion detection and processing systems work well and produce music that fits the user's mood and preferences for as many inputs as possible. Some people might not understand their own feelings and would have difficulty choosing a song or spend too much time on it, to accomplish this goal Alexa will have to properly analyze emotion from simple explanations and choose the perfect song based on the vibe of the person. Finally, we want to ensure our users have a wide range of genres from which to choose since no matter a person's mood, their preference for a song will largely depend on its genre.

USABILITY TESTING PROCEDURES

1. BRING PRODUCT TO USER'S IDEAL ENVIRONMENT

This makes it easier to get information about the product itself without outside factors or distractions. The user is most likely to have access to an Alexa connected to their Spotify at their home, and they're most likely to use our product when decompressing and mostly alone. This all motivated us to test in comfortable, quiet spaces.

2. THANK THE TESTER FOR COMING, AND EXPLAIN THAT THEY ARE TRYING OUT AN ALEXA FUNCTION WE BUILT FOR THE CLASS, BUT BE VAGUE ABOUT WHAT IT DOES. MAKE SURE THEY'RE COMFORTABLE BEING RECORDED (ALSO IN PRE-QUESTIONNAIRE).

It's important to make sure that the user is comfortable with being recorded and feel they're in a friendly environment and interaction. We want them to be ready to work with Alexa, but want to keep the product's purpose unknown so that we can identify whether or not its intended purpose is clear to a first time user. Additionally, all instructions in the real world would be limited to Alexa's speech, and we want to ensure our product delivers them.

3. GIVE PRE-TEST QUESTIONNAIRE

This asks for age, consent for recording, familiarity with voice assistants, how often they listen to music using a voice assistant, how they find music, and how long finding music usually takes. These questions allow us to separate responses and view them in a context based on past experiences. Questioning about their music finding habits shows us if they are someone who might get good use out of this product, or even if this product is useful. This gives insight into the marketability of this Alexa function, lets us know if it might not end up being all that useful to many users, and helps us better envision the gap in music listeners' lives we're attempting to fill. A few questions changed since usability testing one to not hint as much about what the product does so as to not interfere with the user's interpretation of the testing while still getting information on certain important metrics. Also, we changed some responses to be clearer, more uniform, and easier to interpret by using the Likert scale.

USABILITY TESTING PROCEDURES CONTINUED

4. SET THEM UP WITH ALEXA/VOICE FLOW, GIVE THEM THE INVOCATION, AND ASK THEM TO SIMPLY FOLLOW ALEXA/VOICE FLOW'S PROMPTS

As mentioned above, the lack of information ensures we will be able to identify the app's ability to guide a first time user. We expect that anyone who has installed the app is also familiar with the invocation and that owners of an Alexa would have familiarity with its system and use. However, it should still be fairly convenient to use for users who aren't as experienced.

5. LET THEM TRY OUT TASK - MAKE SURE THEY DON'T FEEL BAD IF IT IS NOT WORKING, REMIND THEM IT IS A PROTOTYPE AND ENCOURAGE MENTAL NOTETAKING OF ISSUES

It's important to watch how a person goes about the task and see if they are doing something wrong or are having difficulty with something. This allows us to see what things need to be changed to increase accessibility and be more focused on the user experience.

6. GIVE POST-TEST QUESTIONNAIRE, UPLOAD VIDEOS

The post-test questionnaire asks the user how entertaining the experience was, how easy the app was to use, if they would use the function again, if they felt they understood the function, if it successfully played a song for them, how they liked the song, and what recommendations they had for improving the app. We want to understand what the user thought about their experience and what hampered that experience. Knowing if they would want to use the function again tells us if the function is useful or if it is a fun novelty, allowing us to continue directing our design as well. Checking if the function worked in the first place and if the person understands how to use it allows us to figure out if the tool is too difficult or practical. Asking for what the user would like changed gives a new perspective into things that can make the tool better as well. Recorded videos also let us re-analyze the videos and see what things users repeatedly do, and see if there are commonalities between user experiences. Since usability testing one, we shortened this form, as there were redundant answers with the same user for some of the longer response questions. This helps us get the same input but with less hindrance and time spent for the tester. Also, in the multiple choice we changed the wording to be the Likert scale to make responses less biased and the response choices easier to understand.

USEABILITY TESTING ONE ISSUES

User, Issue #	Description	Issue Category	UX Severity (1-5)	Tech Complexity (1-5)	Total Score	Resolution
Natalie#3	Music failed to play (three times in a row, restarting process each time) after successful questions	Intended Feature Failure	5	1	6	Fix mistake in voiceflow code
Eric & Scott#1	Alexa couldn't understand unique (not y/n) response to confirming the detected emotion, and the function stopped abruptly.	Intended Feature Failure	4	2	6	Add an I didn't quite catch that branch for every user input
Adriana, Eric, Natalie#8	Interaction did not feel like a conversation: was not empathetic to negative emotions; started out male and became female	Intended Feature Failure	3	1	4	Optimize prompts for humanity and fluidity
All users #7	Not connected to Amazon Alexa	Needed Expansion	5	2	7	Connect to Amazon Alexa
All users #5	Limited emotion/genre options. Can't truly fulfill intended user experience	Needed Expansion	4	3	7	Expand number of emotions and genres. Expand playback options (single song vs playlist, skip, new song, etc.)
Olivia #5a	Couldn't detect emotion when expressed tired and calm feelings	Needed Expansion	2	4	6	See #5, maybe option to directly say emotion when description fails or catch all extra option
All Users#4	Alexa speaks too slowly/is too wordy	Needed Expansion	3	1	4	Shorten and optimize prompts for information sharing
Natalie (& Seo)#7a	Read options for feelings and genre off of voiceflow (cheating!)	Needed Expansion	2	2	4	Upload function to Alexa (turned brightness down for next tests)
Multiple users #6	Started response before prompt finished	Needed Expansions	2	1	3	Shorten prompts, make it so that Alexa doesn't pause mid prompt
All users #2	Music playing at the same time as Alexa talking at the end	Second Tier Expansion	2	3	5	Edit voiceflow order and delay

USEABILITY TESTING ONE DEMOGRAPHICS

We sought out testers with a wide variety of both expertise with Amazon Alexa and level of appreciation for music. While our target user owns an Amazon Alexa and loves music as an emotional experience, testing Mood Music on general audiences will help us find the kinks that someone immediately drawn to our product might forgive. We also sought young adult users who are more likely to have the funds to own a personal Alexa, the technical familiarity to add a plugin to it, and the desire to explore new music.

Eric, 22 - chosen for demographic fit and his frustration with music searches

Alexandra So, 21 - chosen for demographic fit and her Alexa ownership/expertise

Natalie Muradyan, 21 - chosen for demographic fit and her love of music that fits her mood

Adriana Rivera-Socarrás, 20 - chosen for demographic fit, her Alexa ownership, and her love of music

Seo Yeong Kwag, 20 - chosen for demographic fit and her Alexa familiarity

Scott Hunter, 28 - chosen as an outlier of demographic fit, Alexa ownership, and his love of music

Olivia Struckman, 26 - chosen for demographic fit and her Alexa ownership

USEABILITY TESTING ONE
PRE-QUESTIONNAIRE

Name
Age
We will record this test and the video will be seen by our group and some TA's. Is that okay with you?
Do you or have you owned an Alexa or a similar voice assistant?
How familiar are you with voice assistants in general?
On a scale of 1-10, how much do you listen to music?
When you listen to music, how often do you use a voice assistant to do so?
When you listen to music, how often do you look for music to match your mood?
When you do listen to music, how often do you wish you didn't have to search for the music that best suits your current mood?
If you were to find a song to match your mood right now, how would you do it?

USEABILITY TESTING ONE POST-QUESTIONNAIRE

What is your name?
How would your rate your user experience with this app?
How would you rate your technical experience with this app?
How inclined would you be to use this app again?
If you were to use this app again, what would you use it for?
Do you feel you understood the purpose of this app?
Did this app successfully play a song to match your mood?
How much did you like the song the Alexa played for you?
If you could change one technical feature of this app what would it be?
If you could change one thing about this app's user experience what would it be?
What was your favorite part of the app?
What was your least favorite part of the app?
Any other suggestions/comments/feels?

USEABILITY TESTING TWO ISSUES

User, Issue #	Description	Issue Category	UX Severity (1-5)	Tech Complexity (1-5)	Total Score	Resolution
All users #1	Limited emotion options. Can't truly find moods to fit most users, unfulfilled experience	Needed Expansion	4	4	8	Expand the number of emotions, maybe add calm, boring, fun, stressful, others?
All users#2	Music playing at the same time as Alexa talking at the end	Second Tier Expansion	2	3	5	Edit voiceflow order and delay
Many users#3	Testers were often unsure of what to say to answer questions, including pausing, just being unsure of what they want, especially happened for genre question.	Needed expansion	3	4	7	Keep improving question wording, maybe add "I don't know" type options or give more time for responses. Maybe some listed options for genre after they time out to prompt their thinking.
Raunak#4	Accepted random sentence as genre for song and then played a song based on that	Intended feature failure	3	4	7	Limit acceptable responses before using response to search for playlist on Spotify - though would also limit allowed genres
Raunak#5	Interpreted mood as angry when user said 'elated'	Second tier expansion				Improve emotion detecting code, but also might be due to Alexa mishearing
Raunak#6	User not clear on wanted response (y/n) when confirming mood	Needed expansion	2	1	3	Change wording of question, or add a please answer yes or no prompt if the user keeps responding in an unexpected way.
Raunak#7	Alexa failed to understand "perhaps not," a longer synonym for no	Second tier expansion	1	3	4	Add more response options. Thankfully, it did rightly ask again after not understanding.
Milan#8	Alexa stopped the app after two silent responses to the genre question.	Needed expansion	4	3	7	Add loop back to question if no response, maybe same question but with suggestion to make easier for user

USABILITY TESTING TWO DEMOGRAPHICS

Overall, for this test we had slightly younger users than the last test and a great variety in the testers' Alexa experience and music listening habits. For instance, we had two testers who reported using Spotify to listen to music and two who reported using YouTube. They also reported spending significantly different amounts of time choosing music. This is also somewhat promising, as our product, assuming it chooses music that the user is happy with, took around a minute to play music, which is less than the five minutes that two of the testers usually spend, which shows our apps' potential usefulness.

Raunak Chowdhury, 24 - chosen for his demographic fit, and his unique perspective stemming from internship experience working with the Alexa product at Amazon

Sabine Chu, 18 - chosen for her demographic fit on the lower side, her ownership and familiarity with Alexa, and her love of music

Angela Jiao, 18 - chosen for her demographic fit on the lower side, her unfamiliarity with Alexa, and her love of music

Milan Haiman, 21 - chosen for his demographic fit, his unfamiliarity with Alexa, and his love of music

USABILITY TESTING TWO
PRE-QUESTIONNAIRE

Name
Age
We will record this test and the video will be seen by our group and some TA's. Is that okay with you?
Do you or have you owned an Alexa or a similar voice assistant?
How familiar are you with voice assistants in general?
When you listen to music, how often do you use a voice assistant to do so?
If you were to find a song to listen to right now, how would you do it?
How long do you usually spend looking for what music to play?

USEABILITY TESTING TWO POST-QUESTIONNAIRE

What is your name?
Using the app was entertaining.
The app was...
I would use this app again.
Do you feel you understood the purpose of this app?
Did this app successfully play a song to match your mood?
Did you like the song Alexa played for you?
If you could change one thing about this app what would it be?
What was your favorite part of the app?
What was your least favorite part of the app?
Any other suggestions/comments/feels?