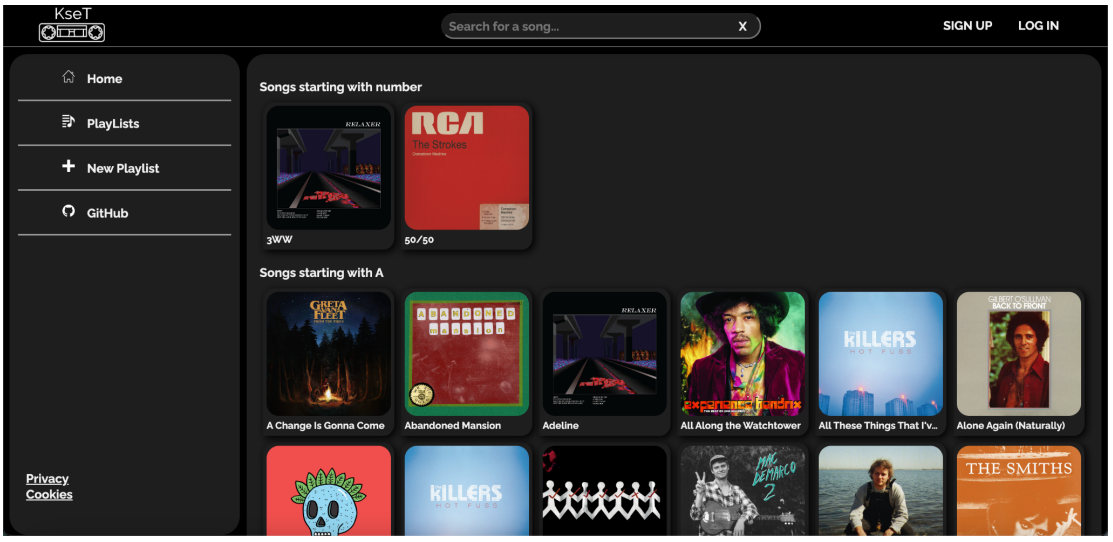
Documentation of Final Prototype

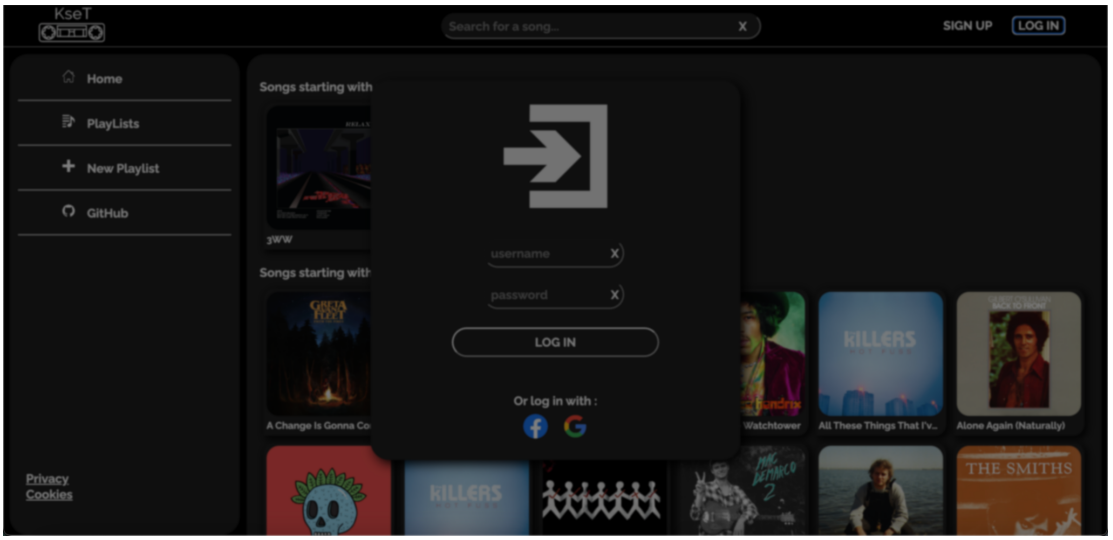
I. Description of the final prototype focusing on its evolution with respect to the initial prototype.

Throughout the process of designing the music-streaming website, we made many changes with regard to the topics we learned in class. The project was completed in three main stages: (1) we created a primitive model of the website, in code, then (2) we created an improved prototype using design tools, before (3) finally implementing the changes to the final project. Below is a breakdown of our changes to better accommodate the topics we learned in class.

1) First model



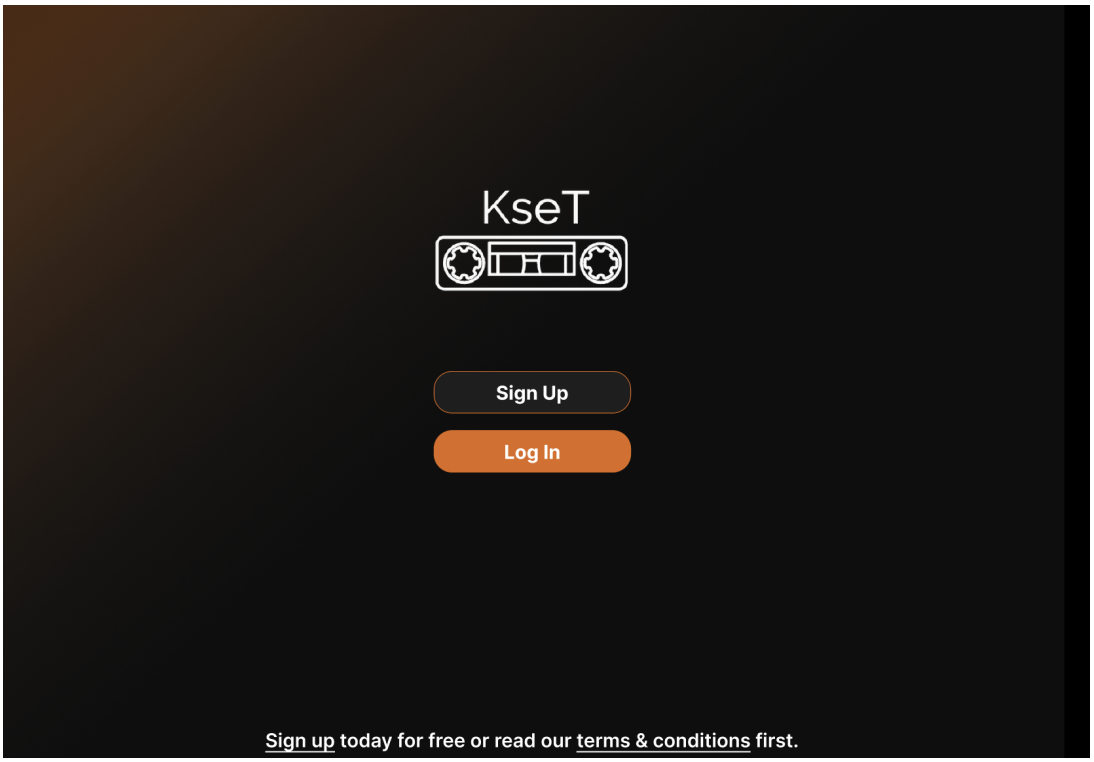
In the first design of the website, lots of functionality had been created however, the color scheme was very monochromatic, and there were a few bugs. Additionally, the functionality was not well-designed as signing up or logging in added no additional features to the website. This was a very primitive version of the website we had hoped to create.



There were still bugs with some parts of the code, such as the login window being blurred when clicked, a new playlist not being able to be created, and the Facebook and Google buttons not allowing login.

2) Prototype

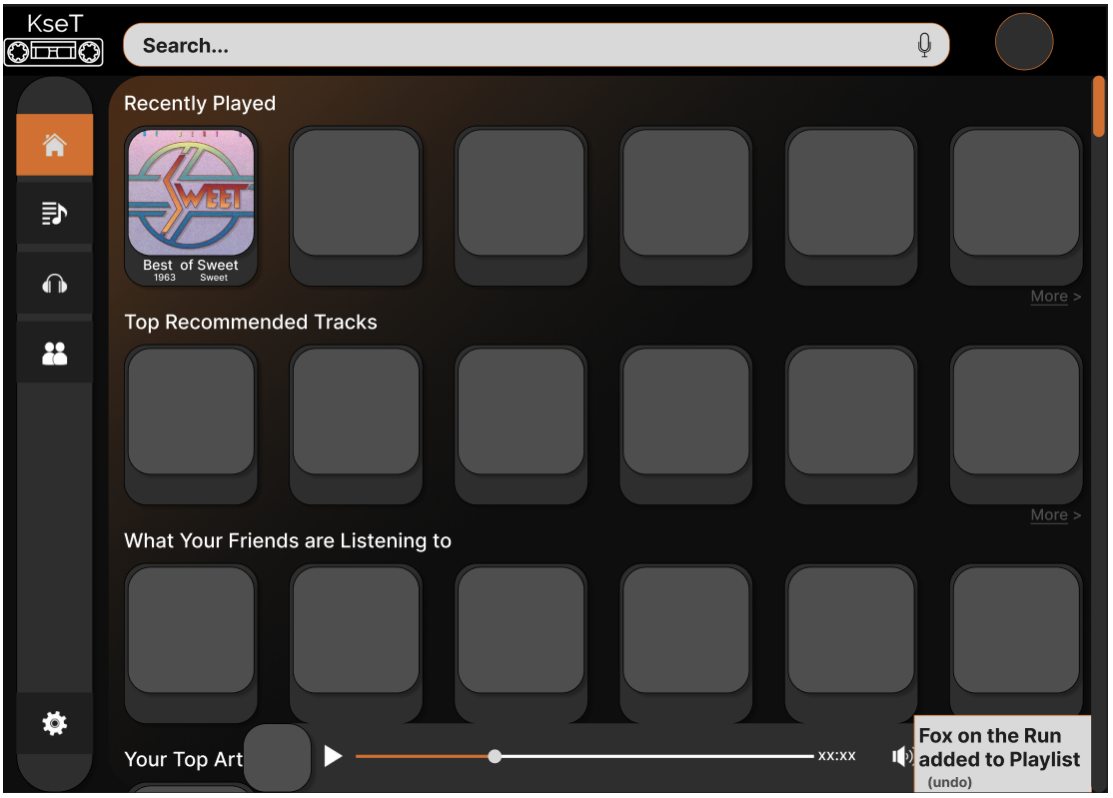
In the interest of creating a prototype that adequately satisfied the needs of our users, we created personas and made changes based on what the personas may have wanted or needed to properly utilize the website.



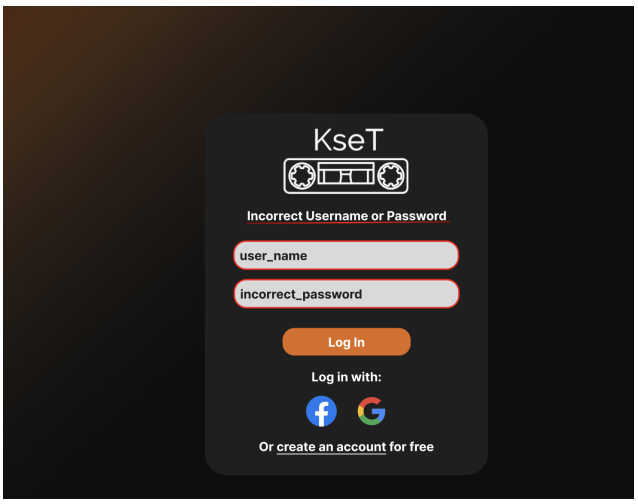
The first change we made was to change the login screen. This change was the first step towards making a true website that could be used by people as it allowed users to

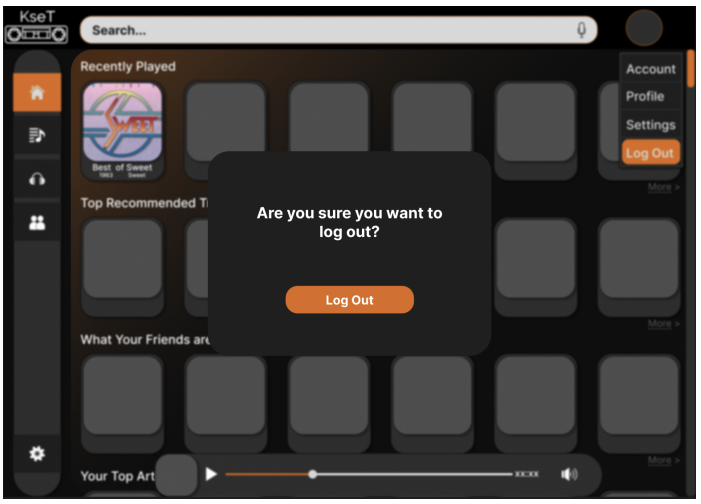
create profiles and log in later to reclaim the information they had already entered. The data of these users was stored in a backend database and the login was saved in cookies to allow easier login in the future.

Additionally, we redesigned the website to have a stronger dominant and accent color scheme, with a black and orange theme. Not only did this create a consistent design (a) across each page we displayed, but it was very minimalistic and aesthetic (b), aligning with Neilsen's Heuristics.

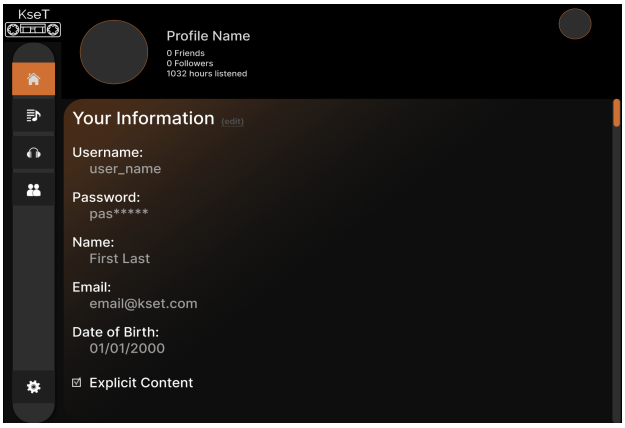


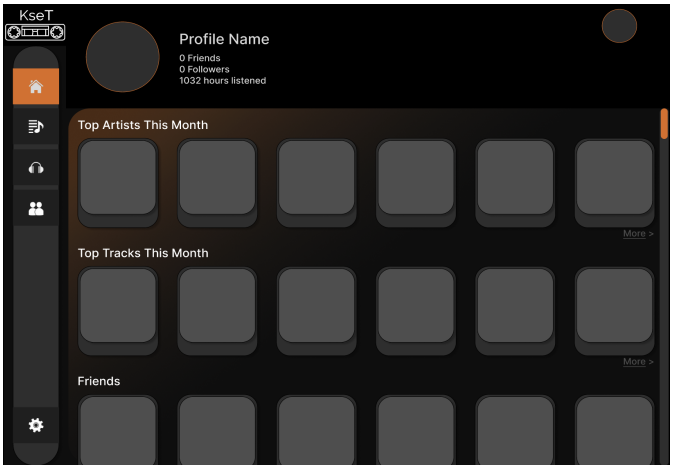
The next page consisted of a scrollable (c) homepage (d) with all the available music in the database sorted into categories of popularity (e) and recommendation. We designed the page to look similar to other streaming services we analyzed, such as Spotify and SoundCloud, in hopes of creating an easy transfer to our platform from users accustomed to other platforms (f). Finally, the webpage was very responsive and controllable by the user (g) via buttons and keyboard input to navigate, with a real-time audio player to display song information (h) at the bottom of the page. All of these decisions were motivated by Nielsen's Heuristics or Van Duyne's Design Patterns.





Another feature we added was error prevention (i) and visibility of system status (j). These features connect the user to the system and create trust between the user and the system by providing invaluable feedback in a quick manner. A few places we thought would be valuable to have feedback were the login and signup windows and the logout window. We designed an error message and distinct red coloring to show errors.





Finally, when creating the account and profile pages, we ensured that the pages followed templates (k) so that the formatting moved as little as possible between shifts in content (l) and creates modules for personalized content for each user, including top artists, songs, and friends. These once again create trust and reliance on our platform, encouraging users to continue to use the website.

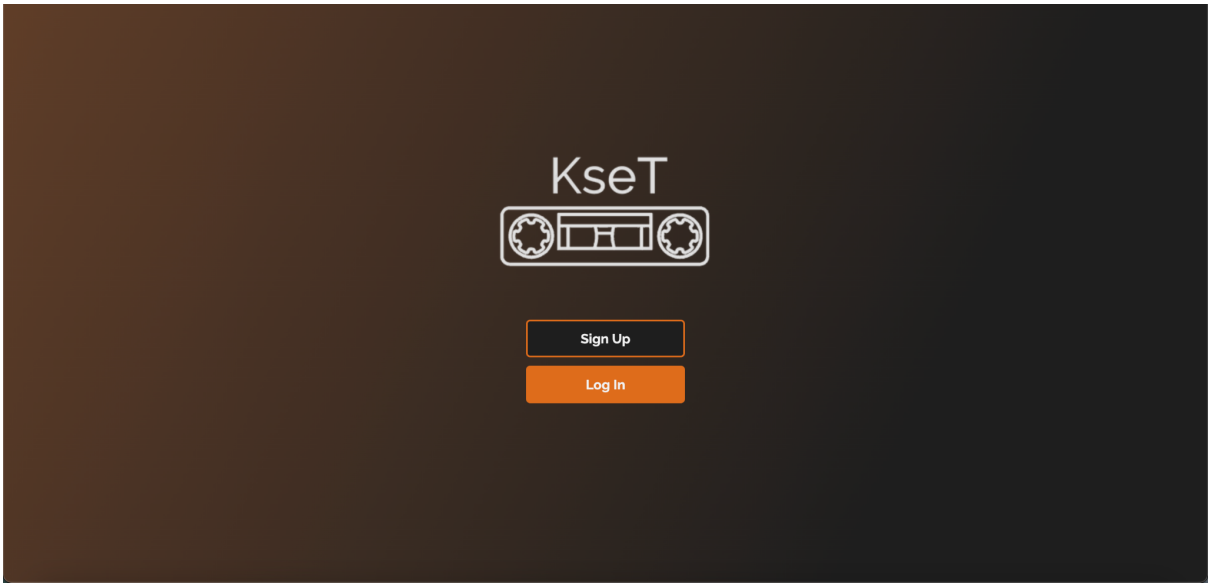
In designing the mock-up for the website with design standards in mind, we implemented the following qualities we learned from class:

a) Nielsen's Heuristics: Consistency and Standards
b) Nielsen's Heuristics: Aesthetic and Minimalist Design
c) Van Duyne's Design Patterns: Browsable Content
d) Van Duyne's Design Patterns: Homepage

e) Van Duyne's Design Patterns: Popularity-Based Organization
f) Nielsen's Heuristics: Recognition Rather than Recall
g) Nielsen's Heuristics: User Control and Freedom
h) Nielsen's Heuristics: Match Between System and Real World
i) Nielsen's Heuristics: Error Prevention
j) Nielsen's Heuristics: Visibility of System Status
k) Van Duyne's Design Patterns: Page Template
l) Van Duyne's Design Patterns: Content modules
m) Van Duyne's Design Patterns: Personalized Content

3) Final Model

Now that we had decided on what changes we were going to attempt, it was time to execute.

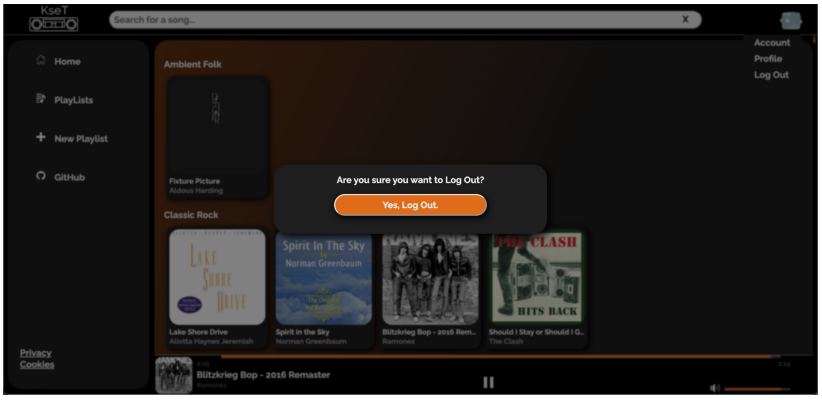


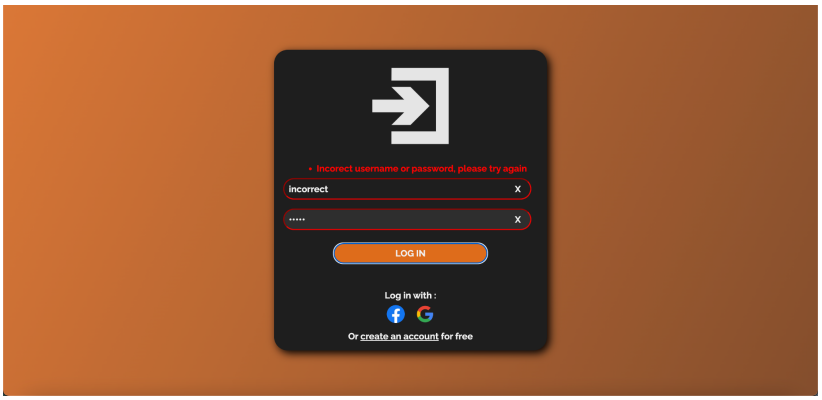
First, we implemented the login page background gradient and accent colors. Using keyframes, the gradient moves when the page is loaded for a cinematic effect.

Next, we created genres in which we could organize the available songs to organize the music for the user in contrast to sorting by name which we had before. The color gradient was also applied to the main content to set it apart from the rest of the page. Additionally, the signup and login buttons were removed as they were no longer necessary with our current system. Instead of using profile photos for the user, we used an online service that hashed the username of our user to choose a playful profile image unique to each user.

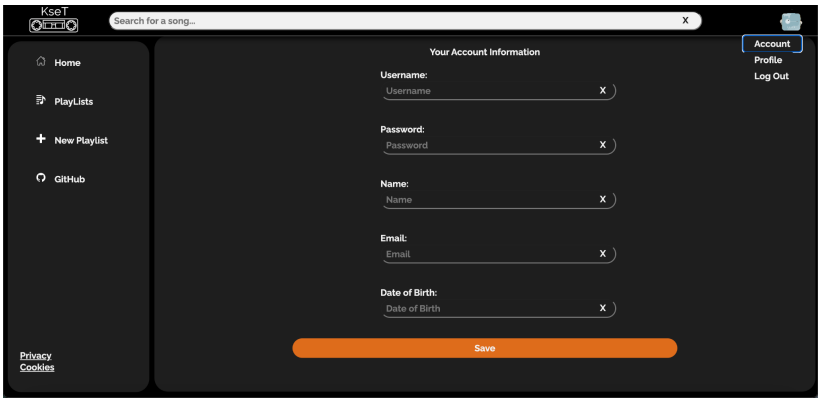
Another big change was the audio player, which had to be redesigned to be consistent with the color scheme and style of the rest of the website. We had to add the status bar, current time, total song time, volume controls, and play/pause controls. Another thing we thought was valuable to add was the artist's name and song title both on each cover and in the audio player.

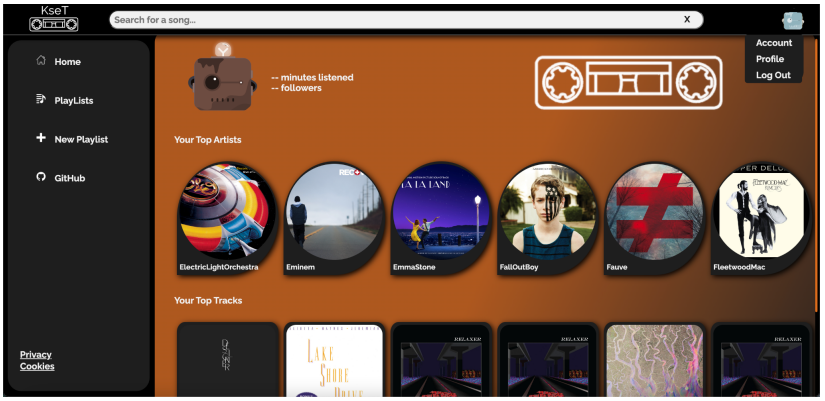
Next, we implemented the error messages and feedback very similar to how we planned.





Finally, we updated the account and profile pages with the chosen color scheme. For the profile page, we added the top artists and tracks as well as a cassette icon that would theoretically contain a summary of all the music the user listens to.





Overall, we believe that we executed the prototype and the changes well. In the future, we would love to have made the cassette functional as well as some other small features.

II. Description of the technology used for the implementation.

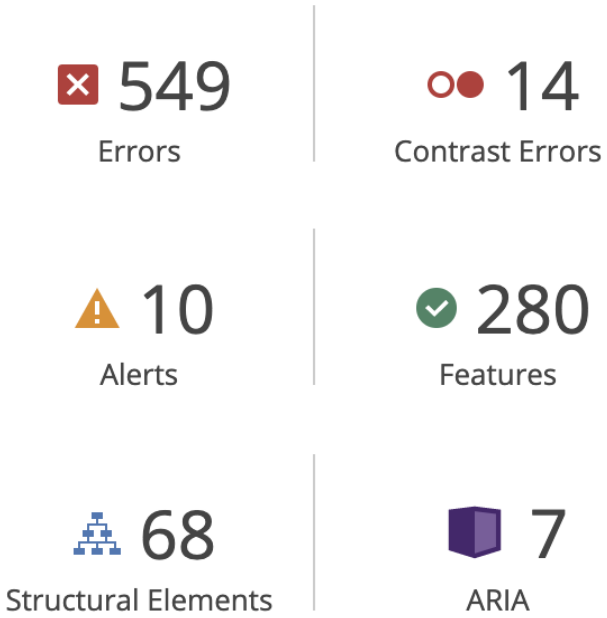
To develop our application, we've only used basic tools and haven't imported any npm packages. So the frontend consists of static HTML and a substantial part of DOM manipulation in JavaScript through the included web API. If we take a look at other specific features, we've used the cookie API in order to add some form of local storage to our application. Finally, we've used a lot of CSS in order to make a responsive layout and make it look good while we're at it.

In the backend, the technologies used are Nest, a TypeScript framework to handle http requests, and PostgreSQL for the Database.

Combining the frontend with a backend allowed us to have real and persistent data at our disposal throughout the development process and helped us to make scalable DOM generation functions.

III. Accessibility report with the description of the results obtained from the WAVE tool.

Summary of results:



Based on the accessibility results obtained from the WAVE tool, the vast majority of our errors are missing alternative text and labels. The errors and alerts consist of missing alternative text as well as alternative text that is too long and/or suspicious. Most images or features on our webpage do not have a label built into the html, which

could result in the website being difficult to use if it cannot load properly or in the case that the user has visual or auditory difficulties.

The webpage also has some contrast errors. Since our site's color scheme is very minimalist, relying mainly on dark gray/black, orange, and white, there are areas where WAVE has suggested the contrast could be higher. The aforementioned areas are mainly when two dark colors are placed next to each other. The tracks are displayed on a dark gray block against the dim background and the navigation bars are also in the same color range. Although this contrast could be improved, there are also many examples of applications that have similar contrast levels in order to preserve the minimalist design. The other place the contrast error is notable is on the login button on our main sign-up and login page. The orange against a background that is a similar color makes for a low contrast. Instead, we could have made both the login and sign up buttons darker colors that were still differentiable against the lighter background.

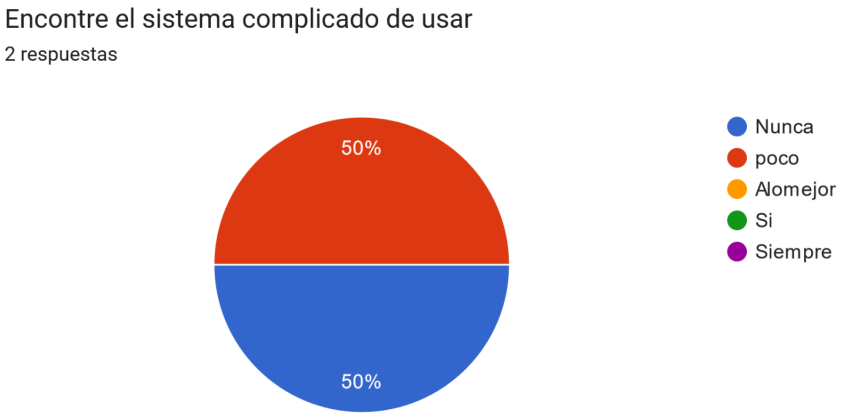
Other errors include that the language of the document is not identified and the page does not have a first-level heading. Errors such as these can be easily remedied within the code to allow easier reading, translation, and understanding of the page.

IV. Usability report with the results of the usability test, including statistics about the users' profiles (age range and gender) and the individual and mean results from the SUS questionnaire.

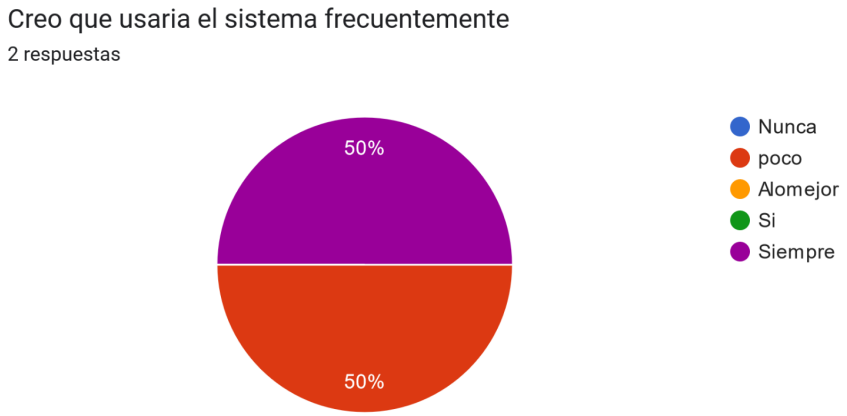
https://docs.google.com/forms/d/e/1FAIpQLSf2evhIHau3ROYDrb6dklIubdWGOpDg4N1AdEQa29Q3-xNd2A/viewform?usp=sharing

Of our two respondents, each was of college age (18-22). One was male, the other female. We received interesting results from the survey, the most striking of which I will show and talk about below.

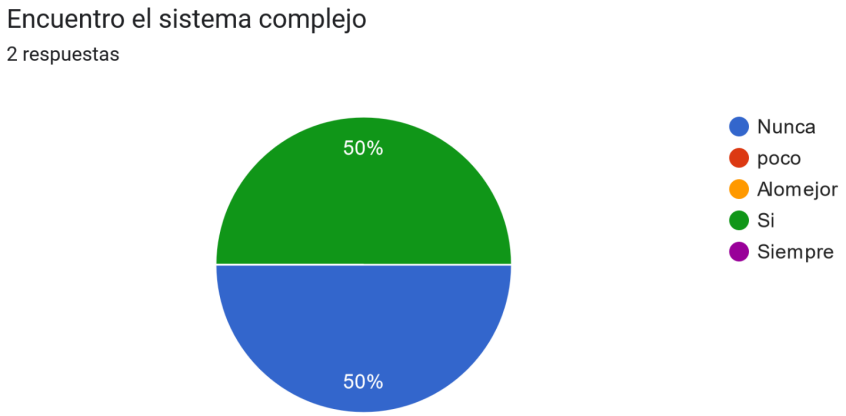
First, the most homogenous response that we got. Although the individual users had easy experiences working through the website, they indicated that some people might need help learning the ropes. This may indicate that we need to make the site easier to use for people on the edge cases, like differently abled people or old people.



Next, our most encouraging piece of feedback. This indicates that our system was very easy to use for our respondents, which is a good sign. However, as we have indicated above, they said it might be more difficult for others to use the system, which may be a result of our respondents belonging to a naturally tech-savvy demographic.



Next, another interesting piece of feedback we received. One of our respondents said that they would love to use our system again, whereas the other said they would do so rarely. This means two things; first, that we are delivering a product which some people would like to use; second, that we are delivering a product that does not yet have ubiquitous appeal.



Finally, another split piece of feedback. One of our respondents said that the system was complete and usable, the other the opposite. This could correspond with the willingness of one but not the other to use our product again. This means that there is more work to be done to flesh out our product in order to deliver an enjoyable experience to our customers.

Overall, since we had very few survey respondents, our results are not likely to be as accurate as they can be, but there is still much to be learned from them.