Songscope Project Proposal

0. **Team Members:**

Tim Rolshud, Yusuf Sallam, Krish Arora, Matt Lerman

1. **Project:**

Music review and rating web application for songs, albums, and artists on Spotify

2. **Client(s):**

Mr. Mikhail Rolshud, Ms. Natasha Pevneva, Ms. Margarita Koretskaya, Mr. Vadim Koretsky. These are software engineers from around the world (from NJ to Russia) who are active music listeners and would be glad to give feedback from both a software engineering standpoint as well as a product user standpoint.

3. **Other identified stakeholders:**

Spotify (source of songs, albums, and artists); musicians and artists looking for feedback on their music, testers who are interested in testing the app and offering feedback

4. **Initial assessment of client's need and current solutions:**

The music community is constantly seeking platforms to review, rate, and discuss songs, albums, and artists. Currently, users largely rely on platforms like Reddit and Twitter, however, these platforms are not designed specifically for reviewing music. They lack a unified structure for reviews, and do not offer direct integrations with music streaming services like Spotify. Services such as SoundCloud exist, however, their comments section is very disorganized and does not provide a direct method for reviewing the music itself. These disjointed solutions make it difficult for music enthusiasts and casual listeners to rate and review the music they listen to, and the product we would make would act as a solution to this issue.

5. **Initial Proposed Solution:**

SongScope will be a web application where users can review, rate, and discuss songs, albums, and artists available on Spotify. Users can browse through a structured and unified collection of reviews and add their own. This contrasts with the current scattered and unstructured discussions on various platforms that lack direct music integration and can become out of date when new music is released.

For our web application, there will be 3 types of users: unregistered users, registered users, and admin users.

An unregistered user will be able to view all pages, but cannot complete any actions such as commenting or reviewing. Essentially, the unregistered user is only able to view and not interact with any parts of the website.

A registered user, which can create their account by either signing in through Apple, Google, or Spotify, or create an account using their personal email. Once registered, the user can access all pages of the website and interact without any limitations. This includes posting comments and reviewing different songs, albums, artists, etc. Registered users will have a username that will be public, as it will be shown with any comment they make.

An admin has the same access as a registered user, but can also delete comments, remove interactive privileges from users and delete/add things to be reviewed (albums, songs, artists, etc.).

6. **Summary of product form and technology stack:**

Full stack Client Web Application with React for frontend, a central web API built with express and bun, and a relational database (can change this if needs of the project require it)

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7. Rationale for the product form and technology stack

Lit HTML: This will act as the frontend for our web app. Lit is a very popular and stable library with lots of community support and information on the internet, and its client side rendering approach and server side rendering hybrid approach is essential for us as the client will need to decide to either go to Spotify directly and render the content Spotify gives them if the user is signed in with Spotify. If they are not, to make it possible for users to still use the app, the client will make a request to our API which will then talk to Spotify for the client if they are unable to talk to themselves. Taking a client side rendering approach and only asking "us" (our API) for data when absolutely necessary will take a lot of load off of our servers and our API limits with Spotify as a registered app, which would put a simple app project above something like a Nextjs project which is more bulky, and has more convoluted build steps. If it turns out that Next or anything else of the sort supports client side rendering and increases our productivity, or if we can find another front end technology that would be easier to develop in, we can definitely make the switch. But a basic setup using Lit components and templating features is the plan for now.

API with Bun + Express: We definitely need an API so clients can get the data they need to display dynamic content, Express is a very stable and easy to use javascript library for building servers and APIs and makes it very easy to work with JSONs as they are just objects in JS. Bun is the fastest and most efficient javascript runtime as of right now, but if it proves to be unstable and impractical we can easily switch to Node.

Relational Database: All of us are very familiar with the traditional relational database paradigm and how to use them effectively to organize, store, and retrieve data. If it becomes too slow or impractical to use a relational database for Songscope, we can switch over to another database, but for now, a relational database is more than enough.

8. User Journeys

Initial Unregistered User Login:

1. *If user wants to login and register:*
    a. Prospective user logs in and is greeted with option to create an account with the platform
    b. Account is created, then navigates to the SongScope browse page
    c. If it's the first time they access the site, they are greeted with the ability to select songs/artists/genres that interest them, which we will potentially use later to gather information to suggest them new songs that they might also like (similar to Spotify recommendations)
    d. After logging in, they are greeted with their current "music feed"
        i. This would have listings of current up and coming artists, trending SongScope songs/threads, as well as a view where they can see historical comments and songs they have interacted with
2. *If user simply wants to navigate the site:*
    a. Similar view as before, however with a few key differences
    b. Browse page is still visible, however instead of user-specific recommendations, take in most popular SongScope recommendations/songs and display those in place of recommended genres
    c. Similarly, instead of their own personal "music feed", they will be able to view trending comments and trending songs
    d. Unregistered users will NOT have the ability to comment, like, or give feedback on a song; they will simply only be able to view it.

Registered User Login:

1. An already existing user would login through one of our auth providers or simply through email-password auth
2. From there, it follows as before, except without the prompt to select genres and artists they are interested in
3. For a registered user, they may be able to view their historical statistics on the site, such as most-frequently interacted with genre, favorite artist, number of comments/songs liked, and similar information
4. They are able to easily view their feed of songs, can give feedback/leave comments, and can quickly see what other people feel about songs

Admin User:

1. Admin users will be able to follow similar login flows as registered users, however they can only be assigned admin status through one of the developers of the application currently.
2. While admins will still have access to traditional user-flow, they will additionally be able to view insights and statistics for every song, and will have the option to delete and moderate songs/comment. Additionally, they will have access to site-wide statistics such as the total number of registered users, and will have more detailed information about every artist
3. Importantly, they will be able to visit users and see when accounts were created as well, in an attempt to detect individuals who make alternate throwaway accounts.

9. Success Criteria

Minimum Viable Product:

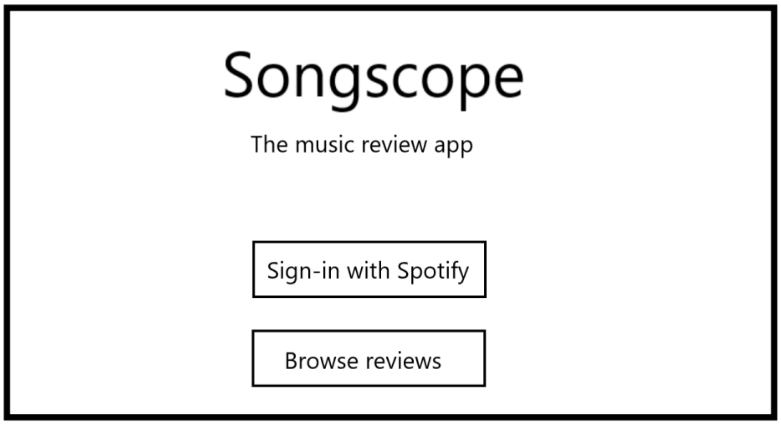
- Ability for users to register by signing in with Spotify, update their username, and delete their account.
- Registered users can rate, create and delete comments on songs, albums, and artists.
- Admins can delete comments and accounts that post offensive content
- All users without accounts are able to browse songs, artists, and albums and view comments, but not post or leave a rating.

Finished Software:

- Users will also be able to register/sign in with Google, Apple and other major OAuth providers
- Users can opt-in to receive email notifications when someone replies to one of their comments
- Admins are able to “time-out” accounts, disabling their ability to comment for either a set time period or permanently, but those accounts are still able to view content, similar to a user without an account
- Users are able to view each other's profiles, showing all of their comments and reviews. Users will also have the option to disable their public profile, preventing other users from seeing this information
- Admins will have a full analytics panel to view for artists and songs, will be able to view more specific detail regarding account creation-time, historical comments (including previously deleted), and can view site-wide information live
- SongScope will generate accurate and thoughtful recommendations for all users that are utilizing the platform, suggesting things from similar genres

10. Screen Sketches

Home Page

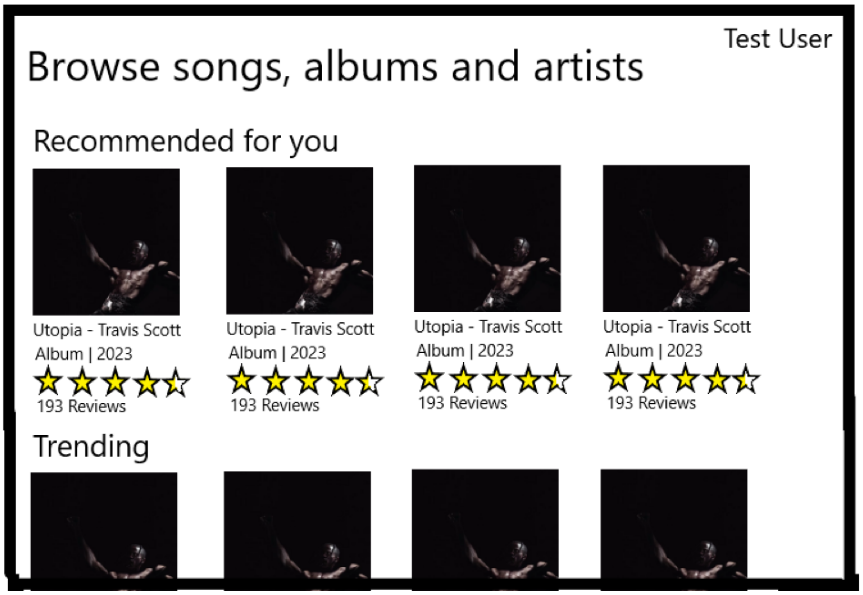


Songscope

The music review app

Users will be greeted with this page, if they are signed in the sign-in button will be hidden, they will be able to click the “Browse reviews” button to see reviews on songs, albums, and artists.

Browse page



Test User

Browse songs, albums and artists

Recommended for you

Utopia - Travis Scott
Album | 2023
193 Reviews

Utopia - Travis Scott
Album | 2023
193 Reviews

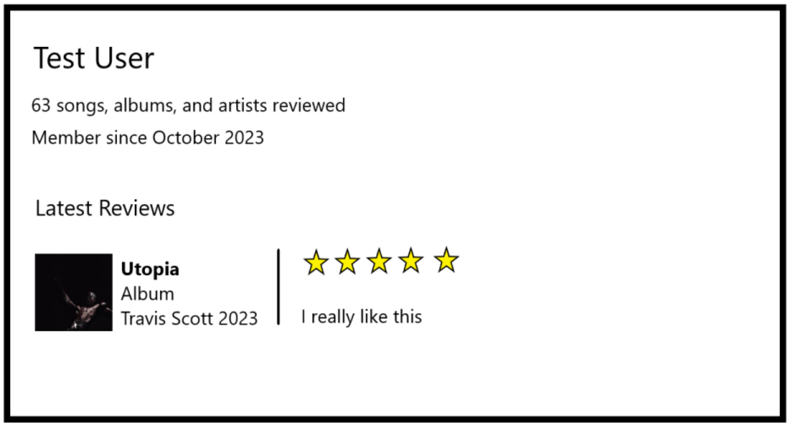
Utopia - Travis Scott
Album | 2023
193 Reviews

Utopia - Travis Scott
Album | 2023
193 Reviews

Trending

Users will navigate here from the button on the home page or through a navigation bar. Signed-in users will see a “Recommended for you” section that shows artists, songs, or albums they may like based on their ratings in the past. Users who are not signed in will only see the Trending section, which are artists, songs, and albums that have received the most reviews recently on Songscope. Both sections are available to signed-in users. Users will be able to click on any song, album, or artist on this page to navigate to its Review page. Both sections will adjust size and have scrollbars if necessary based on the number of songs, albums, and artists to display.

User profile page



Test User

63 songs, albums, and artists reviewed

Member since October 2023

Latest Reviews

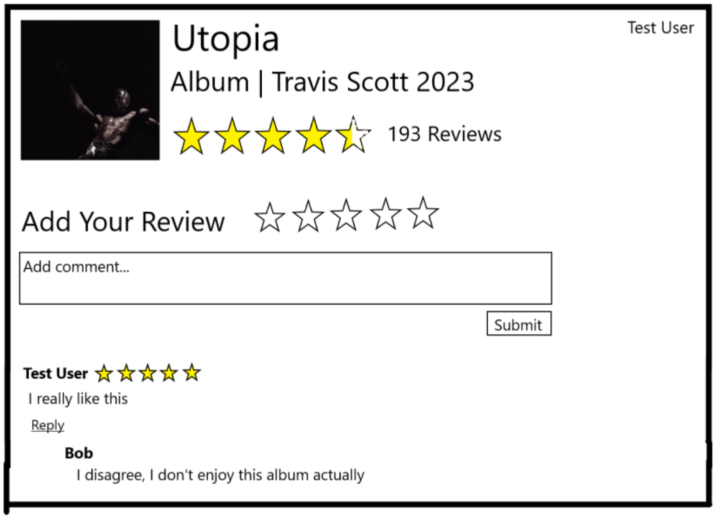
Utopia
Album
Travis Scott 2023

★★★★★

I really like this

Users will be able to scroll through other users’ reviews on profile pages (users have the option to private their reviews if they wish to hide them on their public profile). Clicking on a user’s username from other pages (such as pages for songs) will lead to their public profile page.

Review page (user is signed-in)



Test User

Utopia

Album | Travis Scott 2023

★★★★☆ 193 Reviews

Add Your Review ☆☆☆☆☆

Add comment...

Test User ☆☆☆☆☆

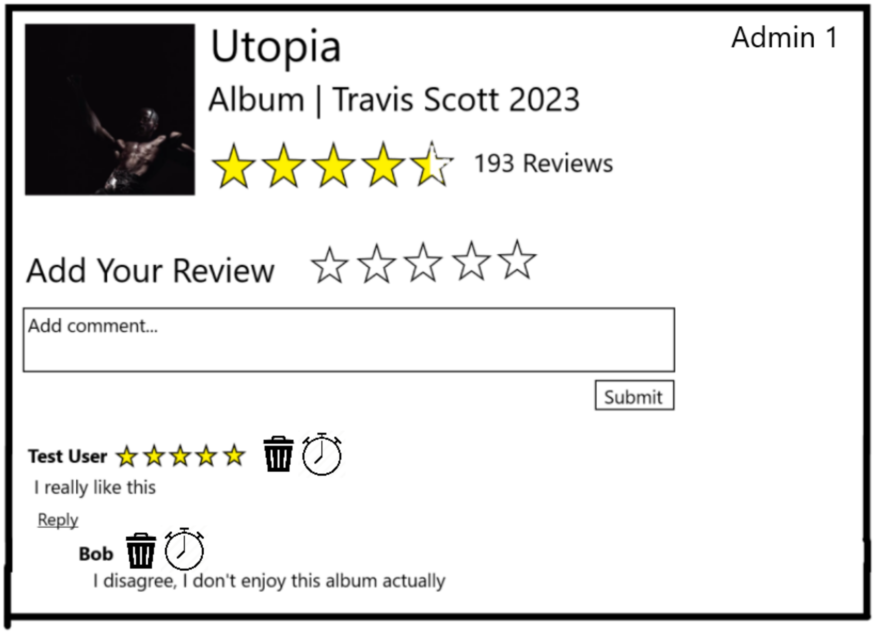
I really like this

Bob

I disagree, I don't enjoy this album actually

Users will be able to click on the star amount they want when reviewing a song and are also able to add an optional comment. They will press the Submit button to submit their star rating and comment if they provided one. Users will be able to reply to other comments and replies on other comments with the reply button visible under each comment. Users will be able to click on users' usernames to visit their public profiles.

Review page (admin account)



Admin 1

Utopia

Album | Travis Scott 2023

★★★★☆ 193 Reviews

Add Your Review ☆☆☆☆☆

Add comment...

Test User ☆☆☆☆☆ 🗑 ⏱

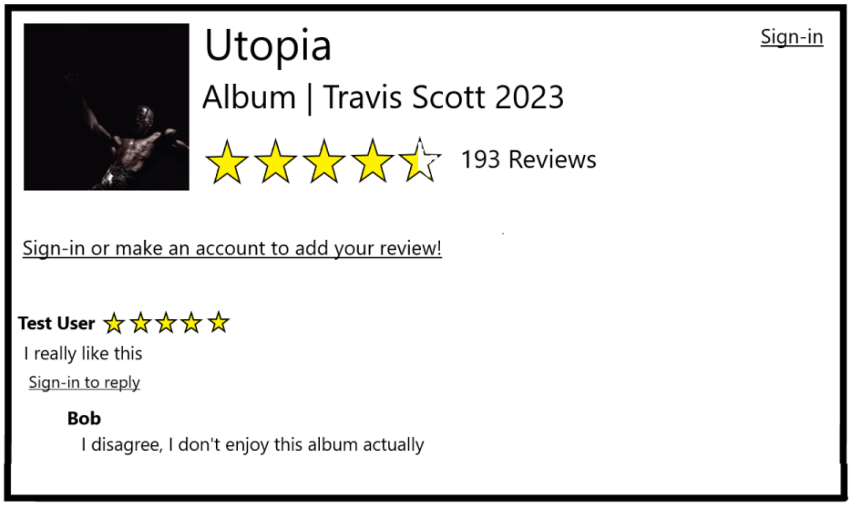
I really like this

Bob 🗑 ⏱

I disagree, I don't enjoy this album actually

Admin view of a review page works the same as a regular user, with the addition of a delete button for every comment, and a time-out button. Clicking on each will bring up a confirmation panel with additional options such as choosing the time-out duration.

Review page (user is not signed in)



Utopia

Album | Travis Scott 2023

★★★★⯪ 193 Reviews

Sign-in

Sign-in or make an account to add your review!

Test User ★★★★★

I really like this

Sign-in to reply

Bob

I disagree, I don't enjoy this album actually

Users are able to scroll through reviews, and click the link to sign-in if they want to add their own review.

11. Accessibility

Due to our product being used by the greater music community, a focus and concern with accessibility in audio quality, visual quality, and simply user-navigation is critical.

With regards to selecting texts, colors, and fonts for this project, we will likely utilize a platform known as: https://www.realtimecolors.com/. This platform will help us select a color palette that is cohesive, consistent, and clear, as it utilizes mathematical formulas and color theory to generate accessible selections of colors. Moreover, it will help us with the visualization of the palette and the intersection between that and the fonts we will be using on the platform.

Additionally, having the ability to view captions/lyrics of a song will be helpful, as sometimes people want to reference lyrics more than necessarily the entire song, or they may want to be able to view comments while on a device that is muted. For this, we will look into using an AI caption generation tool or potentially pulling the captions from online databases whenever possible.

Now commonplace in many modern websites, having a quick search function would be greatly beneficial as well, promoting quick and efficient use of SongScope. A good example of this would be https://tailwindcss.com/ and the “ctrl/cmd - k” shortcut.

As a measure of the effectiveness of these measures, we will be sending out surveys to users of the application, likely through emails they provide us with to gather feedback. In the event we require more data, we will interview specific users that opt-in so that we can gather more information and feedback regarding design choice.

With regards to audio-quality, we will attempt to download/link-out to high quality audio so that users can experience the songs without interruptions or low-quality. With the product being focused on music-reviewing, the last problem we would want to have is users struggling to enjoy songs because of audio compression.

12. Data Migration

All reviews, ratings, and user data are stored in an SQL database. Everything will be written to the database by users and admin via interacting with the website. Database dumps can be done by the admin of SongScope for backups or for any other needs. Importantly, we will be utilizing database migrations as we iterate through instances of the project to ensure that we do not lose any data.

If possible, every time we migrate our database to a new schema, we will have a migration that can migrate "up" the data, enabling the new schema to be used, but also to enable more backward compatibility, we will aim to include a "down" migration whenever needed, so that rollbacks can happen if any issues arise with the schema.

13. Proposed Budget

All labor is provided for free. However, the client will have to cover any other associated costs, such as hosting or specialized hardware required for the project. We will not make any purchases directly (the client must do this), though we can provide relevant technical guidance to the client during the purchase process.

We forecast minimal expenses since most Spotify API calls will be done from the user's API keys, so we forecast around $50-$100 for cloud hosting and database expenses.

14. Timeline of Work

- We will perform a Needs Assessment during early October.
- We will generate a revised, more detailed proposal based on these findings by October 23rd.
- We will create a rapid prototype, which has little to no functionality, but will demonstrate what the final product might look like, by December 15th.
- We will create the Minimum Viable Product by Monday, March 14th.
- The Final Product will be completed in early June.