COMP 4350 Proposal - Harmonizers - Harmony

https://github.com/alexsenden/harmony

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Project Summary and Vision

In a sentence: We envision Harmony as a hub for music lovers to discuss all things related to music.

Harmony is a social media-inspired platform where users can post polls, reviews, and discussions. Every post must relate to either a song, an album, or an artist. Harmony's users can follow other users, and additionally can follow songs, albums and artists to stay up-to-date on discussion. Harmony features two "endless" feeds - one for trending posts, and one for posts by followed users/topics - so that readers have a seamless post viewing experience.

By focusing each post on a specific topic (either a song, album, or artist), Harmony will be a safe platform for users to share thoughts and opinions with a reduced risk of personal harassment and attack.

Stakeholders:

Development Team - The developers finances, reputation, and workload are impacted by the success of the project. They are responsible for developing Harmony.

Users - End users on the platform will be interacting with components on the site as well as entering information that can potentially impact their emotions as well as their security. The users are responsible for using the platform and communicating feedback to the development team.

Project Sponsors - The sponsors' financials and reputation are impacted by the success of Harmony. Sponsors have some responsibility in advising some of the project's high level decisions.

Artists - Artist's brand, image, and popularity are impacted by the reviews and discussions generated by users of Harmony.

Core Functional Features and User Stories

Account Management

As a new user, I want to create an account so that I can interact with posts.

Acceptance Criteria:
Given that I am in the role of an unregistered user
When I open the webpage
Then the system shows me a Login or Register button
When I click on the button
Then the system shows me a page where I can login or register
When I fill in the required details (email, username, password)
And I click the "Register" button or press enter on the keyboard
Then the system stores my information and logs me in.

As an existing user, I want to sign in to my account so that I can interact with posts.

Acceptance Criteria:
Given that I am in the role of an existing user
When I open the webpage
Then the system shows me a Login or Register button
When I click on the button
Then the system shows me a page where I can login or register
When I fill in the required details (username, password)
And I click the "Login" button or press enter on the keyboard
The system ensures my credentials are correct and logs me in.

As a logged-in user, I want to change my account information so that I can have a profile that is up-to-date.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the webpage
Then the system shows me a button that leads to a page where I can edit my profile
When I click on the button
Then the system shows me an account management page
When I fill in any details I'd like to change
And I click the "Save" button
Then the system stores my up-to-date information and updates my profile.

Creating Posts

As a logged-in user, I want to create polls so that I can quantifiably see what other users think about a topic.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a button that allows me to make a post
When I press that button
Then the system shows me pop up that allows me to create a poll, review, or discussion
When I click on the poll option
And fill in the options and press "Send"
Then the system posts my poll on the website.

As a logged-in user, I want to create reviews so that I can share my opinion on a song/artist/album.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a button that allows me to make a post
When I press that button
Then the system shows me pop up that allows me to create a poll, review, or discussion
When I click on the review option
And fill in my opinions on a song and press "Send"
Then the system posts my review on the website.

As a logged-in user, I want to create discussions so that I can interact with other users and see their opinions.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a button that allows me to make a post
When I press that button
Then the system shows me pop up that allows me to create a poll, review, or discussion
When I click on the discussion option
And fill in a discussion topic and press "Send"
Then the system posts my discussion on the website.

Interact With Posts

As a user, I want to view popular posts on an "endless" feed so that I can have a seamless experience.

Acceptance Criteria:
Given that I am in the role of a user
When I open the "Home" page
Then the system shows me a series of posts
When I vertically scroll through posts
Then the system keeps loading new posts in advance so the feed seems "endless".

As a logged-in user, I want to "Like" posts so that I can show support for quality content.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a series of posts
Then the system shows me a button on each post to like that post
When I click the click the like button
Then the system will update to show that I have liked the post.

As a logged-in user, I want to comment on posts so that I can share my thoughts.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a series of posts
When I click the desired post
The system shows me a pop up that allows me to enter a comment
When I type and enter my comment
The system will append my comment onto the post's comments.

Interact With Others

As a user, I want to view other user's profile information so that I can understand who the user is.

Acceptance Criteria:
Given that I am in the role of a user
When I open the "Home" page

Then the system shows me a series of posts
When I click the desired post
The system shows me a pop up including the users profile username/image
When I click the username/image
The system shows me the users profile page including their profile information.

As a user, I want to view all of a user's posts from their profile so that I can see all of their opinions.

Acceptance Criteria:
Given that I am in the role of a user
When I open the "Home" page
Then the system shows me a series of posts
When I click the desired post
The system shows me a pop up including the users profile username/image
When I click the username/image
The system shows me the users profile page with their posts at the bottom of the page.

As a logged-in user, I want to follow other users so that I can stay up to date with their recent content.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a series of posts
When I click the desired post
The system shows me a pop up including the users profile username/image
When I click the username/image
The system shows me the users profile page with a follow button
When I click the follow button
The system will update to show that I have followed that user.

As a logged-in user, I want to only see posts by people I follow in an "endless" feed so that I can see content that interests me.

Acceptance Criteria:
Given that I am in the role of a logged in user
When I open the "Home" page
Then the system shows me a series of posts of the people I follow
When I scroll down
The system will scroll down the "endless" feed, showing me more posts of people I follow.

Interact With Artists/Albums/Songs

As a logged-in user I want to follow my favorite artists/albums/songs so that I can participate in recent discussions.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a feed of posts by users related to songs/albums/artists
When I click on that song/album/artist
Then the system shows me a page dedicated to that song/album/artist
The system also displays a button which lets me follow the topic
When I press the "Follow" button
Then the system persists my action of following the song/album/artist and will display posts related to the topic under my "Followed" feed.

As a user, I want to see all posts related to an artist so that I can understand how people perceive them.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a feed of posts by users related to songs/albums/artists
When I click on an artist
Then the system shows me a page dedicated to that artist with a tab dedicated to posts related to the artist
When I click on this tab
Then the system shows me all posts related to that artist.

As a user, I want to see all posts related to an album so that I can understand it's public reception.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a feed of posts by users related to songs/albums/artists
When I click on an album
Then the system shows me a page dedicated to that album with a tab dedicated to posts related to the album
When I click on this tab
Then the system shows me all posts related to that album.

As a user, I want to see all posts related to a song so that I can understand the general consensus on it.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a feed of posts by users related to songs/albums/artists
When I click on a song
Then the system shows me a page dedicated to that artist with a tab dedicated to posts related to the song
When I click on this tab
Then the system shows me all posts related to that song.

Search for Content

As a user I want to search for other users so that I can find my friends and popular users.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a button I can use to search
When I press that button
Then the system shows me a search page with a large search bar with 4 options underneath it, users, songs, albums, and artists
When I press the users option and fill in the search bar
And press the search button or press the "Enter" key
Then the system shows me users that match my search.

As a user, I want to search for an artist so that I can see discussion and music related to them.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a button I can use to search
When I press that button
Then the system shows me a search page with a large search bar with 4 options underneath it, users, songs, albums, and artists
When I press the artist option and fill in the search bar
And press the search button or press the "Enter" key
Then the system shows me artists that match my search.

As a user, I want to search for an album so that I can see posts related to the album and its songs.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a button I can use to search
When I press that button
Then the system shows me a search page with a large search bar with 4 options underneath it, users, songs, albums, and artists
When I press the albums option and fill in the search bar
And press the search button or press the "Enter" key
Then the system shows me albums that match my search.

As a user, I want to search for a song so that I can see posts related to the song.

Acceptance Criteria:
Given that I am in the role of a user
When I open the webpage
Then the system shows me a button I can use to search
When I press that button
Then the system shows me a search page with a large search bar with 4 options underneath it, users, songs, albums, and artists
When I press the songs option and fill in the search bar
And press the search button or press the "Enter" key
Then the system shows me songs that match my search.

Non-Functional Features

- The system should be able to maintain concurrent 200 user sessions and respond to 1000 requests per minute.
- Users should be able to access and use our web app using Chrome, Firefox and Edge.
- All sensitive user data is encrypted in transit and at rest on the server.

Technologies

- Programming Language (Frontend and Backend):

  o TypeScript

      - We used TypeScript for everything because it is a strongly-typed language built on top of JavaScript, a weakly-typed language, which helps with code cleanliness, readability, and testing. Additionally, all members of

the development team have experience using TypeScript, so there isn't a steep learning curve to start the development of our app.
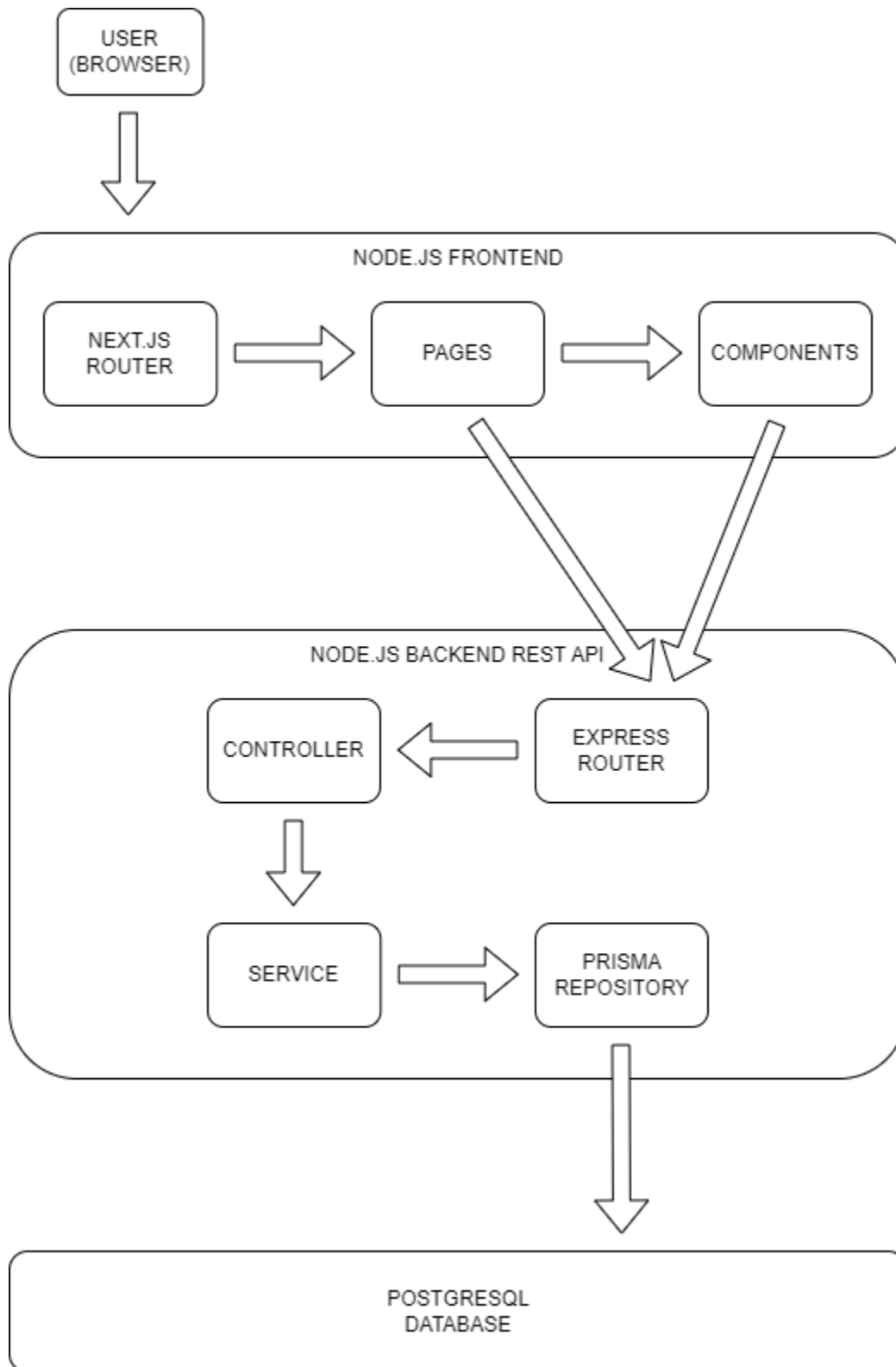
- Frontend:

  o NextJS/React

    - NextJS is built on top of React, which allows for the reuse of components. It has more features and speeds up development by providing a better initial project set up with things like routing and quicker shipment to production. Our reason to pick it was flexibility in choosing between static site generation and server side site generation, and the performance enhancements it can provide.

- Backend:

  o Express

    - Express routing is very straightforward and fits nicely with the chosen front-end framework. That makes it easier for developers to see the flow of data in both directions. Furthermore, it scales well and provides reasonable performance to support most modern apps with a large number of concurrent users.

  o Prisma

    - Prisma is an ORM that helps to ease interaction with our database. It supports PostgreSQL and MongoDB databases, so that gives us another layer of separation between components and ability to switch from SQL to NoSQL database later.

- Database:

  o PostgreSQL

    - We decided to go with PostgreSQL because it allows us to have more structured data, while NoSQL databases like MongoDB are more prone to introduce extra fields or other issues due to errors in code. Especially if validation for the scheme is not introduced and database design is not final. Additionally, the MusicBrainz music metadata dataset that we are using is downloadable in a PostgreSQL format, which reduces the risk of human error and data loss.

- Hosting:

  o Microsoft Azure

    - For hosting we chose Azure because it provides lots of options to host our app and database, as well as flexibility between high and low level of
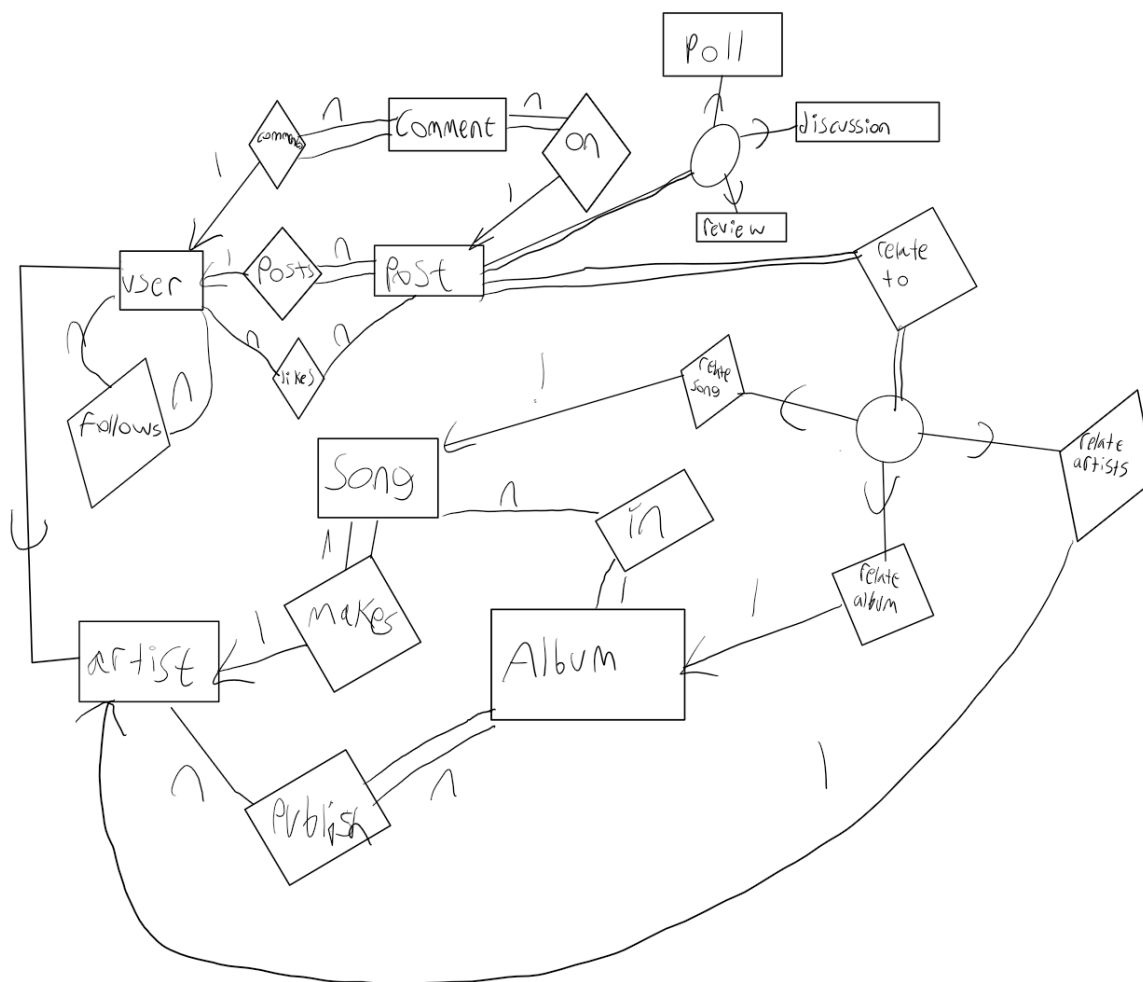
control over our servers, which would help us set everything up exactly as we want it.

- CI/CD:

  o GitHub Actions

    - For CI/CD we decided to go with GitHub actions. The main reason is that it's easily integrated with our GitHub code repository.

Architecture Diagram:

Relational Diagram:

Meeting Minutes

Date: September 12, 2023

Attendance:

All

Points Discussed:

Introductions
Project idea brainstorming

Date: September 14, 2023

Attendance:

All

Points Discussed:

Project proposals
Features brainstorming
Assigned project roles

Date: September 19, 2023

Attendance:

All

Points Discussed:

Features proposals
Agreed on technologies used:
- React
- Express
- NextJS
- PostgreSQL
- Docker
- Prisma
- Typescript

Date: September 21, 2023

Attendance:

All

Points Discussed:

Discussed and agreed on using MS Azure as a hosting system
Worked on proposal

Date: September 26, 2023

Attendance:

All

Points Discussed:

Worked on presentation

Date: September 27, 2023

Attendance:

All

Points Discussed:

Finalized presentation

Date: September 28, 2023

Attendance:

All

Points Discussed:

Finalized proposal