University of Regina

Project Proposal

Title:

Soundio

Group Name:

Soundio Crew

Student Names:

Andrew Petrie
Raj Wadia
Pingsong Huang
Tomiwa Ogunleye

Department of Computer Science

CS 476-02 (Software Development Project)
Spring 2023
Sirvan Parasteh

June 8th, 2023

Table of Contents

1. Project Description

Soundio is a music media client similar to other well known apps such as “Spotify” and “Soundcloud” with some notable differences. Soundio provides a platform for musicians and enthusiasts alike to listen, enjoy, and share music with the community.

2. Introduction

The idea for Soundio came about during our first meeting as a group when, during a brainstorming session, we collectively decided on a music application. This comes from the team’s passion for music as an art form as well as the desire for new challenges and opportunity to overcome said challenges and, in the process, learn and develop new skills and techniques for working with new languages and datatypes.

3. Problem Statement

The problem statement for our software project will cover our motivations, as well as, opportunities for learning and growth amongst the team. The anticipated problems we will face and our determination to overcome. Currently, we’ve established a database and all team members have connected to it, we’ve also created the conceptual schema maintaining 3rd normal form and have created concept art for the U.I of our application, all of which can be found on our github

3.1 Project Motivation

As stated previously, our motivation for taking on a music media client as our project, developed from our love of music and the desire to work with new languages and data types specifically for web development and audio data management. We desired a challenge for this project as we’ve already made websites during previous courses and want this project to be something we can learn new skills from and, as a result, deepen our desire for a finished product we can be proud of

3.2 Problem definition

Conceptually, this application will be similar to most, we require a front end that the user can interact with and navigate easily. We also need a back end for the storage and retrieval of information in regards to user credentials and audio data. The design for the front end will be created using a JavaScript library called “ReactJS” which will provide useful front end frameworks. We’ll also be learning “NodeJS” which is a backend JavaScript environment, as well as, “ExpressJS”

which will handle API calls to and from the server. Server-side is standard MySQL, which we are all familiar with, but the proficient storage, retrieval, and management of Audio data is still an ongoing process. Concerning audio data, great effort is being made to guarantee fair-use and copyright guidelines are met and followed. Finally we're in the middle of finding a domain service that can host our website and allow server-side programming.

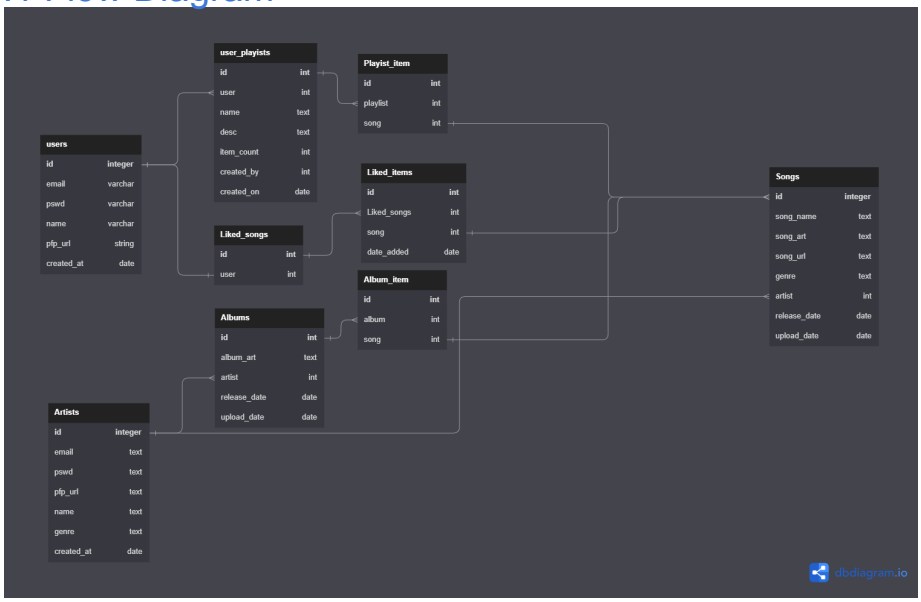
3.3 Application Domain

The application domain of Soundio is that of the music streaming industry. Which requires a smooth flow of data between the frontend and backend of our application. This demands absolute confidence in the conceptual schema and at least 3rd normal form.

4. Solution Overview

Already the team is hard at work to solve these issues and have been finding success. Royalty-free music will be used during the testing phase and concept art for the front-end has already been created. The most important task is the creation and design of our database, which we've already established and have made an entity relationship diagram for.

4.1 Flow Diagram



As you can see, we've worked out an ERD that was collectively agreed upon by the group. We've done our best to maintain a 3rd normal form between the entities as the efficient flow of data is crucial for any streaming services.

5. Project Scope

During our meeting on May 17th, we discussed the scope of our project and came up with as many use cases as possible. The many features we were able to describe depended on differing factors that go into our application, such as what sort of privileges the user has (Artist or Fan) as well as requirements for the project that can be parsed into functional and non-functional.

5.1 Functional Requirements

- User Registration
- User Authentication
- Profile Management
- Search function
- ‘Like’ function
- ‘Follow’ function
- Create playlist (both add and remove songs)
- Audio manipulation (Play, Pause, Skip, Rewind)
- Music Genres

Functional Requirements for privileged users (Artists)

- Upload music
- Delete music
- Manage music
- Create albums
- Credit music to self and collaborators

5.2 Non-Functional Requirements

- Password Encryption (using Hash and Salt)
- Forgot Password
- Navigation bar
- SQL injection security
- Profile pictures and customization
- Album art

Certain ideas we tossed around during some of our meetings have since been abandoned, such as a dark mode or the ability to share music. These ideas were scrapped in favour of time management.

6. Project Team and Roles

6.1 Team members and Duties

Team Members	Roles & Responsibilities
Andrew Petrie arp032@uregina.ca Github I.D: Ruswal	Team Lead & Backend Developer **Skills:** ● Proficient at writing SQL queries ● Experience with Database management and development ● Management Experience ● Creating Conceptual, Design, and Physical schemas **Responsibilities:** ● Writing SQL queries and triggers ● Password encryption and security ● Project oversight and aggregation of tasks and responsibilities ● Audio Management and Manipulation ● Github creation and maintenance ● Documentation ● Updating Task Board
Raj Wadia rmw462@uregina.ca Github I.D: raj1179	Frontend Dev & Database Admin **Skills:** ● Proficient with use of Unix and Windows commands ● Experience setting up databases and Domain hosting ● Creating Conceptual, Design, and Physical schemas ● Knowledgeable in Frontend and Backend development **Responsibilities:** ● Learning and using ReactJS, NodeJS and ExpressJS ● Developing Frontend ● Developing Backend ● Creating Database connections ● Updating Task Board

Pingsong Huang huang23p@uregina.ca Github I.D: PingsongHuang	Graphic & U.I Design, U.X manager **Skills:** ● Graphic design ● SQL ● Frontend Languages **Responsibilities:** ● Creating concept art to be used in the development of the front end ● General assistance in all areas ● Overseeing efficient flow of data ● User experience and navigation while on Soundio ● Conceptual flow of frontend ● Updating Task Board
Tomiwa Ogunleye ogunleto@uregina.ca Github I.D: TomiwaOgun	Frontend Developer **Skills:** ● Frontend design ● Frontend languages ● Funny (necessary for team morale) ● SQL queries ● PHP **Responsibilities:** ● Frontend oversight and development ● Learning and using ReactJS, NodeJS and ExpressJS ● Creating framework of the frontend ● Writing Javascript functions ● Frontend Style implementation ● Updating Task Board

6.2 Project Reporting Structure

Our team hosts weekly meetings on Friday to share all the work we've accomplished during the sprint, as well as discuss future plans and the workload to be divided amongst each other. The intention of this is so every team member knows exactly what each other is doing during the development process, as well as, to ensure strong communication between the members. We also created a task board on our Github that all members are responsible for updating.

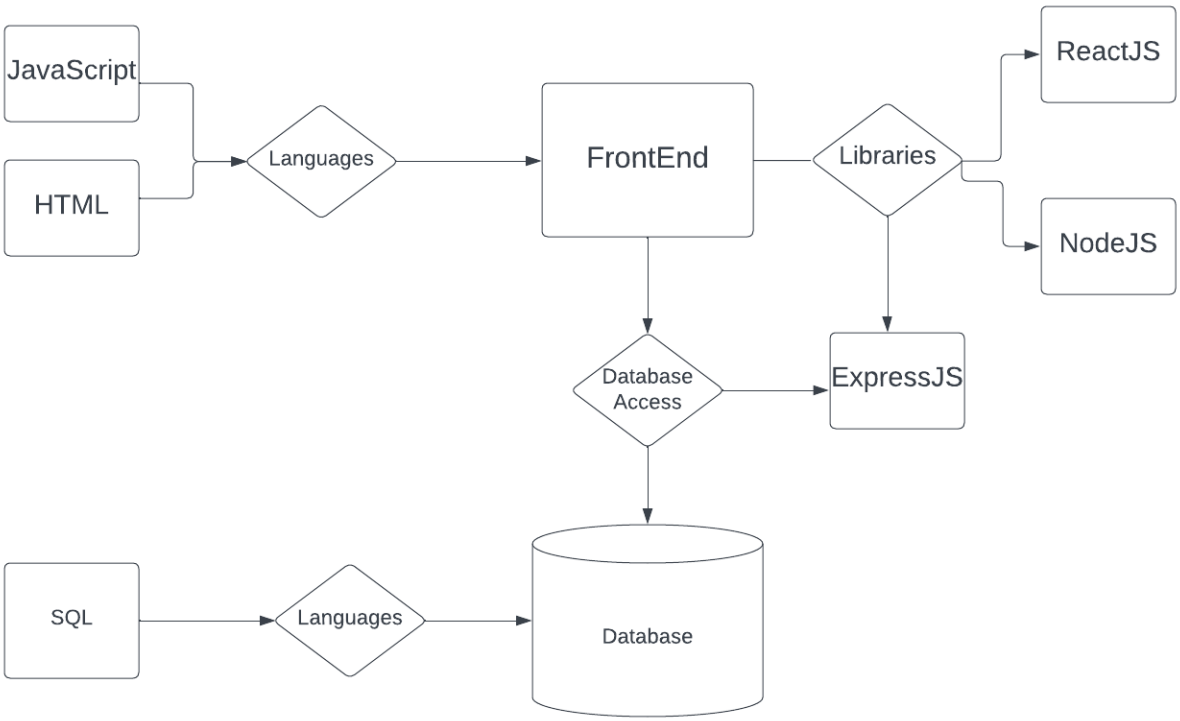
7. Timeline

Because we're limited by the amount of time we have, we've agreed to try to complete at least one sprint per week. This may seem difficult, and it is, but we have full confidence that if we keep our expectations for the outcome of each sprint achievable then we'll have no issue meeting the deadlines we've placed before us.

7.1 Project Milestones

Milestones	Tentative Due Date
Finish the graphic Designs for frontend pages, begin creating entities in Database, Find domain hosting service	June 9th
Creating a skeleton structure for website, establishing relationships between entities in Database, Domain hosting setup	June 16th
User feature implementation (login, register, etc) functional audio data storage and retrieval	June 23rd
Music Feature implementation (listen, add, audio client) User authentication and security features	June 30th
Any remaining features to be implemented, artstyle overhaul (going from skeleton structure to graphic design artstyle)	July 7th
Bug hunting and hotfixes, general polishing of product before launch	July 14th
Deployment and maintenance until presentation date	July 21st

8. Simple Project UML



(*Please note this UML design is not a complete comprehensive overview of the project but gives a good idea)