

# Project Report: RhythmBox - A Music Streaming Application

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*Date: 17/04/2024*

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## 1. Introduction

RhythmBox is a modern music streaming application built using Vue.js for the frontend and Flask with SQLAlchemy for the backend API. It offers users the ability to explore a vast library of songs, create playlists, like and report songs, and interact with a community of creators. The application is designed to be responsive, providing a seamless experience across various devices.

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## 2. Project Structure

The project follows a structured approach with separate directories for the frontend and backend:

- **Backend (Flask)**
    - **app.py**: Contains all the routes and business logic of the application.
    - **models.py**: Defines the database models (User, Album, Song, Like, Report, Playlist, PlaylistSong).
    - **config.py**: Configuration file for Flask app settings.
    - **tasks.py**: Contains background tasks implemented using Celery.
    - **static/**: Contains static files such as CSS, JavaScript, and images.
    - **migrations/**: Contains database migration scripts for managing schema changes.
  - **Frontend (Vue.js)**
    - **src/**: Contains all Vue.js source code.
    - **components/**: Reusable Vue components for building the user interface.
    - **views/**: Vue components representing different pages of the application.
    - **assets/**: Contains static assets such as images and fonts.
    - **router.js**: Vue router configuration for navigation.
    - **App.vue**: Main Vue application component.
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## 3. Features Overview

RhythmBox offers a range of features catering to different user roles:

- **User Registration and Login**: Users can register for an account and log in securely.
- **Album and Song Management**: Admin and creators can add, edit, and delete albums and songs.

- **Summary Reports:** Admins can view summary reports including total users, creators, songs, likes, and more.
  - **Song Interaction:** Users can play songs, view lyrics, like songs, and report inappropriate content.
  - **Playlist Creation:** Users can create and manage playlists, adding songs of their choice.
  - **Responsive Design:** The application is fully responsive, providing an optimal viewing experience on all devices.
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## 4. Implementation Details

### 4.1 Backend Development

- Flask is used to develop the backend API, providing endpoints for user authentication, album, and song management, playlist creation, and more.
- SQLAlchemy ORM is utilized for database interaction, allowing seamless communication with the SQLite database.
- Celery is integrated for background job scheduling, enabling tasks such as generating summary reports to run asynchronously.

### 4.2 Frontend Development

- Vue.js is the framework of choice for building the frontend, offering a reactive and component-based approach to UI development.
  - Vue Router is used for client-side routing, enabling navigation between different views of the application.
  - Chart.js is employed for visualizing summary reports with interactive charts and graphs.
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## 5. Future Enhancements

- **Enhanced User Profiles:** Implement features for users to customize their profiles, upload avatars, and manage account settings.
  - **Social Features:** Introduce social features such as following other users, sharing playlists, and commenting on songs.
  - **Advanced Search:** Enhance the search functionality with filters for genre, artist, and album, providing more targeted results.
  - **Real-time Notifications:** Implement real-time notifications for likes, playlist updates, and new song releases.
  - **Internationalization (i18n):** Add support for multiple languages to make the application accessible to a global audience.
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## 6. Conclusion

RhythmBox is a feature-rich music streaming application that combines the power of Vue.js and Flask to deliver an immersive user experience. With its intuitive interface, seamless navigation, and responsive design, the application sets a new standard for online music consumption. With continuous development and user feedback, RhythmBox has the potential to become a leading platform for music enthusiasts worldwide.

**Project Demonstration Video Link :** [VIDEO LINK](#)

**[https://drive.google.com/file/d/1TQzvj\\_tS44itKH1iQ5K\\_xQejwWLjHjki/view?usp=sharing](https://drive.google.com/file/d/1TQzvj_tS44itKH1iQ5K_xQejwWLjHjki/view?usp=sharing)**