Project Document for Rhythmic Tunes

1.Introduction

- Project Title:**Rhythmic Tunes**

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2. Project Overview

Purpose:

Rhythmic Tunes is a web application designed to provide users with seamless music listening experiences. The application allows users to browse,search,and play music tracks,create playlists,and discover new music based on their preferences.

Features:

Music player with play,pause,skip,and volume control.

Search functionality to find songs,albums,and artists.

Users authentication(login/signup).

Playlist creation and management.

Responsive design for mobile and desktop.

3. Architecture

• Component Structure:

The application is built using React.js with a component-based architecture. Major components include:

o Header: Contains the navigation bar and search bar. o Player: Music player controls (play, pause, volume, etc.).

o Sidebar: Displays user playlists and navigation links.

o HomePage: Displays featured tracks, recommended playlists, and new releases.

o SearchPage: Allows users to search for songs, albums, and artists. o PlaylistPage: Displays user-created playlists and allows playlist management.

• State Management: The application uses Redux for global state management. The Redux store manages user authentication, current playing track, playlist data, and search results.

• Routing: The application uses React Router for navigation. Routes include:

o /: Home page

o /search: Search page

o /playlist/:id: Playlist details page

o /login: User login page

4. Setup Instructions

• Prerequisites:

o Node.js (v16 or higher)

o npm (v8 or higher)

o Git

• Installation:

1. Clone the repository: git clone https://github.com/unm12912137/rhythmic tunes.git

2. Navigate to the client directory: cd rhythmic-tunes/client

3. Install dependencies: npm install

4. Configure environment variables: Create a .env file in the client directory and add the necessary variables (e.g., API keys).

5. Start the development server: npm start

5. Folder Structure

- Client:
  - src/components: # Reusable components (Header, Player, etc.)
  - src/pages: # Page components (HomePage, SearchPage, etc.)
  - src/assets: # Images, icons, and other static files
  - src/redux: # Redux store, actions, and reducers
  - src/utils: # Utility functions and helpers
  - App.js: # Main application component
  - index.js: # Entry point
- Utilities:
  - api.js: Handles API requests to the backend.
  - auth.js: Manages user authentication and token storage.
  - hooks/usePlayer.js: Custom hook for managing the music player state.

6. Running the Application

Frontend:

- To start the frontend server, run the following command in the client directory:

  npm start

- npm install
- npx json-server ./db/db.json
- npm run dev
- The application will be available at http://localhost:3000

7. Component Documentation

• Key Components:

- Header: Displays the navigation bar and search bar.
  - Props: onSearch (function to handle search queries).
- Player: Controls the music playback.
  - Props: currentTrack (object containing track details), onPlay, onPause, onSkip.
- PlaylistCard: Displays a playlist with its name and cover image.

  Props: playlist(object containing playlist details), on click (function to Handle playlist selection).

• Reusable Components:

o Button: A customizable button component.

- Props: text, onClick, disabled.

o Input: A reusable input field for forms and search.

- Props: type, placeholder, value, onChange.

8. State Management

• Global State:

The Redux store manages the following global states:

o user: Current authenticated user.

o player: Current playing track, playback status (playing/paused), and volume

o playlists: User-created playlists.

o searchResults: Results from the search functionality.

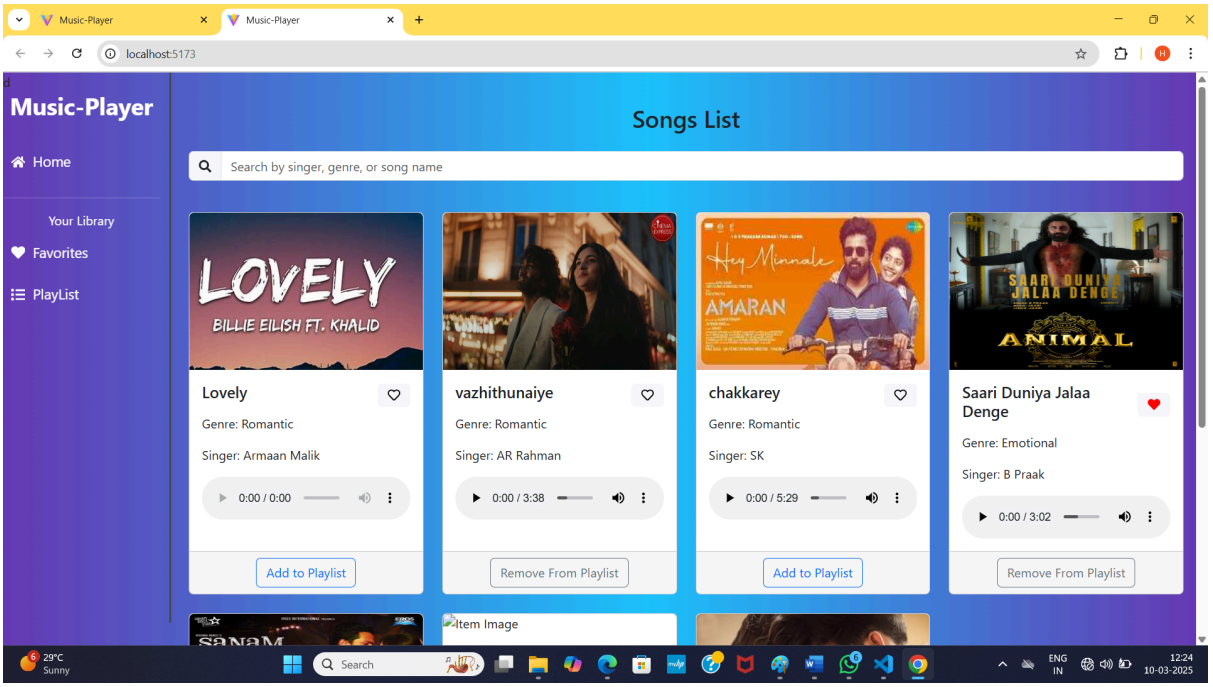
• Local State

Local state is managed using React's useState hook within components. For example, the SearchPage component manages the search query input locally.

9. User Interface

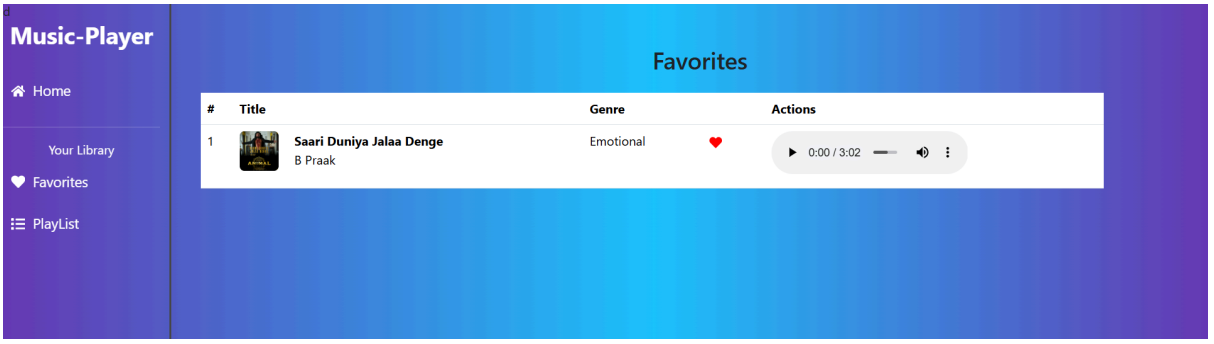
- Screenshots

    o Home Page: Display featured tracks and recommended playlists.



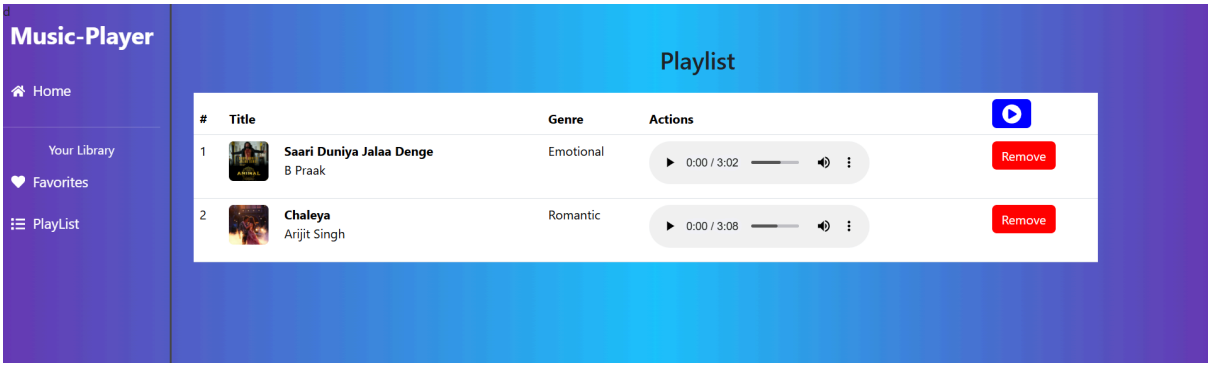
Search page:

Allows user to search for song,albums and artists.



Playlist page:

Display user created playlist and allows playlist management.



10. Styling

- **CSS Frameworks/Libraries**:

The application uses Styled-Components for styling. This allows for modular and scoped CSS within components.

- **Theming:**

A custom theme is implemented using Styled-Components, with support for light and dark modes.

11. Testing

- **Testing Strategy**:

o Unit Testing: Using Jest and React Testing Library.

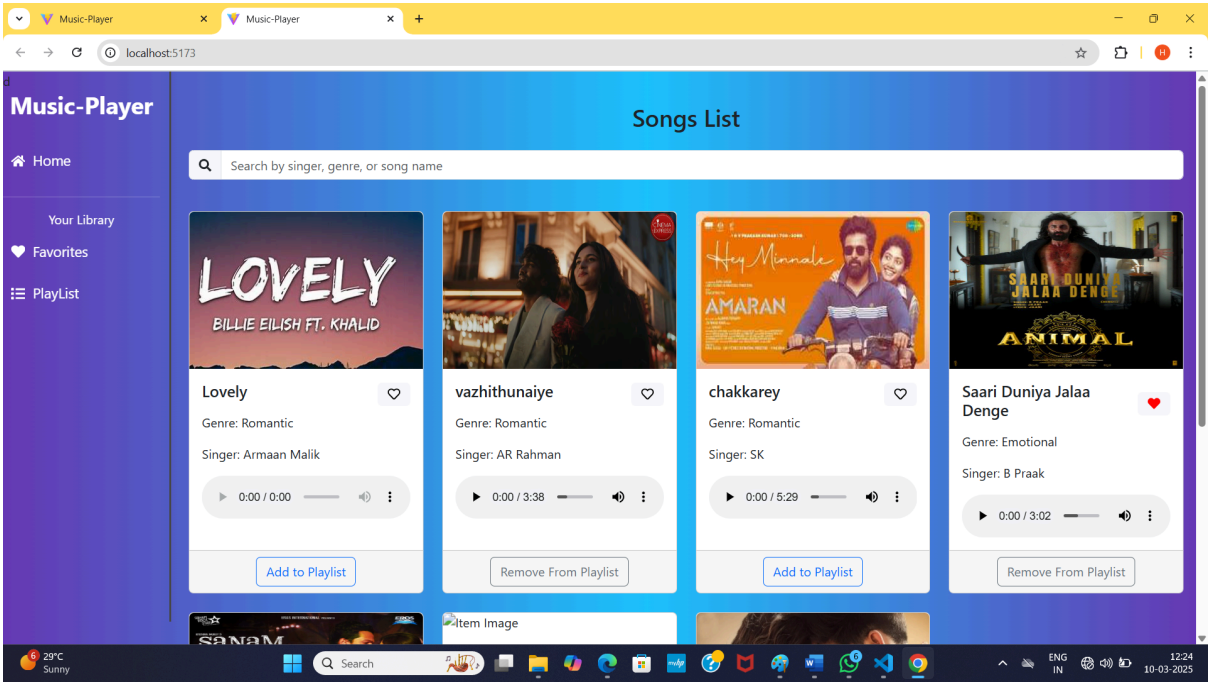
o Integration Testing: Is performed to ensure that components work together as expected.

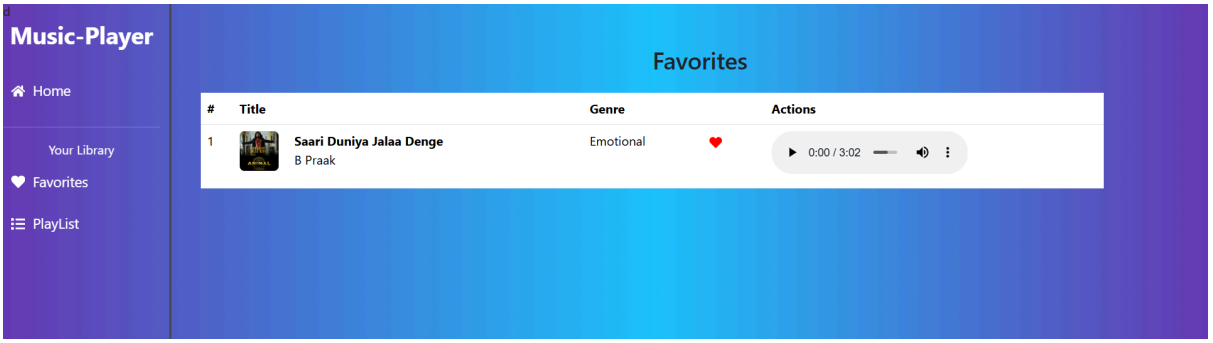
o End-to-End Testing: Cypress is used for end-to-end testing of user flows.

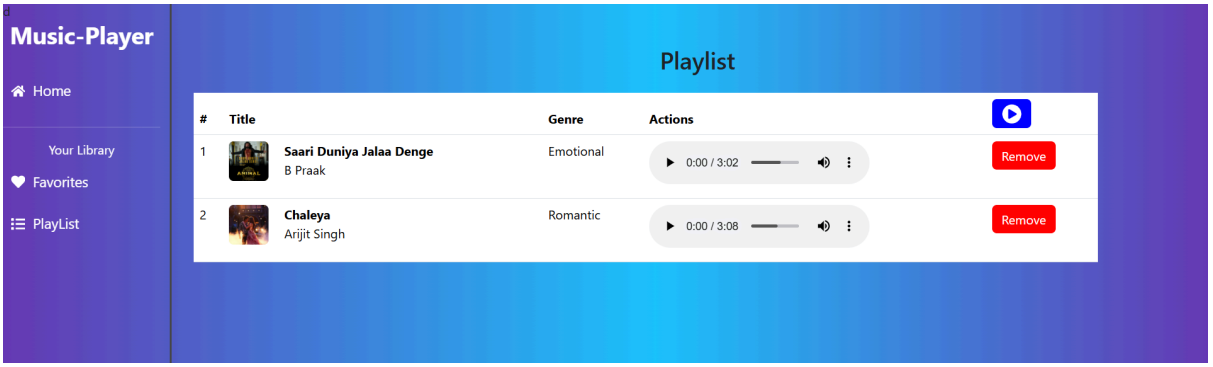
- **Code Coverage:**

o Code coverage is monitored using Jest's built in coverage tool. The current coverage is 85%.

12. Screenshots or Demo







Demo Link:

https://drive.google.com/file/d/1mBcACo9ceBGnvQluJljroFlu2VbCPH5i/view?usp=sharing

- **Screenshots**: See section 9 for UI screenshots.

13. Known Issues

- **Issue 1:** The music player sometimes skips tracks unexpectedly.
- **Issue 2**: The search functionality is slow with large datasets.

14. Future Enhancements

- **Future Features**:
  - Add support for user profiles and social sharing.
  - Implement a recommendation engine for personalized music suggestions.
  - Add animations and transitions for a smoother user experience.

This documentation provides a comprehensive overview of the Rhythmic Tunes project, including its architecture, setup instructions, and future plans.