

RYTHIMIC TUNES PROJECT DOCUMENTATION

INTRODUCTION

Project Title: RYTHIMIC TUNES :

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Project Overview

Purpose:

Rhythmic Tunes is a music streaming web application designed to provide users with a seamless, engaging, and personalized music experience. Built using **React.js** for the frontend and **Node.js** for the backend, the platform enables users to explore, play, and manage their favorite music effortlessly.

Features:

User Authentication: Secure login and signup using JWT authentication.

Music Library: Browse an extensive collection of songs by artists, albums, and genres.

Playlists Management: Create, edit, and delete custom playlists

Favorites & Likes: Mark songs as favorites for easy access.

Architecture:

Component Structure

The application follows a modular component-based architecture:

App.jsx – The main entry component.

Header.jsx – Navigation bar with search and user authentication options.

Home.jsx – Displays a list of songs, albums, and playlists.

MusicPlayer.jsx – A reusable component for playing songs with controls like play, pause, shuffle, and repeat.

Playlist.jsx – Displays user-created playlists and allows adding/removing songs.

SongCard.jsx – A reusable component for individual song display.

LyricsDisplay.jsx – Shows lyrics in sync with the currently playing song.

ThemeToggle.jsx – Dark mode and light mode toggle component.

Footer.jsx – Footer section with links and copyright information.

State Management:

- Uses Context API for managing global state.
- Music Context.jsx handles all music-related data, including songs, playlists, and player controls.
- Local state is used within individual components for UI interactions, such as play/pause status and theme switching.

Routing:

Uses react-router-dom for seamless navigation between pages.

Example Routes:

- **/ → Home Page** (Displays trending and recommended songs)
- **/song/:id → Song Details Page** (Displays lyrics, artist info, and play options)
- **/playlist/:id → Playlist Page** (Shows user-created playlists and songs)
- **/upload → Upload New Song Page** (Admin feature for adding songs)
- **/login → User Authentication Page**

Setup Instructions for Rhythmic Tunes

Prerequisites

- Install **Node.js** (latest stable version recommended)

Installation

1. Clone the repository:

```
git clone https://github.com/yourusername/rhythmictunes.git
```

2. Navigate to the project directory:

```
cd cookbook
```

3. Install dependencies:

```
npm install
```

4. Start the development server:

```
npm run dev
```

Folder Structure

```
📁 RhythmicTunes
|   |- 📂 src
|   |   |- 📂 components
|   |   |   |- 📄 Header.jsx
|   |   |   |- 📄 Footer.jsx
|   |   |   |- 📄 MusicPlayer.jsx
|   |   |   |- 📄 Playlist.jsx
|   |   |   |- 📄 SongCard.jsx
|   |   |   |- 📄 ThemeToggle.jsx
|   |   |- 📂 pages
|   |   |   |- 📄 Home.jsx
|   |   |   |- 📄 SongDetails.jsx
|   |   |   |- 📄 PlaylistDetails.jsx
|   |   |   |- 📄 Login.jsx
|   |   |- 📂 context
|   |   |   |- 📄 MusicContext.jsx
|   |   |- 📄 App.jsx
|   |   |- 📄 main.jsx
|   |   |- 📄 App.css
|   |   |- 📄 index.css
|   |   |- 📄 .eslintrc.cjs
|   |- 📄 package.json
|   |- 📄 package-lock.json
|   |- 📄 README.md
|   |- 📄 vite.config.js
|- 📂 backend
|   |- 📂 config
|   |   |- 📄 db.js
```

```
|   |- controllers
|   |   |- authController.js
|   |   |- songController.js
|   |   \- playlistController.js
|   \- models
|       |- User.js
|       |- Song.js
|       \- Playlist.js
\- routes
    |- authRoutes.js
    |- songRoutes.js
    \- playlistRoutes.js
\- README.md
```

Running the Application

- Run the frontend locally:
 - npm run dev
-

Component Documentation

Key Components

```

import React from "react";
import { useNavigate, useParams } from "react-router-dom";
const SongDetails = ({ songs }) => {
  const { id } = useParams();
  const navigate = useNavigate();
  const song = songs.find((s) => s.id === id);
  if (!song) {
    return <p className="loader">Loading...</p>;
  }
  return (
    <div className="song-page">
      <div className="song-container">
        {/* Song Header: Image and Details */}
        <div className="song-header">
          <div className="song-img">
            <img src={song.thumbnail} alt={song.title} className="song-image" />
          </div>
          <div className="song-info">
            <h3>{song.title}</h3>
            <p><strong>Artist:</strong> {song.artist}</p>
            <p><strong>Album:</strong> {song.album}</p>
            <p><strong>Genre:</strong> {song.genre}</p>
            <p><strong>Duration:</strong> {song.duration}</p>
          </div>
        </div>
        {/* Music Player */}
        <div className="music-player">
          <h4>Now Playing</h4>
          <audio controls>
            <source src={song.audioUrl} type="audio/mp3" />
            Your browser does not support the audio element.
          </audio>
        </div>
        {/* Back Button */}
        <button className="back-button" onClick={() => navigate(-1)}>
          Back
        </button>
      </div>
    );
};
export default SongDetails;

```

Reusable Components for RhythmicTunes

Header.jsx – Navigation bar for easy access to different sections.

Footer.jsx – Bottom section with credits, links, or additional info.

SongCard.jsx – Displays a single song card (Title, Artist, Album, Image).

SongForm.jsx – Handles adding/editing songs in the playlist.

State Management & UI for RhythmicTunes

Global State:

- Managed using **Context API** in MusicContext.jsx.
- Provides **songs data** to all components for seamless access.

Local State:

- Used within components for **UI interactions**, such as:
- **Handling form inputs** in SongForm.jsx.
- **Managing play/pause state** in the audio player.

User Interface Styling:

- **CSS:** Uses normal CSS for styling.
- **Theming:** Custom styles for buttons, song cards, and navigation.
- **Responsive Design:** Ensures a smooth experience across devices.

Testing Strategy:

- **Testing Framework:** Uses **Jest & React Testing Library** for unit testing.
 - **Code Coverage:** Ensures key components like SongCard.jsx and SongDetails.jsx are well-tested
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Screenshots or Demo

HOME PAGE:

Music-Player

localhost:5173/songs

Songs List

Search by singer, genre, or song name

	Title	Singer	Genre	Actions
1	Kanave Kanave	Anirudh Ravichander	Romantic	0:00 / 4:40
2	Malai Mangum Neram	Javed Ali, Chinmayi	Romantic	0:00 / 5:15
3	Ava Enna	Karthik	Romantic	0:00 / 5:20
4	Vizhi Moodi Yosithal	Karthik	Romantic	0:00 / 5:32

Add to Playlist Remove From Playlist Add to Playlist Add to Playlist

Type here to search

29°C Mostly clear 12:15 09-03-2025

FAVORITES:

Music-Player

localhost:5173/favorites

Favorites

#	Title	Singer	Genre	Actions
1	Ava Enna	Karthik	Romantic	0:00 / 5:20
2	Ennai Vittu	Sid Sriram	Romantic	0:00 / 3:52
3	Unna Nenachu	Ilayaraaja	Romantic	0:00 / 3:55
4	Kaadhal En Kaviye	Pradeep Kumar	Romantic	0:00 / 5:11

Type here to search

29°C Mostly clear 12:15 09-03-2025

PLAYLIST:

The screenshot shows a web-based music player application titled "Music-Player". The left sidebar has navigation links: "Home", "Your Library", "Favorites", and "PlayList". The main content area is titled "Playlist" and displays a list of three songs:

#	Title	Genre	Actions
1	DEVARA ANIRUDH RAVICHANDER	Romantic	▶ 0:00 / 3:42 ⏪ ⏴ ⏵ ⏹ ⏷ Remove
2	DEVARA ANIRUDH RAVICHANDER	ROCK	▶ 0:00 / 3:15 ⏪ ⏴ ⏵ ⏹ ⏷ Remove
3	VETTAIYAN ANIRUDH RAVICHANDER	Romantic	▶ 0:00 / 3:55 ⏪ ⏴ ⏵ ⏹ ⏷ Remove

The status bar at the bottom shows system icons and the date/time: 01:57 PM 08-03-2025.

Demo Link:

https://drive.google.com/file/d/1J6JizhS4Jv_Vy5hGuQKc9iEFkfAy2I-J/view

Known Issues

- Song files are not stored persistently yet.
- Filtering options for songs need refinement (e.g., by artist, album, or genre).

Future Enhancements

- Add a favorites/playlist feature to allow users to save songs.