FrontendDevelopmentwithReact.js

ProjectDocumentationforRhythmicTunes

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1. Introduction

- **Project Title**: **Rhythmic Tunes**
- **TeamMembers**:

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2. ProjectOverview

- **Purpose**: RhythmicTunesisawebapplicationdesignedtoprovideuserswithaseamlessmusic listeningexperience.Theapplicationallowsusers tobrowse,search,andplaymusic tracks,createplaylists,anddiscovernewmusicbasedontheirpreferences.
- **Features**:
  - Musicplayerwithplay,pause,skip,andvolumecontrol.
  - Searchfunctionalitytofindsongs,albums,andartists.
  - Userauthentication(login/signup).
  - Playlistcreationandmanagement.
  - Responsivedesignformobileanddesktop.

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3. Architecture

- **ComponentStructure**: TheapplicationisbuiltusingReact.jswithacomponent-basedarchitecture.Major components include:

- **Header**:Containsthenavigationbarandsearchbar.
- **Player**:Musicplayercontrols(play,pause,volume,etc.).
- **Sidebar**:Displaysuserplaylistsandnavigationlinks.
- **HomePage**:Displaysfeaturedtracks,recommendedplaylists,andnew releases.
- **SearchPage**:Allowsuserstosearchforsongs,albums,andartists.
- **PlaylistPage**:Displaysuser-createdplaylistsandallowsplaylistmanagement.

- **StateManagement**: TheapplicationusesRedux**Redux**forglobalstatemanagement.TheReduxstoremanagesuser authentication, current playing track, playlist data, and search results.
- **Routing**: Theapplicationuses**ReactRouter**fornavigation.Routesinclude:
  - /:Homepage
  - /search:Searchpage
  - /playlist/:id:Playlistdetailspage
  - /login:Userloginpage

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4. Setup Instructions

- **Prerequisites**:
  - Node.js(v16orhigher)
  - npm(v8orhigher)
  - Git
- **Installation**:
  1. Clonetherepository:gitclone
  2. https://github.com/pappu-0211/music-streaming-app.git
  3. Installdependencies:npminstall
  4. Configureenvironmentvariables:Createa.envfileintheclientdirectoryand add the necessary variables (e.g., API keys).
  5. Startthedevelopmentserver:npmstart

5. FolderStructure

- **Client**:
  - **src/components:**#Reusablecomponents(Header,Player,etc.)
  - **src/pages:**#Pagecomponents(HomePage,SearchPage,etc.)
  - **src/assets:**#Images,icons,andotherstaticfiles
  - **src/redux:**#Reduxstore,actions,andreducers
  - **src/utils:**#Utilityfunctionsandhelpers
  - **App.js:**#Mainapplicationcomponent
  - **index.js:**#Entrypoint
- **Utilities**:
  - **api.js**:HandlesAPIrequeststothebackend.
  - **auth.js**:Managesuserauthenticationandtokenstorage.
  - **hooks/usePlayer.js**:Customhookformanagingthemusicplayerstate.

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6. RunningtheApplication

Frontend:

- Tostartthefrontendserver,runthefollowingcommandintheclientdirectory: npm start
- npminstall
- npxjson-server./db/db.json
- npmrundev
- Theapplicationwillbeavailableathttp://localhost:3000

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7. ComponentDocumentation

- **KeyComponents**:
  - **Header**:Displaysthenavigationbarandsearchbar.
    - Props:onSearch(functiontohandlesearchqueries).
  - **Player**:Controlsthemusicplayback.
    - Props:currentTrack(objectcontainingtrack details), onPlay, onPause, onSkip.

- **PlaylistCard**:Displaysaplaylistwithitsnameandcoverimage.
    - Props:playlist(objectcontainingplaylistdetails),onClick(functionto handle playlist selection).

- **ReusableComponents**:
  - **Button**:Acustomizablebuttoncomponent.
    - Props:text,onClick,disabled.
  - **Input**:Areusableinputfieldforformsandsearch.
    - Props:type,placeholder,value,onChange.

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8. StateManagement

- **GlobalState**:
  TheReduxstoremanagesthefollowingglobalstates:
  - **user:**Currentauthenticateduser.
  - **player:**Currentplayingtrack,playbackstatus(playing/paused),andvolume.
  - **playlists:**User-createdplaylists.
  - **searchResults:**Resultsfromthesearchfunctionality.
- **Local State**:
  LocalstateismanagedusingReact'suseStatehookwithincomponents.Forexample, the SearchPage component manages the search query input locally.

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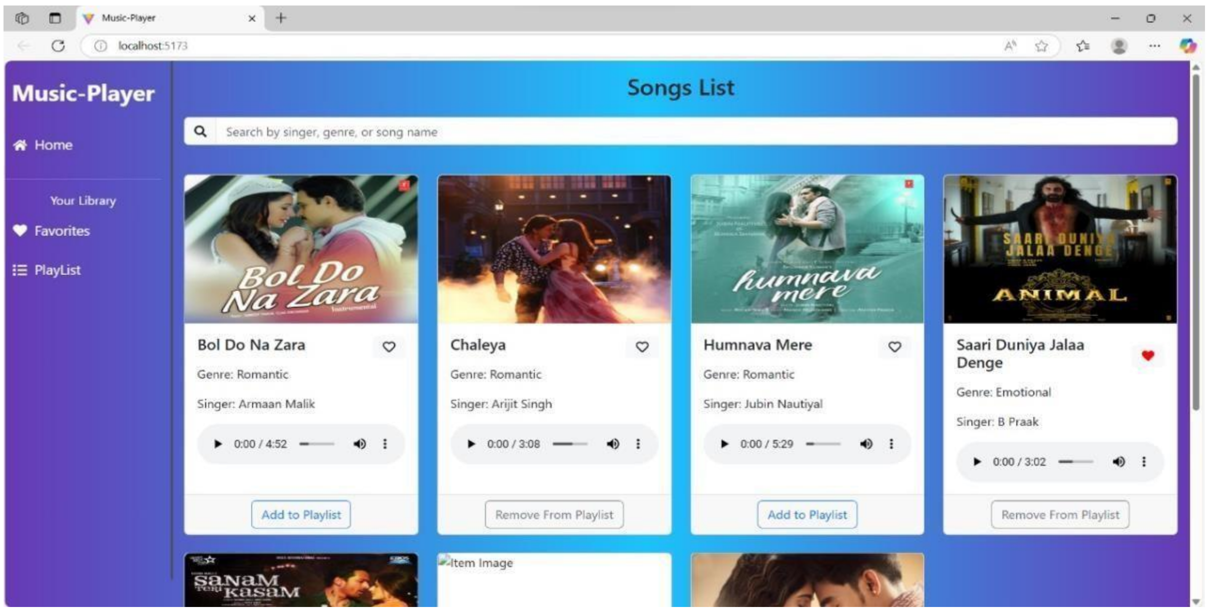
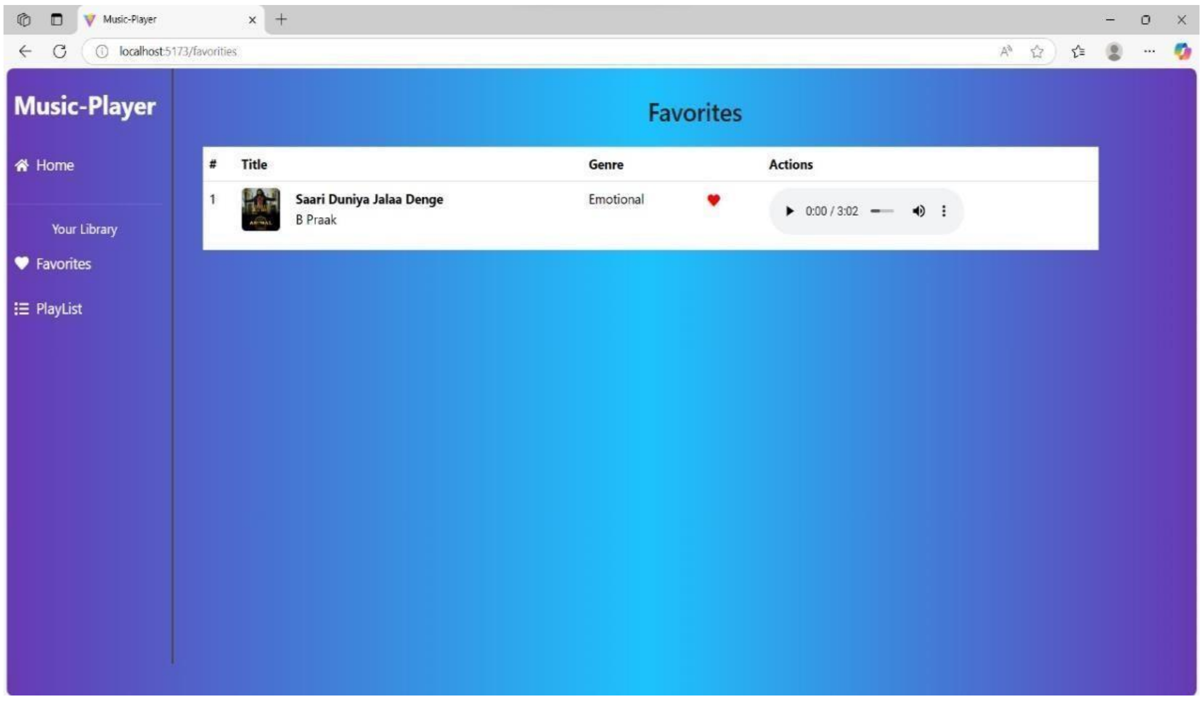
9. UserInterface

- **Screenshots**
  - **HomePage:**Displayfeaturedtracksandrecommendedplaylists.

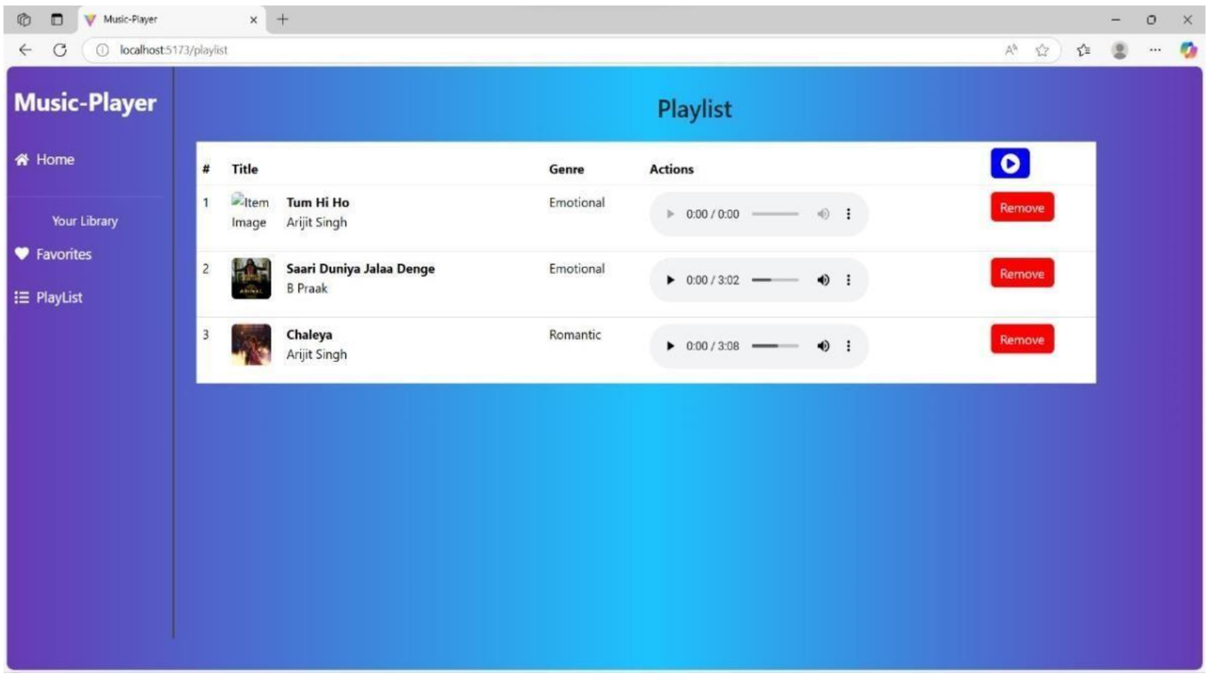


- **SearchPage:**Allowsuserstosearchforsongs,albums,andartists.



#	Title	Genre	Actions
1	Saari Duniya Jalaa Denge B Praak	Emotional	0:00 / 3:02

- **PlaylistPage:**Displaysuser-createdplaylistsandallowsplaylistmanagement.



Playlist

#	Title		Genre	Actions	
1	Item Image	Tum Hi Ho Arijit Singh	Emotional	0:00 / 0:00	Remove
2		Saari Duniya Jalaa Denge B Praak	Emotional	0:00 / 3:02	Remove
3		Chaleya Arijit Singh	Romantic	0:00 / 3:08	Remove

10. Styling

- **CSS Frameworks/Libraries**:
  Theapplicationuses**Styled-Components**forstyling.Thisallowsformodularand scoped CSS within components.
- **Theming**:
  AcustomthemeisimplementedusingStyled-Components,withsupportforlightand dark modes.

11. Testing

- **TestingStrategy**:
  - **UnitTesting:**Using**Jest**and**ReactTestingLibrary**.
  - **IntegrationTesting**:Isperformedtoensurethatcomponentsworktogetheras expected.
  - **End-to-EndTesting:Cypress**isusedforend-to-endtestingofuserflows.
- **CodeCoverage**:
  - CodecoverageismonitoredusingJest’sbuiltincoveragetool.Thecurrent coverage is 85%.

12. ScreenshotsorDemo

- **Demo Link: https://github.com/unm115u22cs138/Rythmic-tunes/commit/9ea9ad641eaca25607e3bc3ab5c0444a9ba9024b**

Screenshots:Seesection9forUIscreenshots.

13. KnownIssues

- **Issue1**:Themusicplayersometimesskipstracksunexpectedly.
- **Issue2**:Thesearchfunctionalityisslowwithlargedatasets.

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14. FutureEnhancements

- **FutureFeatures**:
  - Addsupportforuserprofilesandsocialsharing.
  - Implementarecommendationengineforpersonalizedmusicsuggestions.
  - Addanimationsandtransitionsforasmootheruserexperience.

Thisdocumentationprovidesacomprehensiveoverviewofthe**RhythmicTunes**project,including its architecture, setup instructions, and future plans.