NAAN MUDHALVAN PROJECT REPORT

PROJECT TITLE: RHYTHMIC TUNES -MUSIC

TEAM LEADER:

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2. PROJECT OVERVIEW:

- Rhythmic Tunes is a project that explores the power of rhythm and music.It focuses on
- creating simple rhythmic patterns using instruments or digital tools.The project studieshow rhythm affects mood, focus, and creativity.Participants can experience rhythm through listening, clapping playing.

Features:

- Creative Rhythms – Generates simple and engaging rhythmic patterns.
- Interactive Experience – Allows participation through clapping, tapping, or playing. Mood Enhancement – Tunes designed to boost energy, focus, or relaxation.
- Cultural Blend – Showcases rhythms from traditional and modern music Easy Accessibility – Can be enjoyed through digital tools or simple

3. ARCHITECTURE:

- Input Layer – Users provide input by clapping, tapping, singing, or using digita instruments.
- Processing Layer – The system/ software records and analyzes beats, rhythm, and patterns.

- Rhythm Generator – Creates rhythmic tunes using pre-set patterns or user-created sequences
- Output Layer – Plays back the rhythmic tunes through speakers, headphones, or instruments
- Feedback Layer – Users can listen, repeat, or modify the rhythm for creativity and learning.

Frontend: React.js + Bootstrap + Material UI

Role:

The user interface that delivers a smooth, responsive, and interactive experience.

Technologies Used:

React.js: Component-based structure for dynamic UI. Bootstrap: Layout grid system, responsiveness, and basis styling.

Material UI: Modern, sleek UI components (buttons, cards, modals, etc)

Backend: Node.js +Express.js

Role:

Handles business logic, API routing, user authentication, and connection with the datab

Technologies Used:

Node.js: Event-driven, non-blocking backend runtime for handling high concurrency.

Expre ss.js
logic

: Lightweight framework to build RESTful APIs and manage server-side

Database: MongoDB

Stores structured and unstructured data in flexible JSON-like documents.

[React.js (Frontend)]
|

| REST API Calls

↓

[Node.js + Express.js (Backend)]

|

| Mongoose Queries

↓

[MongoDB (Database)

4. SETUP INSTRUCTIONS:

Prerequisites:

- Node.js
- MongoDB
- Git

-React.js

-Express.js – Mongoose– Visual Studio Code

Installation Steps

Clone the Repository

git clone <your-repo-url> cd <repo-folder-name>

Install Client Dependencies

Cd code

npm install

Install Server Dependencies

cd code npm instal

Start Client (Frontend):

npm start

Start Server (Backend): In a separate terminal:

cd code

npm start

Clone the Repository

git clone <your-repo-url> cd <repo-folder-name>

Start the Application

Start Client (Frontend):

Bash

npm start

StartServer(Backed)

cd server

npm start

5. FOLDER STRUCTURE:

```
rhythmic-tunes565/
│
├── src/                    # All source code
│   ├── assets/               # Audio files, images, etc.
│   │   ├── audio/            # Sound files (e.g., .mp3, .wav)
│   │   └── images/           # UI images, icons
│   │
│   ├── components/           # Reusable UI or logic components
│   ├── modules/              # Feature-specific code (e.g., beat generator)
│   │   ├── player/           # Music player logic
│   │   ├── sequencer/        # Rhythm/timing features
│   │   └── recorder/         # Audio recording/upload
│   │
│   ├── utils/                # Helper functions
│   ├── config/               # App config, constants
│   └── main.py / app.js      # App entry point (based on language)
│
├── public/                 # Static files (index.html, icons, etc.)
│
├── tests/                  # Unit and integration tests
│   ├── test_player.py        # Example test file
│   └── ...
.
├── README.md               # Project overview
├── requirements.txt        # Python dependencies
```

```
├── package.json              # JS/Node dependencies
├── .gitignore                # Git ignore rules
└── LICENSE                   # Optional license file
```

- **COMPONENT DOCUMENTATION:**

Key Components:

- **Frequently used across the application**
- **Central to the user interface or interaction**

Reusable Components:

• Built for reuse in multiple places within the application

• Often composed of multiple smaller components

- **STATE MANAGEMENT:**

Global State:

Managed Context for MUSIC, favorites, and user login status.

Local State:

Form input states managed inside AddMusicForm.

- **USER INTERFACE:**

Include screenshots or GIFs of:

- Home page showing music
- music detail page
- Adding a music

- ## STYLING:

CSS Frameworks/Libraries:

Tailwind CSS for styling; Styled Components for scoped styles.

Theming:

Dark and light mode toggle implemented via context.

- ## TESTING:

Unit testing:

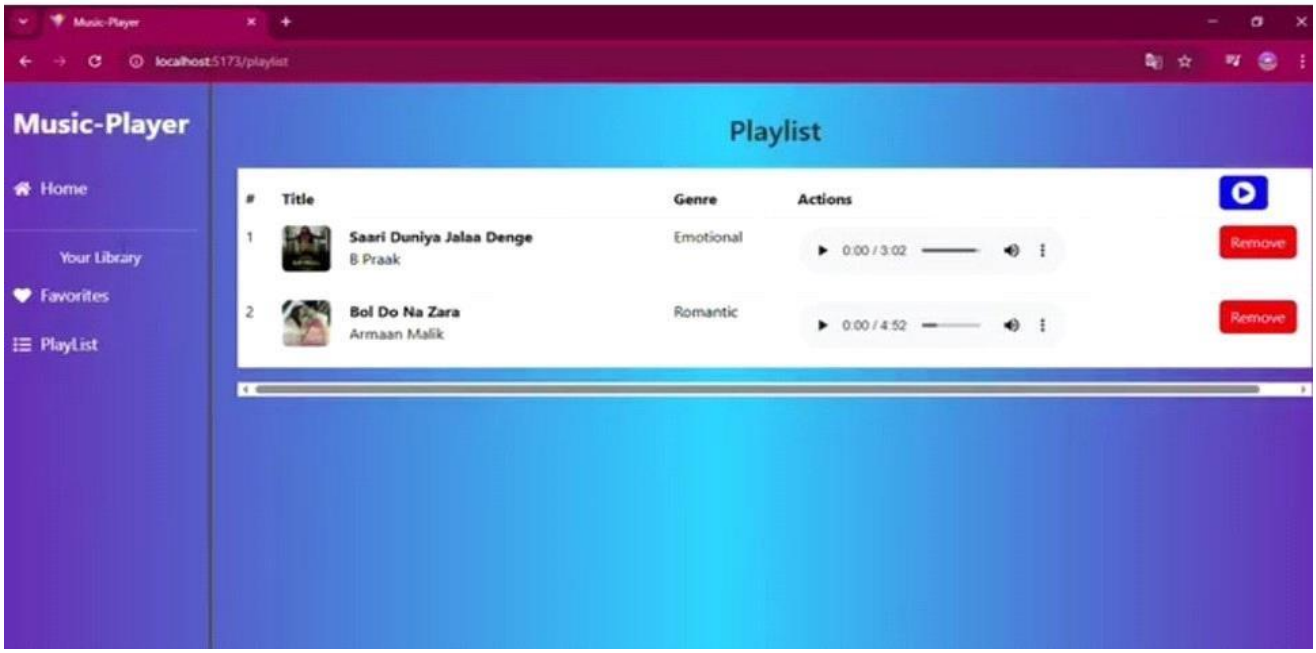
Testing individual components or functions in isolation to ensure they work correctly.

Integration testing:

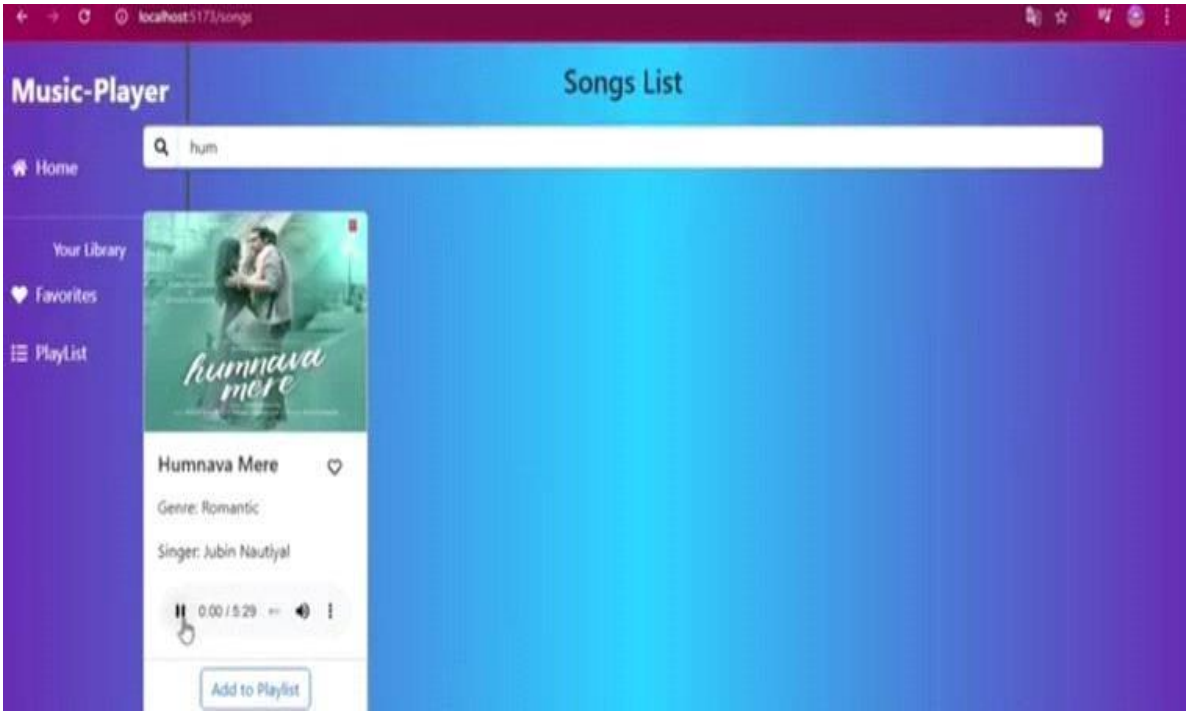
Testing how different components or modules work together as a whole

- ## SCREENSHOTS OR DEMO:

https://github.com/asper156c24ug156cap032/rhythmic-tunes.git



macOS installer (.pkg)

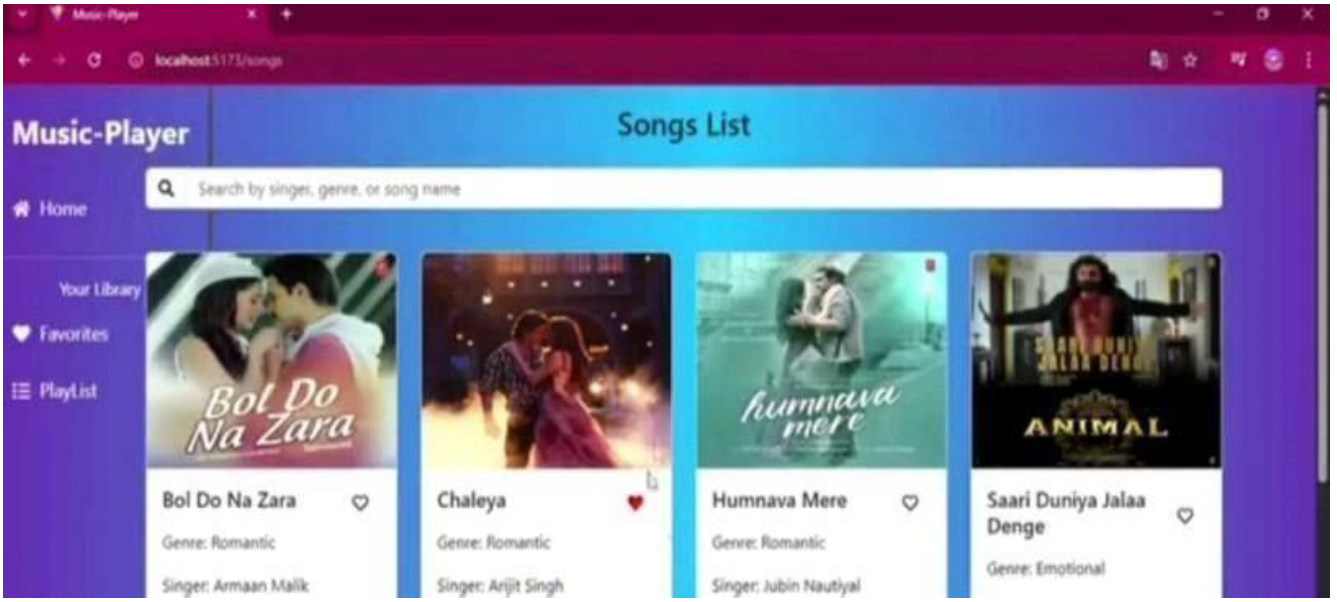


After all the downloads finishes, now type **npm run dev** and press **Enter**

Known Issues:

- Ambiguity of meter – difficultydistinguishing between duple and triple time.
- Syncopation – accents on weak beats that obscure the main pulse.
- Polyrhythm – conflicting rhythms (e.g., 3 against 2) causing complexity
- Notation vs. perception – written rhythm may differ from how it's heard.
- Irregular meters – unusual time signatures (5/8, 7/8) create grouping challenges.

PROJECT OUTPUT:



Future Enhancements:

- AI-assisted rhythm analysis – tools to detect and correct rhythmic irregularities in composition
- Interactivelearningapps– softwarethattrainsstudentstointernalizecomplexmetersandpolyrhy
- Dynamicnotationsystems– smarternotationthatbetterrepresentsswing,groove,andhumanfe
- Cross-culturalrhythmintegration– blendingrhythmictraditions(Indiantala,Africanpolyrhythm Western meter)fornewpossibilities.