RhythmicTunes: Your Melodic Companion
Ideation Phase
Brainstorm & Idea Prioritization

Date	31 January 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

Reference: https://www.mural.co/templates/brainstorm-and-idea-prioritization

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

⏱ 10 minutes

Person 1	Person 2	Person 3	Person 4
Users can search songs, albums, and artists and get recommendations.	Allow users to create, edit, and share playlists.	Fetch and display real-time lyrics while playing a song.	Display top charts and trending songs based on user preferences.

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

⏱ 20 minutes

Music Discovery & Search	Personalization & Playlists	Enhanced Listening Experience

Step-3: Idea Prioritization

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕐 20 minutes

Importance

If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Smart Search & Discovery

Playlist Creation & Management

Lyrics Display

Trending & Popular Songs Section

Feasibility

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)
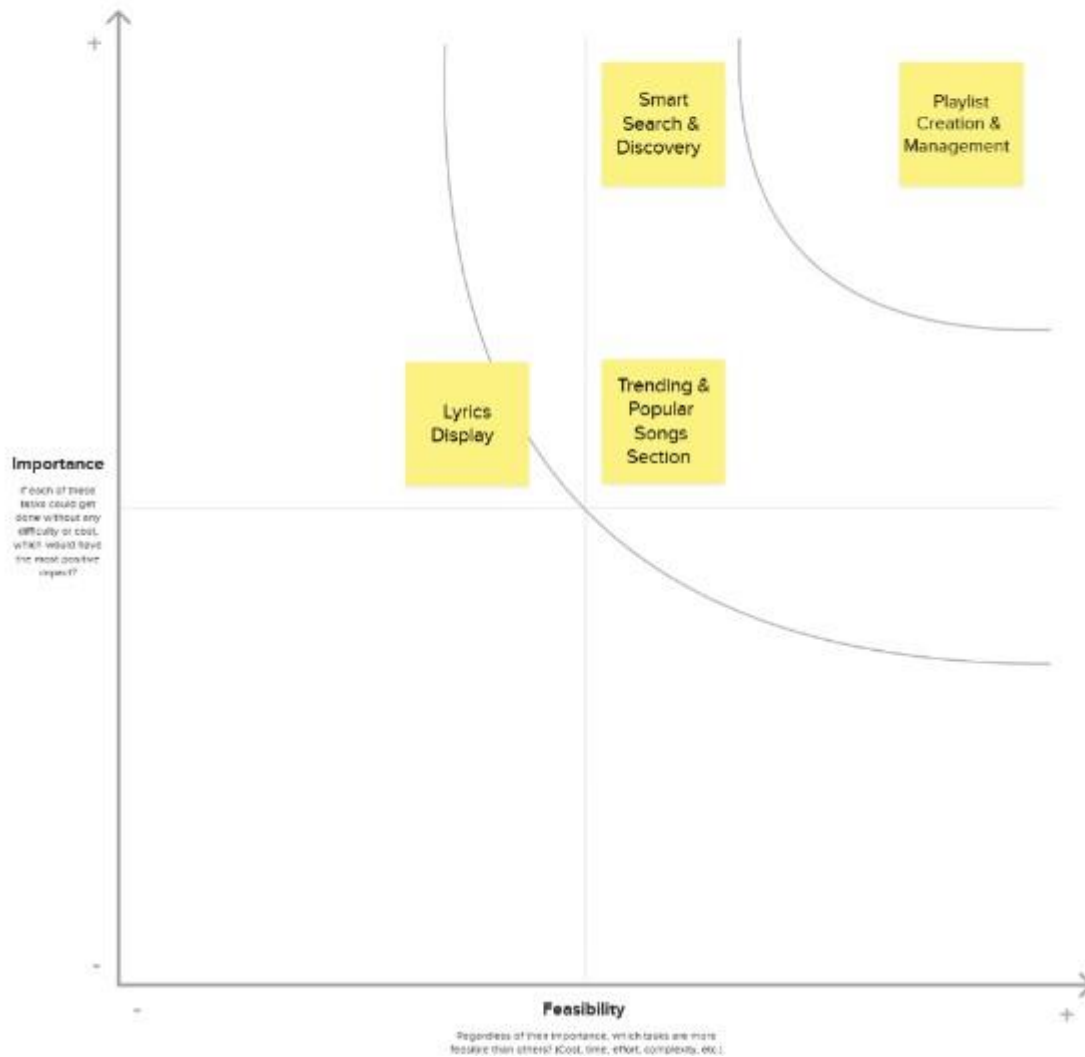
RhythmicTunes: Your Melodic Companion
Ideation Phase
Define the Problem Statements

Date	5 March 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	2 Marks

Customer Problem Statement Template:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

Reference: https://miro.com/templates/customer-problem-statement/

Example:

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	A casual music listener	Discover and play my favourite songs easily	The existing options are either cluttered or require unnecessary sign-ups	I just want a simple and quick way to listen to music	Frustrated and uninterested in complicated platforms
PS-2	A user exploring new music	Find new songs based on my preferences	Most platforms push mainstream tracks rather than personalized recommendations	I prefer fresh, unique music rather than what's always trending	Disconnected from my personal taste and less excited about using the platform
PS-3	A multitasker	Listen to music while working or studying	The platform has interruptions like ads or buffering issues	I need a seamless experience without distractions	Annoyed and frustrated with constant disruptions
PS-4	A mobile user	Stream music on my phone with a smooth interface	The UI is not optimized for mobile or lacks essential features	I want a responsive and intuitive design that makes navigation easy	Frustrated and likely to switch to another app

RhythmicTunes: Your Melodic Companion
Ideation Phase
Empathize & Discover

Date	31 January 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	4 Marks

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.

It is a useful tool to helps teams better understand their users.
Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Example:

Reference: https://www.mural.co/templates/empathy-map-canvas
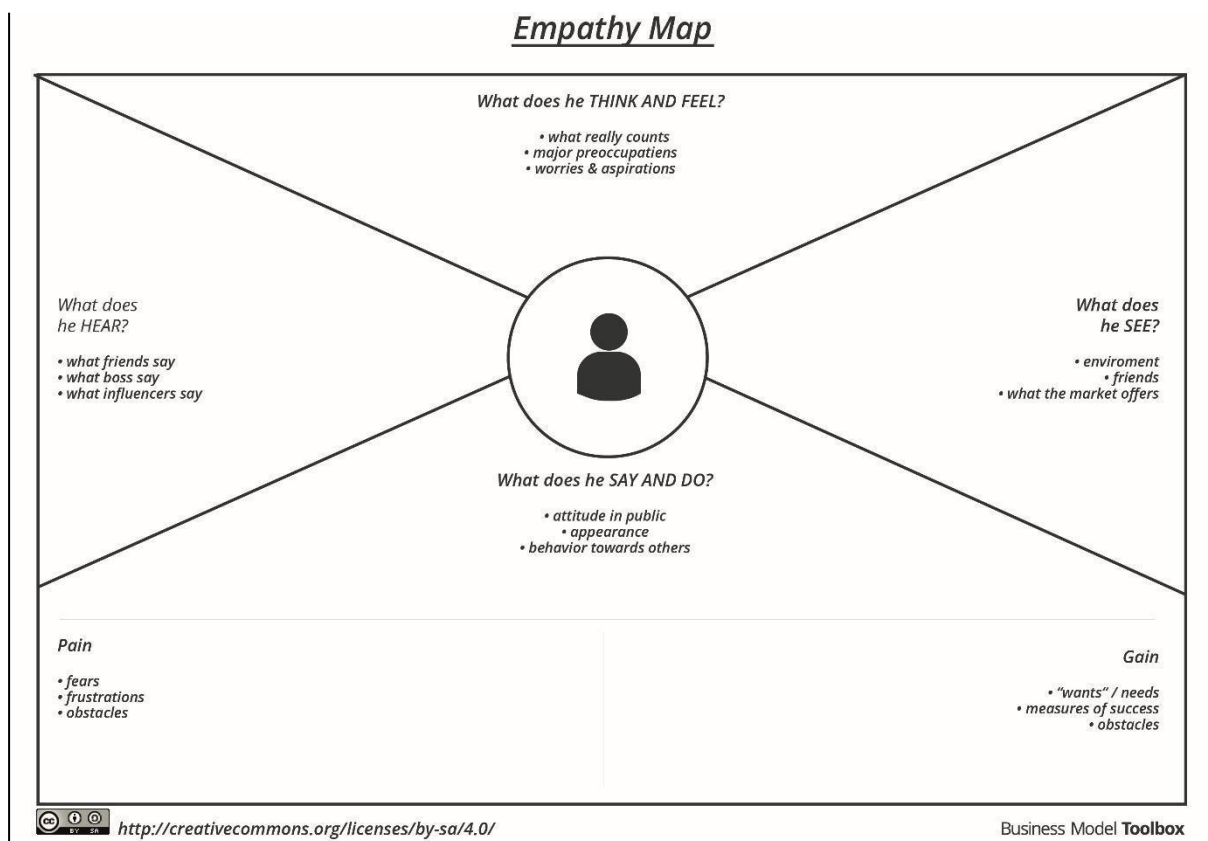
Says
What have we heard them say?
What can we imagine them saying?

Thinks
What are their wants, needs, hopes, and dreams?
What other thoughts might influence their behavior?

I want an easy way to discover new music.

Which platform gives me the best music recommendations?

Shivani Kapoor
Music Listener

Searches for new songs and creates playlists.

Excited when discovering a new favorite song.

Does
What behavior have we observed?
What can we imagine them doing?

Feels
What are their fears, frustrations, and anxieties?
What other feelings might influence their behavior?

See an example

Project Design Phase-II
Data Flow Diagram & User Stories

Date	31 January 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	4 Marks

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Example: DFD Level 0 (Industry Standard)
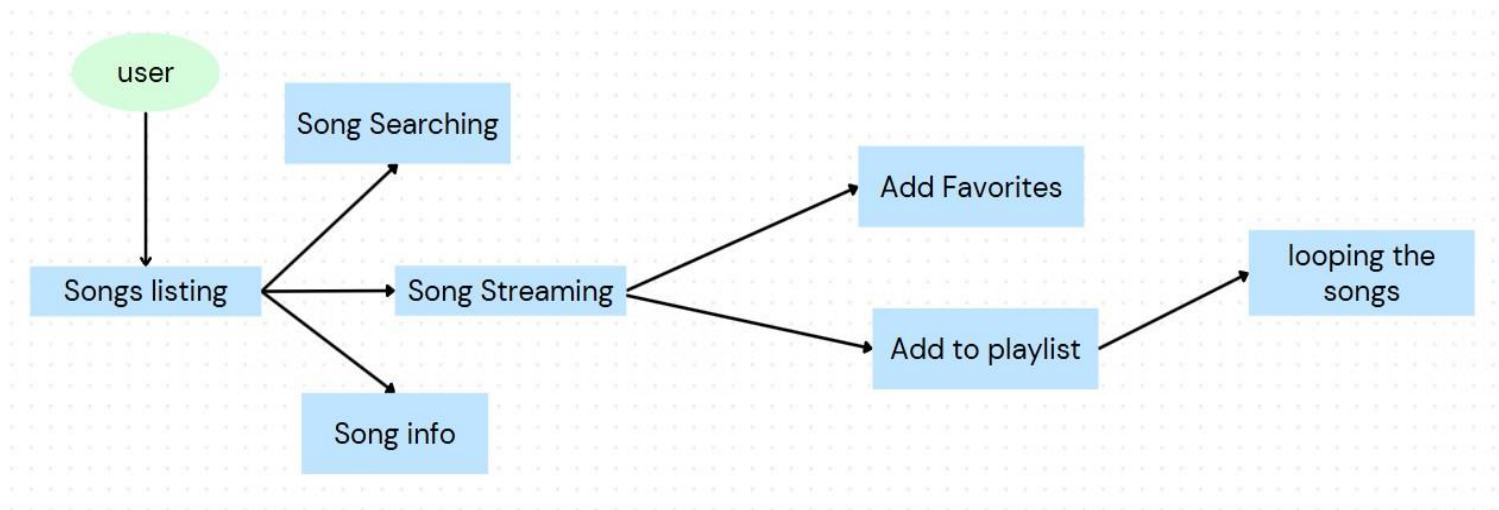
User Stories

User Story Table – Music Streaming App

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Music Discovery		USN-1	As a user, I can search for songs, albums, or artists.	I can see a list of relevant search results.	High	Sprint-1
		USN-2	As a user, I can view trending and recommended songs.	I can see recommended music on my dashboard.	Medium	Sprint-2
Playback		USN-3	As a user, I can play, pause, and skip songs.	I can control playback with basic buttons.	High	Sprint-1
		USN-4	As a user, I can view album artwork and song details while playing a song.	I can see album art, song title, and artist name.	Medium	Sprint-2
Playlists & Favorites		USN-5	As a user, I can create my own playlists.	I can save a collection of songs under a custom playlist name.	High	Sprint-2
		USN-6	As a user, I can add or remove songs from my playlists.	I can successfully manage songs within a playlist.	High	Sprint-2
		USN-7	As a user, I can like/favorite songs.	I can save my favorite songs and access them later.	Medium	Sprint-2
Audio Streaming		USN-8	As a user, I can stream high-quality audio.	I can listen to songs without buffering.	High	Sprint-1

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	31 January 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

Functional Requirements – Music Streaming App

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Music Search & Discovery	Search for Songs, Albums, and Artists
		View Trending and Recommended Music
FR-2	Playback & Streaming	Play, Pause, and Skip Songs
		Display Album Art and Song Details
FR-3	Playlist & Favorites	Create and Manage Playlists
		Add or Remove Songs from Playlists
		Like / Favorite Songs
FR-4	Audio Streaming	Stream High-Quality Audio

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	The app should have an intuitive and user-friendly interface, ensuring smooth navigation and accessibility for users of all demographics.
NFR-2	Security	User authentication and data must be secured using encryption (e.g., HTTPS, OAuth for third-party logins). The app should prevent unauthorized access and follow best security practices.
NFR-3	Reliability	The app should ensure a consistent and uninterrupted music streaming experience, minimizing crashes and downtime.

NFR-4	Performance	Songs should load and stream with minimal buffering. The app should respond to user interactions (search, playback, playlist management) within 2 seconds.
NFR-5	Availability	The system should maintain an uptime of at least 99.9%, ensuring accessibility across different time zones.
NFR-6	Scalability	The app should handle increasing numbers of users and concurrent streams efficiently without performance degradation. The architecture should support future feature expansion.

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	31 January 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Rhythmic Tunes

Reference: https://open.spotify.com/

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web-based interface for music streaming	HTML, CSS, JavaScript / React Js etc.
2.	Application Logic-1	Music streaming and metadata management	React js, Node js
3.	Application Logic-2	Playlist and user preference management	React js, Node js
4.	Database	Stores Songs, playlists, and metadata	JSON Web Server

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
5.	Open-Source Frameworks	Frontend frameworks	React.js, Node.js, BootStrap, Tailwind CSS
6.	Scalable Architecture	3-tier architecture with RESTful APIs	Microservices

References:

React.js Documentation

Node js Best Practice

JSON Web Server Referance

https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d

Project Planning Phase
Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Date	15 February 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Product Backlog & Sprint Schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Music Search & Discovery	USN-1	As a user, I can search for songs, albums, or artists.	3	High	
		USN-2	As a user, I can view trending and recommended songs.	2	Medium	
Sprint-2	Playback & Streaming	USN-3	As a user, I can play, pause, and skip songs.	2	High	
Sprint-3	Playlist & Favorites	USN-4	As a user, I can create my own playlists.	3	High	
		USN-5	As a user, I can add or remove songs from my playlists.	2	High	
		USN-6	As a user, I can like/favorite songs.	2	Medium	
Sprint-3	Audio Streaming	USN-7	As a user, I can stream high-quality audio.	3	High	
Sprint-4	User Profile Management	USN-8	As a user, I can update my profile information.	2	Medium	
		USN-9	As a user, I can change my password.	2	Medium	

| Sprint-4 | Customer Support | USN-10 | As a user, I can contact support via in-app chat. | 2 | Medium | |

Project Tracker, Velocity & Burndown Chart

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	1 Mar 2025	2 Mar 2025	20	2 Mar 2025
Sprint-2	20	6 Days	3 Mar 2025	4 Mar 2025	20	4 Mar 2025
Sprint-3	20	6 Days	5 Mar 2025	6 Mar 2025	20	6 Mar 2025
Sprint-4	20	6 Days	7 Mar 2025	8 Apr 2025	20	8 Apr 2025

ProjectDesignPhase Solution
**Architecture**

Date	15February2025
TeamID	153915
ProjectName	RhythmicTunes
MaximumMarks	4 Marks

Solution Architecture:

The solution architecture for **HarmonyStream**, the Rhythmic Tunes Application, ensures a **scalable, high-performance, and immersive platform** for discovering, streaming, and organizingmusicacrossgenres,artists,andpersonalizedplaylists.Thearchitectureprioritizes seamless audio delivery, real-time recommendations, and cross-device synchronization to enhance user engagement.

- Find the best tech solution to solve existing business problems.
- Describethestructure,characteristics,behavior,andotheraspectsofthe software to project stakeholders.
- Define features, development phases, and solution requirements.
- Providespecificationsaccordingtowhichthesolutionisdefined,managed,and delivered.

Example - Solution Architecture Diagram:
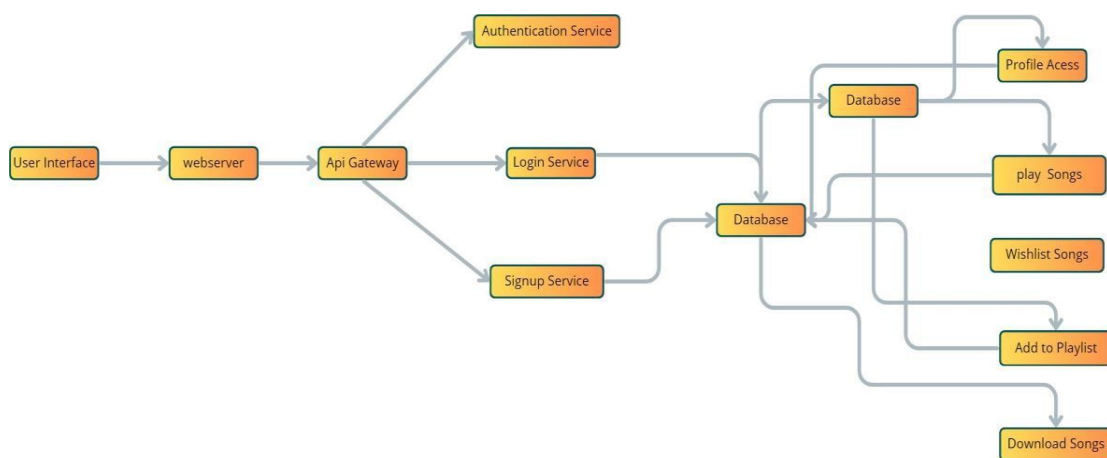
ProjectDesignPhase Problem–
SolutionFit Template

Date	6March2025
TeamID	153915
ProjectName	RhythmicTunes
MaximumMarks	2Marks

Problem–SolutionFitOverview:

The**Problem-SolutionFit**ensuresthattheidentifiedproblemalignswiththeneedsofmusiclisteners and that the proposed solution effectively addresses it. This validation is crucial before further development.

Purpose:

- Address the fragmented music streaming experience, where users struggle to find a comprehensiveplatformthatcaterstodiversemusicaltastesandofferspersonalized recommendations.
- Provideanintuitiveandengagingplatformforuserstodiscovernewmusic,artists,andplaylists without relying on multiple sources.
- Offerseamlessplayback,offlinelistening,andsocialsharingfeaturestoenhanceuser engagement and satisfaction.
- Provideaplatformthatempowersindependentartisttogainexposure.
- Improveaccessibilityandengagementthroughan**interactiveUI,responsivedesign,and well-structured data flow**.

ProblemStatement:

Manymusicenthusiastsfacechallengesinfindingasingleplatformthatoffers:

- Avastanddiversemusiclibrary.
- Accurateandpersonalizedmusicrecommendations.
- Reliableofflinelisteningcapabilities.
- Astrongsocialcommunityaroundmusic.
- Fairexposureforindependentartists.

Solution:

"RhythmicTunes",amusicstreamingwebandmobileapplication,willprovide:

- Anextensivemusiclibrarythroughpartnershipswithmajorandindependentrecordlabels.
- personalizedrecommendationsbasedonuserlisteninghistoryandpreferences.
- Offlinelisteningmodefordownloadedplaylistsandalbums.
- Dedicatedartistpages,tohelpusersfindmoreinformationabouttheartist.
- Afreemiumbusinessmodel,thatallowsforfreeandpaidusers.

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Project Design Phase
Proposed Solution Template

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Date	15 February 2025
Team ID	153915
Project Name	Rhythmic Tunes
Maximum Marks	2 Marks

Proposed Solution for Music Streaming App

S. No.	Parameter	Description
1	**Problem Statement** (Problem to be solved)	Users often struggle to find a seamless, personalized music streaming experience that offers high-quality playback, real-time recommendations, and an intuitive user interface. This project aims to provide a responsive and engaging music streaming platform that integrates with a third-party API.
2	**Idea / Solution Description**	The Music Streaming App is a React-based frontend solution that allows users to search, stream, and manage their favourite music. It leverages a third-party API to fetch music data and ensures an intuitive and interactive UI/UX for a seamless experience. Users can create and manage playlists, search for songs/artists, and enjoy personalized recommendations.
3	**Novelty / Uniqueness**	- **Personalized Playlists & Recommendations** using AI-powered API suggestions - **Intuitive UI/UX** with responsive design across devices - **Cross-Platform Support** for both mobile and web users - **Seamless Integration** with third-party music APIs for vast content availability
4	**Social Impact / Customer Satisfaction**	- Provides an **ad-free music streaming experience** with customizable playlists - **Brings emerging artists** to a wider audience through recommendations - **Increases user engagement** through interactive features like favourite tracks, genre-based suggestions, and social sharing
5	**Business Model (Revenue Model)**	- **Freemium Model**: Free tier with ads, premium subscription for an ad-free experience - **In-App Purchases**: Exclusive access to curated playlists, offline downloads - **Affiliate Partnerships**: Integration with brands and music merchandise stores
6	**Scalability of the Solution**	- Can be **expanded globally** by integrating multiple third-party music APIs - Supports **multi-user profiles** for enhanced personalization - Can be extended to **mobile applications** for iOS & Android using React Native - Potential integration with **AI-driven recommendation engines** for improved user experience

UserAcceptanceTesting(UAT)Template

Date	08March2025
TeamID	153915
ProjectName	Rhythmic Tunes
MaximumMarks	

ProjectOverview:-

ProjectName: RhythmicTunes
ProjectDescription:AReact-basedmusicstreamingapplicationthatallowsuserstosearch,play,and manage music using a third-party API. Features include,search, playback, playlists, and profile management.
ProjectVersion:v1.0
TestingPeriod:March1,2025-March8,2025

TestingScope:-

FeaturesandFunctionalitiestobeTested

✅**MusicSearch& Discovery**
✅**AudioPlayback(Play,Pause,Skip)**
✅**PlaylistManagement(Create,Edit,DeletePlaylists)**
✅**ProfileManagement(EditProfile,ChangePassword)**
✅**StreamingQuality&PerformanceTesting**
✅**ResponsiveUITesting(Mobile,Tablet,Desktop)**

UserStoriesorRequirementstobeTested

☑**UserRegistration&Authentication**
☑**Searching&ViewingMusicRecommendations**
☑**Playing&ControllingMusicPlayback**
☑**CreatingandManagingPlaylists**
☑**UpdatingProfileInformation**

Testing Environment

URL/Location:[EnterWebURL]
Credentials(ifrequired):

- **TestUser:**testuser@example.com/Test@1234

- **AdminUser:**admin@example.com/Admin@1234

Test Cases

Test Case ID	TestScenario	TestSteps	Expected Result	Actual Result	Pass/Fail
TC-001	MusicSearch Functionality	1. Enter a song nameinthesearch bar 2. ClickSearch	Matchingsongs should be displayed	[Actual Result]	[Pass/Fail]
TC-002	MusicPlayback (Play/Pause)	1. Clickonasong 2. ClickPlay/Pause button	Songshould start/stop playing	[Actual Result]	[Pass/Fail]
TC-003	PlaylistCreation	1. Navigateto Playlists2.Click "Create New Playlist"3.Enter Name & Save	Playlistshould be created successfully	[Actual Result]	[Pass/Fail]
TC-004	UI Responsiveness (Mobile)	1. Open app on mobile device 2. Navigatethrough pages	UI should be responsiveand properly displayed	[Actual Result]	[Pass/Fail]

BugTracking

Bug ID	Bug Description	StepstoReproduce	Severity	Status	Additional Feedback
BG-001	Musicplayback is lagging on slow networks	1.Playasongon3G network 2. Observe buffering issues	Medium	In Progress	Optimization required for low-speed connections
BG-002	UIoverlapson small screen devices	1. Open app on iPhone SE 2. Observeoverlapping UI	Low	Open	AdjustCSSfor small screens

Sign-off

Tester Name: [Enter Name]
Date:[EnterDateofCompletion]
Signature: [Enter Signature]

Notes

- **Ensuretestingcoversbothpositive&negativecases**
- **Bugtrackingshouldincludeseveritylevels&reproductionsteps**
- **Finalsign-offrequiredbeforedeployment**