Software Requirements Specification (SRS)

# Music Recommendation System

## 1. Introduction

Purpose:  
This document specifies the requirements for a Music Recommendation System. The system aims to suggest personalized music playlists, songs, and albums to users based on their listening history, preferences, mood, and real-time interactions.

Scope:  
The system will analyze user behavior, mood inputs, and genre preferences to recommend songs. It will support features such as playlist creation, mood-based recommendations, and integration with streaming platforms.

Overview:  
The document details functional, non-functional, user interface, and performance requirements for building an intelligent, scalable, and secure music recommendation application.

## 2. General Description

Functions:  
- Suggest personalized songs and playlists.  
- Support mood-based and genre-based music discovery.  
- Track listening habits for improved recommendations.  
- Allow users to like, dislike, or skip tracks to refine preferences.

User Community:  
- Music lovers using mobile/web apps.  
- Artists seeking listener analytics.  
- Admins managing content and recommendations.

## 3. Functional Requirements

Possible Outcomes:  
- User receives song recommendations based on past activity.  
- User creates and manages playlists.  
- System refines recommendations based on feedback (likes/dislikes/skips).

Ranked Order:  
1. User Registration and Login  
2. Music Recommendation Engine  
3. Playlist Management  
4. Integration with Streaming Services  
5. User Feedback Collection

Input-Output Relationship:  
- Input: User profile, listening history, mood selection, feedback.  
- Output: Personalized music recommendations, playlists, artist suggestions.

## 4. User Interface Requirements

Software Interfaces:  
- Integration with music streaming APIs (e.g., Spotify, Apple Music).  
- Mobile App Interface (Android/iOS).  
- Web Interface for desktop users.

Examples:  
- Search bar for finding songs.  
- Mood selection icons (happy, sad, energetic, calm).  
- "Recommended for You" section.

## 5. Performance Requirements

Response Time:  
Recommendations must be generated within 2 seconds of user input.

Throughput:  
System should handle 1000+ concurrent users seamlessly.

Scalability:  
Support increasing numbers of users and songs without performance degradation.

## 6. Non-Functional Attributes

Usability:  
Simple, intuitive interface for users of all ages.

Reliability:  
99.9% uptime with real-time backup of user preferences and playlists.

Security:  
- User data encryption (AES-256).  
- Secure API calls (OAuth 2.0).  
- Privacy compliance with GDPR guidelines.

## 7. Schedule and Budget

Timeline:  
- Requirement Analysis: 2 Weeks  
- Design & Development: 8 Weeks  
- Testing & Deployment: 3 Weeks

Cost Estimate:  
Approximate budget: ₹5,00,000 – ₹7,00,000 depending on cloud infrastructure and licensing.

## 8. Appendices

Supplementary Information:  
- API Documentation references.  
- Dataset details (Music metadata, user logs, etc.).

Glossary:  
- Recommendation Engine: System module that suggests songs to users.  
- Mood-based Recommendations: Song suggestions based on emotional input.  
- Playlist Management: Feature to create, edit, and delete song collections.