SOFTWARE REQUIREMENTS SPECIFICATIONS

FOR

MUSIC RECOMMENDATION SYSTEM

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1.   <u>Introduction</u>

1.1 AIM

The main aim of this document is to describe   "Song Recommendation System" requirements and necessities of system. Based on your conversations with the chatbot, the chatbot will study your feelings and suggest music from that particular category that suits your current mood. The main goal is to make it simpler for consumers to enjoy music while conversing with the chatbot about their life

1.2 Document Convention.

Font Face	Arial
Heading font size	22px
Sub Heading font size	18px
Table / Sub sub-heading font size	16px
Content font size	14px

Apart from the above mentioned convention we have also highlighted some keywords to make them stand apart.Every requirement has it's own prime concern and every functionality has it own worth.

1.3 Intended Audience and Reading Suggestions

The users of the app are the **target audience** for this text.Develops Initially came up with the requirements but they may change quickly depending on how users react to the features.

The Project Management and Development team, which will **evaluate, develop, and deploy** the system, will use this document as a reference. Under the guidance of Prof. Rajesh Bhatia, the developers will coordinate each activity occurring during the Software Engineering process.

1.4 Definition and Acronym

Term	Full Description
Admin	Person responsible for the upkeep, configuration, and reliable operation of the system
Users	The person using system
API	Application Programming Interface
JS	Java Script (A programming language whose frameworks will be used to develop the application)
Firebase	Google backed application development software which provides services like real-time database and storage.
Python	A programming language which will be used for any machine learning aspect of application.
IBM	International Business Machines Corporation
DFD	Data Flow Diagram
NPM	Package manager for NodeJs
NPX	Package executor for all packages installed using NPM.

1.5 Overview

The remaining part of document comprises of **3** sections as follows:

1 **Section-2:** It consists of problem statement.In these we have covered about System requirement for recommender system,system capabilities and user requirements specifications.

2 **Section-3:**It tells about the Requirements in details and constraints of such system

1. <u>Problem Statement</u>

2.1 System Capabilities

- The system aims to provide a blissful experience to users while listening to songs.
- The Minimal Viable Product of the system is a recommender system that uses user emotion analysis and maps songs to the user's desired genre and recommends songs base nid upon the user's past experiences with the chatbot.
- This service makes our music recommendation system unique from other music applications.

2.2 System Requirements

The functions of our music recommendations system is described below-

- **An intelligent agent / Bot** that can parse text, perform emotional intelligence, and generate song suggestions.
- The platform can draw on the user's previous engagement with the chatbot to generate song recommendations.
- A large **database** of songs for navigation and finding the best suitable song.
- **Visualizing** the user's emotions, song genres, and other statistics for better understanding.

2.3 User Requirements Specifications

- The age restriction of 12 years old is in place to ensure that users are able to provide the chatbot with accurate and relevant information for better results.
- **Hardware:-**
    1. A good internet connection/ Wifi .
    2. Headphones/ Speaker
    3. A computing device laptop.

2.4 System Constraints

- **IBM Tone Analyzer API**: The IBM Tone Analyzer API is a cloud-based service that can be used to analyze the tone of text and speech. It can identify the emotions that are expressed in the text, as well as the overall tone of the conversation.
- **Not enough data, computational power, or time**: The IBM Tone Analyzer API is a powerful tool, but it requires a lot of data to train. We do not have enough data to train our own model API, and we do not have the computational power or time to do so.
- **Cost of keeping it running** : The IBM Tone Analyzer API is a cloud-based service, which means that it needs to be kept running 24/7. This can be expensive, especially if we need to use a lot of data.
- **Self-built models may not be as efficient:** Even if we were able to create our own model API, it may not be as efficient as the IBM Tone Analyzer API. This is because the IBM Tone Analyzer API has been trained on a massive dataset of text and speech, which gives it a better understanding of the nuances of human language.

3. Requirements:

• Functional Requirements

Functional Feature	Remarks
Authentication	Users can log in with their Google accounts.
Message Sender	Chatbots can receive messages from users.
Observe received messages	Users can see chatbot messages (including short error messages).
Seeing error messages	Only the admin will be able to see the complete error message.
Verify default song list	Without even communicating with the chatbot, users will be able to view some music.
Check past emotion	Users may look up the emotions that were previously utilized to suggest music to them.

• Non Functional Requirements

1.Performance Requirements:

The system should be able to support up to 1000 users continuously at its maximum capacity. The length of the user's message will determine how long the chatbot will take to respond, which might range from a few milliseconds to sec.

2.Security Requirements:
Before utilizing the system, users must accept the terms and conditions of the third-party API that is being utilized. Before submitting a message for emotion analysis, a user can verify it for unusual characters and inconsistent letter cases to minimize unintentional data leakage

• Constraints

1.Hardware Requirement:

- 1 GB RAM
- 0.5 GB memory to store data

2.Software Requirement:

- **Node.js** (A Javascript runtime environment)
- **NPM** (A package manager)
- **NPX** (A package executer)
- **Python** 3.x