**Software Requirements Specification (SRS) for Music Player System**

**1. Introduction**

**1.1 Purpose**

The purpose of this document is to provide a detailed specification of the requirements for a EchoBeat music player. It outlines the functionalities, features, and constraints of the system. The document is intended for software developers, testers, and stakeholders.

**1.2 Scope**

The Music Player System will enable users to store, manage, and play audio files. The primary functionalities include playback control, playlist management, and user-friendly navigation through a music library.

**2. Overall Description**

**2.1 Product Perspective**

The EchoBeat Music Player is a application designed interacts with local storage for audio files and provides an intuitive user interface for navigation and playback. It does not rely on external servers except for optional features like music recommendations or streaming services.

**2.2 Product Features**

* **Play, Pause, Stop, and Seek**: Basic playback controls for music files.
* **Playlist Management**: Create, edit, and delete playlists.
* **Library Management**: Import and organize music files, sort by artist, album, or genre.
* **Search Functionality**: Search for songs, albums, or artists.
* **Music Recommendations**: Suggest songs based on user preferences (optional).

**2.4 Constraints**

* The system must support Windows, macOS, and Linux operating systems.
* The system should function with minimal hardware requirements, such as 2GB RAM and dual-core processors.

**3. Specific Requirements**

**3.1 Functional Requirements**

**3.1.1 User Authentication**

* **3.1.1**.**1** The system shall allow users to create an account or log in.

**3.1.2 Music Library Management**

* **3.1.2.1** The system shall automatically organize songs by metadata such as artist, album, and genre.

**3.1.3 Playlist Management**

* **3.1.3.1**: Users shall be able to create new playlists.
* **3.1.3.2**: Users shall be able to add or remove songs from a playlist.

**3.1.4 Playback Controls**

* **3.1.4.1**: The system shall support play, pause, stop, next, previous, and seek controls.
* **3.1.4.2**: The system shall provide a progress bar to indicate playback position.
* **3.1.4.3** The system shall support repeat and shuffle play modes.

**3.1.5 Search and Filter**

* **FR5.1**: Users shall be able to search for songs, albums, or artists.
* **FR5.2**: The system shall allow filtering of songs based on genre, artist, or album.

**3.1.6 Music Recommendations**

* **FR6.1**: The system shall suggest songs based on user listening history.

**3.2 Non-Functional Requirements**

**3.2.1 Performance Requirements**

* **3.2.1.1**: The system shall load a library of up to 100 songs in under 10 seconds.
* **3.2.1.2**: The playback delay between songs should not exceed 2 seconds.

**3.2.2 Usability Requirements**

* **3.2.2.1**: The user interface shall be intuitive and easy to navigate.
* **3.2.2**.2: The system shall provide keyboard shortcuts for playback controls.

**3.2.3 Compatibility Requirements**

* **3.2.3**.1: The system must be compatible with Windows 10 or later, macOS 10.15 or later, and Linux distributions.

**3.3 System Requirements**

* **3.3.1**: The system shall require a minimum of 2GB RAM.
* **3.3.2**: The system shall require a minimum of 500MB disk space for installation and additional space for music storage.

**4. External Interface Requirements**

**4.1 User Interfaces**

* The UI shall include a main screen with playback controls, library view, and playlist view.
* The UI shall provide a settings menu for adjusting audio output and equalizer settings.

**4.2 Hardware Interfaces**

* The system shall interface with sound cards for audio playback.

**4.3 Software Interfaces**

* The system may integrate with online music databases for metadata retrieval (optional).

**5. Appendices**

**5.1 Use Case Diagram**

