Project Proposal

Personal music analytics and recommendation system using Java and the concept of OOP

Problem Statement

In today's digital era, people listen to music from various sources such as Spotify, YouTube, or local files rather than using physical CDs and radios. Listening to music is a kind of addiction, a habit, or a coping mechanism that many people take very seriously and are naturally eager to learn their listening patterns and favourites. The most common and popular form of knowing such statistics is Spotify Wrapped, which comes out at the end of the year and has limited data for a user. It does not allow users to track their listening habits and statistics throughout the year, nor does it offer real-time or context-aware music recommendations based on a user's current mood or recent listening behavior. As a result, users often receive generic or repetitive song suggestions, which leaves many users unfulfilled and unsatisfied.

As a result, there is a need for a customizable music tracking system that allows users to record, store, and analyze their listening activity in greater detail. Such a system would allow users to view their favorite songs, artists, genres, and listening trends over time. This project aims to address these limitations by developing a desktop-based system using Java, consisting of user-controlled data management, analysis, and a recommendation system based on the user's current mood and listening trends.

Project Objectives

The main objectives of the project are:

- Develop a desktop GUI application using JavaFX.
- Allow users to import their music playlists as a CSV file using an external software.
- Allow users to add and manage songs they have listened to in their imported music catalog.
- Allow users to store and view their listening activity
- Provide simple song recommendations based on the user's listening history and mood patterns, allowing them to discover new songs as well as revisit old ones.
- Display listening statistics such as most-played songs, artists, albums, and genres inscresing users' sense of accomplishment and satisfaction.

Model Scopes

Included Features

- A user-friendly GUI using JavaFX.
- Manual input for currently listening songs.
- Music playlist management using imported playlist files (CSV format).
- Track total play of counts for songs, artists, and genres.
- Display statistics such as most played songs and most listened to artists.
- Determine the atmosphere (sad, happy, energetic) using data such as song valency, tempo, danceability, etc.
- Simple recommendation system based on the most listened to statistics
- Use of object-oriented principles such as classes, objects, encapsulation, and inheritance.

Excluded Features

- No real-time music playback.
- No direct integration with music streaming APIs.
- No online user authentication or cloud-based storage.
- No advanced machine learning or AI-based recommendation systems.
- No mobile application versions.
- No exporting YouTube and Apple Music playlists.
- No real-time and automated playlist sync and update.

Model Resources

1. Java Development Kit
2. JavaFX SDK
3. IntelliJ IDEA as the IDE
4. Windows Operating System
5. exportify.net to export user playlists as CSV files
6. w3schools.com for Java basics and concepts
7. youtube.com for JavaFX tutorials and implementations
8. spotify.com to create or get existing playlists

Expected Outcome

The outcome of this project will be a functional Java desktop application that allows users to track their music listening habits, view meaningful statistics, and receive basic song recommendations. The project will demonstrate practical knowledge of Java programming, object-oriented design, file handling, and GUI development, making it suitable as a viable academic project.