**Data Structures & Algorithms**

**Title:**

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| **CA Project** |

**Team Details:**

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**GitHub Link:**

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**Summary:**

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| **To manage the music, I propose the following design:**  **Abstract Data Types (ADTs):**  **Song: Represents a single song with attributes such as title, artist, genre, and duration.**  **Playlist: Represents a collection of songs with methods to add, search, delete, and move songs within the playlist.**  **LikedPlaylist: Inherits from Playlist, adding functionality specific to the liked songs playlist.**  **Interfaces:**  **SongInterface: Defines methods for accessing song attributes.**  **PlaylistInterface: Defines methods for managing playlists, such as adding, searching, deleting, and moving songs.**  **Classes:**  **SongImplementation: Implements SongInterface, providing methods to access and manipulate song attributes.**  **PlaylistImplementation: Implements PlaylistInterface, providing methods to manage playlists and songs.**  **LikedPlaylistImplementation: Extends PlaylistImplementation, adding functionality specific to the liked songs playlist, such as moving the last added song to genre playlists.**  **Method of Managing Songs:**  **The LikedPlaylist maintains a list of songs that the user likes.**  **When a song is added to the liked playlist, it becomes eligible for inclusion in genre playlists.**  **Genre playlists are created and populated based on user-defined criteria, such as genre.**  **Users can add, search, delete, and move songs within their playlists.**  **Users can print any playlist and view the number of songs in each list. Users can create playlists that can be set to repeat, providing an option for continuous playback.**  **This design provides a structured approach to managing music, allowing users to organize their songs efficiently while offering flexibility in playlist management. The use of interfaces ensures modularity and ease of future expansion, while the Swing GUI will provide a user-friendly interface for interaction with the application.** |