**Spotify Streaming Data Management Application Description**

1. **Overview:**

The Spotify Streaming Data Management Application represents an advanced tool designed to facilitate users in the systematic collection and analysis of their Spotify listening habits. This application empowers users to efficiently store and manage intricate details concerning their interactions with the Spotify platform, encompassing songs, playlists, artists, and other relevant data. The architecture of our application incorporates meticulously crafted primary data entities and structures, incorporating essential elements such as hierarchies, 'is-a,' 'contains,' and 'related-to' relationships.

1. **Access Frontend Features:**

Our Access application encompasses diverse lists, including tracks, albums, artists, genres, playlists, users, membership plans, playback histories, user interactions, and countries. These lists are stored in a dedicated Microsoft SQL Server database utilizing the linked tables functionality. Leveraging this infrastructure, we deliver an Access frontend application that provides features like forms and reports, facilitating seamless input, modification, analysis, and tracking of Spotify streaming data. The main menu offers a comprehensive suite of features, allowing users to extract the requisite information efficiently:

* 1. **Users**: Access user-specific information.
  2. **Albums\_Genre**: Facilitates the search for albums with specific types of songs.
  3. **User History Display**: Offers insights into the songs users have listened to and the dates of playback.
  4. **Menu Options**: Provides a flexible menu for users to choose features based on their preferences.

In addition, we have implemented specialized forms—ALBUMSTITLEHISTORY, ARTISTSNAMEHISTORY, and GENRESNAMEHISTORY—for the ALBUMS, ARTISTS, and GENRES entities, respectively. This architectural design ensures that modifications to values such as TITLE in ALBUMS, NAME in ARTISTS, or NAME in GENRES are meticulously recorded in corresponding history forms. Timestamps accompany these updates, establishing a chronological record of the validity period for each modified value.

For example, upon accessing the ALBUMS FORM and navigating to the TITLE FIELD, users will encounter a button. Clicking this button seamlessly transitions them to the ARTISTSNAMEHISTORY FORM, where changes to ARTISTS NAME, along with associated timestamps, can be observed and analysed.

1. **Data Structure Design:**

We meticulously designed the primary data entities and data structure to encompass all essential elements, including hierarchies, 'is-a,' 'contains,' and 'related-to' relationships. We have employed surrogate keys and ensured that the relationships match the defined business rules.

## **Detailed Information - Tables, Attributes and Relationships:**

**1.Tracks:**

**Attributes:**

ID, Title, Duration, Artist ID, Album ID

**Relationships:**

Related to Artist(s).

Belongs to a Album.

Belongs to Playlists (A track can be part of multiple Playlists).

Related to a Playback History.

Related to User Interactions.

**2.Albums:**

**Attributes:**

ID, Title, Release Date, Artist ID, Genre ID

**Relationships:**

Related to Artist(s) (One or more artists create an Album).

Related to a Genre.

Contains Tracks (An album includes multiple Tracks).

**3.Artists:**

**Attributes:**

Artist ID, Name, Biography, Country ID

**Relationships:**

Related to a Country.

Related to Tracks (An Artist can be part of multiple Tracks).

Related to Albums (An Artist can release multiple Albums).

**4.Genres:**

**Attributes:**

Genre ID, Name, Description

**Relationships:**

Related to Albums.

**5.Playlists:**

**Attributes:**

Playlist ID, Title, Description, Creation Date, Tracks ID, Users ID

**Relationships:**

Contains Tracks.

Belongs to a User.

**6.Users:**

**Attributes:**

User ID, Username, Email, Country ID, Plan ID

**Relationships:**

Related to a Country.

Related to a Membership Plan.

Related to Playlists (A User can create or own multiple Playlists).

Related to Playback Histories (A User can have multiple Playback Histories).

Related to User Interactions.

**7. Membership Plans:**

**Attributes:**

Plan ID, Plan Type (Free, Premium, Family, Student), Description

**Relationships:**

Related to Users.

**8.** **Playback Histories:**

**Attributes:**

History ID, Playback Timestamp, Track ID, User ID

**Relationships:**

Related to a Track (A Playback History is the play history of a Track).

Related to a User.

**9.User Interactions:**

**Attributes:**

Interaction ID, Type (like, dislike), Timestamp, Track ID

**Relationships:**

Related to a User (Records interactions made by Users).

Related to Tracks (Identifies the Track involved in the Interaction).

**10.Countries:**

**Attributes:**

Country ID, Name

**Relationships:**

Related to Users.

Related to Artists.