Spotify Dashboard – Project Design Document

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Project Objectives

Business Problem

Understanding user engagement with Spotify's music catalog is essential for improving user experience and optimizing content recommendations. Spotify needs insights into user engagement to understand listening patterns, content preferences, and platform usage. This will drive marketing, content recommendations, and strategic decisions. This dashboard is designed to identify listening trends, patterns, and popular content, enabling data-driven decisions.

Key Metrics

The dashboard will track and visualize key performance indicators (KPIs) related to user behavior and content consumption.

- **Total Albums Played**: Number of albums consumed by users over time.
- **Total Artists Played**: Number of artists streamed by users.
- **Total Tracks Played**: Total number of tracks played by users.
- **Average Listening Time**: Average time spent listening to tracks or albums.
- **Year-over-Year (YoY) Growth**: Percentage growth or decline in album, artist, and track consumption from one year to the next.
- **Track Frequency**: Number of times a track is played over time.
- **Skipped Tracks**: Number of tracks skipped before completion.

Target Audience

- **Marketing Team**: Use insights to understand user preferences, identify content for promotion, and tailor marketing campaigns based on the most played albums, artists, and tracks.
- **Product Team**: Make informed decisions on product features, track engagement, and platform performance.
- **Content Strategy Team**: Develop content strategies to engage users based on data-driven insights about listening trends.
- **End Users**: Ultimately, users will benefit from improved recommendations and content tailored to their listening habits.

Data Sources

Data Availability

The data for this project will be sourced from a Kaggle dataset that includes detailed listening information, such as track plays, album names, artist names, and timestamps.

https://www.kaggle.com/datasets/sgoutami/spotify-streaming-history

Data Structure

The dataset includes the following columns, which will be utilized for analysis:

- **spotify_track_uri**: Unique track identifier.
- **timestamp**: Timestamp when the track stopped playing (ISO 8601 format).

- **platform**: The device/platform used to stream (e.g., desktop, mobile, smart speaker).
- **ms_played**: Time (in milliseconds) the track was played before stopping or skipping.
- **track_name**: Name of the track played.
- **artist_name**: Artist who performed the track.
- **album_name**: Album the track belongs to.
- **reason_start**: The reason the track started playing (e.g., autoplay, user-selected).
- **reason_end**: The reason the track stopped (e.g., track completion, skip).
- **shuffle**: Indicates whether shuffle mode was on or off during playback.
- **skipped**: Indicates whether the track was skipped before finishing.

Business Requirements

Reporting Needs

The dashboard will generate multiple reports focusing on Spotify usage and engagement, including:

- **Monthly Trends**: Total albums played, most listened tracks, and popular artists over time.
- **Artist and Track Consumption**: Identify the top albums, artists, and tracks based on play frequency.
- **Year-over-Year Growth**: Compare the listening patterns of albums, artists, and tracks between the current and previous years.

Key Insights

- **Peak Listening Times**: Visualize peak listening hours using heat maps.
- **Top 5 Albums, Artists, and Tracks**: Identify the top albums, tracks, and artists based on user engagement (frequency of listens).
- **Listening Behavior**: Insights into whether users listen to tracks more during weekdays vs. weekends.
- **Engagement Insights**: Track the number of skips to determine user engagement with specific tracks and albums.

Interactivity

The dashboard should be interactive, enabling users to:

- **Filter Data**: By artist, album, year, platform, or listening time.
- **Drill-Down**: To view more detailed insights, such as the top tracks within a specific album or artist.
- **Year-over-Year Comparison**: Easily compare data between different years to track growth trends.
- **Platform Analysis**: Identify how music consumption varies across different devices/platforms (e.g., desktop, mobile, smart speakers).

User Interface & User Experience Design

Design Preferences

- **Color Scheme:** Use brand colors or a simple color palette that enhances the visibility of key metrics and trends.
- **Layout:** A dashboard that prioritizes key metrics at the top (total plays, top albums, artists, tracks), with detailed charts below (e.g., listening patterns, peak hours).
- **Responsiveness:** The design should adapt for desktop, tablet, and mobile interfaces.

User Navigation

- **Sections/Tabs:** Create separate tabs for different categories of analysis:
    - **Albums:** Trends in album listening.
    - **Artists:** Artist engagement and top artists.
    - **Tracks:** Track performance, including most played tracks.
    - **Listening Patterns:** Heatmap for listening times and scatter plot for track frequency vs. listening time.