Problem Solving & Software Design
Final Project Proposal

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We pledge our honor that we have neither received nor given unauthorized assistance during the completion of this work.

I. Big Idea

Our goal is to build a music website. Some of the major features include researching names of songs, showing corresponding lyrics, storing historical playlist, recommending similar songs, and displaying images that reflect the emotion of the music.

II. Website Design

1. Homepage
    a. Brief introduction about functions within our website
    b. Search input → page 2
    c. List of historical searches (top 10 most recent) → page 3

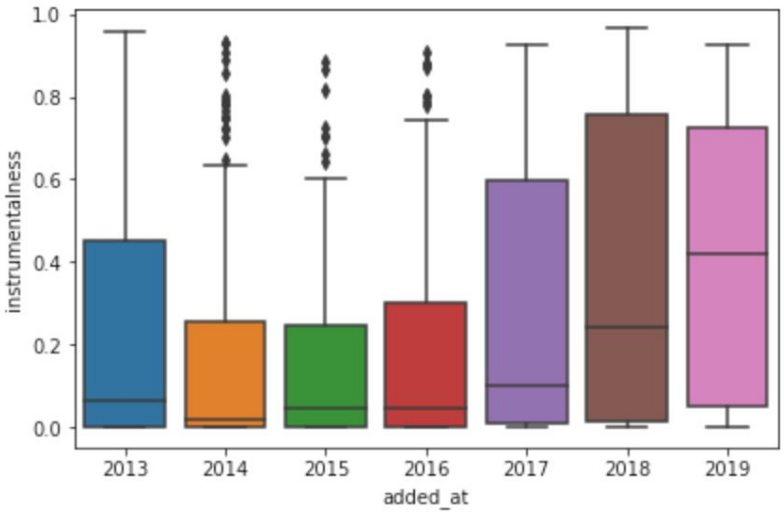
2. Search result
    a. Lyrics
    b. Audio file
    c. Attributes of songs (tempo, danceability, energy, loudness and etc) in visualized graphs


```
"danceability": 0.735,
"energy": 0.578,
"key": 5,
"loudness": -11.84,
"mode": 0,
"speechiness": 0.0461,
"acousticness": 0.514,
"instrumentalness": 0.0902,
"liveness": 0.159,
"valence": 0.624,
"tempo": 98.002,
"type": "audio_features",
"id": "06AKEBrKUckW0KREUWRnvT",
"uri": "spotify:track:06AKEBrKUckW0KREUWRnvT"
"track_href": "https://api.spotify.com/v1/tra
"analysis_url": "https://api.spotify.com/v1/a
```


    d. Emotion tag
    We will define four different emotions based on different combinations of attributes. Each type of emotion will have a corresponding emotion tag.
    e. An image that reflects the emotion of the song (keyword search using the emotion)
    f. Recommendation for similar songs

Possible extensions:

3. Summary of historical searched songs
    a. List of historical searches
    b. Visualization of attributes for all songs. Example:



API List:

- SearchLy (song recommendation)
- Spotify (basic info, song attributes)
- Pexels (images)
- Chart Lyrics (lyrics)

Libraries:

- from flask_sqlalchemy import SQLAlchemy
  To create a SQL database for historical searches
- from datetime import datetime
- pandas - for data visualization