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Project Description:

The aim of this project is to provide users with a free music streaming app where the user can surf the recent songs and albums by their favourite creator. A user is also able to register itself as a creator to upload songs and albums or update and delete them. A user also has the ability to create playlists and add songs to it.

Technologies Used:

HTML, CSS, Jinja, Bootstrap, Flask, Flask-Login, Flask-SQLAlchemy, Flask-Bcrypt, Flask-WTF, Mutagen, Click and Matplotlib's pyplot

- Python is the core programming language used to write the app.
- Flask is the core framework to build the website.
- Flask-Login is used for managing user login and their session.
- Flask-SQLAlchemy is an ORM tool used to interact with the database.
- Click is used for command line interaction and Mutagen for audio metadata.
- Matplotlib is used to draw graphs and plots for the admin and creator dashboards.

Database Schema:

The ER Diagram for the Database Model can be seen here:
https://dbdiagram.io/d/Fourier

API Design:

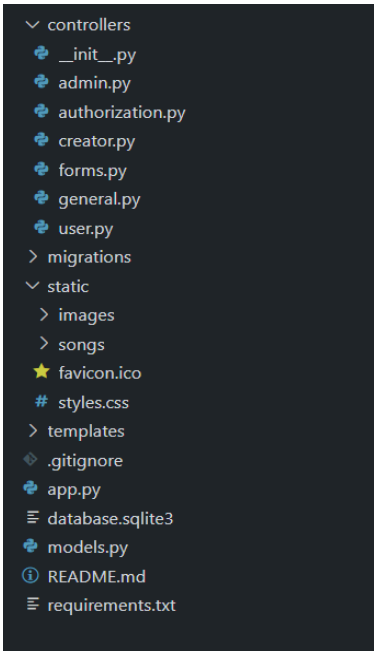
I have implemented GET, PUT, POST and DELETE for User, Creator, Album, Playlist and Song Table in the Database Model.

https://app.swaggerhub.com/apis/hamees-sayed/fourier-music_streaming_app_open_api_3_0/1.0.0

Here you can have a look at all the available endpoints and their respective use cases.

App Architecture:

This Flask application follows a modular structure with controllers handling specific features. Database models are defined in `models.py`, and Database migrations are managed using Alembic. The static directory includes images, styling and serves as a filesystem to store media (audio songs in this case), while templates organize HTML for rendering views using Jinja. The `app.py` file serves as the entry point to run the project while `__init__.py` serves as the main entry point, configuring the Flask app and initializing necessary extensions. This structure promotes maintainability and scalability.



Features:

1. Authentication and Authorization:
    - Users can register and login with a unique username and password. Passwords are securely hashed using Bcrypt.
    - Users can also logout of the current session.
2. Admin Management:
    - Admins can be created from the command line and have a dedicated login page.
    - Admin can view and supervise entire App statistics through the Admin Dashboard. The Dashboard visualizes the highest performing songs and user activity through graphs.
3. Creator:
    - Users can register as creators and creators can manage songs and albums and also view their statistics through graphs on how their songs are performing.
4. Search Functionality:
    - Users can search for songs and albums based on title, lyrics, creator and rating
5. Home Page:
    - Displays a list of all the songs with genre, average rating, creator name and lyrics. Users can also play these songs.
    - Also provides a link to albums for further exploration, clicking on an album displays a list of songs in that album.
6. Users:
    - Users have the ability to rate songs and also add songs playlist and manage the playlist.

Presentation Video:

Link to my Presentation Video