CISC 699 Final Applied Project in Computer Information Sciences

Applied Project Synopsis

Project Title: MUSICON, a music player emulator

Professor: Dr. Abrar Qureshi

Author: Prafulla Chandra Munugoti

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Project Synopsis:

MUSICON is a software emulator that allows users to stream audio files. It was created in response to the role of music in reducing stress, boosting morale, and increasing confidence. Researchers conducted a survey with text responses to understand how music affects people during the pandemic. The results showed that there is a strong correlation between musical engagement, mood regulation, anxiety, and worry levels.

This survey results led me to build the MUSICON software artifact, allowing users to play, pause, resume, and skip audio files as they wish.

Addendum for CISC 699:

MUSICON is a software application that goes beyond the basics. It provides users with a variety of features, including:

Personalized music mixes:

MUSICON creates music mixes based on your past listening habits. This means that you'll always have something new to listen to, even if you're not sure what you're in the mood for.

Music recommendations:

MUSICON can also recommend songs based on your favorite artists, genres, or albums. This is a great way to discover new music that you'll love.

Single-song loop mode:

If you find a song that you really love, you can set MUSICON to loop it so that you can listen to it repeatedly.

AM/FM radio:

MUSICON can also be used to listen to AM/FM radio. You can choose to listen to a specific station based on its location, frequency, or category.

Podcasts:

MUSICON also supports podcasts. You can listen to your favorite podcasts from the app's database, or you can search for podcasts by podcaster or category.

MUSICON is a powerful and versatile music application that offers something for everyone. Whether you're looking for personalized music mixes, new music recommendations, or a way to listen to AM/FM radio or podcasts, MUSICON has you covered.

To develop such an interactive menu-based software artifact there are many requirements both from the software and hardware side to make it possible. Below are some of the requirements based on the machine that is used to develop the application:

Integrated Development Environment (IDE):

Anaconda Navigator 2.4.0 (Jupyter Notebook 6.3.0)

Hardware Requirements:

Processor: Intel Core i5 or Apple M1 or AMD Ryzen or equivalent
RAM: 4 GB RAM (8 GB preferred)
Hard Disk: 15 GB

Software Requirements:

Coding Platform: Developed in Mac OS Ventura 13.3.1 (portable to Linux and Windows machines)
Coding Language: Python
Compiler: Python 3.8.8 (MacOS comes pre-installed with Python version)
Libraries used: pandas, pymysql, copy, time, pygame, colorama, re, datetime, random.

Build/Installation Instructions:

1. MySQL Installation: https://dev.mysql.com/doc/mysql-installation-excerpt/8.0/en/macos-installation-pkg.html
2. Anaconda Installation: https://docs.anaconda.com/anaconda/install/mac-os/
3. Type cmd/terminal to pull a terminal and enter the command: "pip install pymysql" or "pip3 install pymysql".
4. Type cmd/terminal to pull a terminal and enter the command: "pip install pygame" or "pip3 install pygame".
5. Type cmd/terminal to pull a terminal and enter the command: "pip install pandas" or "pip3 install pandas".
6. Type cmd/terminal to pull a terminal and enter the command: "pip install colorama" or "pip3 install colorama".
7. All other libraries come standard with Python installation, else use the similar command pip3 install <library name>.

Following the above steps 1-7 will provide proper installation of libraries.

Starting MySQL server for the script to fetch data from DB:

1. https://dev.mysql.com/doc/refman/8.0/en/macos-installation-launchd.html
2. cd /usr/local/mysql/bin/
3. ./mysql -u root -p. → prompts a password of the root user
4. Enter the password of the root used in the installation process. MySQL is ready to use.
5. Run SQL commands present in "musicon.sql" file to store the data in MySQL DB.

Run the musicon code:

1. cd <directory where source code is located>
2. ./musicon.py, and follow the menu items to use the MUSICON software artifact.

Product Inventory (List of Files):

1. MUSICON.py (main Python source code)
2. musicon.sql (mail script to create/insert initial tables data)
3. songs/*.mp3 (audio files for the software artifact to work)
4. libraryTest.py (test cases of Library class)
5. playlisttest.py (test cases of Playlist class)
6. musicontest.py (test cases of MUSICON software artifact as a system)
7. README (file and explanation of each option in the MUSICON menu with step-by-step instructions for each file and option)

Known Issues:

1. No known issues found yet.