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Project Title:-Music Genre Classification with MFCC and K-Nearest Neighbors

Libraries:-

python_speech_features:

Purpose: This library is used for extracting Mel Frequency Cepstral Coefficients (MFCC) features from audio data. It is commonly used in speech and audio processing tasks.
Usage: It provides functions for calculating MFCC features, delta and delta-delta coefficients, and more.

scipy.io.wavfile:

Purpose: This library is part of SciPy and is used for reading audio files in WAV format.
Usage: It is utilized to read audio files and obtain the sample rate and audio signal data.

numpy:

Purpose: NumPy is a fundamental library for numerical and matrix operations in Python.
Usage: It is used for various array and matrix calculations, including matrix transposition, covariance matrix computation, and more.

tempfile:

Purpose: The tempfile library provides functions for creating temporary files and directories.
Usage: In this code, it's used to create a temporary file for storing audio features.

os:
Purpose: The os library provides functions for interacting with the operating system, such as file and directory manipulation.
Usage: It is used to navigate directories, access files, and list folder contents.

pickle:
Purpose: The pickle library is used for serializing and deserializing Python objects, allowing them to be saved to and loaded from files.
Usage: In this code, it's used to save and load pre-processed audio features from a file.

random:
Purpose: The random library provides functions for generating random numbers and performing random operations.
Usage: It's used here for random splitting of the dataset into training and testing sets.
Usage: In this code, it's used to create a dictionary to map numeric IDs to genre labels.

librosa:
Purpose: Librosa is a Python library for music and audio analysis. It provides tools for audio feature extraction and analysis.
Usage: While not imported explicitly in this code, it could be used for additional audio analysis tasks if needed.

These libraries are essential for various aspects of the code, including feature extraction, data handling, file operations, and machine learning tasks.