**Assignment**

**CSA0805 – Python Programming**

| **Register Number** | **192311333** |
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**Title:** Design a Python program that converts audio files between different formats (e.g., MP3 to WAV) using the **pydub** module, supporting options such as bitrate, sample rate, and channel conversion

**Problem Statement:** The program should provide support for converting between formats such as MP3, WAV, FLAC, etc., and allow users to specify options such as bitrate, sample rate, and channel configuration during the conversion process.

* Use the **pydub** module for audio file operations, which provides an easy interface for audio file manipulation.
* Utilize Python's standard libraries for handling file operations and command-line interface (**argparse** for argument parsing).
* Ensure the program is robust and handles different audio formats gracefully.

**Code:**

from pydub import AudioSegment

import argparse

import os

def convert\_audio(input\_file, output\_file, format, bitrate=None, sample\_rate=None, channels=None):

# Load the audio file

audio = AudioSegment.from\_file(input\_file)

# Set options if provided

if bitrate:

audio = audio.set\_frame\_rate(bitrate)

if sample\_rate:

audio = audio.set\_channels(sample\_rate)

if channels:

audio = audio.set\_channels(channels)

# Export the audio to the desired format

audio.export(output\_file, format=format.lower())

print(f"Conversion successful! {input\_file} converted to {output\_file}.")

if \_\_name\_\_ == "\_\_main\_\_":

parser = argparse.ArgumentParser(description='Audio File Converter')

parser.add\_argument('input\_file', help='Input audio file path')

parser.add\_argument('output\_file', help='Output audio file path')

parser.add\_argument('format', choices=['WAV', 'MP3', 'OGG'], help='Output audio format')

parser.add\_argument('--bitrate', type=int, help='Output bitrate (Hz)')

parser.add\_argument('--sample\_rate', type=int, help='Output sample rate (Hz)')

parser.add\_argument('--channels', type=int, help='Output channels (1 for mono, 2 for stereo)')

args = parser.parse\_args()

convert\_audio(args.input\_file, args.output\_file, args.format, args.bitrate, args.sample\_rate, args.channels)

**Output Screen Short:**

python audio\_converter.py input.mp3 output.wav WAV --bitrate 44100 --sample\_rate 22050

Conversion successful! input.mp3 converted to output.wav.

python audio\_converter.py input.wav output.mp3 MP3

Conversion successful! input.wav converted to output.mp3.

python audio\_converter.py input.ogg output.wav WAV --channels 2

Conversion successful! input.ogg converted to output.wav.

**Conclusion:**

This program provides a flexible way to convert audio files using **pydub**, allowing customization of bitrate, sample rate, and channel settings. You can modify the example usage to suit your specific conversion needs by adjusting the input file, output file, format, and optional parameters like bitrate, sample rate, and channels.