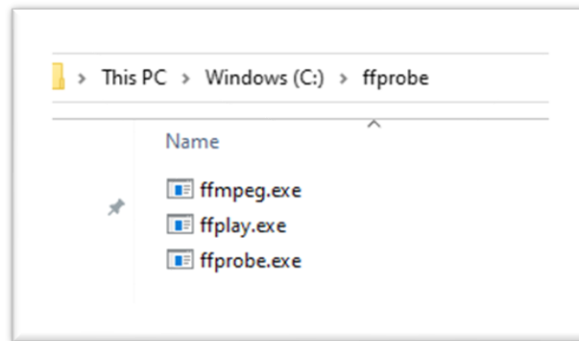
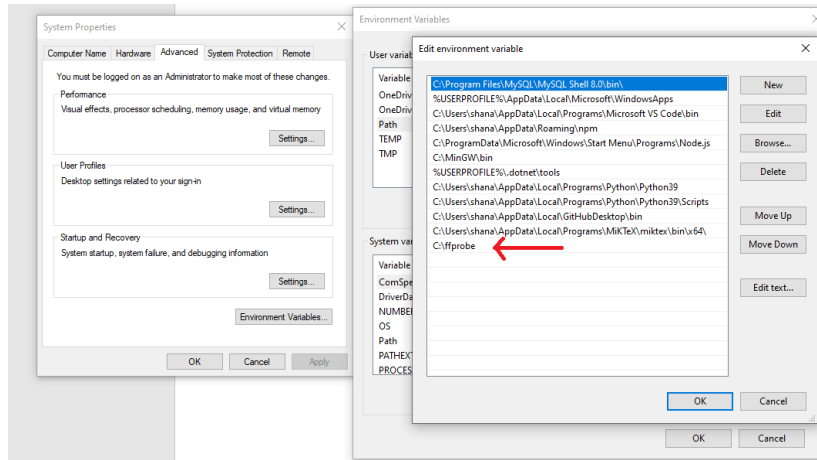


Exercise 3

How ffmpeg and ffprobe was install and configured on my machine

I first downloaded the last full build from the official website[1]. Then added a system path variable to the `.exe` files. in my local C drive, that was obtained from the download. This allowed my system to run the ffmpeg and ffprobe commands and functionalities locally.



Analysis

The function, `generate_report`, takes the list of given video files directories as input. The function utilizes the ffprobe tool to extract metadata from each video file and checks for compliance with the specified video and audio specifications as per the assignment instructions. Using a series of built-in Python string methods and formatting, it identifies files that do not meet the required criteria, such as video codec, resolution, aspect ratio, and audio codec/bitrate, by using multiple logic statements. The function then generates a brief report in a text file, highlighting aspects of the video that do not match the requirements.

The function, `reformat_files`, takes the report generated by the previous function and the list of video file directories as input. It reads the report, identifies issues related to video and audio specifications, and attempts to reformat the problematic files accordingly. The function uses the ffmpeg tool to modify the audio codec, bit rate, sample rate, and channel, as well as the video resolution, aspect ratio, frame rate, and codec. It does this by once again using Python string formatting and logic statements. It then stores the reformatted audio and video files in the folders "videos" and "audio", if they were reformatted, and merges them. The correctly formatted files are saved in the "reformat_videos" directory.

At the end of the notebook, the application removes all the edited video and audio files, and keeps only the original videos, and the newly re-formatted ones. This is done to save storage space.

Description of terms

- Video format (container): file format that contains both video and audio data. Common video formats include MP4, AVI, and MKV. The container holds various streams, such as video, audio, and subtitles.
- Video codec: video codec is a software tool that compresses and decompresses video data. Popular codecs include H.264, H.265 (HEVC), and VP9. They determine how video is compressed for storage and transmission, affecting file size and playback quality.
- Audio codec: audio codec is a software tool that handle the compression and decompression of audio data. Examples include AAC, MP3, and FLAC. These codecs impact audio quality and file size.
- Frame rate: the number of individual frames displayed per second in a video.
- Aspect ratio: the width and height of a video frame. Common aspect ratios include 16:9 and 4:3. Aspect ratio affects the visual presentation of the video on screens with different dimensions.
- Resolution: the number of pixels in a video display. Common resolutions include 720p and 1080p. Higher resolutions results in sharper and more vivid images/videos.
- Video bit rate: the amount of data processed per unit of time in the video stream. Measured in kilobits per second or megabits per second. The video bit rate determines the level of video compression.
- Audio bit rate: the amount of data processed per unit of time in the audio stream. Measured in kilobits per second, it indicates the level of audio compression.
- Audio channels: the number of separate audio tracks in a sound system. Common configurations include mono, 1 channel, stereo, 2 channels, and surround sound.

References

[1] ffmpeg.org. (n.d.). *Download FFmpeg*. [online] Available at: <https://ffmpeg.org/download.html>.