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SOFTWARE DEVELOPMENT: THE WORK WITH VIDEO FILES

At the current stage of the information society development, multimedia technologies are the necessary tools for the processing and transmission of all types of information. The term "video" (derived from the Latin word meaning "to see", "to look") contains the wide spectrum of recording, processing, transmission, storage and reproduction technologies of visual and audiovisual materials on monitors. In the everyday sense, this term means a video material, a television signal or a movie recorded on a storage device (video cassette, video disc, etc.).

The given work shows the way to process video files (e.g. to convert them into various formats, cut and split into frames) using the library of a particular resource and determines the effectiveness of using the open MediaToolkit library methods. MediaToolkit provides a simple interface for processing multimedia data, which performs converting, cutting and editing audio and video files absolutely effortlessly. MediaToolkit contains a .NET wrapper for FFmpeg; free (LGPLv2.1) multimedia frameworks containing multiple audio and video codecs, support for multiplexing, demultiplexing, and transcoding tasks in various media formats.

FFmpeg is a collection of free open source libraries that allow recording, converting, and transfering various digital audio and video files. It includes AxInterop.WMPLib.dll and Interop.WMPLib.dll static libraries that work with videos and the MediaToolkit.dll dynamic library. Its name comes from the name of the expert group MPEG and "FF" meaning "fast forward".

The .lib format is the static library format adopted by MSVC (or by other compilers), i.e., the libraries that will be compiled by a linker into an executable module. Other compilers (especially on other systems) can have another format of static libraries.

The .dll format is the system-wide format of dynamic libraries accepted by Windows operating system, i.e., the libraries that are connected during execution. The compilers generating a code for Windows usually (but not always) produce dynamic libraries in this format. In other systems, the format of dynamic libraries is different.

The program requires three above-mentioned libraries for its work. After launching the program, a window appears with a video file player; the menu includes two buttons called "File" and "Edit" containing «Open», «Cut», «Split», «To MP4» and «To DVD».

In order to start the program, it is necessary to select a file through the selection dialog box, and choose the further actions for this file. "Cut" is used to clip (cut) the video file; "Split" is used to split the video file into frames (20 frames per second); "To MP4" converts a file into an MP4 format; and "To DVD" converts a file into a DVD format (has two types of encoding).

The actual contribution into the program development was the addition of a video player, which allows previewing the file before its processing and creating a "setup" file for the given program, which, after installation, includes a "VideoEditor.exe" file and necessary libraries. The data below represents the duration of file processing: the time required to convert into MP4 takes 496.84 seconds, to convert into DVD(NTSC) − 29.69 seconds, to convert into DVD(PAL) 30.45 seconds, to split into frames − 613.45 seconds, to cut from 10 to 20(s) − 17.23 seconds.

Thus, the Media Toolkit is definitely an indispensable tool in processing multimedia files. Applying Media Toolkit one can copy DVD movies, burn video files to DVD as well as convert audio and nearly all video formats into other video and audio formats in order to be played on various multimedia devices.

Conclusions. The aim of the work was to develop the software which allows performing the following functions: splitting video files into frames, cropping video files, converting files into MP4, DVD formats, etc using MediaToolkit. The program we have written uses a small amount of RAM, but it has significant requirements for the processor. At present we are working to improve the program by reducing the time and adding new features.

References:

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