GOA COLLEGE OF ENGINEERING

"Bhausaheb Bandodkar Technical Education Complex"

Experiment No: 1

Aim: To study different Multimedia Formats and Editors

Theory:

Multimedia Formats

A file format is a standard way that information is encoded for storage in a computer file. Multimedia data and information must be stored in a disk file using formats similar to image file formats. Multimedia formats, however, are much more complex than most other file formats because of the wide variety of data they must store. Multimedia formats are also optimized for the types of data they store and the format of the medium on which they are stored.

Image Formats

Image file format are standardized means of organizing and storing digital images. They bring different ways to overcome the problem of delivering an image with reduced file size and minimum download time. Image file formats are standardized means of organizing and storing digital images. Image files are composed of digital data in one of these formats that can be rasterized for use on a computer display or printer. An image file format may store data in uncompressed, compressed, or vector formats. Once rasterized, an image becomes a grid of pixels, each of which has a number of bits to designate its color equal to the color depth of the device displaying it.

JPEG (Joint Photographic Experts Group)

JPG is the most used image file format. Digital cameras and web pages normally use JPG files because JPG heroically compresses the data to be very much smaller in the file. However, JPG uses lossy compression to accomplish this feat, which is a strong downside. A smaller file, but this is at the cost of image quality. This degree is selectable (with an option setting named JPG Quality), to be lower quality smaller files, or to be higher quality larger files. JPG is rather unique in this regard, using lossy compression allowing very small files of lower quality, whereas almost any other file type uses lossless compression

PNG (Portable Network Graphics)

PNG was invented more recently than the others, designed to bypass possible LZW com- pression patent issues with GIF, and since it was more modern, it offers other options too (RGB color modes, 16 bits, etc). One additional feature of PNG is transparency for 24-bit RGB images. Normally PNG files are a little smaller than LZW compression in TIF or GIF, but PNG is slower to read or write. That patent situation has gone away now, but PNG remains excellent lossless compression. It is a good choice for lossless quality work.

BMP (Bitmap)

The BMP file format is an uncompressed raster image which consists of a grid of pixels. The BMP file format contains a header, an identifier, and information about the size of the file, the wide and the height

and the colors associated with the file. BMP files contain a range of colors for each pixel.

GIF (Graphics Interchange Format)

GIF was designed by CompuServe in the early days of computer 8-bit video, before JPG, for video display at dial up modem speeds. GIF discards all Exif data, and while GIF is fine for video screen purposes, GIF does Not retain printing resolution values. GIF always uses lossless LZW compression, but it is always an indexed color file (1 to 8-bits per pixel). GIF can have a palette of 24-bit colors, but only 256 of them maximum (which colors depend on your image colors).

TIFF (Tagged Image File Format)

TIFF is which is considered the highest quality format for commercial work. The TIF format is not necessarily any "higher quality" per se (the same RGB image pixels, they are what they are), and most formats other than JPG are lossless too. TIF simply has no JPG artifacts, no additional losses or JPG artifacts to degrade and detract from the original. And TIF is the most versatile, except that web pages don't show TIF files. For other purposes however, TIF does most of anything you might want, from 1-bit to 48-bit color, RGB, CMYK, LAB, or Indexed color. Most any of the "special" file types (for example, camera RAW files, fax files, or multipage documents) are based on TIF format, but with unique proprietary data tags, making these incompatible unless expected by their special software.

Audio Formats

Audio is an electrical or other representation of sound. An audio file format is a file format for storing digital audio data on a computer system. It can be a raw bitstream, but it is usually a container format or an audio data format with defined storage layer.

MP3 (MPEG-1 Audio Layer-3)

MP3 is a standard technology and format for compressing a sound sequence into an exceed- ingly small file (about one-twelfth the size of the original file) while preserving the original level of sound quality when it is played. MP3 provides near CD quality audio. It is a lossy compression.

WAV (Waveform Audio File Format)

WAV is a file extension for an audio file format created by Microsoft. The WAV file has become a standard PC audio file format for everything from system and game sounds to CD-quality audio. Also referred to as pulse code modulation (PCM) or waveform audio, a WAV file is uncompressed audio. A Wave file also stores information about the file's number of tracks, sample rate, bit depth, and whether it's mono or stereo.

Ogg

Ogg is an audio compression format, comparable to other formats used to store and play digital music, but differs in that it is free, open and unpatented. It uses Vorbis, a specific audio compression scheme that's designed to be contained in Ogg.

MIDI (Musical Instrument Digital Interface)

MIDI files are exceedingly small but are not compressed. They use .mid or .midi filename extensions. A MIDI file is not a recording of music being played; it is a description of how to create the sound based on predefined sounds, like a 6-string guitar or pipe organ. A MIDI recording never contains the human voice. A 10KB (10,000 storage locations) MIDI file could easily hold more than a minute of music.

Video Format

Video files are collections of images, audio and other data. The attributes of the video signal include the pixel dimensions, frame rate, audio channels, and more. In addition, there are different ways to encode and save video data. This page outlines the key characteristics of the video signal, and the file formats used to capture, work with, and deliver that data.

AVI (Audio Video Interleave)

Developed by Microsoft and introduced to the public in November 1992 as part of its Video for Windows technology, the AVI format is one of the oldest video formats. It is so universally accepted that many people consider it the de facto standard for storing video and audio information on the computer. Due to it's simple architecture, AVI files are able to run on a number of different systems like Windows, Macintosh, Linux; is also supported by popular web browsers. AVI files stores data that can be encoded in a number of different codec's, although most commonly with M-JPEG or DivX codecs. This means that all AVI files, while they may look similar on the outside, differ substantially from one another on the inside.

MP4 (Moving Pictures Expert Group 4)

MP4 is an abbreviated term for MPEG-4 Part 14, a standard developed by the Motion Pictures Expert Group who was responsible for setting industry standards regarding digital audio and video and is commonly used for sharing video files on the Web. First introduced in 1998, the MPEG-4 video format uses separate compression for audio and video tracks; video is compressed with MPEG-4 or H.264 video encoding; and audio is compressed using AAC compression. The MP4 file format is also another great file sharing format for the Web, MP4 file sizes are relatively small but the quality remains high even after compression. MP4 standard is also becoming more popular than FLV for online video sharing, as it compatible with both online and mobile browsers and also supported by the new HTML5.

MOV (Apple QuickTime Movie)

Developed by Apple. Inc, the QuickTime file format is a popular type of video sharing and viewing format amongst Macintosh users, and is often used on the Web, and for saving movie and video files. In recent years, Apple came up with a newer version called QuickTime X, currently available on Mac OS X Snow Leopard, Lion and Mountain Lion. MOV files are the most commonly opened via the Apple QuickTime Player for the Macintosh Operating System. However, MOV files are not just limited to being played on Apple computers, as there is a free version of the QuickTime Player available for the Windows Operating System among many other players. Considered one of the best-looking file formats, MOV files are of high quality and are usually big in file size.

Text Formats

Files in the text file format are files in which the bytes represent the text characters of a particular character set using a specific system to relate the binary numbers in the file to the text characters of the set. Such systems are called 'encodings' and become an issue when the file includes characters that are not in the standard ASCII set, such as characters in languages other than English. The Text file format includes a number of different formatting strategies for text files in which data fields are structured in a regular pattern. Most of these formats represent rows of data on different lines of the file using different strategies to separated data values within each row. 'Fixed-width' formats place each data entry in a separate column and therefore limit the size of the data entries. 'Separated' formats use a special character or character sequence to separate entries. For instance, the comma separated value, the tab separated value formats and the space separated value formats use commas, tabs, and spaces respectively to separate the data fields.

DOC

Microsoft's Word (word processing) software saves documents using the .doc filename ex- tension. These files contain special formatting codes that identify how the text with look (bold, italic, color, typeface, etc.) as well as how the page lays out (margins, indentation, pagination, etc.). This file format was superseded in Word 2007 with the .docx filename extension. DOCX files incorporate XML (EXtensible Markup Language) coding rules that help integrate a document with Internet applications. As a result, earlier versions of Word cannot read DOCX documents, but Microsoft does provide software that converts DOC doc- uments into a DOCX format Word 2007 can read DOC documents and is able to save new documents in a DOC format when using the Save As option.

TXT

TXT documents only contain text Any computer can read a TXT file, but don't expect it to look pretty. The Notepad text editor included with Windows defaults to creating TXT documents. The individual characters in the document (letters, punctuation, newlines etc.) are each encoded into bytes using the ASCII encoding (or another character encoding such as UTF8 or iso8859-1, particularly if the document is not in English), and stored in a simple sequence. This format only stores the text itself, with no information about formatting, fonts, page size, or anything like that. It is portable across all computer systems and can be read and modified by a huge range of software applications. The details of the format are freely available and standardized. If the storage media are damaged, any undamaged sections can be recovered without problems.

PDF (Portable Document Format)

PDF files use a .pdf filename extension. These files are created using a software package from Adobe called Acrobat. This software must be purchased and converts files created by other softwares like Microsoft's Word, into a read-only PDF file. In this format case, the text plus formatting, page size and similar information are stored in a moderately complex encoding. While the details of this encoding are freely available, the format is owned by Adobe and can be changed by them at any time, for any reason. The

document can be viewed and printed on all major platforms, using free software provided by Adobe (or others) PDF documents cannot be readily edited.

HTML (HyperText Markup Language)

It uses either .htm or .html filename extensions. HTML files contain codes that browsers, like Internet Explorer or Safari, translate into Web pages. The text, plus simple formatting, is stored in a simple encoding that is based on the plain text file format above, with plain text markup interspersed with the text. This format is freely available and controlled by a public-interest standards body. The document can be viewed in any web browser It can be edited in a text editor by someone who knows HTML, or in any number of "rich text" editors, word processors, HTML editors and so on.

Multimedia Editors

Currently, most media content exists in digital form. File formats such as MP3, MP4, and AVI etc. are commonly encountered by everyday users of media content. Each file format consists of a multitude of layered elements that have been incorporated for normal consumption. Video files include text, images, audio and video, and tend to be the most dense of all multimedia files. In this respect, audio and images are simpler and easier to work with. Within multimedia editing there are finer areas of audio and images editing, which require a different set of tools and skills to master. Multimedia editing is therefore the skill of being able to combine these various content files into a singular file type. Usually a video file. Multimedia editing involves at the minimum three types of files: audio, images and video. And although it's possible to find a single software that can successfully work with all three file types, the quality will never be as good as if you had worked with a standalone editing software for each file type. To ease that requirement, a number of software is available to let you manage and work with each of these components individually.

Image Editors

Almost everyone is familiar with image editing. Hundreds of free user-friendly applications available for editing images on mobile devices mean that even our parents may, at some point, have played around with the images clicked on their phones. The turnkey tools allow the look and feel of images to be changed with the use of mere filters. For the perfectionists, such apps also let you control the finer features of images such as brightness, contrast and colour tones. However, it's important to note that these apps aren't suitable for professional looking pictures since they use predetermined settings to change images, preventing you from manually editing the image to your needs. For high quality image editing, which not only allows you to make subtle adjustments but is also capable of dealing with large image resolutions, you need to explore other options. These full-fledged image editing software are remarkably popular for not only correcting errors in photographs, but for also making significant changes that can make the surreal look real

Audio Editors

Audio editing software are just as easily available for free, but suffer from the same draw- backs. The need for good audio editing in multimedia projects is critical since audio files are experienced with greater scrutiny by people. The slightest background noise such as sounds of voices speaking can easily be detected.

The good news is that such sounds (and other similar unintentional effects) can be deleted and corrected with the help of a fullfledged audio editing tool. Experienced audio editing tool users will find such applications handy to express their creativity seeing as they have at their disposal a wide assortment of features that are invisible to casual users. A good audio editor can help you change the tone and pitch of a person's voice making it more dramatic or funny, depending on the effect you're going for. It will also let you configure sound to work best on multiple speaker setups, such as a 7.1 Dolby Surround Sound System in theatres or the kind used in concert halls or even in your living rooms. Multimedia editing expands to numerous tools which work with smaller and more detailed aspects of the footage – from sound effects to visual effects This software also comes with the ability to compose and design your own music from scratch, with the help of digital instrumental tracks that can create entire symphonies in a matter of minutes

Video Editors

Video editing tools are the mother lode of multimedia editing since they come packed with the bulk of features required to create a multimedia project. Such software gives you the freedom to take an assortment of shot footage, combine it with audio, graphics, effects and text and create a unique product. Video editing packages can range from basic to professional, depending on your needs. If you're only interested in automated multimedia creation then simple tools like 'Windows Movie Maker' should do. However, more powerful software like 'Avid Media Composer' let you make footage shot on your mobile phone look like a scene from Sin City