**Experiment :12**

**To study different file format of Audio, Text, Video, Animation Files**

**AUDIO FILE FORMAT**

**Audio File Format :-**

An audio file format is a file format for storing digital audio data on a computer system. The bit layout of the audio data (excluding metadata) is called the audio coding format and can be uncompressed, or compressed to reduce the file size, often using lossy compression. The data can be a raw bitstream in an audio coding format, but it is usually embedded in a container format or an audio data format with defined storage layer.

**1.aiff**

**audio interchange file format**

The format was developed by Apple Inc. in 1988 based on Electronic Arts' Interchange File Format (IFF, widely used on Amiga systems) and is most commonly used on Apple Macintosh computer systems. The audio data in most AIFF files is uncompressed pulse-code modulation (PCM).

**2 .cda**

.cda is a common filename extension denoting a small (44 byte) stub file generated by Microsoft Windows for each audio track on a standard "Red Book" CD-DA format audio CD as defined by the Table of Contents (ToC) (within the lead-in's subcode).[1] These files are shown in the directory for the CD being viewed in the format Track##.cda, where ## is the number of each individual track**.**

**3 .mid or .midi**

**Musical Instrument Digital Interface**

MIDI (Musical Instrument Digital Interface) is a protocol designed for recording and playing back music on digital synthesizers that is supported by many makes of personal computer sound cards. Originally intended to control one keyboard from another, it was quickly adopted for the personal computer.

**4 .mp3**

**MPEG-2 Audio Layer III**

MP3 is an audio coding format for digital audio which uses a form of irreversible data compression (original bits cannot be recreated from the compressed bits) . It was designed by Moving Pictures Expert Group (MPEG) as part of its MPEG-1 standard and later extended in the MPEG-2 standard .

**5 .mpa**

MPEG-2 (a.k.a. H.222/H.262 as defined by the ITU) is a standard for "the generic coding of moving pictures and associated audio information".[1] It describes a combination of lossy video compression and lossy audio data compression methods, which permit storage and transmission of movies using currently available storage media and transmission bandwidth. While MPEG-2 is not as efficient as newer standards such as H.264/AVC and H.265/HEVC, backwards compatibility with existing hardware and software means it is still widely used, for example in over-the-air digital television broadcasting and in the DVD-Video standard.

**6 .ogg**

**ongoing**

The OGG Audio file format. OGG is a free, open container format created under unrestricted software patents by the Xiph.Org Foundation (Ogg Vorbis). It allows users to stream and alter high quality digital multimedia files. The name “Ogg” derives from the jargon word “ogging.”

**7 .ra**

**Rich audio**

Audio file used by RealPlayer, an audio and video streaming program; may reference a streaming audio file online or may contain audio data; can use various codecs to compress audio with variable bit rates; uses a proprietary Real compression algorithm.

**8 .wma**

**Windows Media Audio**

Audio file in Microsoft Windows Media format. WMA is a file extension used with Windows Media Player. WMA stands for Windows Media Audio. WMA is both an audio format and an audio codec. WMA was intended to be a competitor for the MP3 and RealAudio audio formats.

**9 .wpl**

**Windows Media Player playlist**

WPL is a computer file format that stores multimedia playlists. It is a proprietary file format used in Microsoft Windows Media Player versions 9–12. The elements of WPL files are represented in XML format. The top-level element, smil, specifies that the file's elements follow the SMIL structure.

**10 .wav**

**Waveform audio file format**

A WAV file is an audio file that uses a standard digital audio file format utilized for storing waveform data. It allows audio recordings to be saved with different sampling rates and bitrat esand are often saved in a 44.1 KHz, 16-bit, stereo format, which is the standard format used for CD audio.

**TEXT FILE FORMATS**

**TEXT FILE FORMAT**

Text files contain textual data and may be saved in plain text or rich text formats. While most text files are documents created and saved by users, they can also be used by software developers to store program data. Examples of text files include word processing documents, log files, and saved email messages.

1. **.\_doc**

A \_DOC file is a Microsoft Word document with the .doc extension changed to .\_doc. It is a .DOCfile, which may include formatted text, images, graphs, tables, and charts. \_DOC files may be renamed to ".\_doc" files by an email program to prevent the file from being blocked by an email service.

1. **.eml**

An EML file is an email message saved by Microsoft Outlook or other e-mail programs. It may also contain an e-mail attachment, which is a file sent with the message.

1. **.txt**

A TXT file is a standard text document that contains unformatted text. It is recognized by any text editing or word processing program and can also be processed by most other software programs.

1. **.rtf -**

Revisable Form Text (RFT) document format used by DisplayWrite, a once-popular IBM word processor program; contains document text and graphics data; used on IBM mainframes and IBM DisplayWriter System machines.

1. **.odt -**

An ODT file is a text document created by various word processors, such as the Writer program included in Apache OpenOffice and LibreOffice. It contains different elements such as text, images, drawn objects, and styles. ODT files are formatted using the OASIS OpenDocument XML-based standard.

1. **.wpd -**

A WPD file is a text document created by Corel WordPerfect, a popular [word processor](https://techterms.com/definition/wordprocessor). It may contain formatted text, tables, drawn objects, and images. WPD files are stored in a proprietary Corel format, but can be exported to other formats from within WordPerfect.

1. **.log -**

A LOG file is a [log](https://techterms.com/definition/logfile) used by various operating systems and programs. It typically contains a plain text log of certain events with their timestamps. LOG files may be created by the operating system to keep track of system events or by a software installation program to list location and names of installed files.

1. **.msg -**

An MSG file is an email message, contact, appointment, or task created or saved within Microsoft Outlook. It may contain one or more email fields, which includes the date, sender, recipient, subject, and message body, or contact information, appointment details, and one or more task descriptions. MSG files are also compatible with other programs that use Microsoft's Messaging Applications Programming Interface (MAPI).

1. **.wps -**

A WPS file is a word processing document created by Kingsoft Writer, a word processor that is part of the Kingsoft WPS Office suite. It contains text, images, and page formatting. WPS files are similar to Microsoft Word documents ([.DOC](https://fileinfo.com/extension/doc) or [.DOCX](https://fileinfo.com/extension/docx) files).

1. **.docx -**

A DOCX file is a document created by Microsoft Word or another [word processing](https://techterms.com/definition/wordprocessor) program, such as OpenOffice Writer or Apple Pages. It contains formatted text but may also include images, drawn objects, and other document elements. DOCX files are widely used in home, academic, and business environments for drafting letters, resumes, invitations, newsletters, and other documents.

**ANIMATION**

Animation is a dynamic medium in which images or objects are manipulated to appear as moving images. In [traditional animation](https://en.wikipedia.org/wiki/Traditional_animation), images are drawn or painted by hand on transparent [celluloid sheets](https://en.wikipedia.org/wiki/Cel) to be photographed and exhibited on film. Today most animations are made with computer-generated imagery (CGI). Computer animation can be very detailed [3D animation](https://en.wikipedia.org/wiki/3D_computer_graphics), while [2D computer animation](https://en.wikipedia.org/wiki/2D_computer_graphics) can be used for stylistic reasons, low bandwidth or faster real-time renderings. Other common animation methods apply a [stop motion](https://en.wikipedia.org/wiki/Stop_motion) technique to two and three-dimensional objects like paper cutouts, [puppets](https://en.wikipedia.org/wiki/Puppet) or [clay figures](https://en.wikipedia.org/wiki/Clay_animation). The stop motion technique where live actors are used as a frame-by-frame subject is known as pixilation.

**Animation File Formats**

**1. ANM**

DeluxePaint Animation ".ANM" files consist of a large header and a series of structures that can be up to 64 KB long each. The programmer refers to these structures as "Large Pages". Large Pages are a format for dividing a file into 64 KB chunks that can be stored out-of-sequence in the file. That is, a large page can be logically inserted into the file, without having to move all the following data out of the way.

Each large page holds one or more "records". A record represents one frame of the original animation. A record is of any length from 0 to almost 64 KB. The records in a large page are sequential. However, the first large page may not contain the first frames of the animation file. Each large page contains a sequential set of records but the large pages themselves are not in sequential order. It is possible for the first large page in a file to contain the last few frames of the animation. When the animation file is processed the large page structures must be scanned to determine which large page contains the frame you wish to display or process next.

An ANM file is built on this mechanism, so that as frames change in size, they can be maintained with a minimum of extra file i/o, yet without loss of playback performance. In addition, there is an optional special record which is the delta from the last frame to the first frame, for smooth playback of looping animations.

**2. AVI**

The AVI (Audio Video Interleave) format was developed by Microsoft, and is a common format on PC's. It is a RIFF file specification used with applications that capture, edit, and playback audio-video sequences. In general AVI files contain multiple streams of different types of data.

The format is interleaved such that video and audio data are stored consecutively in an AVI file (i.e. a segment of video data is immediately followed by a segment of audio data). Each frame is also compressed.

AVI hopes that the video and sound frames synchronise together - instead of synchronising to a common clock, video plays at its own clock rate and sound is clocked to its sample rate. The AVI architecture also means that a silent VFW file must include a "silent" (null) sound in order to play correctly which leads to a waste of bandwidth.

**3.DL**

This animation file format, developed by Davide Tome' and Luca De Gregorio, is not public domain.

**4. DPX**

This is a standard developed by the Society of Motion Picture and Television Engineers (SMPTE). It is a file format for the exchange of digital moving pictures on a variety of media between computer-based systems. It does not define the characteristics of input or output devices or displays. DPX is, in fact, the Kodak Cineon raster file format with a few slight modifications to the file's header.

The DPX specification is referred to as the ANSI/SMPTE 268M-1994 Standard.

**5. FLM**

This is a low resolution colour Atari ST format. The speed and direction of the animation can be altered, as can the action to perform at the end of the animation. Actions include:

* pause, then repeat from beginning
* immediately repeat from beginning
* reverse (change direction)

The Animatic version number is also recorded.

The image data consists of each frame to display (in the order of their execution). No compression is used.

**6. FLX**

The FLX file format is a 16 bit High colour file. It is an animation file that plays animations without having to change, optimise or merge palettes. The file format is ideal for direct conversion of video into animations.

The file is derived from the AutoDesk Animator Pro FLC format, and the basic file is the same as the FLC file except for the following:

* The depth field in the header is set to 16 rather than 8
* Frames do not have palette changes
* The first frame is BRUN compressed
* All other frames are SS2 compressed

**7. GIF**

A GIF file consists of a screen colour map and a series of images, each with an optional colour map. The images do not have to be at the origin and can be any size smaller than the screen size. This allows GIF animations to be created that only update the part of the screen that changes. GIF files use the LZH compression algorithm.

GIF89a is a 256-colour (maximum) format. GIF allows for any number of colours between 2 and 256. The fewer colours, the less data and the smaller the graphic files. If a GIF only uses 4 colours, the palette can be reduced to only 2 bits (4 colour) and decrease the file size by upwards of 75%.

GIF animation is starting to appear on the World Wide Web (WWW), with Netscape 2.0 (and later versions), and Microsoft's Internet Explorer supporting it. It must be noted however that none of these fully support the GIF specification.

GIF89a (like GIF87a before it) allows multiple images to be compiled within a single GIF file. This "stream" of images can be used like frames in an animation sequence or movie. In addition, GIF89a allows more control over the "play" of the frames by allowing the GIF to:

* specify the x and y pixel coordinate of each "frame"
* state how many 100ths of a second to wait before displaying the next frame
* wait for user input
* set a transparent colour
* use interlacing
* include comments
* display lines of text
* decide how the image should be removed after displayed

With GIF89a based animation, self-contained GIF files are downloaded once and played from the computer's disk cache. Several may be downloaded per page, and a single animated GIF can be placed dozens of times on the same page, creating effects that would never be possible with server-based solutions. Unlike other movie formats, GIF still supports transparency, even in animations. They are as simple to use and implement as any still GIF image. The only thing GIF lacks is sound, a feature that has been added to GIF's in the past. A GIF animation can be slowed down or interrupted by other images being downloaded and other playing animations.

**8. IFF ANIM**

The Amiga's IFF format was designed as a universal (extensible) data format. Many different data types and chunks can be found in IFF ANIMs. Many ANIMs include sound chunks or colour cycling. There are a plethora of compression techniques (with different tradeoffs) used. Most IFF ANIMs are meant to be double-buffered, with deltas applying to frames two distant. A looping ANIM means the last two deltas produce images that are the same as the first two.

**9.PFX**

PageFlipper Plus F/X on the Amiga is the creator of these files. PFX contains a series of deltas with a play list at the end. The format supports colour map changes, nested loops and dynamic timing.

**10. QuickTime**

This format is commonly used on Macintosh computers and is expanding to other platforms. QuickTime is not only a video or animation file format, but is more of a multimedia format. QuickTime supports two Movie formats, namely the Movie format and an extended version of the PICT format.

The Movie format is used to manage different forms of dynamic data. The format consists of different tracks that begin and end at different times during a presentation. There are currently five types of tracks available however new types are possible:

* Video (including MPEG)
* Animation
* Sound
* Music (a Midi-like synthesiser track)
* Text

**Video File Format**

**1. What is Video ?**

**Ans:-  Video** is an electronic medium for the recording, copying, playback, broadcasting, and display of moving visual media. Video wasVideo File formats first developed for mechanical television systems, which were quickly replaced by Cathode ray tube (CRT) systems which were later replaced by flat panel displays  of several types.

**2. Types of Video file formats ?**

**Ans**:- A video file format is a tyVideo File formatspe of file format for storing digital video data on a computer system. Video is almost always stored in compressed form to reduce the file size.A video file normally consists of a container (e.g. in the Matroska format) containing video data in a video coding format (e.g. VP9) alongside audio data in an audio coding format (e.g. Opus). The container can also contain synchronization information, subtitles, and metadata such as title. The coded video and audio inside a video file container (i.e. not headers, footers and metadata) is called the essence. A program (or hardware) which can decode compressed video or audio is called a codec.

**AVI (Audio Video Interlaced):-** First introduced in 1992 by Microsoft, AVI videos were the most popular type throughout the 90s and into the early 2000s. It can only contain video and audio tracks, and it can actually hold multiple tracks of each but this feature is rarely used. Readability of AVI is almost universal, but it has some compression limitations that result in larger-than-average files.

**MKV (Matroska Video Container):-** First introduced in 2002, the Matroska format is both free and open standard, which has helped it to stay relevant over the years. MKVs can contain virtually all kinds of video and audio codecs, plus multiple subtitle tracks and DVD menus and chapters, making it the most flexible format currently available. And while Matroska’s popularity has been on the rise, it isn’t universally supported yet.

**MP4 (MPEG-4 Version 2):-** First introduced in 2001 but later revised in 2003, the MP4 format took the then-popular QuickTime File Format and improved on it in several ways. It supports a wide variety of video and audio codecs but is most often used with H.263/H.264 for video and AAC for audio. Also supports subtitle tracks.

**WMV (Windows Media Video):-**First introduced in 1999, WMV is a proprietary codec developed by Microsoft to be used with their proprietary ASF container format. A file with the WMV extension is an ASF container with a WMV video track, but WMV video tracks can also be stored within AVI or MKV containers. Most Microsoft devices still support it, but it has fallen out of popular use in recent years.

**Xvid (H.263/MPEG-4 Part 2)** — First introduced in 2001 as an open source competitor to DivX, Xvid became popular for its ability to compress DVD movies down to CD sizes without sacrificing much quality. Most players support Xvid today.

**x264 (H.264/MPEG-4 AVC)** — First introduced in 2003, H.264 is best known as one of the encoding standards used on Blu-ray videos and as the most popular encoding standard for video streaming, used by sites like YouTube, Vimeo, etc. x264 is an open source implementation that allegedly produces higher-quality videos at smaller file sizes.

**x265 (H.265/MPEG-H HEVC)**— First introduced in 2013, H.265 is the up-and-coming successor to H.264, allowing more than twice the data compression while keeping the same video quality. It also supports resolutions up to 8K. All of this means that H.265 will pave the way for better-quality videos while keeping file sizes reasonable. x265 is an open source implementation of it. Because H.265 is so new, it isn’t widely supported yet.