

# File Formats & Types

*only for CS 1<sup>st</sup> Year*  
**(Multimedia & Animation)**

*Presented by* REETA

# File Format

- A **file format** is a standard way that information is encoded for storage in a computer file.
- A file format specifies how bits are used to encode information in a digital storage medium.
- File formats may be either proprietary or free and may be either unpublished or open.
- For example : image file format , audio file format , video file format and Text Formats etc.

# Types of File Formatting



```
graph TD; A[Types of File Formatting] --> B[Image File Format]; A --> C[Audio File Format]; A --> D[Video File Format]; A --> E[Text Format];
```

Image File  
Format

Audio File  
Format

Video File  
Format

Text Format



# Image File Format

- Image Formats 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.

# TYPES OF IMAGE FORMATS



GIF

JPEG

PNG



# GIF

- Stands for Graphic Interchange Format.
- Uses lossless compression technique
- Supports 8 bit colors
- Supported by all browsers
- Suitable for text , artwork , icons and cartoons
- Large File Size
- Extension is .gif



# JPEG

- Stands for Joint Photographic Experts Group
- Uses lossy compression technique
- Supports 24-bit colors
- Supported by all browser
- Suitable for photographs
- Smaller File Size as compared to GIF
- Extension is .jpg or .jpeg

# PNG

- Stands for Portable Network Graphics
- Uses lossless compression technique which supports 24-bits colors but not supported by all browsers
- Suitable for text , icons etc.
- Smaller File Size as compared to GIF and JPEG
- Extension is .png





# Audio File Format

- An audio file format is a file format for storing digital audio data on a computer system.
- This data can be stored uncompressed, or compressed to reduce the file size.
- It can be a raw bit stream, but it is usually a container format or an audio data format with defined storage layer.

# Types of Audio File Format

- 
- 
- MPEG
  - WAVE

- MIDI
- WMA

- AIFF
- AAC



# MPEG

- Stands for Moving Picture Experts Group
- MPEG files employ loss data compression
- MPEG files use the .mp3 filename extension
- Digital music , pod casts and audio books are often saved as MPEG3 files
- Older MPEG files are usually designated with an extension of .mp2
- Older MPEG files are usually designated with an extension of .mp2
- One minute of music takes up approximately 1MB of storage space



# WAVE

- Stands for Resource Interchange File Format Waveform
- Wave files employ an uncompressed audio format
- WAVE uses .wav filename extensions
- This file format is a proprietary format that was sponsored jointly by Microsoft and IBM
- The .wav format can support both monaural (single-channel) and stereo (multichannel) audio
- One minute of stereo music takes up approximately 10MB of storage space



# MIDI

- Stands for Musical Instrument Digital Interface
- MIDI files are very 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



# WMA

- Stands for Windows Media Audio
- WMA file formats use a loss compression developed by Microsoft and is widely recognized by a variety of players and jukeboxes, like Winamp and Music Match
- Windows Media Audio files use a .wma filename extension
- It is non-proprietary MP3 format for saving and storing music files





# AIFF

- Stands for Audio Integrated File Format
- AIFF uses the .aiff file extension
- AIFF is the native audio file format developed by Apple for the Macintosh computer platform
- It is an uncompressed audio format
- This means that it is much larger in file size than MP3 but can support the highest possible audio recording quality as well as lower quality settings
- AIFF can support music from the highest quality 48K recording through to lower quality recordings

# AAC

- Stands for Advanced Audio Coding
- AAC is a standardized loss compression
- It uses the .aac file extension
- Intended to be the successor to MP3 format, AAC generally has better audio quality and is the default format for many digital audio players like the iPod, iPhone, iPad, Nintendo DS and others





# Video File Format

- Video File Format is consist of two ways:
  1. Analog
  2. Digital
- Examples of these formats is:
  - MPEG
  - MOV
  - AVI
  - WMV
  - Real Video
  - SWF

# Types of Video File Format

- 
- MPEG
  - MOV

- AVI
- WMV

- REAL VIDEO
- SWF

# MPEG

- Stands for Motion Picture Experts Group
- MPEG files are also a common format for digital videos and movies
- It use the filename extensions of .mpg or .mpeg
- The latest MPEG version, MPEG4, uses the .mp4 filename extension



# MOV

- Stands for QuickTime Movie
- The QuickTime video and movie file format was originally developed for the Apple Macintosh
- But MOV is now recognized by all personal computers
- QuickTime movies use the .mov filename extension
- .qt filename extension used as an alternative



# AVI

- Stands for Audio/Video Interleave
- The AVI video and movie file format was originally developed by Microsoft for Windows-based personal computers
- It uses the .avi filename extension
- It is the nominal standard for personal computers using Windows



# WMV

- Stands for Windows Media Video
- WMV file formats are propriety to Microsoft licensed products
- WMV are not widely recognized by non-Windows players
- Windows Media Video files use a .wmv filename extension
- Files stored in this format are intended to be played, not edited



# RealVideo

- RealVideo is a proprietary file format
- It uses .rm, .ram, .ra as file extensions
- Used mainly for real-time streaming of audio and video it requires RealPlayer (Windows and Mac) software



# SWF

- Stands for Originally ShockWave Flash, now means Small Web Format
- SWF files use the .swf file extension
- It is a format for multimedia, vector graphics and ActionScript in the Adobe Flash environment
- SWF files can contain animations or applets of varying degrees of interactivity and function
- Currently, SWF functions are the dominant format for displaying "animated" vector graphics on the Web





# Text Format

- 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.




## Text Format (Con't)

- 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.

# Types of Text File Format

- 
- 
- DOC/DOCX
  - RTF

- 
- TXT
  - HTML

- 
- PDF
  - ZIP



# DOC/DOCX

- Microsoft's Word (word processing) software saves documents using the .doc filename extension
- 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 superceded 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 documents 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



# RTF

- Stands for Rich Text Format
- RTF documents are designed to transfer documents between word processing software
- These files use .rtf filename extensions
- While the text formatting options are as "rich" as those used by Word, RTF files have limited page layout options
- For example, you cannot create columns, add page numbers, headers, or footers
- The WordPad word processor included with Windows defaults to creating RTF documents





# 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



# HTML

- Stands for HyperText Markup Language
- It use 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



# PDF

- Stands for 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





# ZIP

- ZIP files are compressed data files
- Files of ZIP format use the .zip filename extension
- A popular shareware program called WinZip originally used this format
- At one time you needed to use WinZip to compress (zip) and uncompress (unzip) ZIP files, but many personal computers now recognize this file format and will unzip the files
- ZIP files can contain several compressed files under one filename, called an archive, when using the WinZip software
- As a result you could unzip a file (archive) named testbank.zip and find it contains 12 unique files for a 12-chapter textbook

<b>Format</b>	<b>Purpose</b>
TXT	A plain-text file, with no formatting. This is the default format for the Notepad app in Windows, as well as most other text editors.
RTF	Rich Text Format (RTF) is a widely accepted generic word processing format. Nearly all word processing applications can read and write this format. It includes all the basic text formatting options, including fonts, attributes, paragraph indentation, margins, bullets and numbering, and headers/ footers.
DOC/DOCX	The DOCX format is the current format for Microsoft Word documents and is also used by many other word processing applications for compatibility with Word. The DOC format is an earlier version, used in Word 2003 and earlier and still supported.
XLS/XLSX	Microsoft Excel, the spreadsheet application, uses XLSX as its default format. The XLS format is an earlier version, used in Excel 2003 and earlier and still supported.
PPT/PPTX	Microsoft PowerPoint, the presentation application, uses PPTX as its default format. The PPT format is an earlier version, used in PowerPoint 2003 and earlier and still supported.
PDF	Portable Document Format (PDF) is the default format for Adobe Acrobat and Adobe Reader. This format is designed to make document formatting consistent when distributing documents across platforms. No matter what computer or device you open up a PDF file on, the file looks the same, without any variation in fonts or spacing. You can save to PDF in most Microsoft Office applications; you can also set up a PDF print driver that outputs print jobs to PDF files, useful in applications that do not save to PDF.

File Name	Description
<b>JPEG/JPG</b> (Joint Photographers' Expert Group)	Most popular lossy image format. Allows users to specify what level of compression they desire.
<b>PNG</b> (Portable Network Graphics)	Best of lossless image formats. Widely supported across web. Allows you to include an alpha channel within file.
<b>BMP</b> (BitMaP)	Would avoid if possible. They offer little to no compression which results in unnecessarily large files.
<b>TIFF/TIF</b> (Tagged Image File Format)	Offers both compressed and uncompressed versions. Compressed are similar to PNG and uncompressed is similar to BMP.
<b>PDF</b> (Portable Document Format)	Most widely used document format. Great vector image format. Created by Adobe.
<b>EPS</b> (Encapsulated PostScript)	Most common vector image format. Standard format for print industry.
<b>GIF</b> (Graphics Interchange Format)	Lossless format that supports both animated and static images. Great for webpage banner ads.

# Thank You