ASSIGNMENT 2

An encoding format is a standardized method of representing data in a specific format so that it can be efficiently stored, transmitted, and interpreted by computers. Different types of data require different encoding formats, depending on the nature of the data and the requirements of the application.

list of common encoding formats for various types of data:

**1. Text Encoding Formats:**

* **ASCII (American Standard Code for Information Interchange):**
  + Represents English characters as numbers.
* **UTF-8 (Unicode Transformation Format - 8 bit):**
  + Encodes all possible characters in the Unicode standard.
* **UTF-16 (Unicode Transformation Format - 16 bit):**
  + Another Unicode encoding capable of encoding all characters.
* **ISO/IEC 8859 (Latin Alphabet):**
  + Includes various parts (e.g., ISO/IEC 8859-1 for Western European languages).
* **Base64:**
  + Encodes binary data into ASCII characters for text transmission.

**2. Number Encoding Formats:**

* **Binary (Base-2):**
  + Represents numbers using only 0 and 1.
* **Decimal (Base-10):**
  + Standard numeric representation using digits 0-9.
* **Hexadecimal (Base-16):**
  + Uses digits 0-9 and letters A-F to represent numbers.
* **IEEE 754 (Floating Point):**
  + Standard for representing floating-point numbers.
* **BCD (Binary-Coded Decimal):**
  + Represents each digit of a decimal number separately in binary.

**3. Photo (Image) Encoding Formats:**

* **JPEG (Joint Photographic Experts Group):**
  + A commonly used format for lossy compression of digital images.
* **PNG (Portable Network Graphics):**
  + A lossless image format that supports transparency.
* **GIF (Graphics Interchange Format):**
  + Supports animation and limited colors (256).
* **BMP (Bitmap):**
  + A raster graphics image file format without compression.
* **TIFF (Tagged Image File Format):**
  + A flexible format often used for storing high-quality images.

**4. Audio Encoding Formats:**

* **MP3 (MPEG-1 Audio Layer 3):**
  + A commonly used format for lossy compression of audio.
* **WAV (Waveform Audio File Format):**
  + An uncompressed audio format used for high-quality sound.
* **AAC (Advanced Audio Coding):**
  + A lossy compression format with better sound quality than MP3.
* **FLAC (Free Lossless Audio Codec):**
  + A lossless audio format, maintaining high fidelity.
* **OGG (Ogg Vorbis):**
  + A free, open-source lossy audio compression format.

**5. Video Encoding Formats:**

* **MP4 (MPEG-4 Part 14):**
  + A widely used format for storing video, audio, and subtitles.
* **AVI (Audio Video Interleave):**
  + A format by Microsoft for video files, supporting multiple codecs.
* **MKV (Matroska Video):**
  + An open-standard container that can hold an unlimited number of video, audio, and subtitle tracks.
* **MOV (QuickTime File Format):**
  + A format developed by Apple for storing multimedia files.
* **H.264/AVC (Advanced Video Coding):**
  + A standard for video compression, used in many formats including MP4.

These encoding formats are essential for ensuring that different types of data are handled correctly by software and hardware, enabling efficient processing, storage, and transmission.

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