NAME – ISHAN DATE – 16/08/2024

ROLL NO. – FET-BAML-2022-26-012

SUBJECT – IOT AND AUTOMATION

**ASSINGMENT-2**

**1.A data encoding format is a standardized method for converting data into a specific format for efficient storage, transmission, and interpretation by computers.**

**What is an Encoding format List down encoding formats for various types of data ( Text, Number, Photo, Audio, Video).**

ANS- Different types of data (text, numbers, photos, audio, and video) have specific encoding formats to ensure compatibility and efficiency across various systems and platforms.

Encoding Formats for Various Types of Data are:-

1. **Text Encoding Formats:**
   * **ASCII** (American Standard Code for Information Interchange): Encodes English characters using 7-bit binary numbers.
   * **UTF-8** (Unicode Transformation Format - 8-bit): Encodes all Unicode characters and is backward-compatible with ASCII.
   * **UTF-16** (Unicode Transformation Format - 16-bit): Encodes Unicode characters with either 16 or 32 bits.
2. **Number Encoding Formats:**
   * **Binary (Base-2)**: Represents numbers in base 2 (e.g., 1010 for decimal 10).
   * **Decimal (Base-10)**: The standard number system using base 10.
   * **Hexadecimal (Base-16)**: Represents numbers in base 16 (e.g., A1 for decimal 161).
   * **IEEE 754**: Standard for representing floating-point numbers in computers.
   * **BCD (Binary-Coded Decimal)**: Represents each decimal digit as a separate binary value.
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 compression format for images that supports transparency.
   * **GIF (Graphics Interchange Format)**: An image format supporting animation and limited to 256 colors.
   * **TIFF (Tagged Image File Format)**: A flexible format for raster images, often used in publishing and photography.
4. **Audio Encoding Formats:**
   * **MP3 (MPEG-1 Audio Layer III)**: A popular lossy compression format for audio files.
   * **WAV (Waveform Audio File Format)**: An audio format that stores uncompressed audio.
   * **AAC (Advanced Audio Coding)**: A lossy audio encoding format that offers better compression than MP3.
   * **FLAC (Free Lossless Audio Codec)**: A lossless compression format for audio files.
5. **Video Encoding Formats:**
   * **MP4 (MPEG-4 Part 14)**: A multimedia format used to store video, audio, and subtitles.
   * **AVI (Audio Video Interleave)**: A format that stores both audio and video data in a file.
   * **MKV (Matroska Video File)**: A flexible format that can store video, audio, and subtitle tracks.
   * **MOV (QuickTime File Format)**: A multimedia container format developed by Apple.

Each of these encoding formats is tailored to the specific requirements of the type of data being represented, balancing factors such as file size, quality, and compatibility.