Color images are actually stored as 32-bit images, with the extra byte of data for each pixel used to store an alpha value representing special effect information (e.g., transparency).

Examples: Color Image uses 32 bits with high = 200 and width = 200 pixels?

Size= 200*200*4 Bytes=160000B/1024=156.25KB.

## 4. Multispectral Images

Multispectral images are like special photos that show more than just what our eyes can see. Instead of the usual colors in a photo, like red, green, and blue, multispectral images use a variety of colors, each showing different parts of light that are invisible to us.

So, multispectral images are like super-powered photos that reveal hidden details in things like plants, landscapes, or even in medical images. They help us understand the world in a more detailed and specialized way.

**Example:**

Imagine you have a farm, and you want to know how healthy your crops are. You take a regular photo, and everything might look green. But if you use a multispectral camera, it can capture not only the greenness but also other information like how much infrared light the plants are giving off. This extra information helps you understand the health of your crops in a way that a regular photo cannot.

## Image file formats:

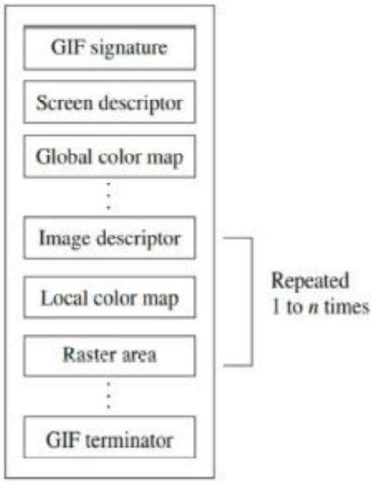
Some popular file formats are listed in the table below with their respective extensions:

Format:

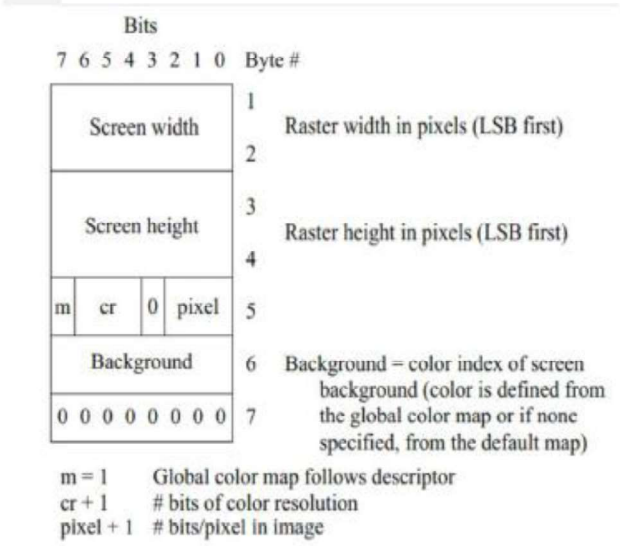
| Format Name | Description | Recognized Extensions |
|---|---|---|
| GIF | Graphics Interchange Format | .gif |
| JPEG | Joint Photographic Experts Group | .jpg, .jpeg |
| TIFF | Tagged Image File Format | .tif, .tiff |
| BMP | Windows Bitmap | .bmp |
| PNG | Portable Network Graphics | .png |

### 1- GIF

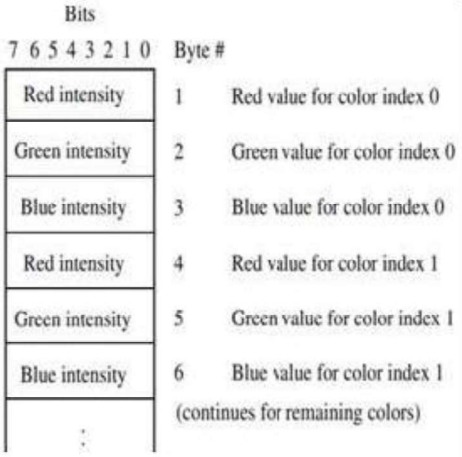
- Graphics Interchange Format (GIF) devised by the UNISYS Corp. and CompuServe, initially for transmitting graphical images over phone lines via modems.
- One of the simplest is the 8-bit GIF format, and we study it because it is easily understood, and also because of its historical connection to the WWW and HTML markup language as the first image
- Type recognized by net browsers.
- Limited to only 8-bit (256) colour images, suitable for images with few distinctive colours (e.g., graphics, drawing)
- GIF89a: supports simple animation, transparency index etc.




*GIF file format*




*Screen descriptor*




*Color map*

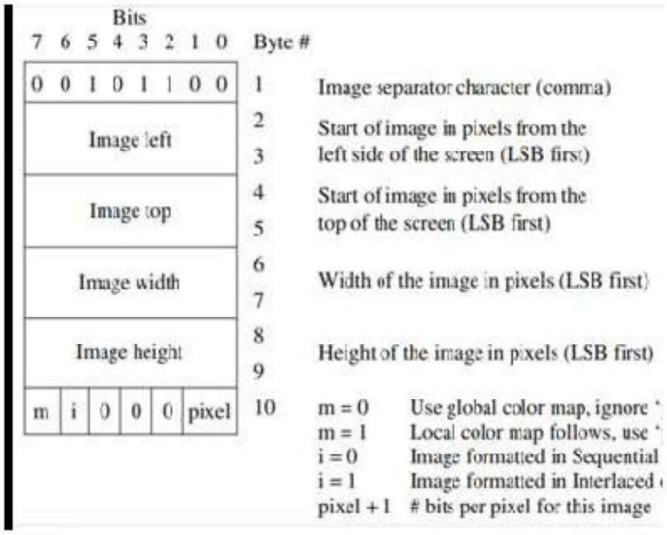



*Image descriptor*

## 2- JPEG Standard

- A standard for photographic image compression created by the Joint Photographic Experts Group
- Takes advantage of limitations in the human vision system to achieve high rates of compression.
- Lossy compression which allows user to set the desired level of quality/compression.

## 3- TIFF

- Tagged Image File Format stores many deferent types of images (e.g., bit-map,greyscale, 8-bit & 24-bit RGB, etc.).
- Developed by the Aldus Corp. in the 1980's and later supported by the Microsoft
- TIFF is a typically lossless format.
- It does not provide any major advantages over JPEG and is not as user-controllable it appears to be declining in popularity.

## 4- BMP

- BitMap (BMP) is the major system standard graphics file format for Microsoft
- Windows.
- used in Microsoft Paint and other programs. It makes use of run-length encoding compression and can fairly efficiently store 24-bit bitmap images.
- Note, however, that BMP has many different modes, including uncompressed 24-bit images.

## 5- PNG

PNG meant to supersede GIF standard

Features of PNG:

- Support up to 48 bits per pixel - more accurate colors
- Support description of gamma-correction and alpha-channel for controls such as transparency
- Support progress display through 8×8 blocks.