

## Multimedia - Image

Tuesday, 18 August 2020 1:55 PM

### Key terms:

Bit-map image: System that uses pixels to make up an image.

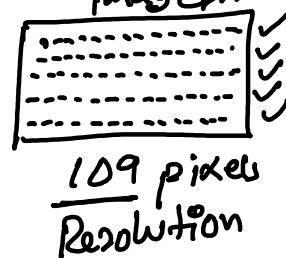
Pixel: Smallest picture element that makes up an image.

Colour Depth:  $2^8 = 256$   $\xrightarrow{\text{Colour Depth}}$   $2^5 = 32$   
Number of bits used to represent the colours in a pixel.

Image Resolution: Number of pixels that make-up an image.

Software

$4096 \times 3192 = 12738656$   
Rows Columns. Pixels in total

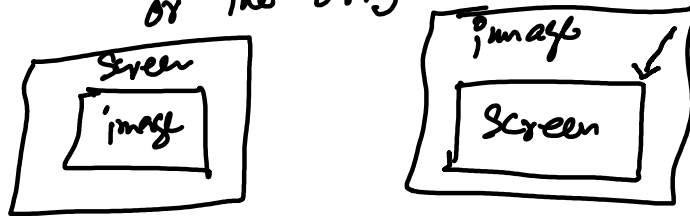


Screen Resolution: number of horizontal and vertical pixels that make-up a

Hardware

Screen display.

If the screen resolution is smaller than the image resolution, the whole image can't be shown on the screen, or the original image will become lower quality.

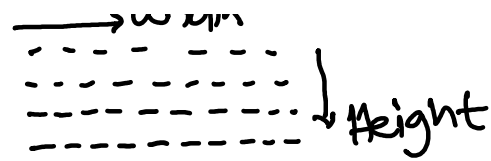


Resolution: Number of pixels per column and per row on a monitor or a TV screen.

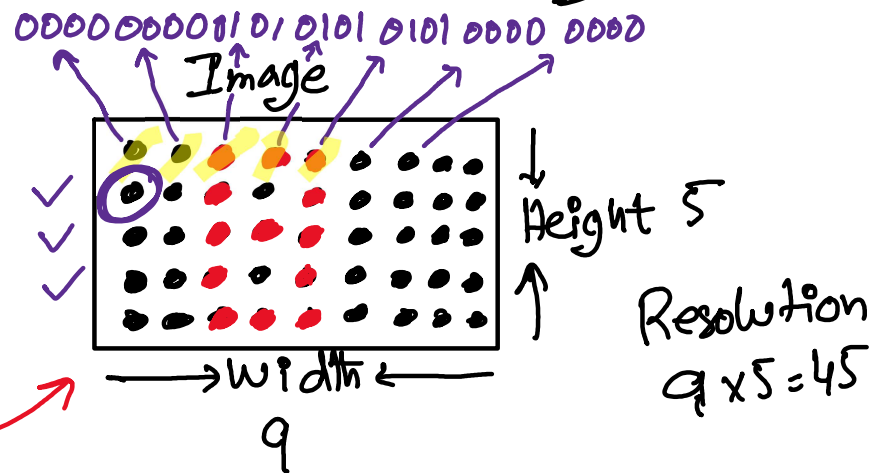
Pixel Density: Pixels per inch (PPI)  
Number of pixels per square inch.

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Bit-map Images: Are made-up of pixels (picture elements); the image is stored in a two-dimensional matrix of pixels.



CMY or RGB



- Resolution
- Pixel
- Image
- Color
- Color Depth (Range)

while  $z = 0$

Red = 5

Columns = 16

Depth = 4 bits

This image has 16 Colors/pixel.

$2^4 = 16$   $\rightarrow$  15 (1111)  
 Color  
 Depth

Depth

Next Row

1 2 3 4 5 6 7 8 9 ↑

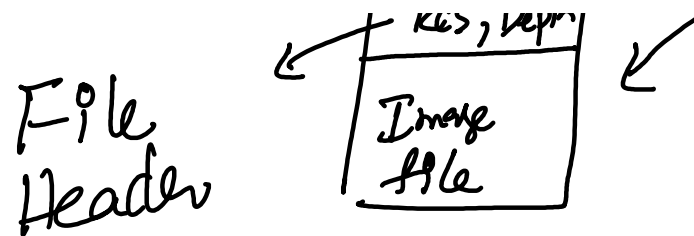
0000 0000 0101 0101 0101 0000 0000 0000 0000 0000

0101 0000 0101 0000 0000 0000 0000 0000 0101 0101 0101

0000 0000 0000 0000 → → →

Information required by the operating system related to this image.

① Resolution  $9 \times 5$



1B  $2^8 \xrightarrow{\text{bits per pixel}} 256 \text{ Colors}$   $\nearrow 0$   
 $\searrow 255$

$$2B \quad 2^{16} = 65k$$

$$3B \quad 2^{24} = 1.7 \text{ millions}$$

# File Sizing

✓	Image	10x10	Resolution
✓	Color	32	

Color 32  
Image Resolution =  $10 \times 10 = 100$   
5 = 32 (5)

Color Depth

$$100 \times 5 = \frac{500 \text{ bits}}{8} = 62.5 = \boxed{63B}$$

②

Image 1024 x 768 Resolution  
Colors 65536 Colors

$$\text{Image Resolution} = 1024 \times 768 \\ = 786432 \text{ pixels}$$

$$\text{Color Depth} = 2^{16} = 65536 \\ 16 \text{ bits}$$

$$786432 \times 16 = 12582912 \text{ bits} \\ 12582912 / 8 = \underline{\underline{1572864 \text{ Bytes}}}$$