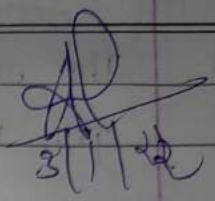


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3/1/22

1. Define the following.

1) Resolution → Resolution is a measure used to describe the sharpness and clarity of an image or picture. The number of horizontal and vertical pixel on a display screen is called Resolution.

2) Interlacing → It is a description of how the picture is created. Interlacing allows for a faster refresh rate by having less information during each scan at a lower cost.

3) Antialiasing → Antialiasing is a computer graphics technique to remove aliasing. Antialiasing tries to smooth and produce perfect round edge.

4) Pixel → It is also known as picture element. It is the smallest element of an image on a computer display. A screen is made up of millions of pixels.

2. Find the size of a  $640 \times 480$  image to 240 pixels per inch / per unit length in X and Y directions?

Ans: The resolution of an image is the number of pixels per unit length in X and Y direction.

$$= 640 / 240 \text{ by } \frac{480}{240}$$

$$= \frac{8}{3} \text{ by } 2$$

3. Find the resolution of an image of size  $2 \times 2$  inch that has  $512 \times 512$  pixels.

Ans: The resolution of an image is

$$\frac{512}{2} = 256$$

$$= 256 \text{ pixels per Inch (PPI)}$$

4. If the height of an image is 2 inches and aspect ratio is 1.5. What is the width of the image?

Ans: Aspect Ratio = 1.5

$$\text{Height} = 2 \text{ inches}$$

$$\text{Aspect ratio} = \text{Height} / \text{width} \\ = 1.5 \times 2$$

$$\text{Width} = 3.0 \text{ inches}$$





5. What are the steps required to fill a region using the boundary fill method?

Ans:→

The below steps illustrate the successive boundary fill algorithm.

Step 1. Start from an interior point.

Step 2. If the current pixel is not already filled and if it is not an edge point, then set the pixel with the fill color, and store its neighbouring pixels in stack for processing.

Step 3. Select the next pixel from stack and continue with Step 2.

6. Calculate the points using an algorithm that would be plotted for a line where end points are  $(12, 10)$  and  $(20, 20)$ .

Ans:→

$(12, 10)$	and	$(20, 20)$
$(x_1, y_1)$		$(x_2, y_2)$

$$\Delta x = x_2 - x_1 = 20 - 12$$

$$\Delta x = 8$$

$$\Delta y = y_2 - y_1 = 20 - 10$$

$$\Delta y = 10$$

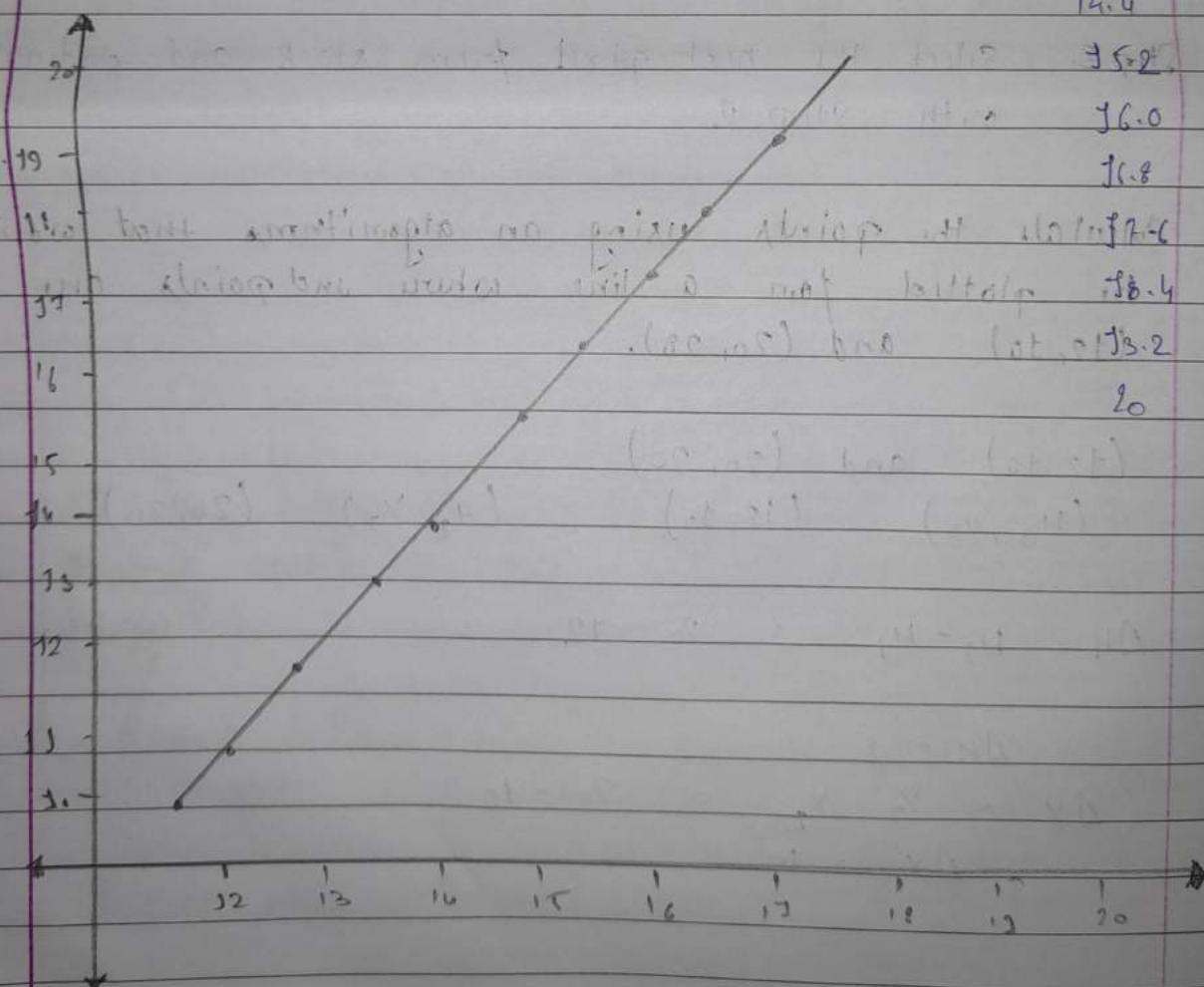
$$M = \frac{\Delta y}{\Delta x} = \frac{10}{8} = 1.25$$

Steps = maximum ( $\Delta H$ ,  $\Delta V$ ) [highest]

$$= 10$$

$$x_{inc} = \frac{\Delta H}{Steps} = \frac{8}{10} = 0.8$$

$$y_{inc} = \frac{\Delta y}{Steps} = \frac{10}{10} = 1$$







7. What advantage do Bresenham algorithm have over DDA algorithm?

- Ans:- (i) Bresenham's line algorithm is highly efficient incremental method over DDA.
- (ii) Bresenham's algorithm produces mathematically accurate results using only integer addition, subtraction & multiplication by 2 where as DDA algorithm, a floating point addition is still needed in determining each successive point.

8. Differentiate between the following?

- | (i) LCD  | (ii) LED                                   |
|--|--|
| i) It is slower than LED in terms of response time.      | i) LED have better response time than LCD. |
| ii) Consumes less power.                                 | ii) Consumes more power.                   |
| iii) It delivers good picture quality but less than LED. | iii) It delivers good picture quality.     |
| iv) It is less costly.                                   | iv) It is more costly than LCD.            |



(ii)

Raster Scan

i) It has low resolution than random scan.

ii) It is less expensive.

iii) Modification is tough.

iv) It is suitable for realistic display.

Random Scan

i) It has high resolution than raster scan.

ii) It is more expensive.

iii) Modification is easy.

iv) It is restricted to line drawing application.

(iii)

CRT (cathode Ray Tube)

i) It is ball shaped.

ii) It has poor resolution.

iii) It occupies more space.

iv) It produces a lot of radiation.

v) It consumes more power.

Flat Panel display

i) Screen is flat shaped.

ii) It has good resolution.

iii) It occupies less space.

iv) It produces less radiation.

v) It consumes less power.