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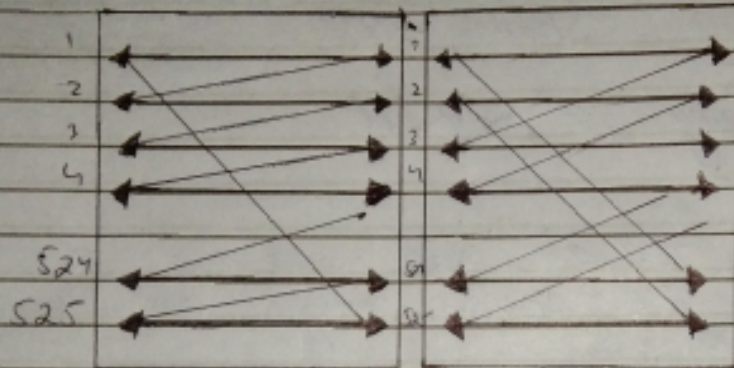
Semester 5th

Department BS(CS)

Subject Computer Graphics

ASSIGNMENT NO 1

QUESTION NO#01



Non interlaced - Interlaced

Answer

A non-interlaced display (appear as flicker) rate is 30 frames per second which mean that scan line $\frac{1}{3}$ of the way down the screen and refreshed every $\frac{1}{30}$ seconds.

Similarly the interlaced display also display 30 frames per second, but here the field double the display rate.

for eg :- Consider a scan line $\frac{1}{3}$ down. Often it swept, it will not be swept again for $\frac{1}{30}$ seconds because the scan lines immediately above and below it are down $\frac{1}{60}$ second later (double rate).

Question No 2

(b) Screen Resolution = 1024×768 pixel
Supporting Shades = 128

Only Grey = $2^7 = 7$ bit

The total no of bit require to display a grey scale image on screen

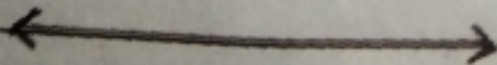
$$\text{bits} = 1024 \times 768 \times 7 = 5505024$$

Divide by 8 yields

$$\frac{\text{bits}}{8} = \frac{5505024}{8} \Rightarrow 688,128 \text{ bytes}$$

Total bytes is convert to Mb.

$$\Rightarrow 0.65625 \text{ Mb}$$



Question No 3

Answer:-

Solution:-

loop	e	(x, y)
1	1	(2, 1)
2	-6	(3, 1)
3	4	(4, 2)
4	-3	(5, 2)
5	7	(6, 3)
6	0	(7, 4)
7	-7	(8, 4)
8	3	(9, 5)

$$P_1(x_1, y_1), P_2(x_2, y_2)$$

Step No 1 :-

$$P(2, 1), P(11, 6)$$

$$\Delta x = 9$$

$$\Delta y = 5$$

$$2\Delta y = 10$$

$$e_1 = 2\Delta y - \Delta x$$

$$e_1 = 10 - 9$$

$$e_1 = 1$$

$$e_1 = 1$$

Step No 2:-

$$e_2 = e_1 + 2\Delta y - 2\Delta x$$

$$e_2 = e_1 + 2\Delta y - 2\Delta x$$

$$\Rightarrow 1 + (0 - 2(9))$$

$$\Rightarrow 1 + 10 - 18$$

$$e_2 = -6 \text{ Increment only } x$$

$$e_2 < 0 \Rightarrow \text{So } (x_{k+1}, y_k) = (2+1, 1)$$

$$(x_{k+1}, y_k) = (3, 1)$$

Step No 3:-

$$P(3, 1), e_2 = -6$$

$$e_3 = e_2 + 2\Delta y$$

$$\Rightarrow -6 + 2(5)$$

$$\Rightarrow -6 + 10$$

$$e_3 = 4$$

$e > 0$ So Increment both x and y

$$(x_{k+1}, y_{k+1}) = (3+1, 1+1)$$

$$(x_3, y_3) = (4, 2)$$

Step No 4:-

$$P(x_3, y_3) = (4, 2) \quad e_3 = 4$$

$$e_4 = e_3 + 2\Delta x - 2\Delta y$$

$$\Rightarrow 4 + (10 - 18)$$

$$\Rightarrow 4 + (-7)$$

$$e_4 = -3$$

$e_4 < 0$ increment only x

$$(x_{k+1}, y_k) = (4+1, 2)$$

$$(x_4, y_4) = (5, 2)$$

Step No 5:-

$$P(x_4, y_4) = (5, 2)$$

$$e_4 = -3$$

$$e_5 = e_4 + 2\Delta x$$

$$\Rightarrow -3 + 10$$

$$e_5 = 7$$

$e_5 > 0$ Increment both x and y

$$(x_{s+1}, y_{s+1}) = (5+1, 2+1)$$

$$(x_s, y_s) = (6, 3)$$

Step No 6:

$$P = (6, 3), e_5 = -7$$

$$e_6 = e_5 + 2\Delta y - 2\Delta x$$

$$\Rightarrow 7 + 10 - 18$$

$$\Rightarrow 7 - 7$$

$$e_6 = 0$$

increment both x and y
 $\Rightarrow (x_{7+1}, y_{7+1}) = (6+1, 3+1)$

$$(x_7, y_7) = (7, 4)$$

Step No 7:-

$$P(7, 4), e_6 = 0$$

$$e_7 = e_6 + 2\Delta y - 2\Delta x$$

$$= 0 + 10 - 18$$

$e_7 = -7$ increment only x

$$\Rightarrow (x_{8+1}, y_8) = (7-1, 4)$$

$$(x_8, y_8) = (8, 4)$$

Step No 8:-

$$P = (8, 4), c_2 = -7$$

$$e_8 = c_2 + 2\Delta x$$

$$e_8 = -7 + 10$$

$$e_8 = 3$$

$c > 0$ Increment both x and y

$$(x_{k+1}, y_{k+1}) = (8+1, 4+1)$$

$$(x_9, y_9) = (9, 5)$$

we will stop here because $(\Delta x - 1)$
is stop condition

$$\Delta x = 9$$

$$\Rightarrow (\Delta x - 1) = (9 - 1)$$

$$(\Delta x - 1) = 8$$