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Subject Computer Graphics

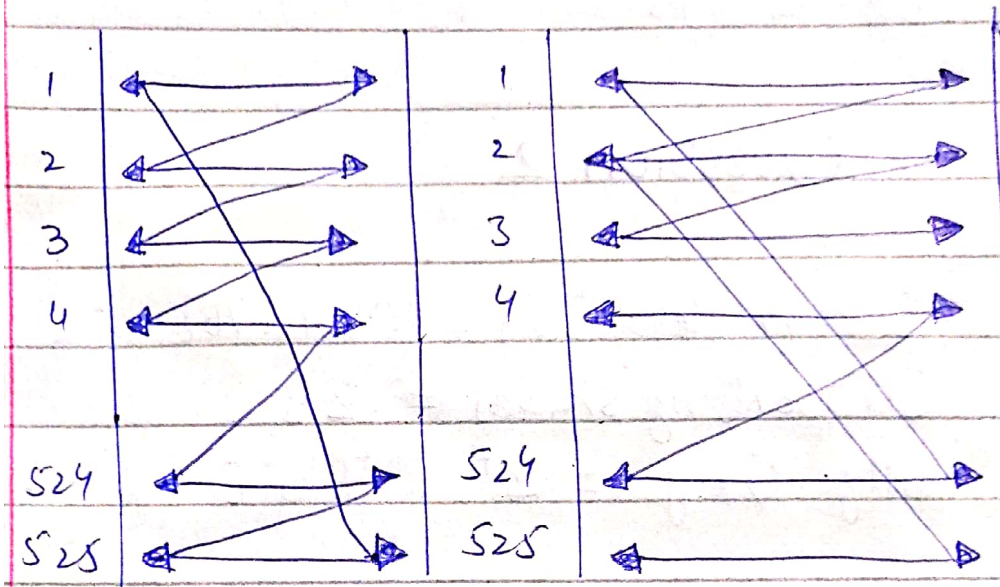
Semester BS CS 5th

Submitted to

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Question 1

Ans:-



Non-interlaced

Interlaced

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 example:- Consider a scan line $\frac{1}{3}$ down after it swept it will not be swept again for

2

$\frac{1}{30}$ seconds. because the scan line immediately above and below it are drawn $\frac{1}{60}$ second later (double rate).

Question 2

Ans:-

Screen Resolution = 1024×768 pixel

Supporting shades = 128

only Grey = $2^7 = 7$ bit

The total number of bit require to display a grey scale image on screen.

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

Divide by 8 yeilds

$$\frac{\text{bits}}{8} = \frac{5505024}{8} \Rightarrow 688.128 \text{ bytes}$$

Total bytes is convert to MB

$$= 0.65625 \text{ MB Ans.}$$

(3)

Question 3

Ans:-

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)

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

Step No 1:-

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

$$\Delta x = 9$$

$$\Delta y = 5$$

$$2\Delta y = 10$$

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

$$e_1 = 10 - 9$$

$$e_1 = 1$$

(4)

Step No 2:-

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

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

$$= 1 + 10 - 2(9)$$

$$= 1 + 10 - 18$$

$e_2 = -6$ increment only x

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

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

Step No 3:-

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

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

$$= -6 + 2(5)$$

$$= -6 + 10$$

$$e_3 = 4$$

$e > 0$ So increment both x and y

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

(5)

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

Step No 4:-

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

$$\begin{aligned} e_4 &= e_3 + 2\Delta x - 2\Delta y \\ &= 4 + (10 - 18) \\ &= 4 + (-7) \end{aligned}$$

$$e_4 = -3$$

$e_4 < 0$ increment only x

$$(x_{4+1}, y_4) = (4+1, 2)$$

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

Step No 5:-

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

$$e_4 = -3$$

$$\begin{aligned} e_5 &= e_4 + 2\Delta y \\ &= -3 + 10 \end{aligned}$$

$$e_5 = 7$$

(6)

$e_5 > 0$ increment both x and y

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

$$(x_5, y_5) = (6, 3)$$

Step No 6

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

$$C_6 = e_5 + 2\Delta y - 2\Delta x$$

$$= 7 + 10 - 18$$

$$= 7 - 7$$

$$e_6 = 0$$

increment both x and y

$$(x_{7+1}, y_{7+1}) = (6+1, 3+1)$$

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

Step 7

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

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

(7)

$$0 + 10 - 18$$

$e_7 = -7$ increment only x

$$(x_{k+1}, y_k) = (7-1, 4)$$

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

Step No 8 :-

$$p = (8, 4), e_7 = -7$$

$$e_8 = e_7 + 2\Delta x$$

$$e_8 = -7 + 10$$

$$e_8 = 3$$

$e > 0$ 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

$$\Delta x = 9$$

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

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

Ans:-