

ASSIGNMENT

OJ

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SEC : 18

1.

① pixel per frame = 6000000 pixel

fps = 60

① pixel processed = 6000000×60

= 360000000 pixel/sec

② pixel processed = $\frac{360000000}{1000}$ pixel/ms

= 360000 pixel/ms

③ No, the GPU can not meet the target performance. The target performance is 360000 pixel/ms and gpu has only 150000 pixel/ms. This gpu can not meet with such this performance and need more to meet.

④

$$\text{Max fps} = \frac{150000 \times 1000}{6000000} = 25 \text{ FPS}$$

2.

$$y = 3x + 2$$

$$x = -4, y - x = 2$$

$$x = -4 \text{ to } 2$$

at $x = -4$,

$$y = 3(-4) + 2 = -10$$

$$\begin{cases} \text{at } x = 2 \\ (-4, -10) \\ \text{start} \end{cases} \quad \begin{cases} y = 3(2) + 2 = 8 \\ (2, 8) \end{cases}$$

$$dx = 2 - (-4) = 6 \quad \int dy = 8 - (-10) = 18$$

$$dy = 8 - (-10) = 18$$

end point = (2, 4)

$$y = 6 + 2 = 8$$

(2, 8)

$$m = \frac{8 + 10}{2 + 4} = 18/6 = 3$$

$$m > 1$$

$$x_{k+1} = x_k + \frac{1}{m}$$

$$y_{k+1} = y_k + 1$$

$$\begin{array}{cc} x & y \\ -4 & -10 \\ -3.66 & -9 \\ = 4 & \\ -3.33 & -8 \\ = -3 & \\ -3 & -7 \\ -2.66 & -6 \\ = -3 & \\ -2.33 & -5 \\ = -2 & \\ -2 & -4 \end{array}$$

$$\begin{array}{cc} x & y \\ -1.66 & -3 \\ = -2 & \\ -1.33 & -2 \\ = -1 & \\ -1 & -1 \\ -0.66 & 0 \\ = -1 & \\ -0.33 & 1 \\ = 0 & \\ 0 & 2 \\ 0.33 = 0 & 3 \\ 0.66 = 1 & 4 \\ 1 & 5 \end{array}$$

$$\begin{array}{cc} x & y \\ 1.33 & 6 \\ = 1 & \\ 1.66 = 2 & 7 \\ 2 & 8 \end{array}$$

3.

$$3x + 7y - 59 = 0$$

lies on x-axis so, $y=0$

$$\Rightarrow 3x + 0 - 59 = 0$$

$$\Rightarrow x = 19.667 \approx 20 \quad (20, 0) \text{ start}$$

end $(5, 1)$

$$\begin{aligned} dx &= 5 - 20 \\ &= -15 \end{aligned}$$

$$\begin{aligned} dy &= (0 - 1) = -1 \\ &= 1 - 0 = 0 \end{aligned}$$

$$\begin{aligned} |dy| &< |dx| \therefore \text{zone 4} \\ |dy| &< |dx| = \text{zone 3} \end{aligned}$$

$$m = \frac{1}{-15} = 0.0667$$

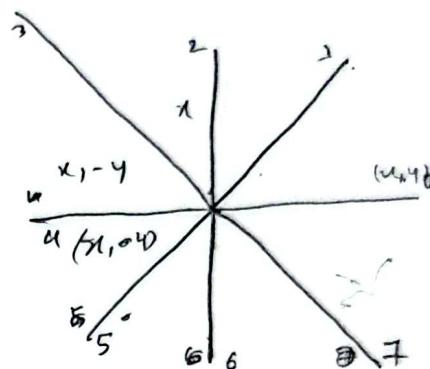
$$\text{start}' = (-20, 0)$$

$$\text{end}' = (-5, -1)$$

$$\begin{aligned} dx_{in} &= 2(-1 - 0) \\ &= 2(-1 - 0) - (-5 + 20) \\ &= -2 - 15 \\ &= -17 \end{aligned}$$

$$\begin{aligned} \text{Inc NE} &= 2(-1 - (-5 + 20)) \\ &= 2(-1 - 15) = -32 \end{aligned}$$

$$\begin{aligned} \text{Inc E} &= 2(-1 - 0) \\ &= -2 \end{aligned}$$



x	y	d	d next	n	y
-20	0	-17(E)	-19	20	0
-19	0	-19(E)	-21	19	0
-18	0	-21(E)	-23	18	0
-17	0	-23(E)	-25	17	0
-16	0	-25(E)	-27	16	0
-15	0	-27(E)	-29	15	0
-14	0	-29(E)	-31	14	0
-13	0	-31(E)	-33	13	0