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Diketahui titik awal $P(1,1)$ dan titik akhir di $Q(10,10)$ dengan area clipping $x_{\min}=1$, $y_{\min}=1$, $x_{\max}=7$ dan $y_{\max}=7$. Selesaikan masalah ini dengan clipping cohen-sutherland.

Garis $P(1,1)$ $L=0$; karena $1 < x_{\min}$ $R=0$; karena $1 < x_{\max}$ Vertex $P=0000$ $B=0$; karena $1 < y_{\min}$ $T=0$; karena $1 < y_{\max}$ Garis $Q(10,10)$ $L=0$; karena $10 < x_{\min}$ vertex $Q=0101$ $R=1$; karena $10 < x_{\max}$ $B=0$; karena $10 < y_{\min}$

→ Region code

 $T=1$; karena $10 < y_{\max}$ $0000 \text{ AND } 0101 = 0000$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10 - 1}{10 - 1} = \frac{9}{9} = 1$$

$$x_{p1} = x_1 + \frac{y_{\min} - y_1}{m}$$

$$= 1 + \frac{1 - 1}{1}$$

$$= 1 + \frac{0}{1} = 1$$

maka titik = $(x_{p1}, y_{\min}) = (1, 1)$
pada garis PQ

(2) Berdasarkan soal no. 1 lakukan clipping menggunakan algoritma Liang-Barsky dimana $x_l = 1$, $x_r = 7$, $y_b = 1$ dan $y_t = 7$.

$$\rightarrow dx = x_2 - x_1 = 10 - 1 = 9 \quad dy = y_2 - y_1 = 10 - 1 = 9$$

$$p_1 = -dx$$

$$= -9$$

$$p_2 = dx$$

$$= 9$$

$$p_3 = -dy$$

$$= -9$$

$$p_4 = dy$$

$$= 9$$

$$q_1 = x_1 - x_l$$

$$= 1 - 1 = 0$$

$$q_2 = x_r - x_l$$

$$= 7 - 1 = 6$$

$$q_3 = y_1 - y_b$$

$$= 1 - 1 = 0$$

$$q_4 = y_t - y_1$$

$$= 7 - 1 = 6$$

$$\Rightarrow \frac{q_1}{p_1} = \frac{0}{-9} = 0$$

\Rightarrow untuk $(p_1 < 0) T_1 = \text{"max"} (0, 0)$

$$= 0$$

$$\Rightarrow \frac{q_2}{p_2} = \frac{6}{9} = \frac{2}{3}$$

\Rightarrow untuk $(p_1 > 0) T_2 = \text{"min"} (2/3, 2/3, 1)$

$$= 2/3$$

$$\Rightarrow \frac{q_3}{p_3} = \frac{0}{-9} = 0$$

$$\boxed{T_1 < T_2}$$

$$\Rightarrow \frac{q_4}{p_4} = \frac{6}{9} = \frac{2}{3}$$

$$\ast T_1 = 0$$

$$\ast T_2 = 2/3$$

$$x_1' = x_1 + dx \times T_1$$

$$x_2' = x_1 + dx \times T_2$$

$$= 1 + 9 \times 0 = 1$$

$$= 1 + 9 \times \frac{2}{3} = 7$$

$$y_1' = y_1 + dy \times T_1$$

$$y_2' = y_1 + dy \times T_2$$

$$= 1 + 9 \times 0 = 1$$

$$= 1 + 9 \times \frac{2}{3} = 7$$

$$(x_1', y_1') \rightarrow (1, 1)$$

$$(x_2', y_2') \rightarrow (7, 7)$$