No 31 - 3 - 2022
Date Kamis

1. Diket titik awal $P(1,1)$ dan titik akhir di $Q(10,10)$, dengan a clipping $X_{min} = 1$ $Y_{min} = 1$, $X_{max} = 7$ dan Y_{max}. Selesaikan masalah ini dengan clipping Cohen - Sutherland

Jawab :

Titik $P(1,1)$

$L = 0, 1 > 1$

$R = 0, 1 < 7$

$B = 0, 1 > 1$

$T = 0, 1 < 7$

Area titik $P = 0000$ (garis berada pada View Port, Sehingga tidak perlu dipotong)

Titik $Q(10,10)$

$L = 0, \; 10 > 1$

$R = 1, \; 10 > 7$

$B = 0, \; 10 > 1$

$T = 1, \; 10 > 7$

Area titik $Q = 0101$ (garis terletak di sebelah kiri View port, Sehingga perlu dipotong)

Titik Potong

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

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

$P(1,1)$ $Q(10,10)$

Jawab :

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

$p_1 = -dx = -9$ $q_1 = x_1 - x_l = 1 - 1 = 0$ $\frac{q_1}{p_1} = \frac{0}{-9} = 0$

$p_2 = dx = 3$ $q_2 = x_r - x_1 = 7 - 1 = 6$ $\frac{q_2}{p_2} = \frac{6}{3} = 2$

$p_3 = -dy = -9$ $q_3 = y_1 - y_b = 1 - 1 = 0$ $\frac{q_3}{p_3} = \frac{0}{-9} = 0$

$p_4 = dy = 9$ $q_4 = y_t - y_1 = 7 - 1 = 6$ $\frac{q_4}{p_4} = \frac{6}{9} = 0{,}667 = \frac{2}{3}$

untuk $(p_i < 0)$ $T_1 = \max(0, 0, 0) = 0$

untuk $(p_i > 0)$ $T_2 = \min(2/3, 2, 1) = 2$

$T_1 < T_2$

Perhitungan endpoint baru

$T_1 = 0$ $T_2 = 2$

$x_1' = x_1 + dx \times T_1 = 1 + (9 \times 0) = 1$ $x_2' = x_1 + dx \times T_2 = 1 + (9 \times 2) = 19$

$y_1' = y_1 + dy \times T_1 = 1 + (9 \times 0) = 1$ $y_2' = y_1 + dy \times T_2 = 1 + (9 \times 2) = 19$

$(x_1', y_1') = (1,1)$ $(x_2', y_2') = (19, 19)$

CamScanner