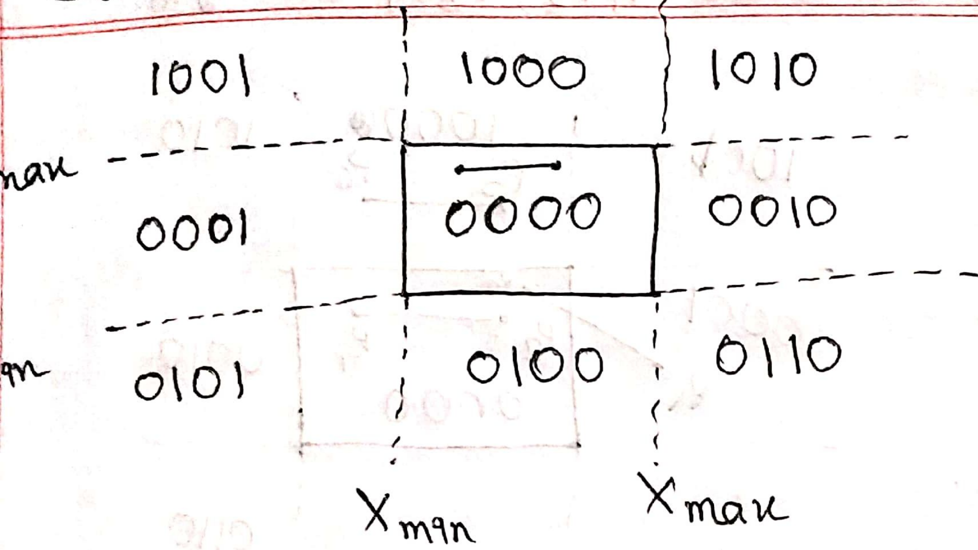
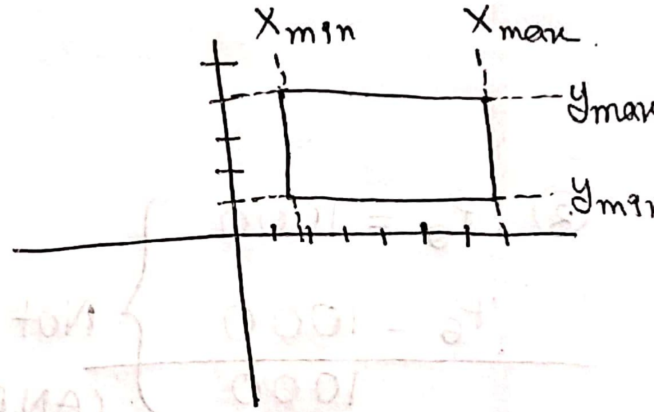
Cohen Sutherland Line Clipping Algorithm.

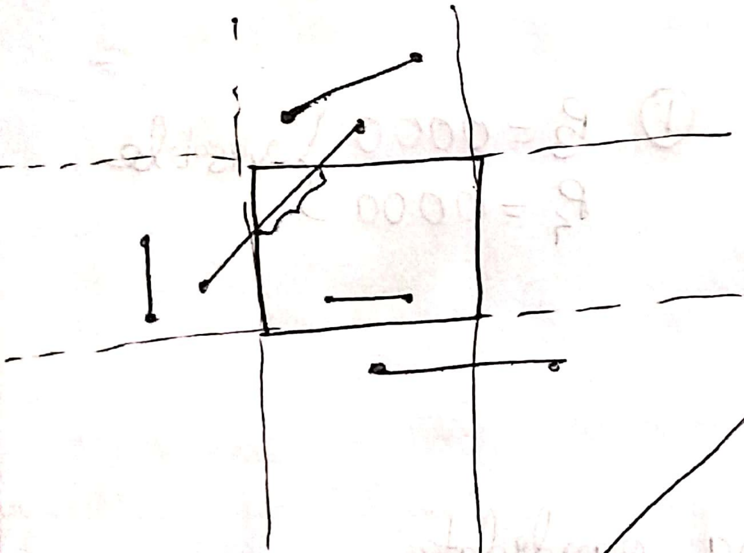


divide area into region code.

TBRL

Top Bottom Right Left

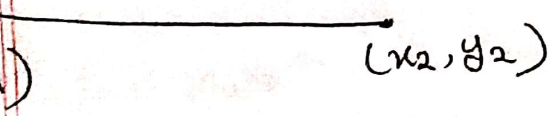


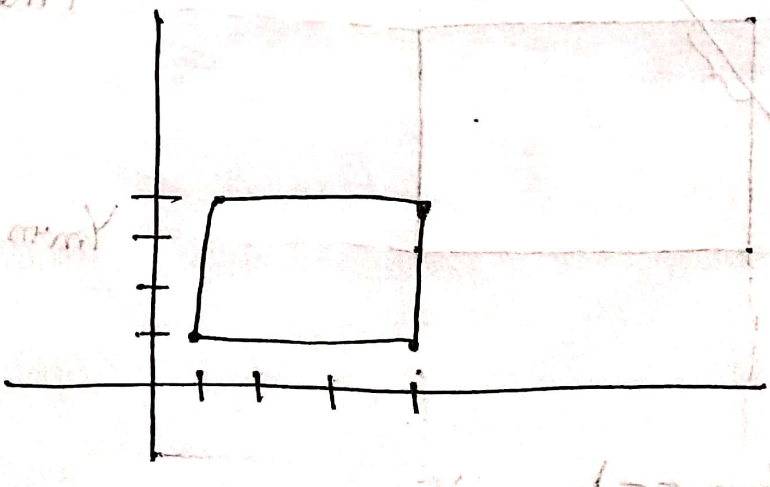


$(y_1, y_2) > y_{max}$.
$(y_1, y_2) < y_{min}$.
$(x_1, x_2) < X_{min}$.
$(x_1, x_2) > X_{max}$.

(i) Visible
(ii) Not visible
(iii) clipping candidate.

(2,2). (2,4). (4,2). (4,4)

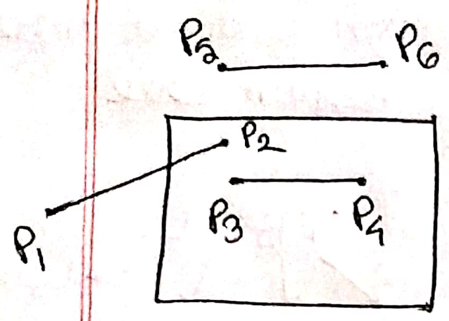


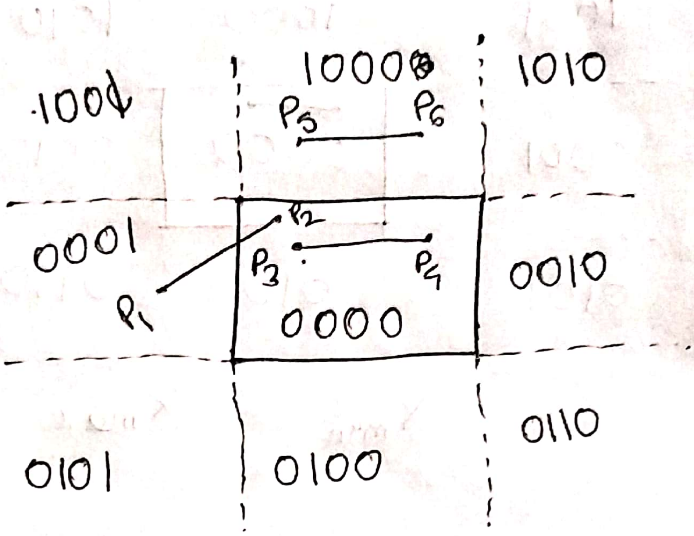


Jegony.

line clipping problem

Q: Find the categories of lines P_1P_2, P_3P_4 and P_5P_6.





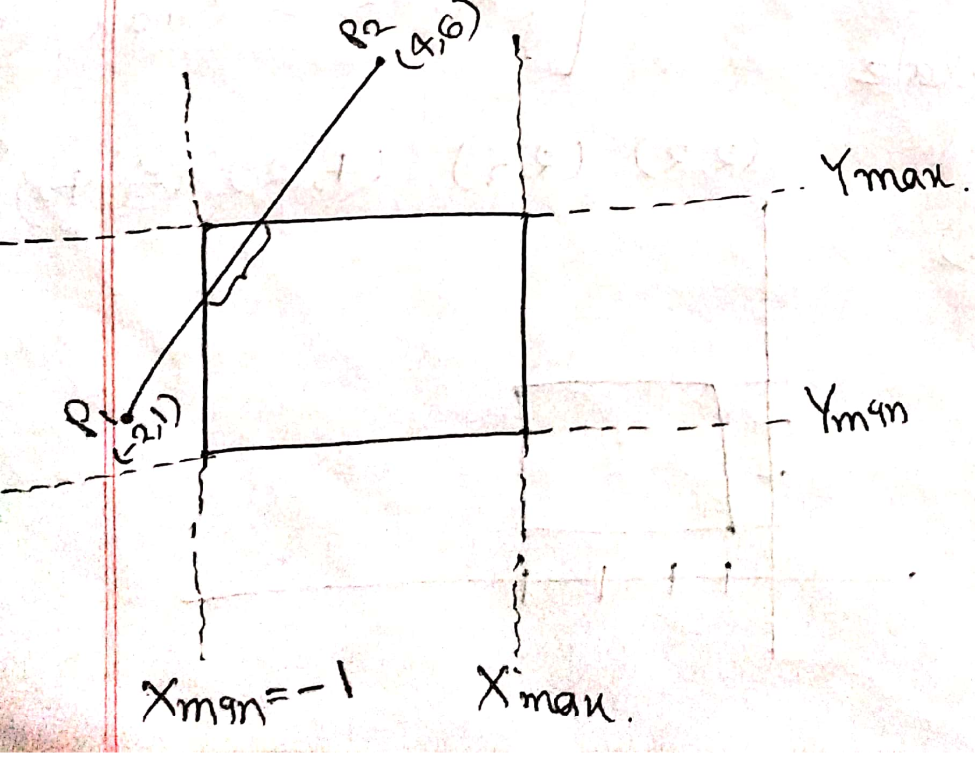
② $P_5 = 1000$
$P_6 = 1000$
$\overline{1000}$

} Not visible (AND O/P)

① $P_3 = 0000$
$P_4 = 0000$
} visible.

③ $P_1 = 0001$
$P_2 = 0000$
$\overline{0000}$

} clipping candidate.



Intersecting points:

y value of vertical line:

$$m = \frac{y - y_1}{x - x_1}$$

$$y - y_1 = m(x - x_1)$$

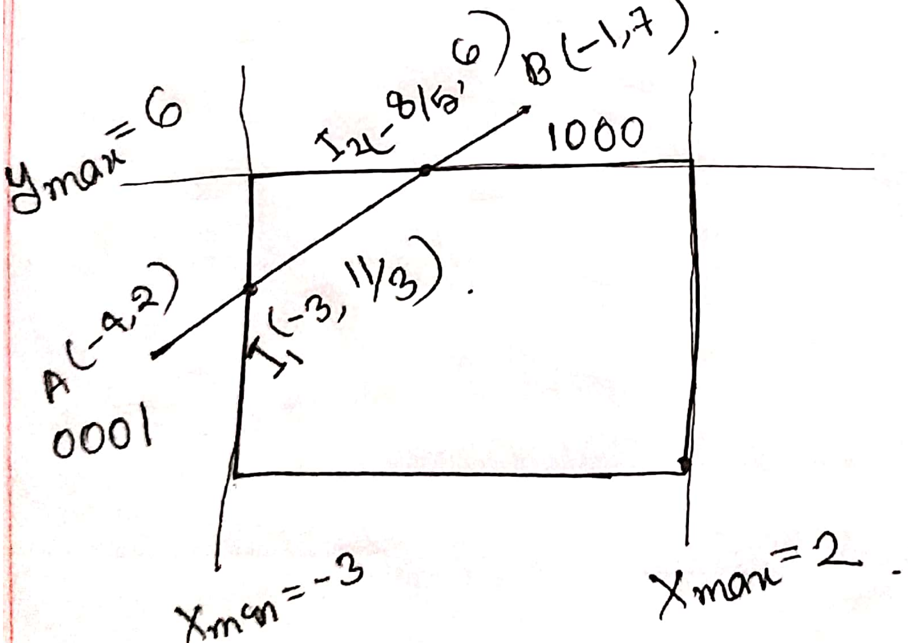
$$y = y_1 + m(x - x_1) \quad [x = X_{min},\ X = X_{max}]$$

x value of horizontal line:

$$m = \frac{y - y_1}{x - x_1}$$

$$\Rightarrow x - x_1 = \frac{y - y_1}{m}$$

$$x = x_1 + \frac{y - y_1}{m} \quad [y = y_{min},\ y = y_{max}]$$



$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7-2}{-1-(-4)} = 5/3$$

$$y = y_1 + m(x - x_1)$$

$$= 2 + \frac{5}{3}(-3+4)$$

$$= \frac{11}{3}$$

A = 0001

B = 1000

0000

Now, $(x_1, y_1) = (-1, 7)$.

$y = 6$

$$x = x_1 + \frac{y - y_1}{m}$$

$$= -1 + \frac{6-7}{5/3}$$

$$= -1 + (-1) \times 3/5$$

$$= -8/5$$