Assignment - 05 (OOPCG).

Roll No. 21123 Batch - F1

Div. SE1 DOP: DOS:

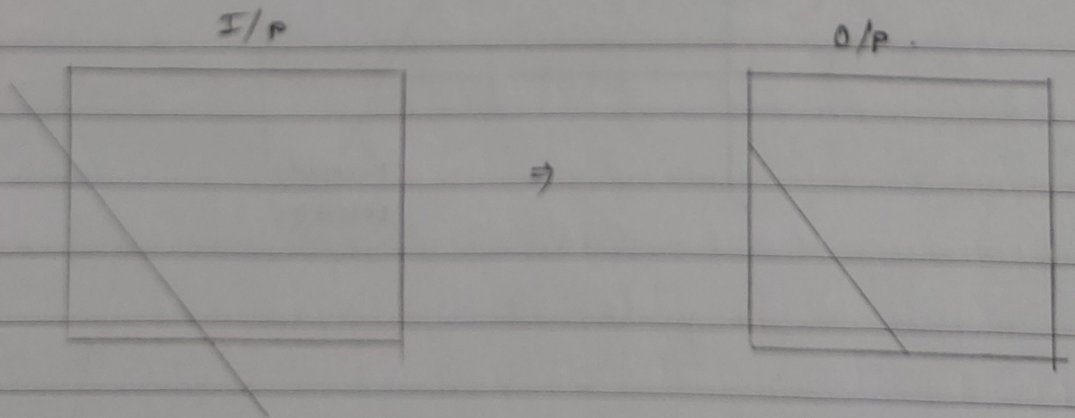
Title - Demonstration cohen southerland line clipping algorithm.

objective - 1) To learch and understand cohen southerland line clipping Algorithm.

Problem statement - Write c++ program to implement cohen southerland line clipping algorithm.

Theory:

cohen sutherland Algorithm is a line clipping algorithm that cuts lines to portions which are within a rectangular area. It eliminates the lines from a given set of lines and rectangle area of intereset which belong outside the area of Intrest and clips those lines which are partially inside the area of interest.

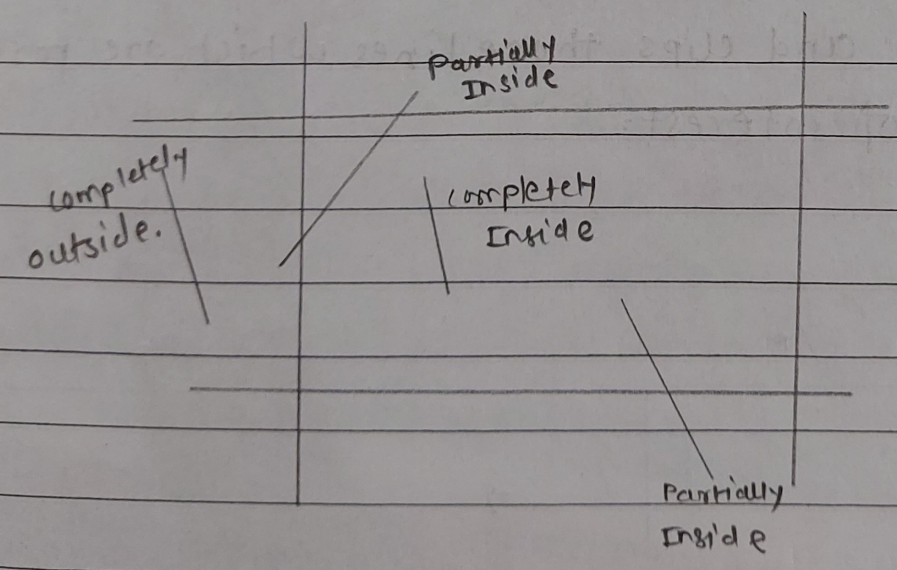


The Algorithm divides a two-dimensional space into 9 region (eight outside regions and one inside region) and then efficiently determines the lines and portions of line that are visible in the central region of interseted.

TBRL
(Top Botton Right left)
4-bit binary code

1001	1000	1010
0001	0000 (window)	0010
0101	0100	0110

four bit code is calculated by comparing extreme end point of given line (x, y) by four co-ordinates x_min, x_max, y_max, y_min which are the co-ordinates of the area of intreset (0000)



Pseudocode.

Step1. Assign a region code for two endpoints of given line.
Step 2. If both endpoints have a region code 0000 then given line is completely inside we will keep this line.

Step 3. If step 2 fails, perform the logical AND operations for both region codes.
Step 3.1 If the result is not 0000, then given line is completely outside.
Step 3.2 else line is partially inside
Step 3.2.1 Choose an endpoint of the line that is outside the given rectangle
Step 3.2.2. Find the intersection point of the rectangular boundary.
Step 3.2.3 Replace endpoints with the intersection point and upgrade the region code.
Step.3.2.4 Repeat step 2 unit we find a clipped line either trivially accepted or rejected.
Step 4. Repeat step 1 for all lines.