

# Cohen-Sutherland Algorithm

## Introduction:

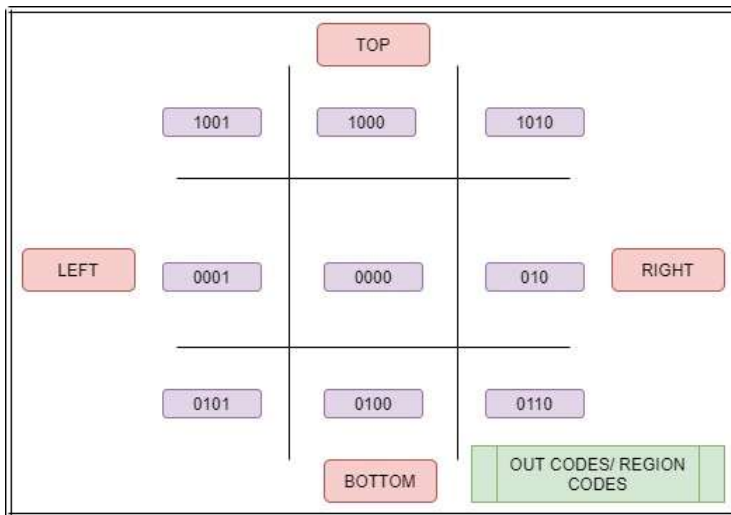
The Cohen-Sutherland Algorithm is a one of the Line Clipping Algorithm which is used in Computer Graphics. This Algorithm is divided on 2D space in to 9 regions which have some codes called Region code or Out Codes. That will be use to determine line and portion of line which is visible on view port.

This Algorithm is developed by Danny Cohen and Ivan Sutherland in 1967 during flight simulator.

## Algorithm :

This algorithm is used for visible line in view port. by this algorithm we can include, exclude or partially include the lines with the help of out codes.

Step1: First decide out codes.



Like this out codes are generated. And by this code we can understand whether line are in left right top or bottom with the help of this figure. There are some conditions are as follows :

Condition1: Both endpoints are in the viewport region (bitwise OR of endpoints = 00): trivial accept.

Condition2: Both endpoints share at least one non-visible region, which implies that the line does not cross the visible region. (bitwise AND of

endpoints  $\neq 0$ ): trivial reject.

Condition3: Both endpoints are in different regions: in case of this nontrivial situation the algorithm finds one of the two points that is outside the viewport region (there will be at least one point outside). The intersection of the outpoint and extended viewport border is then calculated (i.e. with the parametric equation for the line), and this new point replaces the outpoint. The algorithm repeats until a trivial accept or reject occurs.