

Patrician College of Arts and Science

Department of Computer Science

COMPUTER GRAPHICS

Subject Code : SEE6E

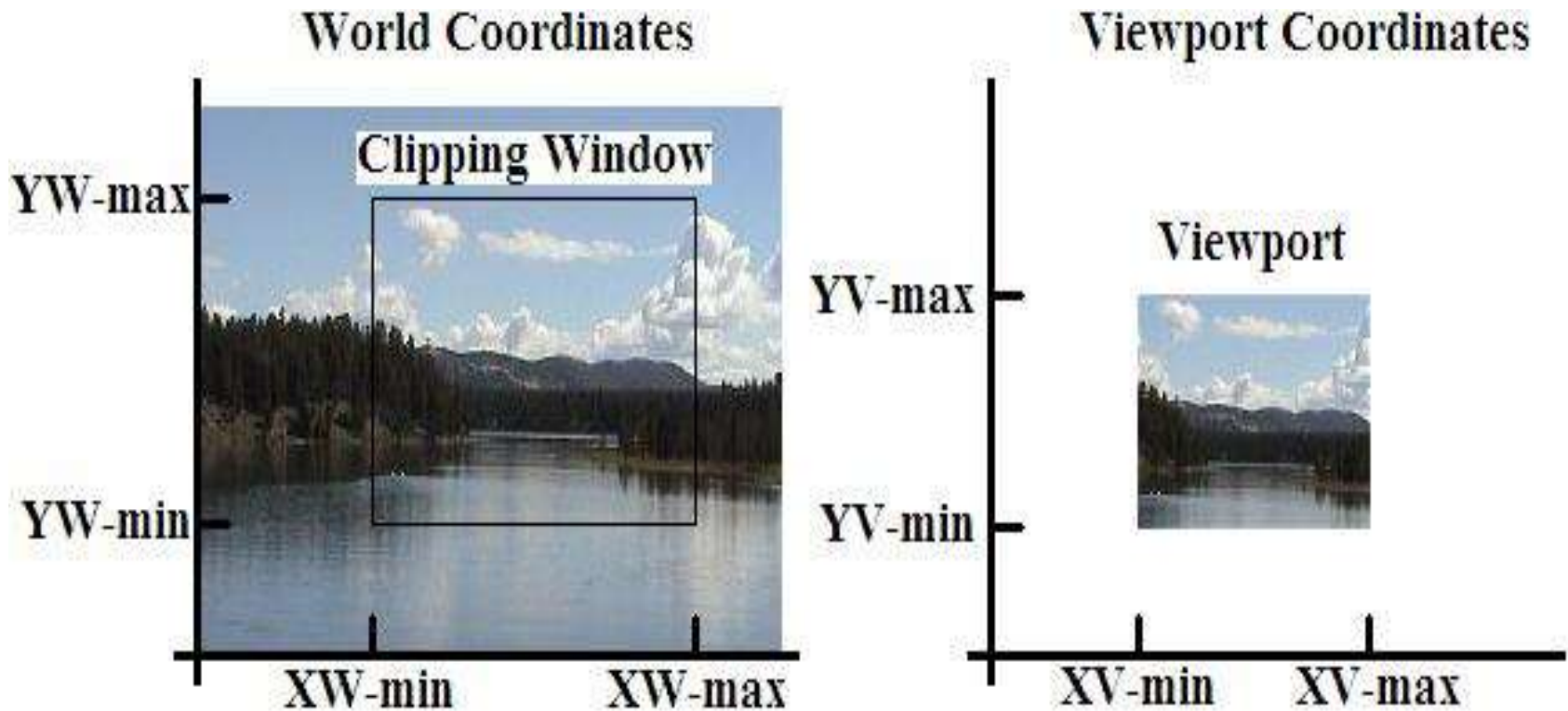
EVEN Semester

Presented By FRIZILIN.R



CLIPPING ALGORITHMS

- Polygon Clipping
 1. Convex polygon clipping
 2. Concave polygon clipping
- Text Clipping
- Exterior Clipping



- Window – *what* is to be viewed
- Viewport – *where* it is to be displayed

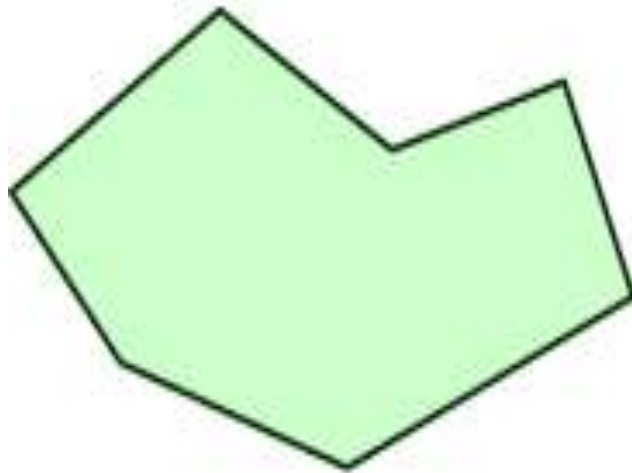
conversion performed in steps

- 1.translate the window area to origin
- 2.perform scaling and scale the window area to size of viewport
- 3.translate scaled window area to viewport position

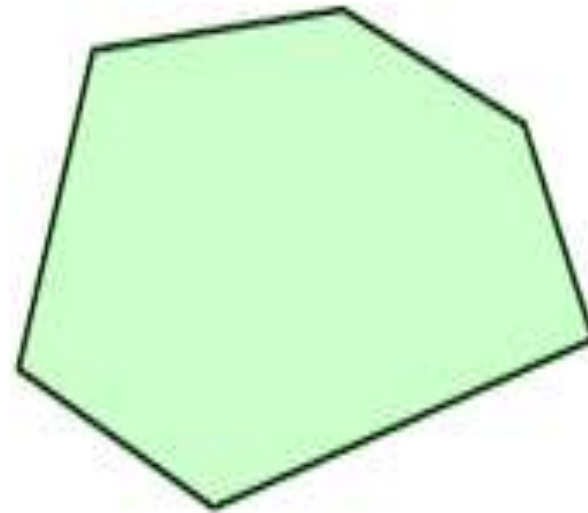
Clipping-Definition

- ▶ Clipping – identifying portions of picture that are either inside or outside a specific region
- ▶ Clip window – the region where the object is to be clipped

Polygon Clipping

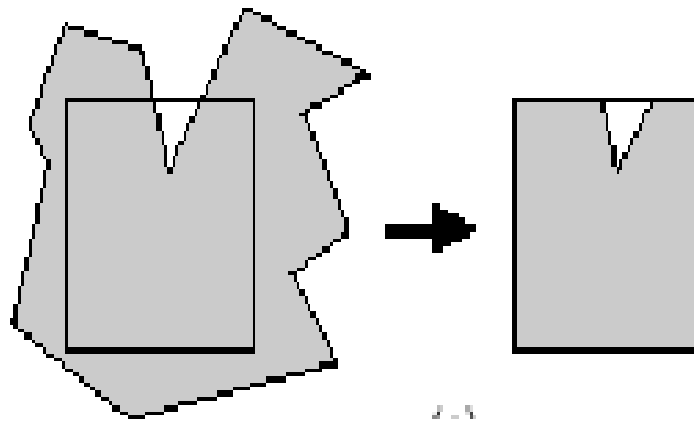


Concave Polygon



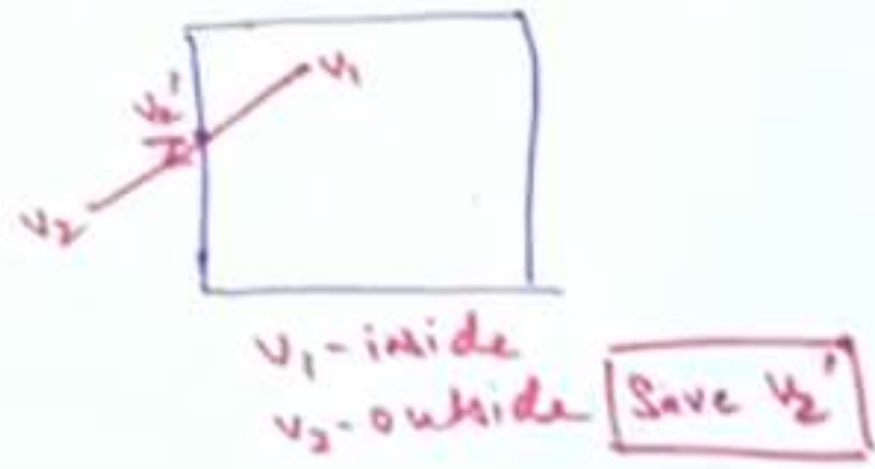
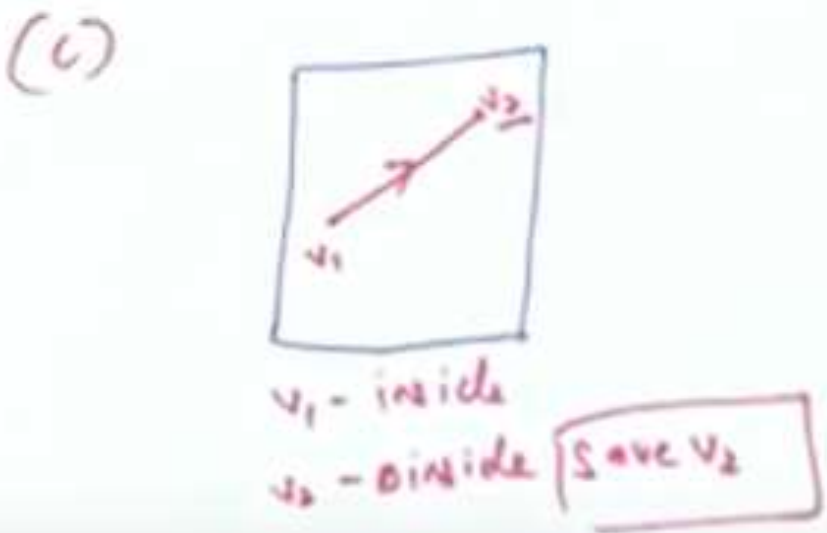
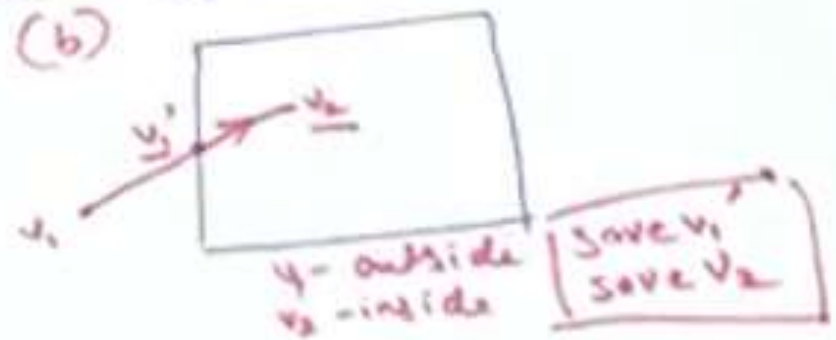
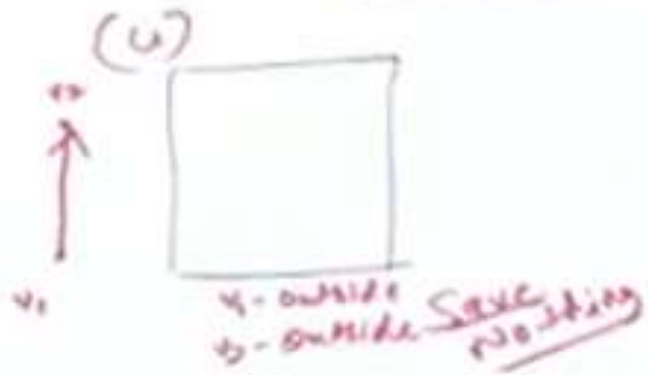
Convex Polygon

Sutherland Hodgman Polygon Clipping



Sutherland Hodgman Polygon Clipping Rules

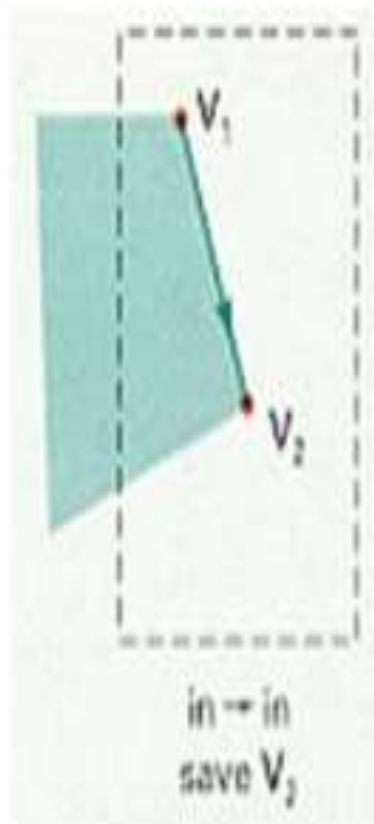
Sutherland-Hodgman Polygon Clipping



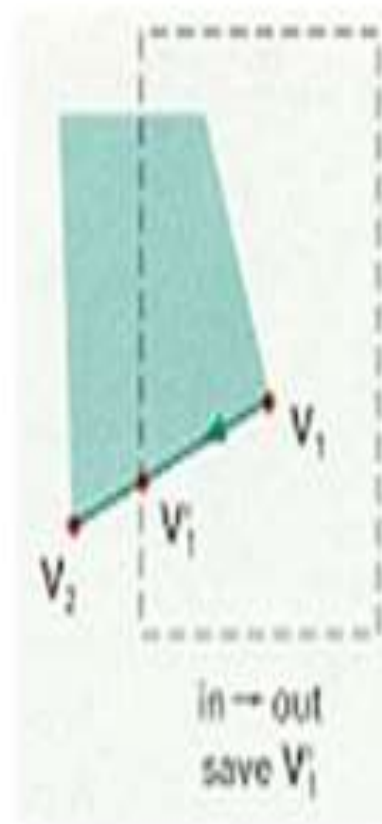
Sutherland Hodgman Polygon Clipping-Example



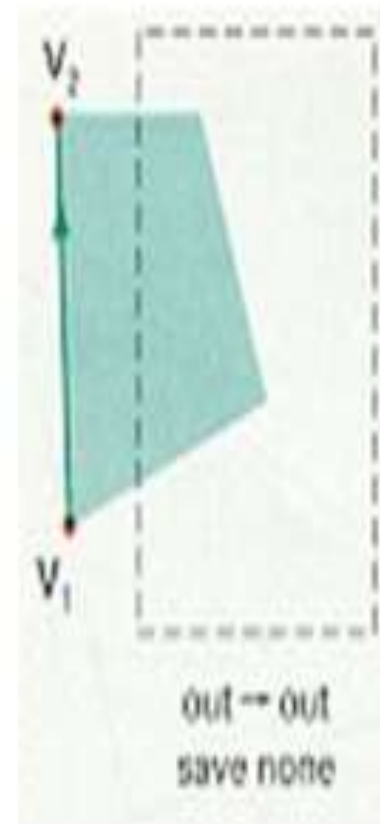
(a)



(b)



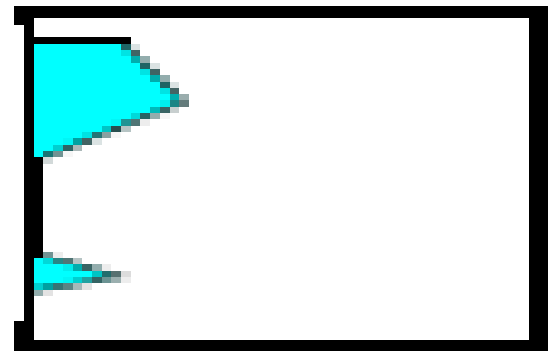
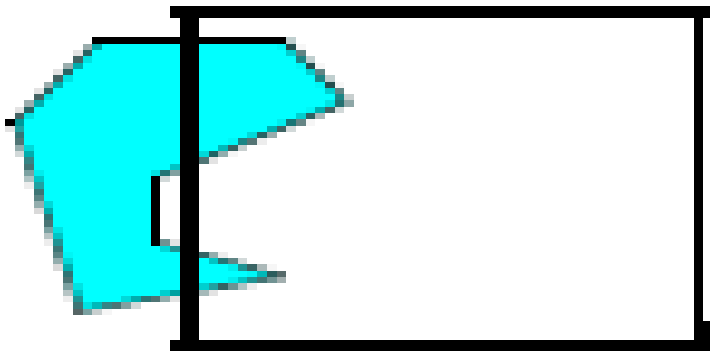
(c)



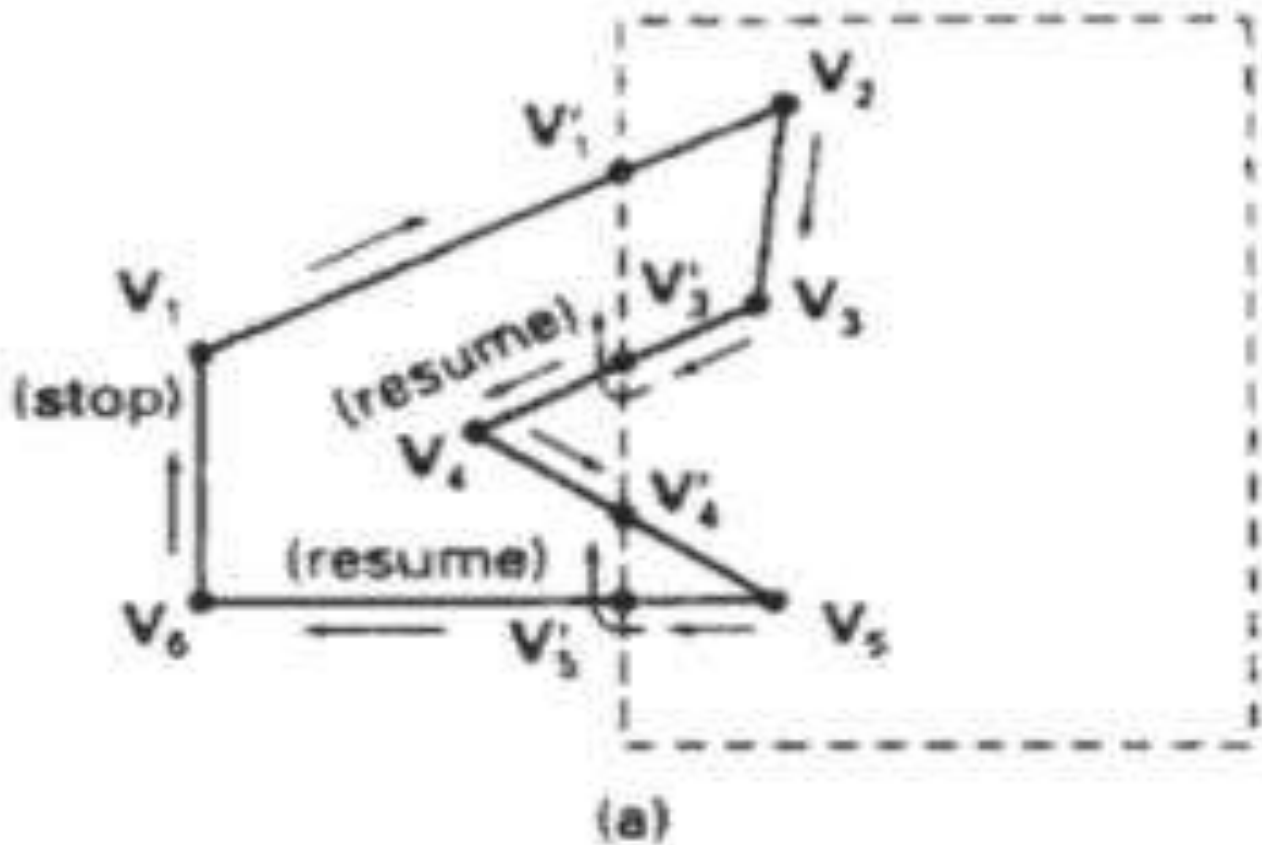
(d)

Disadvantages- Sutherland Hodgman Polygon Clipping

- convex polygons -correctly clipped.
- concave polygons -displayed with extra lines



Weiler Atheton Polygon Clipping



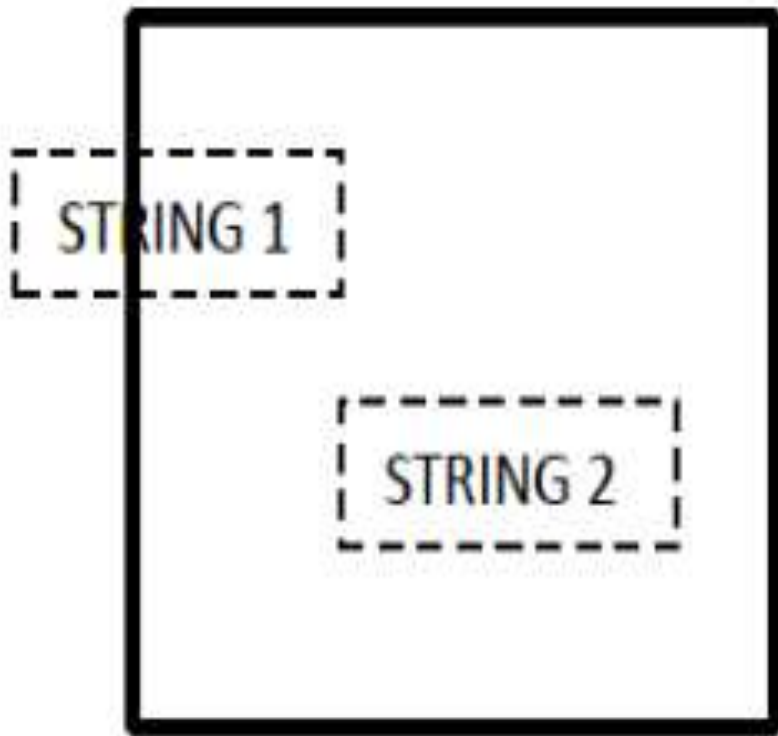
Text Clipping

There are 3 types of text clipping namely

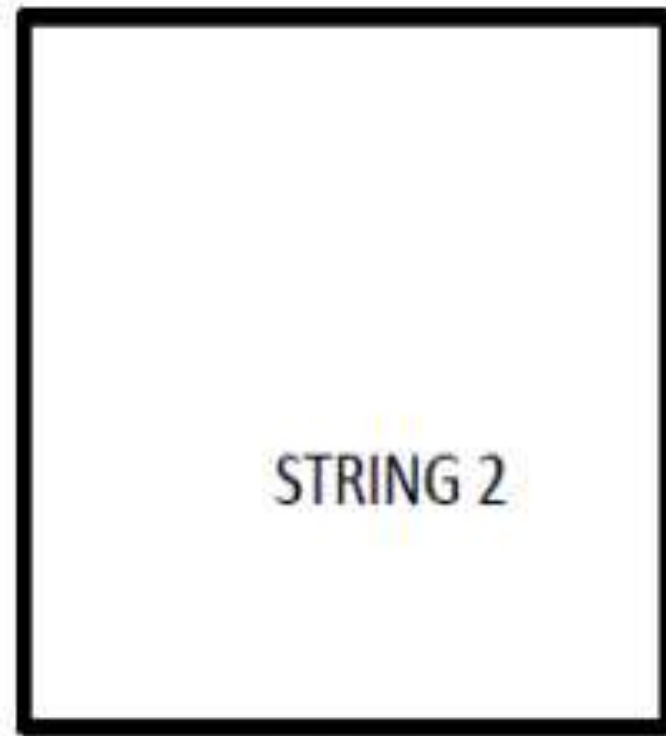
- all-or-none string-clipping
- all-or-none character-clipping
- the components of individual characters

All-or-none string-clipping

- String inside clip window – keep it
- Otherwise - discard



Before Clipping

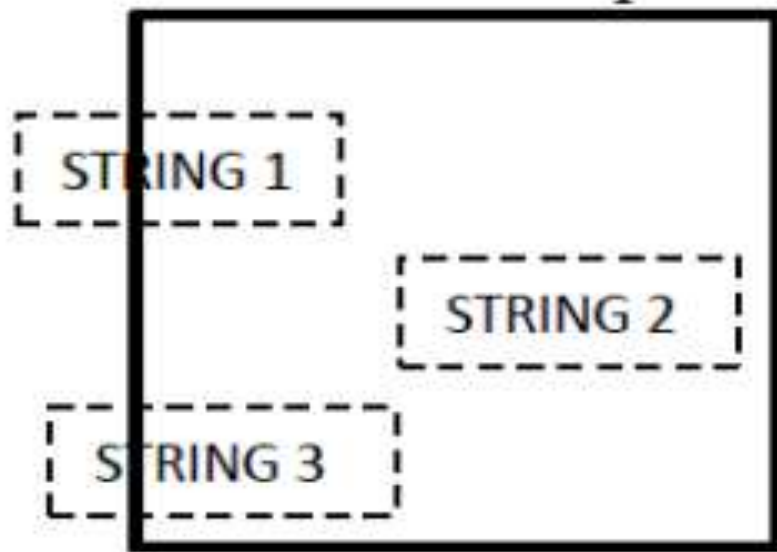


After Clipping

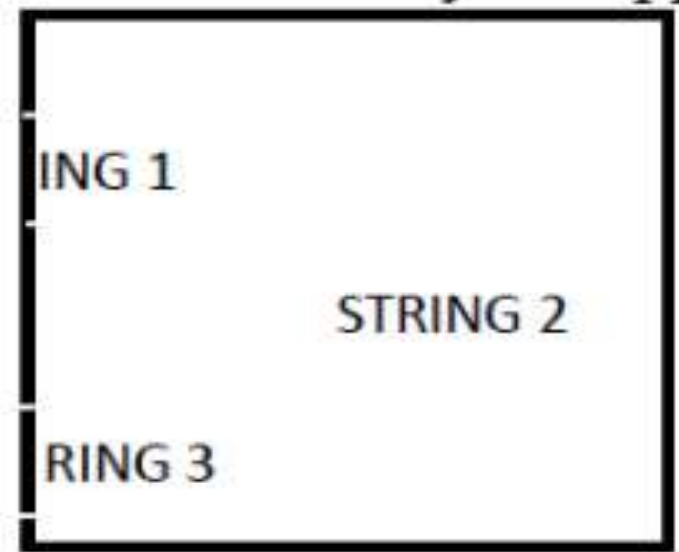
All-or-none character-clipping

- Character overlaps or outside window boundary – discard it

Characters inside window boundary - saved



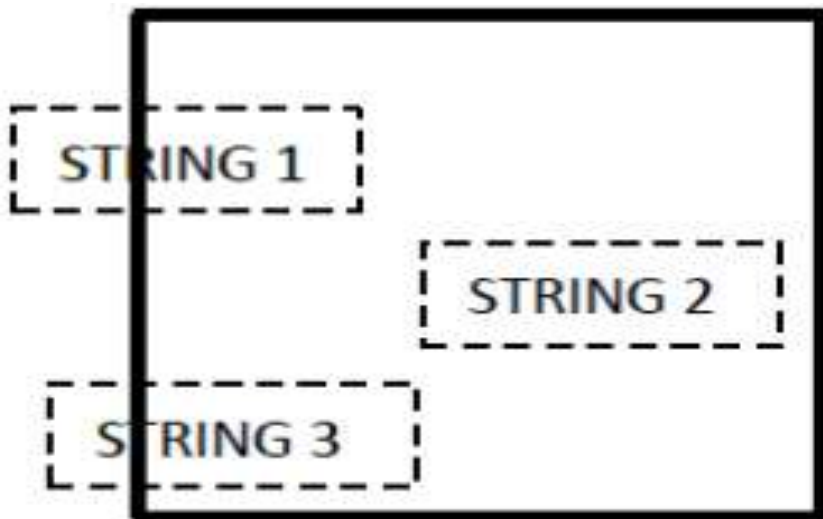
Before Clipping



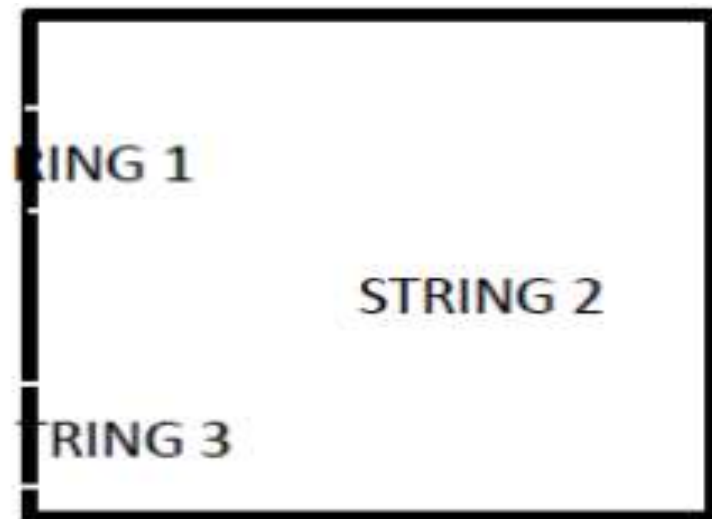
After Clipping

components of individual characters

- Character outside window boundary – discard it
- Character overlaps window boundary – parts of character outside boundary discarded.
- Parts of character inside boundary - saved



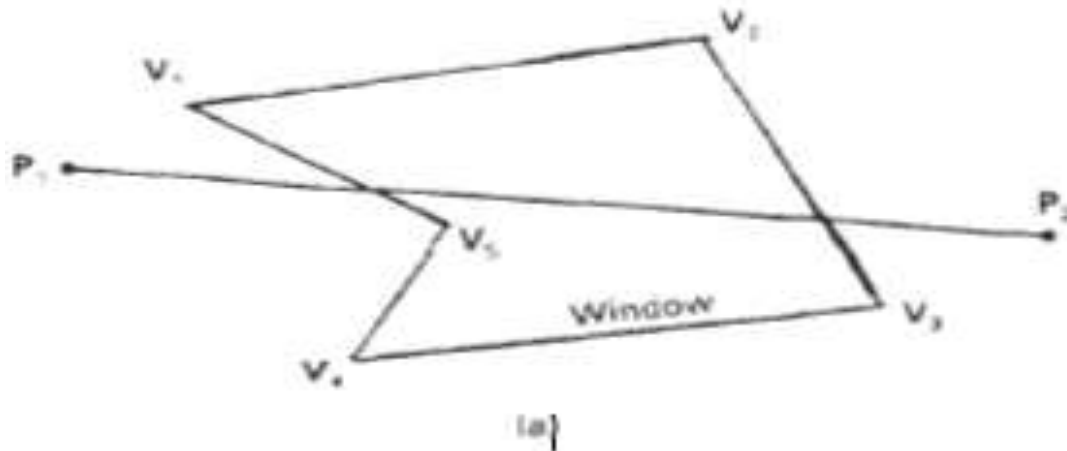
Before Clipping



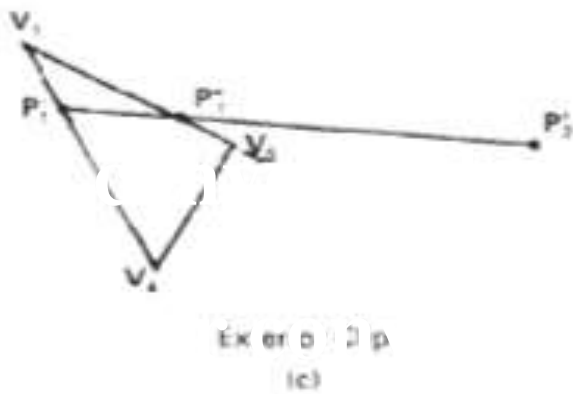
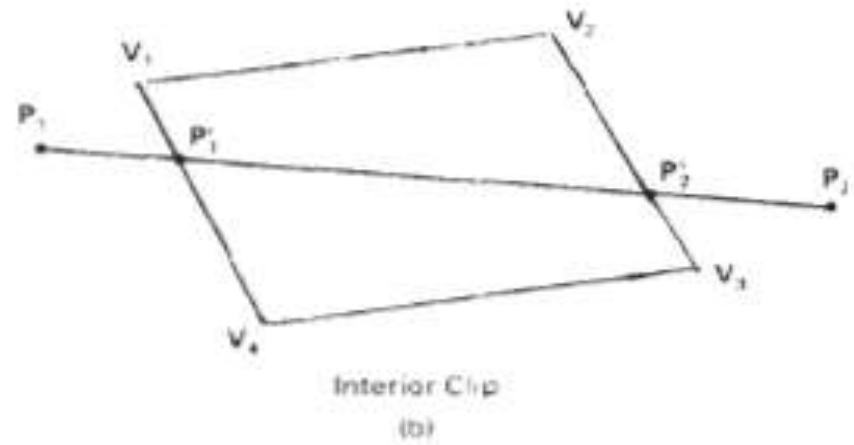
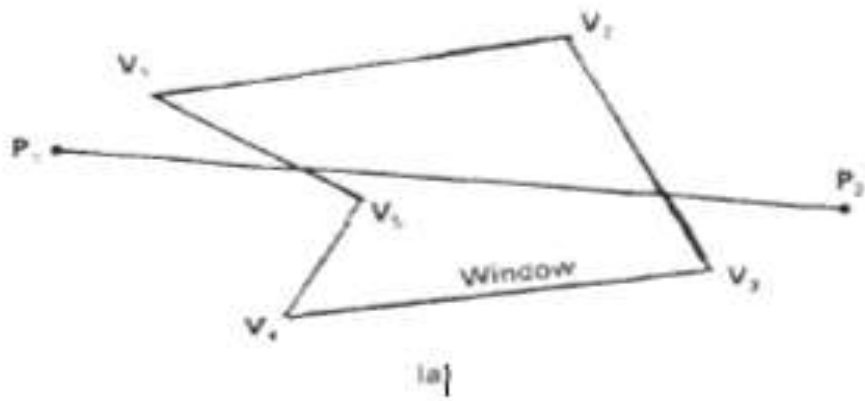
After Clipping

Exterior Clipping

- Exterior Clipping – picture parts outside the region are saved
- Clipping done in 2 passes
- Split concave to two convex polygons



Exterior Clipping steps





Thank you

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