

# TWO DIMENSIONAL VIEWING & CLIPPING

# Introduction

- Windowing vs clipping.
- Viewing transformations
- WCS (World Co-ordinate System)
- Viewport vs window
- Window to View Port Transformation
- *Clipping and clip window.*

# Clipping

- Clipping algorithm for the following primitive types :
  - Point Clipping
  - Line Clipping
  - Polygon (area) Clipping
  - Curve Clipping
  - Text Clipping

# Line Clipping

- Simple Visibility Algorithm
- End Point Codes
- Explicit Line Window Intersection
- Cohen—Sutherland Line Clipping Algorithm
- Midpoint Subdivision Algorithm

# Polygon Clipping

- Inside test
- Sutherland-Hodgman polygon clipping
- Weller-Atherton Polygon clipping
- Curve Clipping
- Text Clipping
- Interior and Exterior Clipping
- Multiple windowing

# 3-D Clipping

- 3-D Clipping volume
- Parallel and Perspective Projection
- PCODE for 3-D Clipping
- Three-dimensional Midpoint Subdivision Algorithm

# Visible-Surface Detection

# Introduction

- Hidden Line and Surfaces
  - Object Space Method
  - Image Space Method
- Visible surface detection techniques
  - Coherence
  - Perspective transformation
  - Bounding Volume
  - Back Face Culling
  - Spatial Partitioning and Hierarchy



# Methods

- Back-face Detection
- Z-Buffer algorithm
- A-Buffer algorithm
- Scan line Method
- Floating Horizon Algorithm
- Ray Tracing Algorithm

# Advanced Topics

1. Fractals
2. Illumination
3. Reflection
4. Shading
5. Shadow
6. Rendering
7. Animation
8. Visualization
9. Virtual Reality