Computer Graphics Topic List

Chapter 1: A Survey of Computer Graphics

- CAD,CAM,CAT

Chapter 2: Overview of Graphics systems

- CRT
- Flat Panel Display
- LCD,LED

Chapter 3: Output Primitives

- Points and Lines
- Line Drawing Algo(DDA, Bresenham)
- Midpoint Circle Drawing Algorithm

Chapter 5: Two-Dimensional Geometric Transformations

- Translation
- Scaling
- Rotation
- Composite Transformations
- General Pivot Point Rotation
- General Fixed Point Scaling
- Reflection
- Shear

Chapter 6:Two-Dimensional Viewing

- Definition (Window, View Port, World Coordinate, Viewing Coordinate, Viewing Transformation, Clipping, Schilding)
- Window to Viewport Coordinate Transformation (Till equation 6.4) - Point Clipping
- Line Clipping (Cohen Sutherland Algo)
- Polygon Clipping (Sutherland Hodgeman polygon Clipping)
- Weiler Atherton Polygon Clipping

Chapter 10: Three-Dimensional Object Representation

- Plane Equation, Polygon Meshes -
- Sphere
- Ellipsoid
- Torus
- Super Ellipse, Super Ellipsoid
- Blooby Objects

- Spline Representation (Interpolation and Approximation)
- Parametric Continuity Conditions
- Spline Specification (Upto Figure: 10-25)
- Cubic Spline Interpolation method
- Natural Cubic Spline
- Hermite Interpolation (upto 10.34)
- Blending Function
- Cardinal Spline (upto 10.38)
- Bezier Curve (upto 10.42)
- Properties of Bezier Curve
- Fractal Geometry
- Types of Fractals
- Fractal Dimension
- Deterministics Self Similar Fractals
- Snow Flack Patterns
- Random Midpoint displacement method
- Self Squaring fractals, Self inverse fractal (short question)
- Definition (Interpolation & Approximation Spline,Convex Hull, Control Graph, Control Polygon)

Chapter 11: Three-Dimensional Geometric and Modeling Transformations

- Translation
- Rotation
- General 3D Rotation (Till Fig: 11-8)
- Scaling
- Reflections
- Shears

Chapter 12: Three-Dimensional Viewing

- Viewing Pipeline
- Line of Sight
- World Coordinate to viewing coordinate transformation
- Projection
- Vanishing point
- Definition (Orthographic Parallel Projection, axonometric drawing, View Window, Projection window, view volume)
- Frustum

Chapter 13: Visible-Surface Detection Methods

- Classification of visible surface detection algorithm
- Back-face detection
- Depth buffer method

- Depth Sorting method
- BSP Tree method
- Painter's Algorithm
- Area Subdivision method
- Definition (Object space methods, Image space methods)

Chapter 15: Color Models and Color Applications

- Chromaticity
- Color
- Visual Spectrum Range
- Characteristic of light
- Intuitive Color Concept (Shade,tint,tone)
- Color Model (RGB,CMYK,HSV)
- Definition (Color,Color Model, Dominant Frequency, Hue, Brightness,Intensity, Purity/Saturation, Chromaticity, Complementary color, Color Gammate, Primary Color, Shade, tint, tone)

Computer Graphics Lab Task List

1. Draw a National Flag
2. Hidden Surface Elimination
3. Translation,Rotation,Scaling
4. Sphere, Ellipsoid, Torus draw
5. Superellipsoid, Superellips draw
6. Bezier curve draw
7. Bresenham line drawing
8. Midpoint circle drawing
9. Cohen Sutherland line clipping algorithm
10. Sutherland-Hodgeman polygon clipping algorithm
11. Fractal Geometry