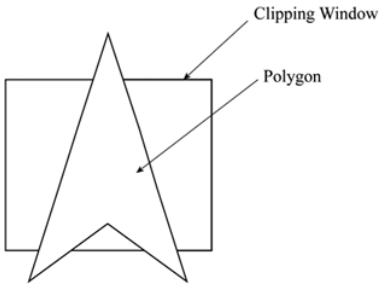
Question Bank

Course Title: Computer Graphics

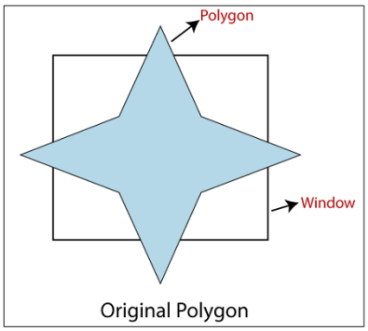
Course Code: E2UC402B

Class: B Tech CSE (IV Sem) All Spc.

1. Illustrate the different types of Computer Graphics.
2. Explain Frame Buffer.
3. Explain DDA Line Drawing Algorithm and find the intermediate points of line having end points (2,2) and (9,7)
4. Illustrate Refreshing, Refresh Rate and Critical Fusion Frequency in Display Devices.
5. Illustrate how Random Scan System is different from Raster Scan System?
6. Discover and analyse the window to viewport normalization Transformation, that maps a window whose lower left corner is at (1,1) and upper right corner is at (3,5) onto a viewport that has lower left corner at (0,0) and upper right corner at (12,12).
7. Develop the mirror image of the triangle ABC about y=x axis with the help of matrices, using homogeneous coordinates.
8. Build the general form of the matrix for rotation about a point P(h, k).
9. Explain Bresenham's Line Drawing Algorithm and draw the line from (4,4) and (9,8).
10. Interpret the Scan Line Method for hidden surface removal in three dimensional objects.
11. Articulate about the 2 D Geometric Transformation in detail and apply 2D Transformation to build the Transformation Matrices and equations.
12. List steps are required to plot a line whose slope is between 0 degree and 45 degree using Bresenham's Algorithm?
13. Do you need to generate the full circumference of the circle using the algorithm, or can we generate it in a quadrant or octant only and then use it to produce the rest of the circumference?
14. Distinguish 3 D Object Primitives with their examples, Analyse the different methods, by which a polygon surface can be represented.
15. Explain Mid Point Circle Generation Algorithm. Generate points for one octant (90 to 45) with radius 7 unit.
16. Given a triangle with vertices (0,0), (2,0) and(1,1). Reflect this triangle about (a). x axis, (b). y axis (c). Line x=2 (d). y=1, and find the new vertices after reflection.
17. Draw a neat diagram for CRT(Cathode Ray Tube) and use it to analyse the different components of CRT and discover their functionalities in detail.
18. Justify the uses of A-buffer method and Scan line method
19. Apply Sutherland Hodgeman Polygon Clipping Algorithm to Clip the given polygon.

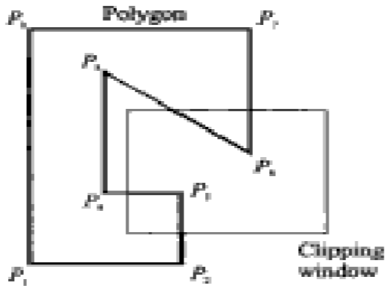


20. Develop the procedure for Window to Viewport Coordinates Transformation in 2D.
21. Classify different types of Polygon Tables and write advantages and disadvantages of each of them.
22. At R be Rectangular window whose lower left head corner is at l(-3,1) and upper
23. Given a clipping window A(20, 20), B(60, 20), C(60, 40) and D(20, 40), apply Cohen Sutherland Line Clipping algorithm and solve to find the visible portion of the line segment joining the point P(40, 80) and Q(120, 30).
24. Write bresenham's line drawing algorithm and trace the algorithm for the given points (2, 1) to (8, 6)
25. "Given a square with vertices A(0,0), B(1,0), C(1,1) and D(0,1). Shearing Factors Shx and Shy are 2 and 3 respectively. Apply 2D Shearing Transformation and find the new vertices of the square after shearing in-
    a. x direction only.
    b. y direction only.
    c. x and y directions both."
26. Apply Sutherland Hodgeman Polygon Clipping Algorithm to Clip the given polygon.

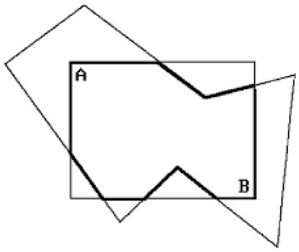


27. Calculate the pixel locations approximating the first octant of a circle having centre at (0,0) and radius 6 units.
28. Use Transformation matrices to carry out a 45 degree rotation of triangle A(0, 0), B(1, 1), C(5, 2) about P(-1, -1) followed by reflection w.r.t y axis
29. Compare Bresenham line generation with DDA line Generation.
30. Define the following term
    a) parallel projection
    b) Perspective projection
    c) Projection reference point
    d) vanishing point
    e) orthographic parallel projection
    f) orthographic oblique projection"
31. Compare and Contrast between Bezier and B Spline Curve. (K4)
32. Explain the function of Control Grid in Cathode Ray Tube (CRT).
33. Develop a procedure, based on a back-face detection technique, for identifying all the visible faces.
34. Explain Horizontal Retrace and Vertical Retrace.
35. Consider window size from (5,5) to (9,9) clip the line using any line clipping algorithm for a given line from (4,12) to (8,8).
36. Define basic transformations with homogeneous coordinate representation.
37. Let ABCD be a rectangular window with A(50,10), B(80,10), C(50,40) and D(80,40) clip the line P(40,15) to Q(75,45) using Cohen Sutherland algo.
38. Explain Viewing Pipeline.

39. Discover and analyse the window to viewport normalization Transformation, that maps a window whose lower left corner is at (1,1) and upper right corner is at (3,5) onto a viewport that has lower left corner at (0,0) and upper right corner at (1/2,1/2).
40. Apply Sutherland Hodgeman Polygon Clipping Algorithm to solve the Clip the polygon P1……..P9 against the window ABCD.



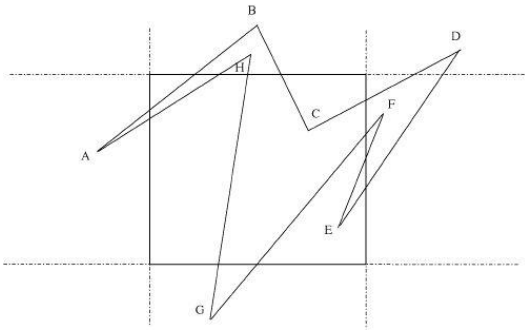
41. right head corner is at R(2,6).Apply the Cohen Sutherland Line Clipping Algorithm to find the region codes for the endpoints A(-4,2), B(-1,7), C(-1,5), D(3,8), G(1,-2), H(3,3) and I(-4,7).
42. Given radius r=10 determine positions along the circle octants in 1st Quadrant from x=0 to x=y.
43. Outline and explain the various applications of Computer Graphics.
44. Rotate a triangle ABC with vertices A(2, 3, 1), B(3, 4, 5) and C(5, 6, 7) about the Y axis
45. Analyse the different 3 D Transformations and its types. Also Discover their transformation matrices and equations.
46. A polygon has four vertices locate at A(20, 10), B(60, 10) C(60, 30) and D(20, 30). Solve and discover the vertices after Applying a scaling transformation to double the size of polygon with point A located on the same place.
47. Apply Sutherland Hodgeman Polygon Clipping Algorithm to Clip the given polygon.



48. Perform a 45 degree rotation of triangle A(0, 0), B(1, 1), C(5, 2) followed by twice magnification about P(-1, -1)
49. Explain the general pivot point rotation
50. Discover and analyse the window to viewport normalization Transformation, that maps a window whose lower left corner is at (1,1) and upper right corner is at (3,5) onto a viewport that has lower left corner at (0,0) and upper right corner at (1/2,1/2).
51. Explain about composite transformation in general
52. "Write short notes.
    a. Ambient light
    b. Diffuse reflection
    c. Specular reflection
    d. Intensity Attenuation
    e. Colour consideration

f. Transparency and Shadows"

53. Distinguish 3 D Projection and its types with the help of neat diagrams in detail.
54. Apply Sutherland Hodgeman Polygon Clipping Algorithm to Clip the given polygon.



55. Define Pixel and explain how it's different from a Point.
56. Given a clipping window A(20, 20), B(60, 20), C(60, 40) and D(20, 40), apply Cohen Sutherland Line Clipping algorithm and solve to find the visible portion of the line segment joining the point P(40, 80) and Q(120, 30).
57. Provide the definition for homogeneous coordinates. Mention the role that they play while doing composite transformations?
58. Determine the term Back Face Detection algorithm and Depth buffer method
59. Elaborate depth buffer algorithm for hidden surface removal in three dimensional objects.
60. Explain Video Controller.
61. Write short notes on Blobby Objects, Polygon Tables, 3 D Primitives, Polygon Meshes, Word Coordinates, Device Coordinates, Normalized Coordinates, Window, Viewport.
62. Determine the 3D transformation matrices to translate a line PQ in the x direction by 3, y direction by 2 and z direction by 2