CS-503: Computer Graphics

Introduction

Basic elements of Computer graphics, Applications of computer graphics.

[2] (Pages 23-54 (contain mostly figures)) (3L)

Graphics Hardware:

Architecture of Raster and Random scan display devices, input/output devices.

[2] **(** Pages 57-94) (5L)

Drawing Primitives: (12 L)

Raster scan line, circle and ellipse drawing algorithms, Polygon filling, line clipping and polygon clipping algorithms

[1] **(Pages 91-102, 105-109,112-114,116-123,128-133,134-141)**

Transformation and Viewing: (12 L)

2D and 3D Geometric Transformations, 2D and 3D Viewing Transformations , Vanishing points.

[3] (Pages 61-99,101-180)(this book size is small and contain many figures and examples)

Geometric Modeling: (5 L)

Representing curves(Hermite and Bezier).

[1] (Pages 497-499,502-515)

Visible Surface determination: (5 L)

Z-buffer algorithm, List-priority algorithm and area subdivision algorithm.

[1] (Pages 692-699,710-713)

Surface rendering: (6 L)

Color Models,

[2] (Pages 591-597)

Illumination and shading models

[2] (Pages 516-531,536-545)

Computer Animation

[2] (Pages 604-616)

Reading Recommended Material

Text Books

1. Computer Graphics: Principles and Practice in C (2nd Edition) James D. Foley , Andries van Dam, Steven K. Feiner , John F. Hughes , Addison-Wesley Professional, 1995.

2. D.Hearn, Baker: Computer Graphics, (2nd Edition) Prentice Hall of India, 2008.

3. D.F.Rogers, Adams Mathematical Elements for Computer Graphics, McGraw Hill 2nd edition , 1989.

PRACTICAL LIST BASED ON PAPER NO -CS-503: COMPUTER GRAPHICS

1. Write a program to implement Bresenhams line drawing algorithm,
2. Write a program to implement mid-point circle drawing algorithm
3. Write a program to clip a line using Cohen and Sutherland line clipping algorithm.
4. Write a program to clip a polygon using Sutherland Hodgeman algorithm.
5. Write a program to fill a polygon using Scan line fill algorithm.
6. Write a program to apply various 2D transformations on a 2D object (use homogenous coordinates).
7. Write a program to apply various 3D transformations on a 3D object and then apply parallel and perspective projection on it.
8. Write a program to draw Hermite/Bezier curve.