Department of Computer Engineering

Academic Year : 2020-21	
SUBJECT : **OCW Assignment**	
CLASS: SE Comp Shift 1	SEMESTER: 3rd
ASSIGNMENT NO. : 1	DATE OF SUBMISSION: 04/12/2020
NAME OF STUDENT: KAUSTUBH S KABRA	ROLL NO. 20
TOPIC: INTRODUCTION TO COMPUTER GRAPHICS	
WEBSITE URL REFERRED:HTTPS://NPTEL.AC.IN/COURSES/106/106/106106090/	

Summary/Abstract/Review:

        Computer graphics is an area of computer science engineering which plays very important role in almost every applications of computer and use of computer science.
        It involves display, manipulation, storage of pictures and experimental data for proper visualization using a computer.
        It also comprises of host computer with support of fast processor, large memory frame buffers, display devices, Input devices, Output devices. Interfacing devices.

APPLICATION MODEL ---> APPLICATION PROGRAM <---> (INPUT)GRAPHICS SYSTEM <---> OUTPUT

Typical Application Areas:
  1. Plotting in Business
  2. Graphical User Interface(GUI)
  3. Office Automation
  4. Desktop Publishing
  5. Plotting in Science and Technology
  6. Web/Business/Commercial publishing and Advertisements
  7. .CAD/CAM/Design(VLSI, Construction,Circuits)
  8. Scientific studies and Simulators
  9. Cartography and Multimedia
  10. Process Monitoring
  11. Digital Image Processing
  12. Education and Training
       Various Application Packages and Standards

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1. Core Graphics
2. Graphics Kernel System(GKS)
3. Simple Raster Graphics Package(SRGP)
4. Programmers Hierarchical Interactive Graphics
5. Cross-Linked Polyethylene(PEX3D)
6. Open GL (With active X and Direct3D)
7. XIL- Based systems

Various utilities and tools available for web-based design include : JAVA, XML, VRML and GIF animators.

Certain Compiles such as Visual C/C++, Visual Basic, Borland C/C++, Borlannd Pascal, Turbo C, Turbo Pascal, Gnu, C/C++,JAVA provide their own graphical libraries,API support and help for programming 2D/3D graphics.

Some of these Systems are:
1. Device - Independent(XII, OpenGL)
2. Device - Dependent(Solaris, HP-AGP)

Four basic output primitives(or elements) for drawing pictures:
1. Polyline
2. Filled Polygon(Regions)
3. Ellipse(Arc)
4. Text
5. Raster Image

Four Major areas of Computer Graphics
1. Display Of Information
2. Design/Modelling
3. Simulation and User Interface

Computer Graphics systems could be active or passive.
In both the cases the input to the system is the scene description and is a static or animated scene to be displayed
In case of active systems the user controls the display with the help of a GUI using an input device. While in passive we cannot control the display.

Various Fundamentals concepts and principles in computer graphics are:

1. Display Systems
2. Tranformations
3. Scan Conversion and clipping
4. Hidden Surface Removal
5. Shading and Illumination

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6. Solid Modelling
7. Curves and Surfaces
8. Miscellaneous
9. Advanced Raster Graphics Architecture

Some examples and illustrations of graphical objects:
1. Wire-Frame model of a sphere, using swap representation
2. Simple Solid 3D objects
3. 3D Solid Object(with hole) generated using constructive solid geometry.
4. Shading effects,texture mapping and shadows.
5. Real World Image of Texture(Stochastic)

Conclusion : Thus, we have studied about computer graphics and various applications of Computer Graphics.

Conclusion: Thus we have studied the basics of Computer Graphics and various operations that we can perform using this application.

Name & Sign of Subject In-charge: | **Marks:**