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Computer based numerical and statistical techniques notes

18th February 2016 , 02:26 PM #1 30th November 2017 , 11:08 AM #2 Email ThisBlogThis!Share to TwitterShare to FacebookShare to Pinterest Page 2 Subject Name: Computer Graphics About Subject: This subject emphasized on working process of graphics and animation on digital platform. Human eyes perceive the object in 3D format but digital screen portrait in 2 dimensional. How pixels work and projected on screen to draw a picture or image. Here, handwritten notes, previous year question papers, assignment, tutorials and programming illustrated. The following will help one to gain the credential of this subject: Subject Name: Computer Graphics Subject Code: RCS-603 Syllabus: Click Here

Course File: Computer Graphics Theory Handbook ----- Course File: Computer Graphics Lab Handbook ----- University Name: Dr. APJ Abdul Kalam Techn University (AKTU, Lucknow) ----- College Name: Shri Ram Murti Smarak College Of Engineering, Technology & Research Bareilly ----- Faculty Name: Sachin Kumar Saxena (Know More....) ----- Facebook Link: ----- Assignment 2 Last Date September 28, 2020 Assignment 1 Reference Website Unit 1 Unit 1: Handwritten Notes Unit 2 Unit 2: Handwritten Notes Unit 3 Unit 5Unit-5 Computer Graphics Part-1Unit-5 Computer Graphics Part-2Unit-5 Computer Graphics Part-3Unit-5 Computer Graphics Part-4 Numerical Computer Graphics Entire Syllabus Computer Graphics in Nut Shell Tutorial 2 Solution Previous year Question Paper 2018-19 Previous year Question Paper 2016-17 Previous year Question Paper 2015-16 Previous year Question Paper 2006-07 COMPUTER GRAPHICS AND SUBJECT CODE: KCS053 Max. Marks: 50 Time: 2:00Hrs. All questions are compulsory. Solutions Distinguish between window port and viewport? A portion of a picture that is to be presented by a window is known as Window port. The display method of the part selected or the design in which the selected element is viewed is called a viewport. 1. What are the Spline curves? The name spline is a flexible strip used to generate a smooth curve through a designated set of points. In computer Graphics, the name spline curves define to any combined curve create with polynomial portions fulfilling specified continuity methods at the edge of the pieces. 2. What does it mean by RGB? RGB is a color model; it is an additive color image in which red, green, and blue lights are added composed in various methods to reproduce a broad display of colors. The term of the model comes from the labels of the three additive primary colors, red, green, and blue. The main objective of the RGB color model is for the sensing, defining and display of pictures in electronic systems, such as televisions and computers, though it has also been utilizing in conventional photography. 3. What are the advantages of laser printers? Large speed, precision, and economy. Low-cost to maintain. Quality printers. Lasts for high time. Toner power is very in-expensive. 4. Define Random and Raster scan displays? Answer- Random scan is a method in which display is made by electronic beam, which is directed only to the points or parts of the screen where picture is to be drawn. The Raster scan system is a scanning technique in which the electron sweep from top to bottom and from left to right. The intensity is turned on or off to light and un-light the pixel. 5. What is Ant Aliasing? Answer: The process of adjusting intensities of the pixels along the line to minimize the effect of aliasing is called ant aliasing. 6. Write The Important Applications Of Computer Graphic? Answer: Following are the applications of computer graphic a. computer graphics is used in the field of computer aided design. b. It is used to produce illustrations for reports or to generate slide for with projections. c. Computer graphic methods are widely used in both fine art and commercial art applications. d. The artist uses a combination of 3D modeling packages, texture mapping, drawing programs and CAD software. e. In the field of entertainment CG methods are now commonly used in making motion pictures. music videos and television shows. f. Computer-generated models of physical, financial and economic systems are often used as educational aids. 7. What Are The Hardware Devices Used For Computer Graphics? Answer: The hardware devices used for the computer graphics are Input Devices: Keyboard, Mouse, Data tablet, Scanner, Light pen, Touch screen, Joystick Output Devices: Raster Devices- CRT, LCD, LED, Plasma screens, Printers,Vector Devices- Plotters, Oscilloscopes 8. Write down the DDA Algorithm with suitable steps to draw a line from (2,3) to (12,8). Answer: 9. Draw a circle using Bresenham's Circle Algorithm for r=10. Answer: 10. Find the clipping coordinates for a line p1p2 where p1=(10,10) and p2=(60,30), against window with (xmin,ymin)=(15,15) and (xmax,ymax)=(25,25) using Liang and Bersky Line clipping algorithm. Answer: 11. A point (4,3) is rotated counterclockwise by an angle 45 degree. Find the rotation matrix and the resultant point. 12. Derive the equation for rotation in two dimensional. 13. Explain basic three transformation in 3D. 14. Basic steps in Computer Graphics. Computer Graphics Lab graphicsDriver: It is a pointer to an integer specifying the graphics driver to be used. It tells the compiler that what graphics driver to use or to automatically detect the driver. In all our programs we will use DETECT macro of graphics.h library that instruct compiler for auto detection of graphics driver. graphicsMode: It is a pointer to an integer that specifies the graphics mode to be used. If *gdriver is set to DETECT, then initgraph sets *gmode to the highest resolution available for the detected driver. driverDirectoryPath: It specifies the directory path where graphics driver files (BGI files) are located. If directory path is not provided, then it will search for driver files in current working directory. In all our sample graphics programs, you have to change path of BGI directory accordingly where you Turbo C++ compiler is installed. ----- Program 1. C Implementation for DDA Line drawing algorithm. Download Code ----- Program 13.a C Implementation for draw lines // C++ Implementation for drawing line #include // driver code int main() { // gm is Graphics mode which is a computer display // mode that generates image using pixels. // DETECT is a macro defined in "graphics.h" header file int gd = DETECT, gm; // initgraph initializes the graphics system // by loading a graphics driver from disk initgraph(&gd, &gm, "c:\\tc\\bgi"); // line for x1, y1, x2, y2 line(150, 150, 450, 150); // line for x1, y1, x2, y2 line(150, 200, 450, 200); // line for x1, y1, x2, y2 line(150, 250, 450, 250); getch(); // closegraph function closes the graphics // mode and deallocates all memory allocated // by graphics system . closegraph(); } ----- Program 13.b C Implementation for drawing circle #include #include #include //driver code int main() { // gm is Graphics mode which is // a computer display mode that // generates image using pixels. // DETECT is a macro defined in // "graphics.h" header file int gd = DETECT, gm; // initgraph initializes the // graphics system by loading a // graphics driver from disk initgraph(&gd, &gm, "c:\\tc\\bgi"); // circle function circle(250, 200, 50); getch(); // closegraph function closes the // graphics mode and deallocates // all memory allocated by // graphics system . closegraph(); return 0; } ----- Program 13.c Draw a rectangle, circle, bar, line and ellipse. #include #include #include main() { int gd = DETECT, gm, left=100, right=200, bottom=200, x= 300, y=150, radius=50; initgraph(&gd, &gm, "C:\\TC\\BGI"); rectangle(left, top, right, bottom); circle(x, y, radius); bar(left + 300, top, right + 300, bottom); line(left - 10, top + 150, left + 410, top + 150); ellipse(x, y + 200, 0, 360, 100, 50); outtextxy(left + 100, top + 325, "My first C graphics program"); getch(); closegraph(); return 0; } ----- Program 13.d Draw a rectangle, circle //Include the graphics header file #include #include #include void main() { //Initialize the variables for the graphics driver and mode int gd = DETECT, gm; clrscr(); initgraph(&gd, &gm, "C:\\TURBOC3\\BGI"); //Set the color of the object you want to draw. setcolor(BLUE); //Draw an object. For this example, drawing a rectangle using the rectangle function rectangle(50,50,100,100); getch(); //unloads the graphics drivers closegraph(); } ----- Program 14.a Draw a hut using Computer Graphics header file. #include #include #include #include void main() { int gd=DETECT, gm; initgraph(&gd, &gm, ""); delay(50); outtextxy(i,80,"Hi I m here "); delay(50); cleardevice(); } ----- Program 14.b. Text from left to right. #include void main() { int gd=DETECT, gm,i; initgraph(&gd, &gm, ""); settextstyle(2,0,7); for(i=0;i<20;i++) { delay(50); outtextxy(i,80,"Hi I m here "); delay(50); cleardevice(); } } ----- Program 14.c. Triangle with different colors with delay time. #include void main() { int gd=DETECT, gm,i; initgraph(&gd, &gm, ""); setfillstyle(11,CYAN); line(20,100,50,50); line(170,170,220,100); line(480,170,420,100); line(420,100,220,100); rectangle(280,420,360,280); rectangle(); getch(); } ----- Program 14.d Draw a hut using Computer Graphics header file. #include #include #include #include void main() { int gd=DETECT, gm,i=0; initgraph(&gd, &gm, "C:\\TC\\BGI"); for(i=1;i<=20;i++) { setcolor(i); delay(30); cleardevice(); } } ----- Program 15.a. Balloon flying from bottom to up. void main() { int gd=DETECT, gm,i,ymax,ymin; initgraph(&gd, &gm, ""); setfillstyle(11,CYAN); line(50,50,80,100); line(80,100,20,100); fillellipse(320,ymax-150,25,50); delay(30); cleardevice(); line(320,ymax,320,ymax-100); } ----- Program 15.b. Font Size for different text. void main() { int gd=DETECT, gm,i,ymax,ymin; initgraph(&gd, &gm, ""); for(ymax=getmaxy(),ymin>=0,ymin<=320;ymin++) { setfillstyle(11,CYAN); fillellipse(320,ymax-150,25,50); getch(); } } Quiz -1 1. The number of pixels stored in the frame buffer of a graphics system is known as a) Resolution b) Depth c) Resulation d) Only a Answer: a) 2. In graphical system, the array of pixels in the picture are stored in a) Memory b) Frame buffer c) Processor d) All of the mentioned Answer: c) Explanation: Frame buffer is mainly used to store pixels. 3. Heat supplied to the cathode by directing a current through a coil of wire is called a) Electron gun b) Electron beam c) Filament d) Anode and cathode Answer: c) Explanation: In CRT the filament is responsible for supply of power. 4. The process of digitizing a given picture definition into a set of pixel-intensity for storage in the frame buffer is called a) Rasterization b) Encoding c) Scan conversion d) True color system Answer: c) Explanation: The digitization process is called scan conversion. 5. In LCD, the refresh rate of the screen is a) 60 frames/sec b) 80 frames/sec c) 30 frames/sec d) 100 frames/sec Answer: a) 6. The primary output device in a graphics system is a) Scanner b) Video monitor c) Neither a nor b d) Printer Answer: b) applied to an object by a) Repositioning it along with straight line path b) Repositioning it along with circular path c) Only b d) All of the mentioned Answer: a) 2. The translation distances (dx, dy) is called as a) Translation vector b) Shift vector c) Both a and b d) Neither a nor b Answer: c) 3. _____ is a rigid body transformation that moves objects without deformation. a) Translation b) Rotation c) Translation d) All of the mentioned Answer: c) 4. To change the position of a circle or ellipse we translate a) Center coordinates b) Center coordinates and redraw the figure in new location c) Outline coordinates d) All of the mentioned Answer: b) 5. The basic geometric transformations are a) Translation b) Rotation c) Scaling d) All of the mentioned Answer: d) 6. What is the primary use of clipping in computer graphics? a) adding graphics b) removing objects and lines c) zooming d) copying Answer: b) 7. A bitmap is collection of _____ that describes an image. a) bits b) colors c) algorithms d) pixels Answer: d) 8. In line clipping, the portion of line which is _____ of window is cut and the portion that is _____ the window is kept. a) outside, inside b) inside, outside c) exact copy, different d) different, an exact copy Answer: a) 9. The process of removal of hidden surfaces is termed as _____ a) clipping b) copying c) culling d) shorting Answer: c) 10. To generate a rotation , we must specify a) Rotation angle θ b) Distances dx and dy c) Rotation distance d) All of the mentioned Answer: a) Quiz 3 1. Which of the following is the basic attribute of a character? a) Font b) Size and color c) Orientation d) All of the mentioned Answer: d) 2. When a character string is to be displayed, the which color is used to set the pixel value in frame buffer? a) White color b) Current color c) Black color d) Any color Answer: b) 3. The Character size is specified by a) Printers b) Compositors c) Frame buffer d) Both a and b Answer: d) 4. _____ is a single character that can be displayed in different colors and in different sizes. a) String b) Marker symbol c) Only a d) Symbols Answer: b) 5. Which of the following is a video editing tool that produces an animated text which can be inserted into video streams? a) Character generator b) Title generator c) Video generator d) Animation generator Answer: a) 6. Which method of character generation is also called Dot-matrix method? a) Stroke method b) Bitmap method c) Starbust method d) There isn't that type of method Answer: b) 7. A translation is applied to an object by a) Repositioning it along with straight line path b) Repositioning it along with circular path c) Only b d) All of the mentioned Answer: a) 8. We translate a two-dimensional point by adding a) Translation distances b) Translation difference c) X and Y d) Only a Answer: d) 9. The translation distances (dx, dy) is called as a) Translation vector b) Shift vector c) Both a and b d) Neither a nor b Answer: c) 10. To change the position of a circle or ellipse we translate a) Center coordinates b) Center coordinates and redraw the figure in new location c) Outline coordinates d) All of the mentioned Answer: b) Quiz-4 1. Cohen-Sutherland clipping is an example of _____ a) polygon clipping b) text clipping c) line clipping d) curve clipping Answer: c) 2. The Cohen-Sutherland algorithm divides the region into _____ number of spaces. a) 8 b) 6 c) 7 d) 9 Answer: d) 3. An outcode can have _____ bits for two-dimensional clipping and _____ bits for three-dimensional clipping. a) 4,6 b) 6,8 c) 2,4 d) 1,3 Answer: a) 4. The centre region of the screen and the window can be represented as _____ a) 0000 b) 1111 c) 0110 d) 1001 Answer: a) 5. If both codes are 0000, (bitwise OR of the codes yields 0000) line lies _____ the window. a) completely outside b) half inside half outside c) completely inside d) can't say anything Answer: c) 6. The 4-bit code of top-left region of the window is _____ a) 1001 b) 1100 c) 0101 d) 1010 Answer: a) 7. The logical _____ of the endpoint codes determines if the line is completely inside the window. a) AND b) OR c) NOT d) NOR Answer: b) 8. Liang-Barsky algorithm is a _____ clipping algorithm. a) circle b) text c) line d) pixel Answer: c) 9. The ideas of the Liang-Barsky algorithm are the same with which algorithm? a) Cyrus Beck algorithm b) Liam-Chopsky algorithm c) Cohen Sutherland algorithm d) All have the same Answer: a) 10. This algorithm uses the _____ equations for a line and solves four inequalities. a) linear b) quadratic c) cubic d) parametric Answer: d)

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