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- 1) Write a program to draw a curve using Bezier's and Koch algorithm.

Bezier algorithm :

```
#include <graphics.h>
#include <math.h>
#include <conio.h>
#include <stdio.h>

void main()
{
    int x[4], y[4], i;
    double px, py, t;
    int gd = Detect, gm;
    initgraph(gd, gm, "C:\VTC\BGI");
    printf("Enter n and y coordinate");
    for(i=0; i<4; i++)
    {
        scanf("%d %d", &x[i], &y[i]);
        pixel(x[i], y[i], 1);
    }
}
```

Scansf("y0 y1", &x[0], &y[0]);
 pixel(x[0], y[0], 1);
 for(i=1; i<4; i++)
 {
 t = (i-1)/3.0;
 px = x[0] + t * (x[1] - x[0]);
 py = y[0] + t * (y[1] - y[0]);
 pixel(px, py, 1);
 }

for ($t = 0.0$; $t \leq 1.0$; $t += 0.001$)

$$\text{put}_x[n] = \text{pow}(1-t, 3) * x[0] + 3^t * t * \text{pow}(1-t, 2) * [1] + 3^t * t^2 * (1-t)^2 * x[2] + \text{pow}(t, 3) * x[3];$$

$$\text{put}_y[y] = \text{pow}(1-t, 3) * y[0] + 3^t * t * \text{pow}(1-t, 2) * y[1] + 3^t * t^2 * (1-t)^2 * y[2] + \text{pow}(t, 3) * y[3];$$

putPixel(put_x[n], put_y[y], white);

geschen;

closeGraph();

Koch Curve:

#include <graphics.h>

#include <conio.h>

#include <math.h>

#include <stdlib.h>

void Koch(int n1, int y1, int n2, int y2,

int n3, int y3)

$$\text{float angle} = 60^\circ * \pi / 180;$$

$$\text{int } n3 = (2 * n1 + n2) / 3;$$

$$\text{int } y3 = (2 * y1 + y2) / 3;$$

$$\text{int } n4 = (n1 + 2 * n2) / 3;$$

$$\text{int } y4 = (y1 + 2 * y2) / 3;$$

$$\text{int } n5 = n3 - (n4 - n3) * \cos(\text{angle}) + (y4 - y3) * \sin(\text{angle});$$

$$\text{int } y5 = y3 - (n4 - n3) * \sin(\text{angle}) + (y4 - y3) * \cos(\text{angle});$$

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if ($i < 0$)

{

Koch (n1, y1, n3, y3, it - 1);

Koch (n3, y3, n1, y1, it - 1);

Koch (n1, y1, n2, y2, it - 1);

Koch (n2, y2, n3, y3, it - 1);

} else

{

line (n1, y1, n3, y3);

line (n3, y3, n1, y1);

line (n1, y1, n4, y4);

line (n4, y4, n2, y2);

}

} else result = result + 0.17;

int main (void)

{

int n1 = 100, y1 = 100, n2 = 400, y2 = 400;

int gd = DESECT, gm = 1; /* initialization */

initgraph (gd, gm, "(C:\TTC\BGI\bg1");

Koch (n1, y1, n2, y2, 4); /* drawing part (1)

getch(); /* waiting for key input */

return 0; /* program ends successfully */

} /* end of main, returns control to DOS */

/* function definitions */

2) Raster Scan Graphics.

- 1) Raster Scan Display are most common type of graphics monitor which employs CRT.
- 2) In Raster Scan System electron beam sweeps across the screen, from top to bottom covering one row at a time.
- 3) A pattern of Spurts is created by turning beam intensity on and off as it moves across each row.
- 4) A memory area called Frame buffer stores picture definition.
- 5) Shaded Intensity values are selected from frame buffer and plotted on screen taking one row at time.

3) Windowing and Clipping.

- 1) The process of selecting and viewing the picture with different areas is called Windowing.
- 2) The process which divides each element of the picture into the visible and invisible portions, allowing the invisible portion to be discarded is called Clipping.
- 3) Points and lines which are outside the window are "cut off" from view. ~~This~~
- 3) This process of "Cutting off" parts of the image of the world is called Clipping.

4) Basics of Computer Graphics

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- 1] Computer graphics is an art of drawing pictures on computer screen with help of programming
- 2) It involves Computation, creation and manipulations of data.
- 3) We can say that Computer graphics is a rendering tool for generation and manipulations of images.

4) Applications of Computer Graphics :

- 1] GUI
 - 2) Cartography
 - 3) Weather Map
 - 4) Satellite Image
 - 5) Medical imaging
 - 6) Engineering drawing
- 5) There are two types of Scan
- i] ~~Raster~~ Raster Scan
 - ii] Random Scan.
- 6) In Raster Scan, the electron beam is swept across the screen, one row at a time from top to bottom.
- 7) In Random Scan also called as vector Scan, the electron beam is directed only to the part of screen where picture is drawn rather than scanning left to right and top to bottom as in raster Scan.
- 8) Computer graphics has major importance in field of Computer.