ACPCE

Where Knowledge is Second Nature

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SUBJECT: COMPUTER GRAPHICS

Experiment : 01

AIM :-   Implement Line Drawing Algorithm.

Theory

     DDA stand for Digital Different Analyzer. it is incremental method of scan conversion of line.

    · Scan Conversion Defi :- " It is a process of Representing graphic objects a collection of pixels.

             [DDA Algorithm]
- Advantage
- it is faster method of using line equation.
- This is method does not use multiplication theorm.
- It is an easy method each involves just two additions.

· Disadvantage
· it involves floating point addition round off done
· Rounding off operations and floating point operations consume a lot of time.

· DDA Algorithm :-

Step 1 :- Start Algorithm.
Step 2 :- Declare $x_1, y_1, x_2, y_2, dx, dy, x, y$ as integer variacle
Step 3 :- Enter value of x_1, y_1, x_2, y_2.
Step 4 :- Calculate $dx = x_2 - x_1$
Step 5 :- Calculate $dy = y_2 - y_1$

Teachers Signature_____1_____

Step 06 :- if ABC (dx) > ABC (dy)

Then step = abs (dx)

Else

Step 07 :- $x_{inc} = dx / step$

$y_{inc} = dy / step$

assign = $x = x_1$

assign = $y = y_1$

Step 8 :- Set pixel (x, y)

Step 9 :- set $x = x + x_{inc}$

$y = y + y_{inc}$

Set pixels (Round (x), Round (y))

Step 10 :- Repeat step 9 until $x = x_2$

Step 11 :- End Algorithm.

Conclusion :-

Therefore we understanding line drawing algorithm by using DDA.

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AIM: Implement Line Drawing algorithm.

Input:

```
1  #include<graphics.h>
2  #include<conio.h>
3  #include<stdio.h>
4  void main()
5  {
6     int gd = DETECT ,gm, i;
7     float x, y,dx,dy,steps;
8     int x0, x1, y0, y1;
9     initgraph(&gd, &gm, "C:\\TURBOC3\\BGI");
10    setbkcolor(WHITE);
11    x0 = 100 , y0 = 200, x1 = 500, y1 = 300;
12    dx = (float)(x1 - x0);
13    dy = (float)(y1 - y0);
14    if(dx>=dy)
15        {
16       steps = dx;
17    }
18    else
19        {
20       steps = dy;
21    }
22    dx = dx/steps;
23    dy = dy/steps;
24    x = x0;
25    y = y0;
26    i = 1;
27    while(i<= steps)
28    {
29       putpixel(x, y, RED);
30       x += dx;
31       y += dy;
32       i=i+1;
33    }
34    getch();
35    closegraph();
36 }
```

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AIM: Implement Line Drawing algorithm.

Output:-
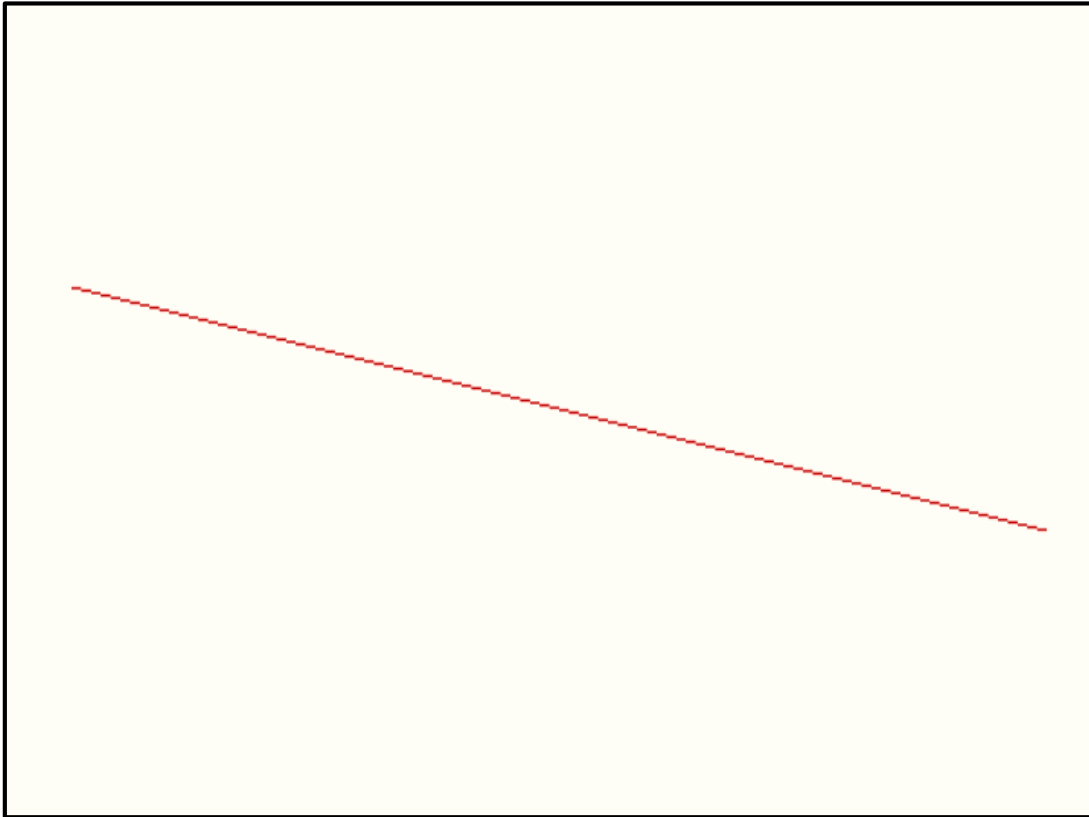
Conclusion: - Therefore we understanding line drawing algorithm by using DDA (Digital Differential Analyzer).

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