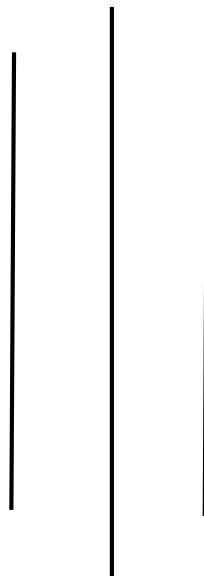


SAGARMATHA ENGINEERING COLLEGE

(TU Affiliated)

Sanepa, Lalitpur



LAB NO: 1

A LAB REPORT ON

DDA LINE ALGORITHM

Submitted By:

Name:.....

Faculty/Year:.....

Roll No:.....

Date:.....

Submitted To:

Department of electronics and Computer Engineering

Signature:.....

Date:.....



COMPUTER GRAPHICS LAB-01

TITLE

DDA LINE ALGORITHM

OBJECTIVES

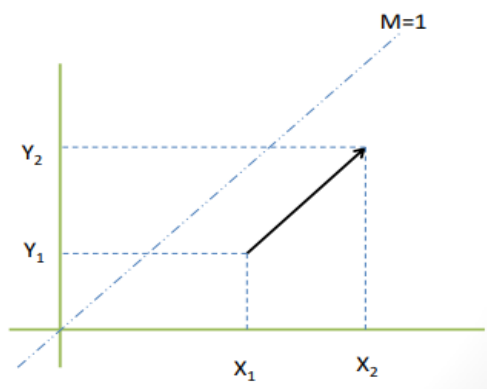
- ✓ To be familiar with fundamental knowledge of line drawing algorithm
- ✓ and its implementation
- ✓ To be familiar with DDA line algorithm and its analysis

HARDWARE/SOFTWARE REQUIRED

- ✓ C Compiler

RELATED THEROY

It is a scan conversion line algorithm based on calculating either Δx or Δy using equation $m = \Delta y / \Delta x$. We sample the line at unit interval in one direction (x if Δx is greater than Δy otherwise in y direction) and determine corresponding integer values nearest the path for the other co-ordinate.





COMPUTER GRAPHICS LAB-01

ALGORITHM

Consider one point of the line as (X1, Y1) and the second point of the line as (X2, Y2).

1. Start
2. Declare $x_1, y_1, x_2, y_2, dx, dy$, steps as integer variables and x, y, x_{inc}, y_{inc} as floating point.
3. Enter value of x_1, y_1, x_2, y_2 .
4. Calculate $dx = x_2 - x_1$.
5. Calculate $dy = y_2 - y_1$
6. If absolute(dx) > absolute(dy)
 - Then steps = absolute(dx)
 - otherwise steps = absolute(dy)
7. Perform:
 - $x_{inc} = \frac{dx}{steps}$
 - $y_{inc} = \frac{dy}{steps}$
 - assign $x = x_1$
 - assign $y = y_1$
8. plot (x, y)
9. Do for k = 1 to steps times
 - $x = x + x_{inc}$
 - $y = y + y_{inc}$
 - plot (Round (x), Round (y))
10. stop



COMPUTER GRAPHICS LAB-01

IMPLEMENTATION OF DDA LINE ALGORITHM

```
#include <graphics.h>
#include <stdio.h>
#include <conio.h>
#include <math.h>
#include <dos.h>
int main()
{
    float x,y,x1,y1,x2,y2,dx,dy,step;
    int i,gd=DETECT,gm;
    /*initgraph initializes the graphics system by loading a
    graphics driver from disk (or validating a registered driver),
    and putting the system into graphics mode.*/
    initgraph(&gd,&gm, (char*)"");

    printf("Enter the value of x1 and y1 : ");
    scanf("%f%f",&x1,&y1);
    printf("Enter the value of x2 and y2: ");
    scanf("%f%f",&x2,&y2);

    dx=abs(x2-x1);
    dy=abs(y2-y1);

    if(dx>=dy)
        step=dx;
    else
        step=dy;

    dx=dx/step;
    dy=dy/step;

    x=x1;
    y=y1;

    i=1;
    while(i<=step)
    {
        putpixel(x,y,5);
        x=x+dx;
        y=y+dy;
        i=i+1;
        delay(100);
    }
    getch();
    closegraph();

    return 0;
}
```



COMPUTER GRAPHICS LAB-01

OUTPUT

RESULT:

Program is compiled, DDA line algorithm implementation was done.