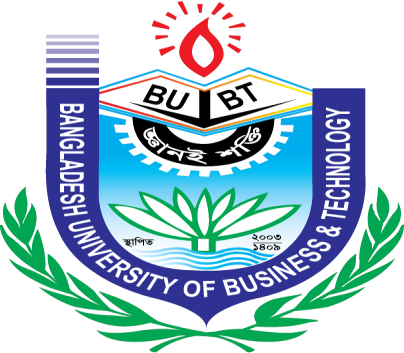
**Bangladesh University of Business and Technology**



**Lab no: 1**

Course Name: Computer Graphics Lab Course Code: CSE 342

Submitted By: Submitted To:

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ID : 19202103239 Lecturer

Intake : 44 Department of CSE

Section: 6 BUBT

Submission Date : 17/01/2023

**Lab No: 01**

**Lab Task Name: DDA Line generation**

**AlgorithmObjective**:

DDA stands for Digital Differential Analyzer. It is an incremental method of scan conversion of line. In this method calculation is performed at each step but by using results of previous steps.

Suppose at step i, the pixels is (xi,yi)

The line of equation for step i

**Algorithm:**

**dx=x2-x1;**

**dy=y2-y1;**

**m=dy/dx;**

**if(m>0 && m<=1)**

**{**

**while(x1<=x2 && y1<=y2)**

**{**

**x1=x1+1;**

**y1=y1+m;**

**glVertex3f(x1/100,y1/100,0.0);**

**printf("%f %f",x1,y1);**

**}**

**}**

**else if(m>1)**

**{**

**while(x1<=x2 && y1<=y2)**

**{**

**x1=x1+(1/m);**

**y1=y1+1;**

**glVertex3f(x1/100,y1/100,0.0);**

**printf("%f %f",x1,y1);**

**}**

**}**

**else if(m>-1 && m<=0)**

**{**

**while(x1>=x2 && y1>=y2)**

**{**

**x1=x1-1;**

**y1=y1-m;**

**glVertex3f(x1/100,y1/100,0.0);**

**printf("%f %f",x1,y1);**

**}**

**}**

**else if(m<-1)**

**{**

**while(x1>=x2 && y1>=y2)**

**{**

**x1=x1-(1/m);**

**y1=y1-1;**

**glVertex3f(x1/100,y1/100,0.0);**

**printf("%f %f",x1,y1);**

**}**

**}**

**Program:**

#include<stdio.h>

#include <GL/gl.h>

#include <GL/glut.h>

float x1,y1,x2,y2,m,i,j;

float dx,dy;

void display(void)

{

glClear (GL\_COLOR\_BUFFER\_BIT);

glEnd();

glColor3f (0.0, 1.0, 0.0);

glBegin(GL\_POINTS);

if(m>0 && m<=1)

{

while(x1<=x2 && y1<=y2)

{

x1=x1+1;

y1=y1+m;

glVertex3f(x1/100,y1/100,0.0);

printf("%f %f",x1,y1);

}

}

else if(m>1)

{

while(x1<=x2 && y1<=y2)

{

x1=x1+(1/m);

y1=y1+1;

glVertex3f(x1/100,y1/100,0.0);

printf("%f %f",x1,y1);

}

}

else if(m>-1 && m<=0)

{

while(x1>=x2 && y1>=y2)

{

x1=x1-1;

y1=y1-m;

glVertex3f(x1/100,y1/100,0.0);

printf("%f %f",x1,y1);

}

}

else if(m<-1)

{

while(x1>=x2 && y1>=y2)

{

x1=x1-(1/m);

y1=y1-1;

glVertex3f(x1/100,y1/100,0.0);

printf("%f %f",x1,y1);

}

}

glEnd();

glFlush ();

}

void init (void)

{

glClearColor (0.0, 0.0, 0.0, 0.0);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

glOrtho(0.0, 1.0, 0.0, 1.0, -1.0, 1.0);

}

int main(int argc, char\*\* argv)

{

//glVertex3f(x1/100,y1/100,0.0);write your code here

printf("Enter value of X1 :");

scanf("%f",&x1);

printf("Enter value of y1 :");

scanf("%f",&y1);

printf("Enter value of X2 :");

scanf("%f",&x2);

printf("Enter value of Y2 :");

scanf("%f",&y2);

dx=x2-x1;

dy=y2-y1;

m=dy/dx;

glutInit(&argc, argv);

glutInitDisplayMode (GLUT\_SINGLE | GLUT\_RGB);

glutInitWindowSize (500, 500);

glutInitWindowPosition (100, 100);

glutCreateWindow ("hello");

init ();

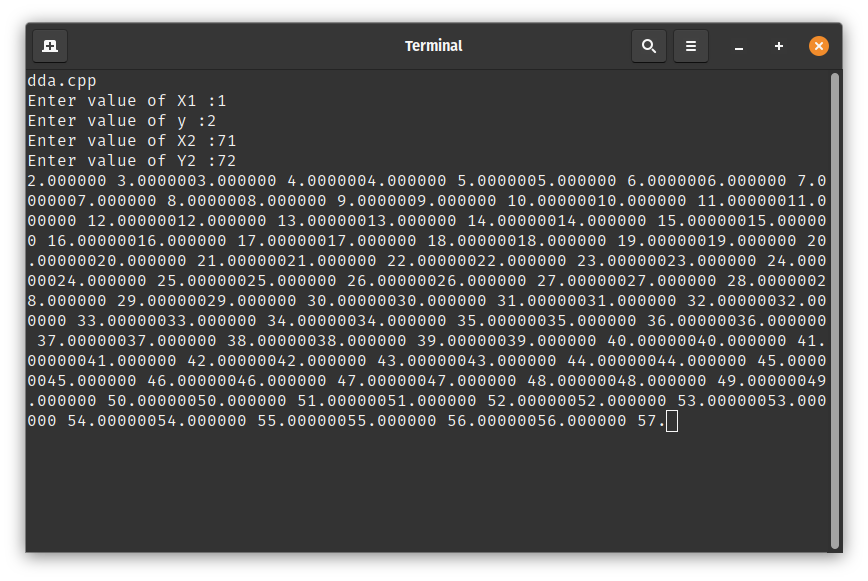
glutDisplayFunc(display);

glutMainLoop();

return 0;

}

**Input & Output:**

****

