VIT AP UNIVERSITY, ANDHRA PRADESH

Lab Sheet 1 : Basic Graphics Primitives

Academic year: 2020-2021 | **Branch/ Class:** B.Tech/M.Tech
Semester: Fall | **Date:** 13-11-20
Faculty Name: Prof.Nileshchandra | **School:** SCOPE
Student name: V.M.Bhuvanesh | **Reg. no.:** 19BCD7088

1. Write a program to implement ***Bresenham's Line Drawing*** Algorithm in OpenGL/Python.

Input : (5,5) to (130,90).

Code:

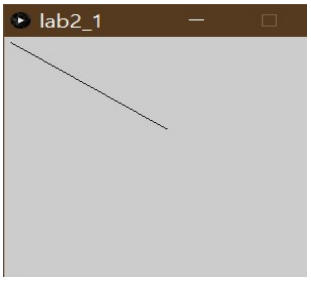
```
int x1=5;
int y1=5;
int x2=130;
int y2=90;
int dx,dy,d;

void setup(){
 size(300,300);
}
void draw(){

 dx=x2-x1;
 dy=y2-y1;
 d = 2*(dx-dy);
 while(x1<x2){

  if(d>=0){
    point(x1,y1);
    y1=y1+1;
    d=d+(2*dy)-(2*dx);
 }
 else{
  point(x1,y1);
  d=d+(2*dy);
 }
 x1=x1+1;
 }
}
```

Output:



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2. Write a program to ***draw a line using DDA line*** drawing Algorithm in OpenGL/Python

Input : (0,0) to (40,40).

Code:

```
int X0 = 0;
int Y0 = 0;
int X1 = 40;
int Y1 = 40;
size(640, 360);
int dx = X1 - X0;
int dy = Y1 - Y0;
int steps = abs(dx) > abs(dy) ? abs(dx) : abs(dy);
float Xinc = dx / (float) steps;
float Yinc = dy / (float) steps;
float X = X0;
float Y = Y0;
for (int i = 0; i <= steps; i++)
{
  point(X, Y);
  X += Xinc;
  Y += Yinc;
}
```

Output:

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3. Write a program to ***draw circle*** in OpenGL/Python.

Input: radius r=50 centered point (100,100)

Code:

```
int x =100;
int y=100;
int r= 50;
int p=0;
int d=3-(2*r);
void setup(){
 size(300,300);
}
void draw(){
      point(p+x,r+y);
      point(p+x,-r+y);
      point(-p+x,-r+y);
      point(-p+x,r+y);
      point(r+x,p+y);
      point(r+x,-p+y);
      point(-r+x,-p+y);
      point(-r+x,p+y);
  while(p<=r)
  {
   if(d<=0)
       {
    d=d+(4*p)+6;
   }
  else
   {
    d=d+(4*p)-(4*r)+10;
    r=r-1;
   }
    p=p+1;
    point(p+x,r+y);
```

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```
    point(p+x,-r+y);
    point(-p+x,-r+y);
    point(-p+x,r+y);
    point(r+x,p+y);
    point(r+x,-p+y);
    point(-r+x,-p+y);
    point(-r+x,p+y);
   }
  }
```

Output: