Lab Report : 01

Department of Computer Science and Engineering

3rd Year 1st Semester

Course Title: Computer Graphics Lab
Course code: CSE-304

Date of submission: 28-05-2023

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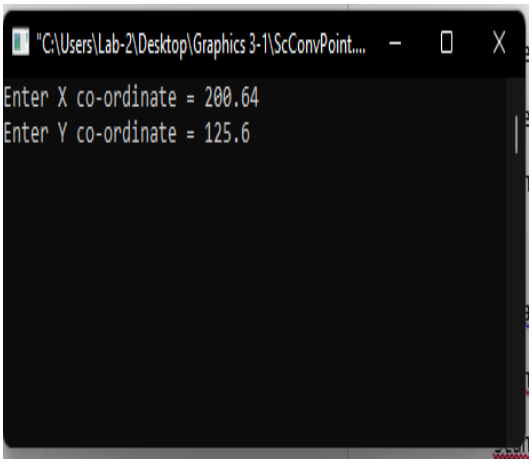
Experiment No 01: Scan converting a point

Code:

```
#include<bits/stdc++.h>
#include<graphics.h>
int main()
{
    float x,y;
    printf("Enter X co-ordinate = ");
    scanf("%f",&x);
    printf("Enter Y co-ordinate = ");
    scanf("%f",&y);
    int gd= DETECT, gm;
    initgraph(&gd, &gm, (char*)"");
    putpixel(floor(x),floor(y),WHITE);
    getch();
    closegraph();
}
```

Output:

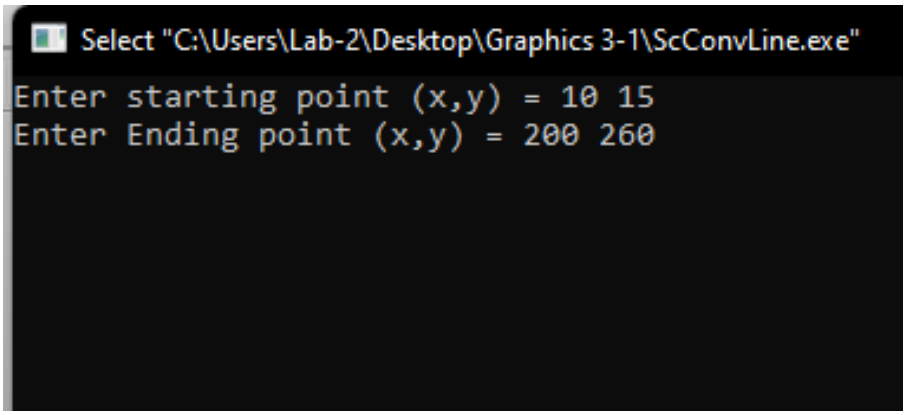


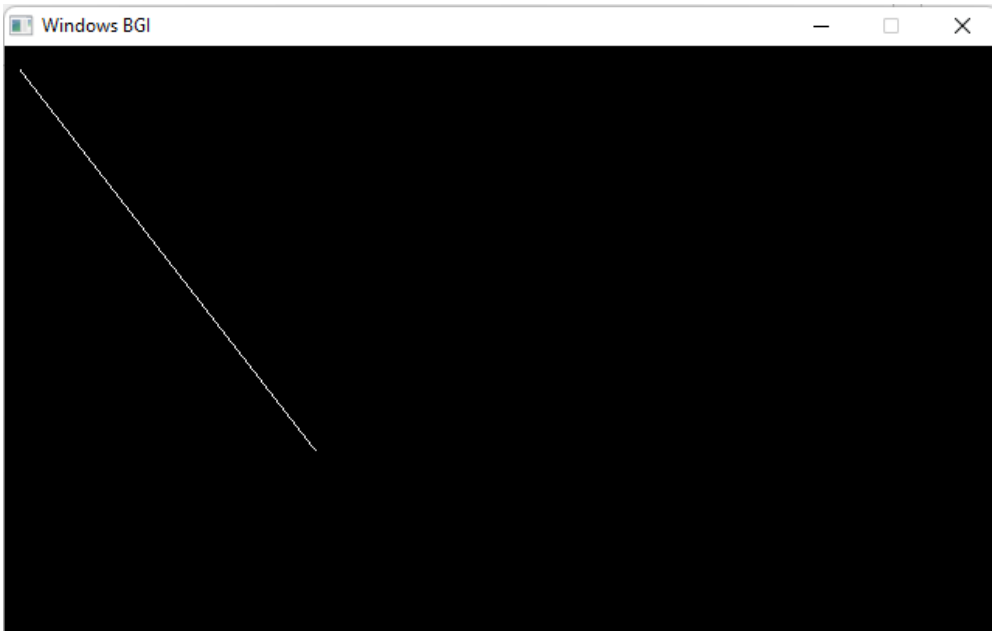
Experiment No 02: Scan converting a line with DDA Algorithm

Code:

```
#include<bits/stdc++.h>
#include<graphics.h>
using namespace std;
int main()
{
    float x1,y1,x2,y2;
    cout<<"Enter starting point (x,y) = ";
    cin>>x1>>y1;
    cout<<"Enter Ending point (x,y) = ";
    cin>>x2>>y2;
    int dx = x2-x1;
    int dy = y2-y1;
    int steps, k;
    float x_inc, y_inc;
    float x = x1;
    float y = y1;
    if(abs(dx)>abs(dy))
        steps=abs(dx);
    else
        steps=abs(dy);

    x_inc = dx/ (float)steps;
    y_inc = dy/ (float)steps;

    int gd = DETECT, gm;

    initgraph(&gd, &gm,"");

    putpixel(x,y,WHITE);

    for(k=0;k<steps;k++)
    {
        x=x+x_inc;
        y=y+y_inc;
        putpixel(floor(x),floor(y),WHITE);
    }
    getch();
    closegraph();

}
```

Output:


Select "C:\Users\Lab-2\Desktop\Graphics 3-1\ScConvLine.exe"
Enter starting point (x,y) = 10 15
Enter Ending point (x,y) = 200 260


Windows BGI

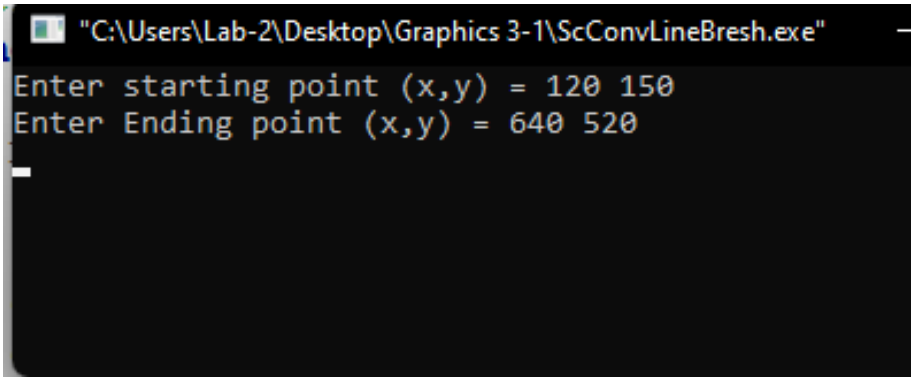
Experiment No 03: Scan converting a line with Breshenham's Algorithm

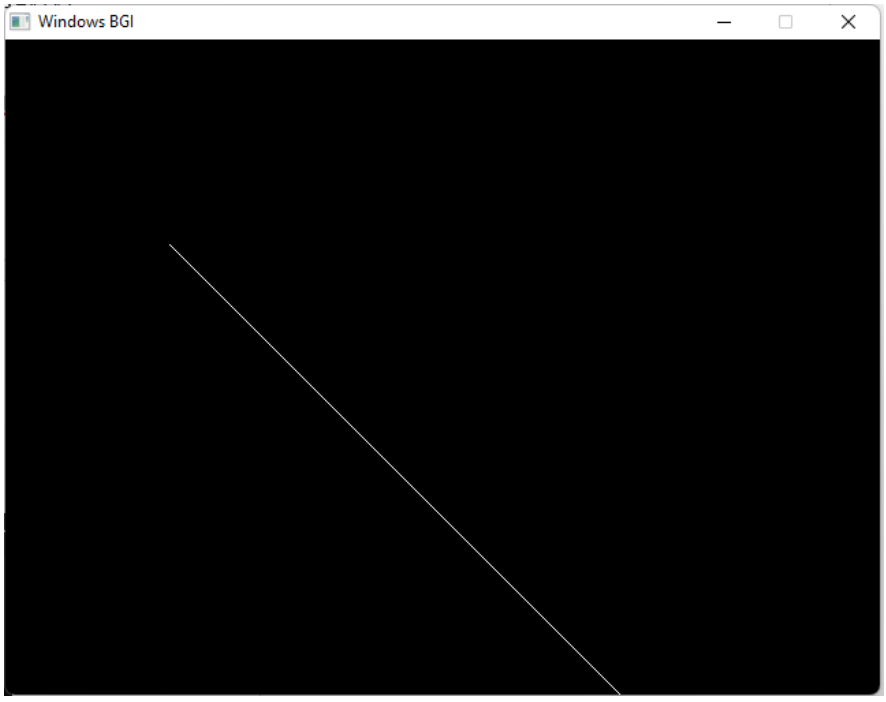
Code:

```
#include<bits/stdc++.h>
#include<graphics.h>
using namespace std;
int main()
{
    float x1,y1,x2,y2,x,y;
    cout<<"Enter starting point (x,y) = ";
    cin>>x1>>y1;
    cout<<"Enter Ending point (x,y) = ";
    cin>>x2>>y2;
    int dx = x2-x1;
    int dy = y2-y1;
    if(dx>0)x=1;
    else x=-1;
    if(dy>0)y=1;
    else y=-1;
    dx=abs(dx);
    dy=abs(dy);
    int gd = DETECT, gm;
    initgraph(&gd,&gm,"");
    while(1)
    {
        putpixel(x1,y1,WHITE);

        if(x1==x2 && y1==y2)
            break;

        int P = 2*(dy-dx);

        if(P> -dy)
        {
            P=P-dy;
            x1=x1+x;
        }
        if(P<dx)
        {
            P=P+dx;
            y1=y+y1;
        }
    }
    getch();
    closegraph();
```

```
}
```

Output:


"C:\Users\Lab-2\Desktop\Graphics 3-1\ScConvLineBresh.exe"
Enter starting point (x,y) = 120 150
Enter Ending point (x,y) = 640 520


Windows BGI

Experiment No 04: Scan converting a circle with Breshenham's Algorithm

Code:

```
#include<bits/stdc++.h>
#include<graphics.h>

using namespace std;

int main()
{
    int h,k,r;
    cout<<"INPUT Coordinate of the center = ";
    cin>>h>>k;
    cout<<"INPUT Radius of the circle = ";
    cin>>r;

    int gd = DETECT,gm;
    initgraph(&gd,&gm,"");
    int x =0,y=r;
    int P = 3-2*r;

    while(x<=y)
    {
        putpixel(h+x,k+y,WHITE);
        putpixel(h-x,k+y,WHITE);
        putpixel(h+x,k-y,WHITE);
        putpixel(h-x,k-y,WHITE);
        putpixel(h+y,k+x,WHITE);
        putpixel(h-y,k+x,WHITE);
        putpixel(h+y,k-x,WHITE);
        putpixel(h-y,k-x,WHITE);

        if(P<0)
        {
            x++;
            P=P+4*x+6;
        }
        else
        {
            x++;
            y--;
            P=P+4*(x-y)+10;
        }
    }
    getch();
```

```
    closegraph();
}
```

OUTPUT: