

Lab Report: 02

Course title: Computer Graphics Laboratory

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Submitted to-

Dr. Mohammad Shorif Uddin

Professor

Department of Computer Science and Engineering

Jahangirnagar University

&

Dr. Morium Akter

Associate Professor

Department of Computer Science and Engineering

Jahangirnagar University

Savar, Dhaka-1342

Class Roll	Exam Roll	Name
373		Md.Rakibul Haque

1.Scan converting a circle using midpoint :-

Code:

```
#include <graphics.h>
#include <bits/stdc++.h>
using namespace std;

class bresen
{
    float x, y,a, b, r, p;
    public:
    void get ();
    void cal ();
};

int main ()
{
    bresen b;
    b.get ();
    b.cal ();
    getch ();
}

void bresen :: get ()
{
    cout<<"ENTER CENTER AND RADIUS";
    cout<< "ENTER (a, b)";
    cin>>a>>b;
    cout<<"ENTER r";
    cin>>r;
}

void bresen ::cal ()
{
    /* request auto detection */
    int gdriver = DETECT,gmode, errorcode;
    int midx, midy, i;
    /* initialize graphics and local variables */
    initgraph (&gdriver, &gmode, " ");
    /* read result of initialization */
    errorcode = graphresult ();
```

```

    // if (errorcode != grOK)    /*an error occurred */
    // {
        // printf("Graphics error: %s \n", grapherrormsg
(errorcode);
        // printf ("Press any key to halt:");
        // getch ();
        // exit (1); /* terminate with an error code */
    //
    x=0;
    y=r;
    putpixel (a, b+r, RED);
    putpixel (a, b-r, RED);
    putpixel (a-r, b, RED);
    putpixel (a+r, b, RED);
    p=(5/4)-r;
    while (x<=y)
    {
        if (p<0)
            p+= (4*x)+6;
        else
        {
            p+=(2*(x-y))+5;
            y--;
        }
        x++;
        putpixel (a+x, b+y, RED);
        putpixel (a-x, b+y, RED);
        putpixel (a+x, b-y, RED);
        putpixel (a-x, b-y, RED);
        putpixel (a+x, b+y, RED);
        putpixel (a+x, b-y, RED);
        putpixel (a-x, b+y, RED);
        putpixel (a-x, b-y, RED);
    }
}

```

OUTPUT:



2. Scan Converting a Ellipse :

Code:

```
#include<graphics.h>
#include<bits/stdc++.h>
using namespace std;
void disp();
float x,y;
int xc,yc;
int main()
{
    int gd=DETECT,gm,a,b;
    float p1,p2;

    initgraph(&gd,&gm,"c:\\\\turbo3\\bgi");
    printf("*** Ellipse Generating Algorithm
***\n");

    printf("Enter the value of Xc\t");
    scanf("%d",&xc);
```

```

printf("Enter the value of yc\t");
scanf("%d",&yc);
printf("Enter X axis length\t");
scanf("%d",&a);
printf("Enter Y axis length\t");
scanf("%d",&b);
x=0;y=b;
disp();
p1=(b*b)-(a*a*b)+(a*a)/4;
while((2.0*b*b*x)<=(2.0*a*a*y))
{
    x++;
    if(p1<=0)
        p1=p1+(2.0*b*b*x)+(b*b);
    else
{
        y--;
        p1=p1+(2.0*b*b*x)+(b*b)-(2.0*a*a*y);
    }
    disp();
    x=-x;
    disp();
    x=-x;
    delay(50);
}
x=a;
y=0;
disp();
p2=(a*a)+2.0*(b*b*a)+(b*b)/4;
while((2.0*b*b*x)>(2.0*a*a*y))
{
    y++;
    if(p2>0)
        p2=p2+(a*a)-(2.0*a*a*y);
    else
{
        x--;
        p2=p2+(2.0*b*b*x)-(2.0*a*a*y)+(a*a);
    }
    disp();
}

```

```

        y=-y;
        disp();
        y=-y;
        delay(50);
    }

    getch();
    closegraph();
}

void disp()
{
    putpixel(xc+x,yc+y,7);
    putpixel(xc-x,yc+y,7);
    putpixel(xc+x,yc-y,7);
    putpixel(xc-x,yc-y,7);
}

```

OUTPUT:

```

Enter the value of Xc    200
Enter the value of yc    200
Enter X axis length      150
Enter Y axis length      100

```

