



আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম
الجامعة الإسلامية العالمية شيتاغونغ
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Lab -05

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1. Ellipse using polynomial method.

Code:

```
#include<bits/stdc++.h>
#include<graphics.h>
using namespace std;
void plot4pixels(int,int,int,int);

void ellipse_polynomial()
{
    int x,y,r,i,h,k,a,b;
    h=200;
    k=200;
    a=150;
    b=100;
    x=0;
    y=b;
    while(x<a)
    {
        plot4pixels(x,y,h,k);
        x++;
        y=b*sqrt(((a*a)-(x*x*1.0))/(a*a));
    }
    plot4pixels(x,y,h,k);
    setcolor(8);
}

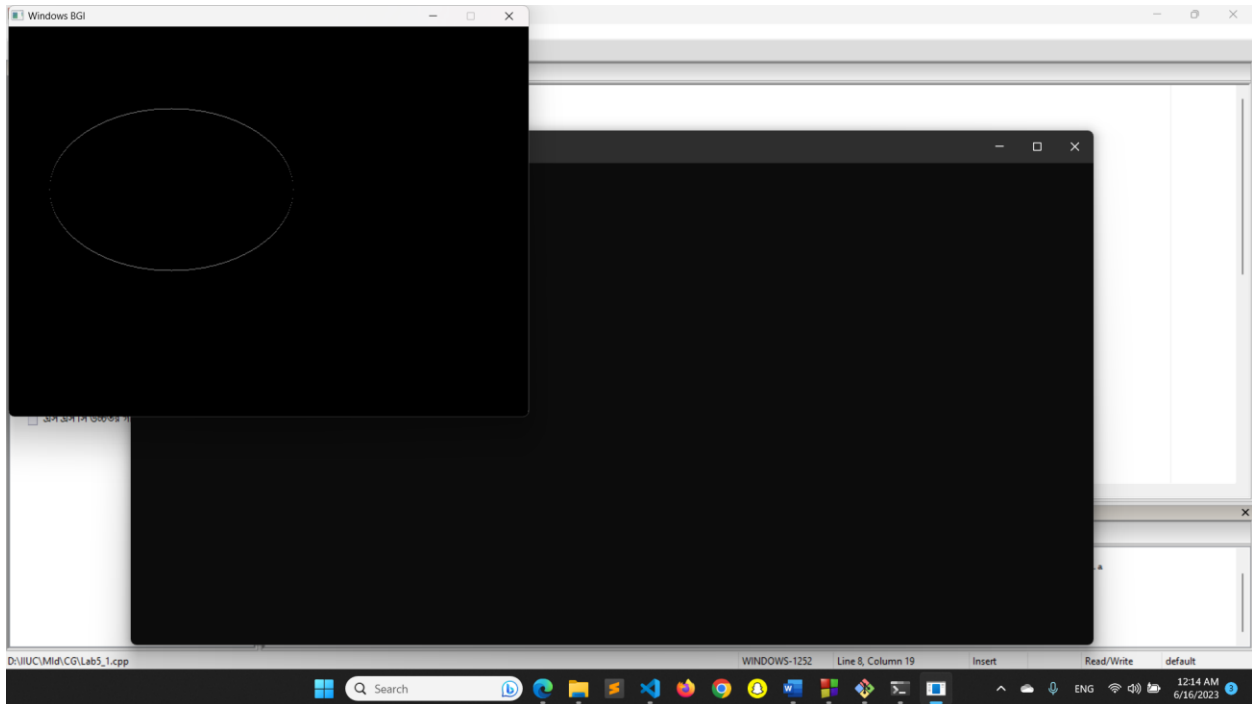
int main()
{
    int gd=DETECT,gm;
    initgraph(&gd,&gm,"");
    setbkcolor(WHITE);
    ellipse_polynomial();
    getch();
}

void plot4pixels(int x,int y,int h,int k)
```

```

{
    putpixel(x+h,y+k,8);
    putpixel(x+h,-y+k,8);
    putpixel(-x+h,y+k,8);
    putpixel(-x+h,-y+k,8);
}

```



2. Ellipse using Trigonometric method.

Code:

```

#include<bits/stdc++.h>
#include<graphics.h>
using namespace std;
void plot4pixels(int,int,int,int);

```

```

void ellipse_Trigonometric()
{
    int x,y,x1,y1,a,b,h,k,theta;
    double p=3.14159/180;
    h=200;
    k=200;
    a=150;
}

```

```

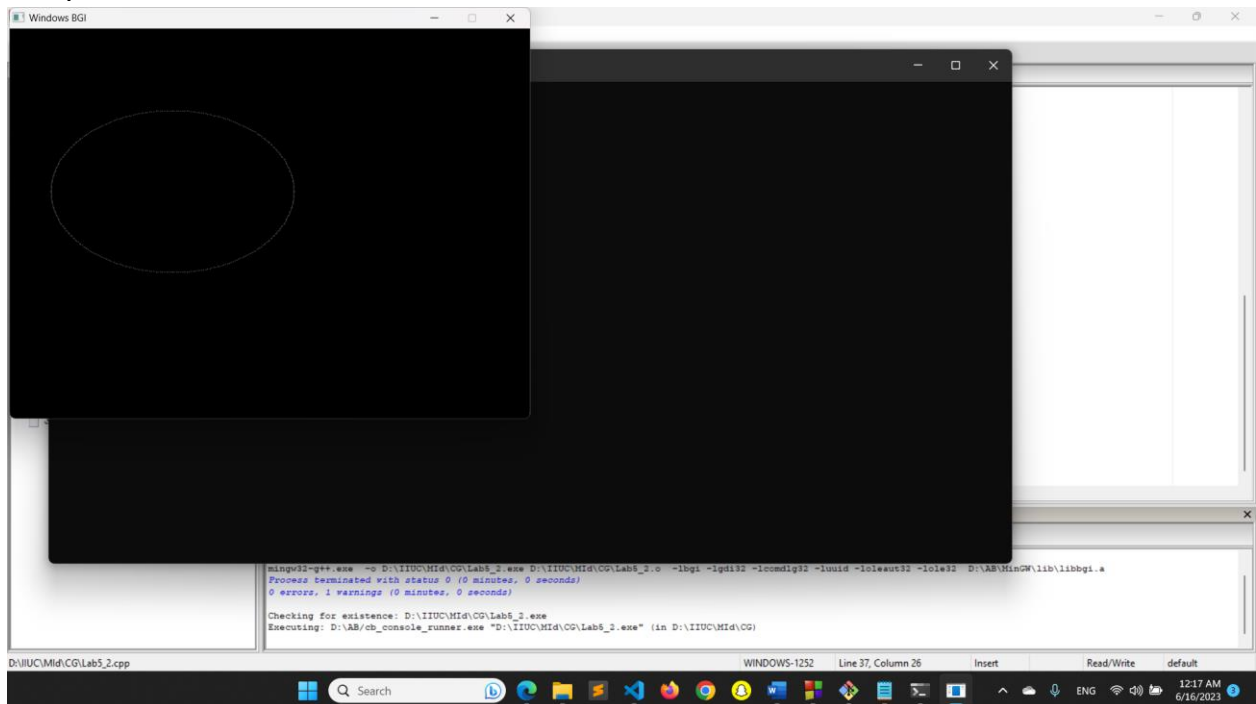
b=100;
setcolor(8);
for(theta=0; theta<=90; theta++)
{
    x1=a*cos(theta*p);
    y1=b*sin(theta*p);
    x=int(x1+0.5);
    y=int(y1+0.5);
    plot4pixels(x,y,h,k);
}
}

int main()
{
    int gd=DETECT,gm;
    initgraph(&gd,&gm,"");
    setbkcolor(WHITE);
    ellipse_Trigonometric();
    getch();
}

void plot4pixels(int x,int y,int h,int k)
{
    putpixel(x+h,y+k,8);
    putpixel(x+h,-y+k,8);
    putpixel(-x+h,y+k,8);
    putpixel(-x+h,-y+k,8);
}

```

Output:



3. Arcs.
Code:

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

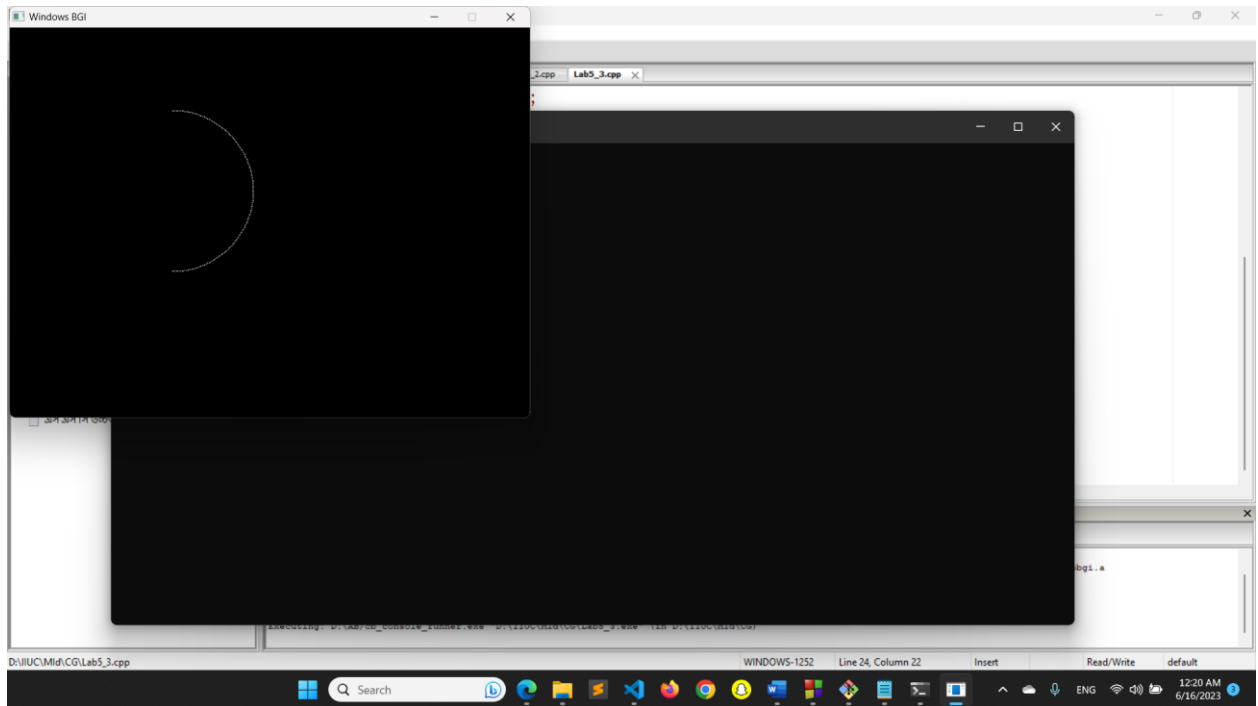
void arc_trigonometric()
{
    int x,y,x1,y1,r,h,k,theta,theta1=270,theta2=270+180;
    float n=3.14159/180;
    h=200;k=200;r=100;
    for(theta=theta1; theta<=theta2; theta++)
    {
        x1=r*cos(theta*n);
        y1=r*sin(theta*n);
        x=int(x1+0.5);
        y=int(y1+0.5);
        putpixel(x+h,y+k,WHITE);
    }
}
```

```

    }
}

int main()
{
    int gd=DETECT,gm;
    initgraph(&gd,&gm,"");
    setbkcolor(WHITE);
    arc_trigonometric();
    getch();
    closegraph();
}

```



4. Sectors.

Code:

```

#include<graphics.h>
#include<bits/stdc++.h>
#include<math.h>
using namespace std;
void drawLineDDA(int x1, int y1, int x2, int y2)

```

```

{
    int dx = x2 - x1;
    int dy = y2 - y1;
    int length = sqrt(dx*dx + dy*dy);

    float xinc = dx / (float)length;
    float yinc = dy / (float)length;

    float x = x1;
    float y = y1;

    for (int i = 0; i <= length; i++)
    {
        putpixel((int)x, (int)y, WHITE);
        x += xinc;
        y += yinc;
    }
}

void sector_trigonometric()
{
    int x,y,x1,y1,r,h,k,theta,theta1=220,theta2=320;
    float n=3.14159/180;
    h=200;k=200;r=100;
    for(theta=theta1; theta<=theta2; theta++)
    {
        x1=r*cos(theta*n);
        y1=r*sin(theta*n);
        x=int(x1+0.5);
        y=int(y1+0.5);
        putpixel(x+h,y+k, WHITE);
        if(theta==theta1 || theta==theta2) {
            drawLineDDA(h,k,x+h,y+k);
        }
    }
}

```

```
}
```

```
int main()
```

```
{
```

```
    int gd=DETECT,gm;
```

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

```
    setbkcolor(WHITE);
```

```
    sector_trigonometric();
```

```
    getch();
```

```
    closegraph();
```

```
}
```

