

**DR. B R AMBEDKAR NATIONAL INSTITUTE  
OF TECHNOLOGY JALANDHAR**



**LAB FILE  
OF  
Computer Graphics  
And  
Animation**

SESSION 2019-2020

**Submitted To:**

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## 1. Bezier Curve

```
#include<iostream.h>

#include<conio.h>

#include<math.h>

#include<graphics.h>

void main()

{

int gd=DETECT,gm;

initgraph(&gd, &gm, "C:\\TURBOC3\\BGI");

int x[4],y[4],i;

double put_x, put_y, t;

cout<<"\n***** Bezier Curver *****"<<endl;

cout<<"Enter four control points of bezier curve: "<<endl;

for(i=0;i<4;i++){

    cin>>x[i]>>y[i];

    putpixel(x[i], y[i],3);

}

for(t=0.0;t<=1.0;t+=0.001){

    put_x=pow(1-t, 3)*x[0]+3*t*pow(1-t,2)*x[1]+3*t*t*(1-t)*x[2]+pow(t,3)*x[3];

    put_y=pow(1-t, 3)*y[0]+3*t*pow(1-t,2)*y[1]+3*t*t*(1-t)*y[2]+pow(t,3)*y[3];

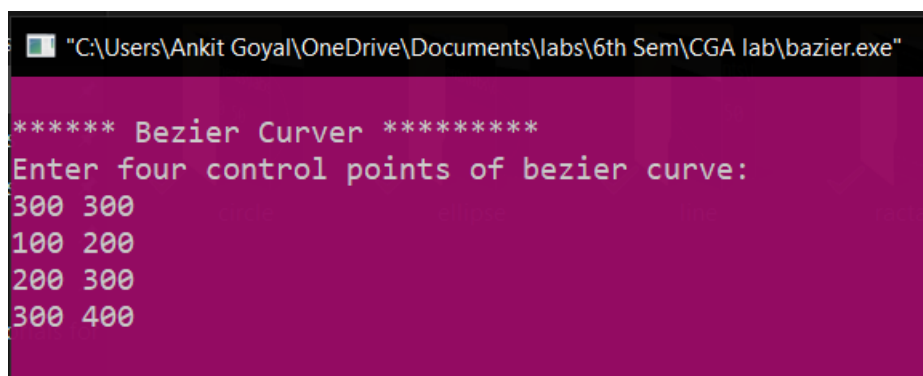
    putpixel(put_x,put_y,WHITE);

}

getch();

closegraph();

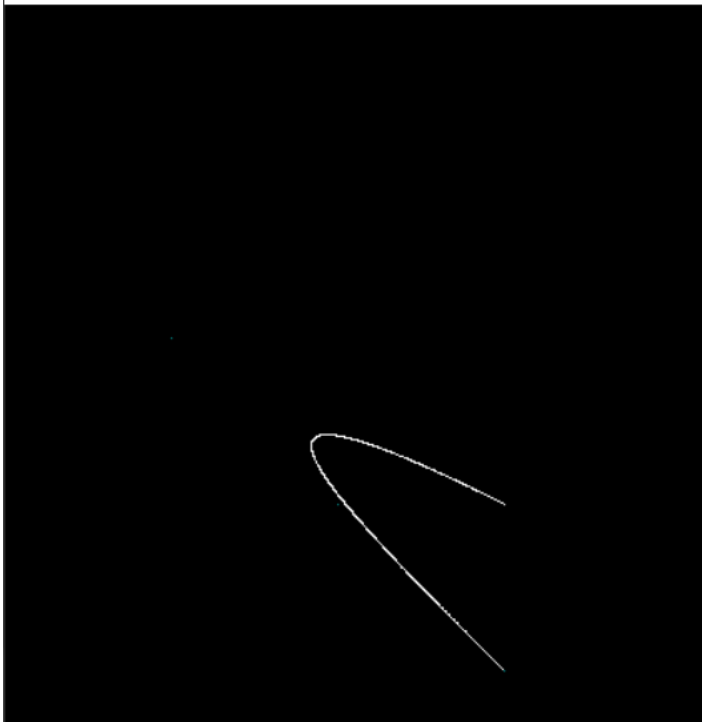
}
```



```
"C:\Users\Ankit Goyal\OneDrive\Documents\labs\6th Sem\CGA lab\bazier.exe"

***** Bezier Curver *****
Enter four control points of bezier curve:
300 300
100 200
200 300
300 400
```

Windows BGI



## 2. Liang Barsky Algorithm

```
#include<iostream.h>
#include<graphics.h>
#include<math.h>
#include<dos.h>

void main()
{
    int i,gd=DETECT,gm;
    int x1,y1,x2,y2,xmin,xmax,ymin,ymax,xx1,xx2,yy1,yy2,dx,dy;
    float t1,t2,p[4],q[4],temp;

    x1=120;
    y1=120;
    x2=300;
    y2=300;

    xmin=100;
    ymin=100;
    xmax=250;
    ymax=250;

    initgraph(&gd, &gm, "C:\\TURBOC3\\BGI");
    rectangle(xmin,ymin,xmax,ymax);
    dx=x2-x1;
    dy=y2-y1;

    p[0]=-dx;
    p[1]=dx;
    p[2]=-dy;
    p[3]=dy;

    q[0]=x1-xmin;
    q[1]=xmax-x1;
    q[2]=y1-ymin;
    q[3]=ymax-y1;

    for(i=0;i<4;i++)
    {
        if(p[i]==0)
        {
            cout<<"line is parallel to one of the clipping boundary";
            if(q[i]>=0)
            {
                if(i<2)
                {
                    if(y1<ymin)
                    {
                        y1=ymin;
```

```

        }

        if(y2>ymax)
        {
            y2=ymax;
        }

        line(x1,y1,x2,y2);
    }

    if(i>1)
    {
        if(x1<xmin)
        {
            x1=xmin;
        }

        if(x2>xmax)
        {
            x2=xmax;
        }

        line(x1,y1,x2,y2);
    }
}

}

t1=0;
t2=1;

for(i=0;i<4;i++)
{
    temp=q[i]/p[i];

    if(p[i]<0)
    {
        if(t1<=temp)
            t1=temp;
    }
    else
    {
        if(t2>temp)
            t2=temp;
    }
}

if(t1<t2)
{
    xx1 = x1 + t1 * p[1];
    xx2 = x1 + t2 * p[1];
    yy1 = y1 + t1 * p[3];
    yy2 = y1 + t2 * p[3];
    line(xx1,yy1,xx2,yy2);
}

```

```
}  
delay(5000);  
closegraph();  
}
```

