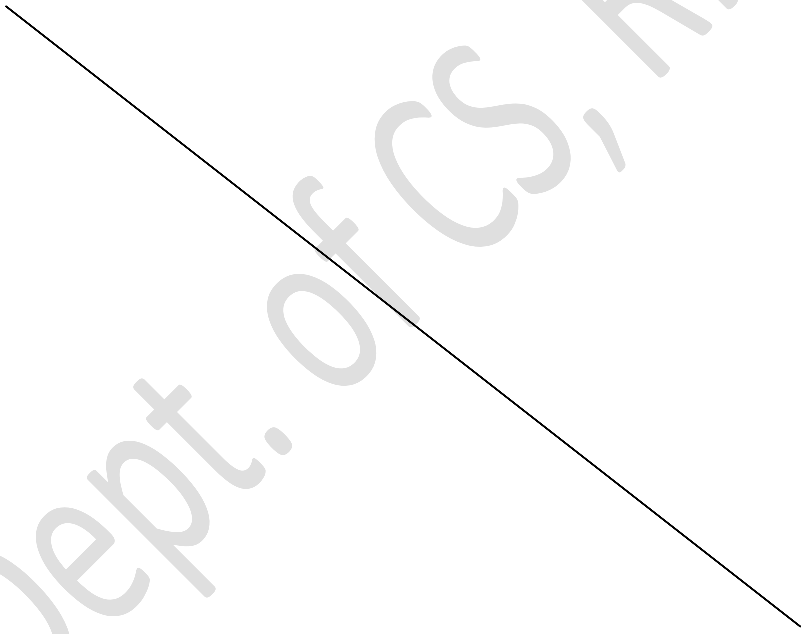
PROGRAM TO DRAW A LINE USING DDA LINE DRAWING ALGORITHM

C Source Code

```
#include<stdio.h>
#include<graphics.h>
#include<math.h>
#include<conio.h>
void LineDDA(float X1,float Y1,float X2,float Y2);
void main()
{
 int gdriver=DETECT,gmode,errorcode;
 initgraph(&gdriver,&gmode,"C:\\tc\\bgi");

 int x1,y1,x2,y2;
 printf("Maximum X -%d Maximum Y -%d\n",getmaxx(),getmaxy());
 printf("Enter first point:-");
 scanf("%d%d",&x1,&y1);
 printf(Enter second point:-");
 scanf("%d%d",&x2,&y2);
 LineDDA(x1,y1,x2,y2);
 getch();
 closegraph();
}

void LineDDA(float X1,float Y1,float X2,float Y2)
{
 float step,XInc,YInc,dX,dY;

 cleardevice();
 dX=X2-X1;
 dY=Y2-Y1;

 if(abs(dX)>abs(dY))
  step=abs(dX);
 else
  step=abs(dY);

 XInc=dX/step;
 YInc=dY/step;

 for(int i=0;i!=step;i++)
  {
  putpixel(X1,Y1,4);
  X1=X1+XInc;
  Y1=Y1+YInc;
  }
}
```

OUTPUT

```
Maximum X - 639  Maximum Y – 479
            Enter first point : 60 30


            Enter second point : 400 300
```



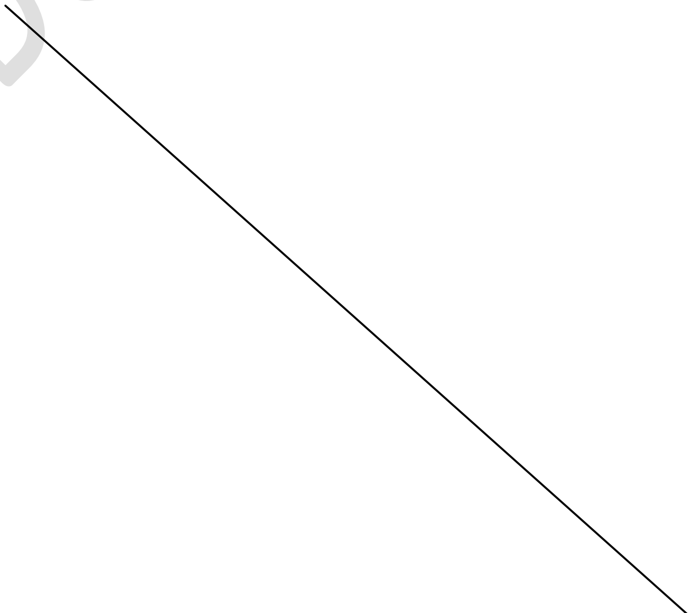
PROGRAM TO DRAW A LINE USING BRESENHAM’S LINE DRAWING ALGORITHM.

C Source Code

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>

void lineBresenham(int X1,int Y1,int X2,int Y2);
void main()
{
 int gd=DETECT,gm;
 int x1,x2,y1,y2;

 initgraph(&gd,&gm,"c:\\tc\\bgi");

 printf("Enter Starting Point:");
 scanf("%d%d",&x1,&y1);
 printf("Enter End Point:");
 scanf("%d%d",&x2,&y2);

 lineBresenham(x1,y1,x2,y2);
 getch();
 closegraph();
}
void lineBresenham(int X1,int Y1,int X2,int Y2)
{
 int dX,dY,temp,swap,s1,s2,P,n;
 cleardevice();
 dX=abs(X2-X1);
 dY=abs(Y2-Y1);
 s1=(X2-X1)/dX;
 s2=(Y2-Y1)/dY;

 if(dY>dX)
  {
   temp=dX;
   dX=dY;
   dY=temp;
   swap=1;
  }
else
   swap=0;
n=1;
P=2*dY-dX;
do
  {
  putpixel(X1,Y1,4);

  if(P>=0)
    {
     X1=X1+s1;
     Y1=Y1+s2;
     P=P+2*(dY-dX);
    }
else
  {
    If(swap==1)
        Y1=Y1+s2;
    else
         X1=X1+s1;
     P=P+2*dY;
  }
  n=n+1;
 }while(n<=dX);
}
```

OUTPUT

```
Enter starting point : 60 30


Enter end point : 400 300
```



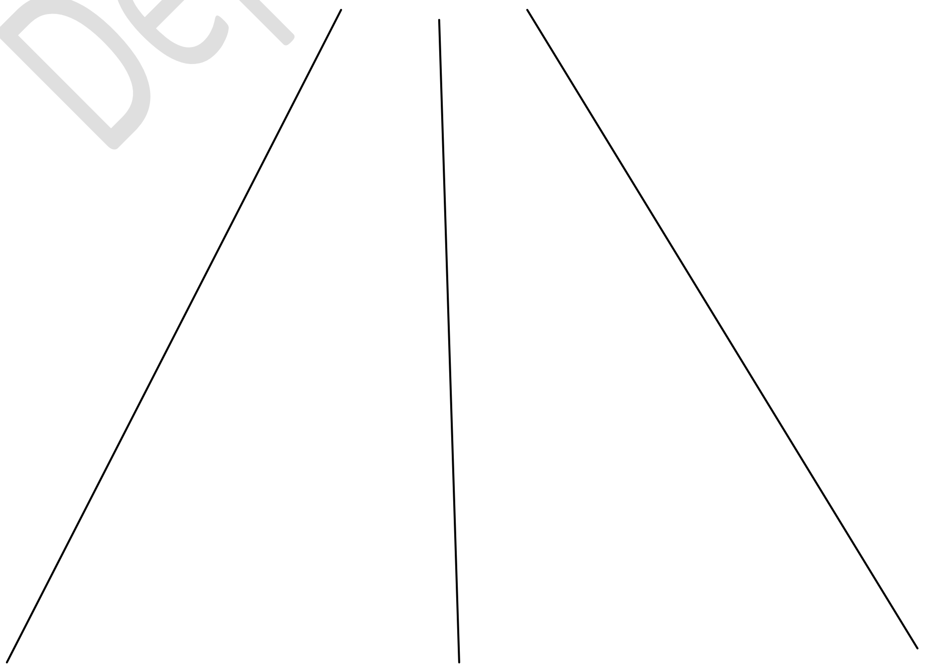
PROGRAM TO DRAW A MIRROR IMAGE OF A GIVEN LINE WITH RESPECT TO Y-AXIS

C Source Code

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void mir(int,int,int,int);
void main()
{
 int gdriver=DETECT,gmode,x1,x2,y1,y2;
 clrscr();
 printf("\n \t Enter starting co-ordinate:");
 scanf("%d%d",&x1,&y1);
 printf("\n \tEnter ending co-ordinate:");
 scanf("%d%d",&x2,&y2);
 initgraph(&gdriver,&gmode,"c:\\tc\\bgi");
 mir(x1,x2,y1,y2);
 getch();
}
void mir(int x1,int x2,int y1,int y2)
{
 int mX,mY;
 mX=getmaxx();
 mY=getmaxy();
 x1=x1%(mX/2);
 x2=x2%(mX/2);
 cleardevice();
 setcolor(1);

 line((mX/2),0,mX/2,mY) ;

 setcolor(11);

 line((mX/2)+x1,y1,(mX/2)+x2,y2);
 line((mX/2)-x1,y1,(mX/2)-x2,y2);
}
```

OUTPUT

```
Enter starting co-ordinate :- 100 30

Enter ending co-ordinate :- 300 400
```



PROGRAM TO DRAW A CIRCLE USING BRESENHAM'S CIRCLE DRAWING ALGORITHM

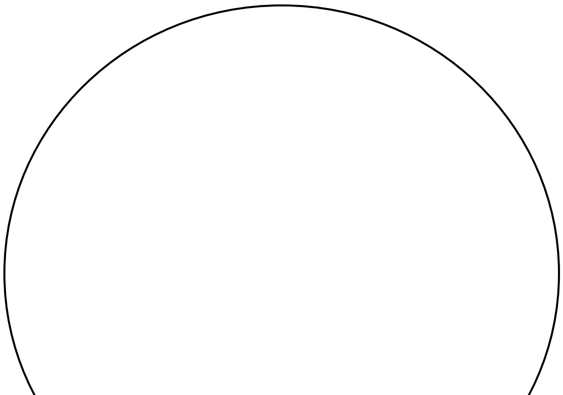
C source code

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<graphics.h>
void BresCircle(int,int,int);
void PutPixel(int,int,int,int);

void main()
{
 int gd=DETECT,gm;
 int Xc,Yc,R;
 initgraph(&gd,&gm,"c:\\tc\\bgi");

 printf("\n Enter the center of the circle:-");
 scanf("%d%d",&Xc,&Yc);

 printf("\n \t Enter the radius of the circle:-");
 scanf("%d",&R);

 BresCircle(Xc,Yc,R);

 getch();
 closegraph();
}

void BresCircle(int Xc,int Yc,int R)
{
int P,X,Y,col;

P=3-2*R;
X=0;
Y=R;
do
 {
  PutPixel(X,Y,Xc,Yc);
  X=X+1;
  if(P<0)
   {
    P=P+4*X+6;
   }
  else
   {
    Y=Y-1;
    P=P+4*(X-Y)+10;
   }
  }while(X<R/sqrt(2));
}
```

```
void PutPixel(int X,int Y,int Xc,int Yc)
 {
  putpixel(Xc+X,Yc+Y,3);
  putpixel(Xc+X,Yc-Y,3);
  putpixel(Xc-X,Yc+Y,3);
  putpixel(Xc-X,Yc-Y,3);
  putpixel(Xc+Y,Yc+X,3);
  putpixel(Xc+Y,Yc-X,3);
  putpixel(Xc-Y,Yc+X,3);
  putpixel(Xc-Y,Yc-X,3);
 }
```

OUTPUT

```
Enter the co-ordinate of the centre : 200 150

Enter the radius of the circle : 100
```



PROGRAM TO DRAW A CIRCLE USING MIDPOINT CIRCLE DRAWING ALGORITHM

C source code

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<graphics.h>
void circleMidPoint(int,int,int);

void main()
{
 int x,y,radius,gd=DETECT,gm;
 clrscr();
 initgraph(&gd,&gm,"c:\\tc\\bgi");
 printf("Enter the coordinate of the centre:-");
 scanf("%d%d",&x,&y);
 printf("Enter the radius of the circle:-");
 scanf("%d",&radius);
 circleMidPoint(x,y,radius);
 getch();
 closegraph();
}
void circleMidGraph(int Xc,int Yc,int R)
 {
  float X=0,Y=R;
  float P;

  do
   {
   putpixel(Xc+X,Yc+Y,3);
   putpixel(Xc-X,Yc+Y,3);
   putpixel(Xc+X,Yc-Y,3);
   putpixel(Xc-X,Yc-Y,3);
   putpixel(Xc+Y,Yc+X,3);
   putpixel(Xc-Y,Yc+X,3);
   putpixel(Xc+Y,Yc-X,3);
   putpixel(Xc-Y,Yc-X,3);

    ++X;
    P=pow(X,2)+pow((Y-0.5),2)-pow(R,2);
    if(P>=0)
    --Y;
   }while(X<Y);
 }
```

OUTPUT

```
Enter the co-ordinate of the centre : 200 150

Enter the radius of the circle : 100
```