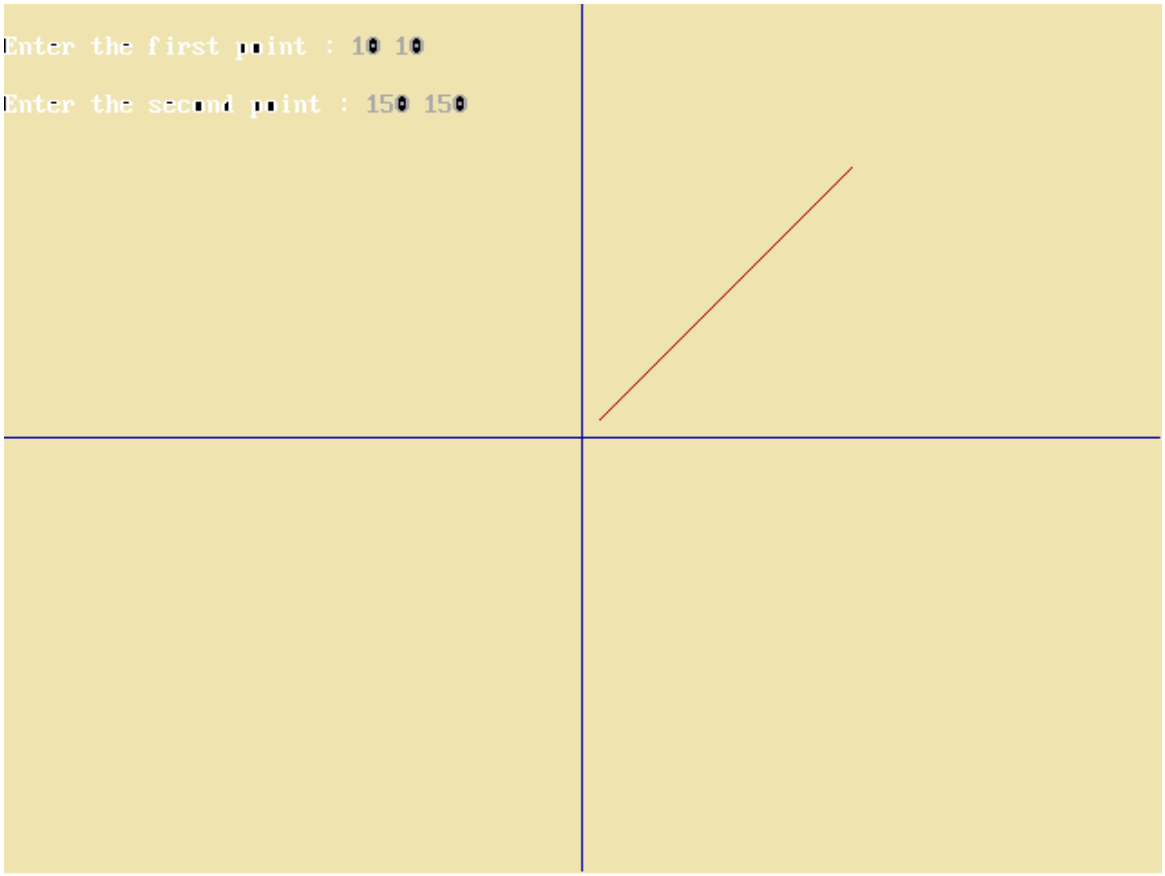
Date : …….....

Assignment : 01

Program : Write a Graphics program for DDA Line Drawing Algorithm.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
int xs, ys, xe, ye, dx, dy, x, y, i=1, span, m, n;
printf("\nEnter the first point : ");
scanf("%d%d",&xs,&ys);
printf("\nEnter the second point : ");
scanf("%d %d",&xe,&ye);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
if(abs(xe-xs)>=abs(ye-ys));
span=abs(ye-ys);
dx=(xe-xs)/span;
dy=(ye-ys)/span;
x=xs;
y=ys;
while(i<=span)
{
putpixel(m+x,n-y,RED);
x=x+dx;
y=y+dy;
i=i+1;
}
getch();
closegraph();
}
```

Output :



Teacher's Signature

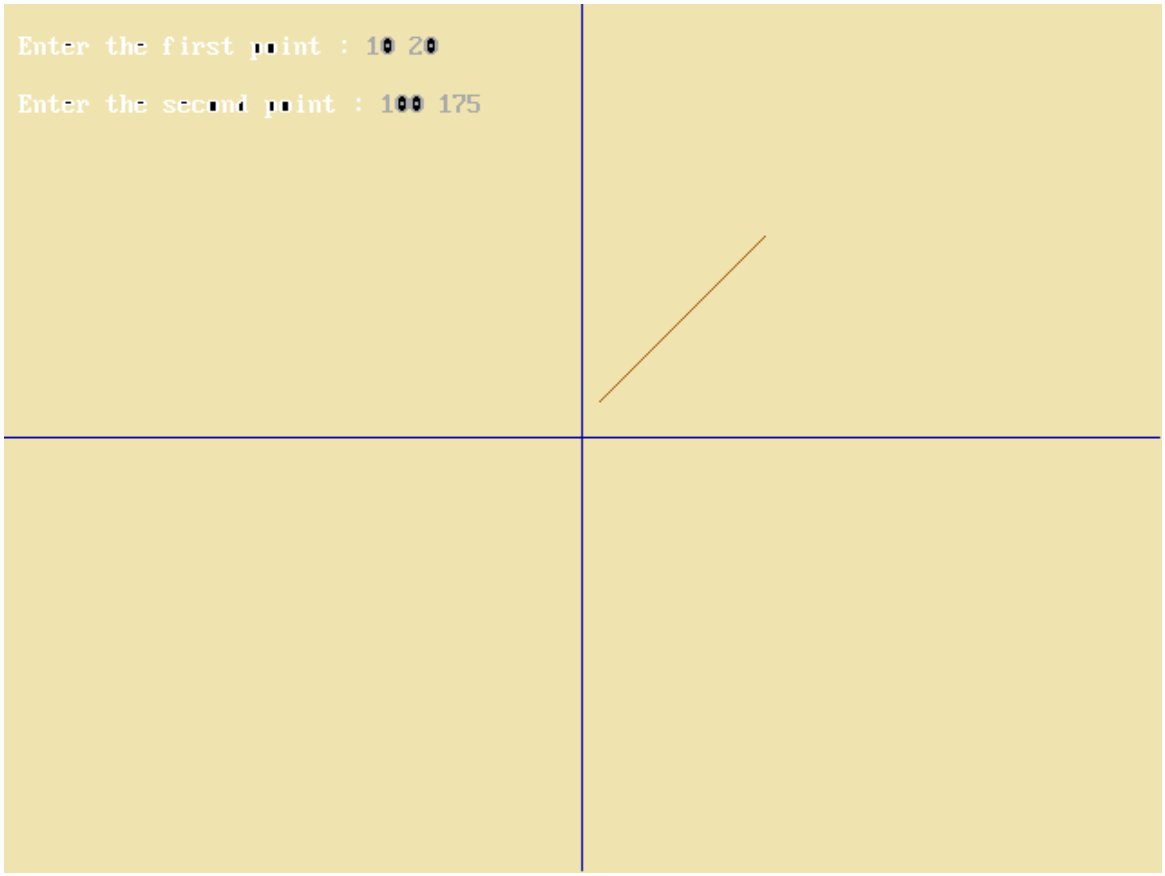
Date : …….....

Assignment : 02

Program : Write a Graphics program for Bresenham's Line Drawing Algorithm for m<1.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
int xs,ys,xe,ye,dx,dy,x,y,i,p,m,n;
setcolor(BLUE);
printf("\n Enter the first point : ");
scanf("%d%d",&xs,&ys);
printf("\n Enter the second point : ");
scanf("%d%d",&xe,&ye);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
dx=abs(xe-xs);
dy=abs(ye-ys);
x=xs;
y=ys;
p=2*dy-dx;
putpixel(x+m,n-y,6);
for(i=0;i<=dx;i++)
{
if(p<0)
{
x=x+1;
p=p+2*dy;
}
else
{
y=y+1;
x=x+1;
p=p+2*(dy-dx);
}
putpixel(m+x,n-y,6);
}
getch();
}
```

Output :



Teacher's Signature

Date : …….....

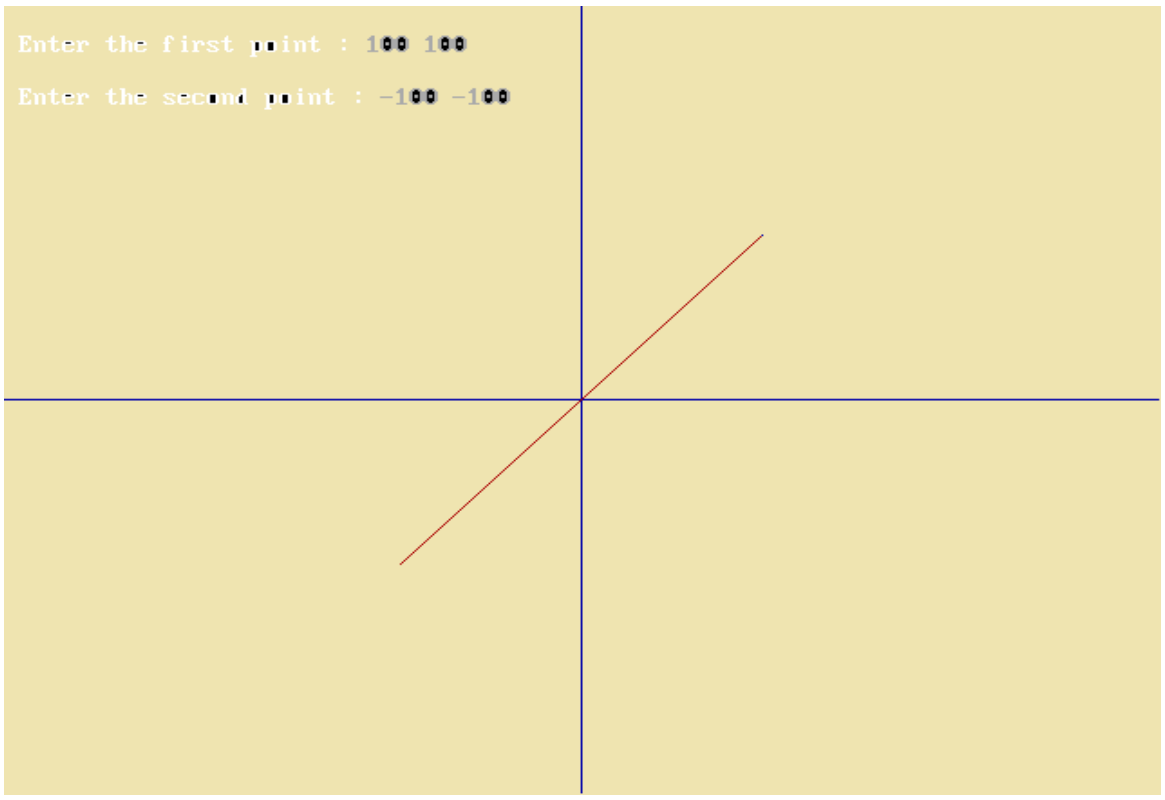
Assignment : 03

Program : Write a Graphics program for Generalized Bresenham's Line Drawing Algorithm.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
int sign(int z)
{
int k=z;
if(k==0)
return(0);
if(z=k/(abs(k))<0)
return(-1);
else
return(1);
}
int main()
{
int gd=DETECT,gm,m,n,i,t,swap;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
float xs,ys,xe,ye,dx,dy,x,y,p,s1,s2;
setcolor(BLUE);
printf("\n Enter the first point : ");
scanf("%f%f",&xs,&ys);
printf("\n Enter the second point : ");
scanf("%f%f",&xe,&ye);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
dx=abs(xe-xs);
dy=abs(ye-ys);
s1=sign(xe-xs);
s2=sign(ye-ys);
x=xs;
y=ys;
if(dy>dx)
{
t=dx;
dx=dy;
dy=t;
swap=1;
}
else
{
swap=0;
}
```

```
p=(2*dy)-dx;
putpixel(m+x,n-y,1);
i=1;
while(i<=dx)
{
if(p>=0)
{
x=x+s1;
y=y+s2;
p=p+2*(dy-dx);
}
else
{
if(swap==1)
y=y+s2;
else
x=x+s1;
}
p=p+(2*dy);
putpixel(m+x,n-y,RED);
i=i+1;
}
getch();
closegraph();
}
```

Output :



Teacher's Signature

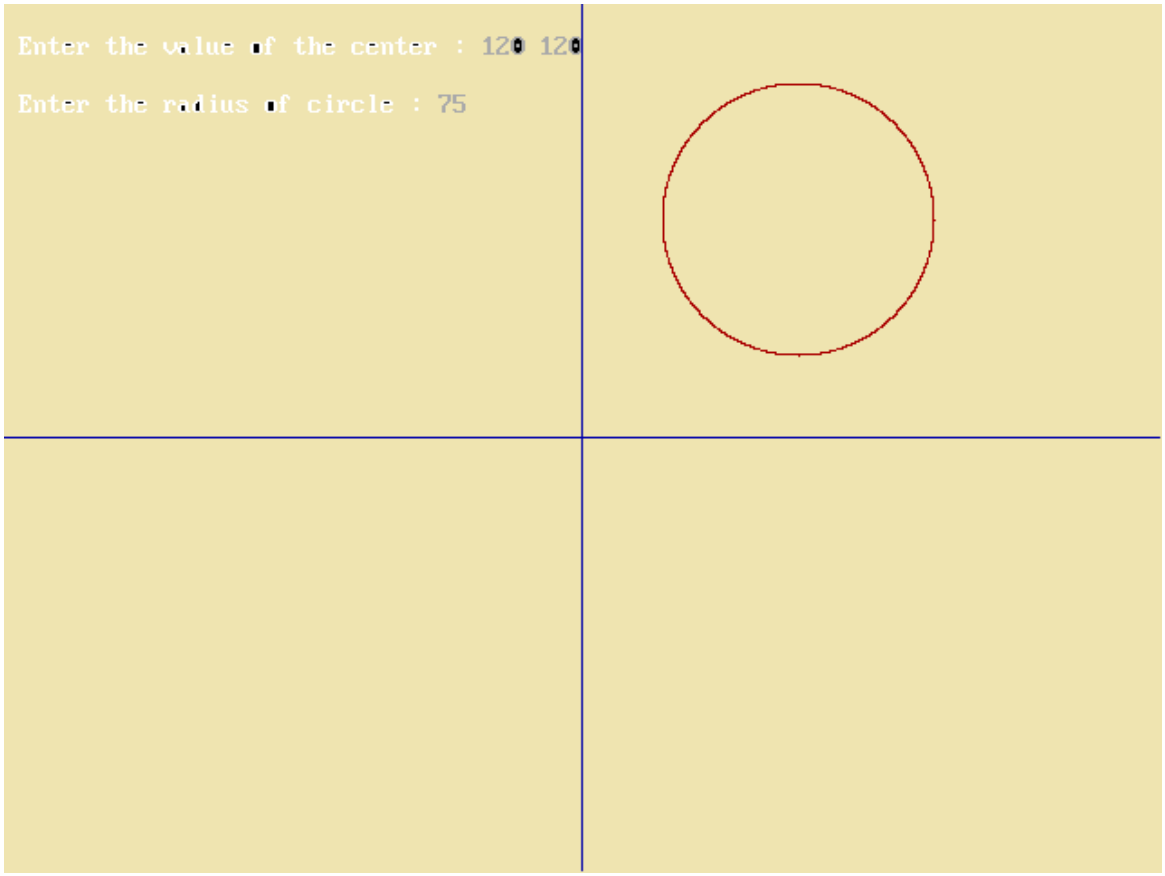
Date : …….....

Assignment : 04

Program : Write a Graphics program for Parametric Circle Drawing.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm,m,n,i,j,xc,yc,r;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
double c,x,y,d,s,m1;
setcolor(BLUE);
printf("\n Enter the value of the center : ");
scanf("%d%d",&xc,&yc);
printf("\n Enter the radius of circle : ");
scanf("%d",&r);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
d=1.0/(double)r;
d=(3.14*d)/180;
c=cos(d);
s=sin(d);
x=0;
y=r;
while((int)y>(int)x)
{
putpixel(int(m+xc+x),int(n-(yc+y)),4);
putpixel(int(m+xc+x),int(n-(yc+y)),4);
putpixel(int(m+xc-x),int(n-(yc-y)),4);
putpixel(int(m+xc-x),int(n-(yc-y)),4);
putpixel(int(m+xc+y),int(n-(yc+x)),4);
putpixel(int(m+xc+y),int(n-(yc-x)),4);
putpixel(int(m+xc-y),int(n-(yc+x)),4);
putpixel(int(m+xc-y),int(n-(yc-x)),4);
m1=x;
x=(x*c)-(y*s);
y=(y*c)+(m1*s);
}
getch();
cleardevice();
}
```

Output :



Teacher's Signature

Date : …….....

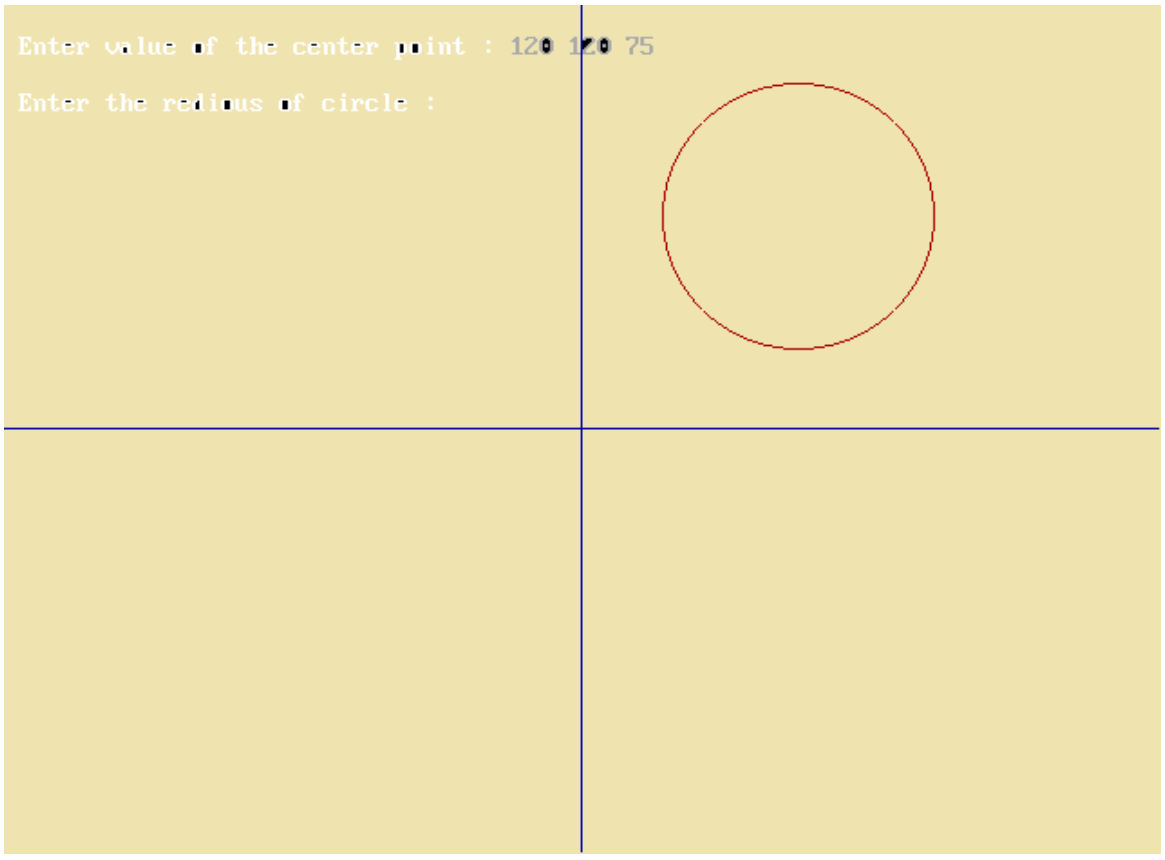
Assignment : 05

Program : Write a Graphics program for Bresenham's Circle Drawing Algorithm.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT, gm,xc,yc,r,n,m,u,dD,x,y;
clrscr();
initgraph(&gd,&gm,"C:\\TURBOC3\\BGI");
setcolor(BLUE);
printf("\n Enter value of the center point : ");
scanf("%d%d",&xc,&yc);
printf("\n Enter the redious of circle : ");
scanf("%d",&r);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,m*2,n);
x=0;
y=r;
dD=2*(1-r);
while(y>x)
{
putpixel(int(m+xc+x),int(n-(yc+y)),4);
putpixel(int(m+xc+x),int(n-(yc-y)),4);
putpixel(int(m+xc-x),int(n-(yc+y)),4);
putpixel(int(m+xc-x),int(n-(yc-y)),4);
putpixel(int(m+xc+y),int(n-(yc+x)),4);
putpixel(int(m+xc+y),int(n-(yc-x)),4);
putpixel(int(m+xc-y),int(n-(yc+x)),4);
putpixel(int(m+xc-y),int(n-(yc-x)),4);
if(dD<0)
{
u=2*dD+2*y-1;
if(u<=0)
{
x=x+1;
dD=dD+2*x+1;
}
else
{
x=x+1;
y=y-1;
dD=dD+2*x-2*y+2;
}
}
```

```
else if(dD>0)
{
u=2*x-2*dD+1;
if(u<0)
{
y=y-1;
dD=dD-2*y+1;
}
else
{
x=x+1;
y=y-1;
dD=dD+2*x-2*y+2;
}
}
else
{
x=x+1;
y=y-1;
dD=dD+2*x-2*y+2;
}
}
getch();
}
```

Output :



Teacher's Signature

Date : …….....

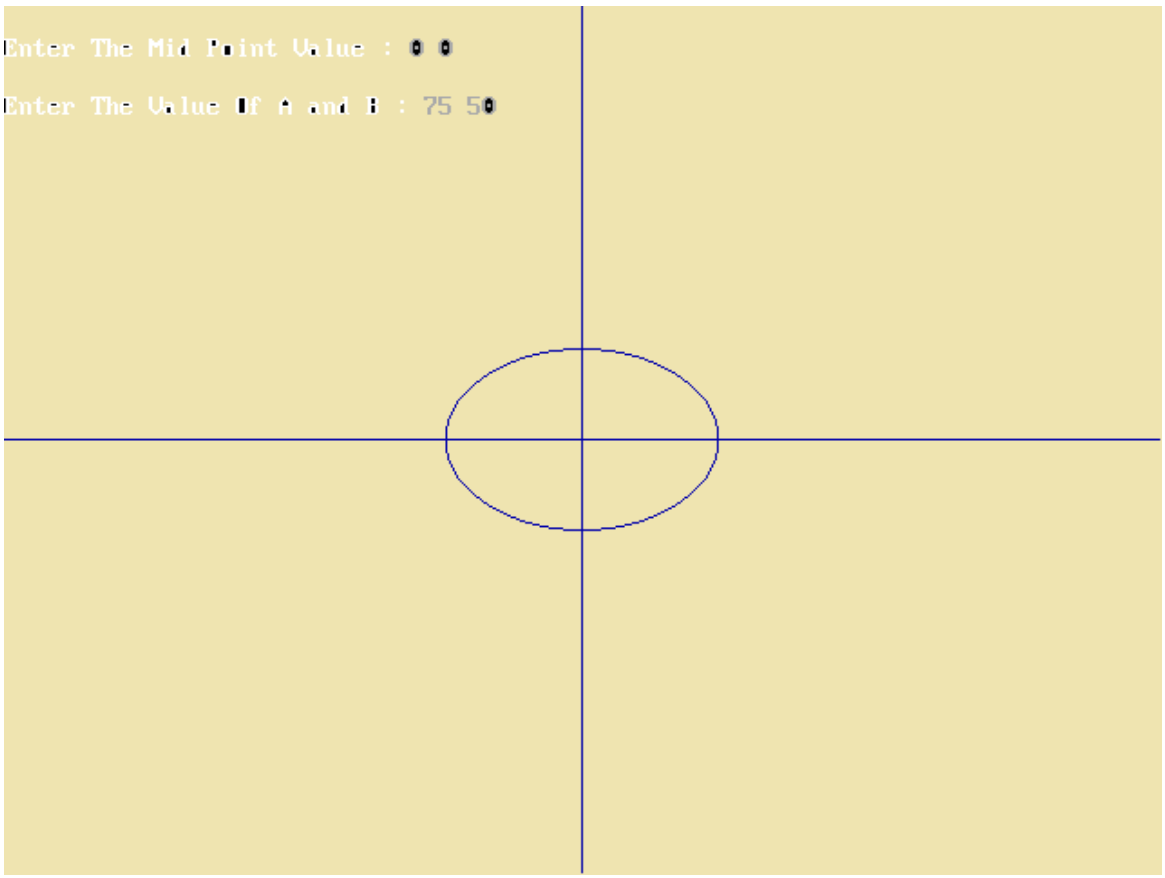
Assignment : 06

Program : Write a Graphics program for Midpoint method for Drawing Ellipse.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\bgi");
setcolor(BLUE);
long a,b,xc,yc,m,n;
long x,y,fx,fy,p;
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
printf("\nEnter The Mid Point Value : ");
scanf("%ld %ld",&xc,&yc);
printf("\nEnter The Value Of A and B : ");
scanf("%ld%ld",&a,&b);
x=0;
y=b;
fx=0;
fy=2*(a*a)*b;
p=(b*b)-b*(a*a)+(a*a)/4;
putpixel((m+xc+x),(n-(yc+y)),1);
putpixel((m+(xc-x)),(n-(yc+y)),1);
putpixel((m+(xc+x)),(n-(yc-y)),1);
putpixel((m+(xc-x)),(n-(yc-y)),1);
while(fx<fy)
{
x=x+1;
fx=fx+2*(b*b);
if(p>=0)
{
y=y-1;
fy=fy-2*(a*a);
}
if(p<0)
p=p+(b*b)+fx;
else
p=p+(b*b)+fx-fy;
putpixel((m+xc+x),(n-(yc+y)),1);
putpixel((m+(xc-x)),(n-(yc+y)),1);
putpixel((m+(xc+x)),(n-(yc-y)),1);
putpixel((m+(xc-x)),(n-(yc-y)),1);
}
p=(b*b)*((x+1/2)*(x+1/2))+((a*a)*((y-1)*(y-1)))-((a*a)*(b*b));
```

```
while(y>0)
{
y=y-1;
fy=fy-2*(a*a);
if(p<0)
{
x=x+1;
fx=fx+2*(b*b);
}
if(p>=0)
p=p+(a*a)-fy;
else
p=p+(a*a)-fy+fx;
putpixel((m+xc+x),(n-(yc+y)),1);
putpixel((m+(xc-x)),(n-(yc+y)),1);
putpixel((m+(xc+x)),(n-(yc-y)),1);
putpixel((m+(xc-x)),(n-(yc-y)),1);
}
getch();
closegraph();
}
```

Output :



Teacher's Signature

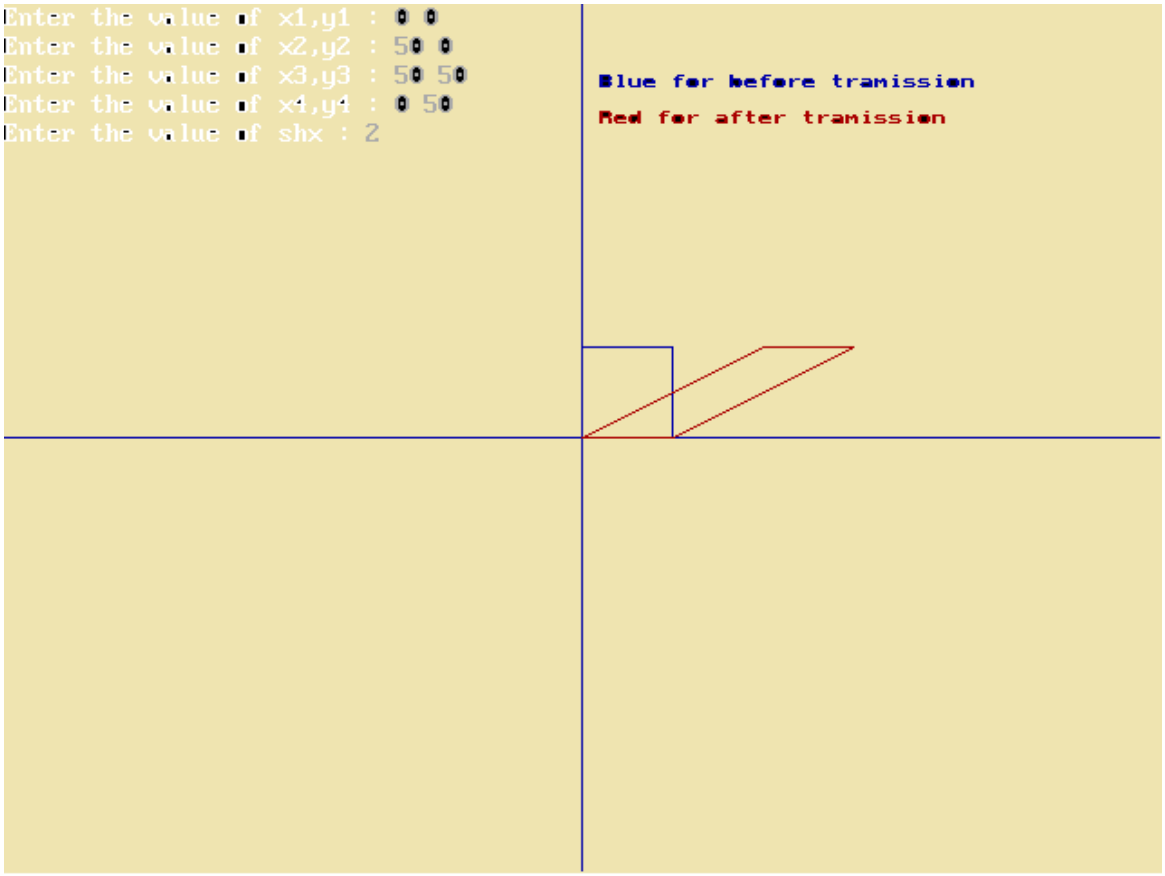
Date : …….....

Assignment : 07

Program : Write a Graphics program for Transformation of Co-Ordinate System.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
int x1,x2,x11,x22,x3,x4,x33,x44,y1,y2,y3,y4,y11,y22,y33,y44,tx,ty,shx,m,n;
printf("Enter the value of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the value of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the value of x3,y3 : ");
scanf("%d%d",&x3,&y3);
printf("Enter the value of x4,y4 : ");
scanf("%d%d",&x4,&y4);
printf("Enter the value of shx : ");
scanf("%d",&shx);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
setcolor(BLUE);
outtextxy(m+10,n-200,"Blue for before tramission");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x4,n-y4);
line(m+x4,n-y4,m+x1,n-y1);
x11=x1+shx*y1;
x22=x2+shx*y2;
x33=x3+shx*y3;
x44=x4+shx*y4;
y11=y1;
y22=y2;
y33=y3;
y44=y4;
setcolor(RED);
outtextxy(m+10,n-180,"Red for after tramission");
line(m+x11,n-y11,m+x22,n-y22);
line(m+x22,n-y22,m+x33,n-y33);
line(m+x33,n-y33,m+x44,n-y44);
line(m+x44,n-y44,m+x11,n-y11);
getch();
}
```

Output :



Teacher's Signature

Date : …….....

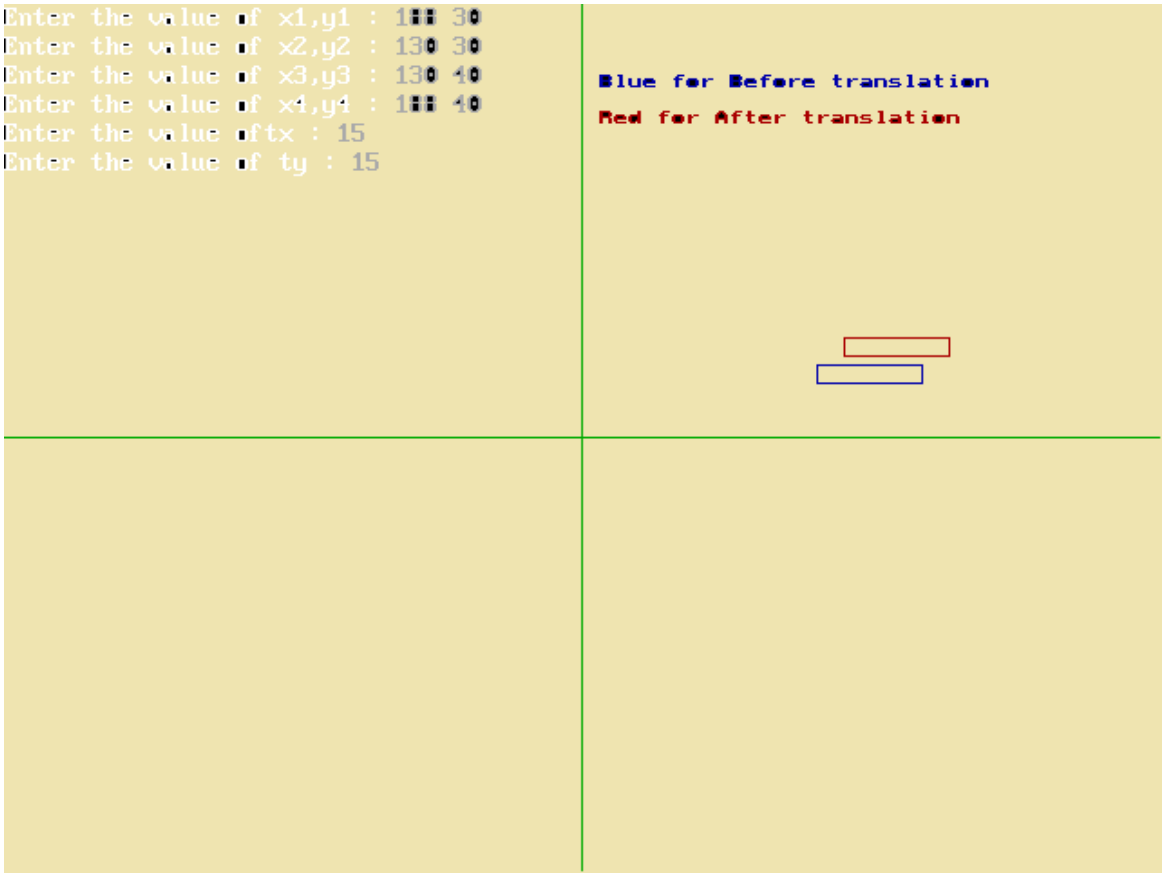
Assignment : 08

Program : Write a Graphics program for Translation of a Rectangle.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
void main()
{
int gd=DETECT,gm;
int x1,x2,y1,y2,x11,x22,y11,y22,x3,y3,x4,y4,x33,y33,x44,y44,m,n;
float tx,ty;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
printf("Enter the value of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the value of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the value of x3,y3 : ");
scanf("%d%d",&x3,&y3);
printf("Enter the value of x4,y4 : ");
scanf("%d%d",&x4,&y4);
printf("Enter the value oftx : ");
scanf("%f",&tx);
printf("Enter the value of ty : ");
scanf("%f",&ty);
setcolor(GREEN);
m=getmaxx()/2;
n=getmaxy()/2;
line(0,n,2*m,n);
line(m,0,m,2*n);
setcolor(BLUE);
outtextxy(m+10,n-200,"Blue for Before translation");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x4,n-y4);
line(m+x4,n-y4,m+x1,n-y1);
x11=x1+tx;
x22=x2+tx;
x33=x3+tx;
x44=x4+tx;
y11=y1+ty;
y22=y2+ty;
y33=y3+ty;
y44=y4+ty;
setcolor(RED);
outtextxy(m+10,n-180,"Red for After translation");
line(m+x11,n-y11,m+x22,n-y22);
line(m+x22,n-y22,m+x33,n-y33);
line(m+x33,n-y33,m+x44,n-y44);
line(m+x44,n-y44,m+x11,n-y11);
```

```
getch();
closegraph();
}
```

Output :



Teacher's Signature

Date : …….....

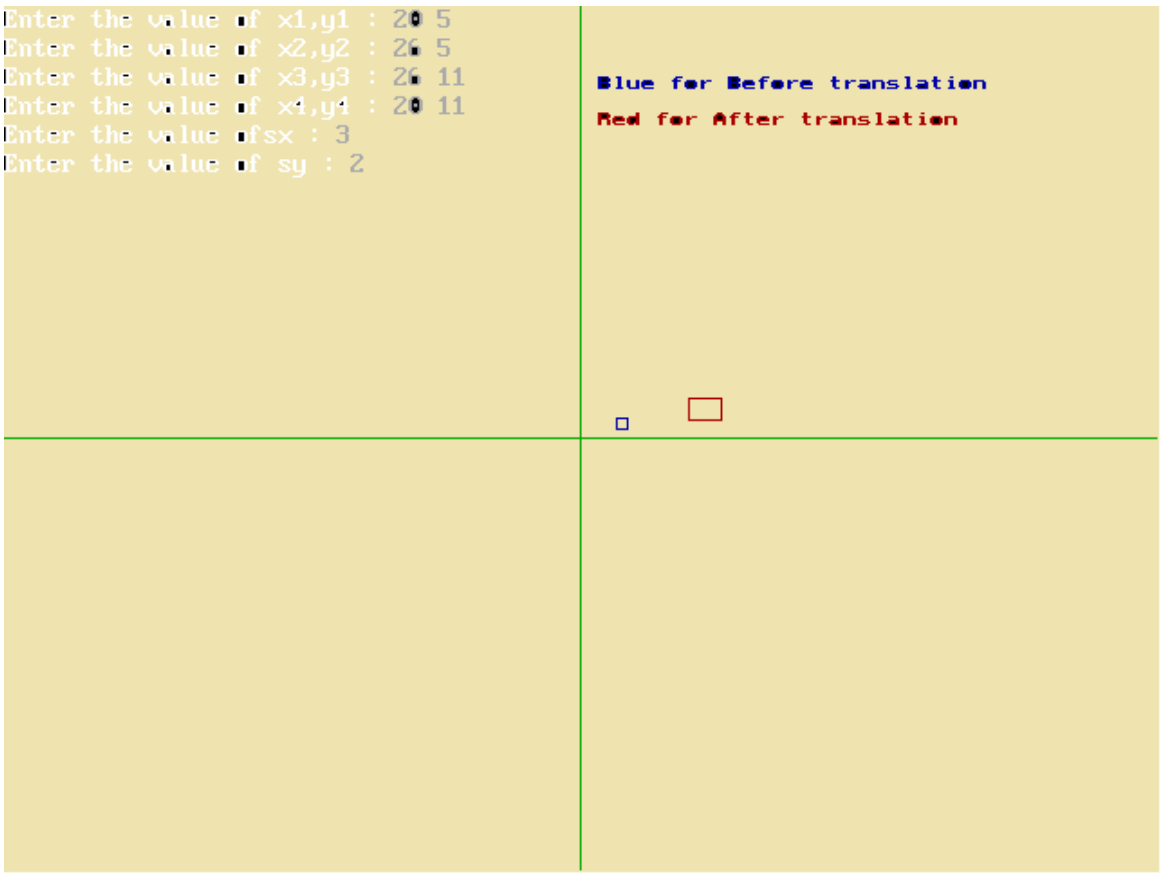
Assignment : 09

Program : Write a Graphics program for Scaling of a Rectangle.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
void main()
{
int gd=DETECT,gm;
int x1,x2,y1,y2,x11,x22,y11,y22,x3,y3,x4,y4,x33,y33,x44,y44,m,n;
float sx,sy;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
printf("Enter the value of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the value of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the value of x3,y3 : ");
scanf("%d%d",&x3,&y3);
printf("Enter the value of x4,y4 : ");
scanf("%d%d",&x4,&y4);
printf("Enter the value ofsx : ");
scanf("%f",&sx);
printf("Enter the value of sy : ");
scanf("%f",&sy);
setcolor(GREEN);
m=getmaxx()/2;
n=getmaxy()/2;
line(0,n,2*m,n);
line(m,0,m,2*n);
setcolor(BLUE);
outtextxy(m+10,n-200,"Blue for Before translation");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x4,n-y4);
line(m+x4,n-y4,m+x1,n-y1);
x11=x1*sx;
x22=x2*sx;
x33=x3*sx;
x44=x4*sx;
y11=y1*sy;
y22=y2*sy;
y33=y3*sy;
y44=y4*sy;
setcolor(RED);
outtextxy(m+10,n-180,"Red for After translation");
line(m+x11,n-y11,m+x22,n-y22);
line(m+x22,n-y22,m+x33,n-y33);
line(m+x33,n-y33,m+x44,n-y44);
line(m+x44,n-y44,m+x11,n-y11);
```

```
getch();
closegraph();
}
```

Output :



Teacher's Signature

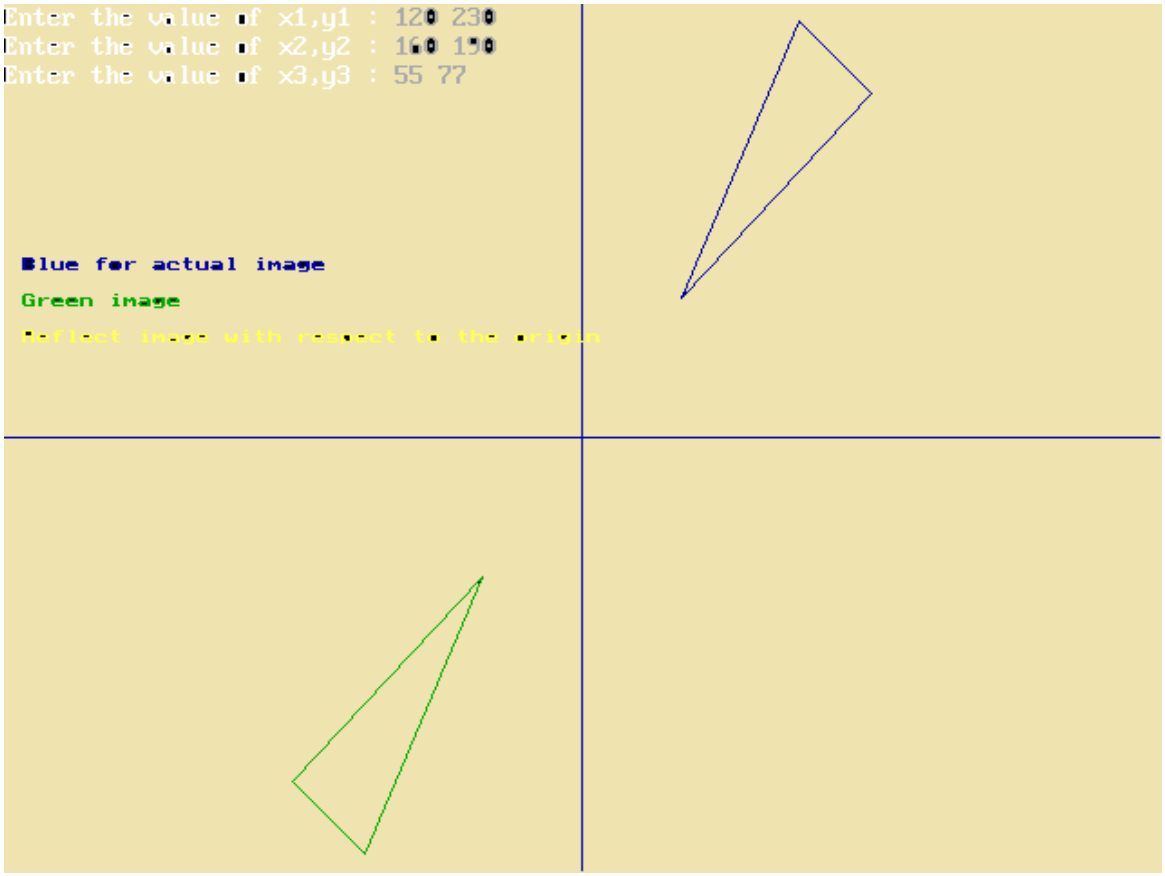
Date : …….....

Assignment : 10

Program : Write a Graphics program for Reflection of a triangle with respect to the origin.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
int x1,x2,x3,y1,y2,y3,m,n;
printf("Enter the value of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the value of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the value of x3,y3 : ");
scanf("%d%d",&x3,&y3);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
setcolor(BLUE);
outtextxy(10, 140,"Blue for actual image");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x1,n-y1);
setcolor(GREEN);
outtextxy(10, 160,"Green image");
line(m-x1,n+y1,m-x2,n+y2);
line(m-x2,n+y2,m-x3,n+y3);
line(m-x3,n+y3,m-x1,n+y1);
setcolor(YELLOW);
outtextxy(10, 180,"Reflect image with respect to the origin");
getch();
}
```

Output :



Teacher's Signature

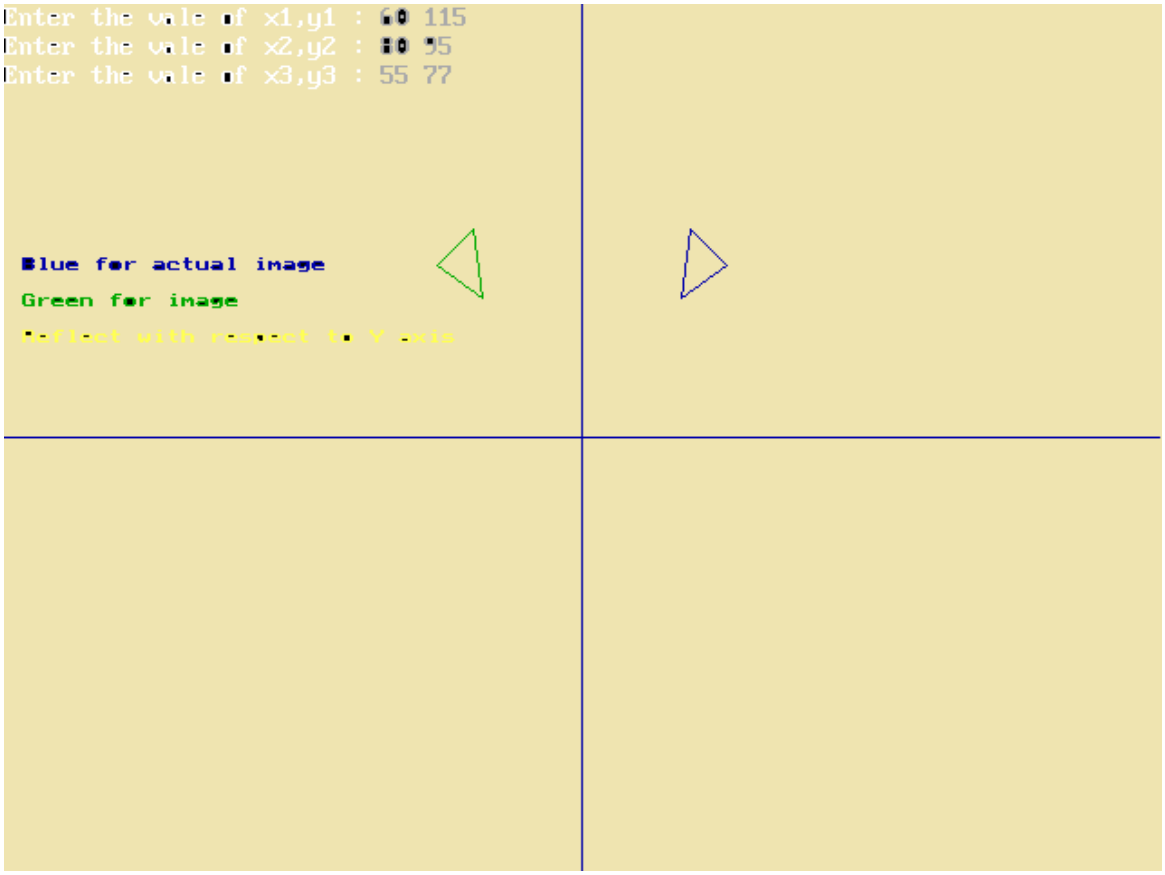
Date : …….....

Assignment : 11

Program : Write a Graphics program for Reflection of a triangle with respect to the Y axis.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
int x1,x2,x3,y1,y2,y3,m,n;
printf("Enter the vale of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the vale of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the vale of x3,y3 : ");
scanf("%d%d",&x3,&y3);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
setcolor(BLUE);
outtextxy(10,140,"Blue for actual image");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x1,n-y1);
x1=-x1;x2=-x2;x3=-x3;
setcolor(GREEN);
outtextxy(10,160,"Green for image");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x3,n-y3,m+x1,n-y1);
setcolor(YELLOW);
outtextxy(10,180,"Reflect with respect to Y axis");
getch();
}
```

Output :



Teacher's Signature

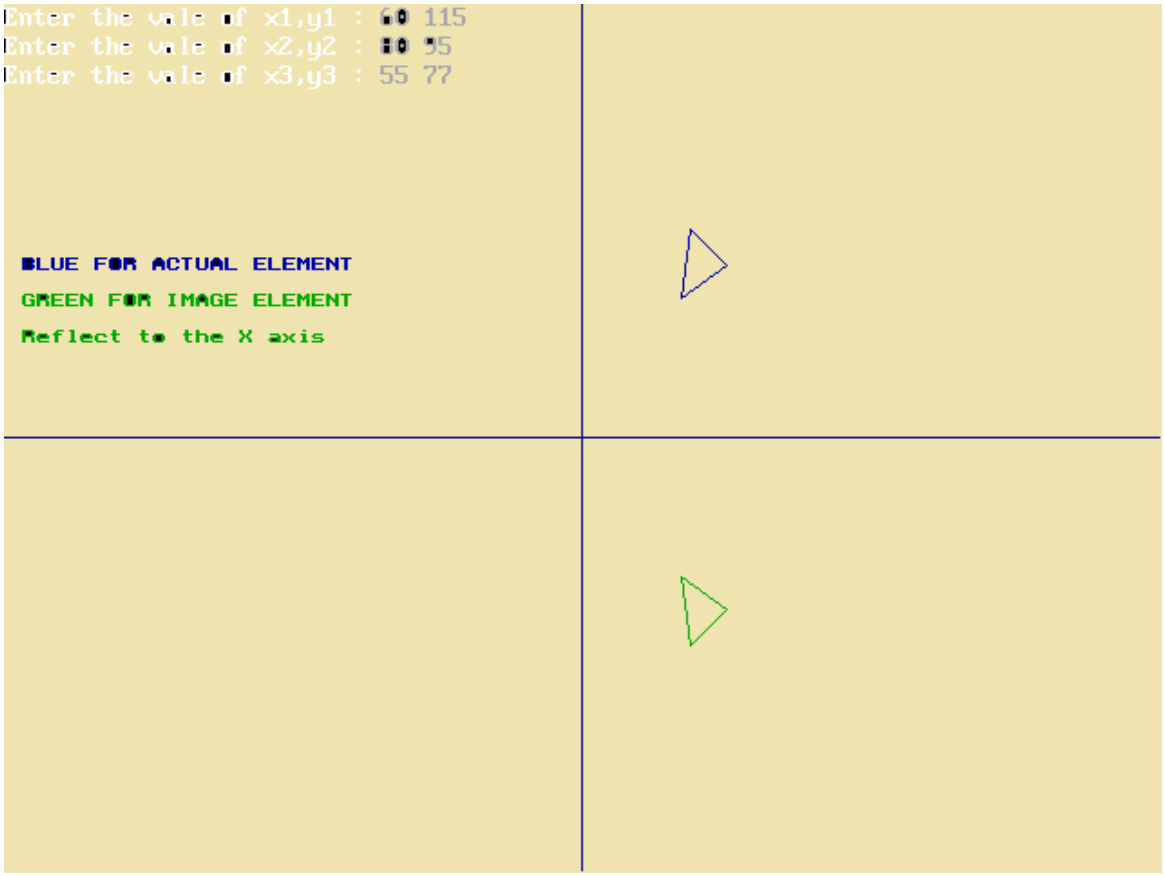
Date : …….....

Assignment : 12

Program : Write a Graphics program for Reflection of a triangle with respect to the X axis.

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<math.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"c:\\Turboc3\\BGI");
setcolor(BLUE);
int x1,x2,x3,y1,y2,y3,m,n;
printf("Enter the vale of x1,y1 : ");
scanf("%d%d",&x1,&y1);
printf("Enter the vale of x2,y2 : ");
scanf("%d%d",&x2,&y2);
printf("Enter the vale of x3,y3 : ");
scanf("%d%d",&x3,&y3);
m=getmaxx()/2;
n=getmaxy()/2;
line(m,0,m,n*2);
line(0,n,2*m,n);
setcolor(BLUE);
outtextxy(10,140,"BLUE FOR ACTUAL ELEMENT");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x1,n-y1,m+x3,n-y3);
y1=-y1;
y2=-y2;
y3=-y3;
setcolor(GREEN);
outtextxy(10,160,"GREEN FOR IMAGE ELEMENT");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x1,n-y1,m+x3,n-y3);
outtextxy(10,180,"Reflect to the X axis");
getch();
}
```

Output :



Teacher's Signature

Date : …….....

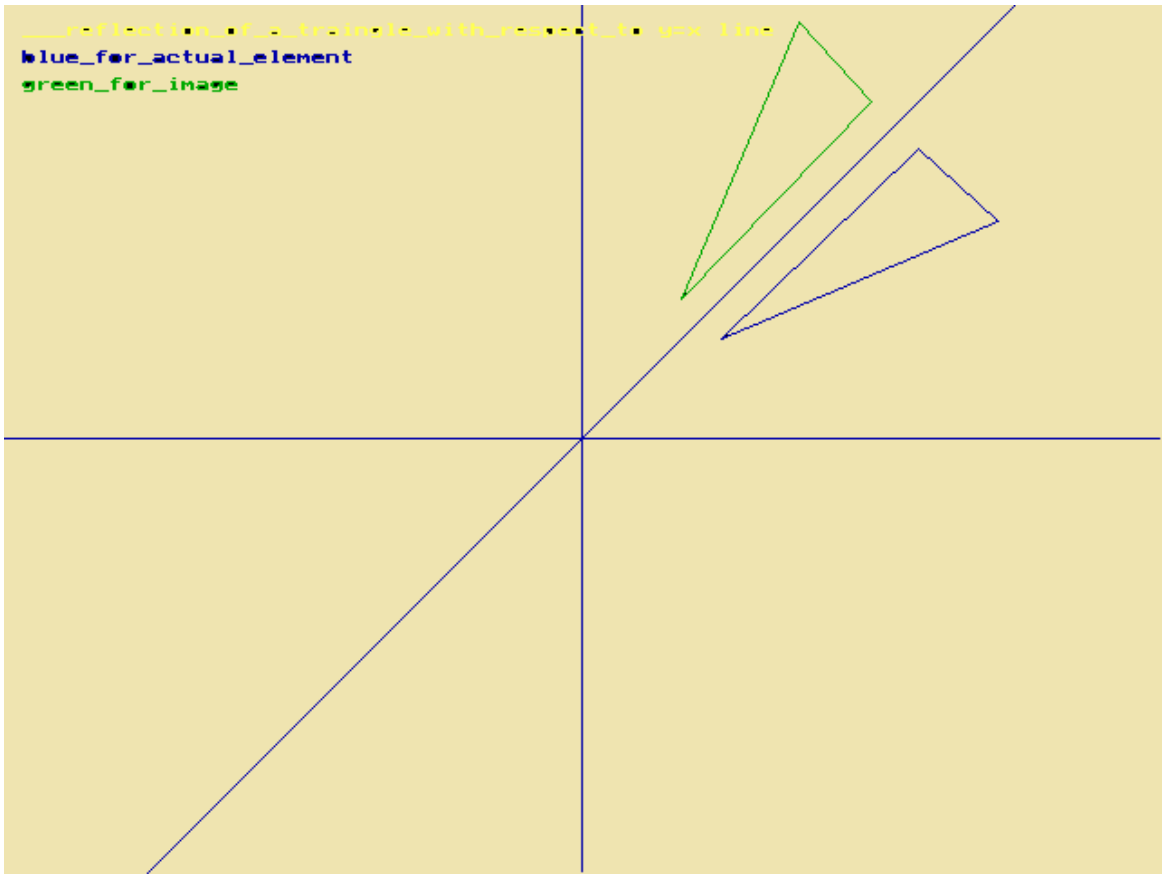
Assignment : 13

Program : Write a Graphics program for Reflection of a triangle with respect to Y=X line.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<graphics.h>
int main()
{
int gd=DETECT,gm,x1,y1,x2,y2,x3,y3,m,n;
clrscr();
printf("You can reflect a traingle with respect to y=x line:");
printf("\nEnter the first point : ");
scanf("%d%d", &x1, &y1);
printf("Enter the second point : ");
scanf("%d%d", &x2, &y2);
printf("Enter the third point : ");
scanf("%d%d", &x3, &y3);
initgraph(&gd,&gm,"c:\\Turboc3\\bgi");
setcolor(BLUE);
m=getmaxx()/2;
n=getmaxy()/2;
line(0,n,2*m,n);
line(m,0,m,2*n);
line(m-300,n+300,m+300,n-300);
setcolor(GREEN);
outtextxy(10,40,"green_for_image");
line(m+x1,n-y1,m+x2,n-y2);
line(m+x2,n-y2,m+x3,n-y3);
line(m+x1,n-y1,m+x3,n-y3);
setcolor(BLUE);
outtextxy(10,25,"blue_for_actual_element");
line(m+y1,n-x1,m+y2,n-x2);
line(m+y2,n-x2,m+y3,n-x3);
line(m+y1,n-x1,m+y3,n-x3);
setcolor(YELLOW);
outtextxy(10,10,"___reflection_of_a_traingle_with_respect_to y=x line");
getch();
closegraph;
return 0;
}
```

Output :

```
You can reflect a traingle with respect to y=x line:
Enter the first point : 120 230
Enter the second point : 160 186
Enter the third point : 55 77_
```



Teacher's Signature

Date : …….....

Assignment : 14

Program : Write a Graphics program for Rotation of a straight line with respect to the pole.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<graphics.h>
int main()
{
int gd=DETECT,gm,x,y,m,n;
float x1,y1,angle;
clrscr();
printf("You can reflect a traingle with respect to the origin:");
printf("\nEnter the point : ");
scanf("%d%d", &x, &y);
printf("Enter the angle to be rotate : ");
scanf("%f", &angle);
angle=angle*3.14/180;
initgraph(&gd,&gm,"c:\\Turboc3\\bgi");
m=getmaxx()/2;
n=getmaxy()/2;
setcolor(WHITE);
line(0,n,2*m,n);
line(m,0,m,2*n);
setcolor(YELLOW);
outtextxy(10,10,"Rotation_of_a_straight_line_reespect_to_pople");
setcolor(BLUE);
line(m,n,m+x,n-y);
outtextxy(m+x,n-y,"initial_line");
x1=x*cos(angle)-y*sin(angle);
y1=x*sin(angle)+y*cos(angle);
setcolor(GREEN);
line(m,n,m+x1,n-y1);
outtextxy(m+x1,n-y1,"destination_line");
getch();
closegraph;
return 0;
}
```

Output :

```
You can reflect a traingle with respect to the origin:
Enter the point : 100 150
Enter the angle to be rotate : 10
```

Teacher's Signature

Date : …….....

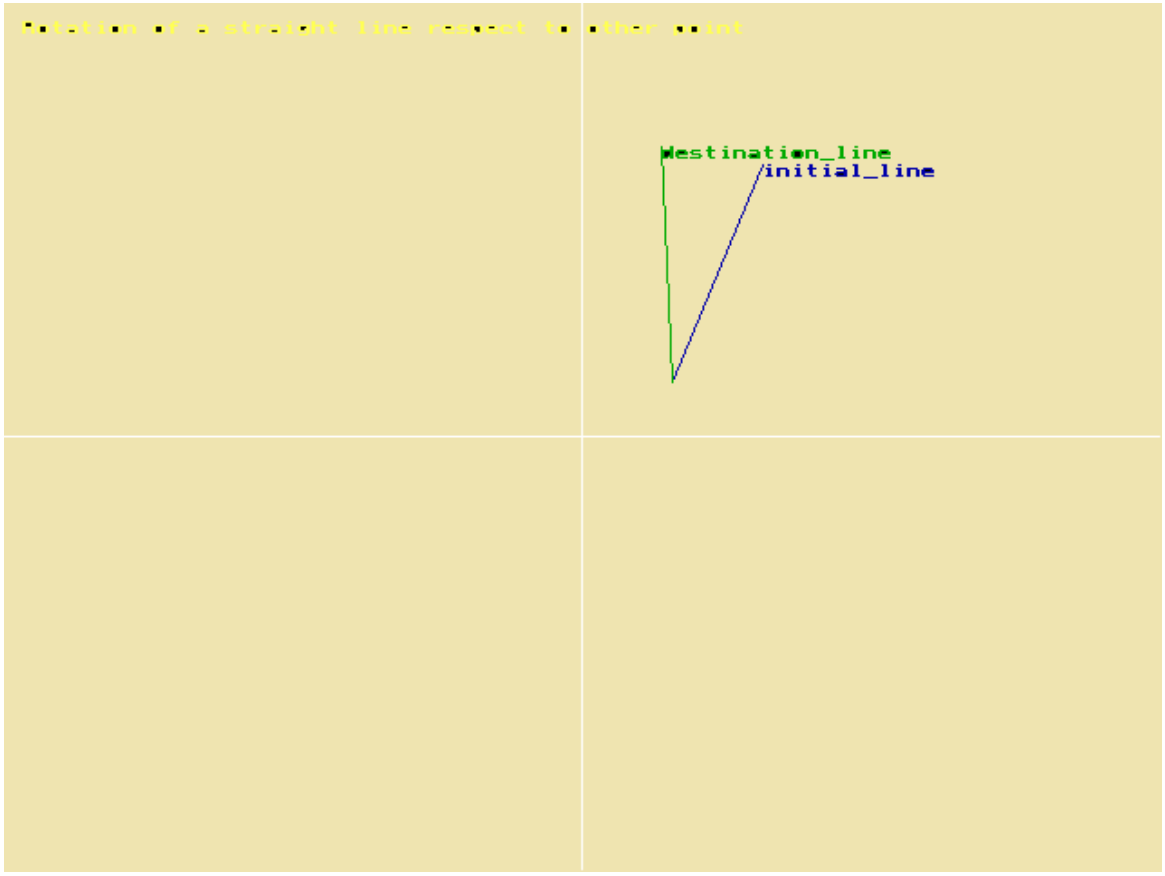
Assignment : 15

Program : Write a Graphics program for Rotation of a straight line with respect to a pole in other point.

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<graphics.h>
int main()
{
int gd=DETECT,gm,xf,yf,x,y,m,n;
float x1,y1,angle;
clrscr();
printf("\n enter the initial point:>");
scanf("%d%d",&xf,&yf);
printf("\n enter the top point:>");
scanf("%d%d",&x,&y);
printf("enter the angle to be rotate:>");
scanf("%f",&angle);
angle=angle*3.14/180;
initgraph(&gd,&gm,"c:\\turboc3\\bgi");
m=getmaxx()/2;
n=getmaxy()/2;
setcolor(WHITE);
line(0,n,2*m,n);
line(m,0,m,2*n);
setcolor(YELLOW);
outtextxy(10,10,"Rotation of a straight line respect to other point");
setcolor(BLUE);
line(m+xf,n-yf,m+x,n-y);
outtextxy(m+x,n-y,"initial_line");
x1=xf+(x-xf)*cos(angle)-(y-yf)*sin(angle);
y1=yf+(x-xf)*sin(angle)+(y-yf)*cos(angle);
setcolor(GREEN);
line(m+xf,n-yf,m+x1,n-y1);
outtextxy(m+x1,n-y1,"destination_line");
getch();
closegraph;
return 0;
}
```

Output :

```
Enter the initial point : 50 30
Enter the top point : 100 150
Enter the angle to be rotate : 25
```



Teacher's Signature