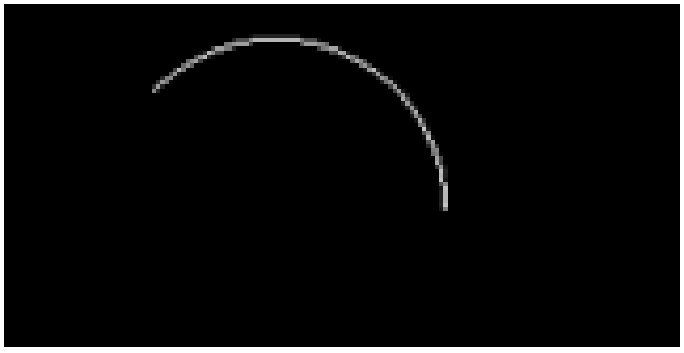
Practical – 1

Aim: Study and enlist the basic functions used for graphics in C language

Arc Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
arc(100,100,0,135,50);
getch();
closegraph();
}
```

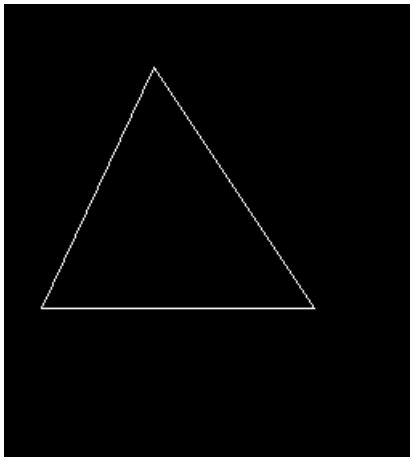
Output:



Drawpoly Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm,points[]={320,150,420,300,250,300,320,150};
initgraph(&gd,&gm,"C:\\TC\\BGI");
drawpoly(4,points);
getch();
closegraph();
}
```

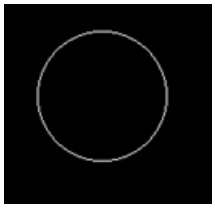
Output:



Circle Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
circle(100,100,50);
getch();
closegraph();
}
```

Output:



Cleardevice Function in C:

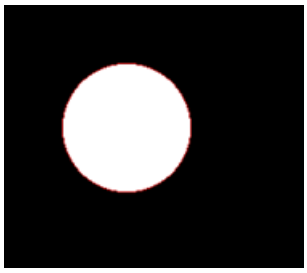
```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
outtext("press any key to clear screen");
getch();
cleardevice();
outtext("press any key to exit");
getch();
closegraph();
}
```

Output:

Floodfill Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
setcolor(RED);
circle(100,100,50);
floodfill(100,100,RED);
getch();
closegraph();
}
```

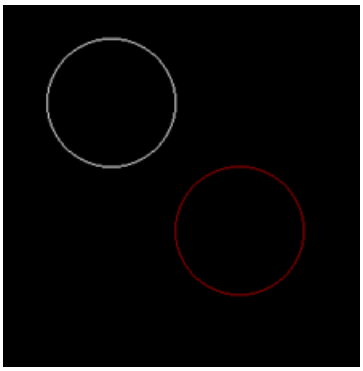
Output:



Setcolor Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
circle(100,100,50);
setcolor(RED);
circle(200,200,50);
getch();
closegraph();
}
```

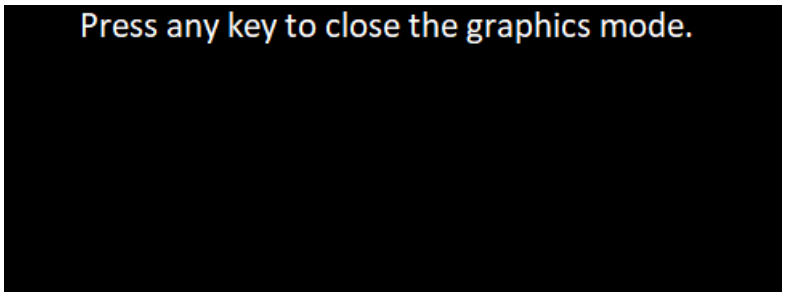
Output:



Drawpoly Function in C:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
outtext("Press any key to close the graphics mode.");
getch();
closegraph();
}
```

Output:



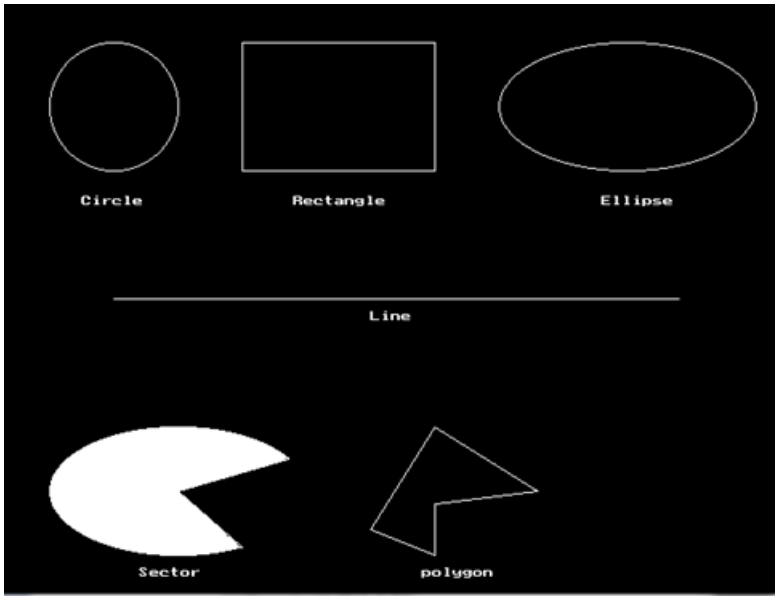
Practical – 2(A)

Aim: To draw circle, rectangle, ellipse, sector and polygon on a screen.

Source Code:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
int poly[12]={350,450,350,410,430,400,350,350,300,430,350,450};
initgraph(&gd,&gm,"C:\\TC\\BGI");
circle(100,100,50);
outtextxy(75,170,"Circle");
rectangle(200,50,350,150);
outtextxy(240,170,"Rectangle");
ellipse(500,100,0,360,100,50);
outtextxy(480,170,"Ellipse");
line(100,250,540,250);
outtextxy(300,260,"Line");
sector(150,400,30,300,100,50);
outtextxy(120,460,"Sector");
drawpoly(6,poly);
outtextxy(340,460,"polygon");
getch();
closegraph();
}
```

Output:



Practical – 2(B)

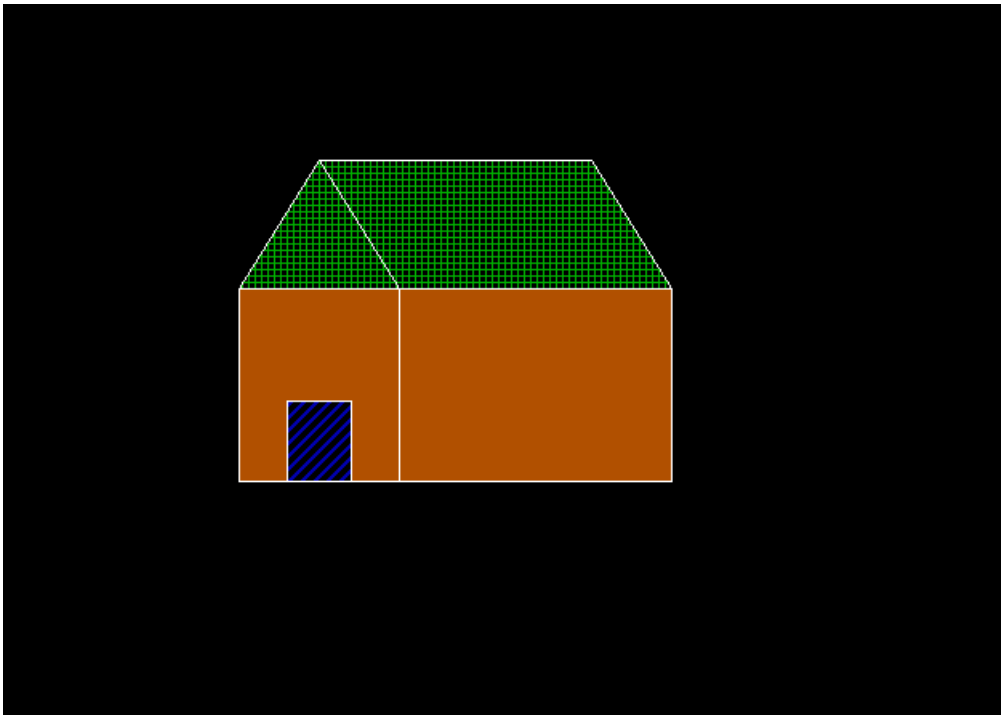
Aim: Draw a simple hut on the screen.

Source Code:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
setcolor(WHITE);
rectangle(150,180,250,300);
rectangle(250,180,420,300);
rectangle(180,250,220,300);
line(200,100,150,180);
line(200,100,250,180);
line(200,100,150,100);
line(370,100,420,180);
setfillstyle(SOLID_FILL,BROWN);
floodfill(152,182,WHITE);
floodfill(252,182,WHITE);
setfillstyle(SLASH_FILL,BLUE);
floodfill(182,252,WHITE);
setfillstyle(HATCH_FILL,GREEN);
floodfill(200,105,WHITE);
floodfill(210,105,WHITE);
getch();
```

```
closegraph();
}
```

Output:



Practical – 3

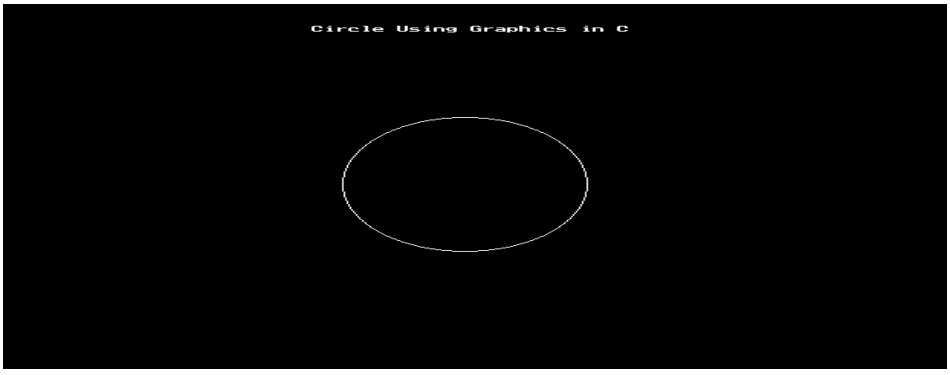
Aim: Draw the following basic shapes in the centre of the screen:

i. Circle ii. Rectangle iii. Square iv. Concentric Circles v. Ellipse vi. Line

Circle in Centre of the Screen:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
int x,y,radius=80;
initgraph(&gd,&gm,"C:\\TC\\BGI");
x=getmaxx()/2;
y=getmaxy()/2;
outtextxy(x-100,50,"Circle Using Graphics in C");
circle(x,y,radius);
getch();
closegraph();
}
```

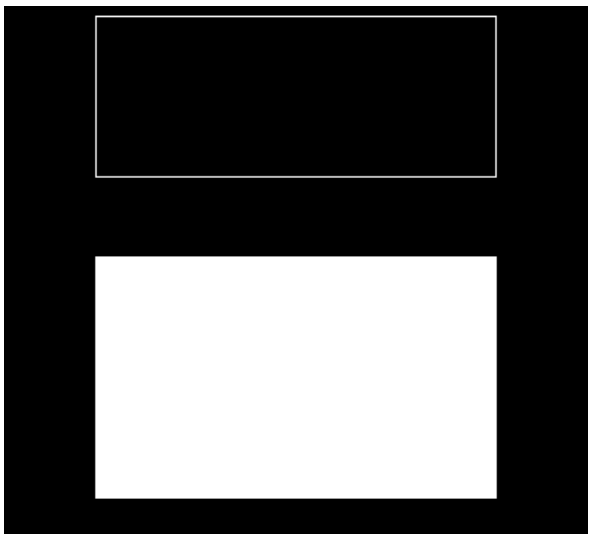
Output:



Rectangle in Centre of the Screen:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
rectangle(150,50,400,150);
bar(150,200,400,350);
getch();
closegraph();
}
```

Output:

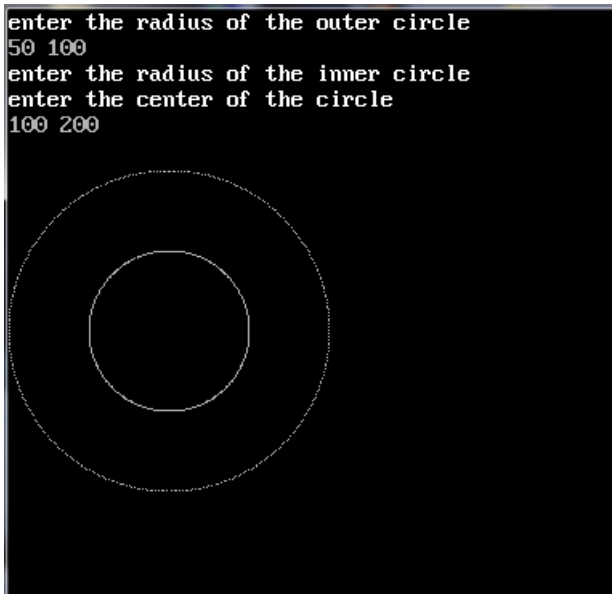


Concentric Circle in Centre of the Screen:

```
#include<graphics.h>
#include<conio.h>
#include<stdio.h>
#include<math.h>
void main()
{
int rc,rb,xc,yc,i;
float x,y;
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
printf("enter the radius of the outer circle\n");
scanf("%d",&rc);
printf("enter the radius of the inner circle\n");
scanf("%d",&rb);
printf("enter the center of the circle\n");
scanf("%d",&xc);
scanf("%d",&yc);
for(i=1;i<=360;i++)
{
x=xc+(rb*(cos (i)));
y=yc+(rb*(sin (i)));
putpixel(x,y,7);
}
for(i=1;i<=360;i++)
{
```

```
x=xc+(rc*(cos(i)));
y=yc+(rc*(sin(i)));
putpixel(x,y,7);
}
getch();
closegraph();
}
```

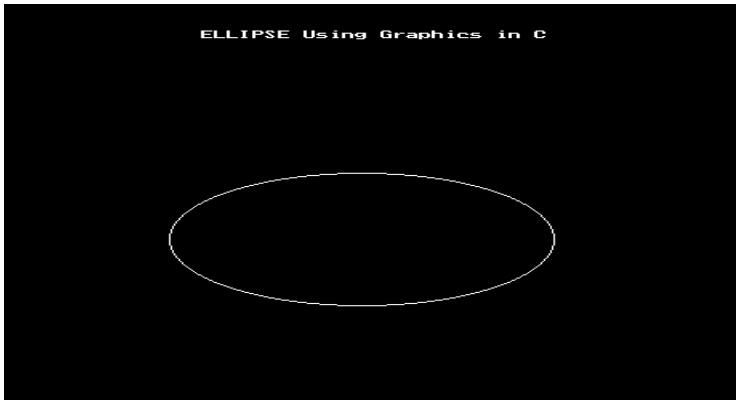
Output:



Ellipse Circle in Centre of the Screen:

```
#include<graphics.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
int x,y;
initgraph(&gd,&gm,"C:\\TC\\BGI");
x=getmaxx()/2;
y=getmaxy()/2;
outtextxy(x-100,50,"ELLIPSE Using Graphics in C");
ellipse(x,y,0,360,120,60);
getch();
closegraph();
}
```

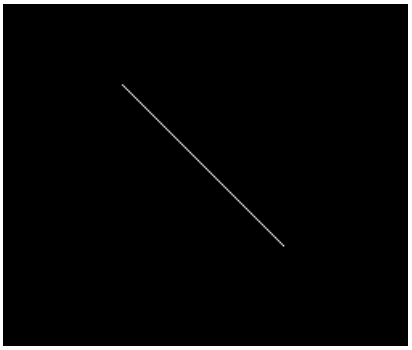
Output:



Line Circle in Centre of the Screen:

```
#include<graphics.h>
#include<stdio.h>
#include<conio.h>
void main()
{
int gd=DETECT,gm;
int x1=200,y1=200;
int x2=300,y2=300;
initgraph(&gd,&gm,"C:\\TC\\BGI");
line(x1,y1,x2,y2);
getch();
closegraph();
}
```

Output:



Practical – 4(A)

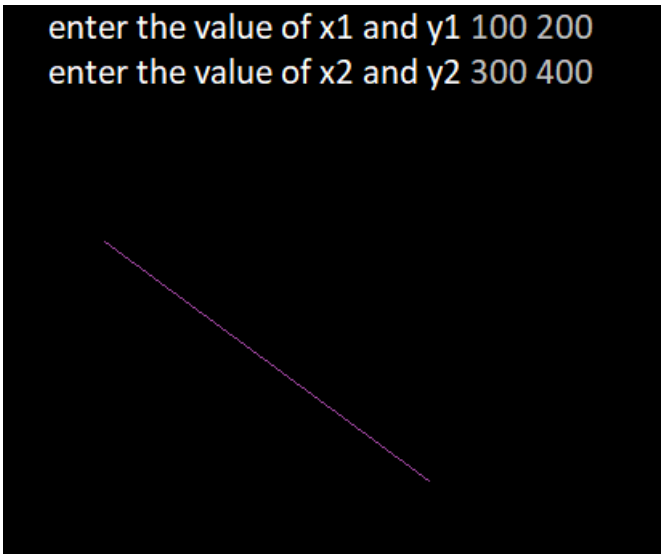
Aim: Develop the program for DDA Line drawing algorithm.

Source Code:

```
#include<graphics.h>
#include<stdio.h>
#include<conio.h>
#include<math.h>
#include<dos.h>
void main()
{
float x,y,x1,y1,x2,y2,dx,dy,step;
int i,gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
printf("enter the value of x1 and y1");
scanf("%f%f",&x1,&y1);
printf("enter the value of x2 and y2");
scanf("%f%f",&x2,&y2);
dx=abs(x2-x1);
dy=abs(y2-y1);
if(dx>=dy)
step=dx;
else
step=dy;
dx=dx/step;
dy=dy/step;
x=x1;
```

```
y=y1;
i=1;
while(i<=step)
{
putpixel(x,y,5);
x=x+dx;
y=y+dy;
i=i+1;
delay(100);
}
closegraph();
getch();
}
```

Output:



Practical – 4(B)

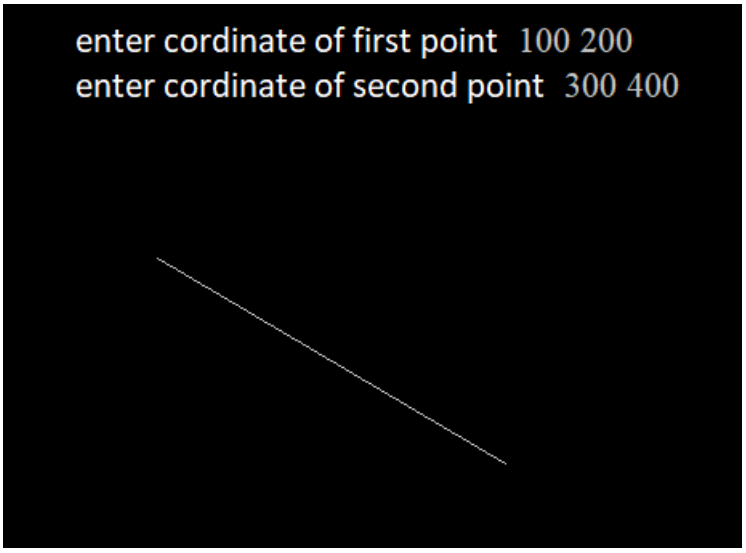
Aim: Develop the program for Bresenham's Line drawing algorithm.

Source Code:

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
void drawline(int x0,int y0,int x1,int y1)
{
int dx,dy,p,x,y;
dx=x1-x0;
dy=y1-y0;
x=x0;
y=y0;
p=2*dy-dx;
while(x<x1)
{
if(p>=0)
{
putpixel(x,y,7);
y=y+1;
p=p+2*dy-2*dx;
}
else
{
putpixel(x,y,7);
p=p+2*dy;
```

```
}
x=x+1;
}
}
void main()
{
int gd=DETECT,gm,error,x0,y0,x1,y1;
initgraph(&gd,&gm,"C:\\TC\\BGI");
printf("enter cordinate of first point");
scanf("%d%d",&x0,&y0);
printf("enter cordinate of second point");
scanf("%d%d",&x1,&y1);
drawline(x0,y0,x1,y1);
getch();
closegraph();
}
```

Output:



Practical – 5 (A)

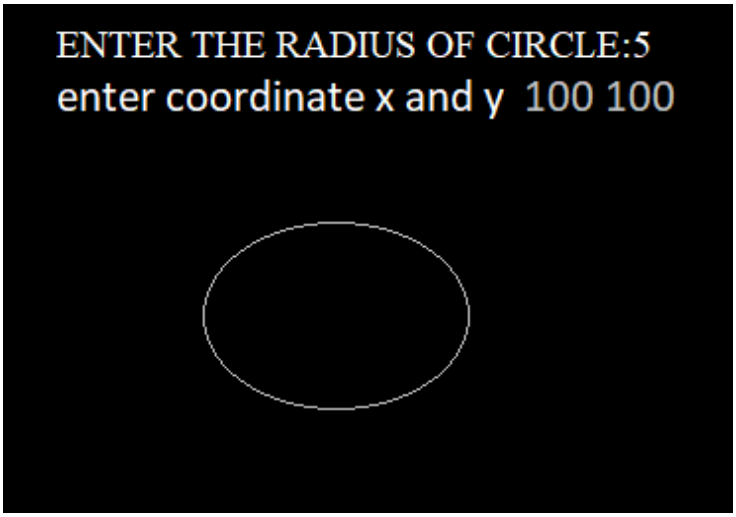
Aim: Develop the program for the mid-point circle drawing algorithm.

Source Code:

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
#include<dos.h>
void drawcircle(int x0,int y0,int radius)
{
int x=radius;
int y=0;
int err=0;
while(x>=y)
{
putpixel(x0+x,y0+y,7);
putpixel(x0+y,y0+x,7);
putpixel(x0-y,y0+x,7);
putpixel(x0-x,y0+y,7);
putpixel(x0-x,y0-y,7);
putpixel(x0-y,y0-x,7);
putpixel(x0+y,y0-x,7);
putpixel(x0+x,y0-y,7);
if(err<=0)
{
y+=1;
err+=2*y+1;
```

```
}
if(err>=0)
{
x-=1;
err-=2*x+1;
}
}
}
void main()
{
int gd=DETECT,gm,error,x,y,r;
initgraph(&gd,&gm,"C:\\TC\\BGI");
printf("ENTER THE RADIUS OF CIRCLE:");
printf("enter coordinate x and y");
scanf("%d",&r);
scanf("%d%d",&x,&y);
drawcircle(x,y,r);
closegraph();
getch();
}
```

Output:



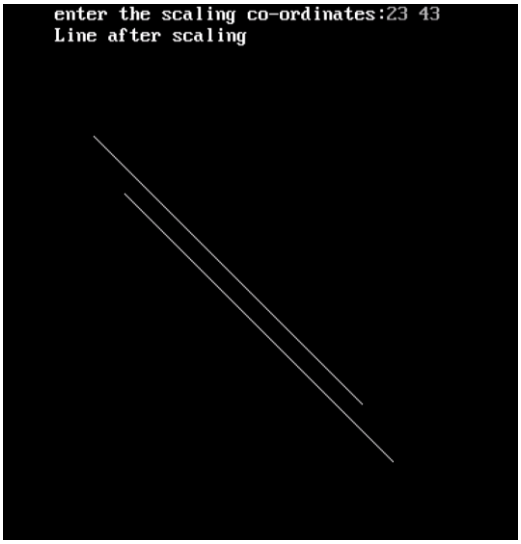
Practical – 6 (A)

Aim: Write a program to perform 2D translation**.**

Source Code:

```
#include<graphics.h>
#include<stdio.h>
#include<conio.h>
void main()
{
int graphdriver=DETECT,graphicmode;
int x1,y1,x2,y2,x,y,x3,y3,x4,y4;
printf("Enter the 2 lines end points:")   ;
printf("x1,y1,x2,y2");
scanf("%d%d%d%d",&x1,&y1,&x2,&y2);
initgraph(&graphdriver,&graphicmode,"C:\\TC\\BGI");
line(x1,y1,x2,y2) ;
printf("enter the scaling co-ordinates:");
scanf("%d%d",&x,&y);
x3=x1+x;
y3=y1+y;
x4=x2+x;
y4=y2+y;
printf("Line after scaling");
line(x3,y3,x4,y4) ;
getch();
closegraph();
}
```

Output:



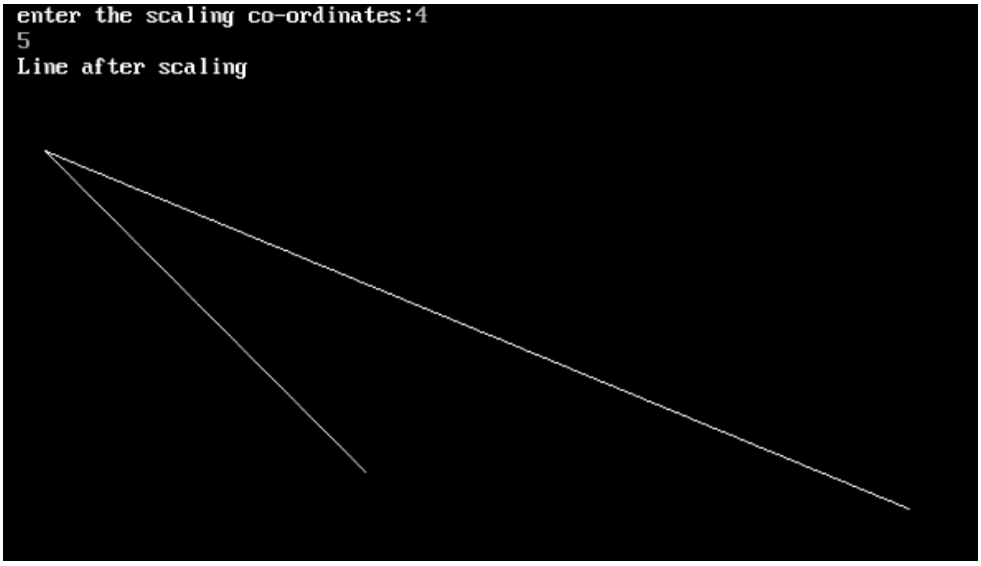
Practical – 6 (B)

Aim: Write a program to implement 2D scaling**.**

Source Code:

```
#include<graphics.h>
#include<stdio.h>
#include<conio.h>
void main()
{
int graphdriver=DETECT,graphicmode;
int x1,y1,x2,y2,x,y,x3,y3,x4,y4;
printf("Enter the 2 lines end points:")   ;
printf("x1,y1,x2,y2");
scanf("%d%d%d%d",&x1,&y1,&x2,&y2);
initgraph(&graphdriver,&graphicmode,"C:\\TC\\BGI");
line(x1,y1,x2,y2) ;
printf("enter the scaling co-ordinates:");
scanf("%d%d",&x,&y);
x3=x1*x;
y3=y1*y;
//x4=x2*x;
//y4=y2*y;
printf("Line after scaling");
line(x1,y1,x4,y4) ;
getch();
closegraph();
}
```

Output:



Practical – 6 (C)

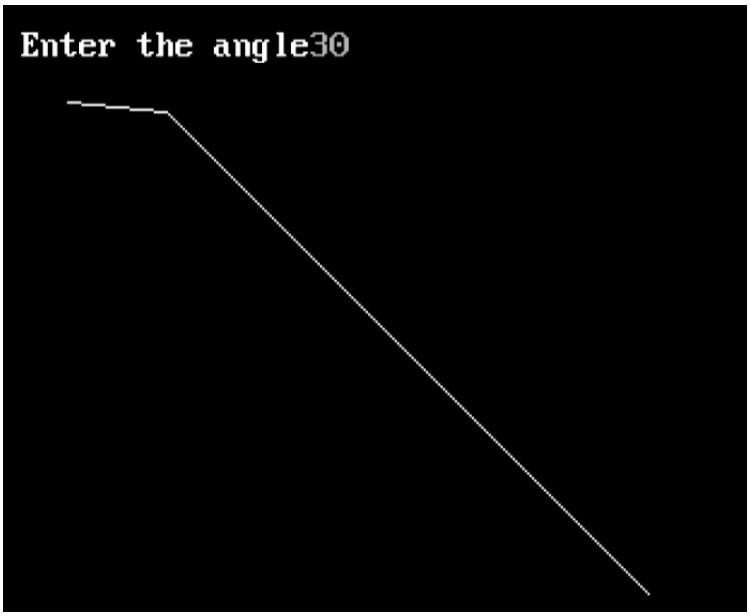
Aim: Perform 2D Rotation on a given object**.**

Source Code:

```
#include<graphics.h>
#include<stdlib.h>
#include<stdio.h>
#include<math.h>
#include<conio.h>
void main()
{
int graphdriver = DETECT,graphmode;
int i;
int x2,y2,x1,y1,x,y,xn,yn;
double r11,r12,r21,r22,th;
clrscr();
printf("Enter the 2 lie end points:");
printf("x1,y1,x2,y2");
scanf("%d%d%d%d",&x1,&y1,&x2,&y2);
initgraph(&graphdriver,&graphmode,"C:\\TC\\BGI");
line(x1,y1,x2,y2);
printf("\n\n\nEnter the angle");
scanf("%lf",&th);
r11=cos((th*3.1428)/180);
r12=sin((th*3.1428)/180);
r21=(-sin((th*3.1428)/180));
r22=cos((th*3.1428)/180);
```

```
xn=((x2*r11)-(y2*r12));
yn=((x2*r21)+(y2*r22));
line(x1,y1,xn,yn);
getch();
}
```

Output:



Practical – 7 (A)

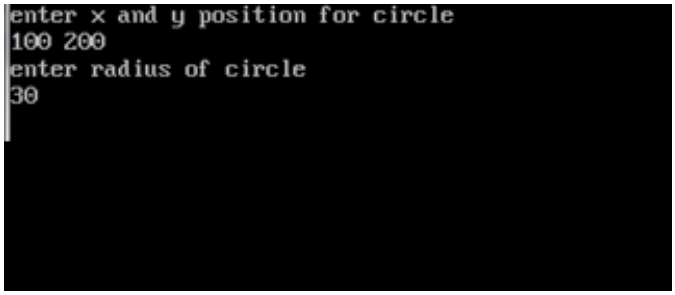
Aim: Write a program to fill a circle using Flood Fill Algorithm.

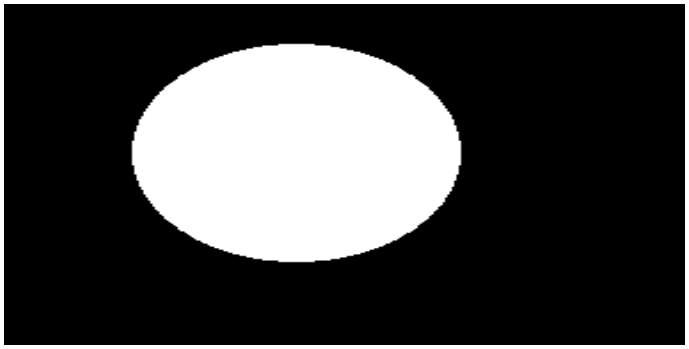
Source Code:

```
#include<graphics.h>
#include<stdio.h>
#include<conio.h>
#include<dos.h>
void floodfill(int x,int y,int oldcolor,int newcolor)
{
if(getpixel(x,y)==oldcolor)
{
delay(20);
putpixel(x,y,newcolor);
floodfill(x+1,y,oldcolor,newcolor);
floodfill(x,y+1,oldcolor,newcolor);
floodfill(x-1,y,oldcolor,newcolor);
floodfill(x,y-1,oldcolor,newcolor);
}
}
void main()
{
int gd=DETECT,gm,radius;
int x, y;
printf("enter x and y position for circle\n");
scanf("%d%d",&x,&y);
printf("enter radius of circle\n");
```

```
scanf("%d",&radius);
initgraph(&gd,&gm,"c:\\TC\\BGI");
circle(x,y,radius);
floodfill(x,y,0,15);
closegraph();
getch();
}
```

Output:





Practical – 7 (B)

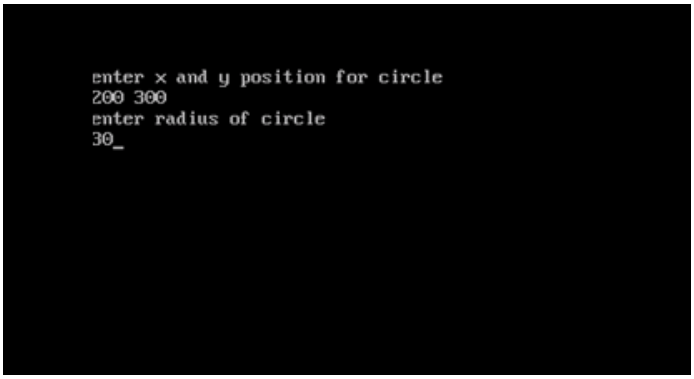
Aim: Write a program to fill a circle using Boundary Fill Algorithm.

Source Code:

```
#include<graphics.h>
#include<iostream.h>
#include<dos.h>
#include<conio.h>
void boundaryfill(int x ,int y,int f_color,int b_color)
{
if(getpixel(x,y)!=b_color && getpixel(x,y)!=f_color)
{
delay(20);
putpixel(x,y,f_color);
boundaryfill(x+1,y,f_color,b_color);
boundaryfill(x,y+1,f_color,b_color);
boundaryfill(x-1,y,f_color,b_color);
boundaryfill(x,y-1,f_color,b_color);
}
}
int main()
{
int gd=DETECT,gm,radius;
int x,y;
cout<<"enter x and y position for circle\n";
cin>>x>>y;
```

```
cout<<"enter radius of circle\n";
cin>>radius;
initgraph(&gd,&gm,"c:\\TC\\BGI");
circle(x,y,radius);
boundaryfill(x,y,4,15);
closegraph();
return 0;
}
```

Output:



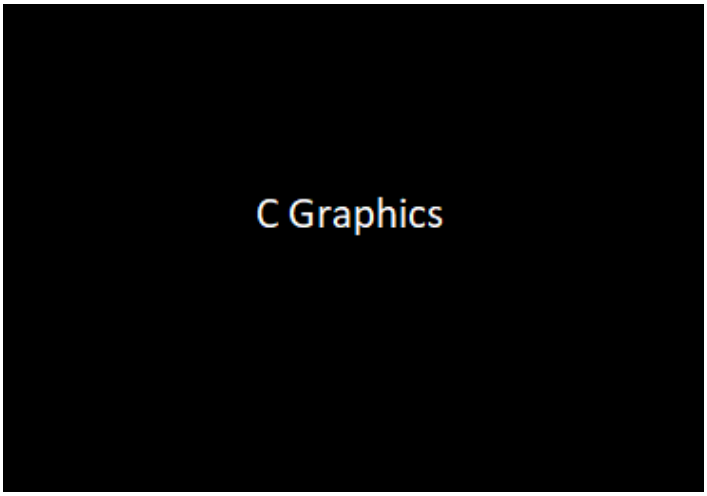
Practical – 8 (A)

Aim: Develop a simple text screen saver using graphics functions.

Source Code:

```
#include<graphics.h>
#include<conio.h>
#include<stdio.h>
#include<dos.h>
void main()
{
int gd=DETECT,gm,i,maxx,maxy,key0;
initgraph(&gd,&gm,"C:\\TC\\BGI");
maxx=getmaxx();
maxy=getmaxy();
while(!kbhit())
{
for(i=0;i<maxy;i++)
{
cleardevice();
settextstyle(2,0,5);
outtextxy(maxx/2,i,"C Graphics");
delay(100);
}
}
getch();
}
```

Output:



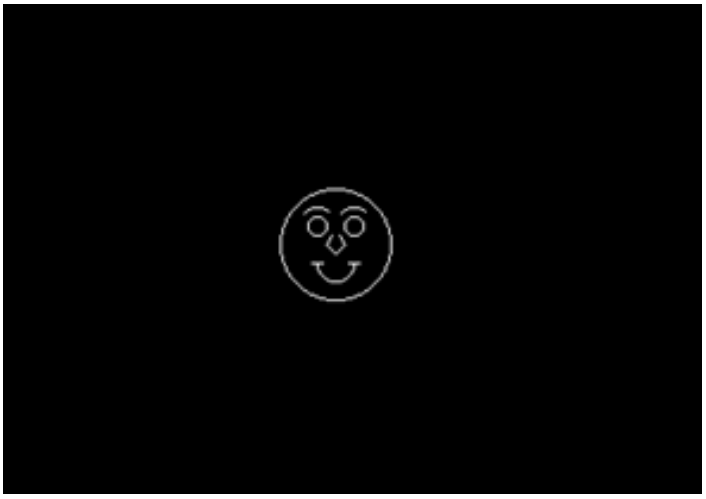
Practical – 8 (B)

Aim: Perform smiling face animation using graphic functions.

Source Code:

```
#include<graphics.h>
#include<conio.h>
#include<stdio.h>
void main()
{
int gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
circle(200,200,30);
circle(190,190,5);
arc(190,190,50,130,10);
circle(210,190,5);
arc(210,190,50,130,10);
arc(200,210,180,360,10);
line(187,210,193,210);
line(207,210,213,210);
line(198,195,195,200);
line(202,195,205,200);
line(195,200,200,205);
line(205,200,200,205);
getch();
closegraph();
}
```

Output:



Practical – 8 (C)

Aim: Draw the moving car on the screen.

Source Code:

```
#include<graphics.h>
#include<dos.h>
#include<conio.h>
void main()
{
int i,j=0,gd=DETECT,gm;
initgraph(&gd,&gm,"C:\\TC\\BGI");
settextstyle(DEFAULT_FONT,HORIZ_DIR,2);
outtextxy(25,240,"press any key to view the moving car");
getch();
setviewport(0,0,639,440,1);
for(i=0;i<=420;i=i+10,j++)
{
rectangle(50+i,275,150+i,400);
rectangle(150+i,350,200+i,400);
circle(75+i,410,10);
circle(175+i,410,10);
setcolor(j);
delay(100);
if(i==420);
break;
clearviewport();
}
```

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

Output: