**PROGRAM 5**

**Write a program to draw ellipse using mid-point ellipse algorithm.**

#include<stdio.h>

#include<stdlib.h>

#include<graphics.h>

#define ROUND(a) ((int)(a+0.5))

void setpixel(int xc, int yc, int x, int y)

{

putpixel(xc+x,yc+y,15);

putpixel(xc+x,yc-y,15);

putpixel(xc-x,yc+y,15);

putpixel(xc-x,yc-y,15);

}

void midptellipse(int xc, int yc, int rx, int ry)

{

int rx2 = rx\*rx, ry2 = ry\*ry;

int tworx2 = 2\*rx2, twory2=2\*ry2;

int x=0, y=ry;

int p= ROUND(ry2 + 0.25\*rx2 - rx2\*ry);

int px= 0;

int py = tworx2\*ry;

setpixel(xc,yc,x,y);

while(px < py)

{

x++;

px += twory2;

if(p<0)

p+= px + ry2;

else

{

y--;

py -= tworx2;

p+= px+ry2-py;

}

setpixel(xc,yc,x,y);

}

p = ROUND(ry2\*(x+0.5)\*(x+0.5) + rx2\*(y-1)\*(y-1) - rx2\*ry2);

while (y>0)

{

y--;

py -= tworx2;

if(p>0)

{

p+= rx2-py;

}

else

{

x++;

px+=twory2;

p+=px-py+rx2;

}

setpixel(xc,yc,x,y);

}

}

int main()

{

int xc, yc, rx, ry;

int gdriver = DETECT, gmode, errorcode;

initgraph(&gdriver, &gmode, "..\\");

errorcode = graphresult();

if (errorcode != grOk)

{

printf("Graphics error: %s\n", grapherrormsg(errorcode));

printf("Press any key to halt:");

getch();

exit(1);

}

printf("Enter center of ellipse\n");

scanf("%d %d", &xc, &yc);

printf("Enter x and y radius\n");

scanf("%d %d", &rx, &ry);

midptellipse(xc,yc,rx,ry);

getch();

closegraph();

return 0;

}

**OUTPUT 5**



