4. Solve the following

a. Develop the program for DDA Line drawing algorithm.

b. Develop the program for Bresenham's Line drawing algorithm.

a. Develop the program for DDA Line drawing algorithm.

Solution:-

```
#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,3);
        x=x+dx;
        y=y+dy;
        i=i+1;
        delay(100);
    }
    getch();
    closegraph();
}
```

b. Develop the program for Bresenham's Line drawing algorithm.

Solution:-

```
#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;
        }
}
int main()
{
        int gdriver=DETECT, gmode, error, x0, y0, x1, y1;
        initgraph(&gdriver, &gmode, "c:\\turboc3\\bgi");
        printf("Enter co-ordinates of first point: ");
        scanf("%d%d", &x0, &y0);
        printf("Enter co-ordinates of second point: ");
        scanf("%d%d", &x1, &y1);
        drawline(x0, y0, x1, y1);
        getch();
        closegraph();
        return 0;
}
//bresenham circle algorithm
```