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ESE LAB: Write a Program to implement Boundary fill algorithm for a convex polygon. Draw polygon edges by DDA / Bresenham line algorithm.

CODE:

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
int x[20],y[20],n = 4;

void boundaryfill(int x,int y,int nc,int bc)
{

   if(getpixel(x,y)!=nc && getpixel(x,y)!=bc)
   {
      putpixel(x,y,nc);
      boundaryfill(x,y+1,nc,bc);
      boundaryfill(x,y-1,nc,bc);
      boundaryfill(x+1,y,nc,bc);
      boundaryfill(x-1,y,nc,bc);
   }
}

void dda()
{
   int X,Y,dx,dy,s,j,k,a=0,i=0;
   printf("Enter 4 Co-ordinates : \n\n");

   for(i=0;i<n;i++)
```

```
{
   printf("\nEnter Co-ordinates for vertice %d :\n\nx : ",i+1);
   scanf("%d",&x[i]);
   printf("\ny : ");
   scanf("%d",&y[i]);
}
for(i=0,j=1;i<n;i++,j++)
{
   if(j == n)
   {
      j = j-1;
      i = 0;
      a = 1;
   }
   X = x[j]-x[i];
   if(X<0)
   {
      X = X * -1;
   }
   Y = y[j]-y[i];
   if(Y<0)
   {
      Y = Y * -1;
   }
   if(X>Y)
   {
      s = X;
   }
   else
   {
      s = Y;
```

```
        }
        dx = (x[j]-x[i])/s;
        dy = (y[j]-y[i])/s;
        X = x[i];
        Y = y[i];
        k = 1;
        putpixel(X,Y,YELLOW);
        while(k<=s)
        {
           X = X + dx;
           Y = Y + dy;
           k = k+1;
           putpixel(X,Y,YELLOW);
        }
        if(a == 1)
        {
           break;
        }
    }
}

main()
{
    int gd=DETECT,gm;
    int i,fx,fy;
    initgraph(&gd,&gm,"");
    dda();

    fx = ((x[0]+x[1])/2 + (x[2]+x[3])/2)/2;
    fy = ((y[0]+y[1])/2 + (y[2]+y[3])/2)/2;
```

```
    int nc=RED;

    boundaryfill(fx,fy,nc,YELLOW);

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

OUTPUT: