Scanline Polygon filling algorithm

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1. #include <stdio.h>
2. #include <conio.h>
3. #include <graphics.h>

4. void main()
5. {

6. int n,i,j,k,gd,gm,dy,dx;
7. int x,y,temp;
8. int a[20][2],xi[20];
9. float slope[20];


10.      clrscr();
11.      printf("\n\n\tEnter the no. of edges of polygon : ");
12.      scanf("%d",&n);
13.      printf("\n\n\tEnter the cordinates of polygon :\n\n\n ");

14.      for(i=0;i<n;i++)
15.      {
16.      printf("\tX%d Y%d : ",i,i);
17.      scanf("%d %d",&a[i][0],&a[i][1]);
18.      }

19.      a[n][0]=a[0][0];
20.      a[n][1]=a[0][1];


21.      detectgraph(&gd,&gm);
22.      initgraph(&gd,&gm,"c:\\TURBOC3\\bgi");


23.      /*- draw polygon -*/

24.      for(i=0;i<n;i++)
25.      {
26.      line(a[i][0],a[i][1],a[i+1][0],a[i+1][1]);
27.      }

28.      getch();


29.      for(i=0;i<n;i++)
30.      {
31.      dy=a[i+1][1]-a[i][1];
32.      dx=a[i+1][0]-a[i][0];

33.      if(dy==0) slope[i]=1.0;
34.      if(dx==0) slope[i]=0.0;

35.      if((dy!=0)&&(dx!=0)) /*- calculate inverse slope -*/
36.      {
37.      slope[i]=(float) dx/dy;
38.      }
39.      }
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40.      for(y=0;y< 480;y++)
41.      {
42.      k=0;
43.      for(i=0;i<n;i++)
44.      {

45.      if( ((a[i][1]<=y)&&(a[i+1][1]>y))||
46.      ((a[i][1]>y)&&(a[i+1][1]<=y)))
47.      {
48.      xi[k]=(int)(a[i][0]+slope[i]*(y-a[i][1]));
49.      k++;
50.      }
51.      }

52.      for(j=0;j<k-1;j++) /*- Arrange x-intersections in order -*/
53.      for(i=0;i<k-1;i++)
54.      {
55.      if(xi[i]>xi[i+1])
56.      {
57.      temp=xi[i];
58.      xi[i]=xi[i+1];
59.      xi[i+1]=temp;
60.      }
61.      }

62.      setcolor(35);
63.      for(i=0;i<k;i+=2)
64.      {
65.      line(xi[i],y,xi[i+1]+1,y);
66.      getch();
67.      }

68.      }

69.      }
```