Title: Write C++ program to draw a concave polygon and fill it with desired color using scan fill algorithm.

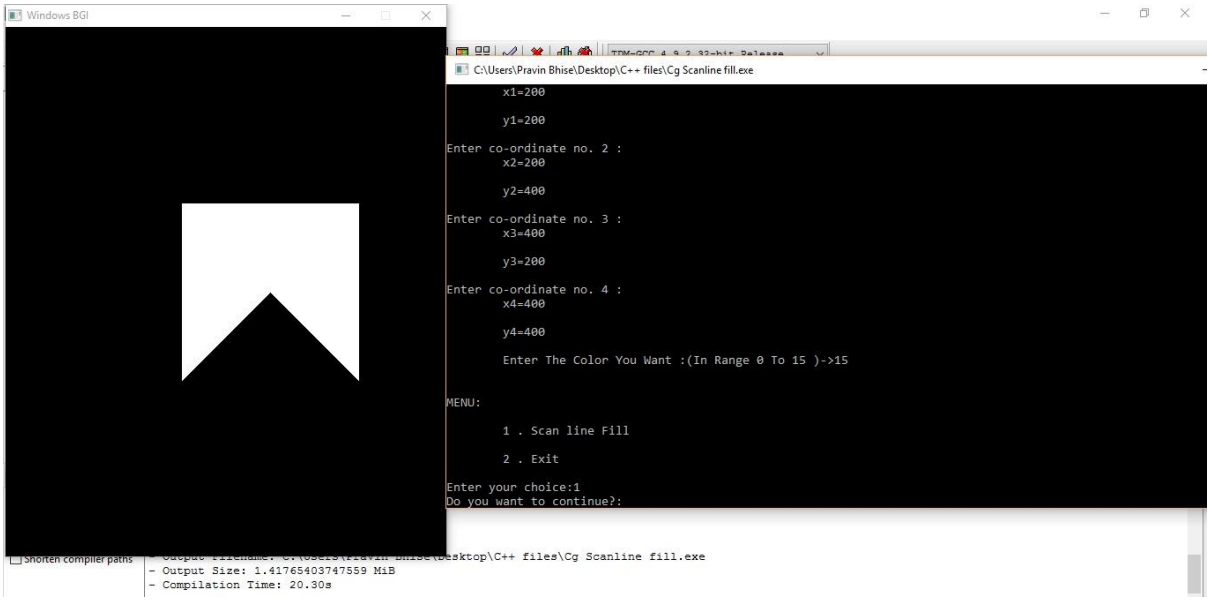
Source Code:

```
#include <conio.h>
#include <iostream>
#include <graphics.h>
#include <stdlib.h>
using namespace std;

class point {
public:
   int x, y;
};

class poly {
private:
   point p[20];
   int inter[20], x, y;
   int v, xmin, ymin, xmax, ymax;

public:
   int c;
   void read();
   void calcs();
   void display();
   void ints(float);
   void sort(int);
};

void poly::read() {
   int i;
   cout << "\nScan Fill Algorithm";
   cout << "\nEnter Number Of Vertices Of Polygon: ";
   cin >> v;

   if (v > 2) {
      for (i = 0; i < v; i++) { // Accept the vertices
         cout << "\nEnter coordinate no. " << i + 1 << " : ";
         cout << "\n\tx" << (i + 1) << "=";
         cin >> p[i].x;
         cout << "\n\ty" << (i + 1) << "=";
```

```
            cin >> p[i].y;
        }
        p[i].x = p[0].x;
        p[i].y = p[0].y;
        xmin = xmax = p[0].x;
        ymin = ymax = p[0].y;
    } else {
        cout << "\nEnter a valid number of vertices.";
    }
}

void poly::calcs() {
    for (int i = 0; i < v; i++) {
        if (xmin > p[i].x)
            xmin = p[i].x;
        if (xmax < p[i].x)
            xmax = p[i].x;
        if (ymin > p[i].y)
            ymin = p[i].y;
        if (ymax < p[i].y)
            ymax = p[i].y;
    }
}

void poly::display() {
    int ch1;
    char ch = 'y';
    float s;

    do {
        cout << "\n\nMENU:";
        cout << "\n\n\t1. Scan line Fill ";
        cout << "\n\n\t2. Exit ";
        cout << "\n\nEnter your choice: ";
        cin >> ch1;

        switch (ch1) {
        case 1:
            s = ymin + 0.01;
            delay(100);
            cleardevice();

            while (s <= ymax) {
                ints(s);
```

```
            sort(s);
            s++;
         }
         break;

      case 2:
         exit(0);
      }

      cout << "Do you want to continue? (y/n): ";
      cin >> ch;

   } while (ch == 'y' || ch == 'Y');
}

void poly::ints(float z) {
   int x1, x2, y1, y2, temp;
   c = 0;

   for (int i = 0; i < v; i++) {
      x1 = p[i].x;
      y1 = p[i].y;
      x2 = p[i + 1].x;
      y2 = p[i + 1].y;

      if (y2 < y1) {
         temp = x1;
         x1 = x2;
         x2 = temp;
         temp = y1;
         y1 = y2;
         y2 = temp;
      }

if (z <= y2 && z >= y1)
```

Output:


Windows BGI
C:\Users\Pravin Bhise\Desktop\C++ files\Cg Scanline fill.exe
x1=200
y1=200
Enter co-ordinate no. 2 :
x2=200
y2=400
Enter co-ordinate no. 3 :
x3=400
y3=200
Enter co-ordinate no. 4 :
x4=400
y4=400
Enter The Color You Want :(In Range 0 To 15)->15
MENU:
1 . Scan line Fill
2 . Exit
Enter your choice:1
Do you want to continue?:

Shorten compiler paths
- Output Size: 1.41765403747559 MiB
- Compilation Time: 20.30s