

Title: Polygon Filling (Flood Fill)

Problem Statement:

Write the C++ program to draw the polygon by using the mouse choose colors by clicking on undesigned color pane use window port to draw use OOA algorithm for line drawing.

Learning objective:

- To understand and study polygon filling algorithm.
- To study the different polygon filling algorithm.
- To understand and study different manipulation facilities in Qtcreator in C++.

Concepts related theory:

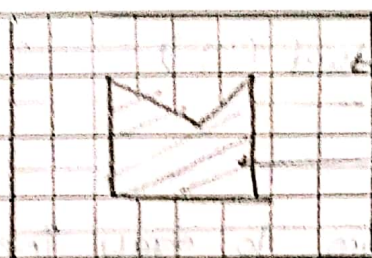
Polygon filling: process of colouring the area of polygon is polygon filling.



- Filling the polygon means highlighting all the pixels which lie inside the polygon with any color other than background.

* Types of Regions:

1. Boundary defined region
2. Interior defined region.

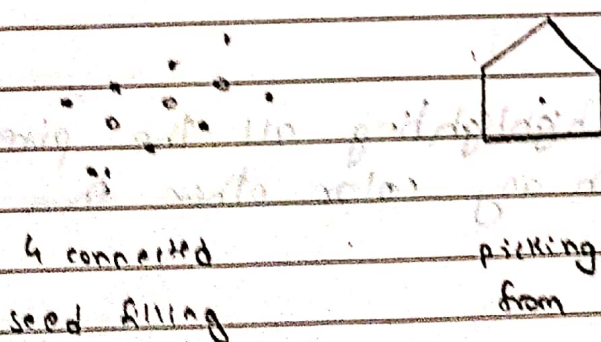


- It is a collection of same color pixels [Exterior pixels have different colors].
- Algorithm used to fill these regions and are called flood fill algorithm.

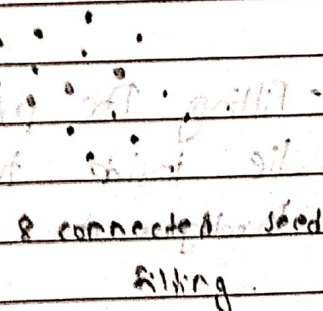
Polygon Filling

Edge fill Fence fill Seed fill Flood fill

- Boundary and Flood fill algorithm together are called seed fill algorithm
- It is pixel level approach
- We can get pixel using `getpixel()`, `setpixel()`.
- It is recursive algorithm



picking seed
from polygon



8 connected seed
filling

Seed Filling algorithm:

- Draw the edge of polygon in frame buffer
- Start with seed point window inside the polygon.
- Continue until boundary pixel.

FOR EDUCATIONAL USE

Boundary / Flood fill:-

Check for boundary color pixel in:-

- 1) Four-connected
- 2) Eight-connected.

Pseudocode

Algorithm Flood fill ($x, y, fillcolor, bkcolor$)

Start

if (getpixel(x, y) \neq $bkcolor$)

Begin

Flood fill ($x+1, y, fillcolor, bkcolor$)

Flood fill ($x, y+1, fillcolor, bkcolor$)

Flood fill ($x-1, y, fillcolor, bkcolor$)

Flood fill ($x, y-1, fillcolor, bkcolor$)

END

END

Conclusion:

We have learned and implemented the polygon filling algorithm flood fill & pixel approach & way at using in recursive manner.