# Computer Graphics Lab-03
# 2D object Coloring with OpenGL

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## 1 Context Menu

Pressing the right mouse button on the screen will open this context menu.

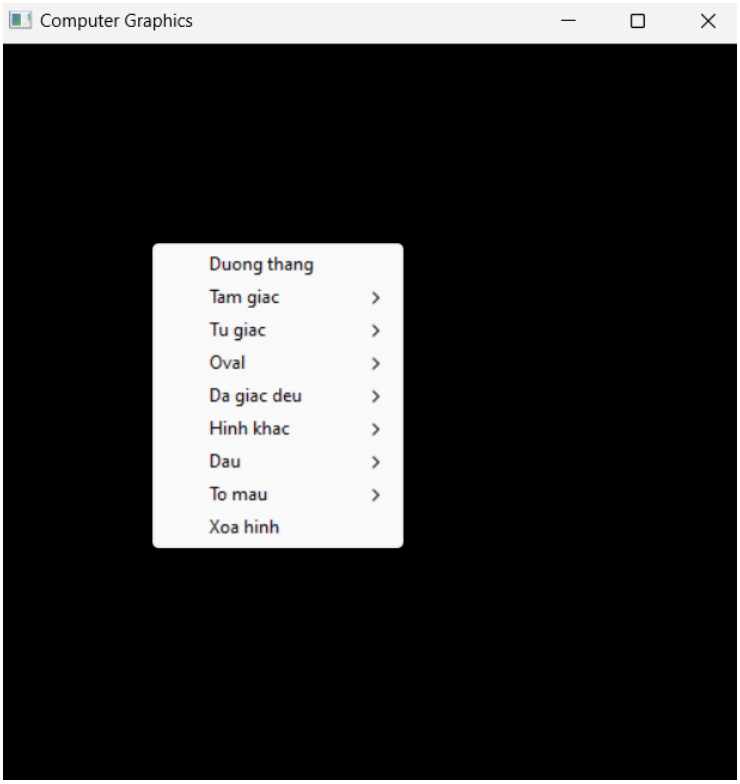


Figure 1: Context Menu

## 2 Lines

Choosing “Duong thang” on the context and left clicking on the screen will draw a simple diagonal line with the center at the mouse position.

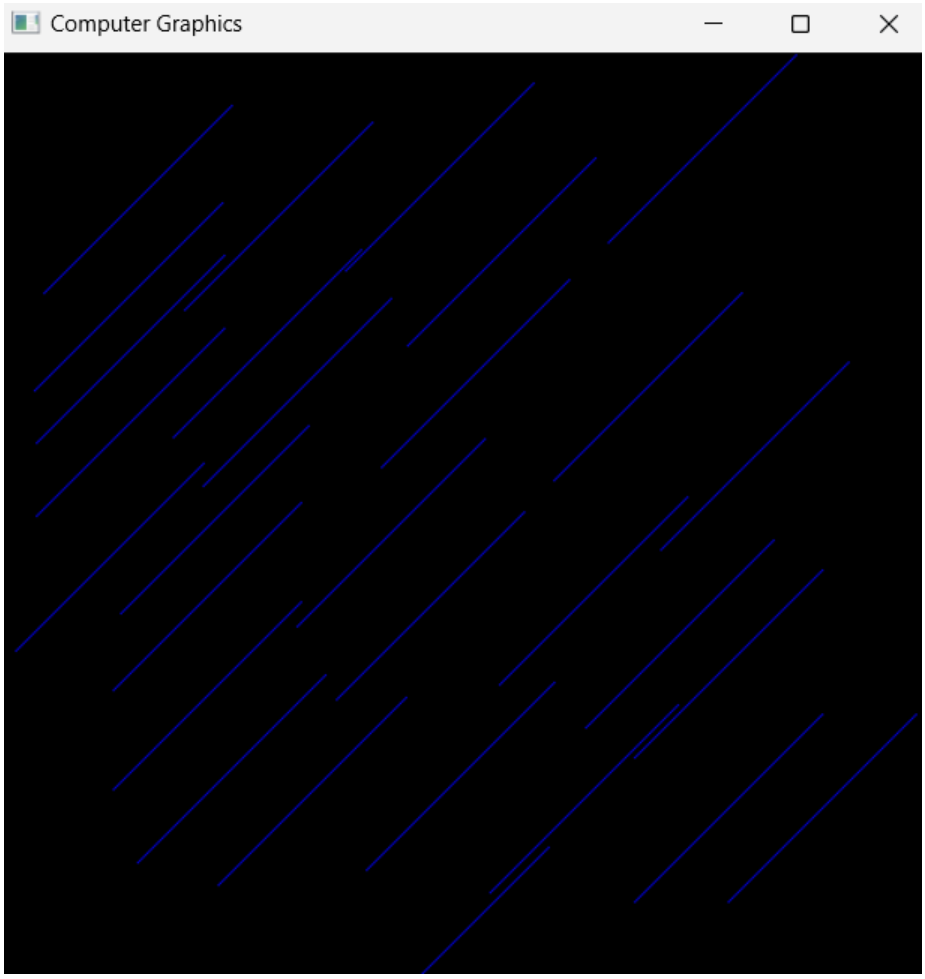


Figure 2: Lines

# 3 Triangle

Choosing “Tam giac” on the context will open a submenu with “Vuong can” and “Deu”. Choosing one option and left clicking on the screen will draw the appropriate shape on the screen, centered at the mouse position. The algorithm will first draw the outline of the shape and fill it using BoundaryFill.

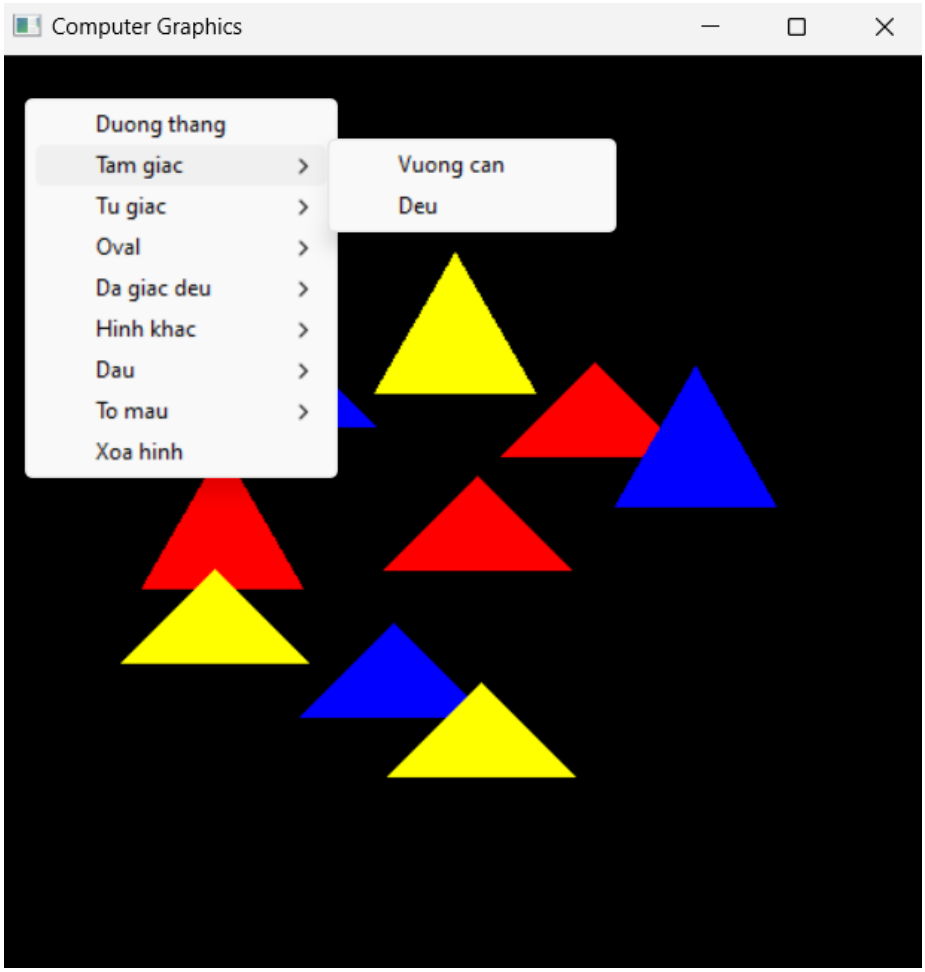


Figure 3: Triangles

# 4 Quadrilateral

Similar to the above.

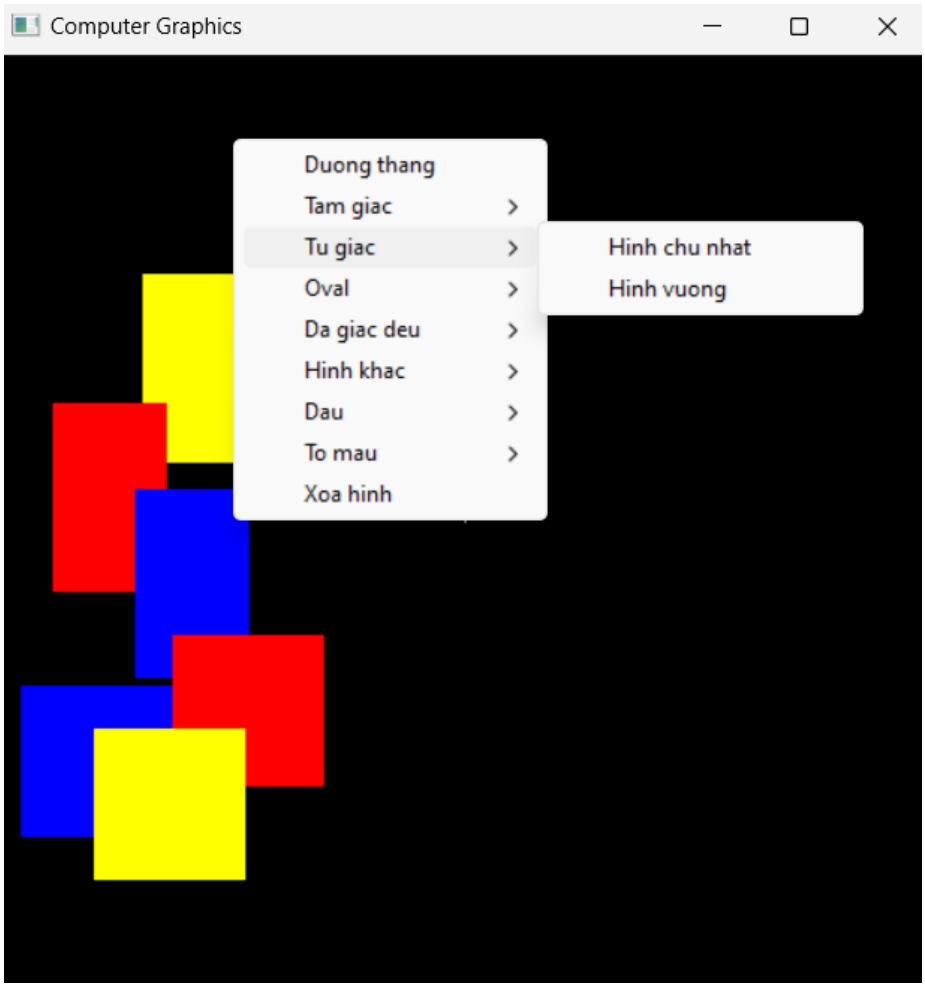


Figure 4: Quadrilateral

# 5 Oval

Similar to the above.


Figure 5: Oval

# 6 Polygons

Similar to the above.

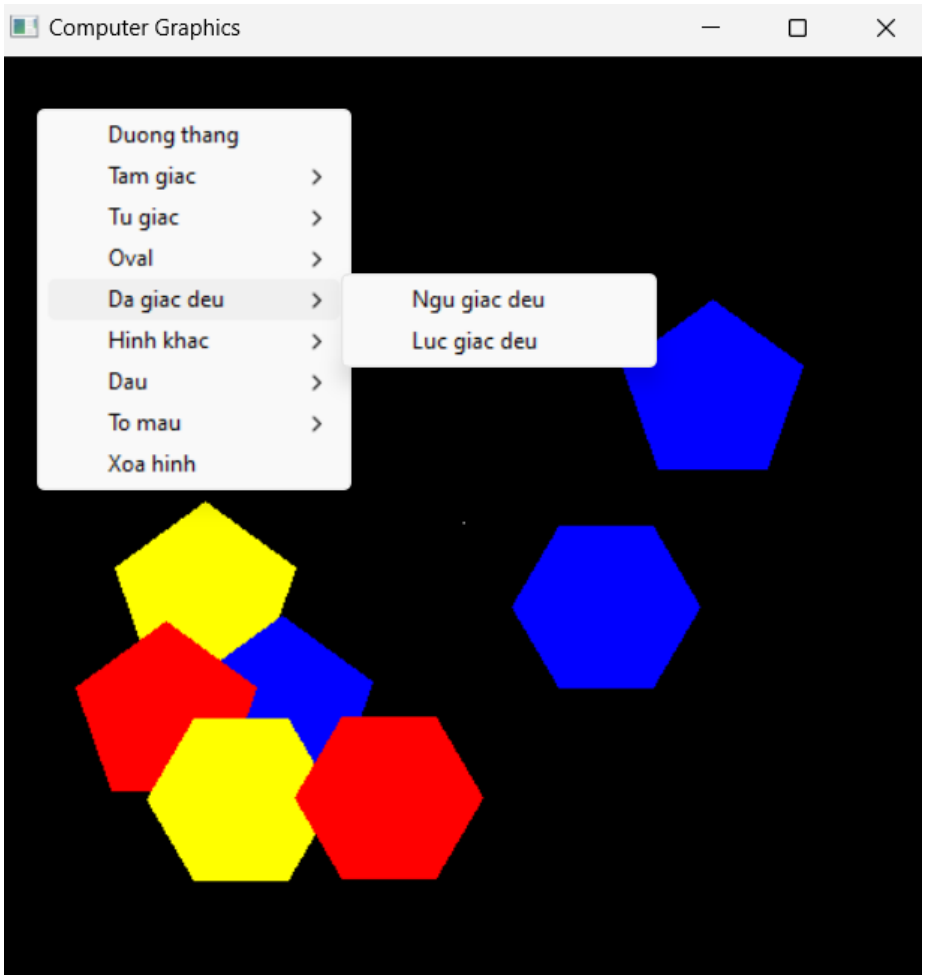


Figure 6: Polygons

# 7 Other

Similar to the above.


Figure 7: Other

# 8 Operators

Similar to the above.

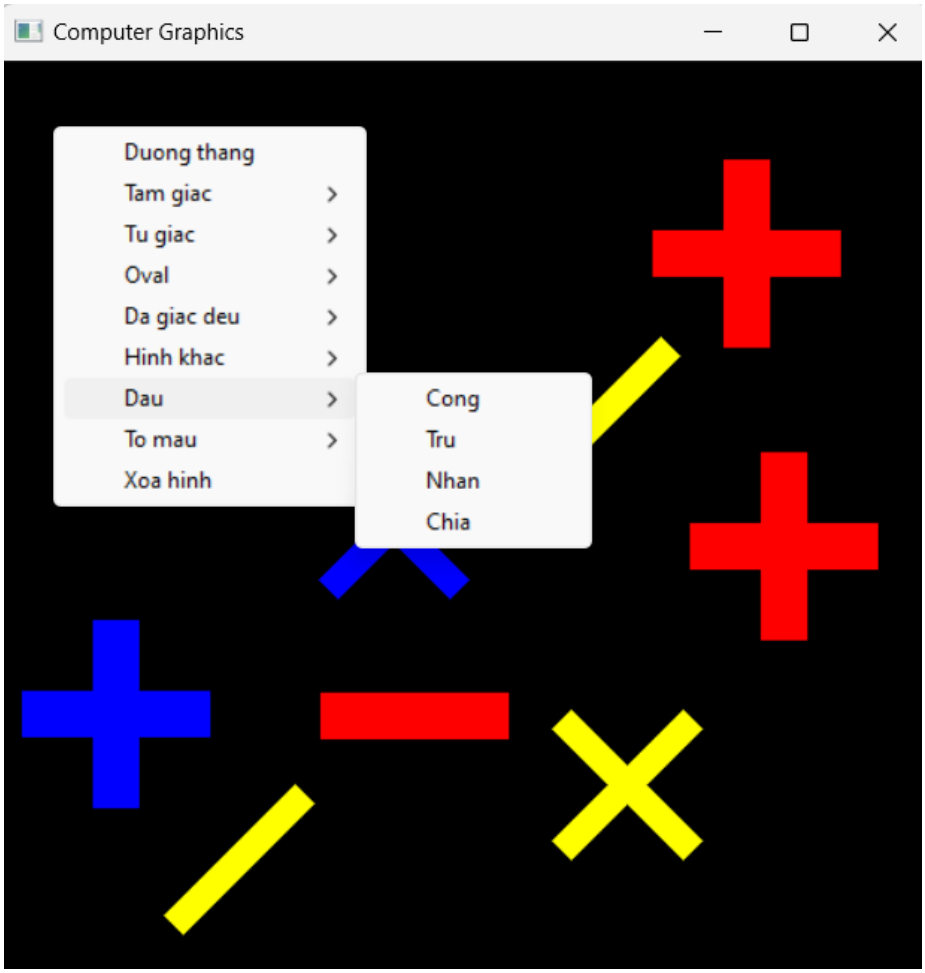


Figure 8: Operators

# 9 Color

Choosing any entry in this submenu will change from drawing mode to coloring mode (picking any of the above shapes will change back to drawing mode). Left clicking anywhere (but not empty background) will change the change that color to the currently selected color (identical to the bucket fill tool in Paint). I use FloodFill algorithm to achieve this.

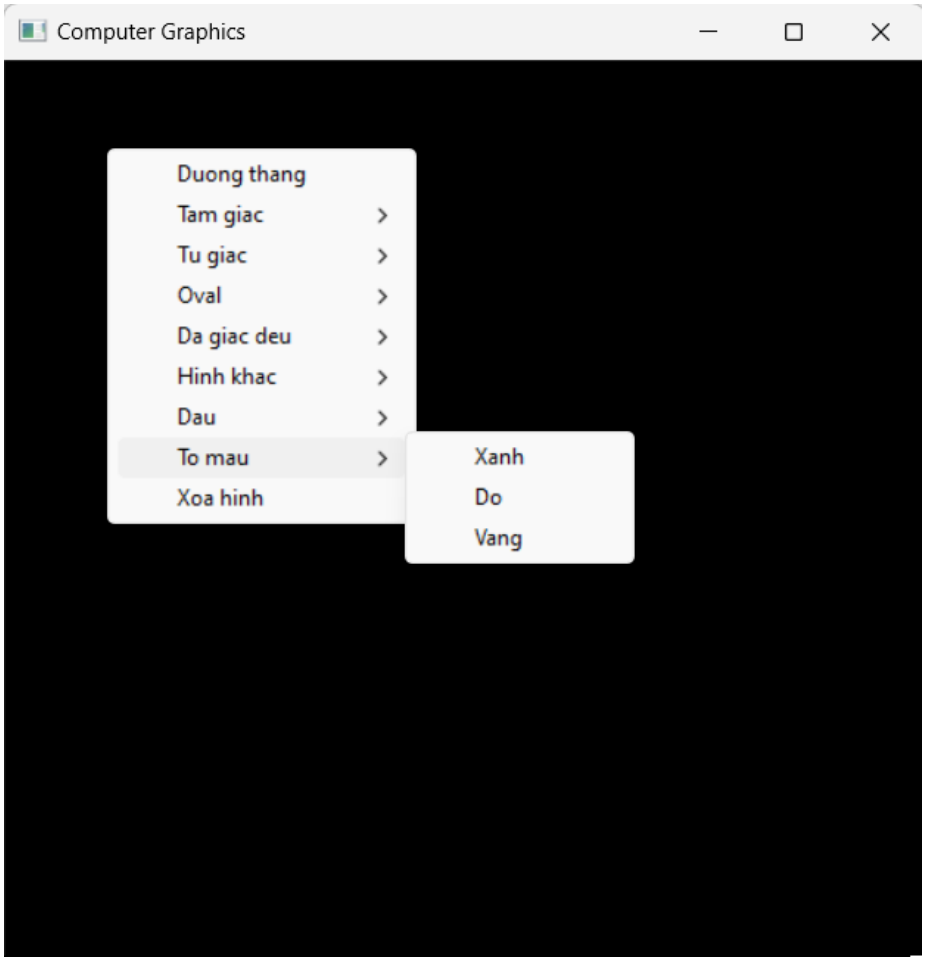


Figure 9: Color

## 10 Clear all shapes

I did not understand "Chon hinh" entry was supposed to do, so for now I added the option to clear the windows.

## 11 Comment

- For now I hard-coded every shapes instead of actually drawing it using math and algorithms.
- The get/setPixel in the tutorial did not deallocate ptr, so I added that.
- Because I accidentally hard-coded the shapes to be too large, the BoundaryFill code in the tutorial will get stack overflow error. I instead coded the same idea using BFS. It is still slow but it is good enough.