Tarefa 1 – Computação Gráfica
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Arquivo "polygon.h":

```cpp
#include <memory>
class Polygon;
using PolygonPtr = std::shared_ptr<Polygon>;

#ifndef POLYGON_H
#define POLYGON_H

#include "shape.h"

class Polygon : public Shape {
unsigned int m_vao;
unsigned int m_vertex;
protected:
Polygon();
public:
static PolygonPtr Make ();
virtual ~Polygon ();
virtual void Draw ();
};
#endif
```

arquivo "polygon.cpp":

```cpp
#include "polygon.h"

#include <iostream>

#include <glad/glad.h>
#include <GLFW/glfw3.h>

PolygonPtr Polygon::Make ()
{
return PolygonPtr(new Polygon());
}

Polygon::Polygon ()
{
```

```cpp
float coord[] = {
0.0f, 0.0f,
0.5f, 0.25f,
0.4f, -0.4f,
-0.20f, -0.5f,
-0.25f, 0.25f
};

unsigned char color[] = {
255, 100, 100,
200, 200, 50,
70, 70, 70,
70, 255, 70,
110, 110, 255
};

// octógono
/* float coord[] = {
0.0f, 0.0f,
-0.25f,-0.5f,
0.25f,-0.5f,
0.5f,-0.25f,
0.5f, 0.25f,
0.25f, 0.5f,
-0.25f, 0.5f,
-0.5f, 0.25f,
-0.5f,-0.25f,
-0.25f,-0.5f
};
unsigned char color[] = {
100, 100, 100,
255, 0, 0,
255, 0, 0,
0, 255, 0,
0, 0, 255,
0, 0, 255,
0, 0, 255,
0, 255, 0,
255, 0, 0,
255, 0, 0
}; */

// create VAO
glGenVertexArrays(1,&m_vao);
glBindVertexArray(m_vao);
m_vertex = sizeof(coord) / sizeof(coord[0]) / 2;
// create coord buffer
```

```cpp
GLuint id[2];
glGenBuffers(2,id);
glBindBuffer(GL_ARRAY_BUFFER,id[0]);
glBufferData(GL_ARRAY_BUFFER,sizeof(coord),coord,GL_STATIC_DRAW);
glVertexAttribPointer(0,2,GL_FLOAT,GL_FALSE,0,0); // coord
glEnableVertexAttribArray(0);
glBindBuffer(GL_ARRAY_BUFFER,id[1]);
glBufferData(GL_ARRAY_BUFFER,sizeof(color),color,GL_STATIC_DRAW);
glVertexAttribPointer(1,3,GL_UNSIGNED_BYTE,GL_TRUE,0,0); // color
glEnableVertexAttribArray(1);
}


Polygon::~Polygon ()
{
}


void Polygon::Draw ()
{
glBindVertexArray(m_vao);
glDrawArrays(GL_TRIANGLE_FAN,0,m_vertex);
}
```
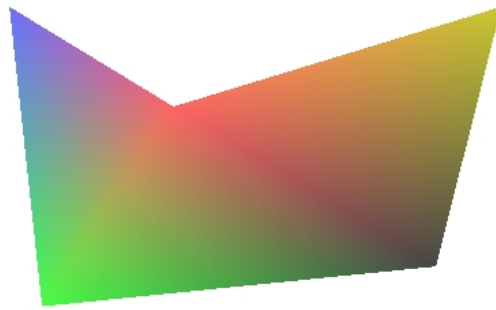
Foto do resultado:

Triangle test

```
neco@fedora:~/Documents/comp-graf-geral/comp-graf$ ./comp_graf_project
libdecor-gtk-WARNING: Failed to initialize GTK
Failed to load plugin 'libdecor-gtk.so': failed to init
OpenGL version: 4.6 (Core Profile) Mesa 25.1.7
```