

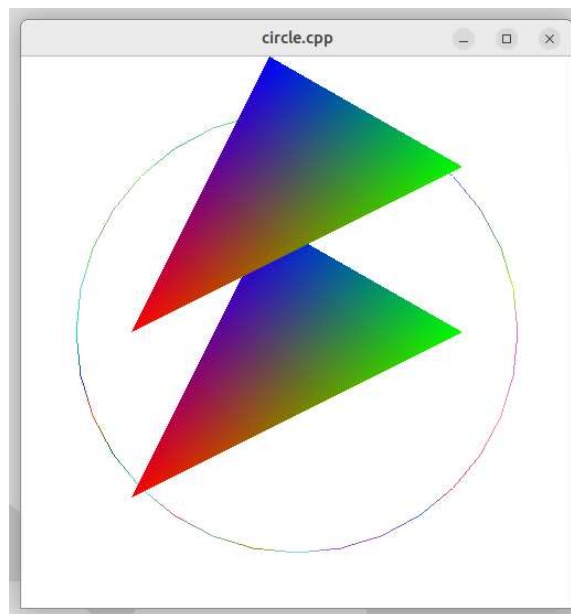
Assignment 2

CS 420

For each of the following, submit your source program(s).

1. Exercises 3.2, 3.6, and 3.10. Submit a separate program for each exercise.

For Exercise 3.10, use one additional VAO for a triangle:



Here's the geometry you should use for the triangle:

```
static float tvertices[] =
{
    20.0, 20.0, 0.0,
    80.0, 50.0, 0.0,
    45.0, 70.0, 0.0
};

static float tcolors[] =
{
    1.0, 0.0, 0.0,
    0.0, 1.0, 0.0,
    0.0, 0.0, 1.0
};
```

In addition to setting up the triangle's VAO, you'll need to add the following to `drawScene` in the appropriate places with the appropriate parameters:

- Reset the model view matrix, using `glMatrixMode()` and `glLoadIdentity()`.
 - Switch VAOs using `glBindVertexArray()`.
 - Use `glDrawArrays` with `GL_TRIANGLES` to draw a triangle using the VAO for a triangle.
 - Use `glTranslatef(0.0, 30.0, 0.0)` to draw the second triangle above the first triangle.
2. Exercises 3.15, 3.16, and 3.18. For 3.18, use the up-arrow key to increase the circle's radius and the down-arrow key to decrease the circle's radius.

Write one program, incorporating all three exercises into it.

Use the keyboard callback to select the drawing mode. Pressing 1 should select drawing a circle by clicking on two points (Exercise 3.15). Pressing 2 should select drawing a circle by selecting one point and then dragging the mouse to select the radius (Exercise 3.16). Remain in the same mode until a different mode is selected. In either mode, the circle's radius should be changeable by using the arrow keys (Exercise 3.18).

Revise `printInteraction()` appropriately.

A few hints for this set of exercises:

- (a) Use a VAO to create a circle with a radius of 1.0 centered at the origin.
- (b) Use `glTranslate3f()` to translate this circle to its actual center on the screen
- (c) Use `glScale3f()` to enlarge this circle to its actual radius.
- (d) Do not forget to convert `y` to `y - h` where appropriate.