GUI Summer 2020

Assignment – Interface-3 (I3)

Due on 6/30/2020

For this assignment, I will give 5 extra points to students that exceed the requirements posed in the assignments. For example, using animation for the fractal, adding lighting and shading, adding texture mapping, adding curves, and adding "nice" features. This will be somewhat subjective.

Submission Instructions:

1. Please carefully follow relevant I1 instructions
2. Please submit **SEVERAL** images (in JPEG) that show **SEVERAL SNAPSHOTS** of the scene obtained through running your program with **different input parameters.**

Assignment Instructions:

This assignment is an extension of assignment I2, it includes the following tasks:

The radio should include four drawing areas,

1) Adding transformations and perspective projection to the simple graphics (from I2),
2) Drawing of an AM carrier,

Eventually, you will have two drawing windows.

1) Simple graphics window:
    a. Use the graphics produced in I2 (with perspective projection).
    b. Each object from I2 should be rendered in the following way:
        i. Each object should be translated and scaled with different translation and scaling parameters so that objects do not overlap.
        ii. Except for the rectangular, each object should be rotated around an arbitrary point (you can choose the point, it can be the same point for all the objects, and it can be the origin) with a different rotation angle.
        iii. The rectangular (or square) should be rotated around its center.

2) AM carrier
    a. Add a utility to draw an AM carrier of the form $c(t) = A\cos(2\pi f_c t)$. Where, f_c is the frequency of the AM station currently selected, and A is volume (A and f are determined in the widget area). The volume A should be in the range $[0, 5]$, and f_c should be in the range $[1, 100]$. The drawing should include at least 10 full cycles of every cosine wave.