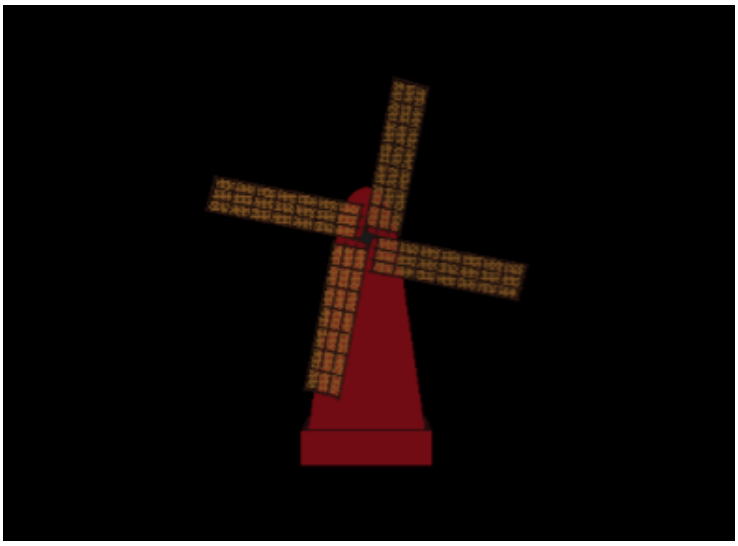
CST8236 – Computer Graphics

Project 1 – Due October 14, 2016 at Midnight

The purpose of this assignment is to demonstrate your knowledge of a scene graph, and the matrix stack for performing rotation, translation and scaling.

In this project, you will implement a program that uses the SFML library to display 3 windmills. The windmills should have 4 rotating blades. Here is an example, but it doesn't have to look exactly like this:



These 3 requirements are sufficient for ~80%:

1. You should have 3 windmills side-by-side.
2. Your program should listen for key presses and mouse movement. Moving the mouse up/down should rotate a windmill around another point in the window (eg. another windmill). Moving the mouse left/right should cause it to rotate around its center. Pressing the keys 1, 2, or 3 should make only windmill 1, 2, or 3 move respectively. Pressing 4, or "a" for all, should cause each windmill to reset its position, and to rotate around the windmill to its left based on input; the first windmill will rotate around any point in the window.
3. The windmills should have a texture which you can download from the internet. They should not use normal colours.

To get a grade of 100%, you must implement the 3 requirements above, and then implement:

1. audio (a background sound of wind howling, or birds chirping, etc..)
2. clouds blowing in the sky (use a picture of the sky with clouds and animate the texture mapping coordinates.

Let me know if you need any clarification and have fun with this and be creative!

Grading:

3 windmills, side-by-side	/ 6
Vertical mouse movement rotates windmill around point in window.	/ 3
Horizontal mouse movement rotates windmill around its center	/ 3
Pressing 1, 2, 3 changes which windmill is being affected	/ 3
Pressing 4 resets transforms, and moves each windmill about its left-neighbour	/ 4
Windmill has texture for base and blades	/ 2
At least one source of audio (music, or sound)	/ 2
Animating background texture to simulate movement	/ 3
Total	/ 26

Value:

- This project is worth 15% of your final grade.

Submission:

- GitHub repository named 'CST8236-Project1' (or if another name is used, an email providing a link to the repository).