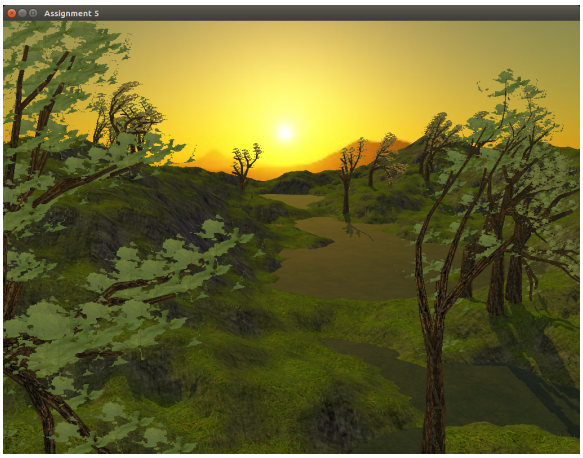
3D Nature Environment with Procedurally Generated Terrain and Trees

Name: Liam Ozog
User ID: lozog
Student ID: 20515121



Artistic Merit (Polish/Artistry/Humour)

Technical Merit (Algorithms/User Interface/Graphics Techniques)

Difficulty

Code/Documentation/Demo

Mark

Objective Mark:	/10
Subjective Mark:	/6
Total	/16

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Objectives

___ **1:** UI: Implement a first-person camera with associated controls to allow navigation of the scene, including movement in 3 axes, speed adjustment, and camera rotation.

___ **2:** Modelling: Add a skybox to the scene using cube mapping.

___ **3:** Implement reflections for water using OpenGL's stencil buffer.

___ **4:** Generate a pseudo-random terrain heightmap with Perlin noise.

___ **5:** Add grass to the scene using billboards to create the illusion of many blades of grass.

___ **6:** Add texture to the ground and foliage using texture mapping.

___ **7:** Use L-systems to procedurally generate trees.

___ **8:** Implement shadows using a depth map stored in an OpenGL frame buffer.

___ **9:** Implement bloom using framebuffers and Gaussian blur.

___ **10:** Objective ten. Use a "screen-door" effect to simulate alpha transparency for grass.