**Graphics – Assignment 2 (Individual Project) Report - Kari McMahon**

**Motivation**

For the assignment I choose to develop a winter scene as I felt it enabled a lot of flexibility for different techniques, objects and textures. It could easily be built on and it was also relevant to the time of the year.

**Design**

The code design of the program tries to take an object oriented approach using various classes with winterScene.cpp being the main class that connects these. I felt an object oriented made the code easier to read and maintain. Many of the classes are taken from class examples and then modified. The code contains two vertex and two fragment shaders which are used for the particles and for the overall scene.

**Application**

The scene contains various features which are:

* Textured snow terrain.
* A skybox.
* A recursive tree.
* Moving textured pond.
* Snow particle animation.
* Fire particle animation.

My core focus for the assignment was particle animations and texturing. I created textured terrain which I tried not to make too hilly cause I felt didn’t create the right effect for the scene I was trying to produce. I added a skybox as I felt it aided the effect of the scene. Snow particles are used to try and produce a winter effect with the fire particles above the logs to create an effect of warmth within the winter scene. I created a basic recursive tree to add to the winter scene, I wanted to have more of these throughout the scene but with the current method slowed it down quite a lot and due to time constraints I didn’t have time to look at further solutions. The moving textured pond was again to add effect.

Lighting and shading……

Console output.

Controls are available in the application to move the view in the x and y direction. I struggled quite a lot with placing objects on the terrain and the view giving an effect of the objects appearing to float in the sky or move significantly in the x direction. For the most part I fixed this but still haven’t really found what was causing the issues.

**Screenshots**

**Project’s Achievements, Challenges And Improvements**

Achievements:

* Textured terrain originally caused a lot of issues getting the textures to look correct but now has been fixed and fits well with my scene.
* Creating a recursive tree that looks right for the scene.
* Creating a skybox which I think really adds to the scene.
* Learning a lot about textures.

Challenges:

* Camera view with the terrain.
* Understanding textures for large objects
* Understanding the lsystem, changing from lines to cylinders.

Improvements for the application in the future:

* Creating infinite snow with it also falling on the ground.
* A textured fire particle system that looks more realistic.
* Using billboarding to spend up drawing of trees.

**Conclusion**

**References**

Images used in the application:

Skybox image from <http://www.custommapmakers.org/skyboxes.php>. Created by Chris Matz and can be used and distributed under the terms of GNU general public license ver 2.

Snow texture from <http://www.spiralgraphics.biz/packs/snow_ice/?23> which is royalty free.

Water texture from <http://dkd-stock.deviantart.com/art/Water-Texture-01-87425499> which is by DKD-stock.