COSC363: Computer Graphics Assignment 1 Report

Scene Description:

This scene consists of a wooden villa situated on an open plane. The house is home to Penny the Penguin, Creed the Creeper, Chow the Cow and Sammy the Snowman. Candice the Candle is a lit candle standing in the corner to give the other characters warmth at night. There is a main light in the house, but the candle also gives off light for when the power goes out. The house is surrounded by green grass on a cloudy day,
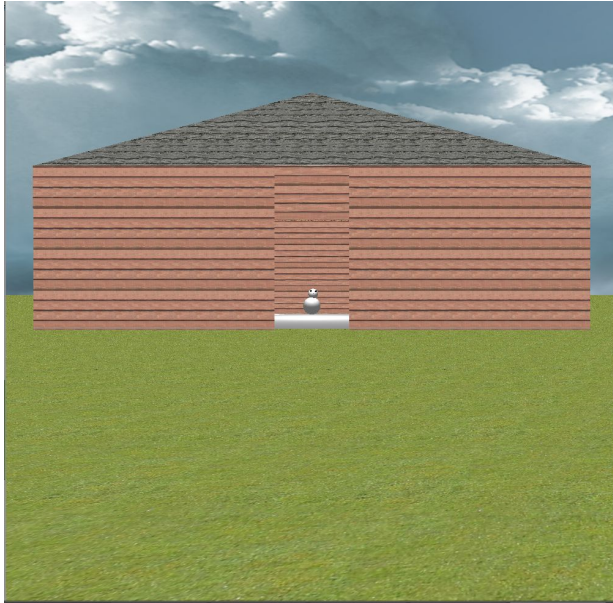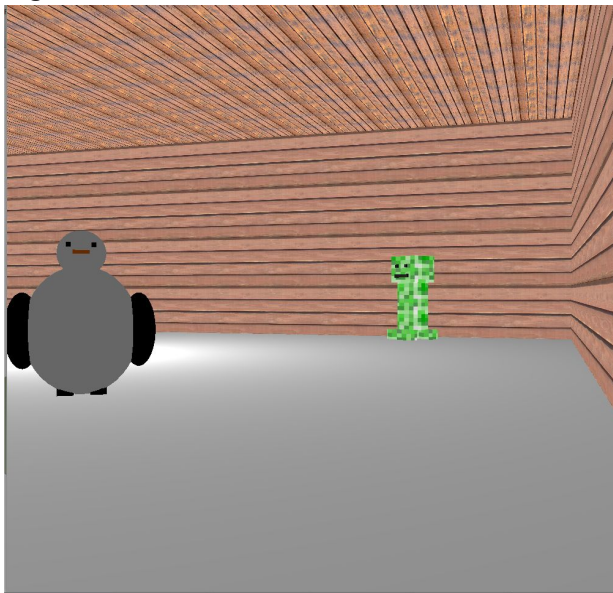

Figure 1: View of the house.

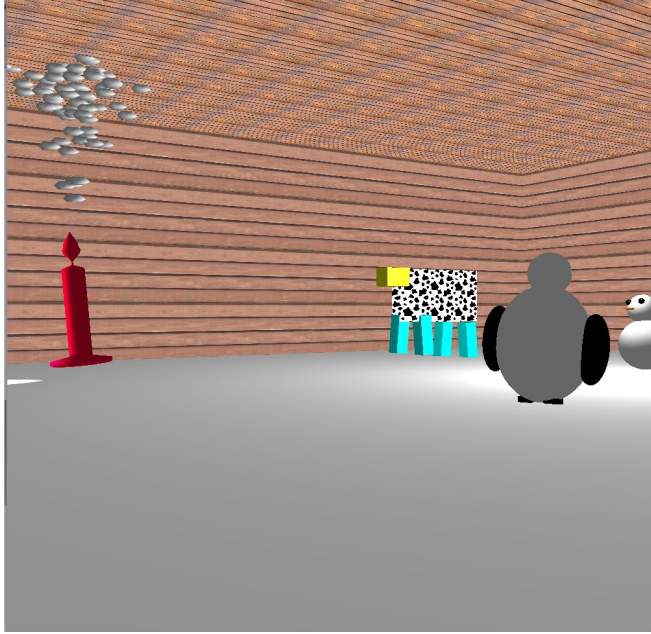**Figure 2: View of penguin and creeper in the house.**

Figure 3: View of the candle, cow, penguin and snowman in the house.

Extra Features:
A spot light on a moving object: The candle has the effect of being lit, and casts a spotlight as it rotates. This spot light moves with the candle is it rotates about the x-axis.
Two camera modes: The first camera mode defaults to being outside the front of the house and gives you full movement controls. The second camera mode is placed in a first person view of the snowman, and translates along the x-axis as the snowman moves.
Particle systems: As well as casting a spotlight, the candle also has a smoke particle effect emitting from the wick. These smoke particles rise up and eventually fade away reset.

Model Descriptions:
Penny the Penguin: Created out of 9 glut objects. The movement is done by rotating the whole penguin about the y-axis. The walking movement is given by rotating the feet about the z-axis, and the waddle is given by rotating the whole penguin about the x-axis. Penny has specular reflections on her arms and eyes.
Creed the Creeper: Inspired by minecraft. This 7 glut object is textured to look like a creeper. To give it an 'exploding' feel, all the objects are collectively being scaled larger and smaller along x, y and z.
Sammy the Snowman: Created by 5 glut objects bobs his head back and forth along the x-axis. Sammy has specular reflection on his eyes.

Chow the Cow: Made out of 6 glut objects, with a texture mapped on to the body to give it a more cow look. His legs continuously have a walking animation given by rotating them about the x-axis.

Candice the Candle: Is made by a system of revolution. In order to map the correct coordinates, a sketch was done to give the points at each change of direction as demonstrated in figure 4 below. These numbers changed as the design was implemented, but the scale stayed mostly the same.
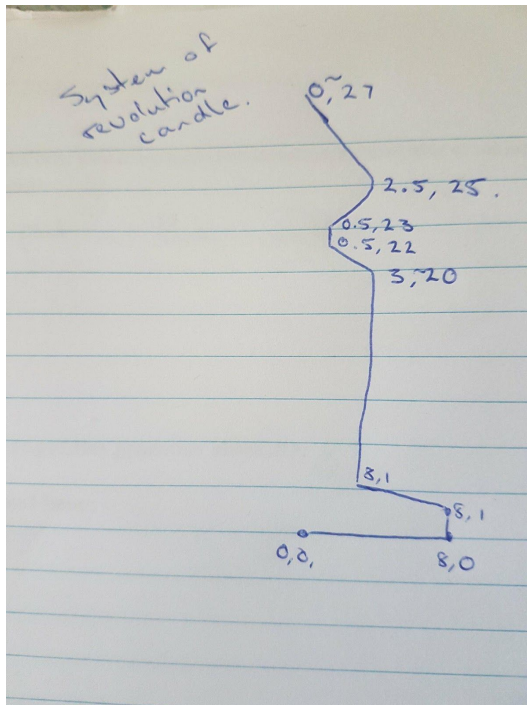

Figure 4: Sketch of rough points for the system of revolution candle.

Control Functions:
Up Arrow Key: Moves the camera forward
Down Arrow Key: Moves the camera backwards
Left Arrow Key: Rotates the camera left
Right Arrow Key: Rotates the camera right
F1: Transitions the camera between the two camera positions (main camera and snowman camera)

References:
http://www.opengl-tutorial.org/intermediate-tutorials/billboards-particles/particles-instancing/ - Creating particle effect.
Lab1, Lab2, Lab3, Lab4