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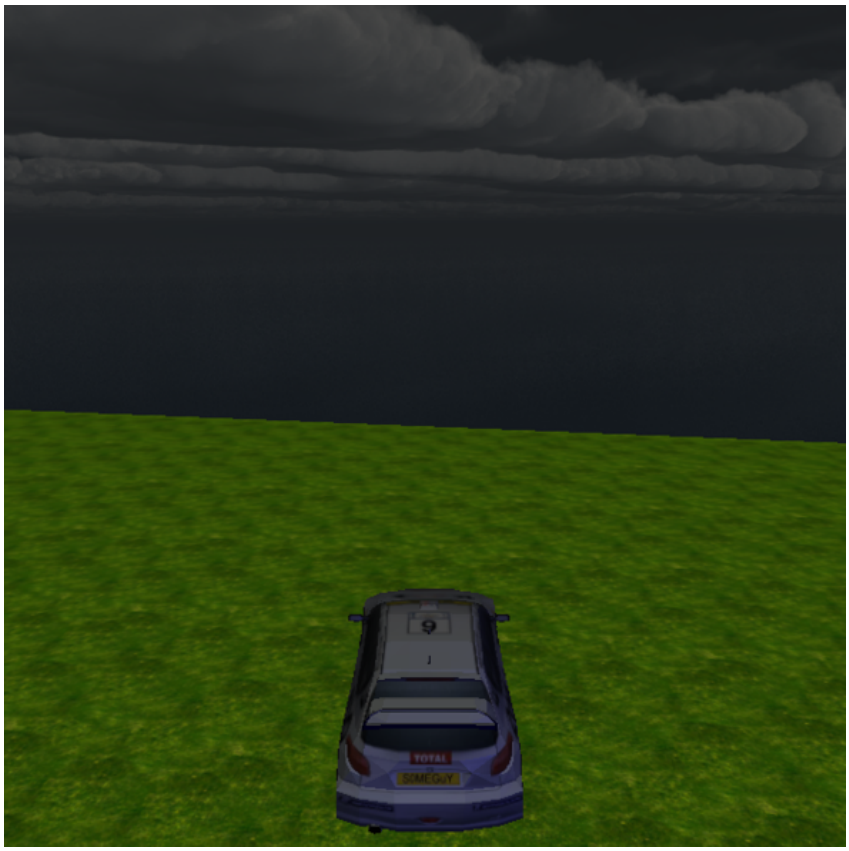
Assignment 3 part 2

Forest Drive

For this assignment I created a forest landscape and a car that you can drive around in. You can control the car with the arrow keys, change driving perspective, drive into trees, and enjoy the view.

Directional light

For this part I created a light that shines from directly above. You can see this light in the tree leaves, and on top of the car. I used Blinn-Phong lighting for this light because it is more efficient.



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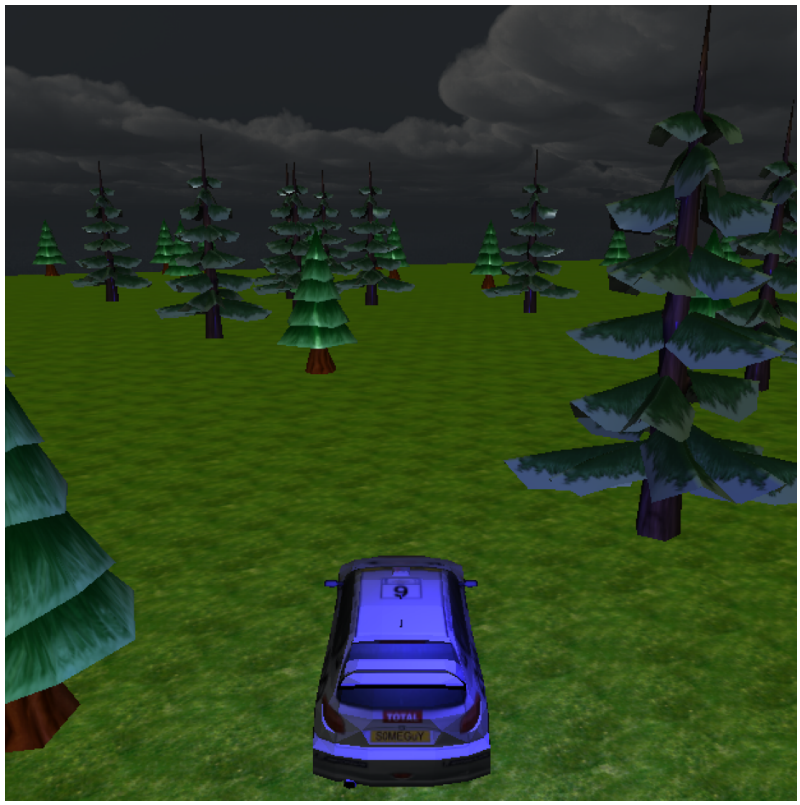
Point Light

For this part I created a blue light that hovers over the ground in the center of the map. You can see this by driving to the middle. Something that I noticed I needed to do was multiply the light location by the view matrix to ensure that it stays in the centre



Loading multiple obj files

The three models I loaded were the player's car, and two different trees. I also generated a flat ground, but that doesn't really count as a model. All models get loaded into a single model class. The Car and Tree classes inherit from the Model class, and Polymorphism is used to call all the different methods.

Multiple Cameras

There are two camera angles available to the player. A third person view from behind the camera, and a first person view from the ground. When viewing from the first person perspective, I don't render the car because you wouldn't be able to see anything. To switch between the two cameras, press spacebar.

Texture Mapping

There are three different types of texture mapping used in my program. One for the skybox, one for the ground, and the textures loaded from the models.

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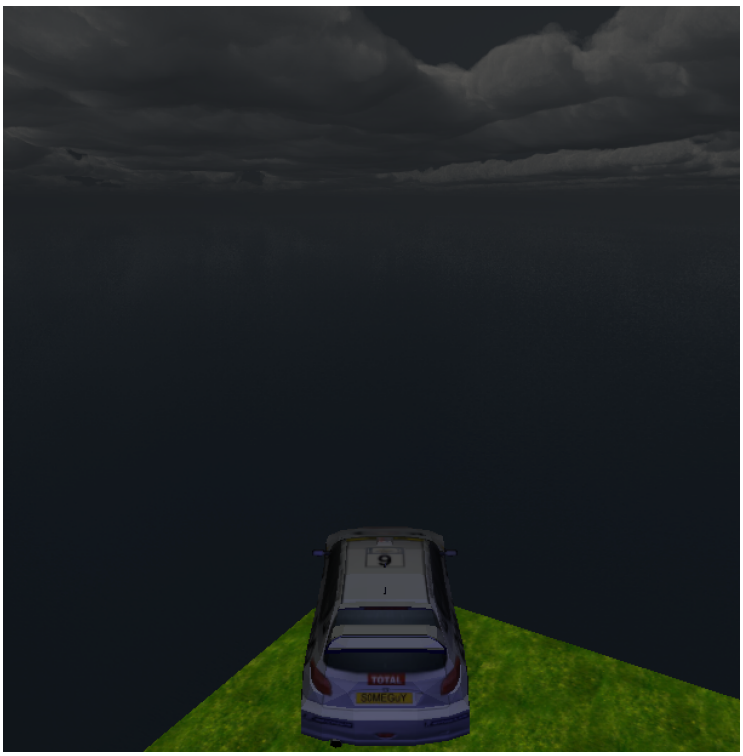
Skybox

I load a skybox into the word by using cubemapping.
Multiple vertex/fragment shaders
I have multiple different shaders. One for the skybox, one for the ground, and one for the models. The ground and sky are different becaue different uniforms are needed for each one



Collision detection

Collision detection was the hardest part. I include collision detection from driving into the edge of the ma, and also into trees. To find the collision of trees, I translate the tree by the cars matrix.