Tutorial 9: Lighting in OSG

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Abstract

In the precedent tutorial, we learnt how to achieve a simple and nice fogging effect. We only noticed that there were some reflections on the terrain at some point. Indeed, these are fake shadow. Before thinking of achieve shadows in OSG, there is an issue you need to address first: **LIGHTING**. This tutorial will delve into Gouraud shading. We will address directional, point and spotlight lights. Stay tuned!

1 Lighting in OSG

Shading your scene greatly improves its realism. This tenet is well known in the computer graphics world. In order to lit your scene, you need to do the following:

1. Create a light group node

2. Create a light source object

3. Create light object

4. Set the properties of the light objects. These include light position, light diffuse and ambient components, light numbers and so forth.

5. Add the light object to the light source node

6. Add the light source node to the light group node

7. Add the light group node to the root node of the scene.

Remember that OSG only wraps OpenGL methods, therefore the previous algorithm can only be repeat a maximum of 8 times! Don't blame OSG for this, it is OpenGL's fault!

2   Scene graph of our scene

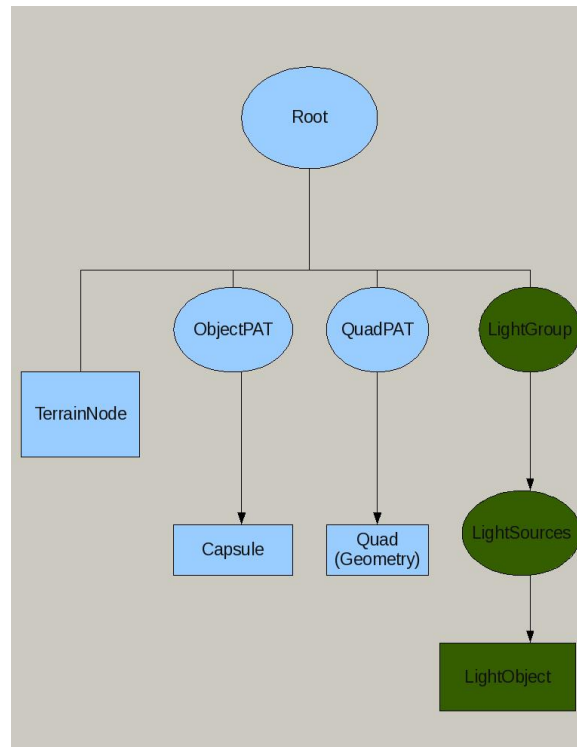The scene graph of our program is shown at the following picture.

Figure 1: The scene graph

3   Results

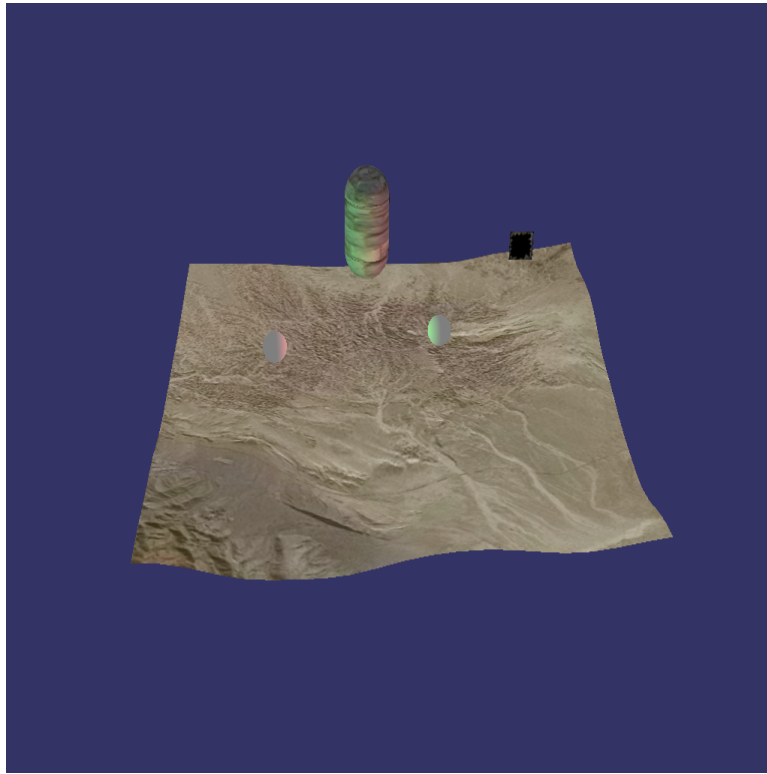The results of our scene is illustrated in the next skecth.

Figure 2: A scene lit with 2 light sources

4 Do-it-yourself

Here is your task list:

1. Study the code and try to add more light sources.

2. In the code I have used point lights. In fact, there is also another category: directional lights, also known as infinite remote light sources. This was defined at the line 134 with the line position. Note that the fourth component of that vector is equal to 1, in order to turn it into a directional light, set the fourth component to 0. You may not notice the difference but when we will study shadows, this will come clearer.