CS557 PROJECT #2

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Renderman is perhaps one of the cool software I have ever worked on. It's been fun generating images by writing very few lines of code. The project seems to be very simple and interesting too.

I have used two geometric models for this project: Sphere and Utah Teapot. To begin with, I took dots.rib and dots.sl from class lectures. These files generates circular dots on sphere. The main task of this homework was to generate elliptical dots on the model. I used the following equation to generate elliptical dots on the sphere:

$$\left(\frac{u-u_c}{A_r}\right)^2+\left(\frac{v-v_c}{B_r}\right)^2 \leq 1$$

It can be observe here that if we put A_r=B_r , the above equation represents the equation of the circular dots which was originally present in the dots.sl files.

I tried different test cases to study the pattern generated over the images. The different case along with the images obtained are given below:

Case 1: A_r=0.05 and B_r=0.02

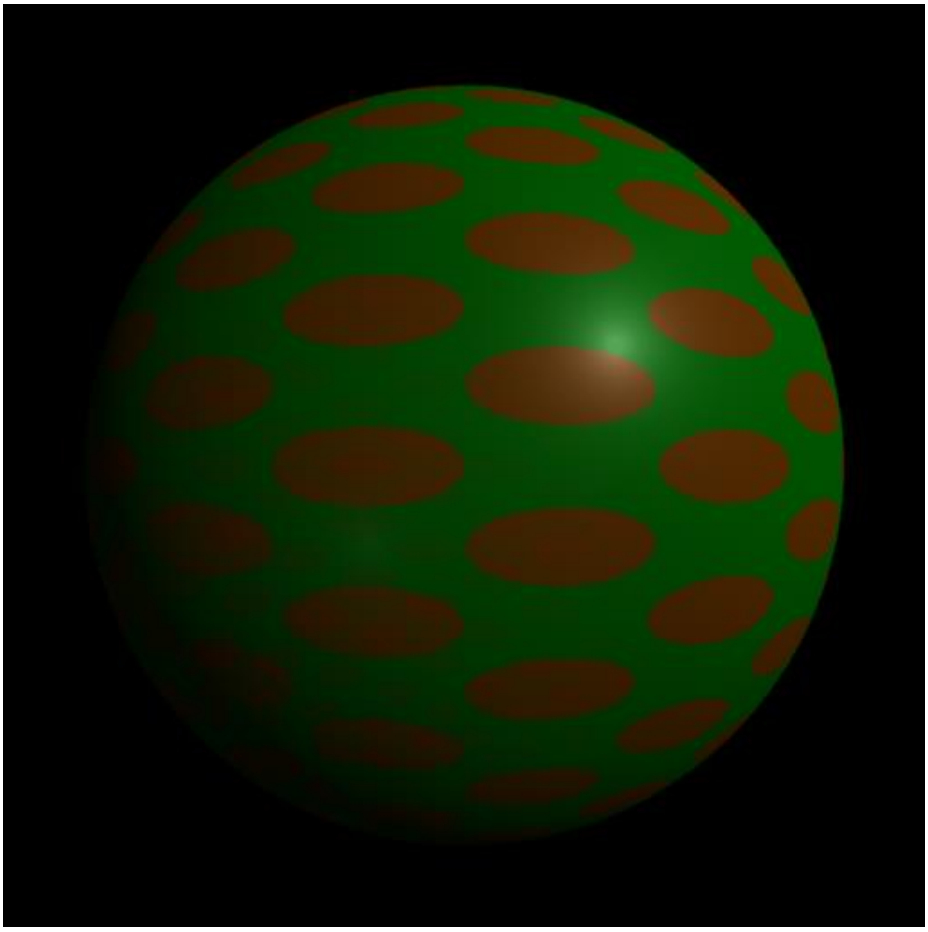

Figure 1. Sphere

Figure 2. Teapot

Case 2: A_r=0.05 and B_r=0.02

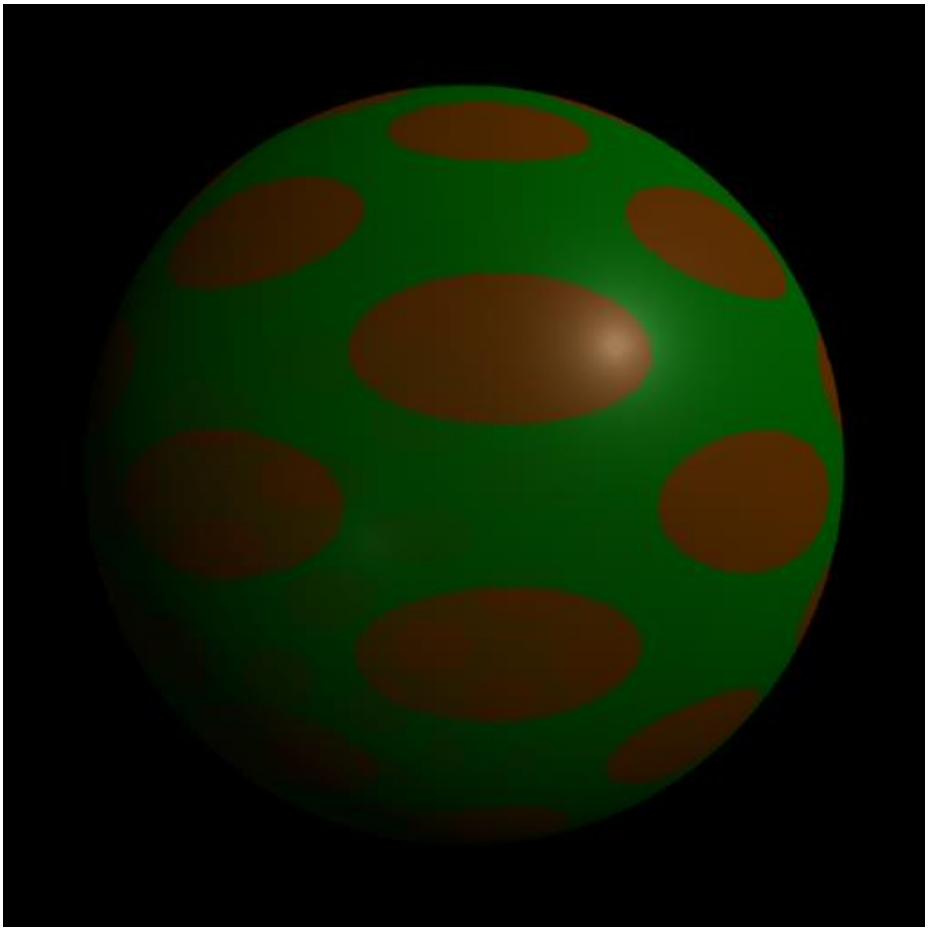

Figure 3. Sphere

Figure 4. Teapot

Case 3: A_r=0.1 and B_r=0.04

Figure 5. Teapot

For Lighting, I tried to change position of the camera by changing the coordinate (10,8,-10), changes the output opacity value to 0.9 and some minor changes which can be seen in the attached .rib and .sl files.

While checking different cases, I found some of the artifacts in the rendering. If figure 2, figure 3 and figure 4 showing elliptical dots on the teapot is observed carefully, it is seen that the pattern is

not unique. I think since the quadrics of the teapot ranges from 0 to 1 completing a circle, the points where the quadrics complete circle, it produces artifacts. These artifacts are more significant in figure 3 and figure 5 where elliptical dots seems to be drawn incorrectly.