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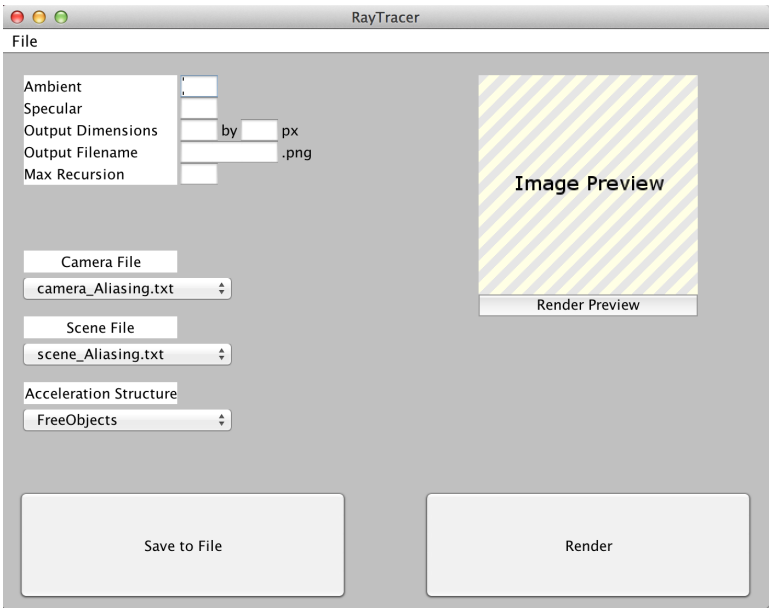
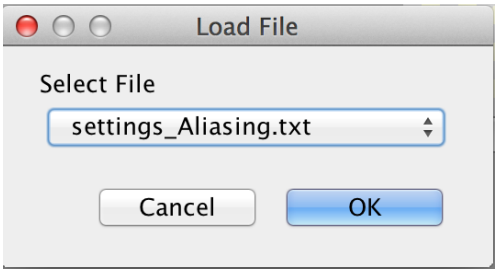
Ray Tracer Manual Test Plan

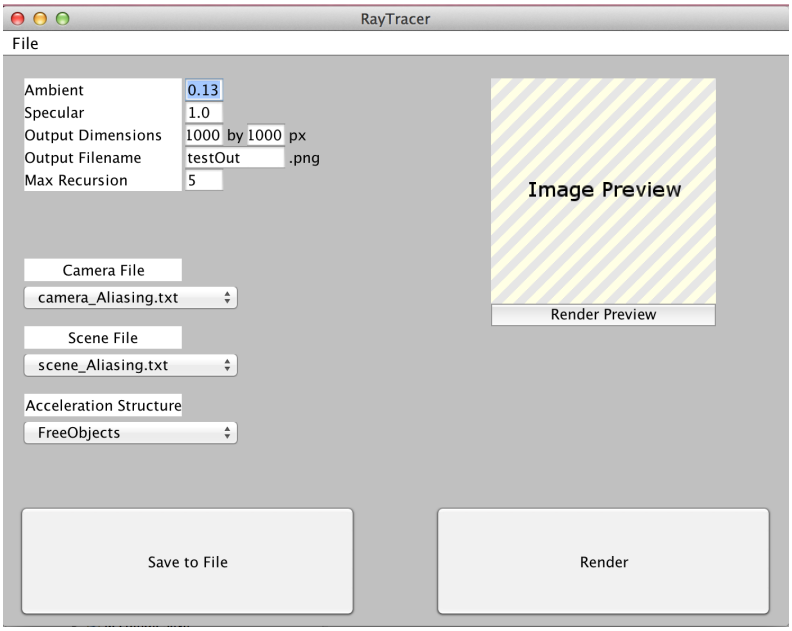
1. UI Testing
    1. Navigate to “Final Project”/src/gui/RenderingInterface.java
    2. Run it



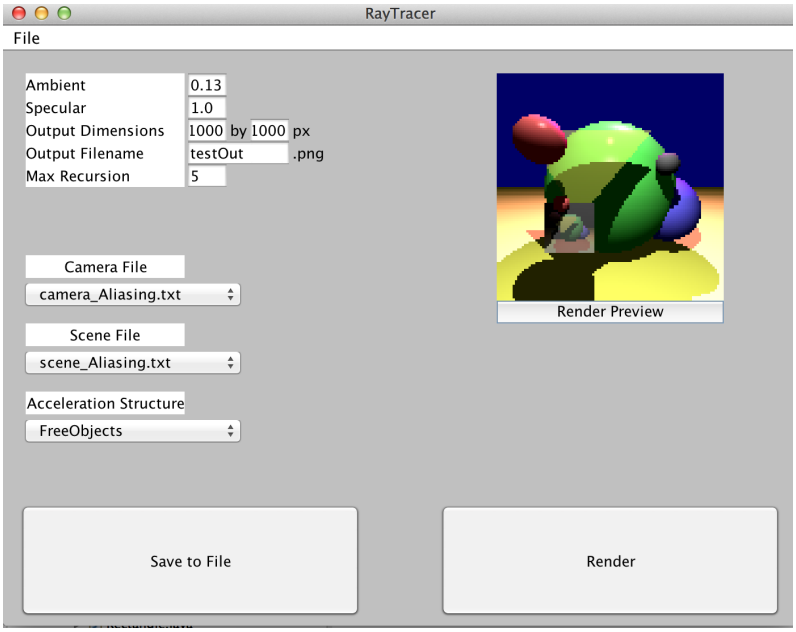
3. The UI elements should be empty, as shown
4. Let’s load an existing settings file
    1. File > Load > Rendering



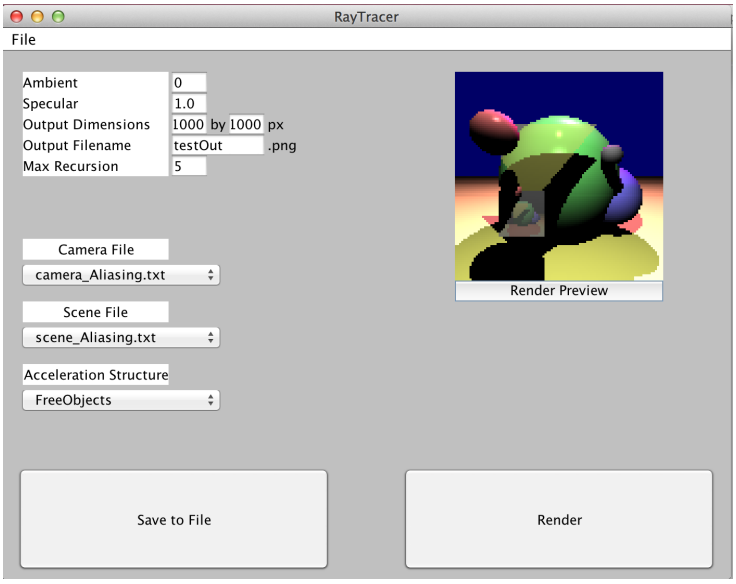
    2. Select settings_Aliasing.txt
    3. Click OK



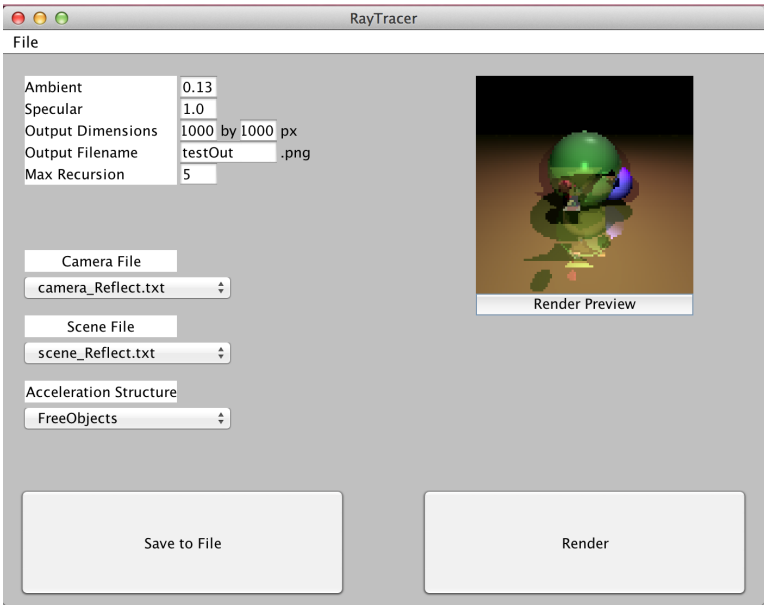
5. The UI Elements have been updated! Let's see if this can generate a preview
6. Click "Render Preview"



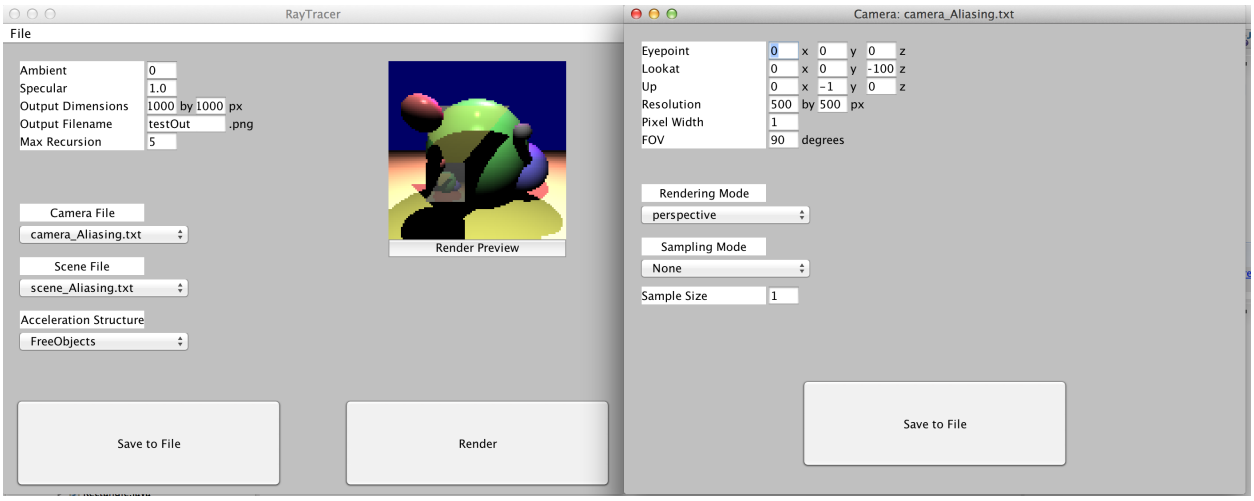
7. Let's change a setting and see it update
8. Edit "Ambient" to 0
9. Render Preview



10. The light in the scene has gone down.
11. Click “Render”
12. The full image should appear in a another window
13. Close the window
14. Click “Save to File”
15. Save with filename settings_Test
16. Let’s load another settings file
    1. File > Load > Rendering
    2. Choose “settings_Reflect.txt”
    3. Render the preview

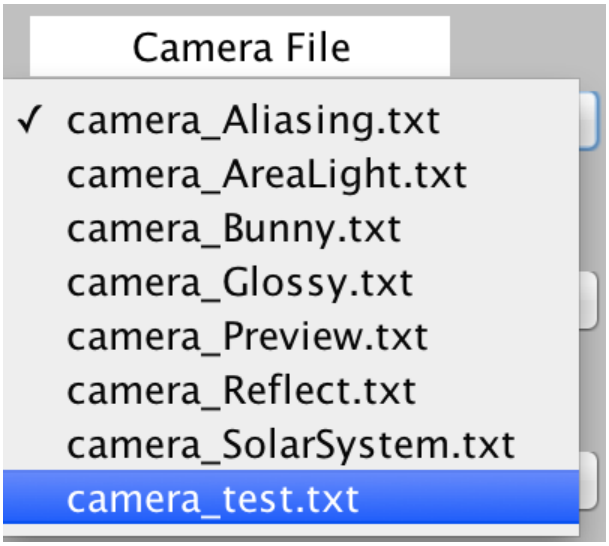


17. Now let's check that we can restore our save
    1. File > "Reload Files"
    2. File > Load > Rendering
    3. Choose "settings_Test.txt"
    4. Our settings should be back to what they were
18. Let's see the camera UI
    1. File > Load > Camera
    2. Choose "camera_Aliasing.txt"
    3. Another window should appear, drag it next to the main window

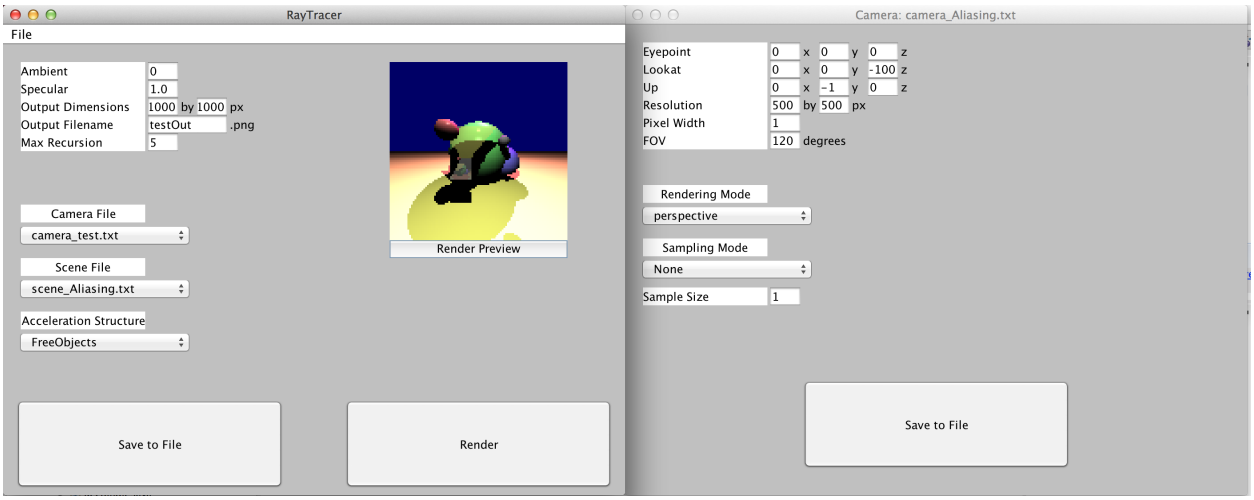


    4. Change FOV to 120
    5. Click "Save to File", save as camera_test
        1. "camera_Aliasing" should be default value

6. In the main window, reload the files
7. Change the Camera File to camera_Test.txt

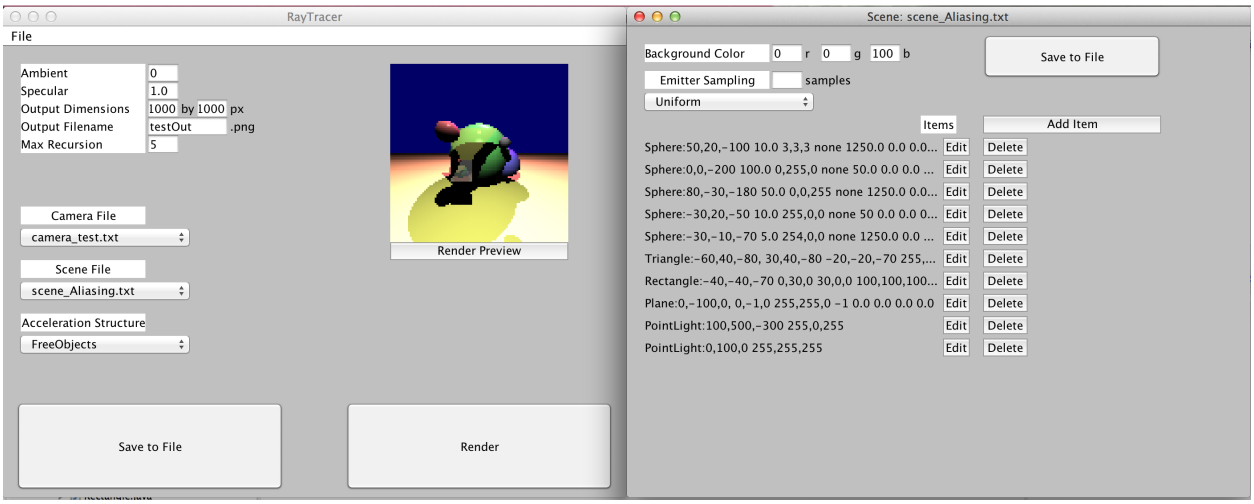


8. Render the preview

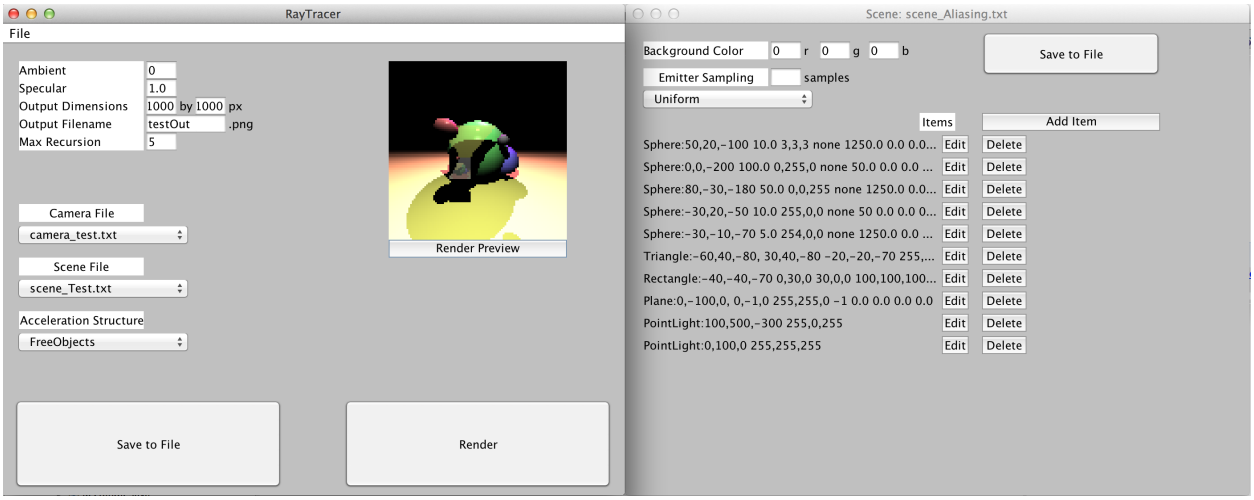


9. The FOV is clearly different
10. Feel free to mess with these settings

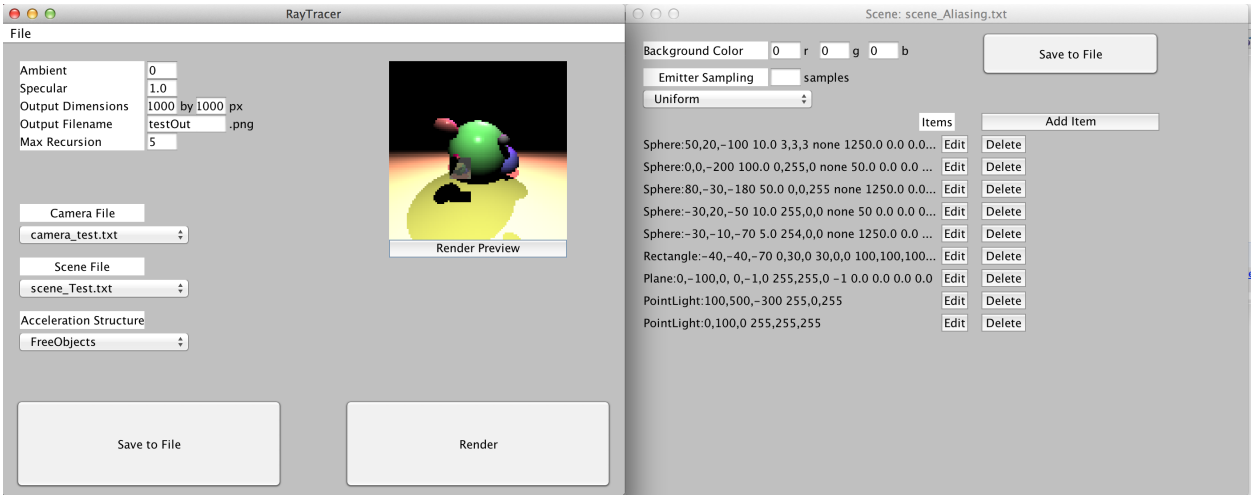
19. Let's see the scene UI
    1. Close the camera window
    2. File > Load > Scene
    3. Choose "scene_Aliasing.txt"
    4. Drag the new window to the side



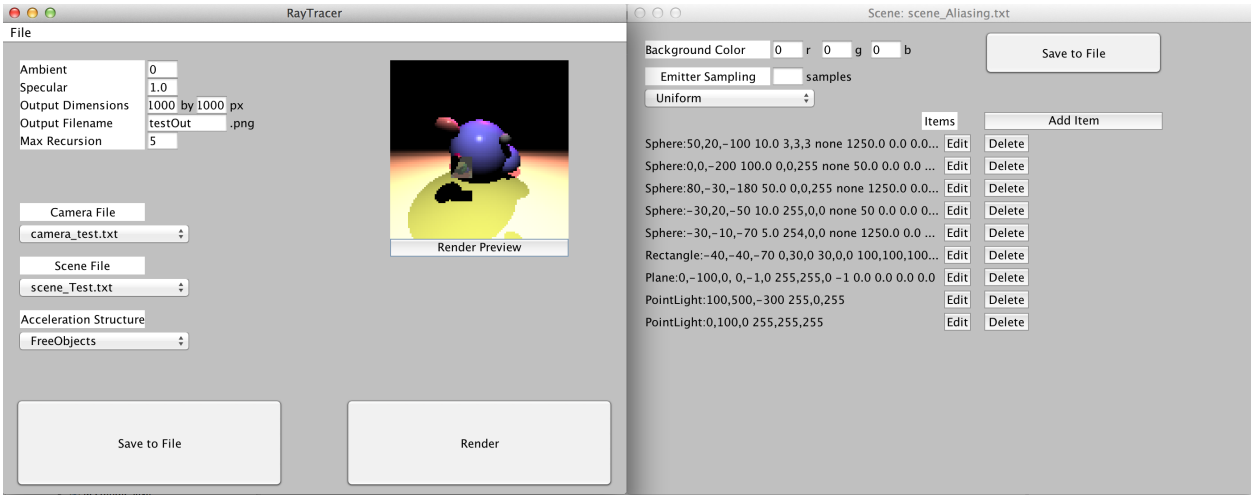
5. Change the background color to 0 r 0 g 0 b
6. Click “Save to File”, save as “scene_Test”
7. In the main window, reload files
8. Change camera file to camera_test.txt
9. Change scene file to scene_Test.txt
10. Render the preview



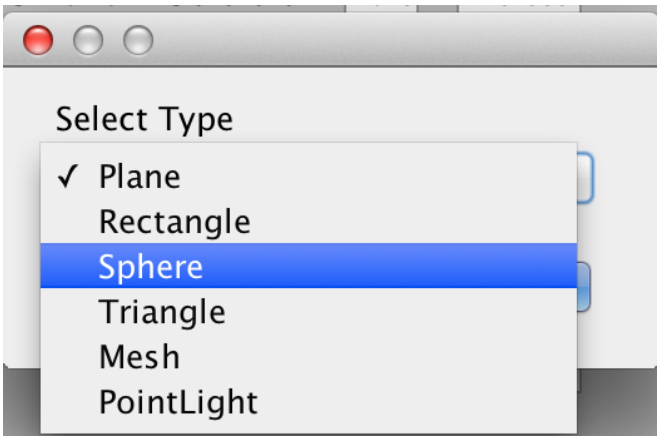
11. I don’t like the triangle, let’s delete it.
    1. Click the Delete button near the triangle line
    2. Save to File, save as “scene_Test”
    3. Render preview



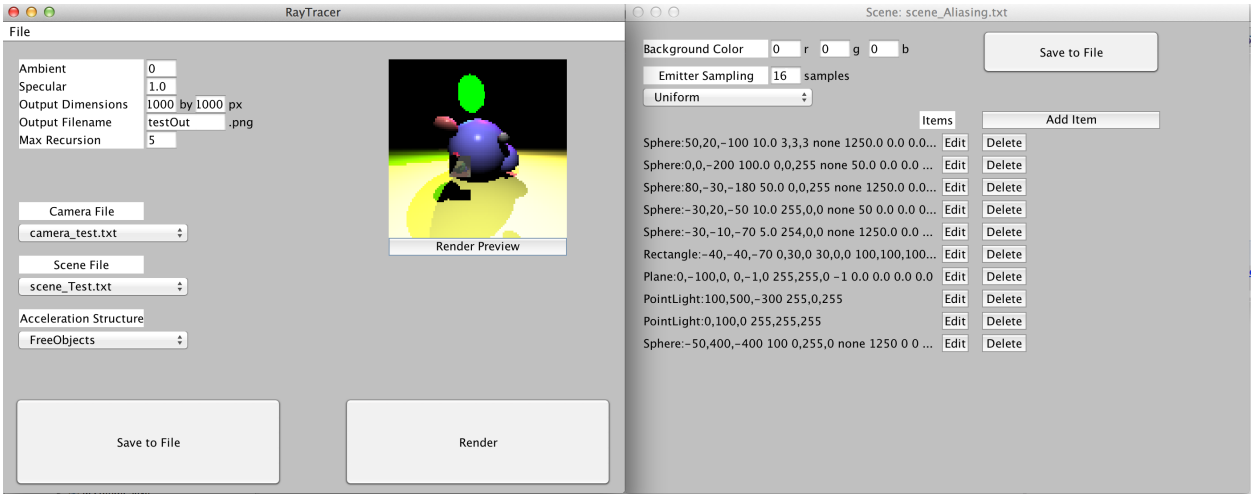
12. I think the big green sphere should be blue, let's edit it
    1. Click the second edit button down
    2. Edit text to "Sphere:0,0,-200 100.0 0,0,255 none 50.0 0.0 0.0 0.0 0.0 False"
    3. Note, this is a temporary solution
    4. Save to file, save as "scene_Test"
    5. Render preview



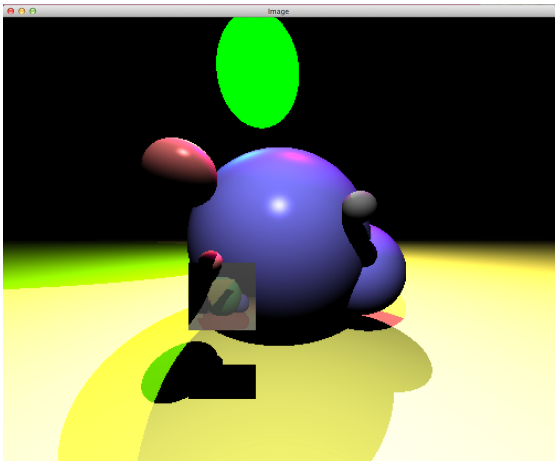
13. Let's put a new sphere in the scene
    1. Click "Add Item"
    2. Select "Sphere"



3. The text should be “Sphere:x,y,z radius r,g,b texture specular_exponent reflectivity glossyExponent refractivity refractionIndex emitter(True/False)”
4. This is a description of the param values
5. Change the text to “Sphere:-50,50,-400 100 0,255,0 none 1250 0.5 0 0 0 True”
6. Note, this is a temporary solution
7. Also, change Emitter Sampling to 16 samples
8. Save to File as scene_Test
9. Load preview

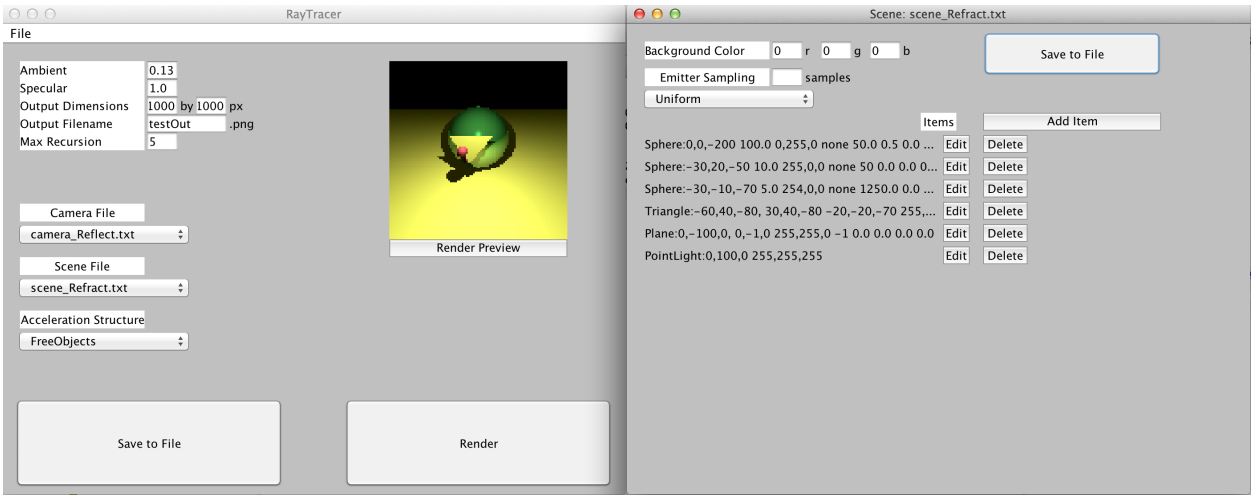


10. Click “Render” while we’re at it

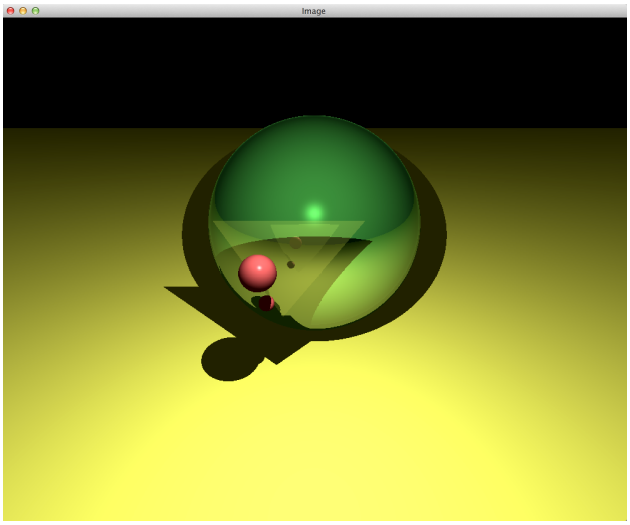


11. Feel free to play with this to test thoroughly

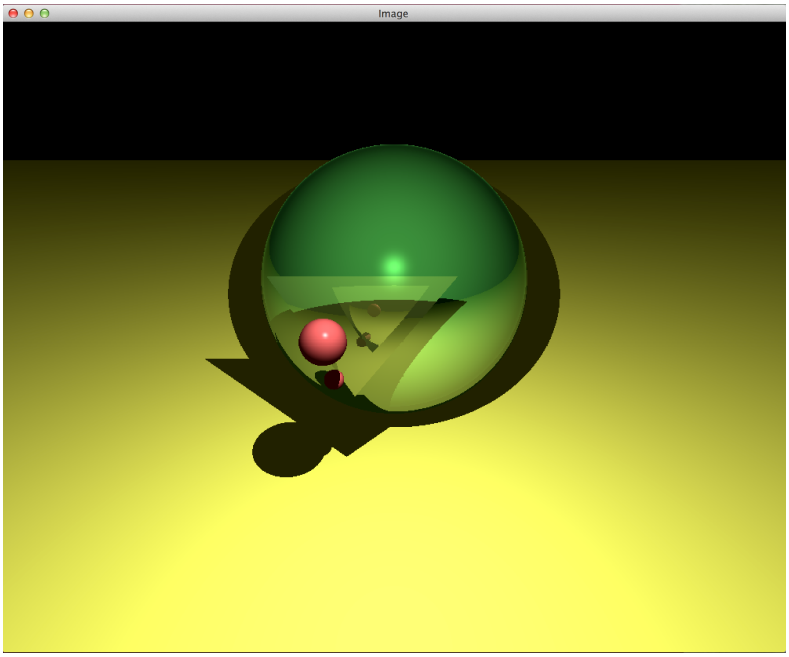
2. Refraction
    1. Close all but the main window
    2. File > Load > Rendering and choose “scene_Reflect.txt”
    3. File > Load > Scene and choose “scene_Refract.txt”
        1. Drag this window to the side
    4. Change the scene file to “scene_Refract.txt”
    5. Render the preview



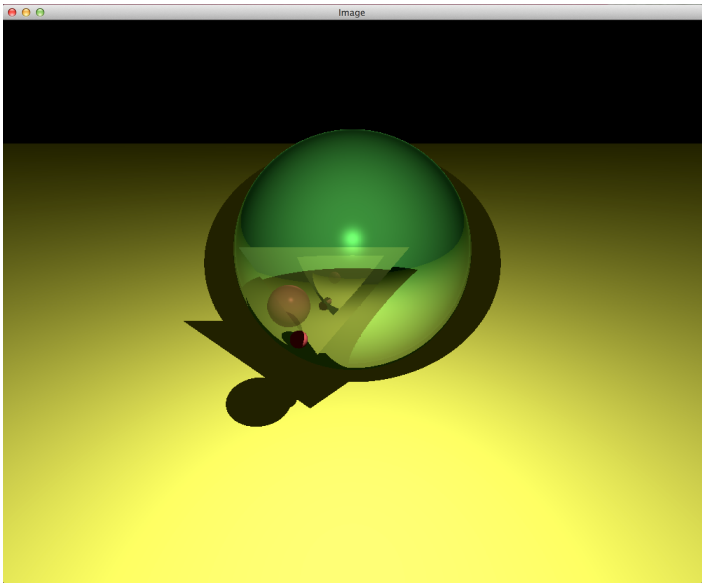
6. Let’s test some refraction. Edit the triangle to “Triangle:-60,40,-80, 30,40,-80 -20,-20,-70 255,255,0 1250.0 0.0 0.0 0.8 1.0”
7. Save to File
8. Render Preview & Render



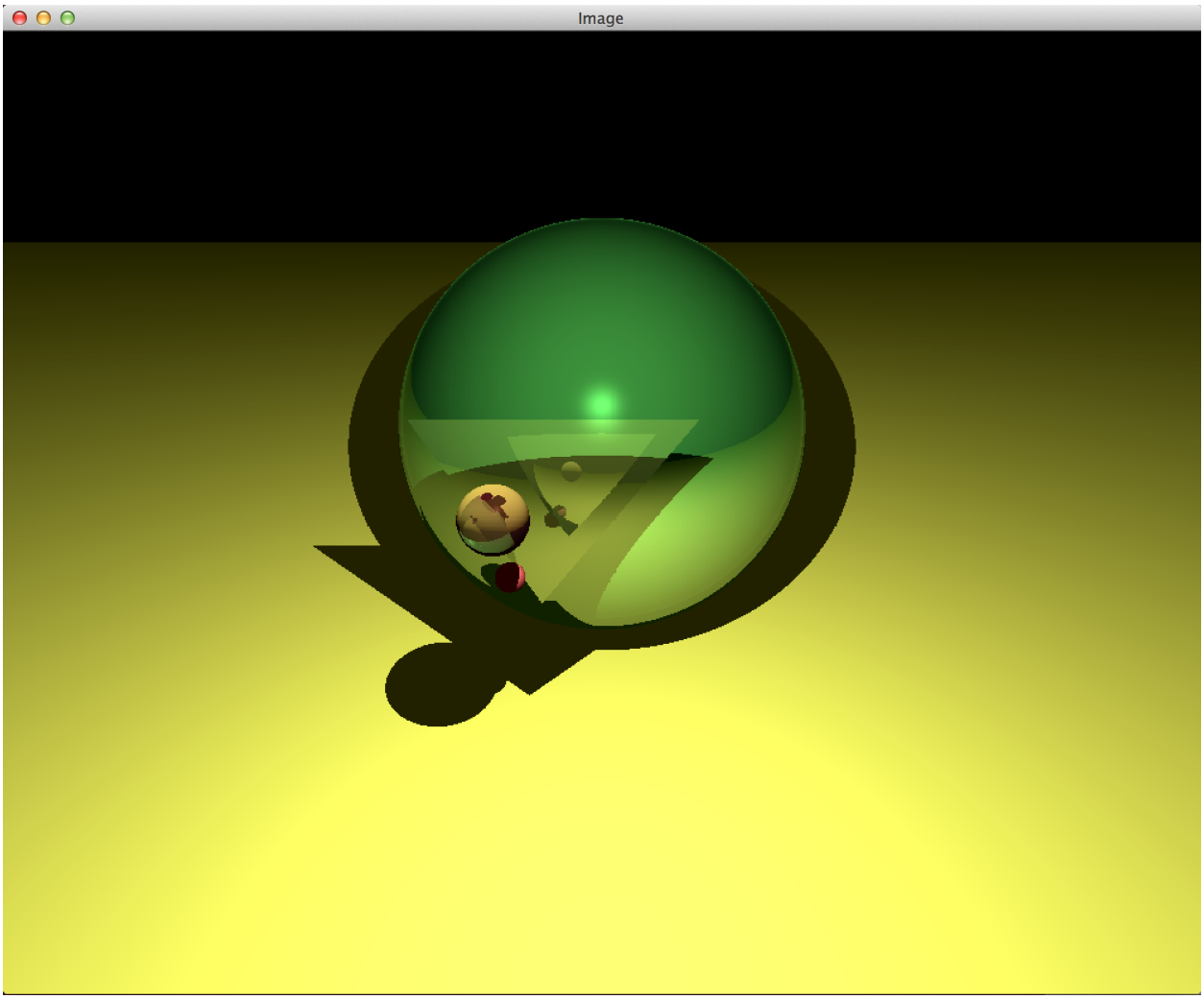
9. The scene's default index of refraction is 1.0 and the triangle's index is set to 1.0, so the triangle is simply translucent
10. Change the triangle's index of refraction to 2.0 "Triangle:-60,40,-80, 30,40,-80 -20,-20,-70 255,255,0 1250.0 0.0 0.0 0.8 2.0"
11. Save to File, Render



12. You can see the distortion of the reflection line on the sphere behind the triangle.
13. Edit the second sphere to "Sphere:-30,20,-50 10.0 255,0,0 none 50 0.0 0.0 0.8 1.0 False"
14. Save to File, Render

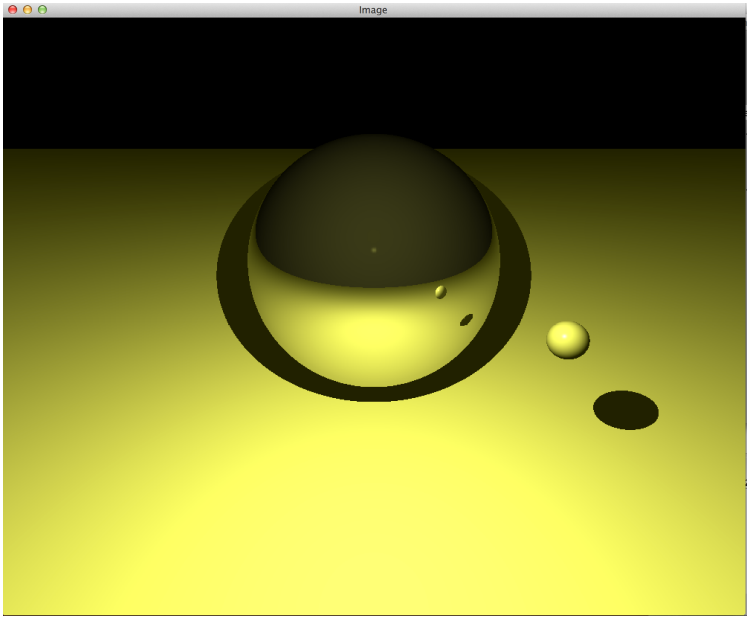


15. The sphere is translucent
16. Change the index of refraction to 2.0 “Sphere:-30,20,-50 10.0 255,0,0 none 50 0.0 0.0 0.8 2.0 False”
17. Save to File, Render

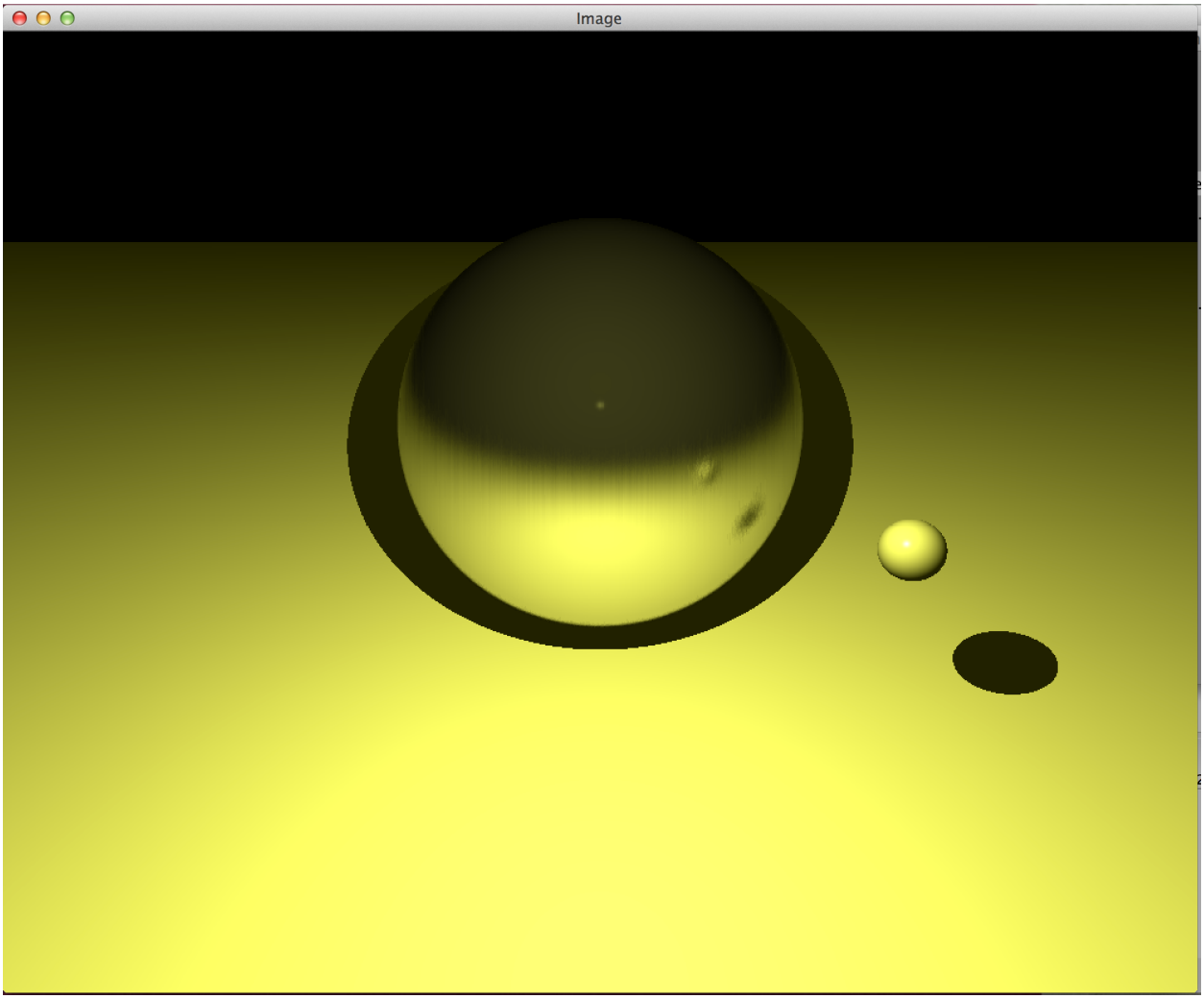


18. The image in the sphere is inverted, as it should be

3. Glossy Reflection
    1. File > Load > Rendering
    2. Choose “settings_Glossy.txt”
    3. File > Load > Scene
    4. Choose “scene_Glossy.txt”
    5. Render the scene

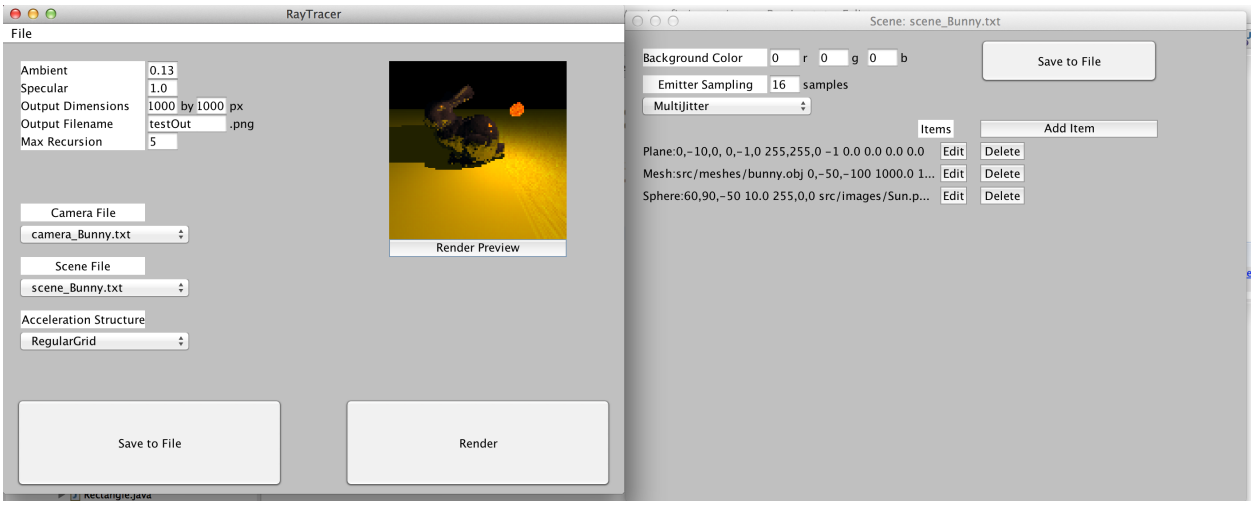


6. This reflection is very sharp, let’s make it glossy.
7. Change the last sphere to “Sphere:0,0,-200 100.0 255,255,0 none 1250.0 0.8 20.0 0 0 False”
8. The glossy exponent is 20. Render the scene.

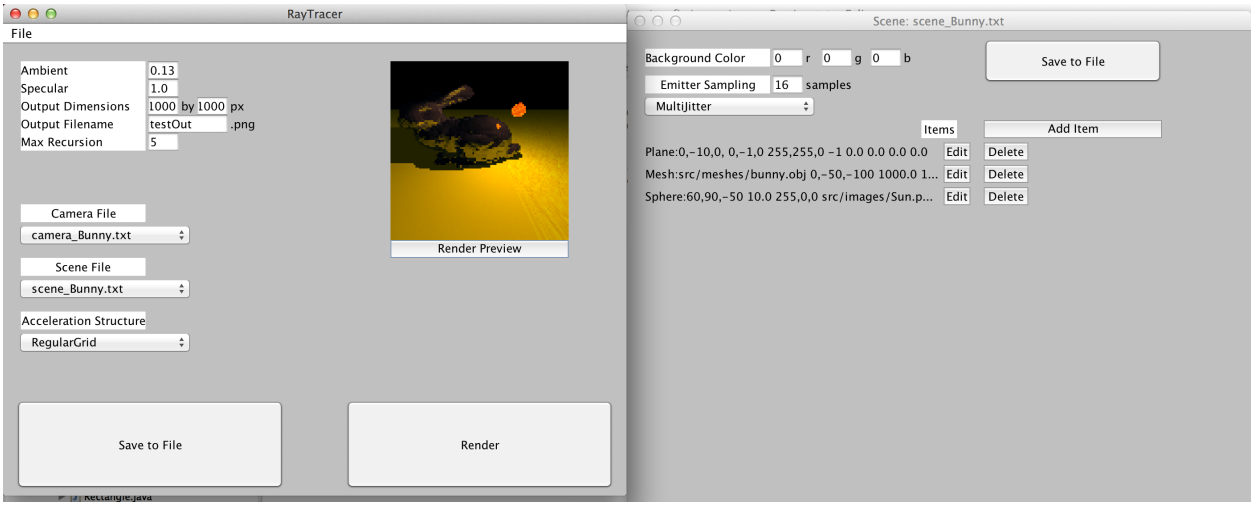


9. This is very glossy.

4. Mesh Transformations
    1. File > Load > Rendering and choose “settings_Bunny.txt”
    2. File > Load > Scene and choose “scene_Bunny.txt”
    3. Render the preview



4. Let's do stretch
    1. Edit the mesh to read "Mesh:src/meshes/bunny.obj 0,-50,-100 1000.0 1.5,1,1 0.0,0.0 0,50,105 1250.0 0.5 0.0 0.0 0.0"
    2. This stretches the bunny in the x direction
    3. Save & Render the preview



5. Let's do rotate
    1. Edit the mesh to read "Mesh:src/meshes/bunny.obj 0,-50,-100 1000.0 1,1,1 0.0,0.5 0,50,105 1250.0 0.5 0.0 0.0 0.0"
    2. This rotates it down the phi direction by 0.5 radians
    3. Save & Render the preview