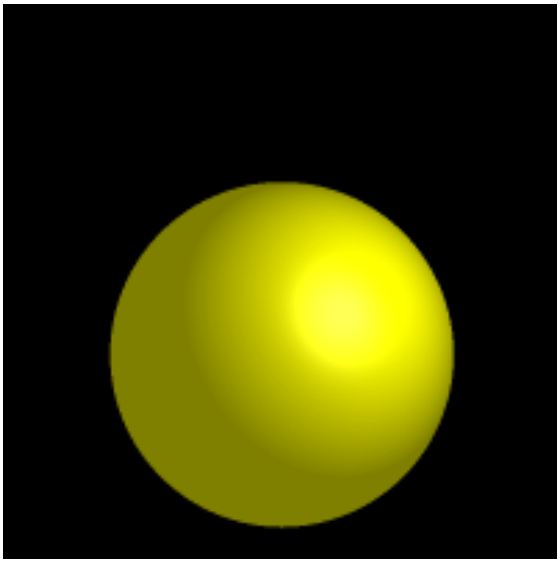
Manual Test Plan



Setup

Bitmap Test

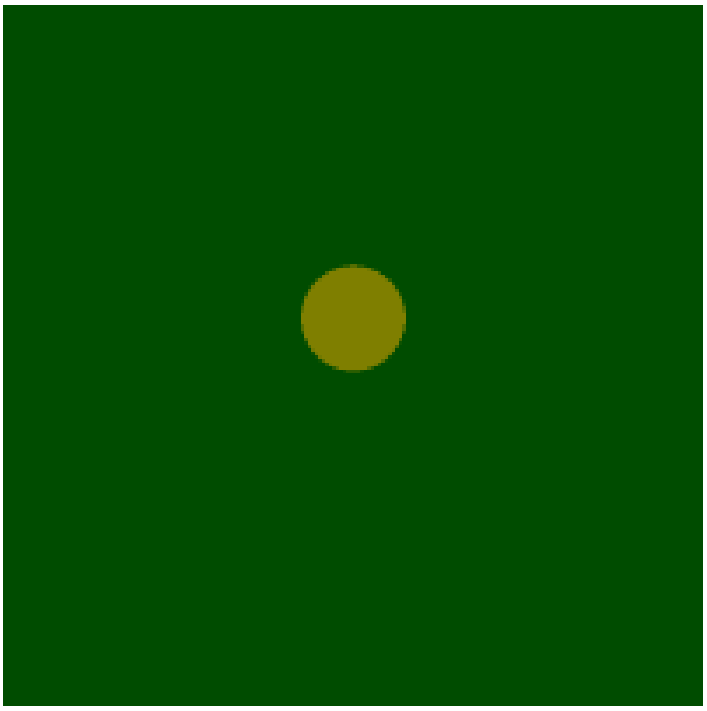
Test the bitmap library by creating a bitmap image 1 pixel tall by 1 pixel wide. Set pixel 0,0 to be red. Check output to confirm pixel is red.

Setup Scene

In the build function setup a simple scene using a green ground plane (roughly a = (0, 0, 0) and n = (0, 1, 0)) and a yellow sphere (roughly center = (0, 10, 0) radius = 10). Use a Matte material for each object. Assign a pinhole camera at (0, 100, 100) looking at the origin.

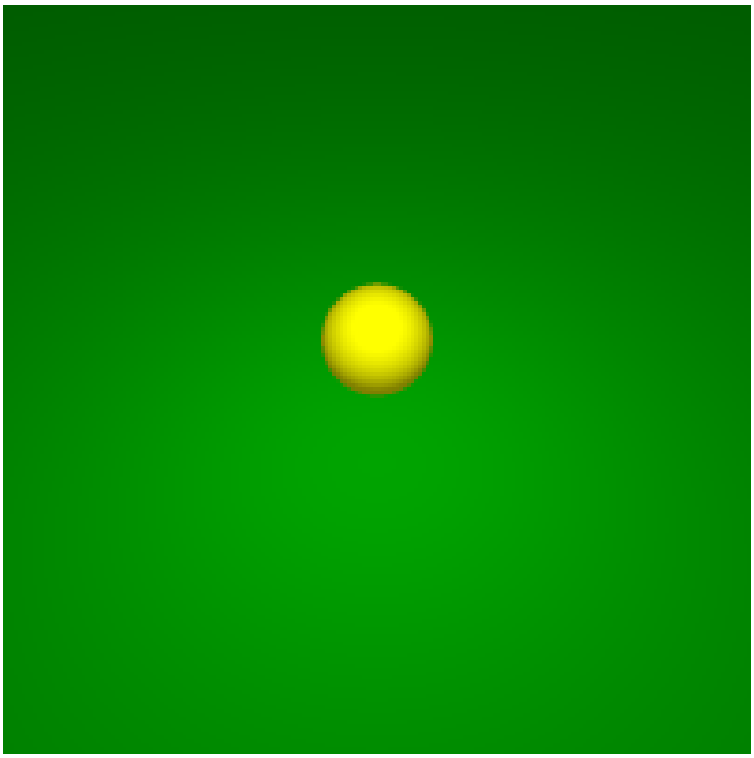
Ambient Lights

Assign an ambient light with radiance 2. Run the render. Check that you can see a yellow circle above a green ground plane shaded solidly.



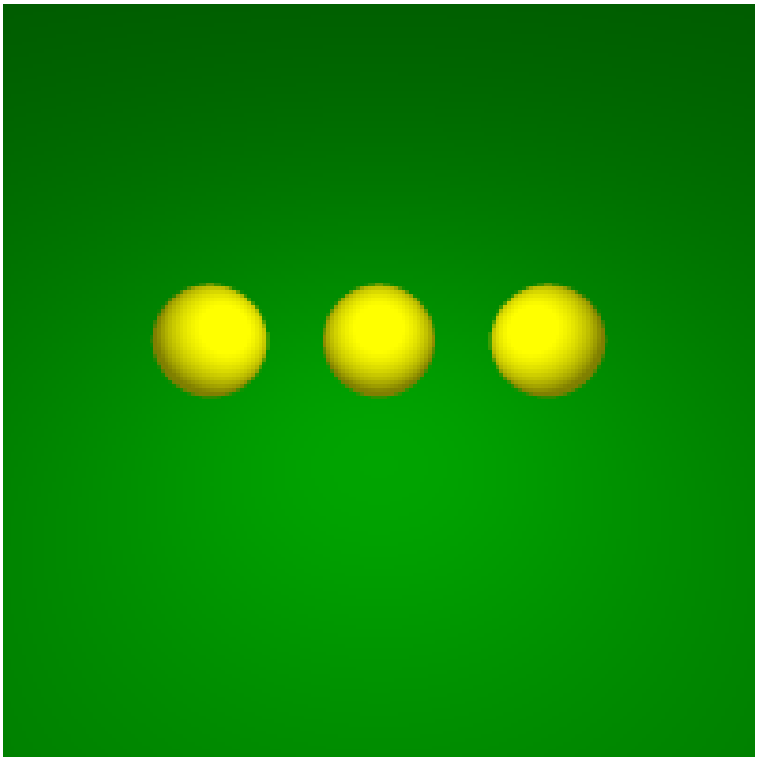
Diffuse Reflection

Assign a point light at (0, 50, 20). Run the render and check to ensure the objects are now shaded instead of solid.



Point Lights

Assign two more spheres of the same size 20 units to the right and left of the first sphere. Run the render. The spheres on either side should be lit from opposite sides.



Directional Lights

Use the previous scene. Replace the point light with a directional light with a direction (1, -1, 0). Run the render. The three spheres should all be lit from the same side.

Shadows

Use the previous scene. Set shadows to true for all objects. Run the render. You should be able to identify shadows from each sphere on the other spheres and the plane.

Specular Reflection

Replace the Matte material with a Phong material with the respective colors of each object. Run the render. You should be able to make out three distinct zones for all curved objects. There should be a dark zone, a large medium shaded zone, and a specular highlight.