Ray Tracing pt. 1 - Strategy Guide

Step 1: Writing out image file
First generate a black image of the correct dimensions.

Step 2a: Ray generation
Create a small image and generate rays that go through the pixels. Print out the rays to make sure you have the correct values.

Step 2b: Ray-sphere Intersection
Create a scene with a single sphere. Have your raytracer return white whenever it hits the sphere. You should see a white sphere on a black background.

Step 3: Sphere (or ray) transformation
Now make sure you feel confident in your ray/sphere intersection code. Move the sphere around, make sure the right results happen.

Step 4: Stress test your ray generation
When you thing all of the above is working be sure to stress test everything. For example, mess around with the image aspect ratio (e.g., make it very narrow), make sure everything works as expected.

Step 5: Color
Instead of coloring the sphere white return the real material color.

Step 6: Point Lights
Add support for point lights with simple (e.g., lambertian) shading

Step 7: Phong Shading
Add support for Phong shading.

Step 8: Multiple spheres
Only one everything else is working, move on to multiple spheres. Save a version of your working code before you do this, as you may need to restructure everything to get multiple spheres working correctly.

Only move on to a new feature when you're sure everything else works so far.