Brief Report

1. What I have implemented:
   1) **Sphere Intersection**: Checked if a given light ray intersects with a sphere;

    2) **Phong Shader**: Implemented the phong shading by using phong reflection model (which is quite the same as what we did in PA3). Resulting image is shown below.

    3) **Direct Illumination**: Implemented the simple stochastic rendering algorithm with only direct illumination considered. This part we ignored the light reflections and the resulting image is capable of capturing soft shadows. Resulting image is shown below.

    4) **Global Illumination:** Implemented rendering algorithm that considered ray reflections on the object surface and terminated the reflection at the fifth time. Resulting image is shown below.

    5) Create different scenes to illustrate direct rendering and global rendering respectively.
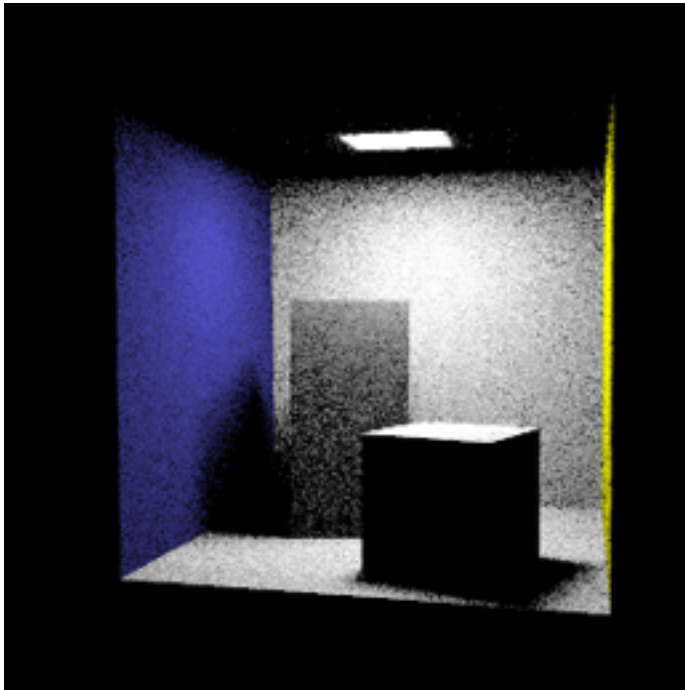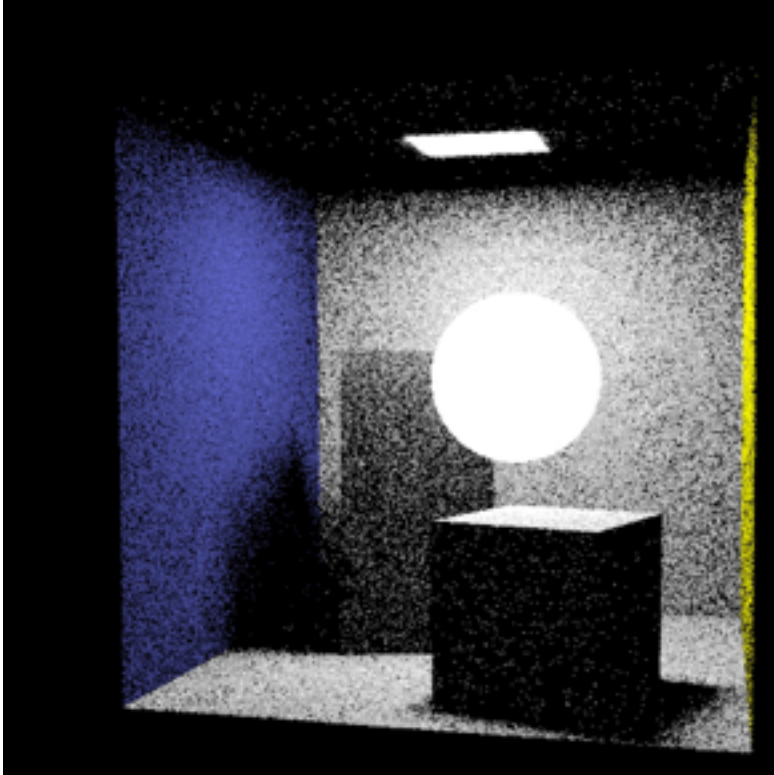
2. Resulting Images
    1) Phong Shading
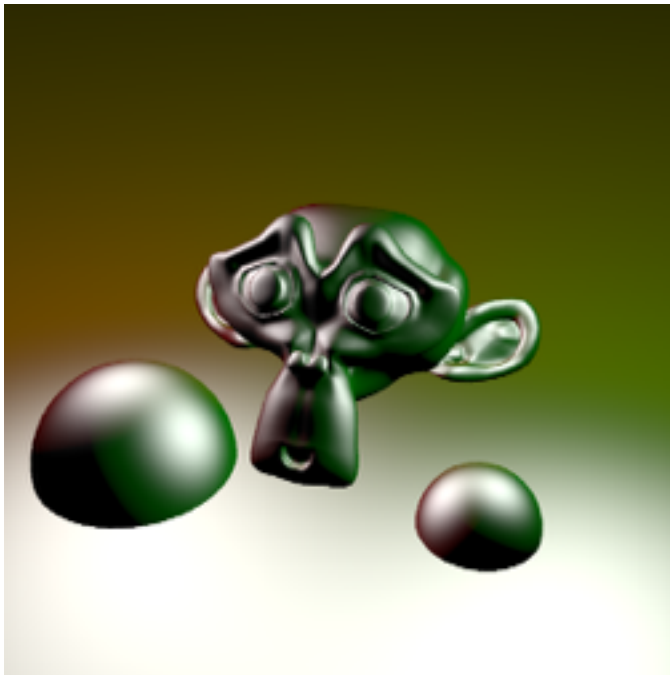
2) Direct Illumination
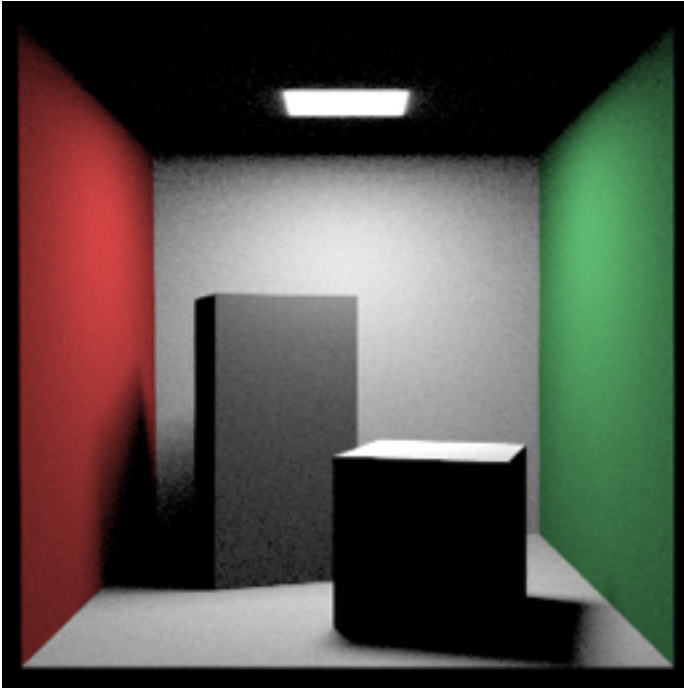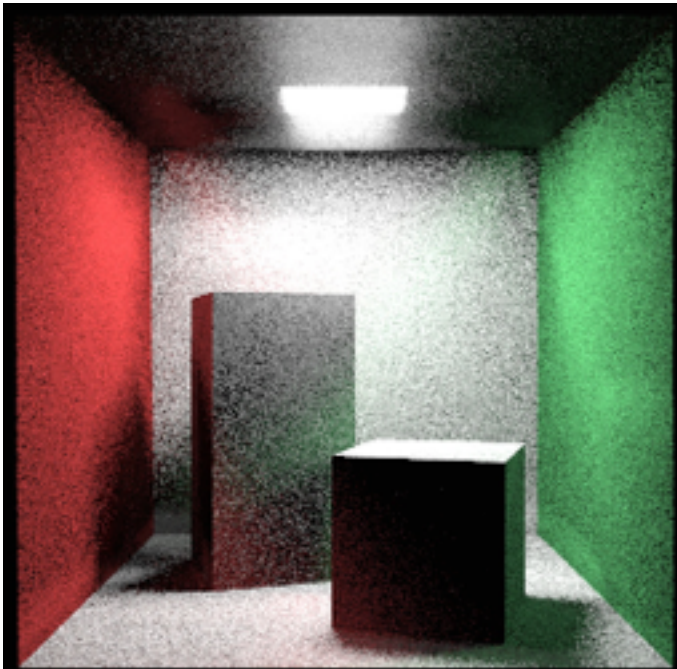

(cbox.xmll : using sample 50*50)
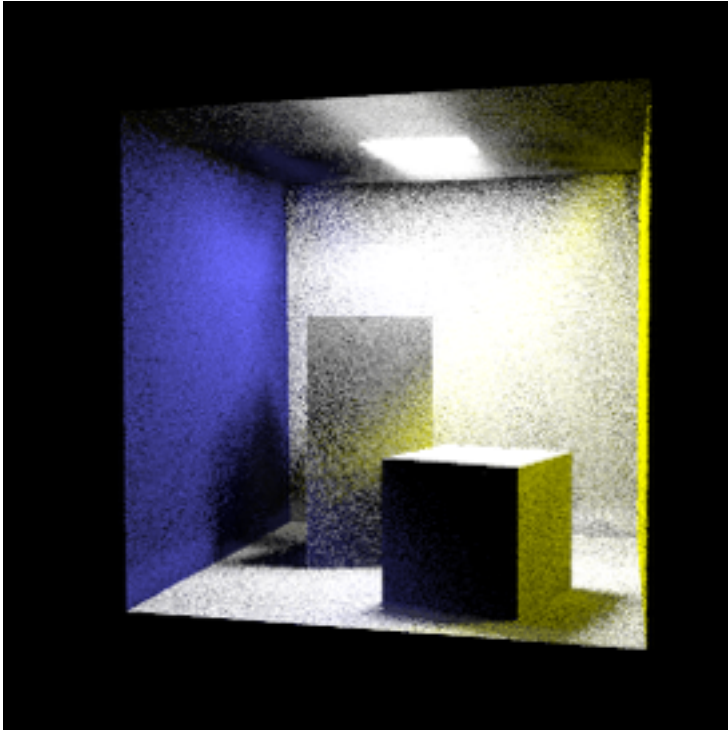

(myDirect1.xml: using sample 20*20)

(myDirect2.xml: using sample 20*20, the sphere is a light source)
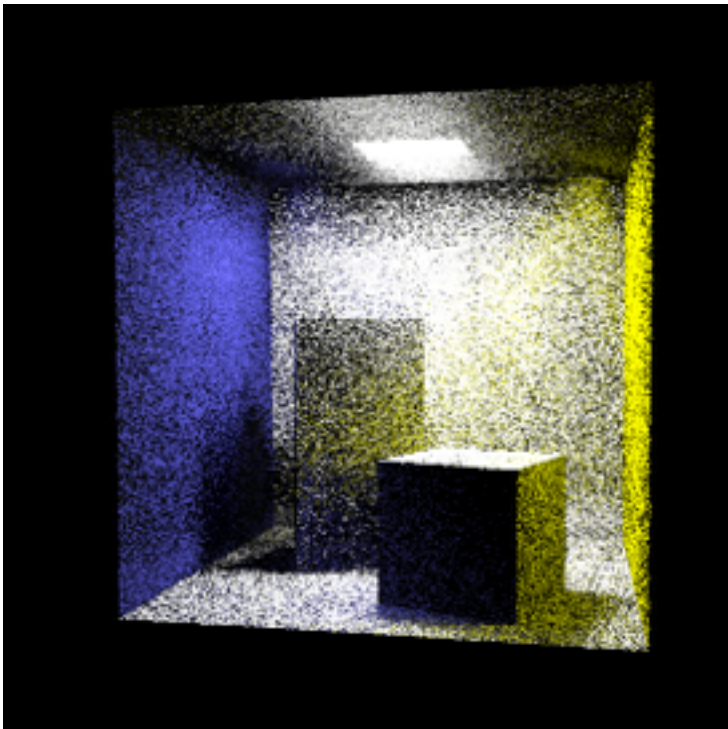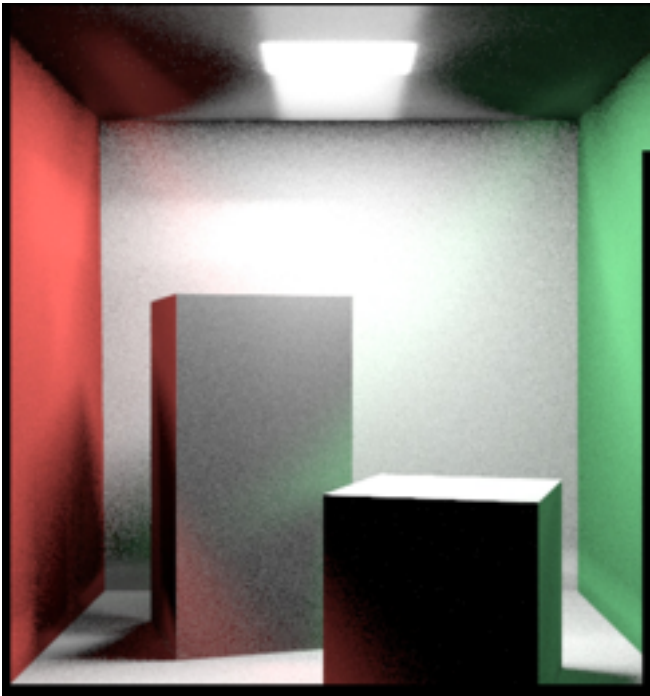
3) Global Illumination

(cbox.xml using sample 20*20)

(myGlobal1.xml: using sample 20*20)

(myGlobal2.xml: using sample 10*10)

(cbox.xml: using 50*50)