

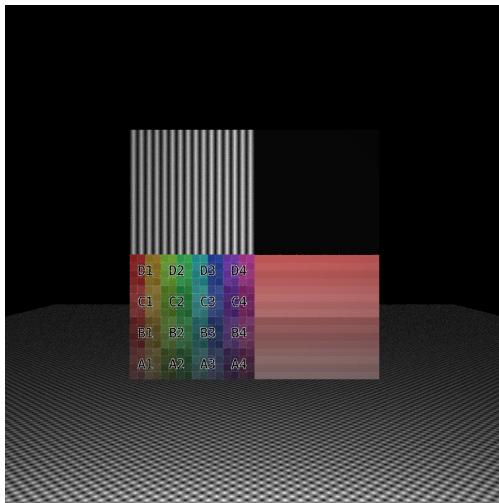
CS177 Computer Graphics

Raytrace II Assignment Report

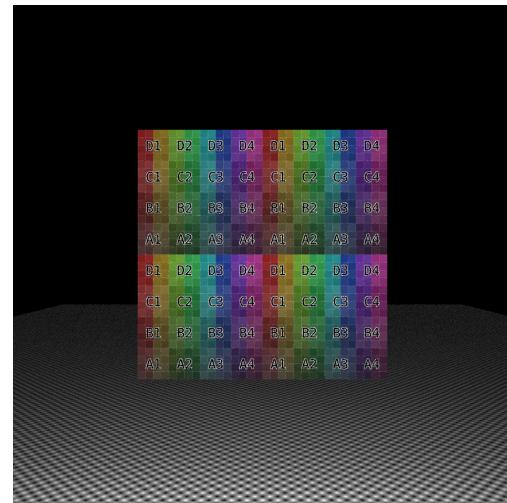
Rui Tian, Beitong Zhang

1. Texture tiling

In this part, texture tiling is implemented. Running time is 1s. The number of samples is 1.



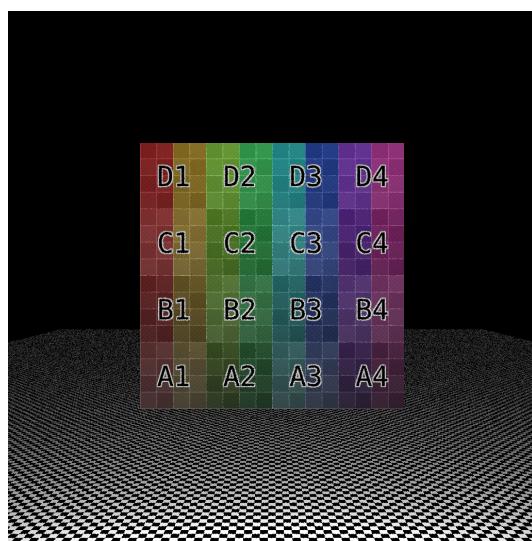
before



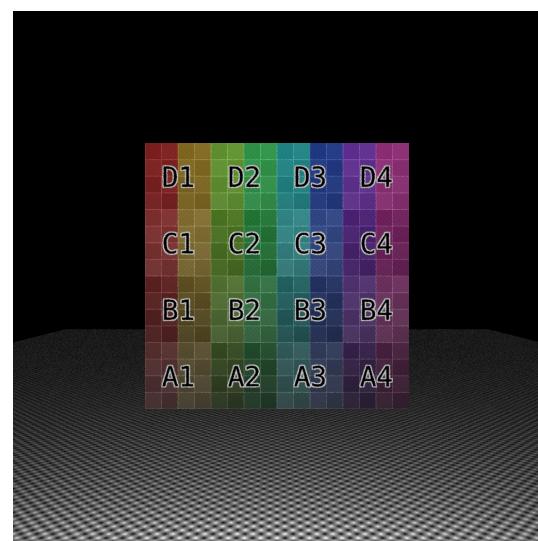
after

2. Texture filtering

In this part, bilinear texture filtering is implemented. Running time is 1s. The number of samples is 1.



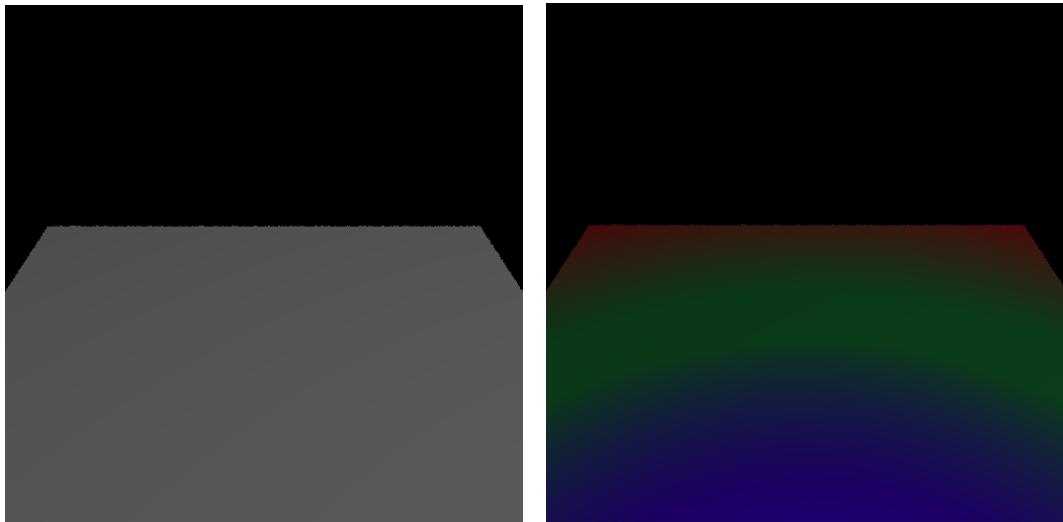
before



after

3. Mip-map with texture filtering

In this part, trilinear mip-map based texture filtering is implemented. I generated 3 png images as the three levels of the mip-map (`mip_blue_128.png`, `mip_green_256.png`, `mip_red_512.png`). Running time is 1s. The number of samples is 1.

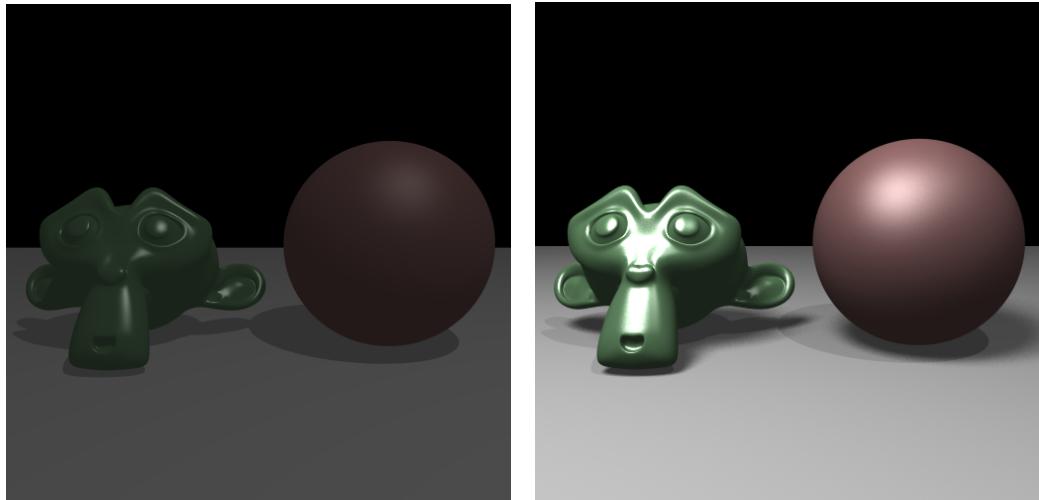


before

after

4. Quad area lights

In this part, area light sampling for quad surfaces is implemented. Running time is 27s. The number of samples is 15.

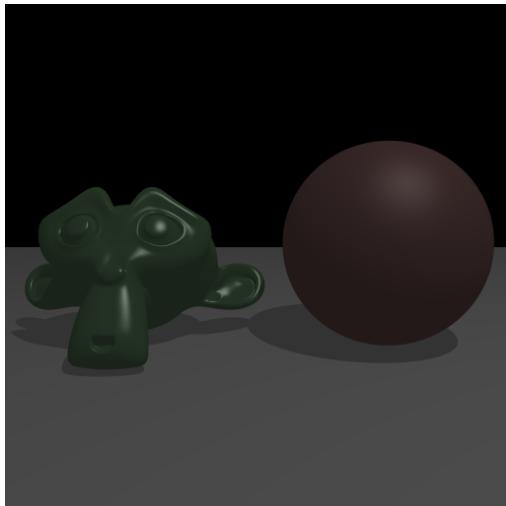


before

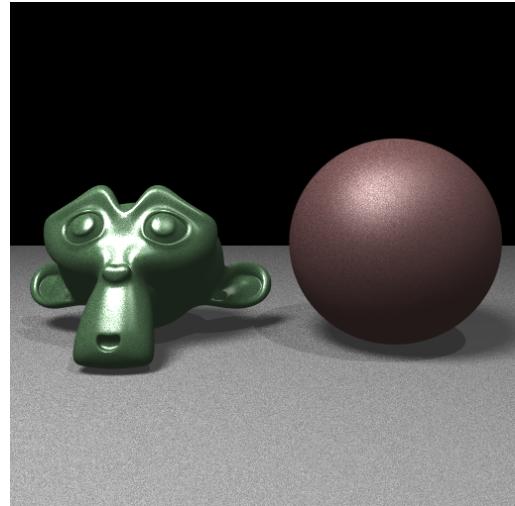
after

5. Sphere lights

In this part, area light sampling for sphere surfaces is implemented. Running time is 27s. The number of samples is 15.



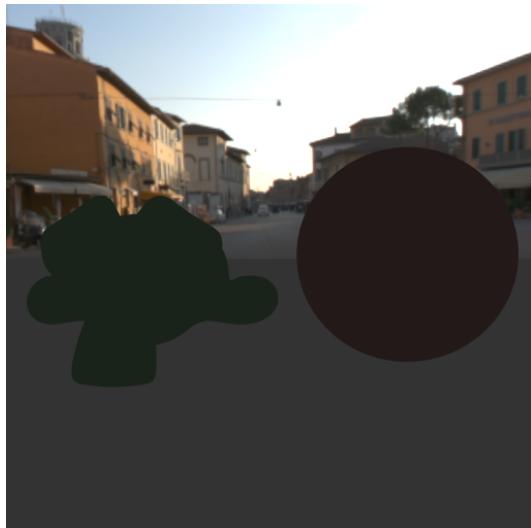
before



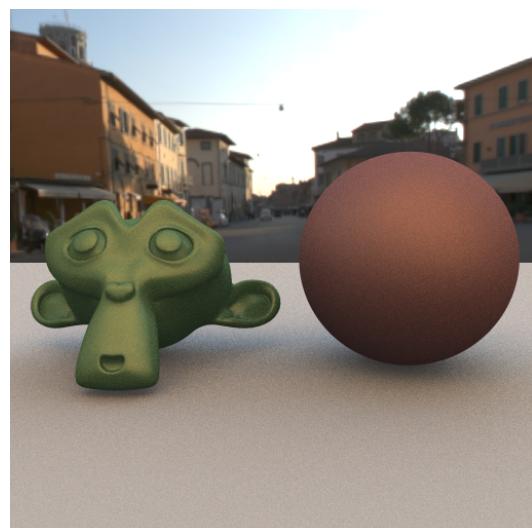
after

6. Environment illumination

In this part, environment mapping is implemented. Running time is 27s. The number of samples is 32.



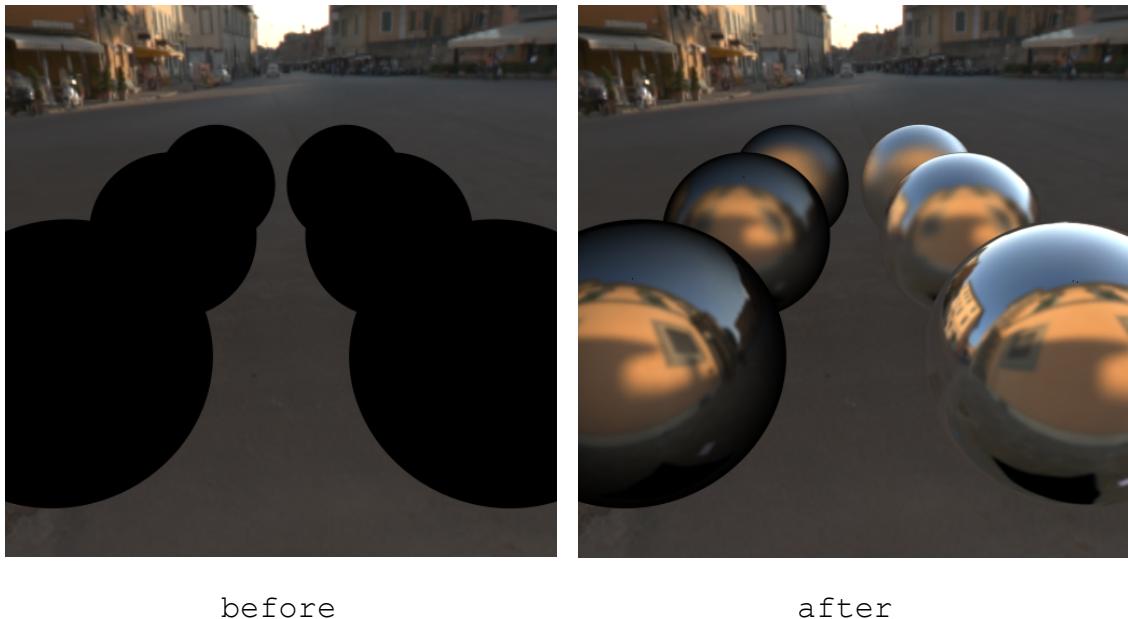
before



after

7. Microfacet materials

In this part, environment mapping is implemented. Running time is 59s. The number of samples is 32.

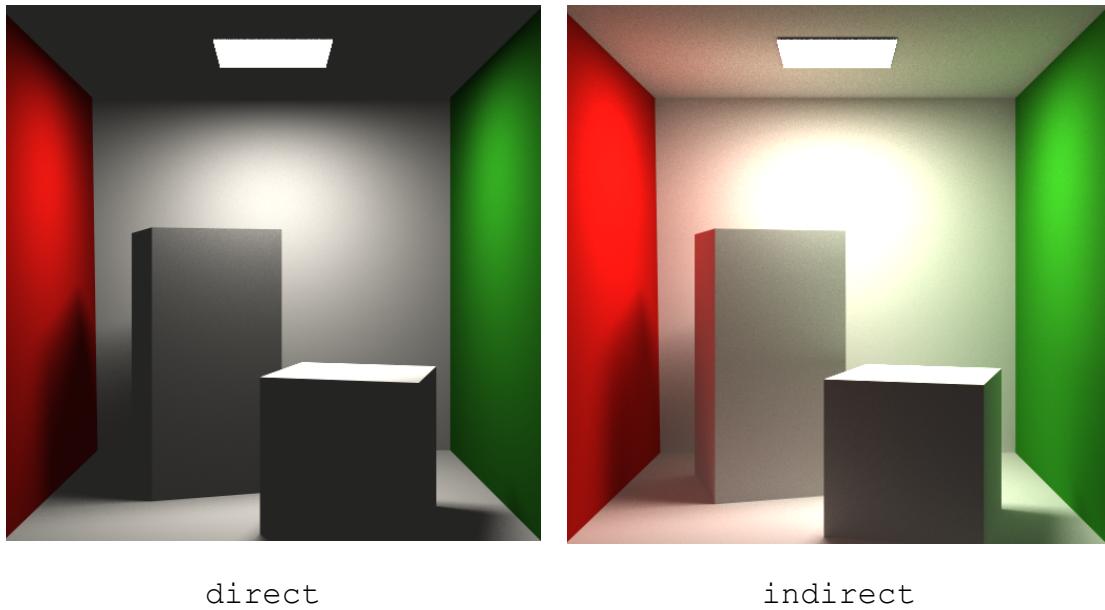


before

after

8. Indirect illumination

In this part, environment mapping is implemented. Running time is 570s. The number of samples is 32.

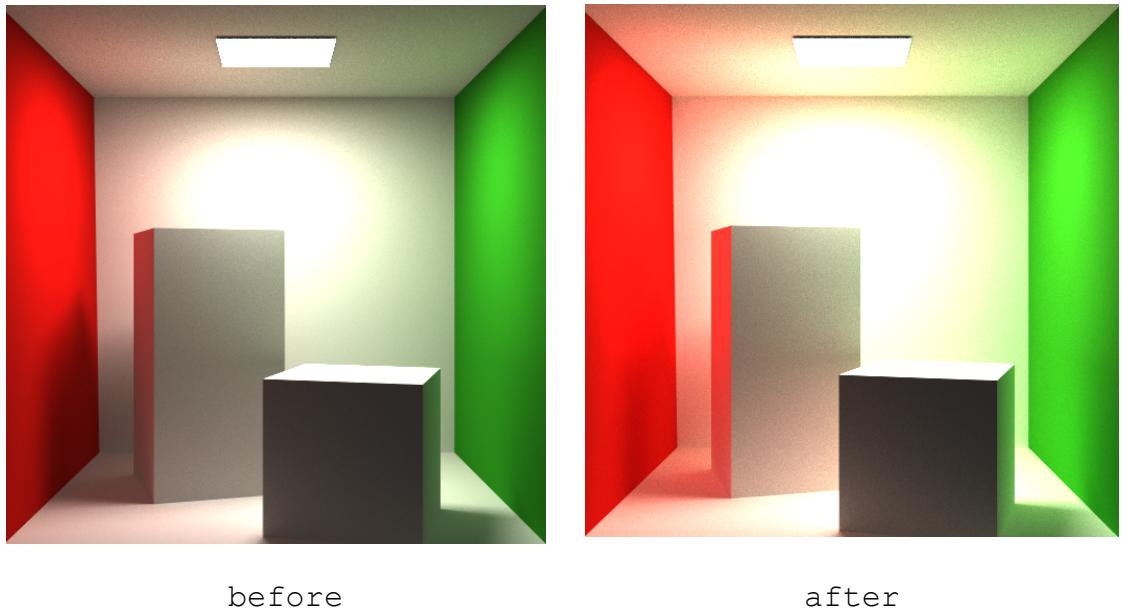


direct

indirect

9. Russian roulette

In this part, russian roulette is implemented for faster ray termination. Running time is 513s. The number of samples is 32.

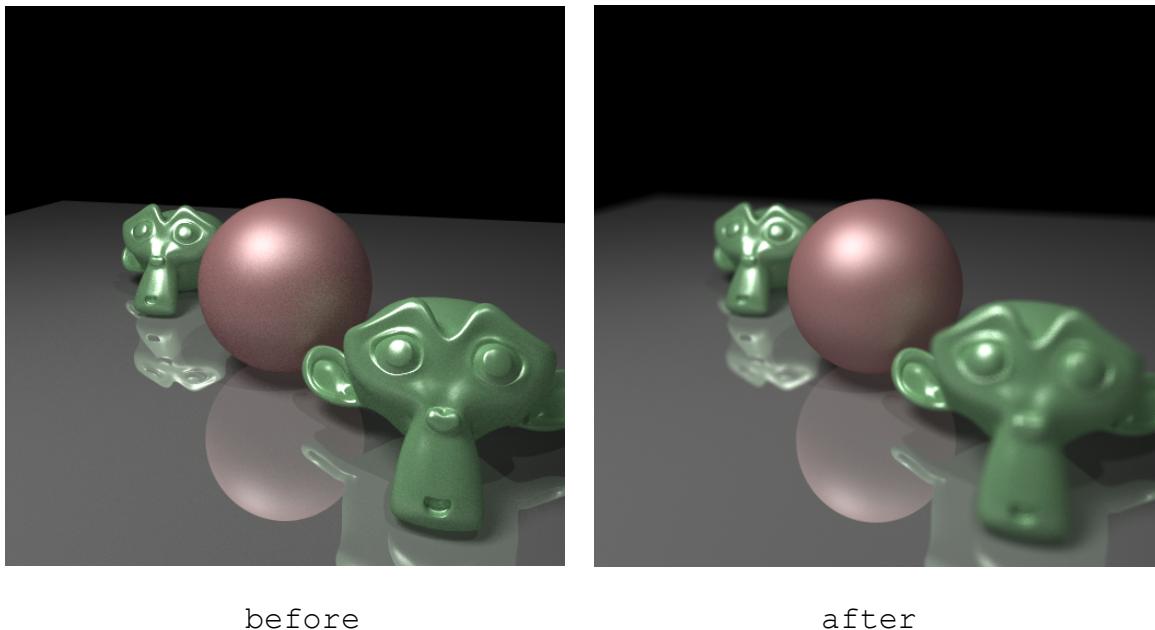


before

after

10. Depth of field

In this part, depth of field blurring is implemented. Running time is 47s. The number of samples is 10.

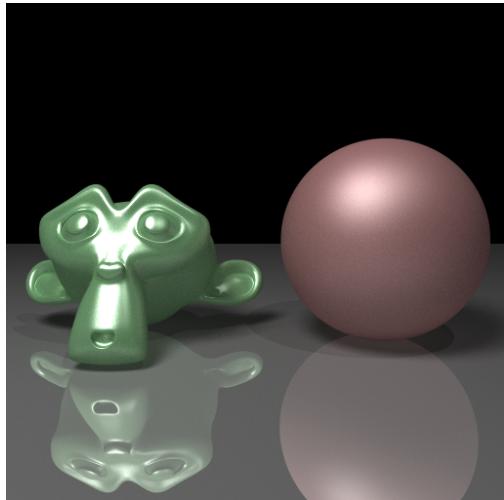


before

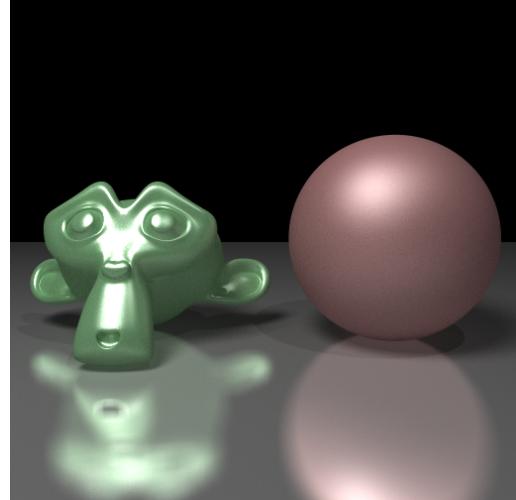
after

11. Blurry reflections

In this part, blurry reflections is supported. Running time is 263s. The number of samples is 15.



before



after

12. 1024x1024 scene

In this part, we use a scene with both blurry reflections and depth of field blurring. It's rendered in a 1024*1024 scale. Running time is 2568s. The number of samples is 10.

