Advanced Computer Graphics Assignment #3

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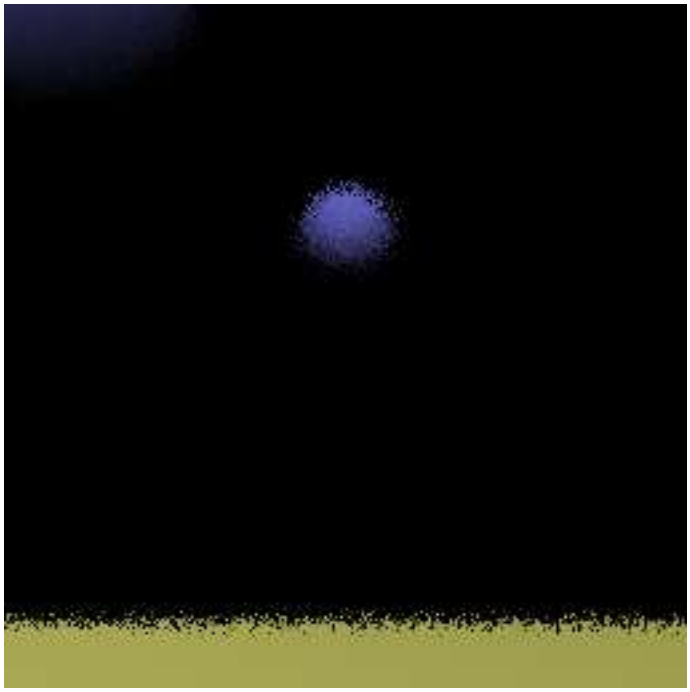
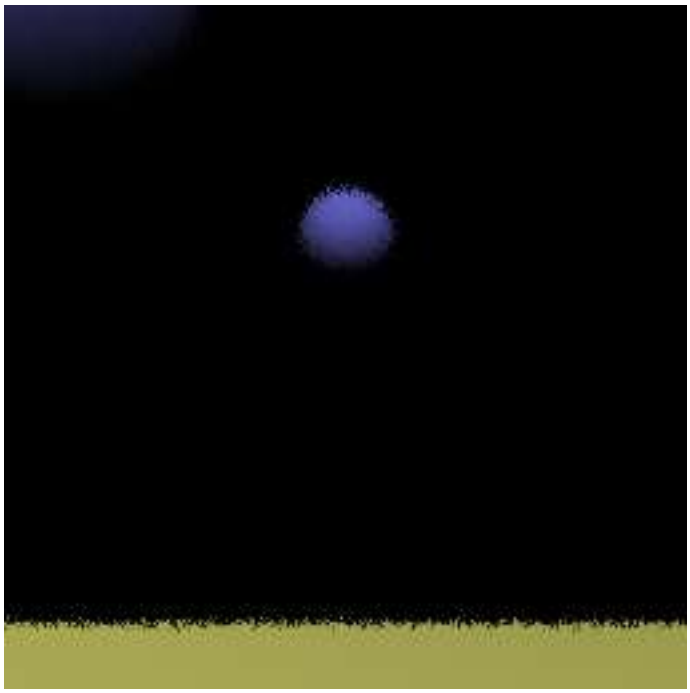
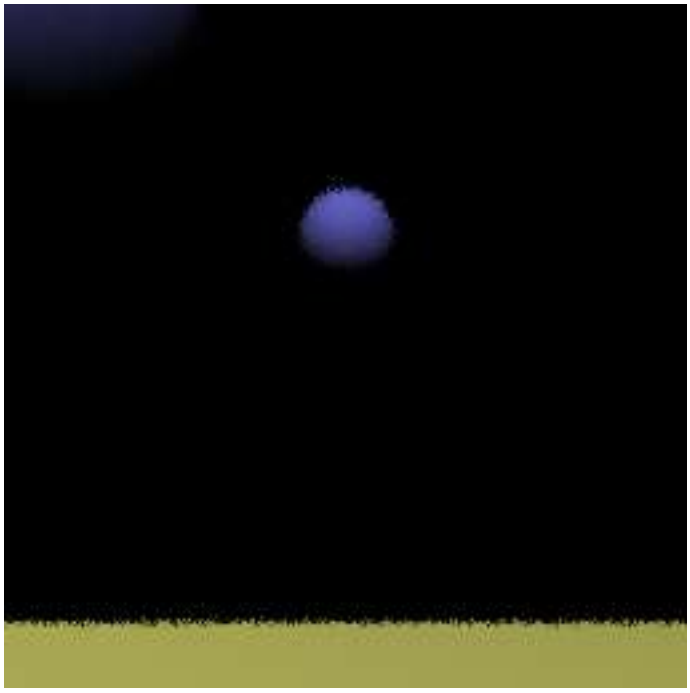
Aperture = 15/2.2 mm

- Output Images in difference z-position (depth)

depth	Figure distributed sample = 10
20 cm (front)	
40 cm (middle)	

60 cm (back)	

- The way to set the distributed samples:
  1. Initialize eye-position
  2. Generate a random float ranging from [0,1) as a random_radio.
  3. Generate a random integer from [0,360] as random_angle of polarized coordinate.
  4. Update the eye position with original eye position + the shift

     $\triangle x$ = aperture*random_radio*cos(random_angle)

     $\triangle y$ = aperture*random_radio*sin(random_angle).

```
//====================== distrubted ray tracing ========================
for(size_t n{0}; n < EYE_SAMPLE_N; n++){
    // init RGB for each sampled eye ray
    r=0;
    g=0;
    b=0;

    // init eye position
    eye_pos[0] = 0;
    eye_pos[1] = 0;

    // random radisu and theta for distributed.
    double rand_r{(APETURE/20)*uni_f(re)}; // notice: apeture unit is mm
    int rand_theta{uni_int(re)}; // random angle unit:degree

    eye_pos[0] += rand_r*cos(rand_theta*PI/180);
    eye_pos[1] += rand_r*sin(rand_theta*PI/180);
```