

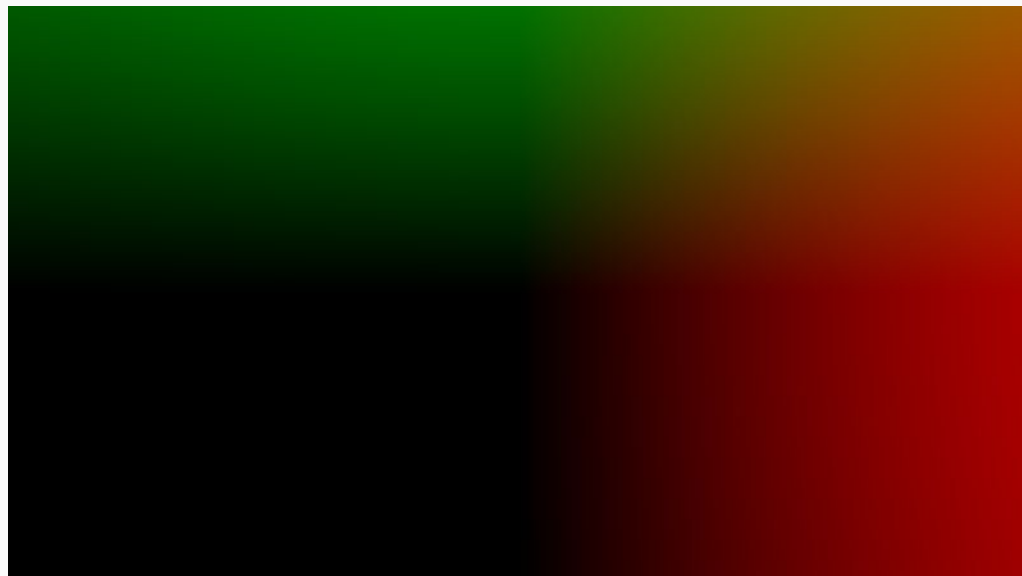
Raycasting in GLSL

(Step-by-step exercises)

Advanced Graphics Programming



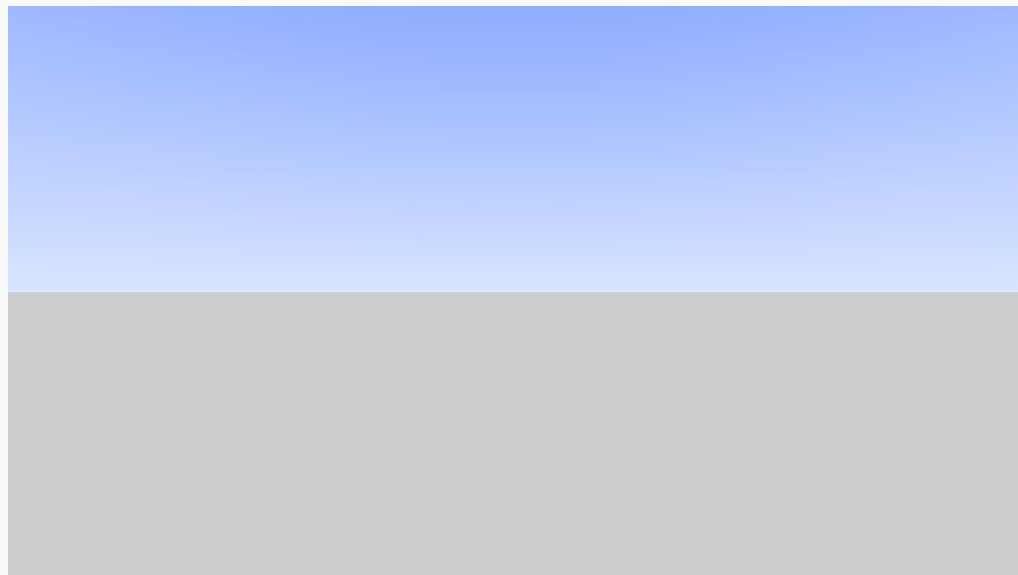
Exercise 1 (ray direction)



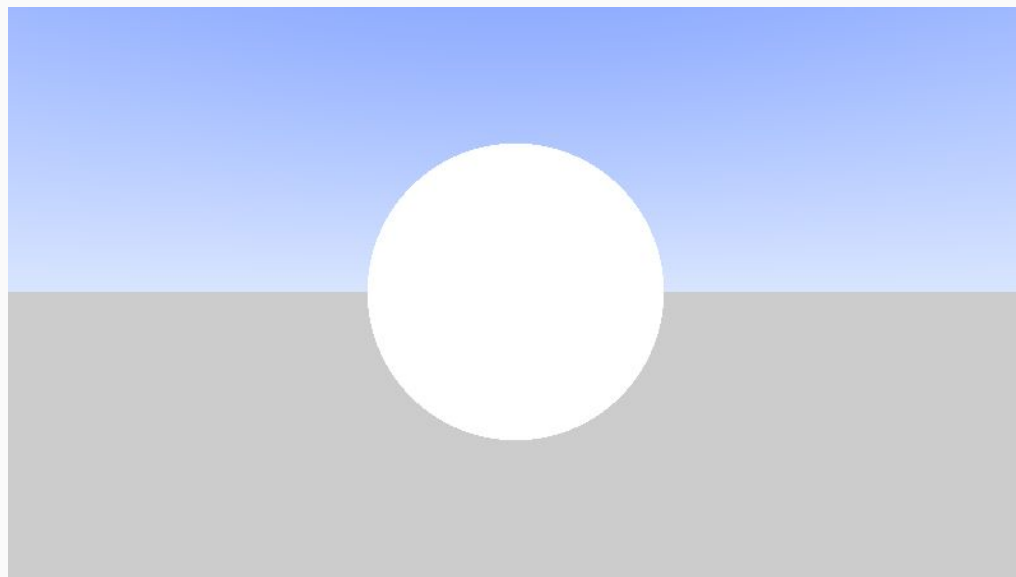
Exercise 2 (Sky gradient - ray Y component)



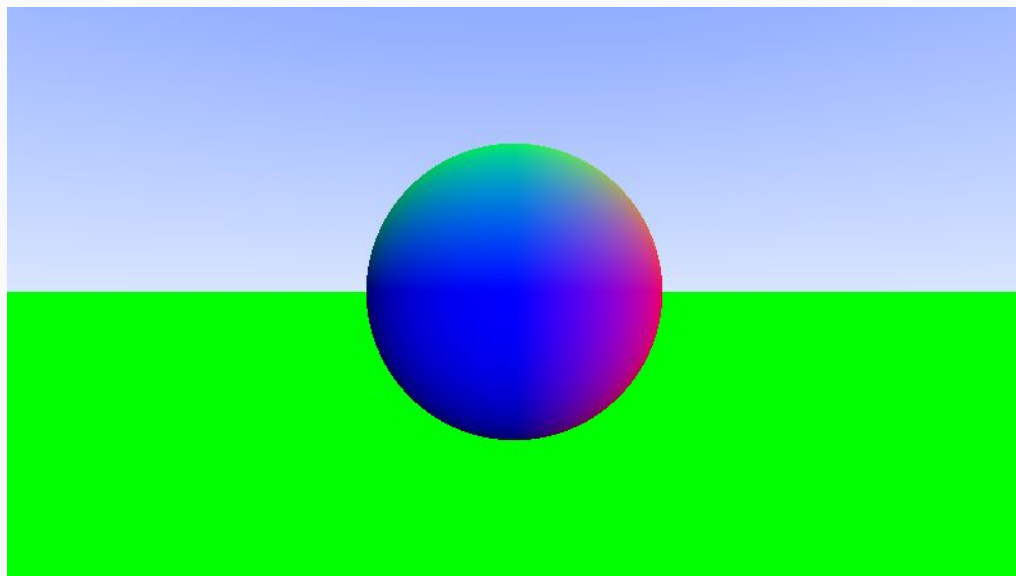
Exercise 3 (floor plane intersection)



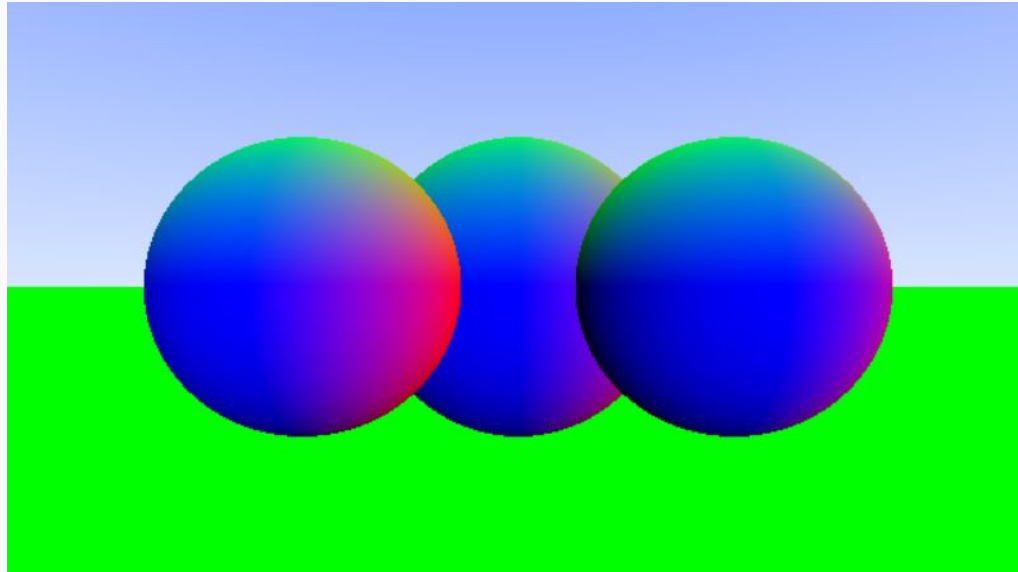
Exercise 4 (sphere intersection)



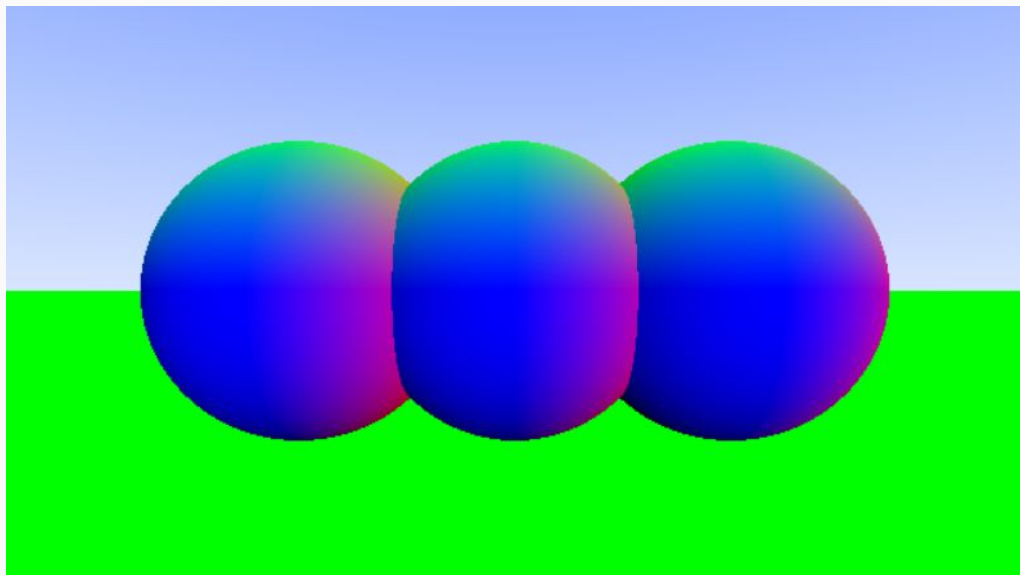
Exercise 5 (surface normals)



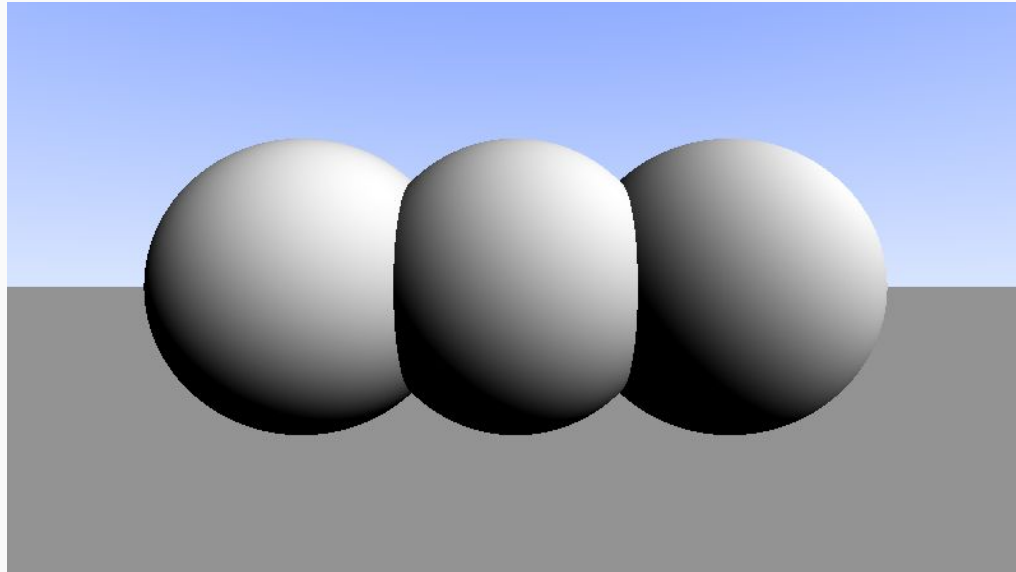
Exercise 6 (arrays)



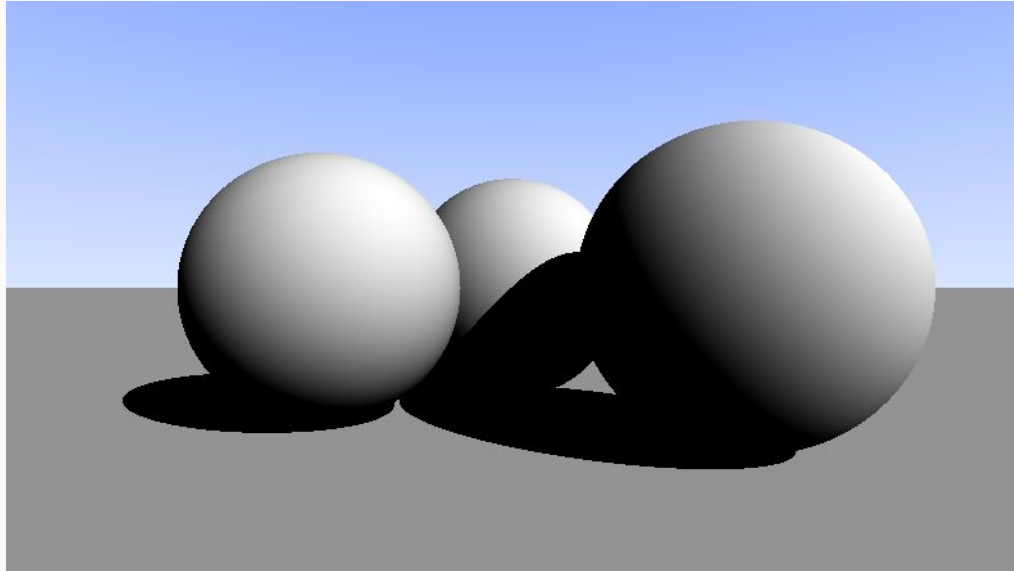
Exercise 7 (nearest intersection)



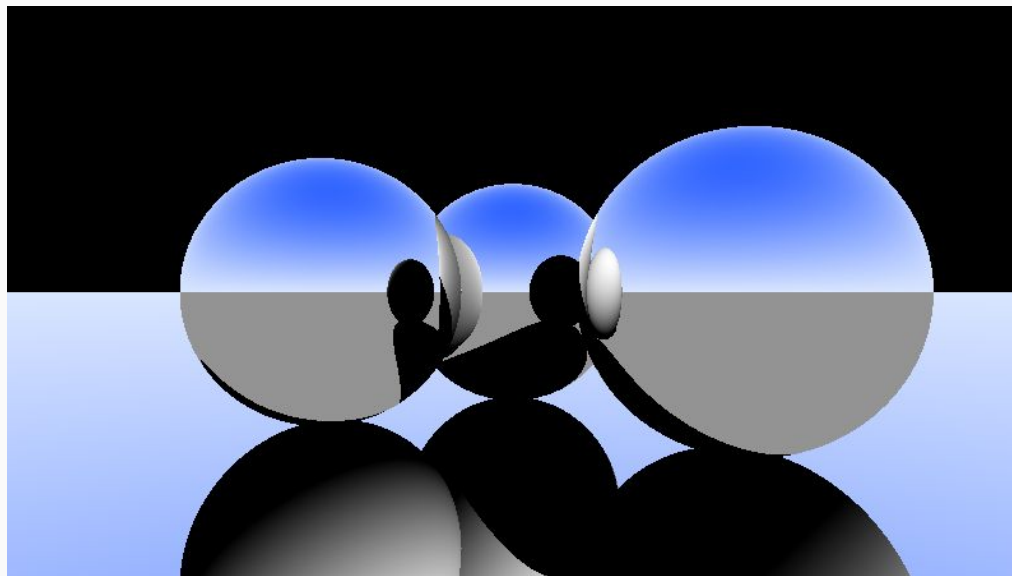
Exercise 8 (shading)



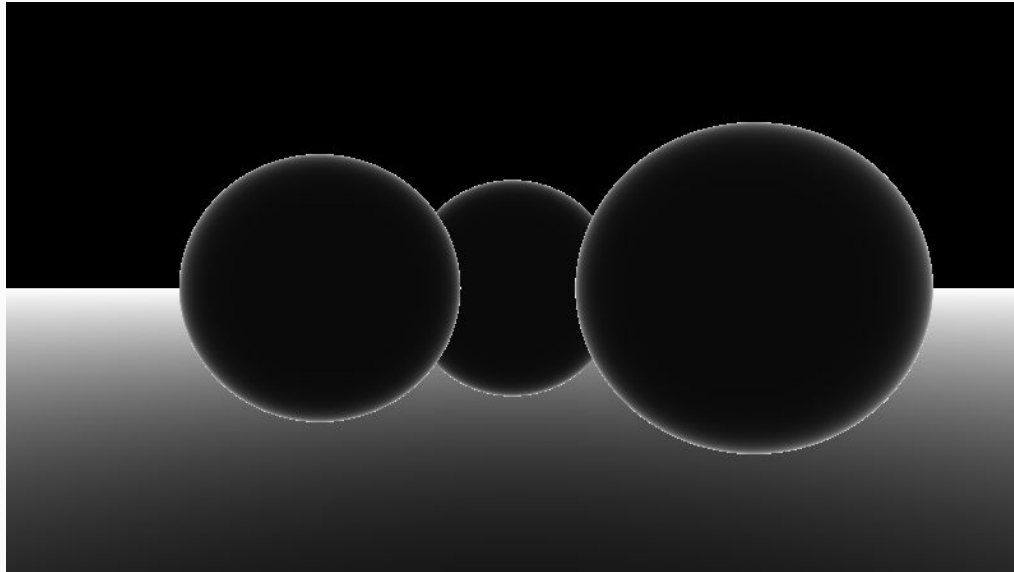
Exercise 9 (hard shadows)



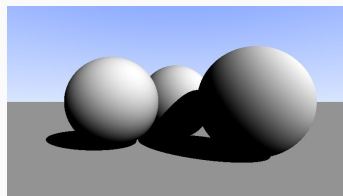
Exercise 9 ½ (1-bounce reflection)



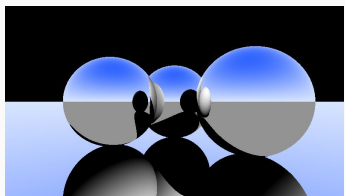
Exercise 10 (fresnel term)



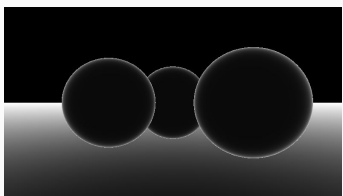
Exercise 11 (1-bounce reflections)



direct

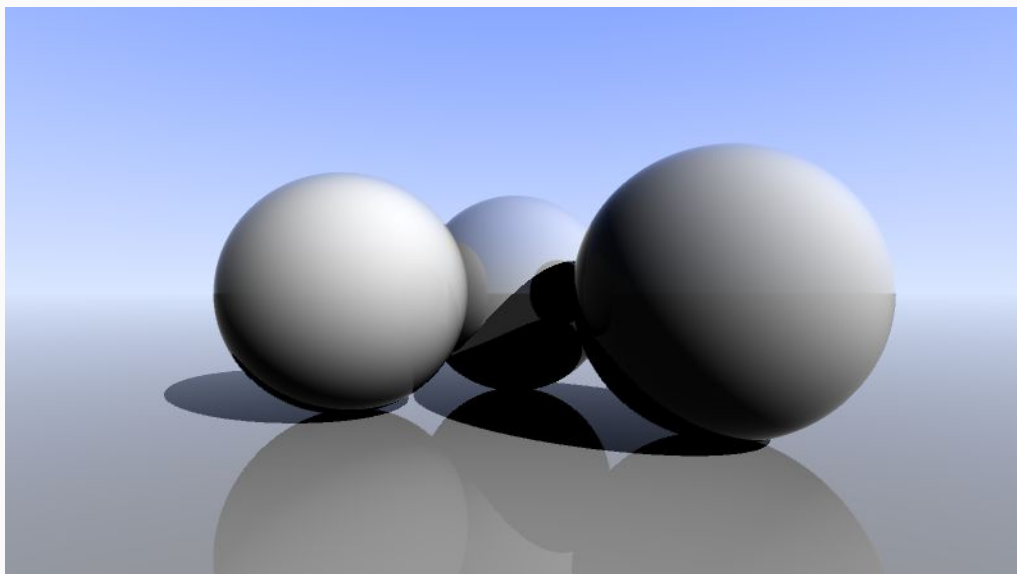


reflection

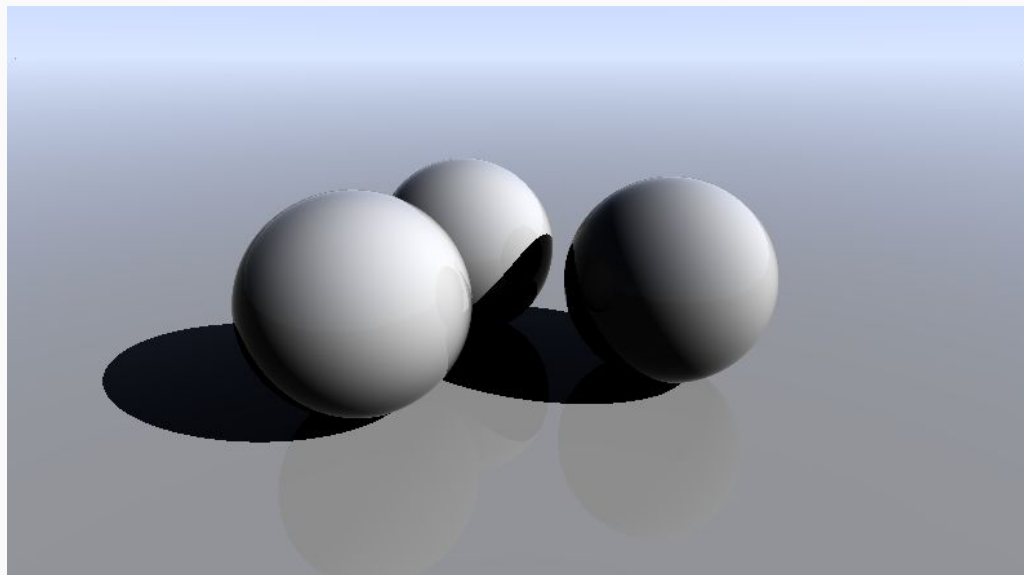


fresnel

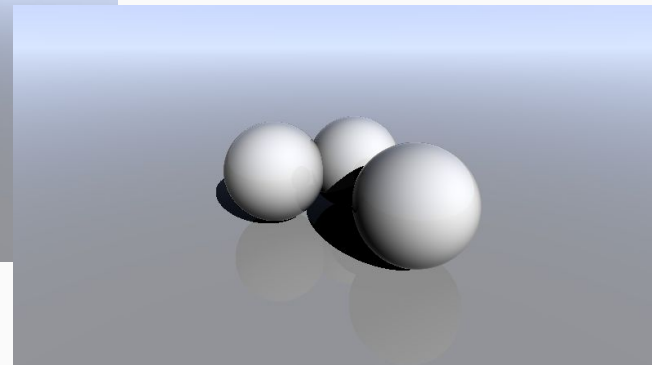
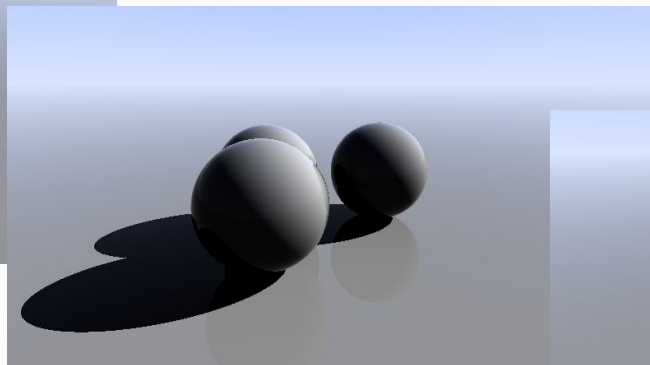
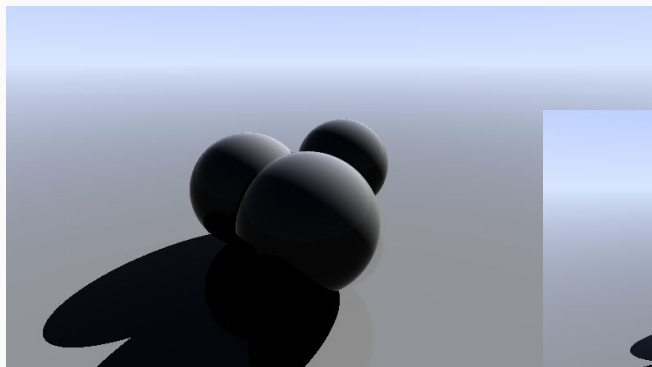
`mix(direct, reflection, fresnel)` ➡



Exercise 12 (camera position)



Exercise 13 (mouse interaction)



Exercise 14 (anti-aliasing)



Go for it!!!

