CS 405 Computer Graphics

Assignment 2 Ray-Tracing

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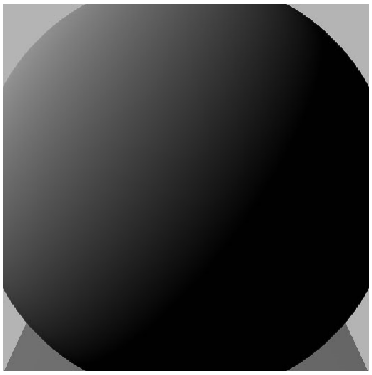
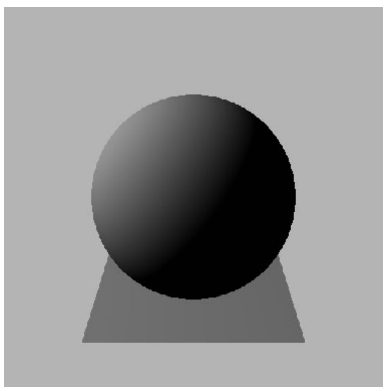
1. Original: Camera is too close



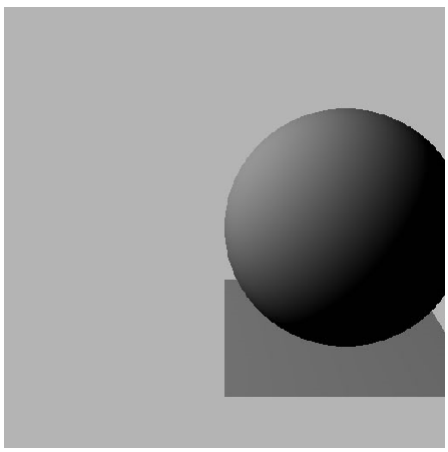
2. Move Camera

2-1) Pull back camera: VRP (1.0,2.0,3.5) => (1.0,3.0,6.0)

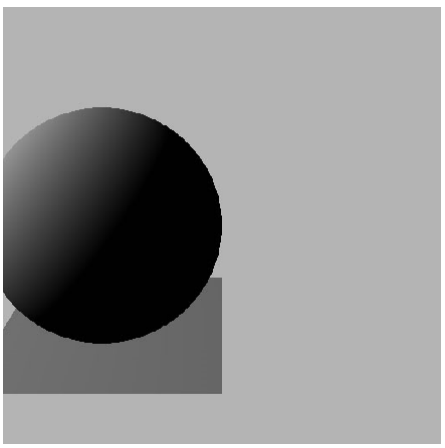


2-2) Moving Camera Left & Right (Direction preserved)

VRP (0.0, 3.0, 6.0)

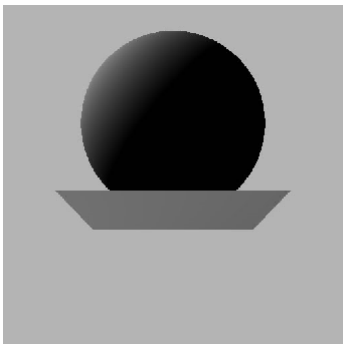


VRP (3.0. 3.0, 6.0)



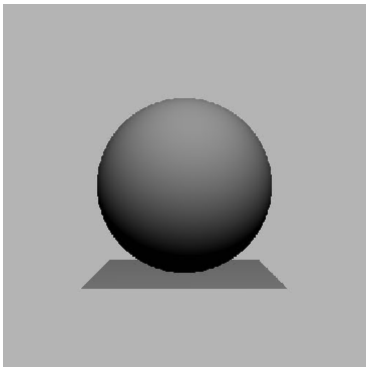
2-3) Looking up object: VRP(1.0, -1.0, 6.0) & VPN(0.0, 1.0 , -3.5)

Camera is watching the backside of plane, but still the same shading effect because shading value purely depends on N and L vectors.

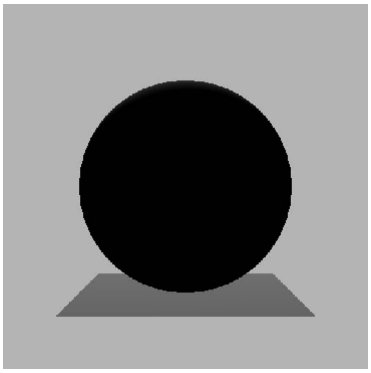


2-4) Look from the left and right

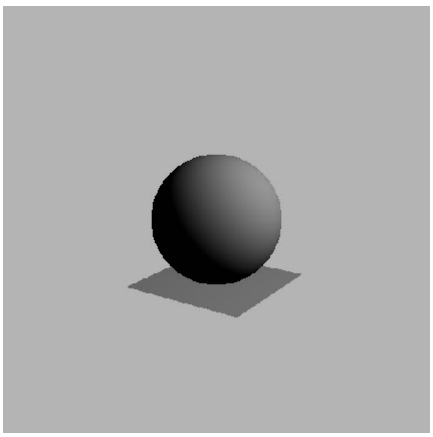
VRP(-5, 1, 1) VPN(1 , 0, .0)



VRP(6, 1, 1) VPN(-1, 0, 0)



2-5) View from diagonal direction: VRP(-4, 3.5, -6.5) VPN(1, -0.5, 1.5)



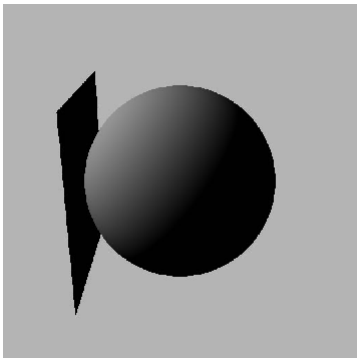
3. Move around the plane: use VPR (1, 3, 6) as default

3-1) Polygon parallel with y-z plane

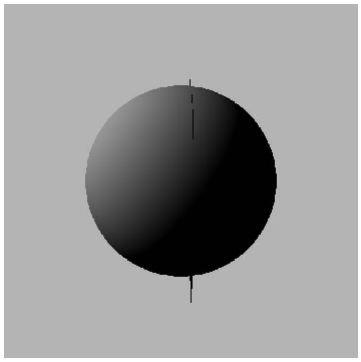
N vector is pointing to the right, so L dot N is negative => shading = 1(black)

x=1 was avoided. if x=1, plane is invisible since it parallel with camera direction.

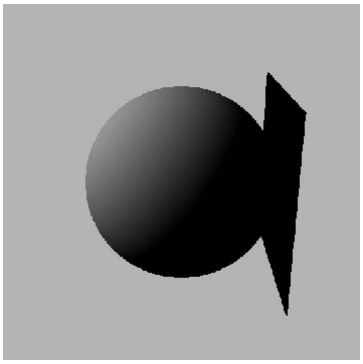
x=0



x=1.1

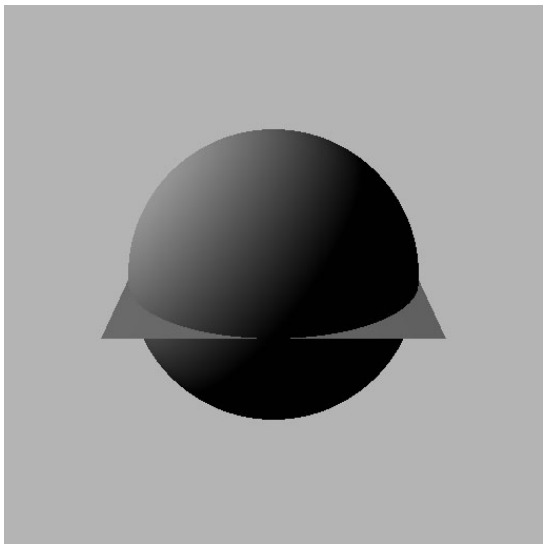


x=2

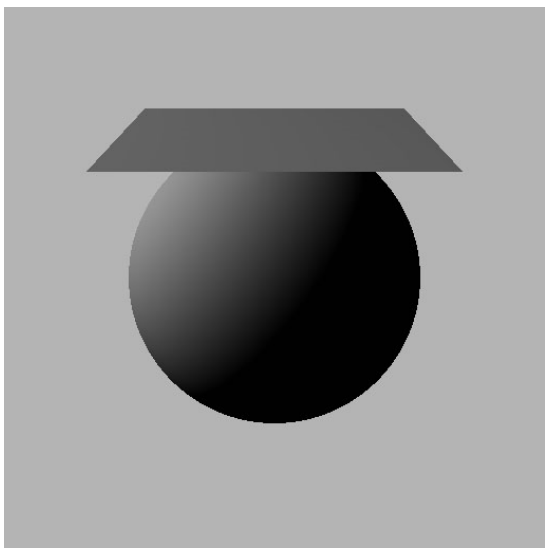


3-2) Polyon parallel with x-z plane

y=1



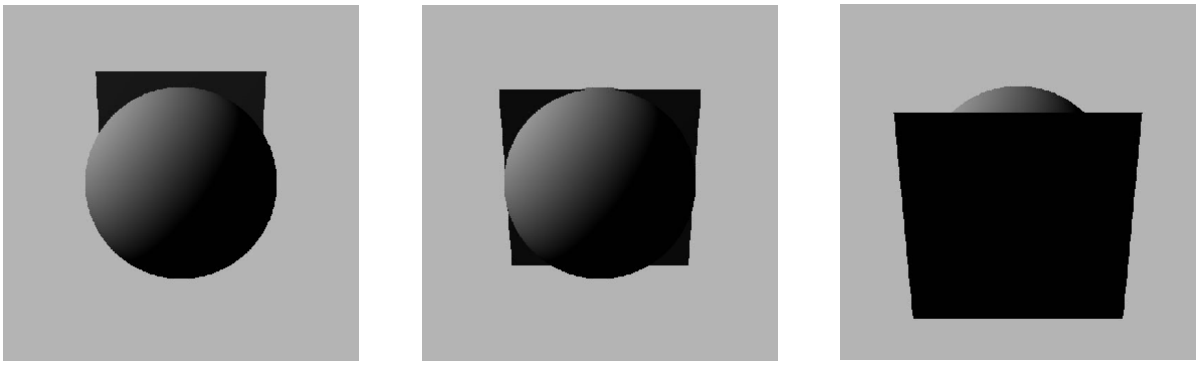
y=2



3-3) Polygon parallel with x-y plane

N vector and V vector are perpendicular. So shading value is 1 (black)

z=0 z=1 z=2



3-4) Tilting plane left and right