CS 362: Computer Graphics

In the assignments, you are asked to render some scenes using the functions you have designed in the previous assignments.

Instructions:

1. **You will do it in groups of 2.**
2. **Copying is strictly prohibited. If I find any case of copying, both the group members will get 0 in the entire lab component (out of 30%).**
3. **You can show the assignment either at my office or at your lab, by 24/4/11 (Sunday), between 10 AM - 1 PM or 4 – 6 PM.**

Consider the following description of a scene in the world coordinate (right-handed system).

Object 1: A solid opaque wall (square surface) on the YZ plane with vertices (0,0,0), (0,1,0), (0,1,1) and (0,0,1). Color = RED

Object 2: A penetrable opaque square surface, on x=1 plane with vertices (1,0,1), (1,1,0), (1,1,1) and (1,0,1). Color = WHITE

Object 3: Composed of two surfaces S1 and S2, with the following vertices.
S1 (a triangle): v1(1,0.5,0.5), v2(2,0.5,0) and v3(2,0.5,1). Color = BLUE
S2 (a square): v4(2,0.5,0), v5(2,0.5,1), v6(3,0.5,1) and v7(3,0.5,0). Color = GREEN

The view volume is defined by Object 1 and the planes x=3, z=1, z=0, y=1 and y=0. Each polygonal surface is filled with the surface color. The vertices of the objects are named anticlockwise.

Do the following.

1. Show the entire scene assuming a viewer at (0,0.5,2) and (2,2,2) and (1,2,0.5).
2. Assume object 3 is "pushed" at edge v6v7. As a result, S1 is now inside the region bounded by Object 1 and Object 2 and S2 outside. Show this scenario assuming the same three viewer positions as in Q1.
3. A further push at the same edge makes object 3 to break along the edge v4v5 (the common edge). S1 is now on Object 1 with v1 along the +ve Y axis. S2 is now completely inside the region between Object 1 and Object 2. Draw this scenario assuming the same three viewer positions as in Q1.

Note: You should use only perspective projection. Assume a WHITE light source at (4,4,4) with intensity 0f 0.5 unit. Ignore ambient light. Assume kd=ks=0.5 for all the surfaces. **You can make other reasonable assumptions, if required (I'll decide if your assumptions are reasonable).**