EXERCISE 3

1. Virtual Reality

Define the term *Virtual Reality*.

Computer-generated world, which a user can interact with and experience using his natural senses. Combination of the 3 Is: Interaction, Immersion, Imagination

2. Input Devices

Why are classical input devices like keyboard and mouse not well suited for an application in *Virtual Reality*?

Suited for 2D interaction only. Not suitable for I/O in 3D environments. Limited reach, unintuitive, not immersive

3. Virtual Reality in Medicine

Explain three situations where *Virtual Reality* applications are beneficial in the medical area.

Ventricular Assist Devices
Virtual Local Anaesthesia
Education - Anatomy
Virtual Surgery

4. Virtual Reality vs. Computer Graphics

Give three main differences between *Virtual Reality* and *Computer Graphics*.

5. Depth Cues

Name and describe three psychological cues that provide depth perception in traditional computer graphics.

6. Depth Cues

Name and describe three physiological cues that provide depth perception in virtual rality.

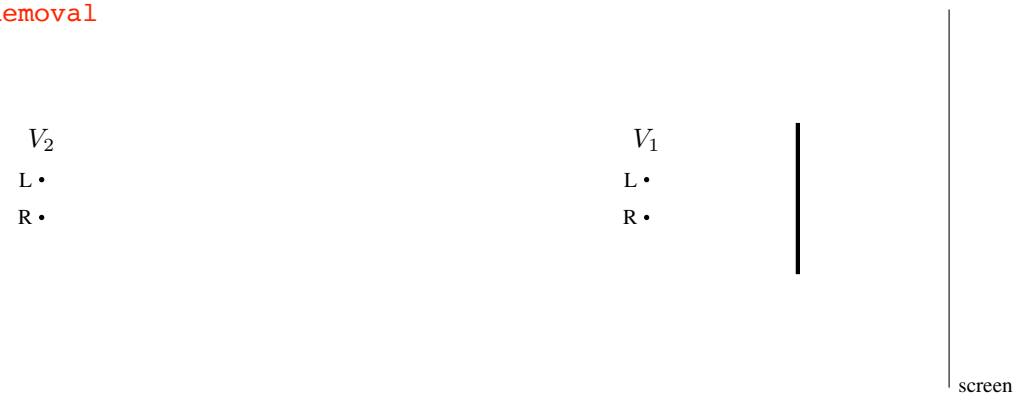
7. Rendering Pipeline

Name and describe three steps of the rendering pipeline that reduce the amount of processed surface area.

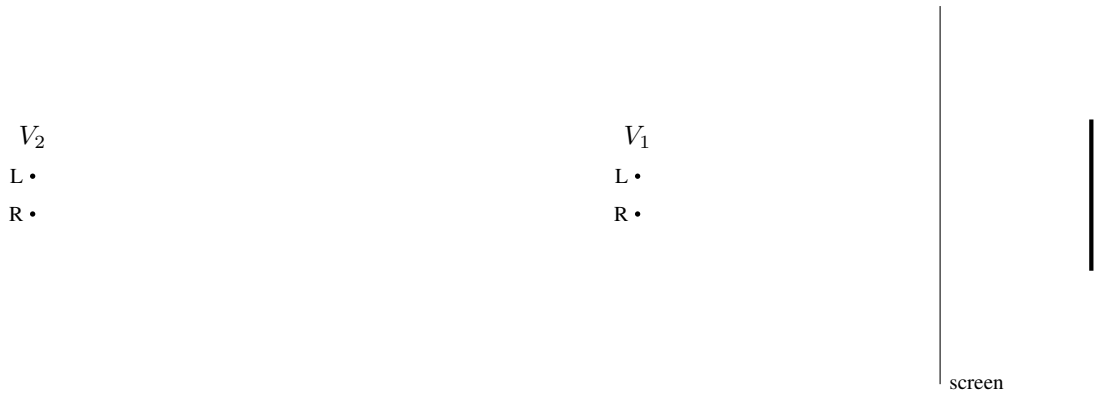
8. Projection

Clipping
Culling
Hidden Surface Removal

(a) Construct the projection of the bold line onto the projection screen for the viewer positions V_1 and V_2.



(b) Construct the projection of the bold line onto the projection screen for the viewer positions V_1 and V_2.



(c) Comment on the differences of the above results.