CPSC 352 Test 2 Information

Coverage: Everything we've covered in lectures on chapters 5, 6, 7, webGL, and Three.js

Format: Short answer and problem solving (understanding terms and algorithms, no programming)

Topics include:

- 1. Chapter 5: Viewing
 - a. Projections: parallel vs. perspective. COP or DOP. Projectors. Orthographic projections.
 - b. View frustum; front and back clipping planes
 - c. Orthographic projection. One, two, three-point perspective.
 - d. Camera API: Eye point, LookAt point, up vector
 - e. Projection API: fov, aspect, near, far; uvn frame (VRP, VUP, VPN)
 - f. Perspective projections: similar triangles to compute coordinates.
 - g. Perspective matrices, divide by w step
 - h. How can you use projections to fake shadows?
- 2. Chapter 6: Lighting and shading
 - a. Global vs. local illumination models
 - b. Light sources: ambient, distant, point, spot
 - c. Umbra, penumbra
 - d. Phong illumination model understand the Phong illumination equation (ambient, diffuse, specular, specular power)
 - e. Lambert's law and Lambertian surfaces
 - f. Specular power
 - g. Shading using the Phong illumination model
 - h. Flat shading
 - i. Gouraud and Phong shading advantages and disadvantages?
 - j. Bilinear interpolation
- 3. WebGL Intro
 - a. WebGL ES pipeline
 - b. Vertex shaders, fragment shaders
 - c. Uniforms, varying variables, samplers
 - d. Vertex buffer objects, program objects
 - e. WebGL primitives
 - f. Polygon triangulaqtion (Van Gogh algorithm)
 - g. Depth buffer algorithm for hidden surface removal
 - h. Three.js concepts
 - i. 3D morphing
- 4. Chapter 7: Discrete techniques
 - a. Texture mapping
 - i. Use of texture coordinates
 - ii. Adjusting for scale. Nearest vs. linear interpolation
 - iii. Mipmaps
 - iv. Combining multiple textures
 - b. Skybox
 - c. Environment (reflection) mapping
 - d. Light mapping