Sample Test 3b: Graphics Pipeline, Overview

April 18, 2023

– State any simple, reasonable assumption used to arrive at your answer.
– A 'yes' or 'no' answer without reasoning is worth 0 points.
– Zero points if the writing is hard to decipher. Use a black pen if in doubt.
– Indicate with arrow if you use the back of the previous page (last page for page 1).

1 Graphics Pipeline

1. (2 points) Use the distinction between a fragment and a pixel to explain why transparency requires pre-sorting when rendering with the standard graphics pipeline.

2. (2 points) Use the distinction between screen space and model space to explain why 'picking' (selecting an object in a graphics scene) is a challenge when rendering with the standard graphics pipeline. Why could we nevertheless pick in Project 1?

2 Techniques and Concepts

[6] Describe, in a sentence or two, or using a sketch, the relationship of each of the following pairs of terms.

 (A) Clipping and the viewing frustum.

 (B) Painter's algorithm and z-buffering.

 (C) Bump mapping and surface normals.

 (D) Bresenham's algorithm and NURBS curves.

 (E) Global Illumination and the OpenGL lighting model.

 (F) Scan line processing and the flood fill algorithm.