Final by Lansingh Freeman & Benjamin Cooper

Overview: Implemented a text file based file loader, and implemented a pulsating wave geometry shader which overlaps with the preexisting objects in the scene.

Contributions:
Benjamin Cooper:

- File Loading

Lansingh Freeman:

- Geometry Shader

Goals: We wanted to expand on our previous work on the midterm by doing a similar task of more advanced shader operations. Though we also were tasked with making some system changes, and we felt a more clean file loading system would be ideal. We also were tasked with creating a new geometry shader, so we looked into advanced and creative geometry shaders to implement.

Justification: Similar to our midterm, we want to show proficiency several aspects, and we were able to get work we are proud of while still being diverse in the number of aspects.

Achievements:

- Unique aspect: We implemented a text file reader for file loading, which we haven't done since we haven't made any major modifications to the framework before hand. But we also added a more complex geometry shader which implemented moving components independent of their parent objects.
- Use of Lighting program: Phong is still being used for the lighting program for all scene objects.
- Post-processing effect: We do have the outline shader in, the pixelation shader was lost in the merge and with the new file loading system it was more trouble than it was worth to fix it.
- Curve Interpolation: we have the skeleton hierarchy following the interpolation path.
- Used vertex and fragment shaders: Yep, did that.
- All rendering off screen: yes.
- New Geometry shader: A combination of a wave shader and a explosion shader were used to give an oscillating and warping object effect in the scene
- New Hierarchy: This one we were unsure of how to meaningfully implement a hierarchy into the system, given we thought it had to be an object hierarchy for a long time, rather than a more general concept of a hierarchy.
- New System: File loading using text files.

Relevant Code Sections:
Geometry Shader Additions

- passTangentBasis_transform_instanced_vs4x.glsl(Line 65-87)

- drawOverlays_tangents_wireframe_gs4x.glsl(Line 68-82, 99-116)
    - Modifications in preexisting vs->gs->fs shader as we didn't want to introduce new files to the system while we were also implementing file loading.

File Loading

- a3_DemoState_loading.c (Line 74-75, 418-470, 579-633)

UML (Geometry Shader):