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CSS 497 Abstract:2D Cloth and Physics Engine

The goal of this project is to make a game developer friendly game engine with the inclusion of a physics engine to simulate cloth physics in JavaScript. The purpose of this self-proposed project is to learn the significance of a physics engine and how they are developed to run in real time.

All the code and files are able to be exported and used as its own library to develop games and applications. This project includes node and spring objects, and a procedurally generated mesh object using both node and spring prefabs.

During the development of this project, dealing with performance issues was a main focus point in order for the project to render and perform in real time. To combat these issues, data structures had to be designed for efficient traversal/retrieval to generate a mesh object. To maintain realistic physics behavior, Verlet Integration was used to determine position and interactions within the mesh object. To simplify calculations and run in real time, the physics engine was developed to depend on values from an object’s previous position, also preventing inaccuracies from frame drops.

As a result, this project allows a game developer to create and configure a mesh object with physics capabilities. Uses for the new mesh object with the new physics engine may include soft-body simulation and interaction for games. Features, though very specific, will allow game developers to include physics to any object giving that object more realistic and predictable movement than linear calculations.