JCAT Game Engine Proposal

Description: JCAT Game engine is a project where we build a game engine from scratch using Vulkan and C/C++. We started this project because we wanted to learn how low level graphics programming works and wanted to learn the process of how a game is created from the primitive level. The goal by the end of this semester is to have a fully working game engine that we could use to develop a game with. We also want to be able to have a deep understanding of how the game engine works. By the end of the semester, we should have a functional game engine that is ready for us to start making games.

Communication:
Communication channel - https://discord.gg/9pEQCxpx
GitHub - https://github.com/JCAT-Games/JCAT-Game-Engine

Techstack:
C/C++
Vulkan
GLFW
Glm
glslc
Blender
CMake
Make

Goals

1. Develop a deep understanding of low-level graphics programming
2. Gain a comprehensive understanding of the functionality and architecture of a game engine.
3. Learn and apply C++, C, and Vulkan to design and develop a game engine.
4. Design and implement a game engine that facilitates the development of games in the foreseeable future.
5. Develop the capability to integrate and utilize 3D models within our game engine.
6. Integrate and implement shaders within our game engine to enhance visual rendering.
7. Implement a physics engine to simulate realistic physical interactions within our game engine.
8. Implement particle systems and visual effects to enhance the realism and visual dynamics of the game engine.

Milestones

Milestones for September:

- Start our GitHub repository
- Get all members development set up
- Learn the basics of Vulkan and graphics programming

Milestone for October:

- Begin working on the game engine
- Create classes for our graphics pipeline
- Configure CMake and Make instructions to build on different machines

Milestone for November:

- Start developing to load models, objects, images, etc.
- Start developing code for physics engine and simulation
- Look into implementing animation systems
- Start developing a layer to build games from the engine

Milestone for December:

- Finalize the game engine
- Have a deep understanding of how the game engine works and its processes

Current Team Members:

Christian Marinkovich - marinc9@rpi.edu - 4 credits - Team Lead
Thanh Ho - hot7@rpi.edu - 1 credit
Asher Schalet - schala@rpi.edu - 4 credits
Alan Wang - wenga@rpi.edu - 2 credits