# Complex Games Evaluation

# Particle System C++

# Issues

a major issue encountered was not being able to render both the fire and smoke particles which was caused by having only one initialise class to share the particles. Which resulted with the draw function rendering the second particles as the update would override the first update particles in the VBO. Which was fixed by making another initialise class, so the fire and smoke particles didn’t share the same VBO. Textures having black background with the sprite that particles that overlap other particles would see the background cutting off the particles behind and not blending. This led to coding in Alpha blending in to make the background transparent and the smoke particles get thicker in alpha when overlap and fire particles get brighter in colour when overlap. In the EntryPoint.cpp I wrote glBlendFunc with GL\_ONE GL\_ONE\_MINUS\_SRC\_ALPHA in the parameter to have an permultiplied alpha blending for all particles which got rid of the black background. However, the fire particles needed to be additive alpha blending. This would be done in the fragment shader with depending on the value of alpha (vec4 alphaAge.x) which was change in the fire compute shader setting it to 0.0f as the default was 0.1f. If greater than 0.5f run the statement for smoke permulitplied alpha blending, else run the statement for fire additive alpha blending. This solved the issue of the black background and sorted the alpha blending to the right particles.

# Performance

# Required Changes