Game Engine Development Assign #1

Part 3: Questions

1. What limitations do you think your game engine would have? Try to explain what these limitations are. (Approx. 50-100 words)

The main limitations for our game engine are the lack of systems to enable more complex physics such as springs, fluids, particles or soft body collisions. Since all our game needs is simple collision detection and actor movement, there are no systems in place to process anything beyond the location of actors and their current movements. Another shortcoming is the simple rendering system, meaning that we are currently limited to rendering simple textures on a 2D plane. There is no planned system for generating 3D models, or mapping textures to them. There is also no lighting system. Therefor, all graphics will be simple 2D textures.

1. How can you adapt your game engine in order to accept a different game genre? You may use diagrams, UML, etc. to help illustrate your example. (if your game genre was FPS pick a different genre for instance RPG and describe how your engine would be different). (Approx. 200-300 words)

In order to adapt our game engine to a third person shooter, we would have to overhaul the majority of the content. Firstly, the physics engine would need to be far more complex. We would need to change the physics simulations from 2D to 3D and add rigid body collisions. The physics engine would also need to be able to handle impulse and forces generated from players being impacted by explosions, weapons etc. Secondly, the rendering system would have to change from a simple display to a camera-based system. It would need to be able to handle 3D models, along with their texture mapping, animation and dynamic lighting. The world would now have to be generated around the player, and the camera choosing what would be rendered to player view. Enemy AI would also need to be far more complex, given that its possible actions and access to information would be far greater. On the other hand, we would no longer need to check the game’s collision manually, as that task would be shifted over to the physics system. Each actors’ movement component could be remodelled, as it would now primarily be sending information to the animation component and the physics engine. The scoring and UI systems could remain similar, though they would now be receiving different information. The most important change is that we would have to switch from a simple main loop to a cooperative multitasking main loop. Currently the game is limited in it’s tasks to complete each cycle, but with the addition of all the extra physics and rendering systems, a simple main loop would no longer suffice.