Nicholas Wulf

**CAP4730: Computational Structures in Computer Graphics**

**Team 5 - Individual Report**

In our group, I was the program manager, Josh Hartman was the graphics programmer and Chris Spence was the modeler. The general game design was decided on by everyone, which includes game goals, level design, and included technologies. In the end, everyone completed their individual tasks and the game came together as originally planned.

As program manager, I was initially in charge of implementing the physics engine. Since I don’t usually like or trust other peoples work too much, I decided to make my own engine from scratch. Collision detection is performed between the car and the walls/floor by assuming that the car is a cylinder. Should the car collide with the floor or a wall, the cars depression into the obstacle will determine how much force is applied to the car in the opposite direction. In this way collisions are modeled exactly as a spring is in physics class. In order to test and debug the physics, I also had to create some basic models so that I could see what was happening. The car was a simple 8 sided box like figure, while the floors and walls were made out of a checkerboard pattern. These models were simple, but they got the job done. They were used in the initial demoing of the game to Dr. Lok in early April and were still in use up to a week and a half before the game was completed. I also implemented a camera system that smoothly follows behind the car and rises or falls depending on the slope of the floor. I also added in the tackles and the initial damage system. Towards the end of the game’s development I implemented the style system, which made note of any tricks the user performed in the arena, allowing them to be rewarded for their efforts.

Josh took care of almost all other programming. He loaded in all of Chris’s models for the weapons, level, and cars. He also implemented the entire weapons system, including firing, weapon physics and collisions with the walls and floors, and damage done to opponents. He also implemented his very own particle system, which was used when the weapons would explode. Most notably, Josh was completely responsible for implementing networking into the game. This was a large task since he not only had to get the different computers to communicate, but also had to rework large amounts of code so that they would work more efficiently in a networked environment.

Chris was completely in charge of creating every single model used in the final game and implemented lighting. He also created his own music and was entirely responsible for implementing sound into the game, including other sound effects.

This project was truly a joint effort and could not have come together so nicely without everyone working as hard as we did. If I had to distribute 100 points amongst us, I would give myself 35, Josh 35, and Chris 30. I feel like Chris probably didn’t put as much effort into the game as Josh or myself, but this is mostly because his responsibilities as a modeler were limited. Yet even though he was only mainly responsible for the models, he still helped out when Josh and I needed him and did the sound all on his own, which in my opinion would have been a big pain.