Programming Assignment 1

Tank Game Part I
ECE 407

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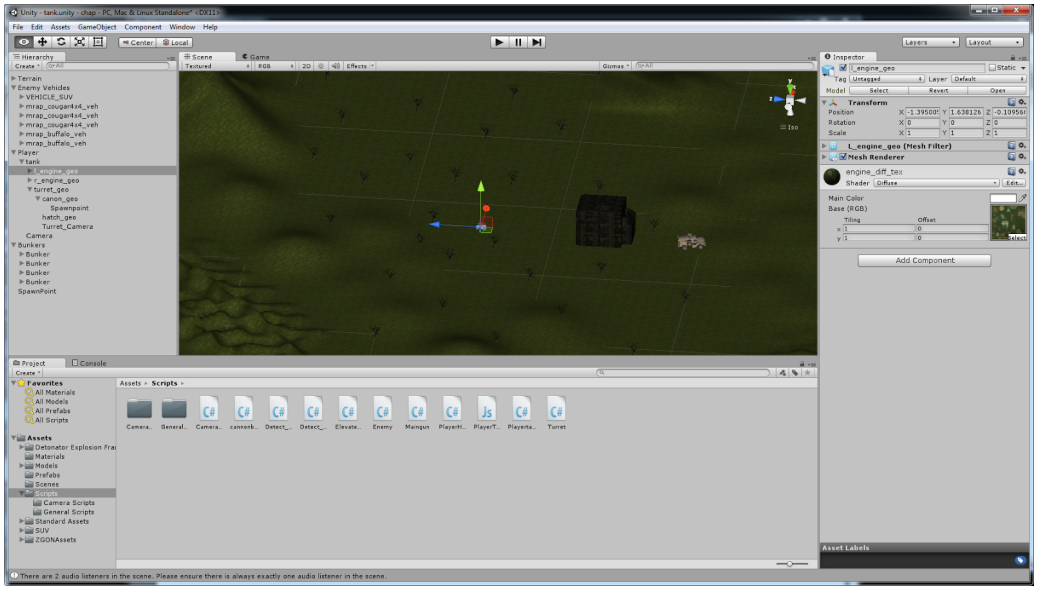
Introduction

In this programming assignment, we were required to create an engaging 3D battle game that involves a tank controlled by the player and other still or moving objects (e.g., vehicles, buildings, and or trees) across a terrain that we designed to be out battle field. We were required to create at least two cameras: one for the entire scene and one third person camera following the tank. The player controls the tank's steering, moving, turret rotation, cannon elevation, and firing. We also required to allow the tank to shoot and destroy any enemy that it would encounter.

Program Design

Source File(s)

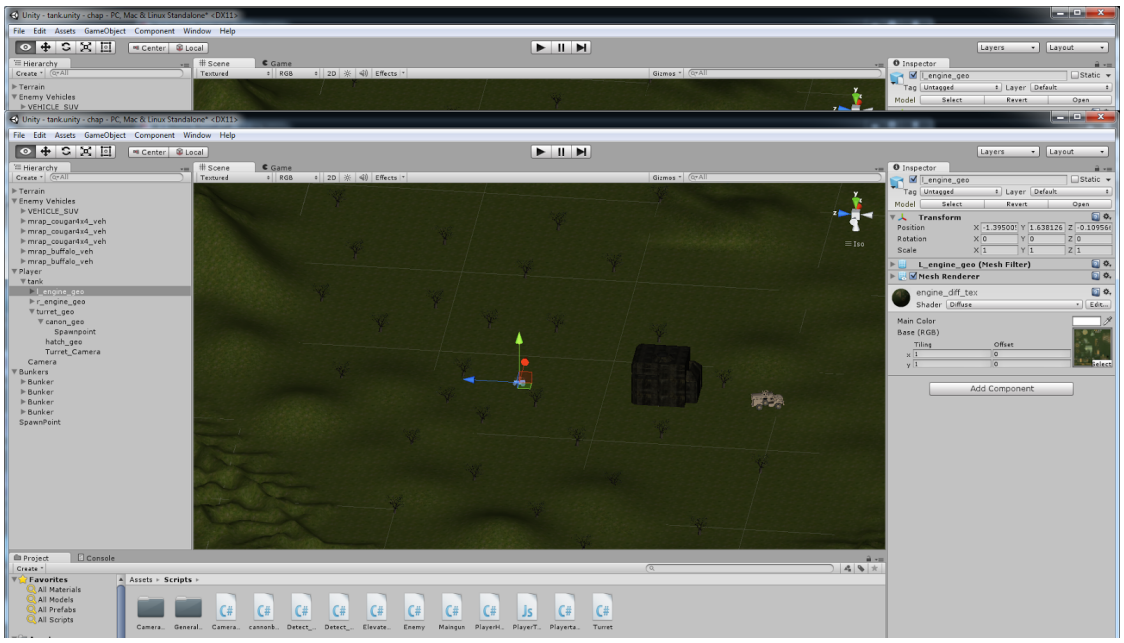
- **Playertank.cs -** This script allows the user to control the movement of the tank as a whole.
- **Turret.cs** -This script allows the user to rotate the turret.
- **ElevateCannon.cs** - This script allows the user to elevate and depress the cannon on the turret.
- **Maingun.cs** - This script allows the user to fire the main gun on the tank.
- **cannonball.cs** - The script detects the collision of the projectile from the main gun on the tank and destroys it on impact with an animation.
- **PlayerHealth.cs** - This script creates a healthbar on screen for the tank.
- **Enemy.cs** - This script detects when the tank is near an enemy and fires bullets at the tank from the enemy.
- **Detect_enemyhit.cs** - This script detects a projectile hit on the enemy and destroys the object.
- **Detect_tankhit.cs** - This script detects a projectile hit on the tank and takes one health point away for each hit, destroying the tank at 0.
- **Camera_Switch.cs -** This script allows the user to switch between two different camera angles.



The point of a prefab is to have something you can edit in your scene and those adjustments be saved to an item. This item can then be duplicated with those adjustments without having to save any changes to an original item.

Prefab(s)

- **Bunker** - This prefab is for the bunker and collision detection
- **Player** - This prefab is for the tank that the user operates.
- **Shot** - This prefab is the projectile from the main gun on the tank.
- **prefabShot** - This prefab is the enemy projectile.



Results

The tank game allows a user to control the tank. The user is able to drive the tank forward, backward, left, and right. The user is also able to traverse the turret as well as elevate and depress the main gun. The user can also fire the main gun on the tank. Upon impact the projectile will have an exploding animation and be destroyed. The user is aware of their tank's health due to a health bar on the GUI. The activation of the enemy return fire is an issue that was encountered.

Conclusion

During the course of this assignment, I have learned a lot about coding in C# for Unity. Due to unforseen circumstances I felt that I was unable to make the progress necessary to make this game work in its entirety. If given more time, I feel as if I could have worked out the last few minor details of the game.