Design Document for Forsaken Crypts

The development of *Forsaken Crypts* was centered around the exploration of what elements contribute to creating more immersive gaming experiences. Whenever the motivation behind why people play video games is brought up as a topic of discussion or research it often leads to the word "escapism": that gamers play to get away from the mundaneness of reality[1] and whilst there are far more complex reasons behind people's motivation to play games, numerous studies have found that this sense of immersion is definitely a contributing factor. Nick Yee, a scientist who made on of the first steps in building framework for studying motivations[2], found that it was indeed one of the three core motivating components along with the social and achievement components[3].

It is evident that immersion has immense importance when looking at game design but so many games fail to achieve this key factor. This is largely due to the ambiguity surrounding immersion within video games. While there are numerous different definitions and theories, a particular research paper published in 2007 by Werner Wirth and a team of other researches presented one unified theory[4]. This theory stated that games which facilitate immersion can be grouped into two main categories: Those that create a rich model of the game environment and those that create consistency between components within the environment. The goal for *Forsaken Crypt's* development was to further explore the first of these categories and what components can be added to a game to increase its richness and thereby increase its immersion.

The first of the components the research paper attributes to immersion is a Cognitively Demanding Environment[4], environments in which the player needs figure out what is going on and navigate the world accordingly. This calls for the development of two critical components in a game; a world for the player to navigate and a way for the player to navigate that world. The most popular choices for how a player can navigate the world are through a third-person or first-person perspective. Whilst different players have their preferred perspective, Alena Denisova's research paper on the topic found that people were more immersed in game play when viewing the game world through the eyes of the character, regardless of their preferred perspectives[5]. Therefore, the development of *Forsaken Crypts* began with the creation of a first-person perspective Character Controller. This done using Unity's built-in Character Controller component to determine how the character would interact with the world around them and a Player Movement script that used player input to move the character accordingly.

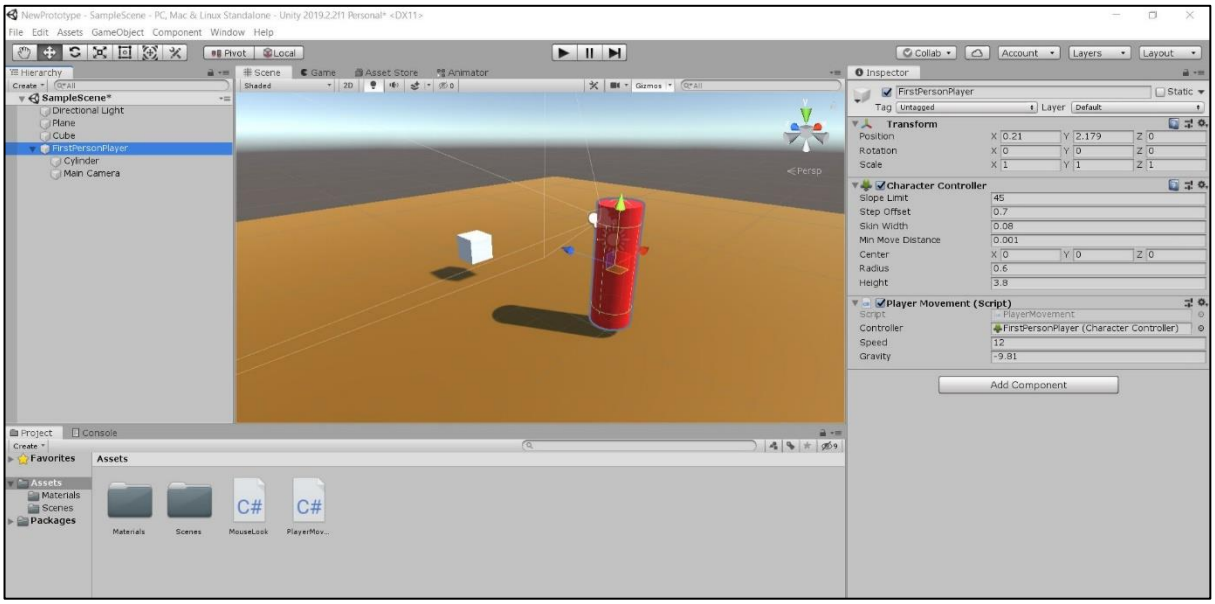

Figure 1: Developing Character Controller

The next element to be developed was the game world itself. According to Wirth's paper another important component in creating immersion is Completeness of Sensory Information, meaning there are less blanks in the game the player has to mentally fill in[4]. When it comes to designing the game world this can be achieved by creating environments the player is likely to be familiar with as they can then comfortably make assumptions about any blank spaces in the world without having to be pulled out of the game to think about it. After contemplating various environments that people are most likely to be familiar with, a graveyard was chosen as the setting for the game as most people have encountered one somewhere in their life. The development of the game world was done through placing the necessary objects in the scene, adding Collider components to them and resizing the Colliders accordingly with some more complex objects requiring several colliders in order for the Character Controller to interact with them correctly.

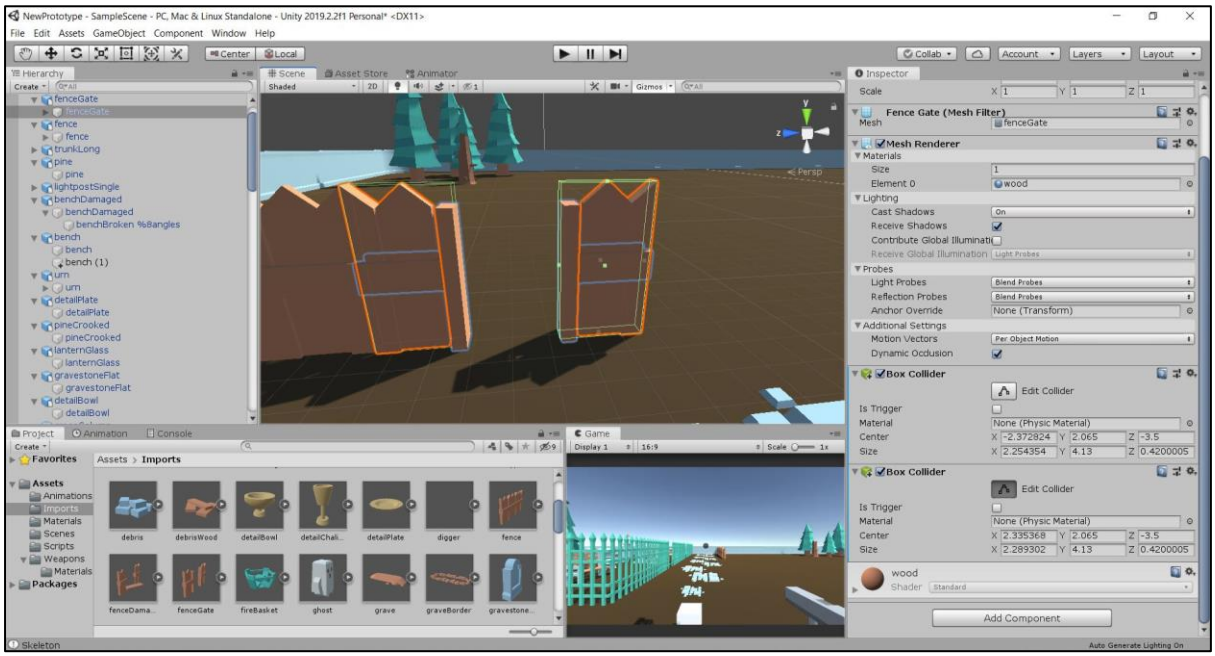

Figure 2: Developing the Game World

In order to create a familiar space, the graveyard in the game would have to resemble graveyards in real life. Research was done into common graveyard elements and layouts, the layout that was developed for the game contains three distinct areas with the philosophy behind them being the representation of different Income Classes.

Using the top-down view below, the section in the bottom-right corner represents the Upper Class. This section is surrounded by a metal-fence, protecting it and isolating it from the rest of the graveyard. The graves within this section also have high-quality, elaborate tombstones. At the back of this section there are also concrete crypts and altars with evidence that they have recently been visited (in the form of baskets and urns). There are also benches where visitors can sit, and the section is well lit with numerous light posts and lanterns.

The second section can be seen in the bottom-left corner and represents the Lower Class. Surrounded by a simple wooden fence. Here there aren't any tombstones or crypts and graves consists only of a hole in the ground. There is also less evidence that these graves have been visited and there is no place for visitors to sit. This section also only has one light-post and very few lanterns.

The top-left section represents the Middle Class. There is a combination of simple and elaborate tombstones but no crypts or altars. At the back there are a few gravestones with some evidence of visitors. It does not have a fence or benches for visitors to sit on.

Lastly the section in the top-right represents the area of the graveyard where graves are still being dug, there is a large part of it still containing trees and rocks which will later be removed for more graves to be dug. This section helps imply that the game world is living and dynamic and establishes a narrative of a graveyard that is still being used.

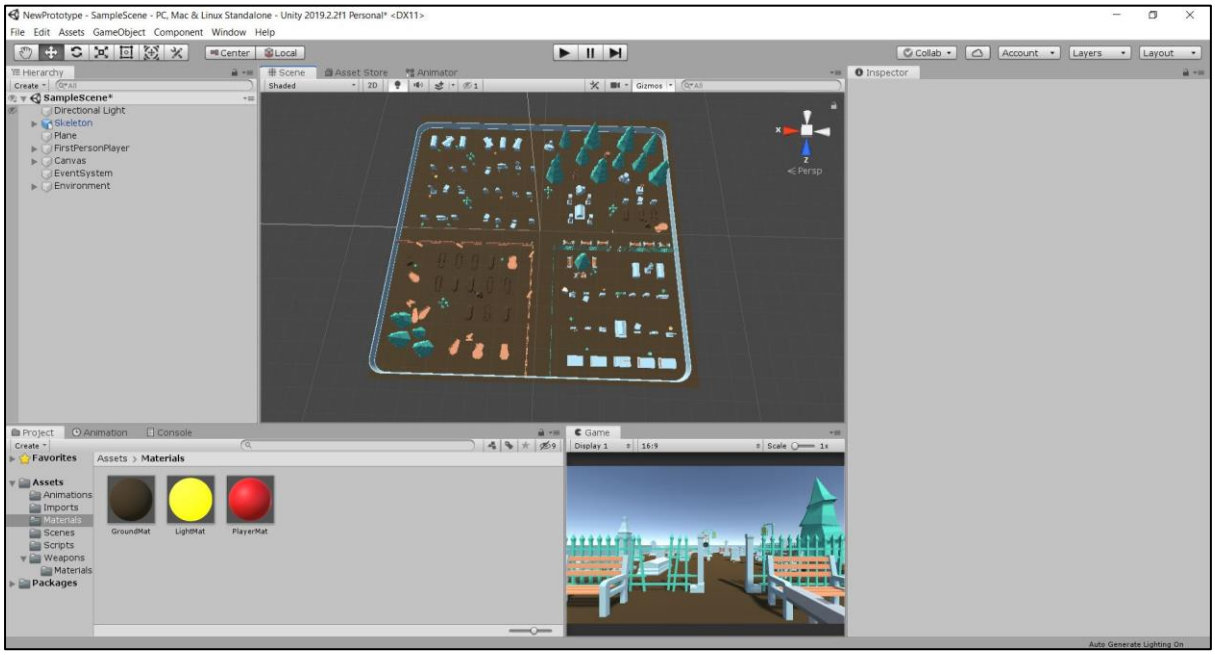

Figure 3: Game Word Layout

With the game world's creation and character controller complete, the player was able to navigate the world however it was not an environment that was cognitively demanding as the player could see exactly where they were and where they could move. To combat this, the players field of view was reduced by manipulating the Lighting Settings and incorporating a dark Fog into the game. This meant that players could only see a small distance around them at any given time, greatly increasing the need for orientation to navigate the world.

The next element that contributes to an environment being cognitively demanding is having objects in the environment which the player can interact with and something that motivates them to interact with these objects. The motivation that was chosen for *Forsaken Crypts* was survival as it is an innate quality all humans possess. Enemy objects were incorporated in the form of Skeletons and Ghost and the character was given a gun that the player would have to use to protect themselves against these enemies. In order to establish these enemies as a viable threat to the players survival, they were developed in such a way that they follow the character wherever the player moves. For the Skeleton enemy this was done using a NavMesh and a script with the SetDestination() command. Whilst for the Ghost this was done using a script with the transform.translate() command. This meant that the Skeleton would have to walk around objects in the game and find a path to the player whilst the ghost could fly "through" objects to follow the player.

A script was also added to the gun object which used the mouse as input for firing the gun and Ray Casting to identify what had been hit. If an object with the Enemy tag was hit, damage would be dealt to that enemy. Scripts were developed for both enemy objects to keep track of their total health. The gun script also contained the logic that determined how much ammunition the player had left, this information was stored in three variables: Total Ammo (which stored the total amount of ammunition), Current Ammo (which stored the amount of ammunition the player had in their gun), Remaining Ammo (which stored the difference between Total Ammo and Current Ammo). Current Ammo and Remaining Ammo were also linked to Text Objects and displayed in the bottom-left of the screen. An Ammo game object which players could pickup to increase their ammo was also included.

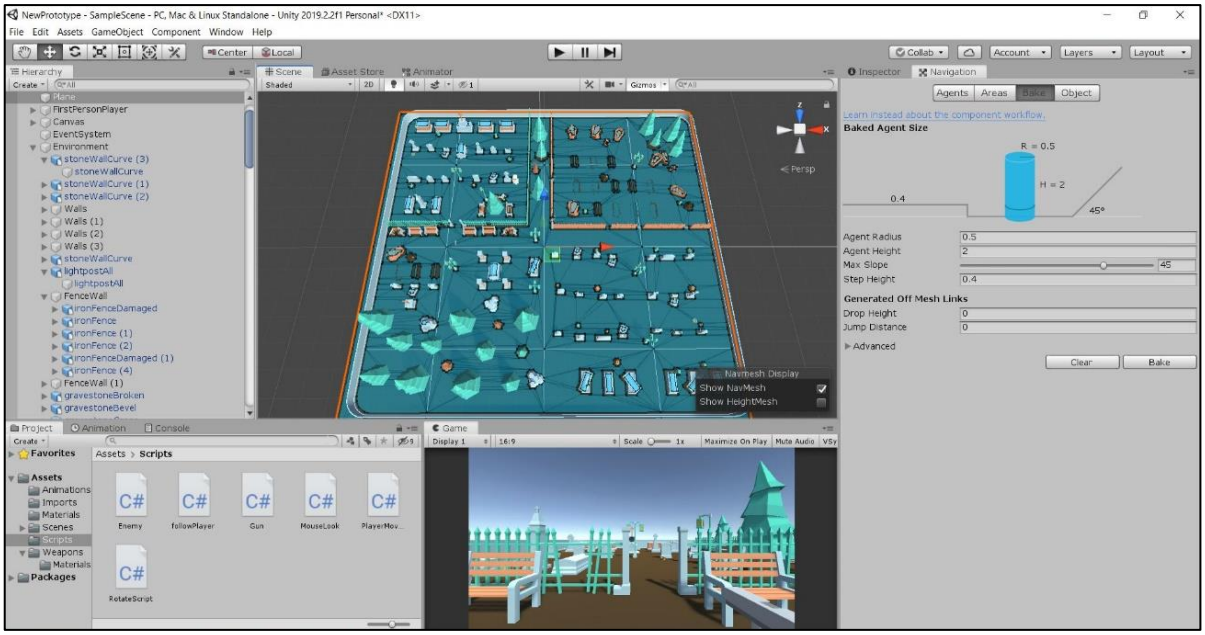

Figure 4: Navigation for Skeleton Enemy

The final component that Wirth's paper attributed to immersion was Multiple Channels of sensory information, meaning the more senses being stimulated the more likely the player is to get immersed in the game[4]. Having a character the player can control using the keypad and mouse, or any other form of input, ensures the sense of touch is being stimulated. The fact that the player's input has a direct result on what they can see happening in the game stimulates sight, but this can be further stimulated using lighting and animation.

With the Fog component already being incorporated into the game and partially contributing to the lighting, instead of using Light Maps to create the rest of the game's lighting, a Light Material with the emission property was used to create the illusion of objects in the game world giving off light. This material was attached to the Light Post and Lantern Objects but also to the enemies eyes.

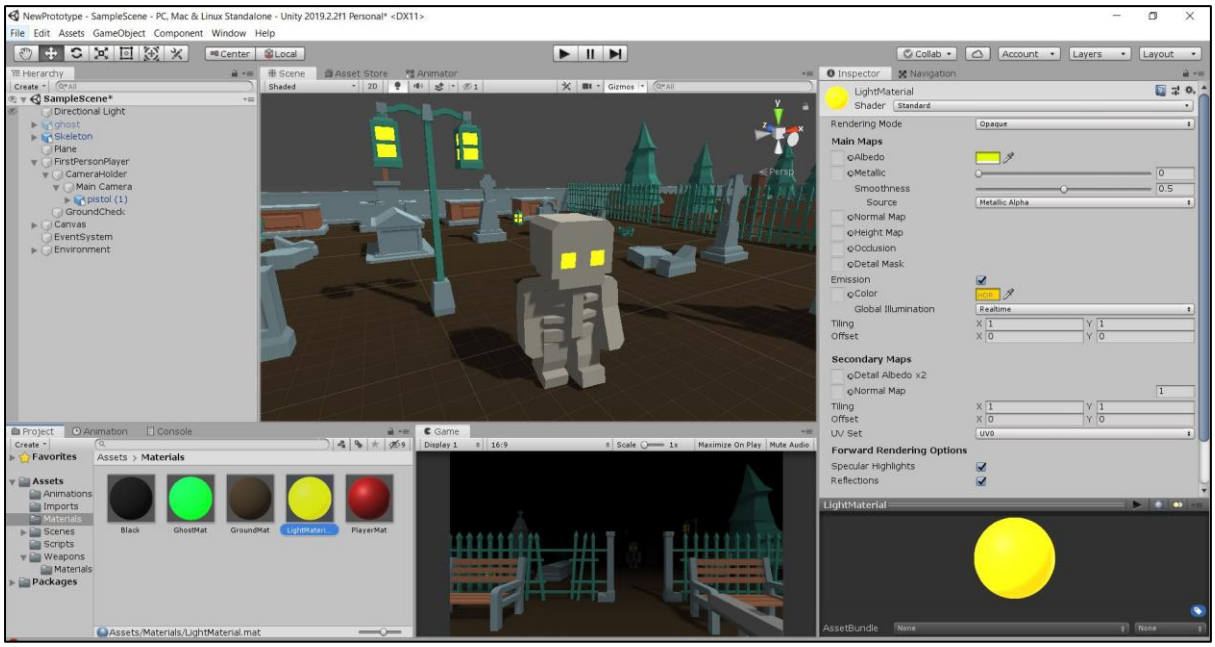

Figure 5: Material used to create illusion of Lighting

For the Gun Object, animations were developed for Shooting and Reloading using the Animation Panel and by manipulating the objects Position and Rotation properties, the same techniques were used to develop a Walk Cycle and dying animations for the Skeleton object as well as an animation that manipulates the opacity of a game object which allowed for the Enemies to fade away after being killed.

The third channel of sensory information that still had to be added was sound. This was done using the Audio Listener attached to the Main Camera and by adding Audio Sources to various game objects. Ambient sound was created by adding an Audio Source to the character object and setting its Spatial Blend to 2D so it had the same volume regardless of where the character was in the game world. Audio Sources with 3D Spatial Blends were added to the Enemies so the sound they made would get louder as they got closer. Various Audio Sources were added to the Gun Object for firing, reloading and firing without any ammo left as well as a script that managed when each of these were played.

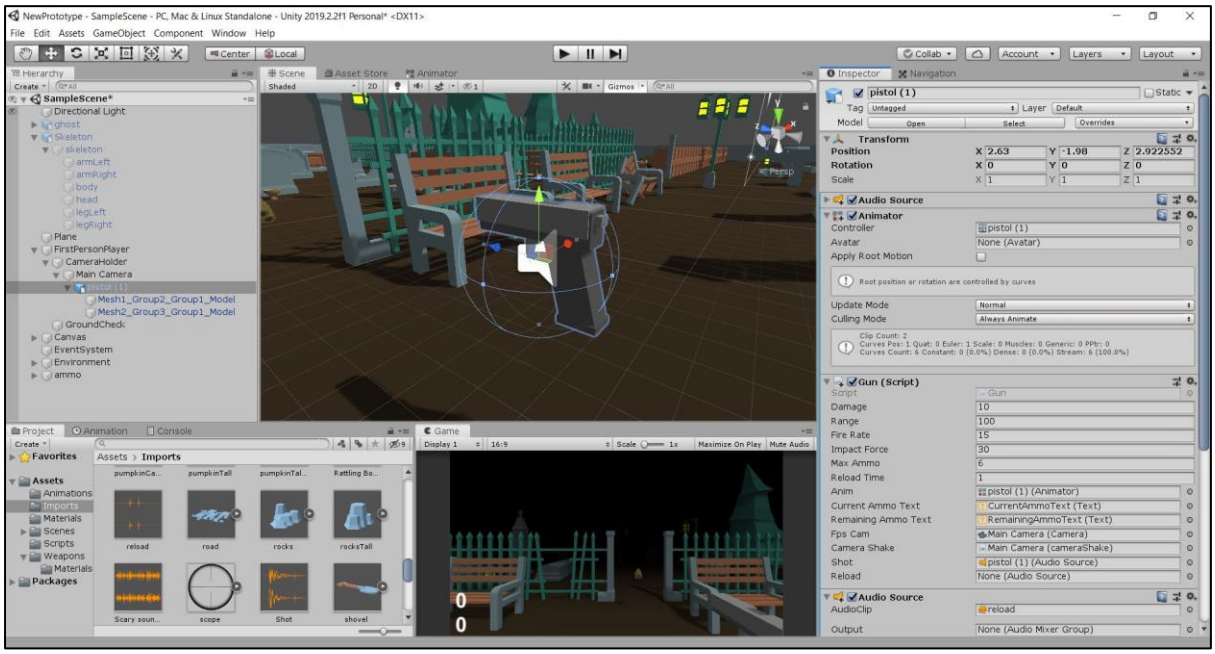

Figure 6: Gun Object's 3D Audio Source

With all of the necessary elements included, *Forsaken Crypts* had become a game with a cognitively demanding environment that contained multiple channels of complete sensory information. The final stages of development included programming a Wave Spawner Script that would spawn a certain number of Enemy Objects into the game world depending on how long the player had survived for and creating basic UI Elements such as a Main Menu and Pause Menu for the game.

Future improvements that could be made to the game would be made considering another component Wirth explores as contributing factor to immersion; a strong and interesting narrative. The game currently has a simple object, to survive, but this could be a primary objective that is accompanied by secondary objectives such as missions or challenges that need to be completed and that tell the story of the protagonist, giving context and motivation to what the player does and needs to achieve. Other improvements would include the expansion of the world to be larger with more diverse spaces as well as the development of more types of enemies which have different abilities. Further diversification could also include adding different types of guns with new fire rates and damage values.

References

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