Games Platform Assignment

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# Overview

The goal of the project is to implement multiple gameplay techniques used in VR game development. The theme for the project was creating a shooting range environment where the player is able to interact with a weapon that can be fired at targets and thrown as an object. This setting allows multiple techniques to be demonstrated in a single project.

# Gameplay Techniques

## Gaze-based interaction

Gaze-based interaction is implemented using two different approaches. The first approach is in movement, as the player’s movement is based on the direction that the player is facing. The second approach is using the player’s gaze to aim the weapon in the shooting range.

## Controller-based interaction

Controller-based interactions were implemented in a variety of ways. One implementation is using the controllers to select and activate menu buttons, by requiring the player to point the controllers at the button. The other implementation is in the weapon interaction, which uses controller-based interactions to use the weapon, such as shooting and throwing it.

## UI interaction

UI interactions were implemented in the form of menu buttons. The menu buttons allow the player to load the game and menu levels and closing the application.

## Scene Management

The UI menu buttons load the player between the game scene and the menu scene using unity’s scene management.

## Character movement

Character movement was implemented using two techniques. The first technique is using the joystick to move then player around based on where the camera is facing. The second technique is by teleporting the player to their desired position.

## Lighting and Effects

Some of the implementations of lighting was having a directional light to provide lighting for the level. This provided adequate lighting to the level without requiring too much hardware resources. The lighting is also baked into the level providing quicker loading times. Effects were also implemented into the weapon by creating a muzzle flash when the weapon is fired.

## Player Comfort

Post processing effects were used to create a more comfortable experience for the player. This was achieved in the form of vignette being activated when the player moves. This creates a tunnelling effect which eases motion sickness for the player.

## Optimization

To reduce the hardware requirements, the lighting for static objects was baked into the level, which allows the level to load quicker whilst using minimal hardware resources. Another optimization technique was implemented in the form of bullet decay. This prevents the player from creating too many bullet instances and inducing lag on the device.

# References

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