AcriJ_BlockerR_CraigT
Professor Ortega
CS310h HW2 Proposal
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Our project for HW2 is a game that combines elements of strategy and first-person shooter games. The player will start in a strategic view of the game map, with the map and all enemies and other objects on it being physical objects. Players use
this strategic mode to prepare for the next wave of enemies, by placing defenses on the map as well as choosing a place to spawn as a combatant when the next wave starts. When a wave starts, the player moves from having an overview of the entire map to being on the map, with the player now being on the same scale as a humanoid enemy. In order to prevent motion sickness, the screen will fade to black and the player will have moved and changed the scale, instead of showing the transition. When the player is on the map, they can fight enemies with ranged weaponry, as in other first-person shooter games.

The game will have a science fantasy art style, inspired by series like Star Wars and Destiny. In the R TS mode, the game map will be a physical table that the player can interact with, as shown in the mock-up below, where the player is green, defenses are Gray and enemies are red. When in the FPS mode, the player will be a character on the map, with a similar scale to enemies, and able to walk around the map as well as fight enemies.

The goal of the game is to defend a target on the map. Players accomplish this by placing defenses to prevent enemies from reaching the target and by personally joining the defenses in the FPS mode. The target has a set amount of health and takes damage every time an enemy reaches it. When the target runs out of health, the player loses and the game is over. Every play

session will have a set number of waves of enemies and the player wins by successfully protecting the target throughout all waves. While the target only needs to have survived for the player to win, they will be scored based on how much health the target has left at the end of the game, giving players an incentive to replay the game and compete with others for getting a better score. Enemies will follow a pre-set path that is procedurally generated at the start of the level. Players can place defenses around the path, but not on it, to defeat enemies before reaching their target and can set their position on the path to spawning in the FPS Mode. The player has a set amount of money to start and gets money by defeating enemies as well as by completing a wave. Placing defenses costs money. Both gameplay modes will have different ways of interacting with the virtual world. In the strategic mode, players will use selection, positioning, and rotation to place defenses, where players pick the defense that they want (like a tower that attacks enemies in range for example) and then move and rotate the defense to select its final position. All of this will be done by pulling the trigger on the Oculus controller to select the defense, moving and rotating the controller to position the defense, and finally releasing the trigger to place the defense. In the FPS mode, players will move and rotate their weapon to aim, with these motions being very similar to the movement and 3 rotation from the R TS mode, were simply moving and rotating their controller moves and rotates the weapon.

The player will also use multiple methods of travel throughout the game. In both the RTS and FPS modes, the player can walk around their physical space to move, as in other VR FPS games. While in the R TS mode, the player will use selection-based travel to pick a location to enter the FPS mode by placing an object on a map. Since we are doing the Special Edition HW2, our project is on a larger scale than the normal HW2. The game will include two different modes that

the player interacts with (an RTS-like strategic overview and an FPS mode), which doubles the scale of the project. To satisfy requirement 9 as listed in HW2's description, we will implement the selection interaction technique in the R TS mode, or one mode of travel used in either the R TS mode or FPS mode.

END OF THE SEMESTER DELIVERABLE

Welcome to Guardians VR! This is an extended report explaining our deliverables for our team's project. Guardians VR is a real-time strategy (RTS) game where you defend against the evil Unreal Engine Manekins from gaining access to your base. In this game, you will be able to use our game economy system to purchase and place your defenses around our procedurally generated map. After you complete your desired defense things get a little more interesting. Our game is not just an RTS but also a first-person shooter (FPS). After placing your defenses you can hop onto the battleground and charge your enemies with a range of weapons we have built.

After gameplay starts the clock starts ticking and you have to survive against the oncoming enemies for the duration of the timer. If however, your base is breached in that time you lose and the game ends. During gameplay, we have implemented both a base enemy class as well as a Boss enemy that has more health and damage but moves slower than the base class enemy. As far as interaction methods go our RTS mode contains teleportation for navigation as well as selection and manipulation. for placing your defenses. For the FPS mode, you can use teleportation to navigate around your enemies as well as manipulation to handle your weapons. All of the weapons both guns and melee weapons are physics objects so you can actually push back enemies with the guns if you wish. To add a little more to the game we also provided a training range at the main menu of the game as well as a guide to the mechanics of the game. In

this place, you can hone your skills and then jump into a game when you feel comfortable with the weapons. On the modeling side all of the weapons and environments, before you were edited and texture painted by us to look like weapons inspired to look like a blend between Star Wars and the game Destiny 2 by Bungie.

It is recommended that you run the game connected to a computer so you can get a full view of

all the lighting effects and particles we put into this game, however, this game can run on Meta Quest 2 on its own.

This project was a massive undertaking and we honestly had no clue how we were going to finish a project of this magnitude by the end. But through lots of going back through the textbook and a ton of youtube tutorials, we believe all of us as a team have grown so much as Unreal Engine game developers. We are so happy we ended up going with specialized homework two.

Below I have also linked a video of our project with narrated commentary on the development of the game in Unreal Engine. Hope you like it, thank you so much for this opportunity!

Game Development Videos:

Gameplay: https://youtu.be/PvqKjVQA1xU

Coding: https://youtu.be/AHb4iO2HP8g