GDD – Helix Agent

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**Course:**

Game Development

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Concept

* The player is an android traveling between several spaceships and planets.
* The player needs to eliminate all the enemies at every location.
* Once an entire location(level) is cleared, the player will be teleported to the next location.
* The player’s goal is to clear as many levels as possible or clear all the levels and win the game.
* Each map will be filled with AI controller enemies that will patrol, chase, shoot and search for the player at the player’s last known location after losing line of sight.

A picture containing indoor

Description automatically generated

Rules

* The player has two guns: an assault rifle and a mini rocket launcher which can be switched by using the mouse wheel.
* The player can shoot the weapon using the left mouse button.
* The player can move using the w, a, s, d keys and jump using the space key.
* Each gun has a set amount of ammo which the player can use.
* Once the gun has no ammo the player will not be able to shoot using that gun.
* Ammo packs will be spread throughout each level that will refill the selected gun’s ammo.
* Each time the player shoots a gun, the gun’s ammo count will be reduced by 1 until it reaches 0.
* Each map will be filled with AI controlled enemies.
* The enemies will patrol through a predefined path.
* Once the player is spotted by an enemy, it will begin chasing the player and shooting him upon reaching a certain distance from the player.
* Once the enemy loses sight of the player it will move to the player’s last known location and search there.
* Upon not finding the player at his last known location, the enemy will return to his original patrol path.
* Both the player and the enemies start the level with a certain amount of health.
* The enemies and the player lose health each time they get shot.
* Each gun can cause a different amount of damage to the hit player.
* Upon reaching a health count of 0, the enemy\player will die.
* If the player dies, the game will restart.
* Upon killing all the enemies in a level, the game will be paused, and the player will be met with a HUD screen that will inform him about clearing the level and about the next round which will soon start.
* There is a 5 second pause between restarts\levels.
* After the 5 second pause, the next level will begin.
* Upon killing all the enemies at the last level, a victory screen will be shown to the player.
* The victory screen will also inform the player about the game restarting after a pause.
* The game will restart after the victory screen.

A group of people on stage

Description automatically generated with low confidence

Requirements

* Static meshes and level assets.
* Player\enemy animations.
* Gun assets.
* Gun sounds.
* A behavior tree that will be used as an enemy’s “brain”.
* A blend of shoot, move, jump and rotation animations.
* An object(gamemode) that will save level and game-flow data between levels.

Potential Technical Challenges

* Ray casting problems.
* Enemies might pick ammo up.
* The game needs to save controller data upon switching levels because a controller is created again at every level.
* Several camera angles might cause issues.
* The rocket launcher’s projectile might hit the gun upon leaving it so it has to be placed a bit further.

A picture containing indoor

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Extra Features

* Hinges.
* A static mesh with several LODs.
* Raycasting upon shooting the assault rifle,
* Usage of blender’s Voronoi to “break” a static mesh into several pieces.
* A demonstration of the mesh that was broken by Voronoi upon moving onto a pressure plate.
* A mini map.
* Several camera angles(which can be switched between by pressing the “V” key on the keyboard).
* A physical actor with a mesh is shot from the mini rocket launcher with a particle trail.
* Shoot and hit sounds on every gun.
* Randomized hit sounds when using the assault rifle.
* A particle system follows the rocket launcher’s projectile.
* Shoot and hit effects on every gun.
* Game music.
* 3D floating tutorial text with instructions.
* Camera shake is implemented when hitting something with the rocket launcher.
* A menu which lets the player start the game.
* The player can takedown an enemy from behind by pressing the “T” key without any ammo cost.

Keys

* Left Click – Shoot
* Space – Jump
* Walk – W, A, S, D
* V – Camera Swap
* T - Takedown