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Code/Architecture Design Document

This game is being made in Unreal using blueprints. Since this game is using blueprints, it is really easy to program fast and have decoupled code. The major blueprints are the gamemode blueprint, player blueprint and enemy AI blueprint.

The Gamemode blueprint:

In this blueprint all the game logic will be held, this will be the main game loop. This is the default game logic blueprint for Unreal. So every class can get access to this blueprint’s functions and variables.

The major functions are spawning enemies, deleting enemies, the day and night cycle, and restarting the game/day when the player dies. The enemies are spawned at the beginning of the night and are destroyed at the start of the day. When a player dies, the player will restart at the beginning of that day.

The major variables are what day it is, how many enemies are spawned and what time it is.

These variables will be referenced in the other scripts so it is important to keep track of them here.

The Player blueprint:

Holds all the code that has to deal with the player.

The major functions of this blueprint deals with player input. This blueprint will hold mouse and keyboard and controller input. Then based on the input it will do the correct action. The actions are movement, aiming the reticle and placing barricades.

The major variables are movement speed, reticle speed, and cost of the the barricades. The movement speed is used for how fast the player will move. The reticle is moved with the mouse or controller joystick. So this variable will be useful for the controller sensitivity. The barricade costs are how much each specific barricade will cost during the daytime and the multiplier for the nighttime.

The Enemy AI blueprints:

Holds enemy logic, this includes the Artificial intelligence.

The major function are movement, destroying barricades. These functions right now are simplistic but will become more complex with a blackboard. The movement function is a simple moveto node. This makes the enemy move to the target location while using a navmesh. In the future, I want to add a blackboard so it can make logical decisions on what path to take based on how long it takes to break down a barrier. The destroy barricades function just has a raycast to see if it hits a barricade it can destroy if it does, it will destroy it after a certain amount of seconds.

The variables are movement speed, object tags it can destroy and how long it takes to destroy the barricades.

Connections:

These Blueprints will be connected by the gamemode blueprint. SInce this blueprint is the central blueprint, the AI and player blueprint can connect to it. The AI and player blueprint will never interact since those should be separate. The information in these should never need the others.

In the gamemode blueprint if either the Player or the Enemy AI needs to do a certain function when something happens. The blueprint will just call a custom function in the respective blueprint. The major custom functions are spawning AI, destroying AI, player dieing and restoring resources. Spawning AI, destroying AI and restoring resources are all tied to the day/night mechanic. Spawning AI is when the night happens. Destroying AI and restoring resources are when the morning happens.