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CS 415: MP2 Design Document

I. Enemy Design

A. Pursuer Enemy

1. No changes were made from what was asked

B. Mortar Enemy

1. Made enemy rotate in place so that it's more obvious to the player that the robot does something – rather than being some inactive object that is part of the environment
2. No changes were made from what was asked

C. Turret Enemy

1. Shoots projectiles at player every few seconds based on player location
2. Only activates if player is within a certain distance from the enemy
3. Cannot be killed by player
4. Design Decisions:
 - a) Rectangle shaped robot with a sphere attached at the front; more intuitive design as behavior of enemy matches its design
 - b) Combination of already existing enemy features: location tracking from Pursuer and projectile launching from Mortar
 - c) Smaller projectiles & removal of projectile launchback; makes sense that aimed shooting involves smaller, more precise projectiles that create targeted damage compared to the Mortar's larger, aimless projectile that explodes & creates radial damage
 - d) Cannot be killed by player as there is essentially no "head"; if the player attempts to jump on top of it to destroy it, the enemy will rotate to face the player above it and shoot at it

D. Additional Ideas

1. Ideas that I came up with during the brainstorming process – but ultimately did not create due to lack of time – include:

- a) Poisonous enemies, flying enemies, enemies with abilities to freeze or slow the player, enemies that drop loot, defensive enemies, intelligent enemies

II. Collectibles Design

A. Health Pack

1. Chose a gift static mesh to help player understand that picking up the health packs are desired
2. Made gift color green to represent “health”

B. Basic Coin

1. A simple coin that grants the player 50 points when picked up
2. Many throughout the level

C. Level Coin

1. A larger, shinier coin that grants the player 500 points when picked up
2. Only two per level
3. Inspired by Mario’s coin collection system, where there are the small coins scattered throughout the level and the 3 large gold coins earned per level. Originally I wanted to use a star coin to distinguish from the basic coin, but I could not find any free static meshes of star coins online that I was satisfied with.

D. Level Star

1. A large star that grants the player 1000 points when picked up
2. One per level
3. Pick-up signifies end of the level
4. Chose a star to help player distinguish that the last pickup is significant; once it is picked up, the level complete screen appears

E. Additional Ideas

1. Ideas that I came up with during the brainstorming process – but ultimately did not create due to lack of time – include:
 - a) Point-doubling power ups, invincibility power ups, super strong powerups (enemy would die upon any collision)

III. UI Design & Other Systems

A. Health Bar & Health System

1. No changes were made from what was asked
2. Health Range: [0, 100]
3. Player is dead at 0 health and must restart level
4. Changes to health include:
 - a) Health pickup: +20 health
 - b) Pursuer collision: -10 health
 - c) Mortar collision: -10 health
 - d) Mortar projectile explosion: -20 health max (depends on distance player is from the explosion)
 - e) Turret collision: -10 health
 - f) Turret projectile damage: -10 health

B. Point System

1. Score system on top right to motivate players to explore island, interact with objects & enemies, and keep track of their progress throughout the level
2. Changes to score system include:
 - a) Basic coin collection: +50 points
 - b) Level coin collection: +500 points
 - c) Star coin collection: +1000 points
 - d) Key pickup: +100 points per key

C. Key & Door System

1. 3 different colored keys per level: Key A (blue), Key B (pink), Key C (green)
2. Each key corresponds to matching door
3. Player cannot pass the door unless they have collected the correct key
4. Purpose is to encourage exploration in the level and have a “purpose” that leads player to complete the level
 - a) The level star is within the last house that the player unlocks through the keys

D. Game Over Page

1. Semi-transparent background for a nicer look
2. Includes restart button that allows player to start the level immediately; everything is reset upon clicking the restart button

E. Level Complete Page

1. Semi-transparent background for a nicer look
2. Displays player points at the end

IV. Level Design

A. Islands

1. Chose to build off of one of the provided level layouts
2. Moved islands around, removed islands, added bridges between islands
3. Added lighting, rocks, foliage, additional houses

B. Houses

1. Extended the given house to have a second floor
2. Added 3 additional houses on the further-out islands to encourage exploration
3. Created 4 houses and 3 keys to challenge players to explore more to find out which houses have the correct keys and to find the correct order in unlocking everything

C. Enemy Placements

1. Placed turret enemies on both the ground & the air to shoot at the player
2. Placed pursuer enemies near houses and on singular islands so that they could roam around the entire island
3. Placed enemies nearby pickups to provide a more challenging aspect (avoiding enemies while trying to pick up health, coins, keys, etc.)

D. Pickup Placements

1. Scattered throughout the world to encourage exploration