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3D Pac Man Documentation

**Description of World--------------------------------------------------------------------------------------------------------------**

This world features somewhere in a forest, where a lumberjack seemingly lives, however it is inhabited by colorfully familiar ghosts who patrol the area. The player controls an also rather familiar yellow sphere who collects the local power orbs to power up and eradicate the ghosts from the lumberjack’s oddly maze like lumber farm.

When Pacman is sighted by a ghost, it will begin to chase after him at a faster maximum speed than when it was following its path, but if the player manages to get far enough, it will cease its pursuit and return to its path. Pacman must collect the orbs to gain more flockers. Once Pacman has collected all the orbs, he is powered up and the ghosts become vulnerable, in which he can chase the evading ghosts and destroy them.

**Steering Behaviors-----------------------------------------------------------------------------------------------------------------**

Flock implementation: Small “pacmen” flock behind the larger Pacman. Cohesion, alignment, and separation are used, and flockers evade being in the path of the leader.

Steering Behaviors

* Seeking – used inside arrive and path following mainly
* Flee – used in separation
* Arrival & Evade – used in leader following

**Advanced Steering Behavior 1:** Leader Following

Leader following implemented successfully as the flocking pacmen arrive at a point behind the leader Pacman. The flockers utilize separation to maintain space from other flockers, and cohesion to remain together. Flockers evade a circular area ahead of the leader to avoid blocking it.

**Advanced Steering Behavior 2:** Path Following

Ghosts patrol the area following a series of set points specific to each individual ghost (as set in the GameManager). The path points are altered by Gizmo’s in the scene editor, and stored in empty game object groups. Specific paths are defined in the Game Manager GO’s inspector, and objects with the PathFollower script must have a Path ID specified to follow that path.

Character interaction: Ghosts pursue the player when within a specified range of them. Handled in path follower.

Environmental response: All ghosts and flockers avoid obstacles. Players collect orbs by colliding with them, and thus gaining another flocker.

Bugs/Errors:

The variables for the leader behind distance and sight radius need to be properly altered (or measured/calculated) to prevent the flockers from bouncing back and forth oddly, however Leader Following is still being implemented correctly in this way.

Because the spawn position of new flockers is a set 10f from the x and y of the player, this can lead to flockers getting stuck behind walls.

Similarly, because of the positioning of certain waypoint in some paths, ghosts might get stuck on walls. Here wall following could have been implemented.

**Other notes--------------------------------------------------------------------------------------------------------------------------**

CameraController: Script that allows pressing the C button to cycle through the available cameras in the scene. Attached to a CameraManager game object. Player Camera: Follows Pacman using first person controls (WASD). Camera 0: A top angled view of the lumber house and Pinky’s path. Camera 1: Show’s an eagle eye view of the area (allows for top down gameplay since the player can strafe). Camera 2: Shows a low angled view facing the black smith’s house.

Player class: This class handle’s the collection of orbs and creation of new flockers through the Game Manager object.

Constraints (a.k.a. human error): My original concept was changed drastically due to last minute design faults. In this way the scene has been minimally expanded on and is mostly flat for the gameplay area, as well as to avoid issues with character controller objects’ y-axis.

The vulnerability of the ghosts and upgrade of Pacman were not implemented. Wander could have been implemented on a ghost instead of path follow. Originally planned for animated sprites.

**Resources**-----------------------------------------------------------------------------------------------------------------------------

PacMan, & Ghosts: As my original intention was to make a PacMan spin-off with Squirrels and the later idea of a Lumberjack, there were no free models of those kind. I wasn’t fond of any of the squirrels (un-animated, as well) either. As a result I ended up making my own PacMan and Ghost models in Maya and textured them in Photoshop, making them into prefabs for the project.

Wood Buildings and tree stump: Unity Asset Store, Made by Damaged Grounds at  
https://www.assetstore.unity3d.com/en/#!/publisher/8184

Trees and Terrain Textures: Unity Environment Package Import

Brick Walls: Primitive made Prefabs with textures from  
http://www.tutorialsforblender3d.com/Textures/Bricks-NormalMap/Bricks\_Normal\_3.html

Center Brick Enclosure: Made by me in Maya (with textures and normal map from the link above)

Orbs: Primitive spheres made into prefabs with simple colored materials.