Assignment 5: Final Project

Brian Baron & Colin Brady

Editor:

Our Editor lets us place multiple tile types into levels/maps, which can be saved. There are 4 maps, which are dynamically linked at runtime in the game. We have a help menu that can be pulled up my pressing F1.

Tile Types:

- Player Spawn: Where the player spawns in the game. If there are multiple Player Spawns in the map at runtime, the Game chooses the first Player Spawn it finds.
- Enemy Spawn: Enemies are spawned here, much like the player spawn. However, for each enemy spawn, an enemy will spawn. This is also where the enemies will respawn if they die. Each enemy has memory of its spawn point, and will only respawn from there.
- Walls: Make walls to prevent player and enemy movement.
- Candy: Power-up that makes the player invincible. Enemies near enough will flee while player is in this state.

Game:

Objective is to get the highest score you can before an enemy kills you. Score is displayed in the bottom left corner, and a property menu can be accessed by pressing F1.

Coins are generated at runtime, randomly distributed to cover a percentage of each map. Currently the percentage is set to 25.

Game ends on player collision with enemy while not invincible.

Properties:

In our property menu, you can edit:

- Player speed
- Enemy speed
- Enemy respawn delay
- Enemy A* calculation (recalculate to find a better path after a set condition)
- Player invincibility

The menu can be navigated with the up and down arrows, and values are changed with +/-.

Player:

Move around with WASD.

Collect coins and candies to increase your score. Eating enemies while invincible also increases score.

Enemy:

Enemy AI is implemented using a state machine. The enemies try and kill the player upon them being within a certain range.

Pathfinding:

A* pathfinding is calculated for each enemy to the player when in the CHASE state. This is recalculated every set number of steps into the path to check for a better path. This prevents pathfinding being calculated every frame as well. The AI uses a seek steering behavior on each node of the path, allowing it to follow the path to completion.

State Machine:

Each enemy has a set of states:

- Chase
- Wander
- Flee

Each state has transitions allowing them to go between the others. The states change based on environment variables in the world, such as position relative to the player or the state of the player. These states determine the AI behavior, and do not keep track of the previous state.