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Project Proposal

***Updates below**

Problem

Current existing 2D map-based games have been around for a long time. Although many of us have played them growing up, we no longer play them often because they become boring after such a long time. 'Pacman' for example, is such an iconic 2D map-based game but is too simple to retain our interest and excitement for long. Therefore, a revitalization of 2D map-based games is necessary!

Solution

Create a new online multiplayer 2D map-based game that people can be addicted to! The game should be sufficiently complex and fast-paced in order to appeal to avid gamers.

KetchUp

Part 1 – Basic Gameplay

Players chase each other around the map on a time-based rotation. E.g. every 10 seconds, a different player becomes the new "catcher". There are three different board sizes: small, medium and large. Players pick a size and the board is randomly generated.

Part 2 – Power Ups

Power ups are items that players can "pick up" along the way that may either hinder them or aid them in winning the game. They spawn randomly throughout the map. Some examples:

- **Boots:** Increases player speed by a small amount
- **Snail:** Temporarily decreases player speed
- **Gun:** When used, shoots a single bullet that can be used to a) "stun" the catcher if you are being chased or b) "catch" a target if you are the chaser (bullets cannot pass through walls)
- **Laser:** When used, shoots a single laser that can be used to a) "stun" the catcher if you are being chased or b) "catch" a target if you are the chaser (lasers can pass through walls)
- **Shield:** Player becomes temporarily invincible

Part 3 – Multiplayer

Players can play online with their friends around the world using sockets.

Part 4 – Computer Players (Artificial Intelligence)

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15-112 Term Project

A simple program that chases after players and runs away from chasers accordingly.

Modules Used:

- Pygame (for game aspects)
- Sockets (for multiplayer)

Possible Challenges:

1. Implementing sockets
   I will use Kyle's starter code found here as a reference.

2. Computer players
   When the computer is the "chaser", backtracking is used to find the shortest route to the player. Possible method would be defining the Computer as a child-class of the 'GameCharacter' class and defining a 'move' method that can be called in 'timerFired' of the 'myProject' class.

Update 1

Basic Gameplay

The game has two modes:

1. **Chase Mode** – Same as above
2. **Shoot Mode** – Players pick up weapons along the way which can be used to shoot each other and gain points.

Artificial Intelligence

There are multiple types of computer players:

1. **The "chaser"** – this program is designed to keep track of the position of the players on the board and run after them to earn points
2. **The "runner"** – this program is designed to note the position of the current "chaser" and to run away

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Update 2

Chase Mode

There are four game characters total – two players on the same keyboard and two computers. Mechanics work the same as described above. Power ups include: boots, snail and shield (all of which work the same as described above)

Shoot Mode

There are four game characters total – all four are players across multiple computers. Mechanics work the same as described above. Power ups include:

- **Gun –** Fires a single bullet that cannot pass through walls
- **Laser –** Fires a single laser beam that passes through walls and destroys bullets