

Project Proposal

The problem I that I intend to solve is that I want to create a multiplayer game where two or more players can work together to fight off a wave of incoming enemies. This game will also have different game modes including: single player, multiplayer, and a 1v1 mode where players can fight against each other online. In order to create this game, I will mainly be using two python modules: pygame and sockets. I will use pygame to handle the graphics and the overall gameplay and I will be using sockets to allow for wireless multiplayer gameplay.

In order to come up with a solution for the idea stated above, I break down the different parts of the game and how I intend to implement them and tie them together.

The first thing I will need is a map for the players to play on. This map will include several obstacles and spawn points for enemies to appear from. The base of the map will be drawn programmatically through pygame and I will then write my own algorithms to randomly spawn different enemies and obstacles on this map.

In addition to this, I will need to create different menus using pygame for the user to select game mode and a lobby for multiplayer mode games.

The enemies will be established in their own class which will hold the enemy type, health, sprite image, etc. I will essentially store an array of these enemies and generate them in random positions as time progresses in the game. I will then need to construct an algorithm for the enemies to chase down the players so that they can take health away from them. I will also need to implement a way to take health away from the enemies when they collide with a projectile from the player's weapon.

I will also need to create a class for the players. This class will also hold health, sprite image, name, etc. I will need to setup different controls to move around and interact with the character so that they can fight other characters. In multiplayer modes, some of the players will be controlled through input from our python server using sockets. The player will also have a weapon and I will need to create an animation when using this weapon.

The last main part of this project is implementing sockets to make the game multiplayer. To do this, I will essentially send a list of commands to the server after the user inputs them onto their computer. From there I can receive these commands back from the server and interpret them, then translate these interpretations into functions that will

work with pygame to move players, send messages, etc. The different players will be able to follow their own character while also seeing the other player's characters at the same time. This will be one of the hardest aspects of the game to implement.

Another difficult problem to solve is how to move around the enemies so that they attack the players. I will need to construct an algorithm so that the enemies dodge obstacles and take the fastest path towards the player. This can be done by storing the positions of the players and constantly checking them. With this information, I can move the enemies around the board so that they move at an angle directly towards the player at that moment in time.