

## Final Documentation: Monster Forest

Our project proposal was a combination of Pacman and multi-level video games, in which our main character has a health bar that dictates their health during their journey. Our player must collect all the coins in each room and get to the end tile in order to win the game. There is also a heart tile in each room that acted as health boosters while avoiding monsters. If the health bar goes to zero, our player loses, meaning the monsters won. Our game had three levels/rooms in total, which have different layouts. The tiles affect the speed of the player. The grass tiles make the player go slower which could make the game a little more difficult if the monsters are getting too close to the player where they cannot easily run away. The brown tiles make the player run faster and there are two kinds of solid blocks that the player cannot walk through. They cannot walk through the borders of the rooms or the brown and green tiles that look like rocks.

Instead of the Pacman world, our game setting takes place in the forest, and resembles a maze made from graphics of trees, dirt, grass, water, and rocks. Each monster will be created from a constructor that randomly synthesizes a head, body, and extremities, creating different monsters with each iteration. When the monsters are created, they all have different colors and sizes of each body parts which is unique to each monster. They move based on Perlin noise and can move anywhere on the canvas within the borders. When the monsters get too close to the player, the player begins to lose life. Losing life is demonstrated by decreasing the size of their health bar. When the health bar decreases in size to half of its width, the bar changes its color to yellow. When the player is close to losing the game, the bar changes its color to red which would tell the player they need to find a heart tile.

The way to fight the monsters is by making noises into the computer's microphone. By yelling into the computer the monsters move away from the player when they are within a certain distance. With a loud enough volume, the monsters run away in the opposite direction of the player. The monsters were created and pushed into an array which made all the monsters appear in one centralized area but eventually went their separate ways using Perlin noise. Also in each room there is a coin for the player to collect. The coins are randomly placed in the different rooms which would be different every time the game is played. One problem that we encountered with this was that when you would go into a room and leave without getting the coin, a new coin would randomly generate in the room, having there be more than one. We fixed this by having a boolean condition that checked each room and checked if a coin was already populated in the room.

Throughout the process of creating this game, we changed the ideas for the game along the way. In the beginning we thought about making the monsters move faster in the different levels of our game and also about making the game multiplayer. Instead of making the monsters move faster, we just made it harder for the player to move around and get away from the monsters based on what tile they were standing on. When we got nearer to our current program we did not really think about making it multiplayer anymore because it was more like a mini game where you can gain coins in each room and fight monsters along the way in order to win. One aspect of the monsters that would have been hard to do is to confine the monsters to certain areas, meaning they also could not go through solid tiles. The monsters were confined to the borders of the room but were about to go through other tiles that the player could not walk

through. It was better in the end to have the monsters move freely because it made it easier for the monsters to get to the player which also made the game more challenging.

If we continue this project, we would like to add different levels where we could have more monsters on the screen in each room, have the monsters actually follow the player around, or to have the monsters increase in speed.