

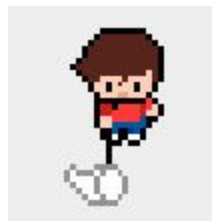
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CS 4730-001

## CS 4730 - Prototypical Document

In our game, Classroom Heroes, your teacher is throwing VP and poison at the class, and you are the defender of your classmates. Armed with a net that catches both VP and poison, you must catch poison blobs before they hit your classmates, and catch VP in order to buy powerup for the next level, or to buy antidotes for your poisoned classmates. You earn more experience points for each student that is left alive at the end of the level. Our final product aims to have 5 levels of net defense fun. As you level up, stat points are gained which can be used to increase movement speed, net range, health and more. At the end of the game, you are given a certain score based on your total experience points.

For our prototype, we focused on getting some of our essential mechanics working: A player sprite that is able to swing a net in 4 different directions and catch items that are in range, and a boss character that throws items across the screen that the player can catch.

For our player character, we first got the sprite to walk around the screen with the proper animation by pressing the arrow keys. This helped us to realize that our sprite should be configured as a top-down sprite, similar to a sprite from any of the Pokemon games, in order to see items that are on any side of you. One of our challenges was changing which VP and poison are in range based on your character's direction. In order to be able to catch those objects, it is necessary to create a hitbox that will sit directly in front of the user image. This way, when the user swings the net in the area in front of it, the hitbox will be able to detect if a thrown object that is collectable is there or not. To implement this, we made a separate sprite called "net," which is a child of the player sprite and is just an invisible hitbox. We got the "net" hitbox to move, and change ranges according to which direction the character is facing by making a method called "moveNet," which is called with the correct direction whenever you press an arrow key. The throwing of our net is displayed in the screenshot below (see Image 1).



*Image 1. The main sprite being used as Player 1*

Another function we wanted to include was a very simple boss. For future levels, the boss may have more functions (such as the ability to move around the top of the screen). However, in the case of our prototype, we wanted the boss to be in fixed position where projectiles would be thrown down towards the user. Though the projectiles will be more

complex in higher levels, as a proof of concept, we made the boss like a turret gun, which rotates and shoots projectiles linearly. To implement this, we first created a method that spawns a projectile sprite, and we call this at a set interval (using the GameClock) in the update loop. To make the items collectible, we add them to the EventListener, and dispatch events if they collide with the net hitbox when the player presses spacebar. To make the projectiles move across the screen, we used our tween function, and tweened each projectiles X and Y position from the center of the boss, to a random point on a semi-circle off of the screen. On higher-levels, we can change the tween function to introduce new complexity. We may also control which directions the items go during each level, in order to prevent the game from being too frustrating (or too boring). Our prototype allows us to experiment with this balance.



*Image 2. The boss (Mario as of now) & its projectiles*

This exercise helped us to make some insights into the gameplay of Classroom Heroes. We realized that the speed of the character should match the amount of projectiles that are being launched. When we were playing the mockup, we tweaked the size of the hitbox a few times to make it easier to catch the items--we can use our prototype to continue find a good balance for the hitbox size. We also realized that it would be difficult to catch items if there are too many obstacles (tables) in the play area, so we will keep this in mind as we design our first level.

Overall, our prototype focused on the main functionalities with the user sprite and the boss sprite. For the next stage of our project (the alpha stage), we plan on putting in more functionality with these sprites. As of now, we just wanted to be able to give a visualize aid of how our final product will come together, and see whether the mechanics we wanted were

possible. Thus, our prototype for the week is useful as a starting point for our alpha and as a way to bring together all of the concepts that we wish to implement in our game soon.