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Player Mechanic

Concept and Background:

The game mechanic I am working on is the main player character and upgrade system from top-down wave survival games like Nuclear Throne, Brotato, Enter the Gungeon, Vampire Survivors, and Deep Rock Galactic: Survivor. I am working on this mechanic independently but am coordinating with a team of three other students who will be focusing on their own unique mechanic for a wave survival game such as enemy AI, map generation, and destructible environments. The aim is to bring together all our individual mechanics to make a full game.

Core Mechanic:

This Mechanic consists of a top down 2D player who can move at a constant speed in all directions using the following keys, “w” for north, “a” for west, “s” for south, and “d” for east. The player will only have two weapons, a sword and blaster. These weapons can be selected by either the mouse scroll wheel or the “1” and “2” keys. Based on the position of the user's mouse the sword will swing in that direction dealing damage to enemies. The sword will have a cool-down of 0.5 seconds. As for the blaster, it will shoot a projectile in the direction of the user’s mouse in a straight line with a constant speed. The projectile will have a small circular hitbox and need to be deleted from the scene after 1 second of flight time or when the projectile hits an enemy or a wall. The blaster will have limited ammo of 10 rounds in the magazine and a capacity of 50 rounds. The player will be able to reload the blaster by pressing “r” on the keyboard. The player will press “left-click” to attack, in this case, shooting the blaster or swinging the sword. Each sword and the blaster will utilize different layers. The blaster’s projectiles will be able to hit enemies on layer 1 (ground layer) and layer 2 (flying layer). Whereas the sword will only be able to hit enemies on layer 1. To keep track of the blaster ammo, a UI element will be placed in the bottom right corner displaying “ammo/capacity”. When the sword is equipped, this UI element will display the cool-down time with a sliding bar. Additionally, each weapon will start with a default damage of 1 but can be upgraded to do more damage as the game progresses.

Steering away from the weapons and movement, the player will need to have a health component. This health will start at 100 and be decreased by an integer value based on which enemy attacks the player. Additionally, the player will have a critical hit chance which starts at 1% and can be increased as the game progresses. The player will also have a debuff component which is initially empty but can be added too with debuffs such as slowness which will decrease movement speed or poisoned which will increase enemies damage to the player. Finally, the player will have a money/experience component. This is what allows the player to upgrade weapons and buffs. Experience point will be earned for each enemy that is eliminated

and once a player earns enough experience to level up, they will be given the choice between different upgrades, for example, increase player movement by 2%, increase sword damage by 15%, or increase reload speed by 20%. As the player levels up, it will take more experience. For example, to reach level two will take 10 experience, then to reach level three it will take 20.

Finally, there will also be a weapon upgrade component that is tied to the player's experience. Every time a specific weapon is upgraded five times, it will be able to be upgraded to have a unique attribute. This attribute will be random and could be ice, which slows down enemies, or fire, which adds a damage over time effect to enemies.

Target Audience: The target audience would be for those who want to experience a since of novelty and exploration, as new weapon upgrades are unique and may provide a surprising result. The game is great for those who like survival games similar to Call of Duty Zombies or action games with simple but fun mechanics like Cuphead.

Visual Design:

In Figure 1 is the UI for the player. Health points (HP) are in the bottom middle, ammo/weapon-level information is in the bottom right, experience level is in the bottom left, and the round/wave number is in the top right.

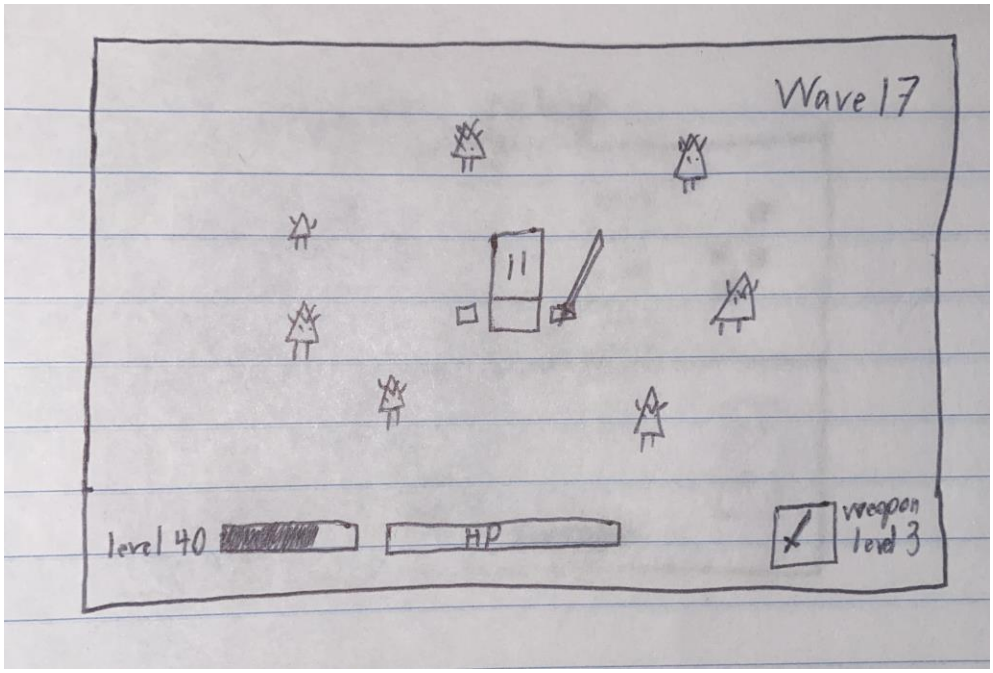

Figure 1.

Figure 2 is an example of how the blaster will be able to hit flying enemies.

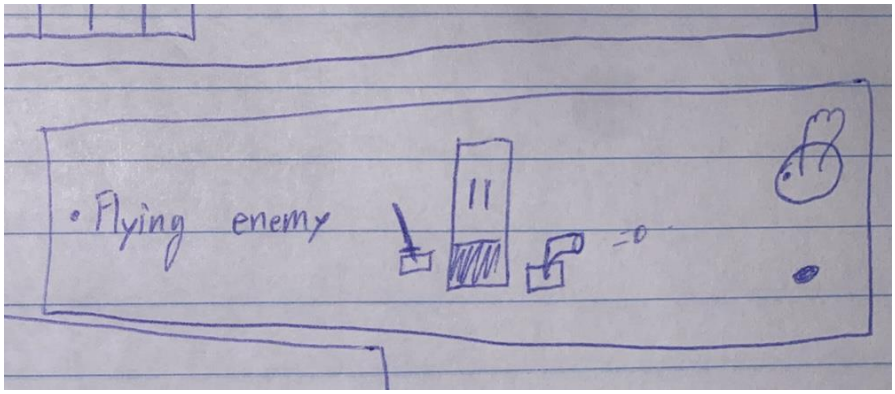

Figure 2.

Figure 3 is an example of how the sword will hit standing enemies.

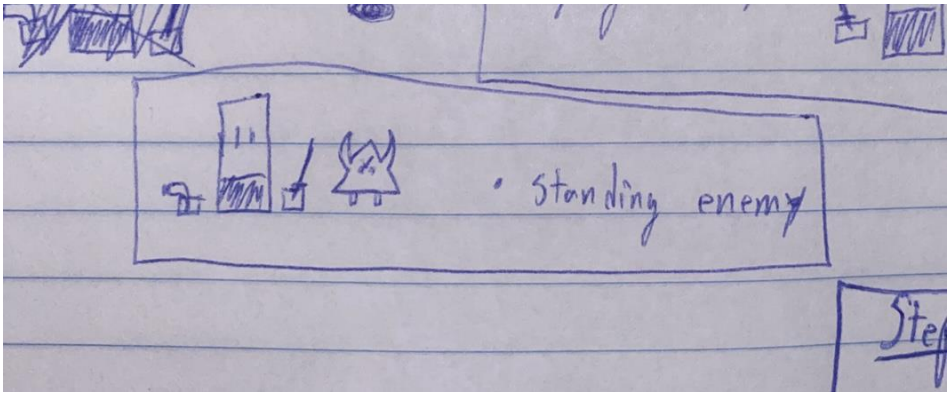

Figure 3.

Figure 4 shows how the blaster will follow the direction of the user's mouse.

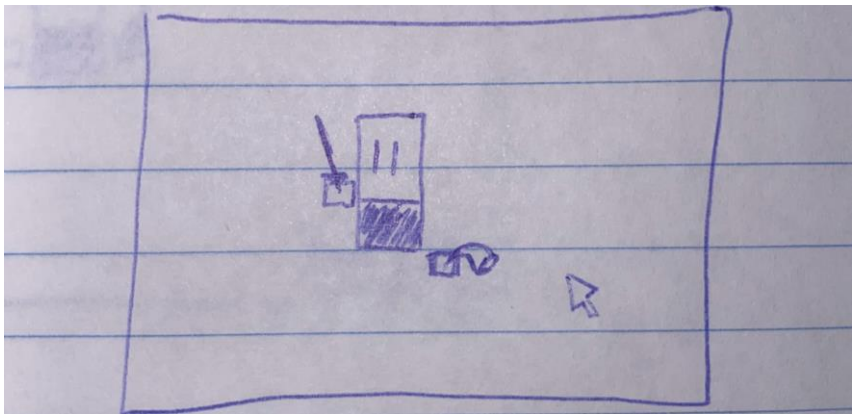

Figure 4.

When an enemy is eliminated, it will drop small squares which represent experience. As seen in Figure 5, when the player eliminates the enemy, it drops the experience, then when the player walks over it, the experience is collected and the player's level increases.

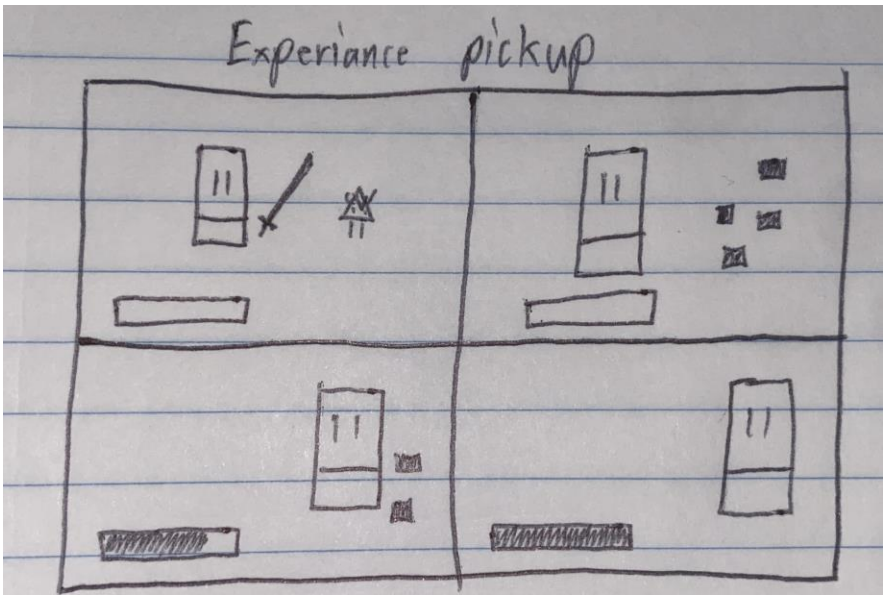

Figure 5.

Now that the player has leveled up, they will be able to choose between three random upgrade options as seen in Figure 6. This UI element will have buttons that call the upgrade functions.

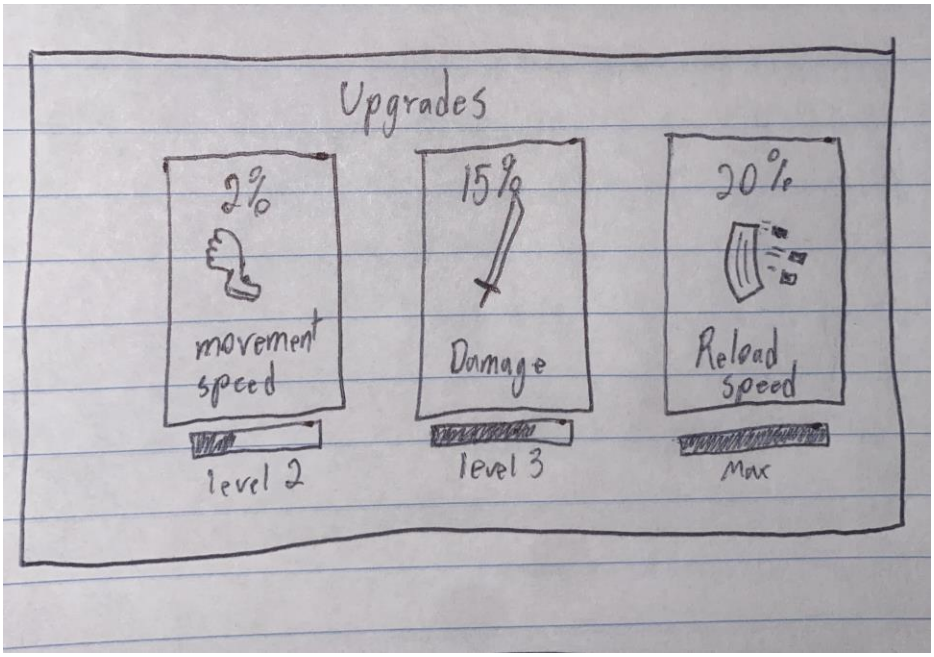

Figure 6.

When a specific weapon is upgraded to level five it will have a unique upgrade page where the player can choose between a special attribute, or a basic multiplier as seen in Figure 7.

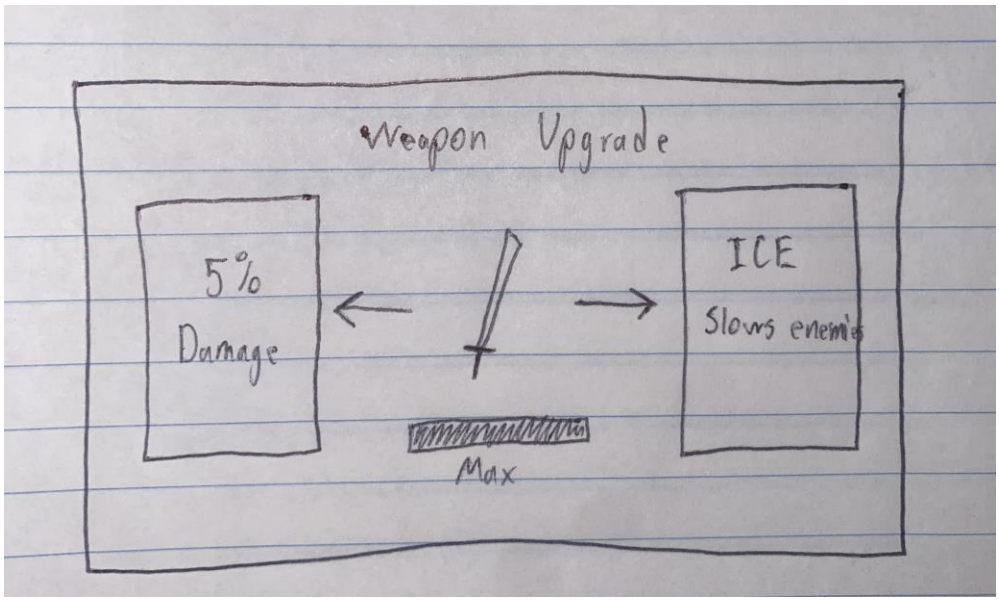

Figure 7.

Scope:

The demo will include a training map with two main sections. A ground enemy and a flying enemy which respawn upon death. The enemies drop experiences that the player can pick up. Enemies will be taken from publicly available assets to simply showcase this player mechanic. The goals of these sections are to display the following:

1) Melee weapons dealing damage to ground enemies and not flying enemies.

2) Ranged weapons dealing damage to flying and ground enemies.

3) Character movement and UI elements.

4) Enemies dropping Experience

4) Player health, picking up enemy experience, and level upgrades