

## Project Requirements

1. The game shall be played on a device that meets certain hardware requirements.
  - 1.1. The device must be able to receive input from a keyboard.
  - 1.2. The device must be able to receive input from a mouse or trackpad.
  - 1.3. The device must be able to render images to a screen display.
2. The game shall incorporate 4<sup>th</sup> grade math problems into gameplay.
  - 2.1. The game shall allow the player to choose which 4<sup>th</sup> grade math concept to focus on, such as addition, subtraction, multiplication, or division.
3. The game shall have tower defense mechanics.
  - 3.1. The player shall defend a clutch of eggs from endless waves of predators.
    - 3.1.1. Predators shall travel along a track to reach the player's eggs.
    - 3.1.2. Predators shall damage and consume the player's eggs once they reach them at the end of the track.
    - 3.1.3. The game shall end when the player loses all their eggs to predators.
  - 3.2. The player shall cast spells to defeat predators at the cost of mana.
    - 3.2.1. The player shall gain mana passively at a fixed rate.
    - 3.2.2. The player shall gain mana actively by solving math problems.
    - 3.2.3. Spells shall enter a cooldown state after they have been casted.
  - 3.3. The player shall be rewarded with berries for surviving waves of predators.
    - 3.3.1. Berries shall be used to upgrade spell strength, cooldown, and mana cost.
  - 3.4. Predators shall be varied in terms of health, strength, and speed.
    - 3.4.1. Health shall be the measure of how hardy a predator is against spells.
    - 3.4.2. Strength shall be the measure of how quickly a predator can consume eggs.
    - 3.4.3. Speed shall be the measure of how fast a predator can travel along a track.
    - 3.4.4. Small-sized predators shall have low health, low strength, and high speed.
    - 3.4.5. Medium-sized predators shall have moderate health, moderate strength, and moderate speed.
    - 3.4.6. Large-sized predators shall have high health, high strength, and low speed.
  - 3.5. The game shall keep track of how many waves of predators the player has survived.
    - 3.5.1. The game shall become more difficult as the player survives waves.
    - 3.5.2. The game shall display the number of waves the player has survived alongside their greatest record after they lose all their eggs to predators.
    - 3.5.3. The game shall record the greatest number of waves the player has survived across sessions.
4. The game shall provide guides that help the player learn how to play it.
  - 4.1. The game shall display a how-to-play guide when the player launches the game for the first time.

- 4.2. The game shall provide helpful hints during gameplay to help the player improve their skills.
- 5. The game shall display an engaging user interface that is suitable for 4<sup>th</sup> grade students.
  - 5.1. The user interface shall present information that can be easily understood at a 4<sup>th</sup> grade reading level.
  - 5.2. The user interface shall consist of prompts and menus that are large enough to be read by a 4<sup>th</sup> grade student.
  - 5.3. The user interface shall be free of clutter to avoid overwhelming the player.
  - 5.4. The user interface shall be stylized to match the whimsical feel of the game.
- 6. The game shall play music that invokes the emotion of whimsy in the background.
  - 6.1. The game shall allow the player to set the volume of the music.