Canvas Shooting Game

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1 Introduction

One of the process of harnessing the skills in HTML, CSS, and JavaScript is to be familiarized with Canvas and Animation. This will visualize how the code works while applying the logic and the physics of the game through programming. This practice project uses Canvas to demonstrate a working Animation.The player is placed statically at the center of the screen while having the ability to shoot upcoming opponents which are coming towards the Player in random positions spawning outside the screen. When shot, the opponents gets smaller, which give more points to the player than its previous size.

2 Explanation

2.1 Creation of Player

Player is a class which is composed of a constructor and a draw method. The constructor stores the x and y-coordinates, the radius, and the color while the draw method uses the constructor to draw the player.

2.2 Creation of Projectiles

Like the Player class, the Projectile is a class which is composed of a constructor and a draw method. However, inside the constructor, a velocity is added and an update method is added inside the class. The update method will update the position of the projectile using the velocity given.

2.3 Creation of Opponents

The Opponent class is a copy of the Projectile class. Even though they are the same, the implementations are different from each other.

2.4 Creation of Particles

The Particle class has the same constructor as the Opponent class, except an alpha attribute is added for the color. The draw method uses the alpha attribute to create a particle fading over time. The update method draws the particle as well as applying the velocity and the global friction

to slow the movement of the particles over time. The alpha attribute is also diminished by 0.01 to create the fading effect.

2.5 Initialization of the Game

The init function initializes the game with a Player, projectile, opponent, and particle arrays, score, the score element, and the final score element, which are gathered from the HTML file by using querySelector().

2.6 Spawn of Opponents

The spawnOpponents() function sets an interval when to spawn the opponents. In each interval, the size of the opponent is determined, the position, the color, the angle, and the velocity. The opponent is pushed inside the opponents array.

2.7 Animation of the Game

The animate function animates the moving objects on canvas. It uses an animation ID to be used whether to stop the animation or not. This is used when the Player is hit by the Opponent. It uses the arrays created to update the screen. It also calculates the collisions between the projectiles and the opponents to create explosions and use the particle array to display the particles. The projectiles, the particles, and the opponents are removed from the arrays once they are not used in the animation.

3 Future Work

Make the player move using the arrow key commands and to have the ability to use power-ups. It is also convenient to display the highest score obtained and add some music.