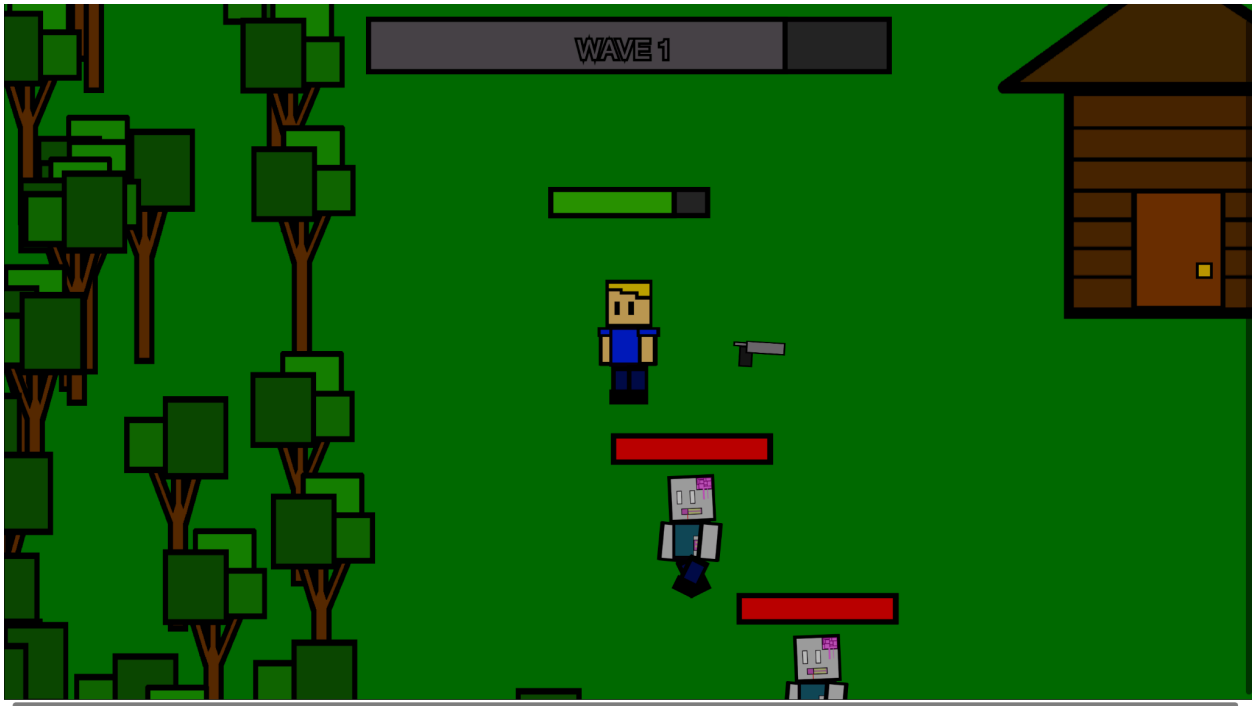
Final Report:

During the development of "Zombie Invasion," I had the privilege of acquiring aid from Pavly, a classmate, as well as artistic assets from Copilot Git Hub. Their contributions were invaluable, particularly in certain technical and conceptual areas of the game's development. The decision to pivot to a new game concept, while challenging, was a necessary step to ensure that our final project stood as a testament to our capabilities and dedication to producing work of high caliber.)

Introduction

This report delves into the intricate details of a web-based game designed using HTML and JavaScript, with the p5.js library as a cornerstone. The game represents a blend of creative visual design and programming acumen, providing an engaging interactive experience. The analysis focuses on the structural components, gameplay mechanics, and graphical assets, offering a comprehensive understanding of the project's scope and execution.



Variables and Objects:

Player Variables (p, pIMG, pAnim): These variables are central to the player's character. They likely handle different aspects of the player's appearance and animations. The array pIMG might contain different sprites or images for the player, and pAnim could be responsible for animating the player's movements and actions.

Zombie and Enemy Variables (h, himg, npc, npcIMG): These are probably used for defining zombies and other non-player characters (NPCs). himg and npcIMG suggest a variety of enemy designs, enhancing the visual diversity of the game.

Weapon and Bullet Mechanics (gun, bullet, gunIMG): The gun and bullet mechanics are crucial for the combat aspect of the game. gunIMG might be used for different gun appearances, and the bullet array could be tracking the bullets fired by the player.

Environmental Elements (BG, bgIMG): These variables are likely used to create the game's background and environment. The use of multiple images (bgIMG) suggests a dynamic or changing background, which could reflect different times of day or environmental conditions.

Game Mechanics Variables (wave, nivelBar, coll): These control the game's progression. wave indicates the current level or wave of zombies. nivelBar might be related to a level or health bar, and coll could be for handling collisions between game elements.

Functions and Game Mechanics:

Player Function (player()): This function is key to the player's interaction within the game. It includes:

Positioning and movement (this.pos, createVector).

Health management (this.life, this.bar()).

Rendering player elements (arms, legs, body, head).

Interaction with weapons (gun.render()).

Health Bar Rendering (this.bar()): This function likely displays the player's health, an essential element in any combat-based game. It's important for player feedback, indicating how much damage they can take before losing.

Enemy and Wave Mechanics: While not detailed in the initial code snippet, the use of arrays like h, npc, and the variable wave imply sophisticated mechanics for enemy behavior and wave progression.

Game Concept and Design:

Setting and Atmosphere: The game is set in a natural environment with a house in the middle. This setting creates a sense of isolation and vulnerability, heightening the tension and excitement. The forest environment allows for strategic gameplay, as players can use trees and terrain for cover.

Progressive Difficulty: The game's difficulty increases with each wave, enhancing the challenge and keeping the player engaged. This progression is a classic game design element, essential for maintaining player interest over time.

Boss Level Dynamics: The final boss level adds a climactic challenge to the game. Designing a unique and formidable boss would be crucial for a satisfying conclusion to the game.

Personal Experience and Reflections on the Game Development Project:

-Initial Concept: Developing a game centered around a zombie invasion in a natural setting requires creativity and a clear vision. The idea of standing against waves of increasingly difficult enemies is engaging and challenges the player's strategic and reflexive skills. It's thrilling to conceptualize such a dynamic environment, imagining how the player would navigate, strategize, and survive against the odds.

- Theme and Atmosphere: Choosing a forest with a central house as the setting was pivotal in creating an immersive atmosphere. The isolation and the eerie quiet of a forest add a layer of suspense and urgency to the gameplay. Crafting this environment would involve not just programming skills but also an artistic touch, to bring the haunting and suspenseful ambiance to life.

Overcoming Technical Challenges

- Programming Mechanics: Implementing the game mechanics, particularly the player's movement, shooting mechanics, and the AI of the zombies presented significant challenges. Each element had to be carefully coded and tested to ensure a smooth and responsive gaming experience. Balancing the difficulty, especially in terms of the zombies' health and speed, was a process of trial and error, requiring patience and attention to detail.

- Animation and Graphics: Creating animations for the player character and the zombies was both challenging and rewarding. Ensuring fluid movement, realistic gunplay, and impactful zombie animations required a deep understanding of both coding and visual design. It was a learning curve to create animations that felt smooth and added to the game's intense atmosphere.

- Debugging and Optimization: Debugging is an inherent part of game development. Resolving bugs, especially those affecting gameplay or causing crashes was a time-consuming yet essential task. Optimizing the game to run smoothly without lag or frame rate drops was crucial for maintaining an engaging player experience.

Future Aspirations

- Storyline and Characters: Adding a storyline and more character depth could make the game more engaging. Introducing different types of enemies with unique characteristics could also enhance the gameplay experience.
- Game Modes: Different modes, like a survival mode or time-limited challenges, could add replay value.
- Player Progression: Implementing a skill tree or upgrade system for the player character would add strategic depth.
- Social Features: Adding leaderboards or multiplayer options could encourage community engagement and competition.

- Continued Learning : This project ignited a desire to delve deeper into game development. I aspire to learn more about advanced game mechanics, perhaps exploring 3D game development or more complex AI for enemies.
- -Collaborative Projects : Working on this game has made me appreciate the value of collaboration. In future projects, I would seek to work with a team, combining skills in programming, art, and storytelling to create even more complex and engaging games.

Conclusion

Reflecting on the journey of developing this zombie invasion game has been a profound learning experience. It challenged my technical skills, pushed my creative boundaries, and taught me the importance of perseverance and strategic planning in game development. This project was not just about building a game; it was about crafting an experience, a journey that I embarked on as a developer, which left me with invaluable skills, insights, and a passion for creating more immersive and engaging games in the future.