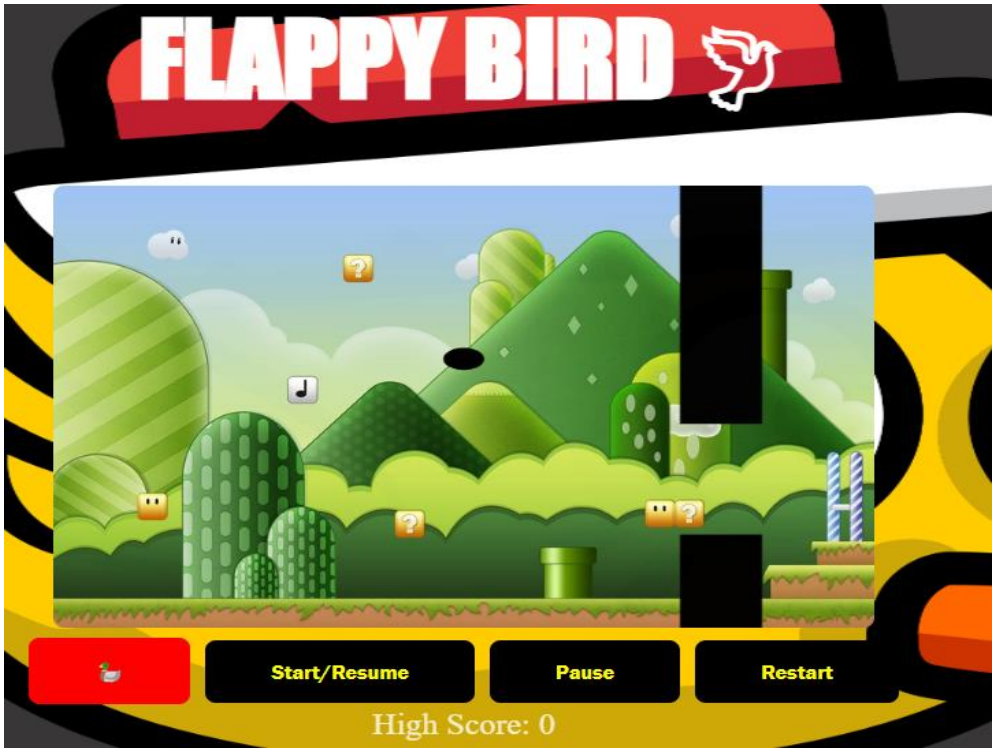
Cape Peninsula University of Technology

Documentation Report

Flappy Bird Game Development



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Introduction

The Flappy Bird game is a classic side-scrolling endless runner game where the player controls a bird, guiding it through openings between pipes. The objective is to navigate the bird through the openings while avoiding collision with the pipes. The game ends when the bird collides with a pipe or falls to the ground.

Technologies Used

HTML: Used for structuring the user interface and defining the layout of the game.

CSS: Used for styling the HTML elements to enhance the visual appearance of the game.

JavaScript: Used for implementing the game logic, including bird movement, pipe generation, collision detection, and user input handling.

WebGL: Used for rendering graphics on the HTML canvas element, providing smooth and efficient rendering of game elements.

- **HTML Structure**

The HTML file (`index.html`) defines the structure of the game interface. It includes elements such as the canvas for rendering the game graphics, buttons for controlling the game (start, pause, restart), and paragraphs for displaying the high score.

- **CSS Styling**

The CSS file (`styles.css`) provides styling for various elements of the game interface, including buttons, paragraphs, and the canvas. It defines properties such as background color, button styles, font styles, and positioning of elements.

- **JavaScript Implementation**

The JavaScript file (`main.js`) contains the game logic and functionality. Here's an overview of the key components and functionalities implemented:

1. **Initialization:** The game initializes the WebGL context and sets up initial variables such as bird position, pillar settings, high score, and event listeners for key input.

2. **Game Loop**: The game loop (`update()`) is responsible for updating the game state and rendering graphics on the canvas. It handles bird movement, pillar generation, collision detection, and updating the high score.

3. **Rendering:** Functions like `drawBird()` and `renderPillars()` are responsible for rendering the bird and pillars on the canvas using WebGL.

4. **Input Handling**: Event listeners for key down and key up events handle user input for controlling the bird's movement (flap up).

5. **Game Control:** Functions such as `startGame()`, `pauseGame()`, and `restartGame()` control the game flow, allowing the player to start, pause, and restart the game.

6. **Sound Effects:** Functions like `playFlapSound()`, `playCollisionSound()`, and `playScoreSound()` are responsible for playing sound effects during gameplay, enhancing the gaming experience.

The game runs on vsCode with LiveServer. The game uses the arrow Keyboard keys.

Conclusion

The Flappy Bird game is implemented using HTML, CSS, and JavaScript, with WebGL used for rendering graphics. The game provides an engaging and challenging experience for players, requiring quick reflexes and precise timing to navigate the bird through obstacles and achieve a high score.