

Zone In - Creating Web-Based Games Using JavaScript

Introduction

"Zone In" is a project aimed at building a computer game that tests a player's cognitive reaction through a web browser using HTML, CSS, and JavaScript. The goal was to find simple but effective methods to develop interactive games without the need for large frameworks. Zone In is a game that represents focus-related difficulties (e.g. ADHD), in which users have to click on the correct targets (●) and not on the distractions (✗) in the shortest time possible.

This report is focused on the technologies used, the logic and the design decisions that led to the creation of Zone In as well as the summary of tutorials and references that were harvested.

Why JavaScript for Web-Based Games?

JavaScript is ideal for browser game development because off:

- **Browser Compatibility:** The JavaScript code can be executed directly in the browser, there is no need for plugins.
 - **DOM Manipulation:** It allows the use of HTML and CSS to develop dynamic interfaces.
 - **Ease of Learning:** JavaScript is very easy for beginners and it does not require complicated setting up.
 - **Audio/Visual Interactivity:** With support for animations, events, and `<audio>` control, it enables full user engagement.
 - **Storage & State:** `localStorage` acts as a memory of player preferences.
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Zone In Development Walkthrough

1. HTML/CSS Structure

- Game layout is organized using `<main>` and `<div>` wrappers.
- Buttons, score display, and the grid use Flexbox and Grid for alignment.
- Responsive styling ensures mobile compatibility.

2. JavaScript Game Logic

- Targets are randomly generated as ● or ✗.
- Scoring adjusts based on correct or incorrect clicks.
- A countdown timer ends the round.
- Keyboard shortcuts (Enter to start, R to restart, B to go back) are enabled for accessibility.

3. Audio Integration

- Background music is loaded via `<audio>` elements with JavaScript `.play()` control.
- Different music tracks are assigned per difficulty level (e.g., `easy.mp3`, `hard.mp3`).
- A click sound effect is triggered on each successful/failed action.
- Music preference is toggled via a `settings` checkbox stored in `localStorage`.

4. Difficulty System

- The game supports Easy, Medium, Hard, and Expert levels.
- Difficulty affects both the timer and gameplay intensity.

5. Keyboard Shortcuts

`Enter` - Start game

`R` - Restart game

`B` - Return to difficulty screen

`Q` - Go back to main menu






- These are handled with `keydown` events.

6. Results & Discussion

- **User feedback:**
 - Positive responses on game's simplicity and focus support.
 - Suggestions included gradual difficulty increase and customization.
 - **Limitations:**
 - Lack of experimental user testing with ADHD-diagnosed individuals.
 - Prototype prioritized functionality over polished UX.
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About the Game (In-Game Description)

Zone In is a fast-paced reaction game where your goal is to:

-  Click green targets () to increase your score
-  Avoid red distractions () that reduce your score
-  Race against a countdown timer

Players can adjust game difficulty, toggle music. It's built for focus training and casual fun!

Helpful YouTube Video Summaries

1. **"Making a Simple Game with JavaScript" – Dev Ed**
 - URL: <https://youtu.be/bG2BmmYr9NQ>
 - A step-by-step breakdown of DOM-based interactivity, event handling, and simple scoring systems.
 2. **"JavaScript Game for Beginners" – SuperSimpleDev**
 - URL: <https://youtu.be/r9l4DuGmJ2Y>
 - Walkthrough for making a minimal game from scratch using just JavaScript and HTML.
 3. **"Add Background Music in HTML/JS" – Code With Shahan**
 - URL: <https://youtu.be/a00NRSFgHsY>
 - How to use `<audio>` tags, autoplay rules, and dynamic `.play().pause()` with user controls.
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Sources of Information

- MDN Web Docs – [KeyboardEvent](#)
 - W3Schools – [JS Keyboard Events](#)
 - Stack Overflow – [Add Background Music in HTML](#)
 - YouTube – Tutorials by Dev Ed, SuperSimpleDev, and Code With Shahan
 - Medium – [Delightful User Interfaces: Easter Eggs](#)
 - Medium – [The Art of Easter Eggs](#)
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Conclusion

Zone In shows how a simple web techs based browser game can be both significant and responsive. The project is a statement to the fact that the user can learn by simplicity, customization (dark mode, music, shortcuts), and interactive design — all of which can be done with just vanilla JS and no frameworks. The possible developments for the present could be introductory animations, more extensive cheat modes, and accessibility facility.