

AlgoRhythm

Overview

AlgoRhythm is a browser-based application that gamifies common computer science algorithms. The project features a retro interface to demonstrate advanced DOM manipulation and CSS styling capabilities.

Interface

- **Retro UI Design:** A custom interface styled to resemble a CRT monitor using CSS animations and CRT Wrap points
- **Navigation:** A central “Arcade Menu” allowing users to switch between games ala Star Fled
- **State Management:** Usage of `localStorage` to save high scores and user preferences.

Minigame 1: Insertion Sort

- **Algorithm Focus:** Insertion Sort
- **Gameplay Loop:** The user is presented with randomly shuffled containers that he has to sort under time limit while following the algorithm
- **Key Features:**
 - Drag-and-Drop / Click Logic: Interactive reordering of DOM elements.
 - Accuracy Check: Moves are validated against the formal definition of an Insertion Sort step.
 - Constraints: A global timer pressures the user; incorrect insertions result in the loss of a “Heart” (life).

Minigame 2: – 8/15-Puzzle (Heuristic Search)

- Algorithm Focus: A* Search Algorithm (Pathfinding).
- Gameplay Loop: A classic 8-puzzle/15-puzzle sliding game where the user attempts to order the tiles.
- Key Features:
 - Solvable Generation: A generation algorithm that ensures the randomized board state is mathematically solvable (checking inversion parity).
 - Auto-Solve Mode: A “Give Up” feature where the application takes control and visually solves the puzzle step-by-step using the A* algorithm.