

Benchmark creation – Project X

Reference ("Bench") Chosen: Crossy Road (original mobile game)



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Goal

The goal of my project is to create a browser-based clone of the game Crossy Road using Three.js. This game involves navigating a character across a series of roads and obstacles while avoiding getting hit by vehicles. I am using this as a research opportunity to explore a new programming tool for me (Three.js), while also trying to analyse and recreate the core mechanics of a successful existing game. This makes Crossy Road a fitting "bench" for my development process.

Bench Analysis

Feature Breakdown

Feature	Crossy Road	My Project X
Game Style	Low poly 3D, blocky, cartoonish	Bloky low poly 3D style recreated with Three.js
Viewpoint	Dinamic camera pointed at and following the character	Dinamic 3D camera in Three.js
Controls	Tap or swipe input (modile)	Arrow key input for keyboard navigation
Map Generation	Infinite/Random each game	Random row generation using utility function (generateRows)
Obstacles	Vehicles (cars, trucks), trees, rocks, rivers	Cars, trucks, and tree randomly placed in their designated row type
Road Design	Multiple lanes, dashed lines	Single lane roads, working on dashed line visual
Character Movement	Grid-based hop movement	Implemented using tile grid logic in Three.js
Feedback (collision)	Crash animation, sound, restart	Hit detection and result screen
UI Elements	Score display, start screen, menus	Score indicator and coin system
Audio	Sound effects for hop/crash	Not yet implemented

Design Translation

By studying Crossy Road, I was able to identify the key elements that make the game work: simple controls, escalating difficulty, and visually clear obstacle types. I decided to replicate the gameplay loop, but adapt the visual implementation using a web-based technology (Three.js) instead of Unity or mobile platforms. I chose to simplify some features—such as having fewer road types—but also explore adding my own ideas in future iterations

One example of adaptation is in how I generate rows. While Crossy Road creates its levels randomly with different theme (city, river, train tracks), I implemented forest and vehicle rows using a utility function that allows different types and directions of obstacles. My project also emphasizes readability and structured code, making it easy to expand later.

Evaluation & Reflection

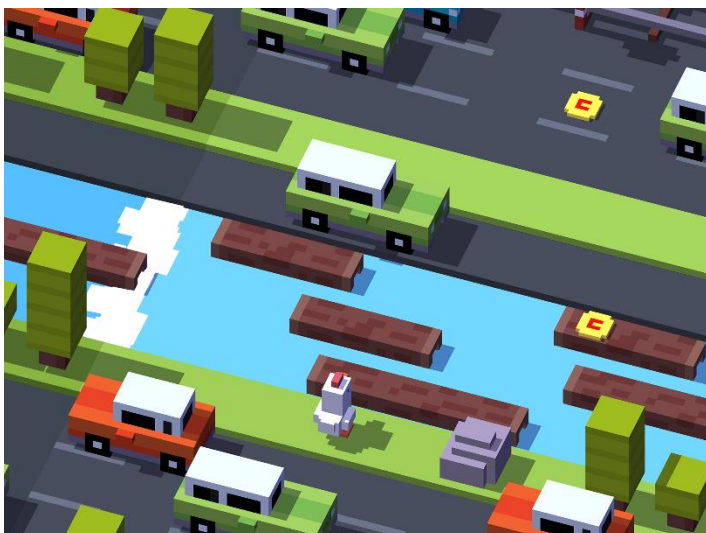
What I kept: The grid-based character movement, randomly generated obstacles, and core gameplay loop of dodging vehicles and other obstacles.

What I adapted: I used Three.js to recreate the blocky 3D style and made the map generation simpler.

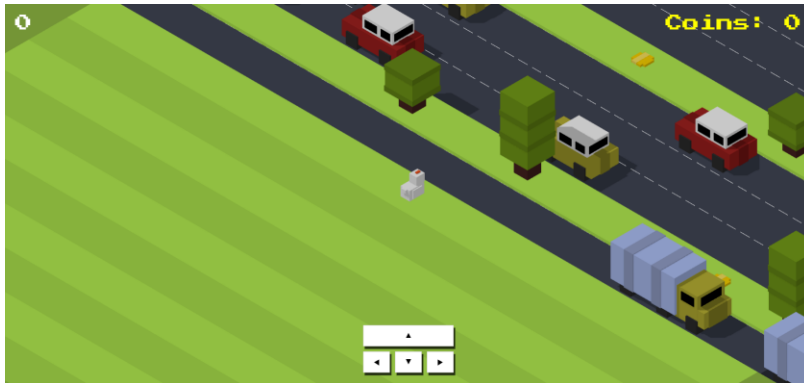
What I plan to improve: Add UI features, polish road visuals with dashed lines, and possibly make the map infinite.

What I learned: Studying an existing game gave me clear goals and helped reduce the uncertainty of starting from scratch. It also helped me balance copying, adapting, and creating my own unique elements and features.

Visual representation



Crossy Road visuals



My Project X visuals

Conclusion

This project is a great way for me to try something new and challenge myself. By recreating Crossy Road in the browser using Three.js, I learned a lot about game design and how to break down a finished game into smaller parts that I could build myself. Using Crossy Road as a reference helped me stay focused and understand which features were important to include. I kept the simple movement and obstacle-dodging gameplay, but also added my own ideas like a score system and new ways to build the map. Some things, like sounds and infinite maps, I still want to add later. Overall, I'm proud of the project. It taught me how to work with a new tool, plan my time, and take feedback into account. Most of all, it made me more confident in turning ideas into something real and playable.