SeedPhrase

A WEB-BASED WORD PUZZLE GAME Case Study

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Overview

SeedPhrase is a web-based word puzzle game where players help hacker zeroXcool decrypt a fantasy crypto wallet seed phrase. The game features a unique encryption method and real-time AI-powered hints.

Timeline and Development Process

Idea for *SeedPhrase* is first noted

June 10

Designed in Figma

June 11

Working version of design fully developed

June 14

Continued development

Present Day

Inspiration and Concept

The idea for *SeedPhrase* was inspired by the numerical encryption methods of Ledger hardware wallets. I wanted to create a "*Wordle* for DeGens" that appeals to both crypto enthusiasts and puzzle lovers.

Goals

Create a unique, fun, and challenging word game with a crypto aesthetic.

Develop a robust *Variable Shift Caesar Cipher* encryption method that generates a seed phrase from the BIP39 wordlist, ensuring stable and engaging gameplay.

Provide different difficulty settings based on puzzle length, pre-solved letters and time.

Allow users to choose from four different blockchains, with accurate wallet IDs and prize values corresponding to each blockchain.

Incorporate AI technology for an immersive experience, enabling users to chat with an AI and receive real-time, AI-powered hints.

Subtly educate users with little interest in or knowledge of crypto about different wallet IDs, blockchains, and their values.

My Role

I was responsible for everything from ideation to design, programming, and testing.

My Responsibilities

Conceptualizing the game idea and design.

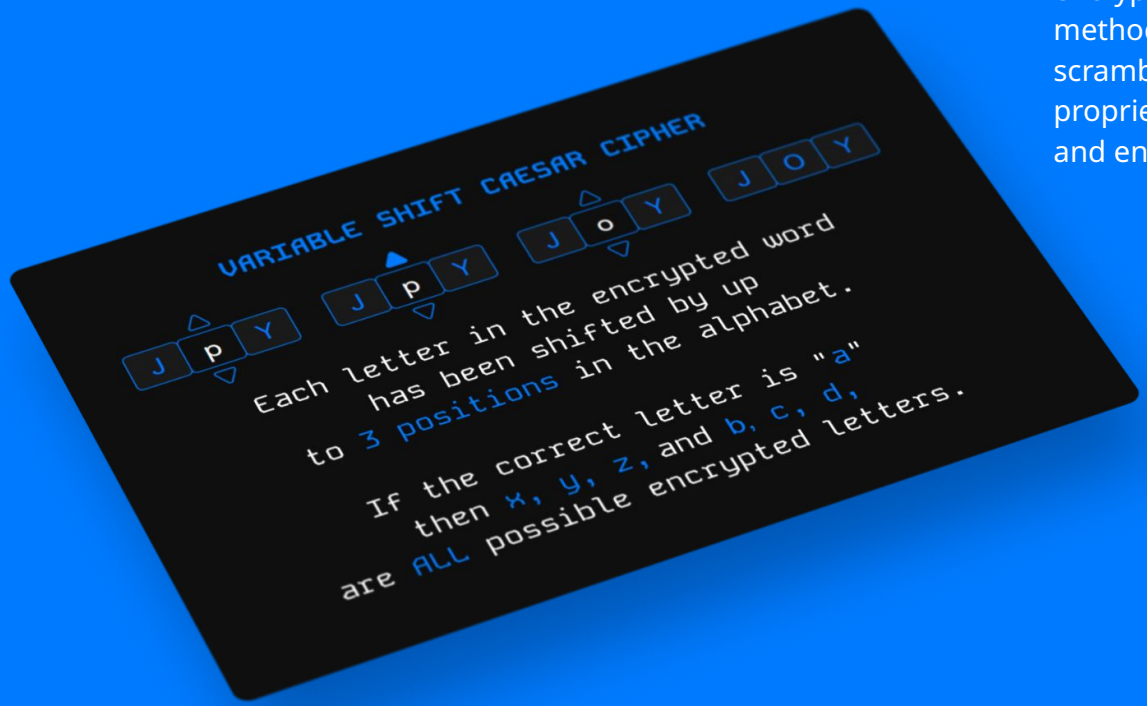
Programming the game, with assistance from ChatGPT for coding.

Testing the game to ensure it meets the envisioned design and functionality.

Unique Aspects of the Project

AI Integration

SeedPhrase integrates an AI chatbot that provides real-time hints to users utilizing the OpenAI API model GPT-4o. The hints are not pre-written but generated on the spot, adding a dynamic and personalized element to the gameplay.



Proprietary Encryption Development

Inspired by Ledger's system for numerical encryption, I developed a unique encryption method, the *Variable Shift Caesar Cipher*, for scrambling the words in the puzzle. This proprietary method makes the game challenging and engaging.

Chat-Based Instructions

Crafting clear, concise instructions was vital. I spent considerable time refining zeroXcool's chat-based guidance to ensure players understood the game's mechanics without feeling overwhelmed or confused.

Crypto Education

SeedPhrase subtly educates users about key concepts in cryptocurrency. In addition to the basic concept of seed phrases, players learn there are different blockchains (BTC, ETH, SOL, XTZ), each with unique values, wallet IDs, and labels.

Competitive Audit

I conducted a competitive audit to understand the landscape of similar games.
SeedPhrase stands out with its unique combination of word puzzles, crypto education, and AI integration.

Wordle

Web-based word puzzle game where players guess a five-letter word within six attempts.

CryptoKitties

Blockchain-based game where players collect and breed digital cats.

Cipher Crosswords

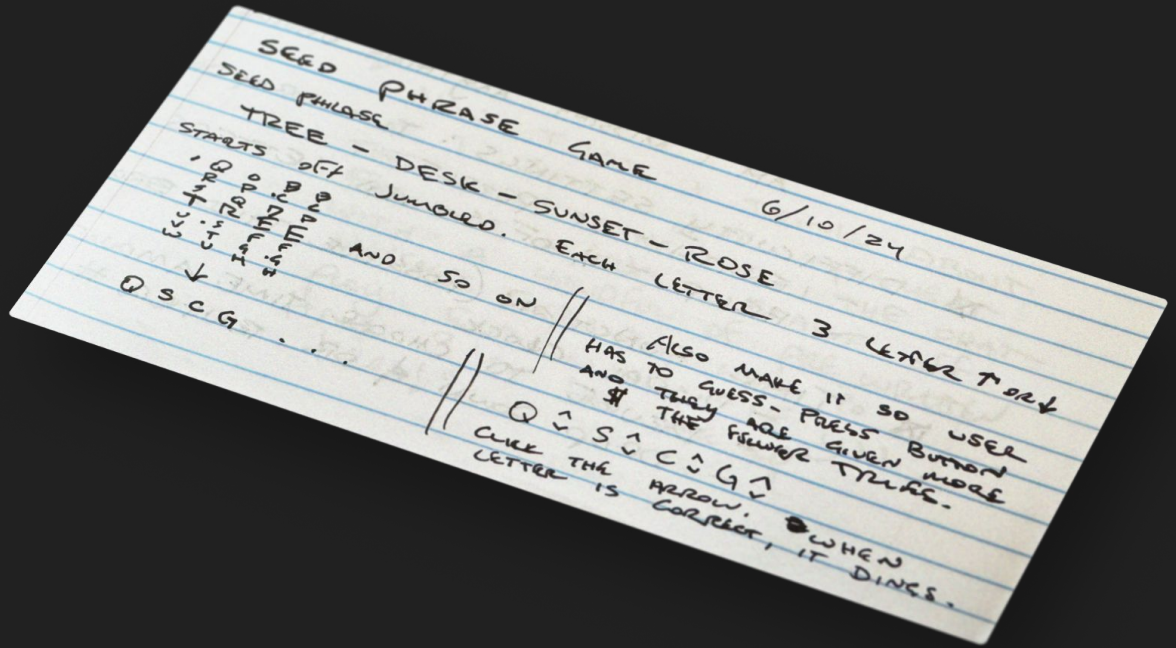
Web-based puzzle game where players solve crosswords encrypted with various ciphers.

AI DUNGEON

Text-based adventure game powered by GPT-3. Players create and explore narratives interactively with AI.

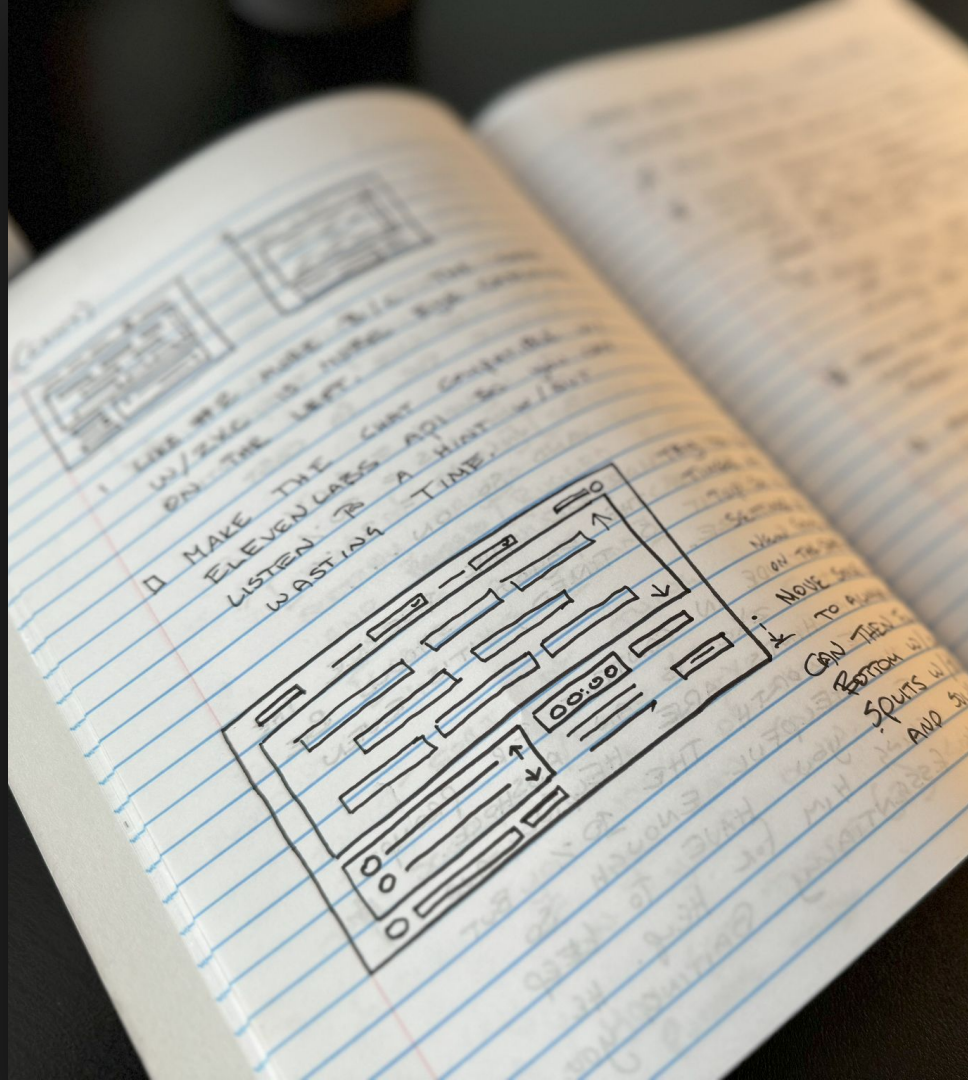
Feature	SeedPhrase	Wordle	CryptoKitties	Cipher Crosswords	AI Dungeon
Word Puzzle	**Yes**	**Yes**	No	**Yes**	No
Crypto Education	**Yes**	No	**Yes**	No	No
AI Integration	**Yes**	No	No	No	**Yes**
Real-Time Hints	**Yes**	No	No	No	**Yes**
Blockchain Elements	**Yes**	No	**Yes**	No	No

Initial Design



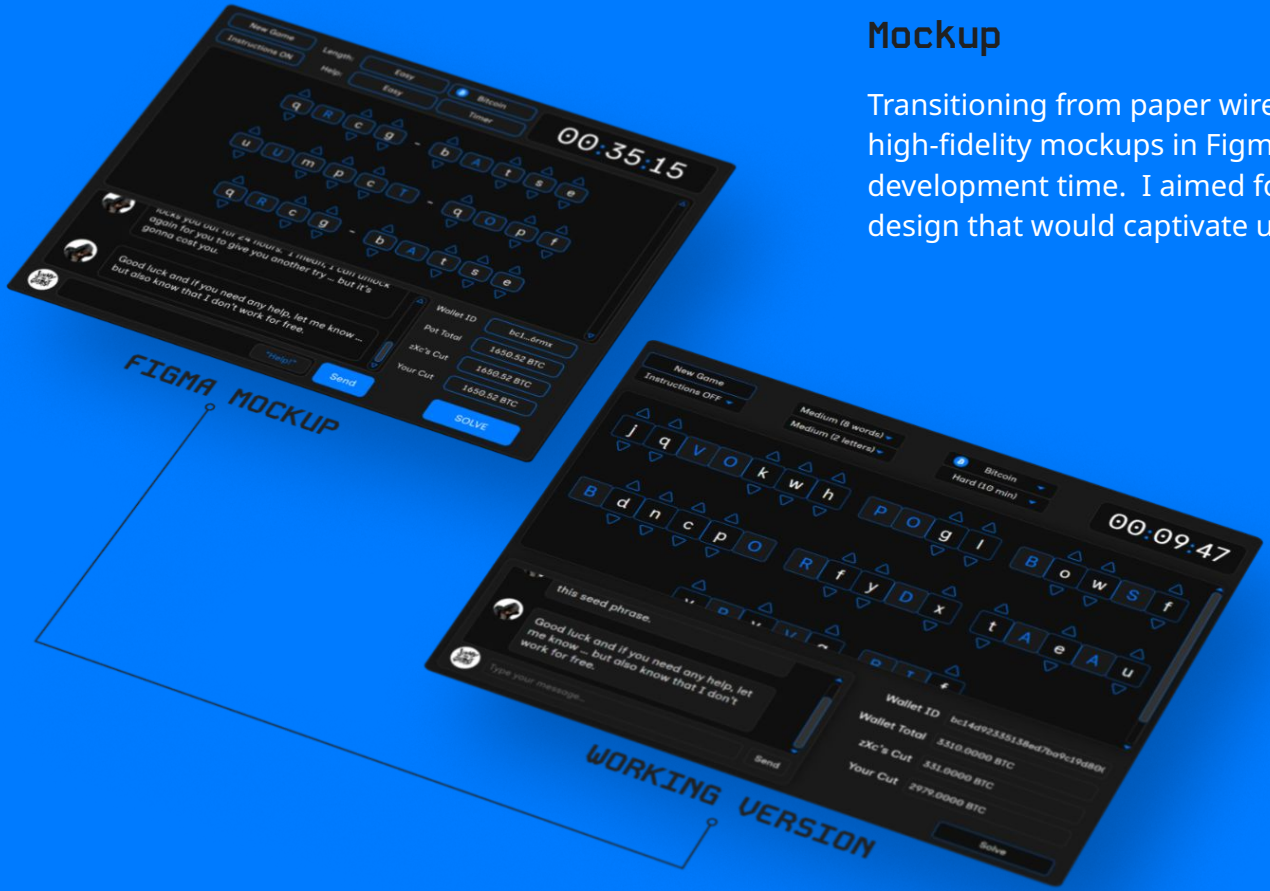
Paper to Pixels

I started with paper wireframes, sketching out the *Variable Shift Caesar Cipher* and the game's design elements. This hands-on approach helped me visualize the core mechanics.



Mockup

Transitioning from paper wireframes directly to high-fidelity mockups in Figma saved valuable development time. I aimed for a sleek, intuitive design that would captivate users.



Building a Working Version

As a beginning programmer, I successfully leveraged the power of ChatGPT to painstakingly build *SeedPhrase* piece-by-piece. Despite these hurdles, I successfully created a working version that matched my initial design.

VARIOUS VERSIONS OF SEEDPHRASE THROUGHOUT THE CODING PROCESS

Accessibility Features

High Contrast Ratio

SeedPhrase features light text on a dark background, ensuring a very high contrast ratio. This design choice improves readability for all users, including those with visual impairments.

Color Palette

A bright blue accent color is used to highlight key information. This color choice is both visually appealing and helps in quickly identifying important elements on the screen.

Information Architecture

The hierarchical design of the game ensures that assistive technologies can easily translate the information for users with disabilities.

Font Choice

SeedPhrase uses the Inclusive Sans by Olivia King for all text. This font is specifically designed to enhance readability, making the game more accessible to users with various reading needs.

Lessons & What's Next

Lessons Learned

Significant insights into coding and programming HTML, CSS, Javascript and GPT-4o chat interfaces.

How to effectively leverage AI to assist in creating a complex program with limited coding knowledge.

How to prioritize and display the most important information on the screen.

Next Steps

Fully Responsive

Ensure the game works seamlessly across all devices.

Live Version

Deploy a live version of *SeedPhrase* on a password-protected website for interested parties and further testing.

User Profiles

Build a robust user profile backend so users can customize their player avatar, keep score, and more.

Usability Study

Perform a comprehensive usability study to gather feedback from a diverse group of users.

Iterate & Improve

Continue testing and iterating on the design to enhance accessibility and overall user experience.

More Accessibility

Continue to develop accessibility settings so all users can enjoy *SeedPhrase*. This will include dark/light mode, better AT integration, and more.

Thanks for reading!

Contact Information

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