

NFT Marketplace Project Report

Team Name: Breaking Bots

Team Members:

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Project Title: Decentralized NFT Marketplace

The Problem It Solves

Our decentralized NFT marketplace allows users to mint, list, and purchase NFTs securely without relying on centralized systems. It eliminates the risk of censorship and data loss by storing NFT ownership and metadata on-chain. The platform provides a seamless experience for artists and collectors to interact directly, while ensuring transparency in transactions. This approach enhances the security, ownership rights, and traceability of digital assets, making it easier and safer for users to engage in NFT trading.

Challenges We Ran Into

During development, one significant hurdle was handling the Ethereum gas fees and value transfer logic. We encountered an `InsufficientFundsError` while interacting with smart contracts due to incorrect value parsing (passing ETH instead of WEI). This was resolved by ensuring proper formatting using `parseEther` and validating balances before sending transactions.

Another challenge was dynamically displaying NFT ownership and recalculating totals after purchases. This required careful state management and Ethereum event handling. We overcame this by structuring the frontend to react to changes in NFT ownership using `ethers.js` and proper state hooks.

We also struggled briefly with updating the `.gitignore` file due to Git cache. Running `git rm --cached <filename>` fixed this and allowed us to track/untrack files correctly.

Technologies We Used

Next.js, Tailwind CSS, TypeScript, Ethers.js, RainbowKit, Viem, Hardhat, Solidity, IPFS, React

How This Project Fits Into the Ethereum Track

This project fully embraces the Ethereum ecosystem by deploying smart contracts for NFTs and marketplace logic on the Ethereum-compatible Polygon network. All transaction logic, including minting and sales, is handled via Solidity contracts, showcasing the power of decentralized finance and trustless transactions on Ethereum.

How This Project Fits Into the Blockchain (Web3) Track

The entire application is built on Web3 principles. It enables peer-to-peer asset exchange, self-custody of NFTs, and wallet-based authentication through MetaMask and RainbowKit. It demonstrates how Web3 applications can disrupt traditional marketplaces using decentralized blockchain infrastructure.

How This Project Fits Into the Web Development Track

Our application features a modern, responsive frontend built using React, Tailwind CSS, and Next.js. It combines Web2 design practices with Web3 technologies for a seamless user experience. Users can browse NFTs, connect wallets, and perform on-chain actions—all through a polished web interface.