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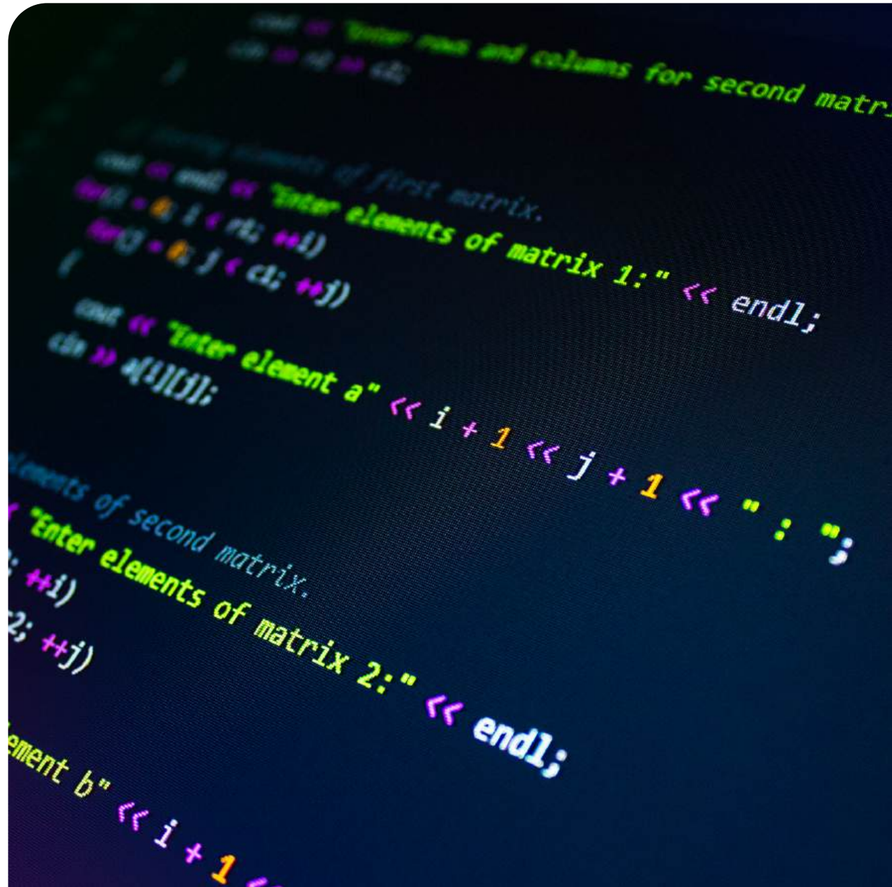
Web3

Course Platform DApp

ERC-20 Rewards + NFT Certificates

Blockchain 1 Final Project

Gaziza Assel Zhandos



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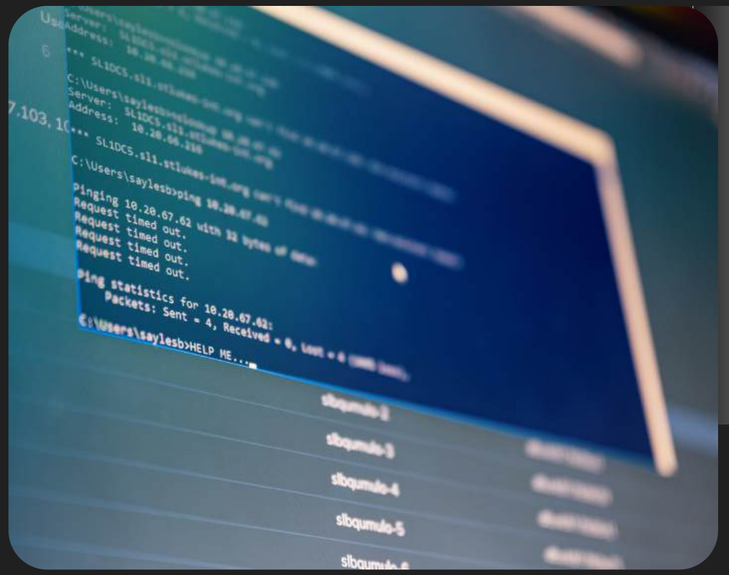
Problem Statement



Traditional online learning platforms are centralized and do not provide transparent ownership of achievements or decentralized rewards. Certificates can be forged and rewards are controlled by centralized servers.

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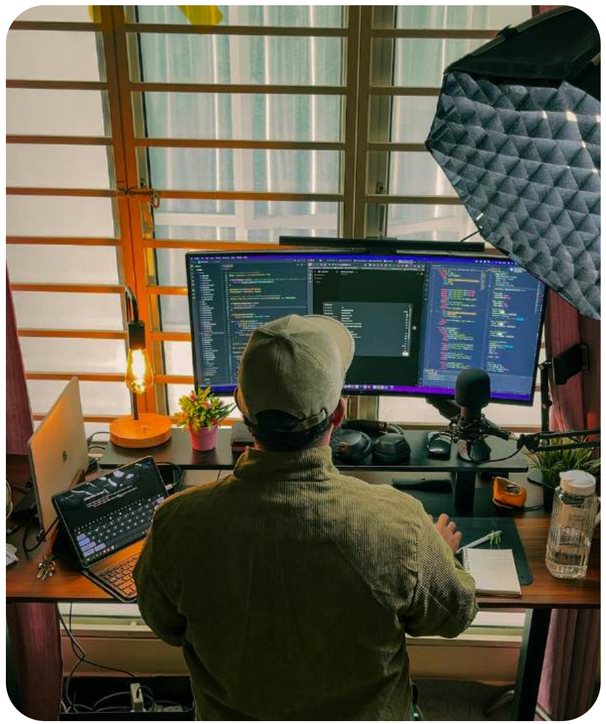
Proposed Solution



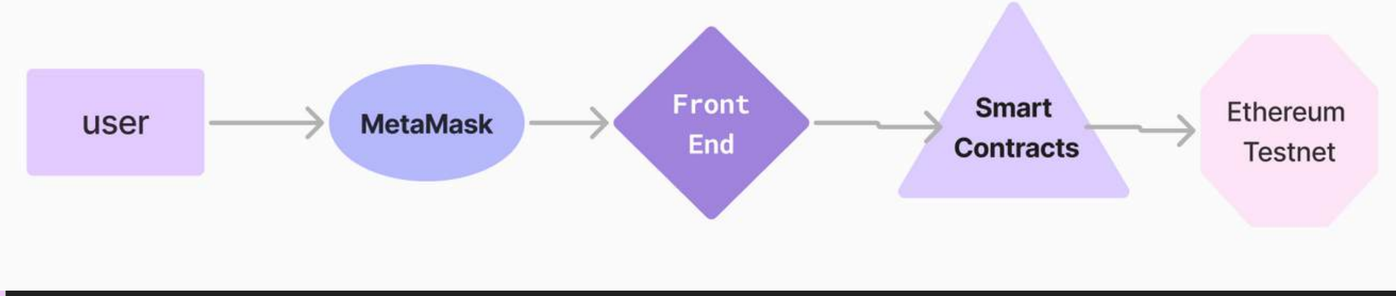
users buy courses using test ETH

ALL ACTIONS ARE RECORDED ON BLOCKCHAIN

RECEIVE ERC-20 REWARD TOKENS AFTER COMPLETION AND NFT CERTIFICATES AS PROOF OF ACHIEVEMENT

Technologies Digital Assets

Layer	Technology
Smart Contracts	Solidity
Blockchain	Ethereum Sepolia
Wallet	MetaMask
Frontend	JavaScript / HTML
Framework	Hardhat
Standards	ERC-20, ERC-721



System Architecture

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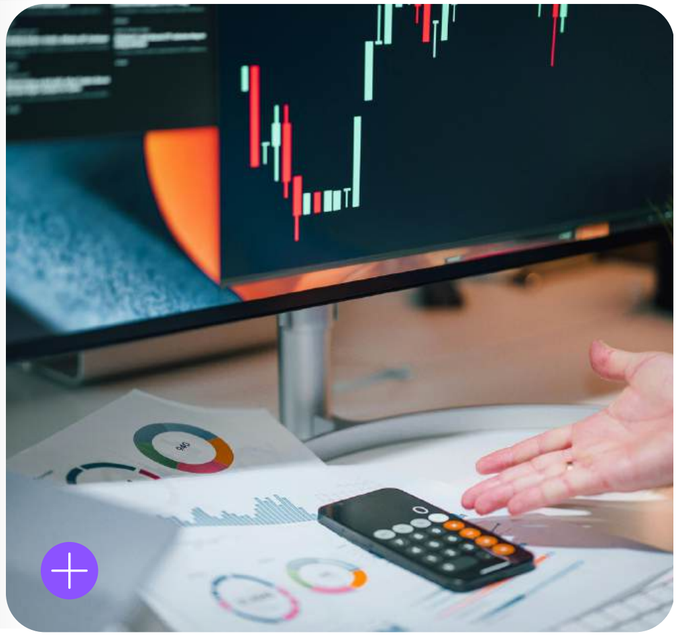
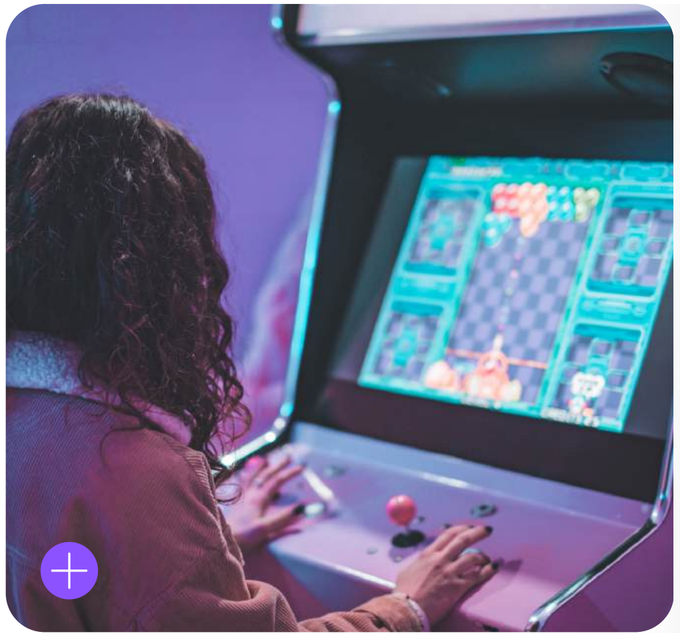
Smart Contracts



CoursePlatform.sol (main logic)

BonusToken.sol (ERC-20)



CertificateNFT.sol (ERC-721)

Adoption Rates

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CoursePlatform Logic

1) Buy
2) Complete
3) Reward Tokens
4) Mint NFT

ERC-20 Bonus Token

mint(msg.sender, bonusAmount)

NFT Certificate

It cannot be duplicated and unique for each student. Proves course completion

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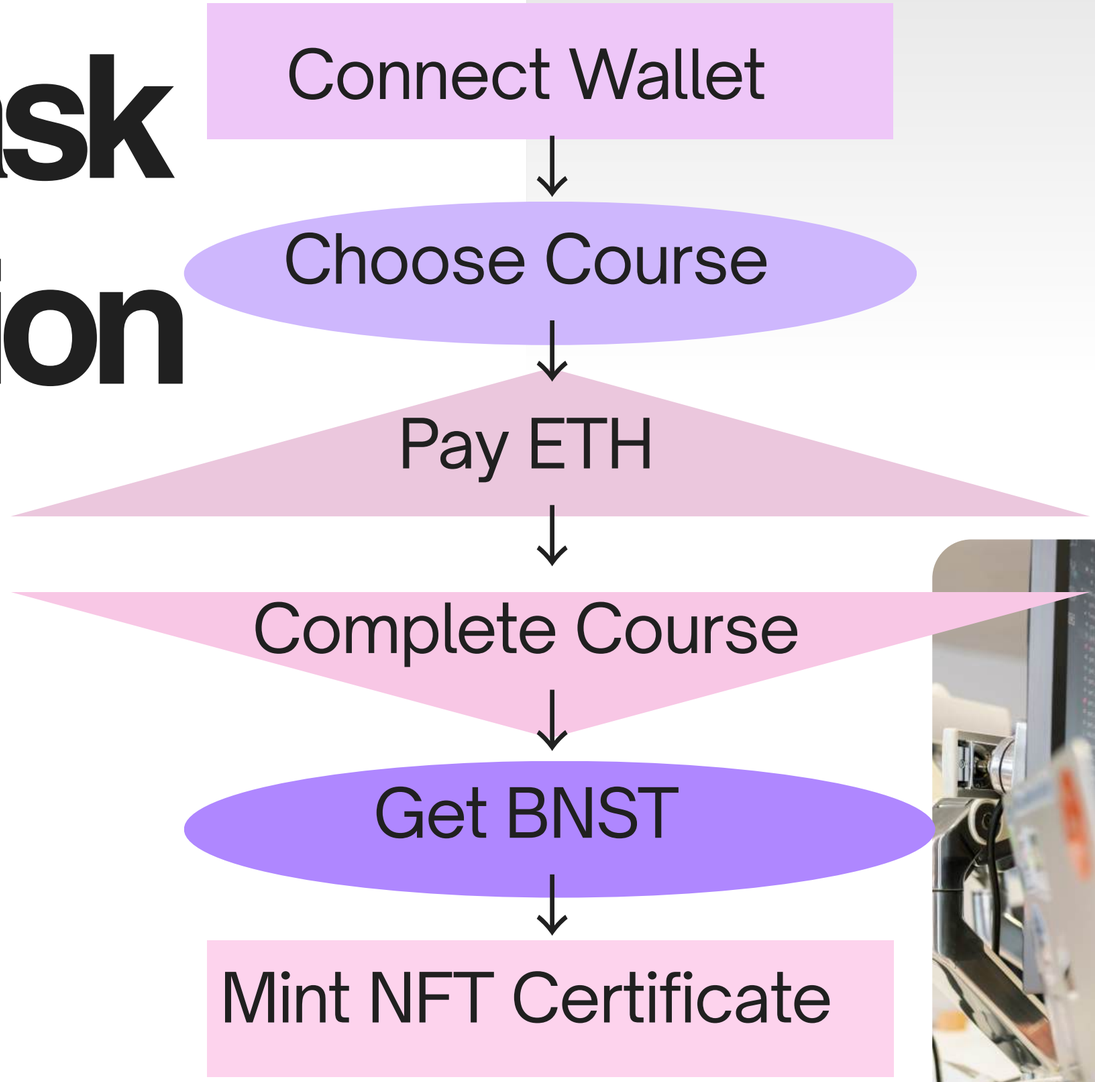
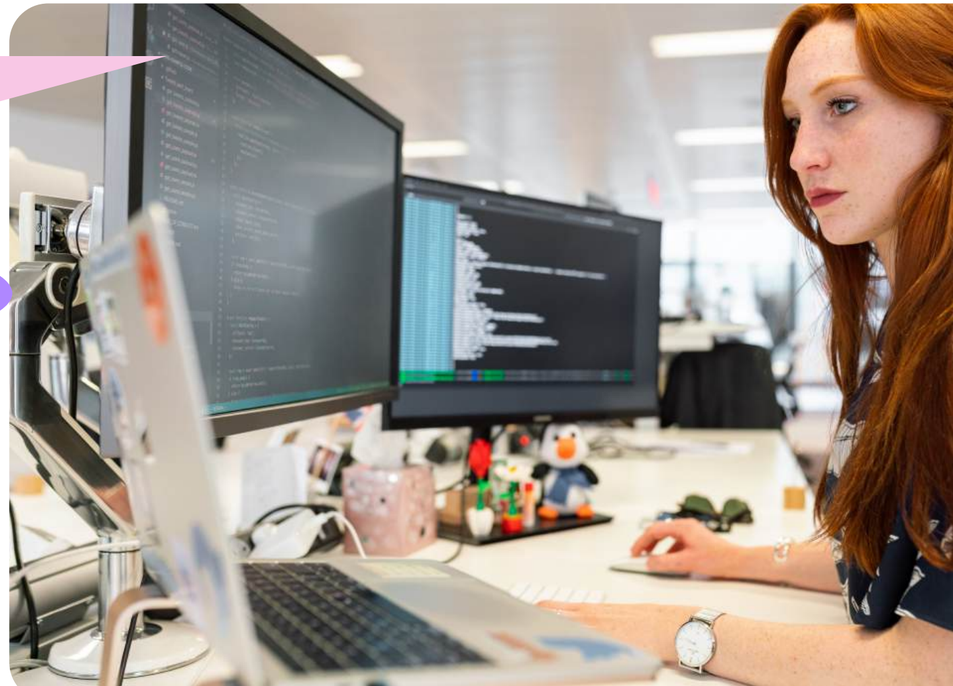
MetaMask Integration

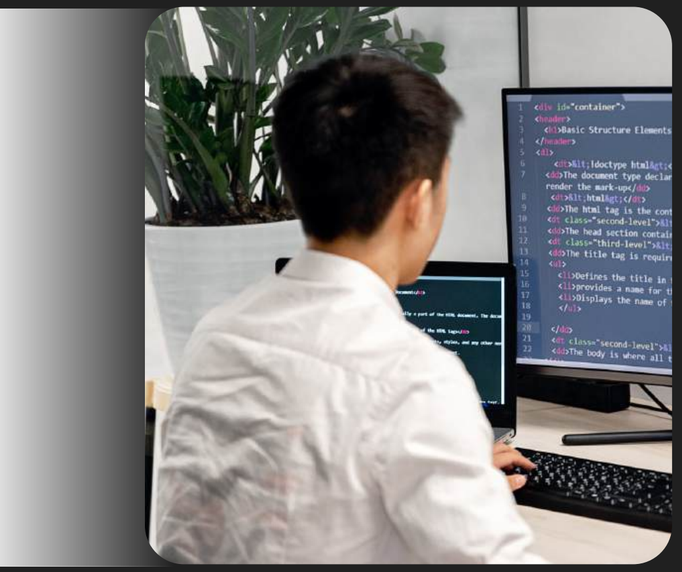


Main functions

- connect wallet
- buy course
- complete course
- view tokens
- view NFTs



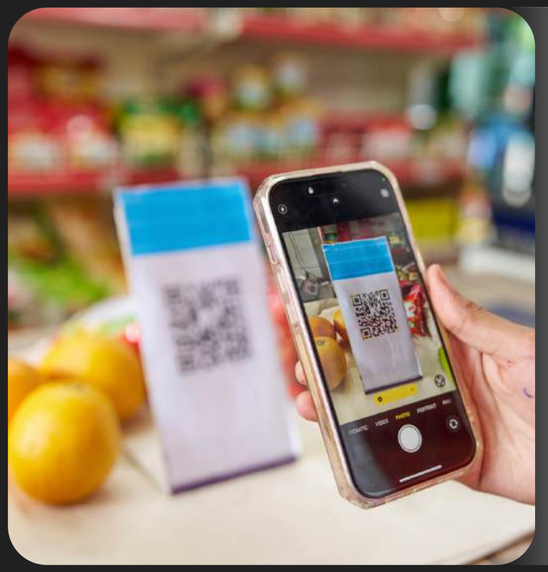
Why Blockchain?



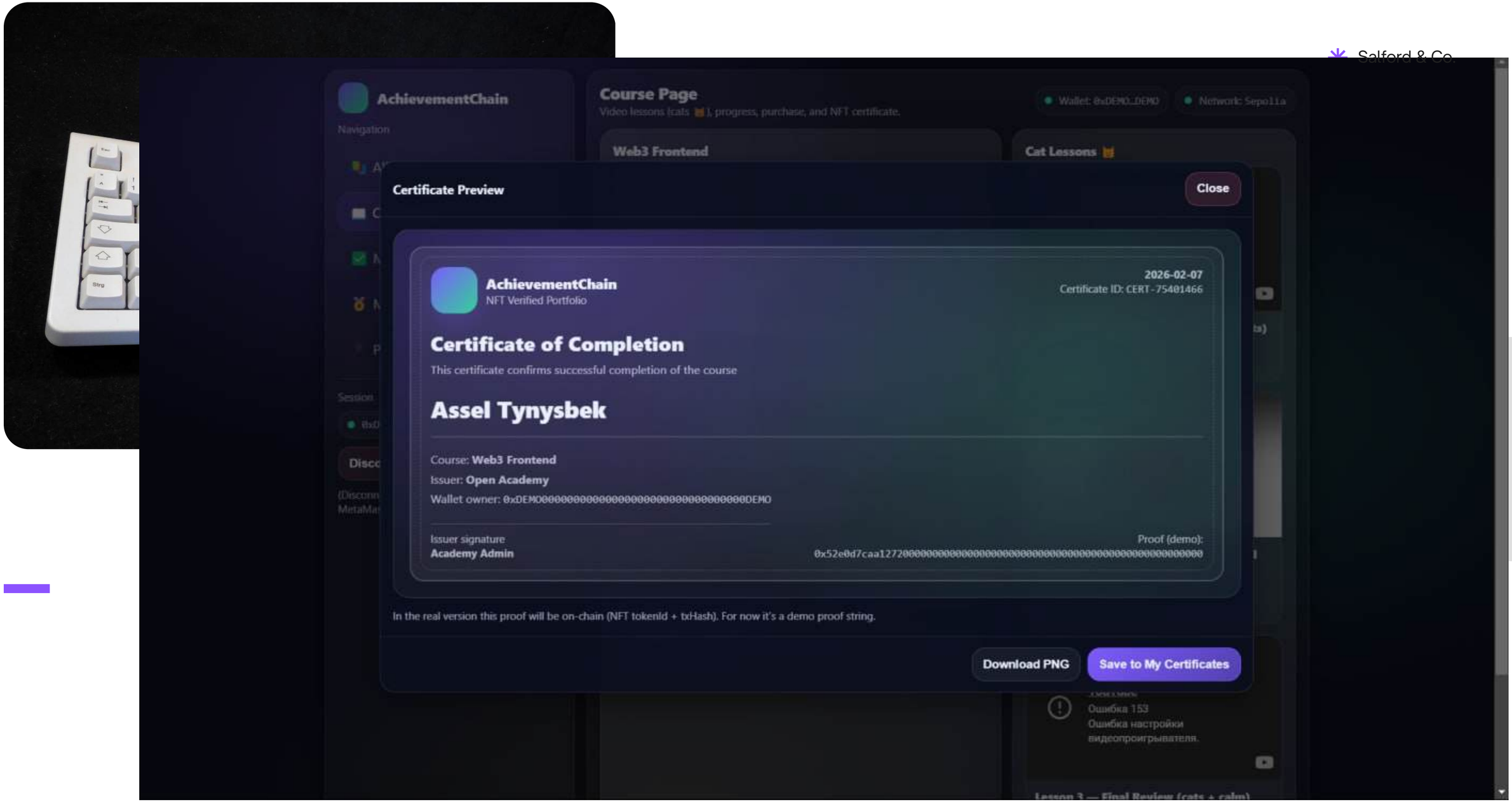
trustless rewards

transparency

no fake certificates



immutable history


AchievementChain
Navigation
Course Page
Video lessons (cats 😺), progress, purchase, and NFT certificate.
Wallet: 0xDEMO...DEMO
Network: Sepolia
Web3 Frontend
Cat Lessons 😺
Certificate Preview
Close
AchievementChain
NFT Verified Portfolio
2026-02-07
Certificate ID: CERT-75401466
Certificate of Completion
This certificate confirms successful completion of the course
Assel Tynysbek
Course: Web3 Frontend
Issuer: Open Academy
Wallet owner: 0xDEMO0000000000000000000000000000000000DEMO
Issuer signature
Academy Admin
Proof (demo):
0x52e0d7caa1272000000000000000000000000000000000000000000000000000000000
In the real version this proof will be on-chain (NFT tokenId + txHash). For now it's a demo proof string.
Download PNG
Save to My Certificates
Ошибка 153
Ошибка настройки
видеопроигрывателя.

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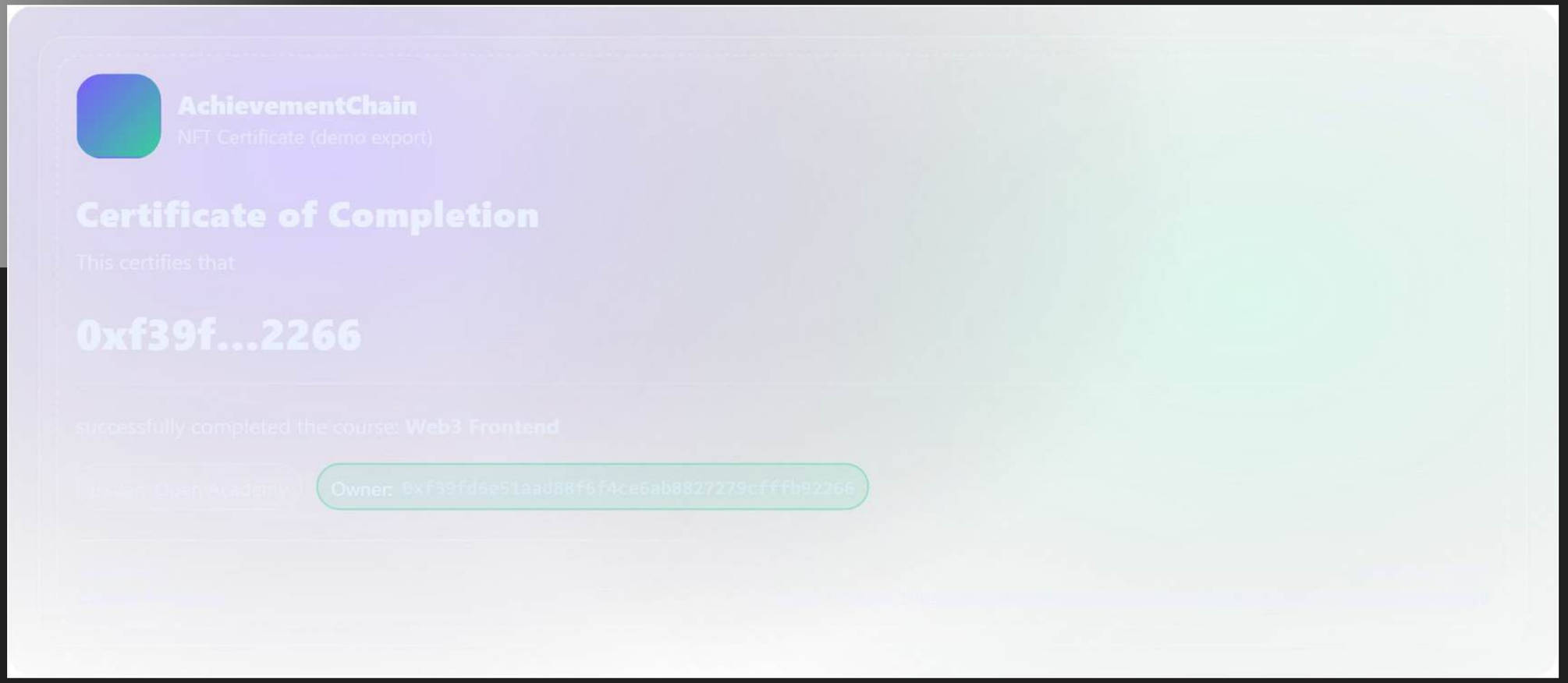
AchievementChain
NFT Certificate (demo export)
Certificate of Completion
This certifies that
0xf39f...2266
successfully completed the course: Web3 Frontend
Owner: 0xf39fd6e51aad88f6f4ce6ab8827279cfffb92266

We successfully built a fully functional decentralized education platform that demonstrates smart contracts, tokenization, NFTs, and MetaMask integration on Ethereum testnet

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Thank You