



FinTech Bootcamp Capstone Project

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Project & Project Goals

https://share.streamlit.io/crypticcrusaders/capstone_project/main/cryptic_crusaders.py



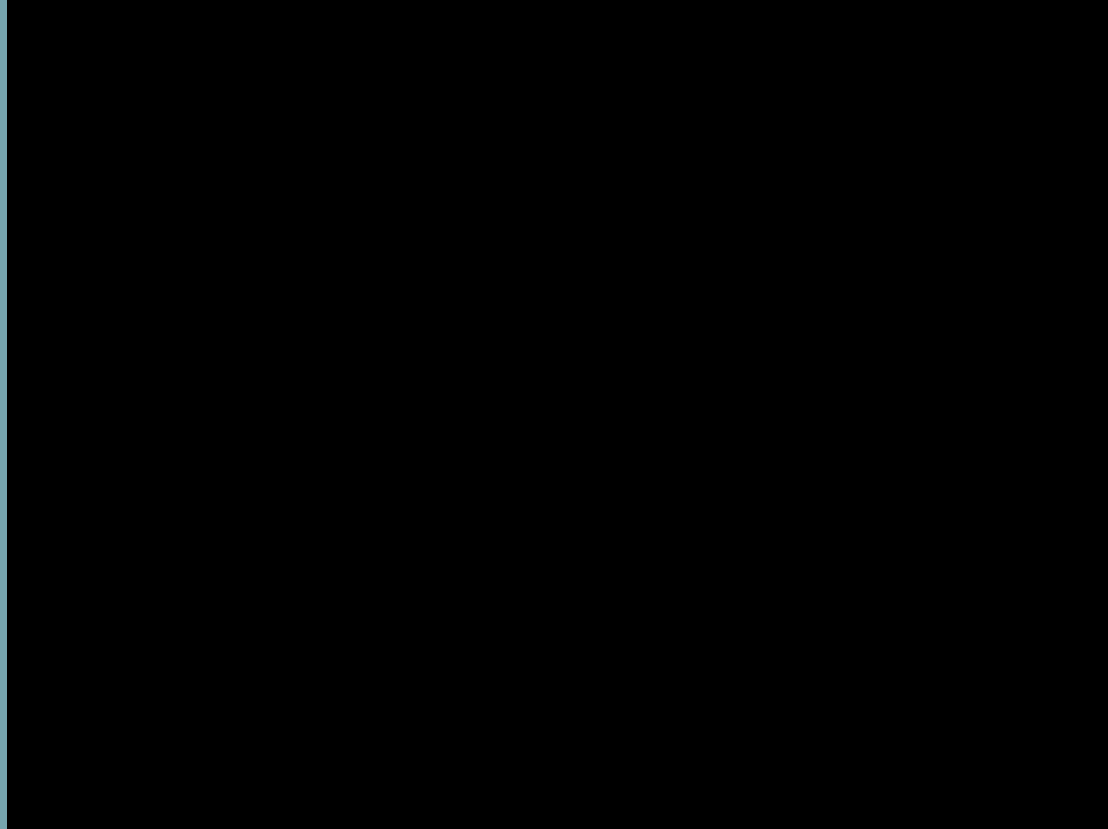


Approach

- Our project is powered through 3 smart contracts through solidity on the backend with a user friendly front end powered by the streamlit



Front End - Internal



Back End - Smart Contracts

The screenshot displays the Remix IDE interface for deploying a smart contract. On the left, the 'DEPLOY & RUN TRANSACTIONS' sidebar contains the following fields and controls:

- VALUE:** A text input containing '3000000'.
- VALUE:** A text input containing '0' and a dropdown menu set to 'Wei'.
- CONTRACT:** A dropdown menu showing 'saleGallery - contracts/nftTrading'.
- Deploy:** An orange button.
- PUBLISH TO IPFS:** An unchecked checkbox.
- OR:** A separator.
- At Address:** A purple button.
- Load contract from Address:** A text input field.
- Transactions recorded:** A dropdown menu showing '27'.
- Deployed Contracts:** A list containing:
 - MINTNFT AT 0XD1C...9E1F3 (BLOCKCH)
 - SALEGALLERY AT 0X3DD...4B795 (BLOC) - This entry is highlighted with a red box.

The main editor area on the right shows the 'nftTrading.sol' file with a code editor and a console. The console displays the following log message:

```
[block:75 txIndex:0] from: 0xEfF...16291 to: saleGallery.(constructor) value: 0 wei data: 0x608...b0033 logs: 0 hash: 0xd9b...621c5
```

The console also includes a search bar labeled 'Search with transaction hash or address' and a 'Debug' button.

Mint

The screenshot displays the Remix IDE interface with the following components:

- Browser Tab:** openzeppelin-contracts/ERC721
- Address Bar:** `remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js&language=...`
- Left Panel (DEPLOY & RUN TRANSACTIONS):**
 - Contract:** MINTNFT AT 0XD1C...9E1F3 (BLOCKCHAIN)
 - Functions:**
 - approve:** address to, uint256 tokenId
 - mintArtwork:** tokenURI: `https://apps.streamlitusercontent.com/...`
 - safeTransferFrom:** address from, address to, uint256 tokenId
 - setApprovalForAll:** address to, bool approved
 - transferFrom:** address from, address to, uint256 tokenId
 - balanceOf:** address owner
 - baseURI:**
 - getApproved:** uint256 tokenId
 - isApprovedForAll:** address owner, address operator
- Central Editor:** Displays the `nft minting.sol` file with line numbers 13 to 23. The code includes a `main/cryptic_crusaders.py` link.
- Bottom Console:** Shows the transaction `transact to mintNFT.mintArtwork pending ...`
- MetaMask Notification:** A notification from Ganache showing a new address detected and transaction details.

| DETAILS | |
|-------------------|---------------------------|
| Estimated gas fee | 0.0052081 |
| Site suggested | Max fee: 0.0052081 ETH |
| Total | 0.0052081 |
| Amount + gas fee | Max amount: 0.0052081 ETH |

Setting Approval

The screenshot displays the Remix Ethereum IDE interface. On the left, the 'DEPLOY & RUN TRANSACTIONS' panel is active, showing the 'mintArtwork' function with a 'tokenURI' field set to 'https://apps.streamlitusercontent.com'. Below this, the 'setApprovalForAll' function is selected, with the 'to' field set to '0x3ddfb1f036379C1d0566A17fE...' and 'approved' set to 'true'. The 'transact' button is visible. The central code editor shows the 'nft minting.sol' file with a highlighted line: `main/cryptic_crusaders.py/+/media/d14ce5d69207f7cb7dcc3dff35fe...`. The bottom status bar indicates 'transact to mintNFT.setApprovalForAll pending ...'. On the right, a MetaMask notification is displayed for 'Account 2' (0xd1C...e1F3), showing a 'New address detected!' message and a 'SET APPROVAL FOR ALL' button. The notification also displays transaction details: 'Estimated gas fee' of 0.00089838 ETH, 'Max fee' of 0.00089838 ETH, and a 'Total' of 0.00089838 ETH.

Remix - Ethereum IDE

openzeppelin-contracts/ERC721...

remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js&langua...

DEPLOY & RUN TRANSACTIONS

mintArtwork

tokenURI:

transact

safeTransferFrom

safeTransferFrom

setApprovalForAll

to:

approved:

transact

transferFrom

balanceOf

baseURI

getApproved

Home

nftTrading.sol

nft minting.sol

13

14

15

16

17

18

19

20

21 `main/cryptic_crusaders.py/+/media/d14ce5d69207f7cb7dcc3dff35fe...`

22

23

listen on network

Search with transaction hash or address

transact to mintNFT.setApprovalForAll pending ...

MetaMask Notification

Ganache

Account 2

0xd1C...e1F3

New address detected! Click here to add to your address book.

<https://remix.ethereum.org>

SET APPROVAL FOR ALL

DETAILS DATA HEX

EDIT

Estimated gas fee 0.00089838

0.000898 ETH

Site suggested Max fee: 0.00089838 ETH

Total 0.00089838

0.00089838 ETH

Amount + gas fee Max amount: 0.00089838 ETH

List NFT

The image shows the Remix Ethereum IDE interface with the 'nft minting.sol' file open. The left sidebar displays the 'DEPLOY & RUN TRANSACTIONS' panel, which includes a 'listNFT' section with input fields for 'token', 'tokenId', and 'price'. The 'price' field is set to '4000000000000000000'. Below this, there is a 'transact' button. The main editor shows the Solidity code for the 'listNFT' function, which calls 'totalSupply()', 'mint()', and 'setTokenURI()'. The right sidebar shows the 'MetaMask Notification' window, which displays the transaction details, including the 'Estimated gas fee' of '0.00336 ETH' and the 'Total' amount of '0.00335992 ETH'. The notification also includes a 'Confirm' button.

Remix - Ethereum IDE

openzeppelin-contracts/ERC721

remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js&language=...

DEPLOY & RUN TRANSACTIONS

SALEGALLERY AT 0x3DD...4B795 (BLOX)

buyToken uint256 listingId

cancel uint256 listingId

listNFT

token: 0xd1Ca57cb547Fe42B5daC27f76

tokenId: 0

price: 4000000000000000000

transact

fetchListing uint256 listingId

totalSupply

Low level interactions

CALLDATA

```
13 uint256 tokenId = totalSupply();
14 _mint(msg.sender, tokenId);
15 _setTokenURI(tokenId, tokenURI);
16 return tokenId;
17 }
18 }
19
20
21 //https://apps.streamlitusercontent.com/crypticcrusaders/capsto
22 //4000000000000000000
23
```

Home nftTrading.sol nft minting.sol

MetaMask Notification

Ganache

Account 2 0x3dd...b795

New address detected! Click here to add to your address book.

DETAILS DATA HEX

Estimated gas fee 0.00335992 0.00336 ETH

Site suggested Max fee: 0.00335992 ETH

Total 0.00335992 0.00335992 ETH

Amount + gas fee Max amount: 0.00335992 ETH

Reject Confirm

Search with transaction hash or address

transact to saleGallery.listNFT pending ...


Fetch NFT

listNFT ^

token:


tokenId:

price:



fetchListing ^

listingId:



0: tuple(address,address,uint256,uint256): 0xEff410608f54a03669923C2C9B493ccb7f916291,0xd1Ca57cb547Fe42B5daC27f76A4190E4Fa79e1F3,0,4000000000000000000

Change Wallet

The image displays a development environment with three main components:

- Left Panel (Deploy & Run Transactions):** Shows a sidebar with icons for deployment, transactions, and settings. The main area is titled "DEPLOY & RUN TRANSACTIONS" and contains sections for "Low level interactions" (with a "CALLDATA" field and "Transact" button) and "SALEGALLERY AT 0X3DD...4B795 (BLOX)" (with a "buyToken" section containing a "listingId" field and "transact" button, and a "listNFT" section with "token" and "price" fields).
- Middle Panel (Code Editor):** Displays Solidity code for "nft minting.sol". The code includes functions for minting and setting token URIs. The current line of code is:

```
uint256 tokenId = totalSupply();
```
- Right Panel (Ganache Wallet):** Shows the "Account 3" interface with a balance of 96.1587 ETH. It includes buttons for "Buy", "Send", and "Swap". Below the balance, there is a list of transactions: "Contract Interaction" and "Set Approval For All", both showing a balance of -0 ETH.

Purchase

Remix - Ethereum IDE

openzeppelin-contracts/ERC721

remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.5.17+commit.d19bba13.js&language=...

DEPLOY & RUN TRANSACTIONS

SALEGALLERY AT 0x3DD...4B795 (BLOCK)

buyToken

listingId: 0

transact

cancel

uint256 listingId

listNFT

token: 0xd1Ca57cb547Fe4285daC27176

tokenId: 0

price: 4000000000000000000

transact

fetchListing

listingId: 0

Home

nftTrading.sol

nft minting.sol

17 }

18 }

19 }

20 }

21 //https://apps.streamlitusercontent.com/crypticcrusaders/capstone

22 //40000000000000000000

23 }

MetaMask Notification

Ganache

Account 3

0x3dd...b795

New address detected! Click here to add to your address book.

https://remix.ethereum.org

BUY TOKEN

0.4

DETAILS DATA HEX

EDIT

Estimated gas fee 0.0022731

0.002273 ETH

Site suggested Max fee: 0.0022731 ETH

Total 0.4022731

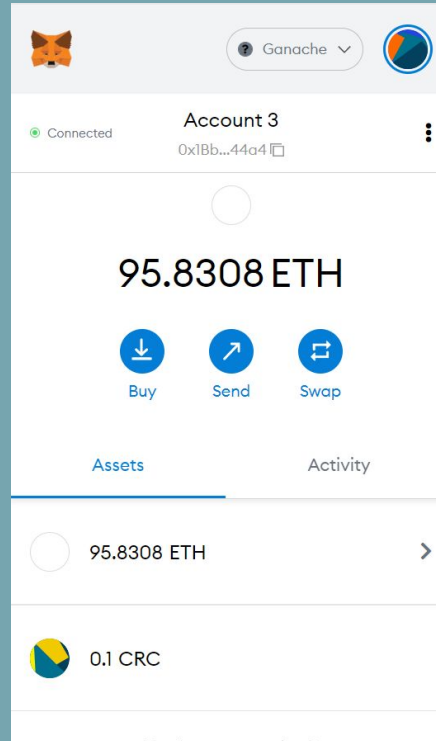
0.4022731 ETH

listen on network

Search with transaction hash or address

transact to saleGallery.buyToken pending ...

Proof of Purchase





Next Steps

- Build a robust collection of NFTs through the use of an NFT generator
- Build smart contract for Initial Coin Offering
- Explore other front end options
- Explore ERC721A for potential gas savings

Questions

