Description:

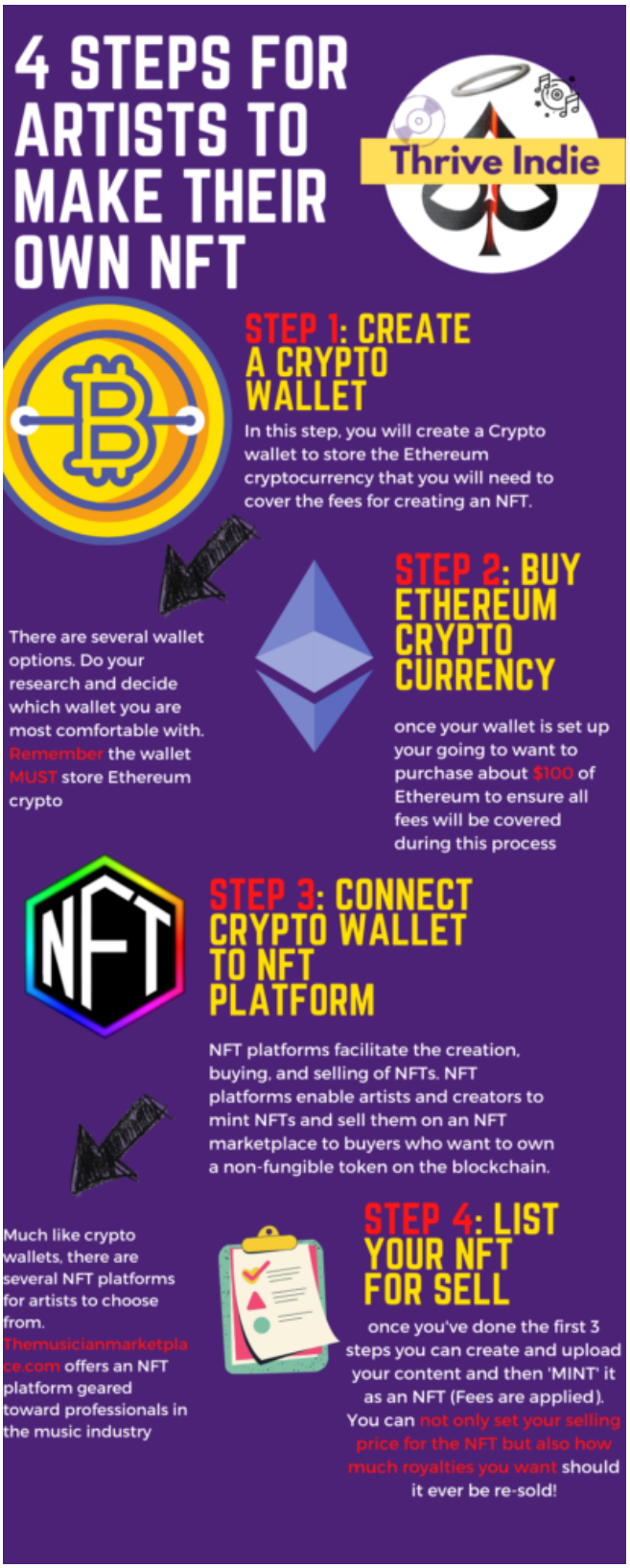
Our project will be about creating NFT's, Non Fungible Tokens, and FTs, Fungible Tokens, this will be a fun project where we can create the Cardell into a fully functioning NFT. An NFT is a unique cryptographic token that exists on a blockchain and cannot be replicated. NFTs can represent real-world items like artwork and real estate. "Tokenizing" these real-world tangible assets makes buying, selling, and trading them more efficient while reducing the probability of fraud. In our project we will be working to tokenize the Cardell which is the only source of food for the RELLIS Campus.

1. purpose

The purpose of our project is to finally get the Cardell name off the ground with our groundbreaking approach to real work of art that is the Cardell.

2. Components

The components we will use will firstly be Etherum as our base token which we will sell our NFT's for, this is the basic blockchain used for most NFT sales. For the components used we will digitize our NFT making sure that the Cardell is perfect for every one minted.



3. Connect and communicate

Then we will store the NFT most likely in a wallet of which will be on an outside database, someone's computer most likely. We then need to do the basics which are signing, minting, and trading the NFT. Lastly, the NFT needs to be confirmed which will be done during the trading process. These components are mostly used in tandem with a cryptographic system, of which the NFT's unique signature will be signed with Algorand Standard Assets (ASA), and then placed into a digital wallet using the public key of the receiver to send the token. We will be placing our NFT's into OpenSea where we will try to sell the Cardell Prime Collection.

4. Technologies used

For the wallet we will most likely use Metamask to store the NFT's, in this wallet we can use the address to store the Cardell Primes and visualize them, as well as where we can sell them from, this works similarly to any other crypto wallet.

Cryptographic mechanisms:

1. Asymmetric Cryptography

Nfts are an evolution of the ERC-721 standard which is developed from the same people that developed the smart contracts which describes the minimum interface, which will be things such as ownership, security, and metadata. The hashing that is used within NFTs is the Provenance hash which is Asymmetric in nature.

2. Hashing

The way this works is that the initial image is hashed using SHA-256 to give a defining characteristic to an NFT. The next part of this would be used for something like crypto kitties, where multiple images will be put together in the provenance hash, if the hash is different when

you shuffle the images, it proves that the images were pre-determined before release and doesn't make you show the meta-data of the NFT to prove this.

3. Signature

This provenance will be proves with some type of signature usually, such as Fio proves this with the above process insuring decentralization and private keys of each one. Then you must secure permanence which is done by writing critical NFT info to the FIO blockchain: NFT chain type, address, token ID and URI, a hash of off-chain image, and the creator's site URL. Finally, the validation process is done by use of a Validator to authenticate with a simple search for FIO Crypto Handle, contract address, image hash, or the NFT image itself. After these steps are taken, hashing the image, proving provenance, and signing, your NFT is secure and ready to be traded on the blockchain.

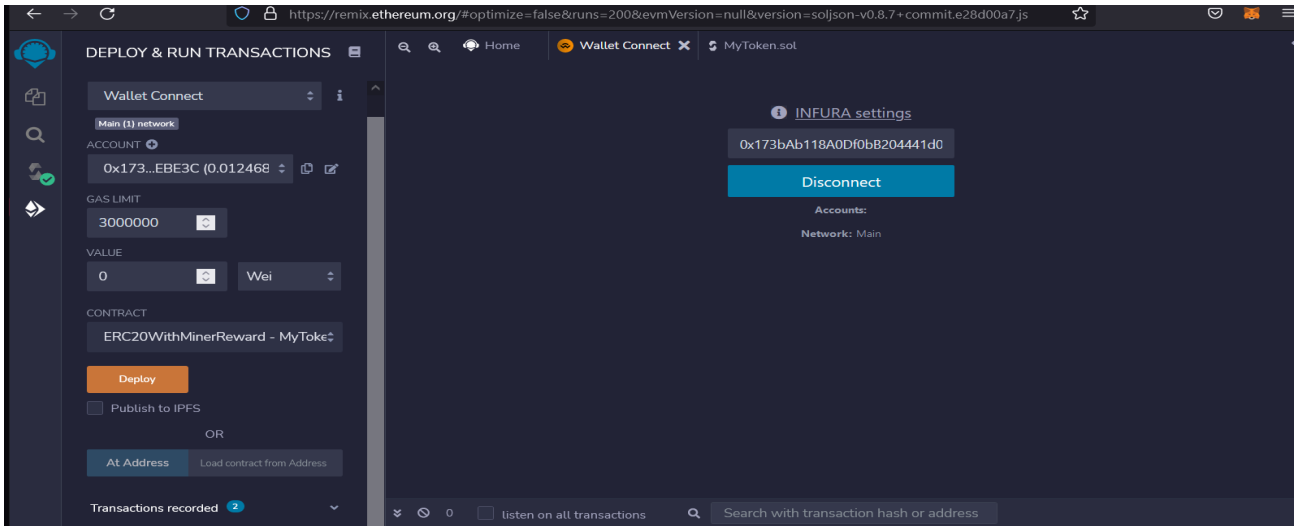
Fungible tokens Description:

In addition, the NFT's fungible tokens will also be explored; a fungible token is a interchangeable and divisible token on a blockchain. It is a digital asset with no unique properties, meaning that, like the popular cryptocurrency Bitcoin, one Bitcoin is worth one Bitcoin. In other words, they are identical and uniform; this also relates to any fungible token, even if they are divided. We will create a fungible token based on the Ethereum blockchain using the ERC20 token standard to make cardell coins. These cardell coins will be interchangeable, divisible, and transferable to any crypto wallet that accepts Ethereum base currency. The cardell coins will have a limited amount of stock but will be able to be mined at a set reward rate minted into the blockchain then sent to the miner's wallet. ERC-20 utilizes smart contracts to keep track

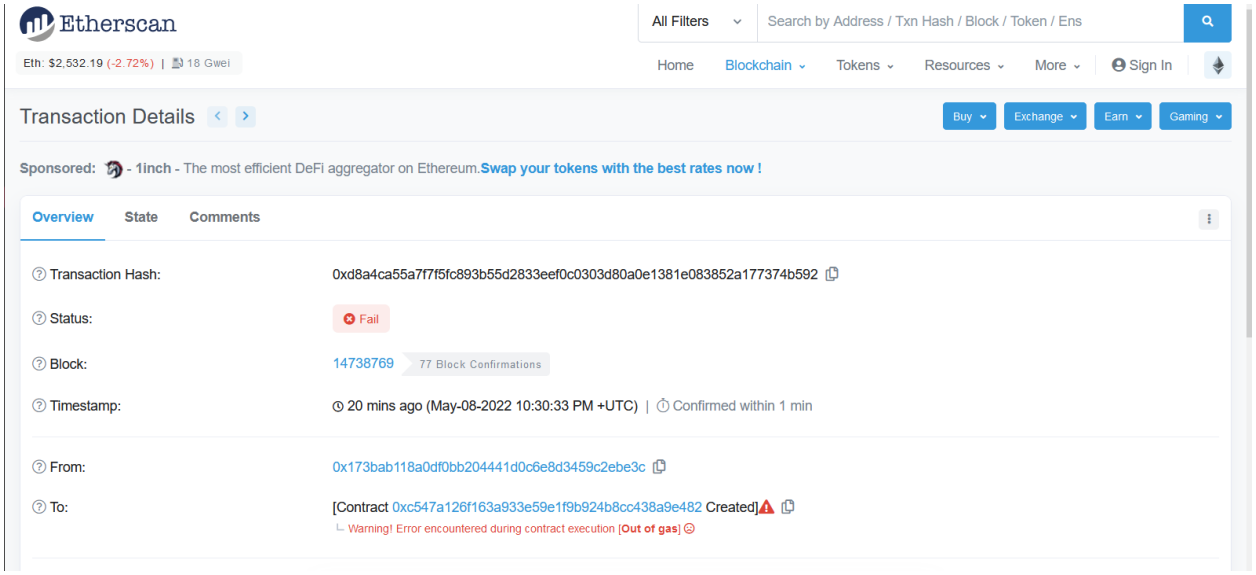
of the created cardell coins along with blockhashs to confirm that transfers between wallets are correct. This will create a log to the address of the wallet making a token contract by the ERC-20 standard these transactions are encrypted on the Ethereum blockchain. The Cardell coin will use the openzepplin application and be programmed in Solidity to create the policies desired for the token. Solidity is a javascript-like programming language based on the ethereum blockchain, allowing for direct deployment of ERC-20 tokens onto the blockchain. Openzepplin is a contract library for secure smart contract development along with HardHat and Truffle development. Web3 will also be a necessary tool after the token parameters are configured; this will push the tokens on to the blockchain as they have met ERC-20 standards and are ready for development.

Fungible Token deployment:

The Cardell tokens created on the remix IDE is generated on the Ethereum blockchain via solidity wallet connect function by typing in the admin address for the tokens. With the wallet connected and contract deployed, you can then mint the token given that you have enough of gas. Gas is a fee to a miner to mint tokens to the blockchain. 10 Cardell token were created with the function to be mined and minted by admin or a user by miner Reward contract.

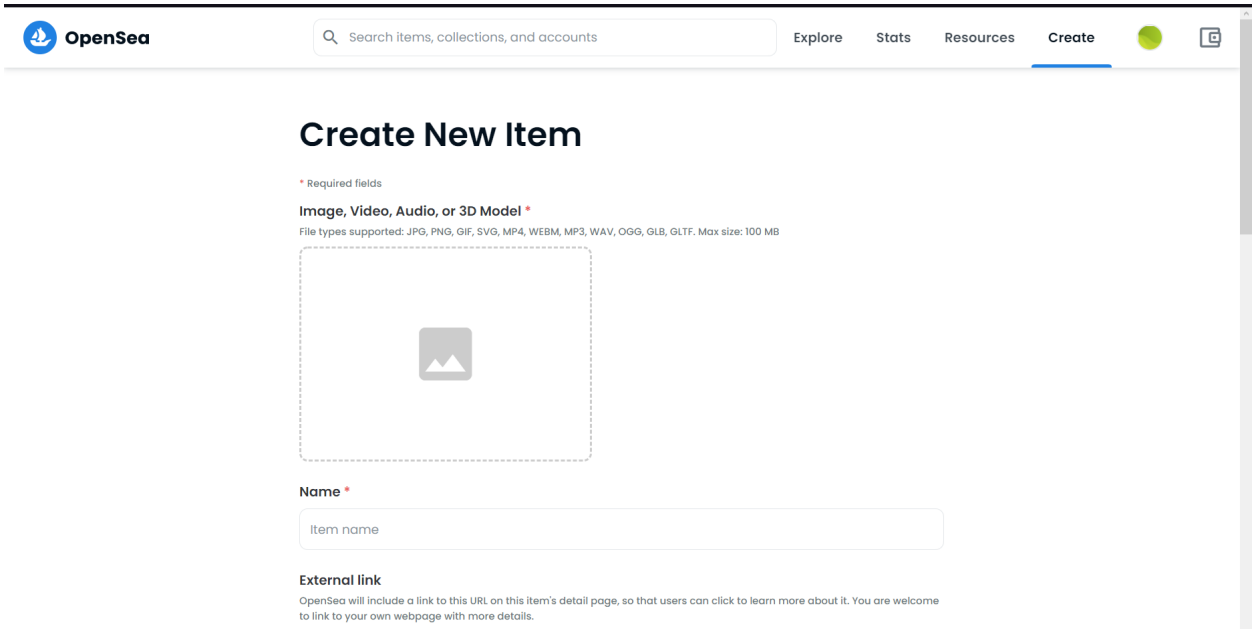


This address of the admin wallet is 0x173bAb118A0Df0bB204441d0C6e8D3459c2EBE3C, however, an error occurred in which the gas ran out, and the gas fee was burnt.



NFT deployment:

The NFT were deployed on open sea; open sea is very user-friendly selection of pictures, connection of metamask wallet then payment will then mint the image to the blockchain.




Some examples of Cardell NFT are as above The Colin Cardell 7, Greg Cardell Selection 1, and the Austin Prime 5.