

Problem

Crypto has become a booming tradable currency in the past couple years and continues to be on the rise. One of the major ways cryptocurrency is used is with NFT's. NFT(Non-Fungible Token) is a type of data which is stored to a specific Crypto's public blockchain and is stored as a unique asset. NFT's are digital items which users can create, buy and sell on NFT marketplaces. Some of the biggest problems with NFT marketplaces can be understanding what is actually going on when using them and depending on what NFT marketplace you use, the price. The NFTies Marketplace is user a friendly marketplace that will help assist in the creation of NFT's by making the process seamless and less expensive for the users who have created NFT's before and user who are only getting started.

Current System

The current system for our application is we have the basic features a frontend would need. We also have the groundwork for our smart contracts completed for handling the minting of NFT's for our marketplace. During this semester our team was split into three teams with me being apart of the Crypto team. The current system for a crypto side is we have two different types of smart contracts built for ethereum. both have the ability to mint an NFT to a testnet at the moment. These two contracts are can both be implement or the team for next semester can choose which they think we work the best. Both smart contracts are ERC721 though can be updated to ERC1155 for more accessibility and cheaper gas costs.

Requirements

What was worked on:

For my portion of the project I worked on The Crypto side. Using the basic Information I learned last semester and using the new gained knowledge this semester with Ethereum, ERC tokens, minting and solidity, After testing multiple dummy smart contracts II was able to put together a smart contract that successfully mints to a test network and can pop up in someone's collection/gallery.

System design:

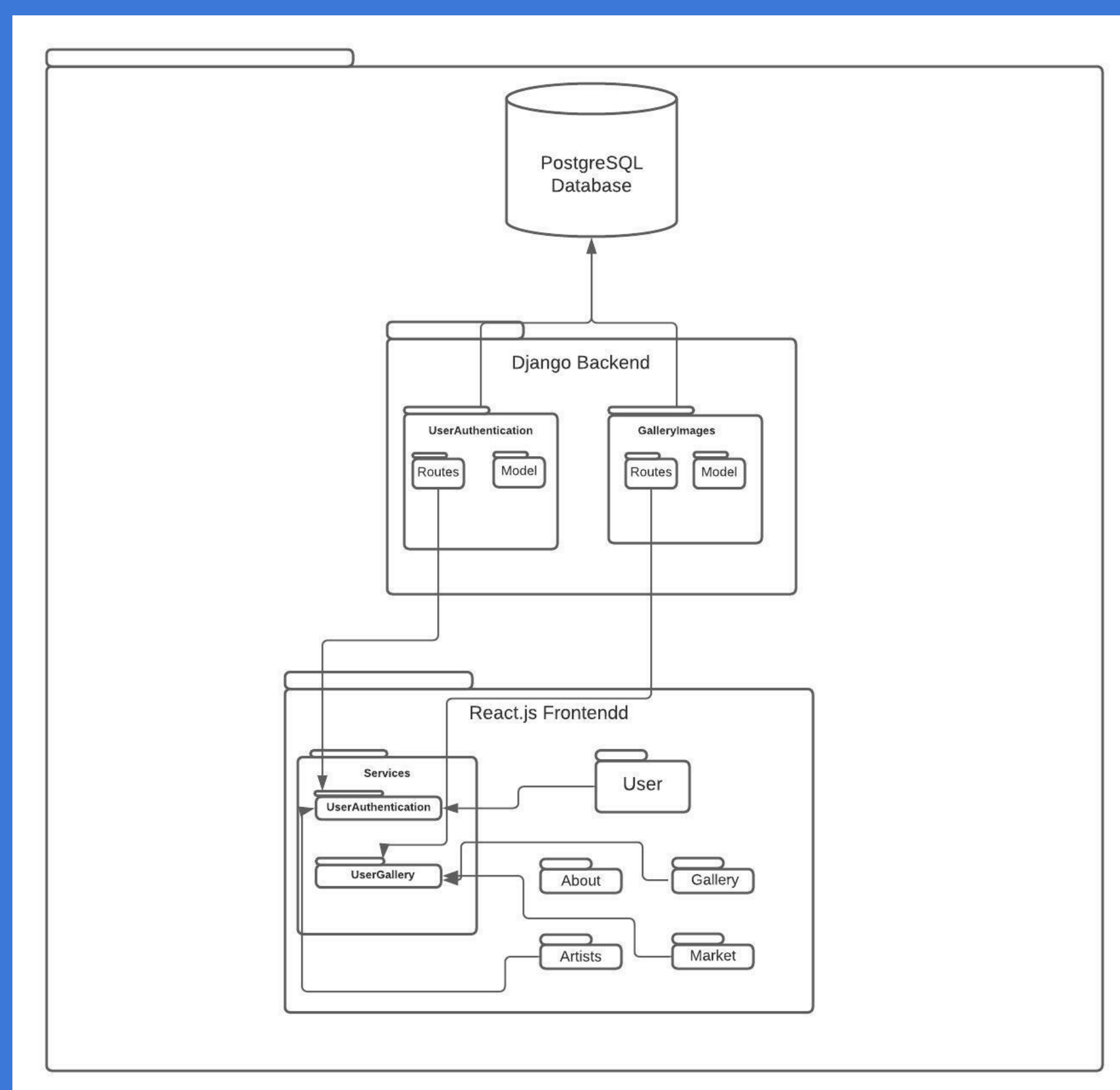
Front-End: React.js, CSS, HTML, Javascript

Back-End: Python, Django

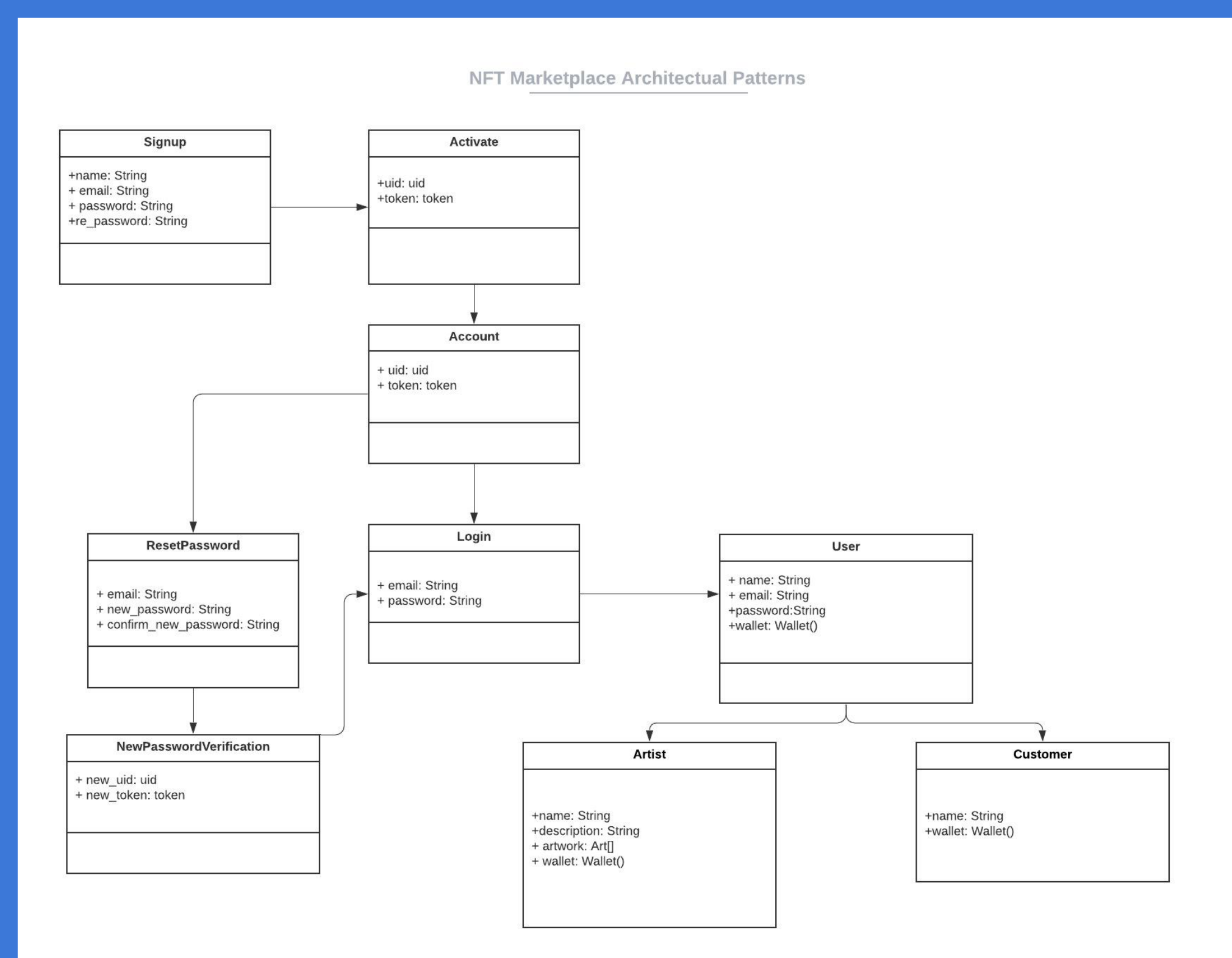
Database: PostgreSQL/PostgreSQL Terminal

Crypto: Ethereum, solidity based smart contracts

System Design



Object Design



Implementation

- **Backend:** Implemented in Python and Django
- **Frontend:** Created in React.js with HTML and CSS
- **Database:** The Database which we decided to use was PostgreSQL
- **Crypto:** Solidity language with is used for ethereum smart contracts

Verification

For verification, we used Remix IDE and OpenSea testnet for testing and coding purposes. Remix allows us to connect to different testnet which allows us the developers to test our smart contracts on pseudo-blockchain environments. The PO was informed not often though when he was, It was when we had used the knowledge we learned and put into contracts for testing.

Screenshots

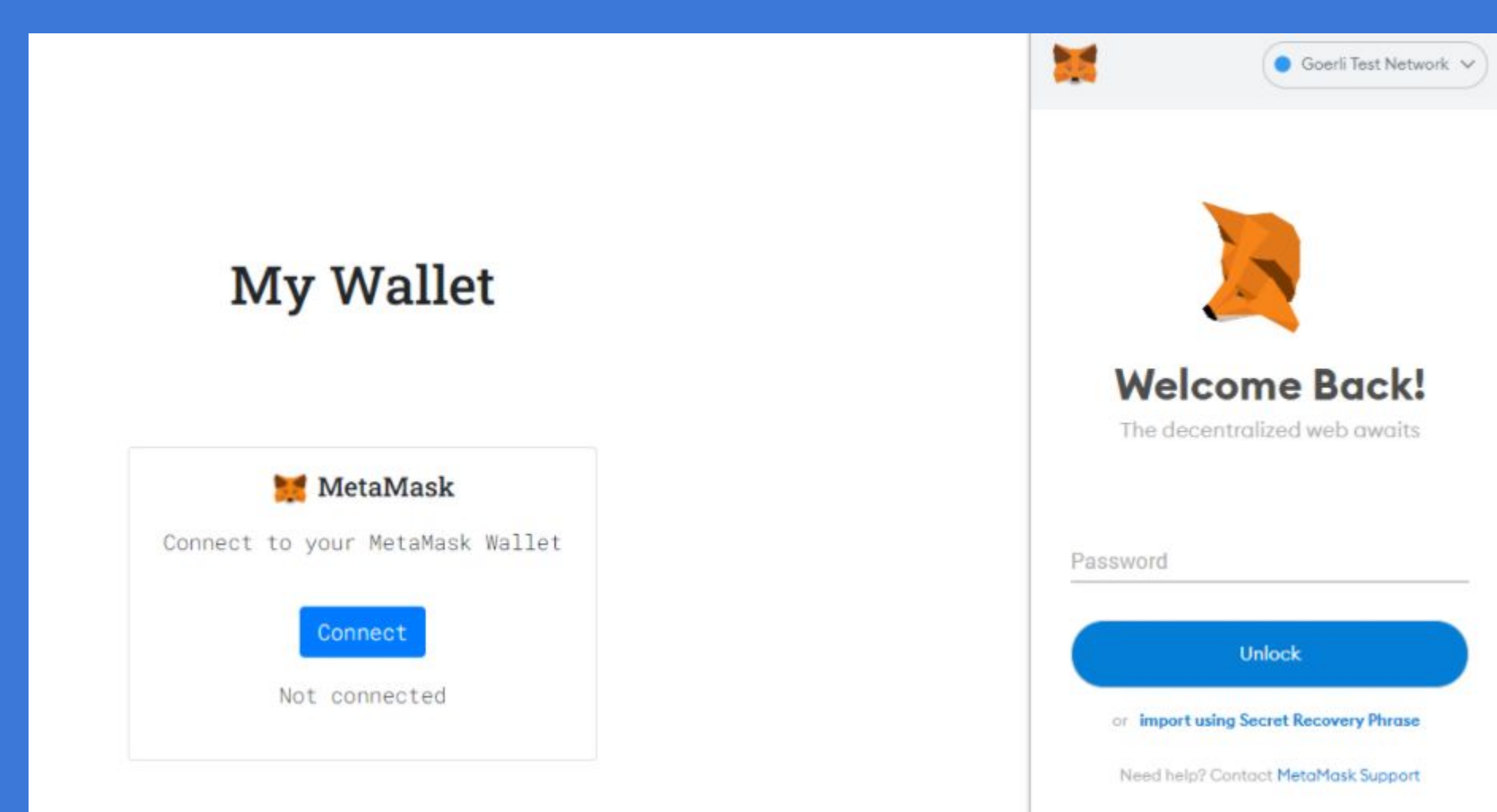


Image 1: this screen allows users to connect to the exchange via their "wallet". The wallet is an external web extension.

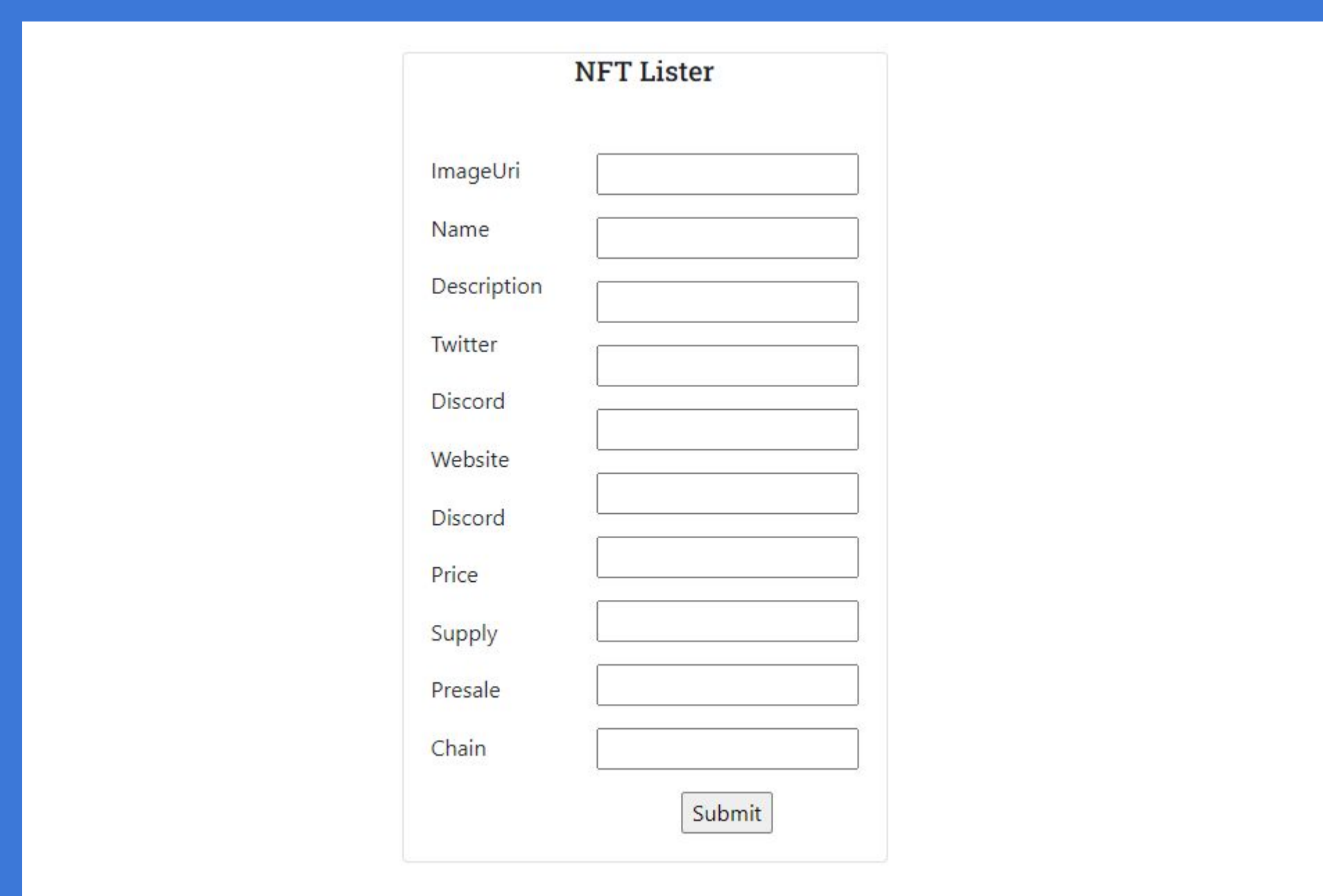


Image 2.: this screen allows users to "mint" their nft's using a form. This from connects to the blockchain and creates a new nft using various parameters.

Summary

The NFTies collective is progressing smoothly this semester after using last semester to learn about crypto and how to create NFT's, minting etc... The crypto side has created two minting smart contracts which can be used to mint an NFT. These two contracts which are both ERC721, can be updated to other tokens like ERC1155 which allows for more accessibility down the line. Somethings that will need to be completed by the next NFTies team will be to update contracts and complete a lot of testing. We do not want a smart contract that does not work perfectly on a live blockchain which can cause many problems. To conclude, this semester our team has create smart contracts which will allow the future teams to work off of and allow for upgradability for the contracts. this will allow for more complex contracts which in actuality is more beneficial to the user.

Acknowledgement

I thank Professor Masoud Sadjadi, TA's Azwad Islam and Sumesh Kumar and PO Eddie Garcia for their and assistance and mentorship that I received throughout the senior design project.