Decentralized Exchange

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About

This is a simple Ethereum based decentralized exchange with a custom token. Decentralized exchange allows for trustless exchange of assets and tokens on Ethereum without giving away control of your assets.

What is an order book?

An order book is a list, typically electronic, of buy (bid) and sell (offer) orders, including the number of shares to be bought or sold. The order book is organized by price level. This helps keep track of the level of interest for a tradable instrument and shows the market depth.

Usage

You need to have a Metamask wallet. Connect to the app using your wallet. When connected, your address will show on the top navigation bar. You can deposit your tokens or ether, create orders by choosing the amount of token you want to get in exchange for the amount of ether or vice versa, or fill open orders to make a trade.

Technology Stack and Tools

- Metamask Wallet
- Truffle - development framework
- React - front end framework
- Redux - front end state management framework
- Solidity - ethereum smart contract language
- Ganache - local blockchain development
- Web3 - library interact with ethereum nodes
- JavaScript - logic front end and testing smart contracts
- Open Zeppelin - smart contract libraries

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Folder / Directory Structure

- Dex
  - migrations
  - public
  - scripts
  - src
    - abis
    - components
    - contracts
    - store
    - Index.js

How to Run

Install dependencies

```
$ npm install
```

Run local blockchain with ganache. Ensure truffle-config.js networks config is your Ganache port. By default it should be host: 127.0.0.1 and port: 7545 or 8545 depending on whether you used GUI or CLI.

```
$ ganache-cli
```

Connect your ganache addresses from the list of given addresses to Metamask by copying the private key and importing these private keys to Metamask.

Compile, Test and Migrate Contracts on Ganache

```
$ truffle compile --all
```

```
$ truffle migrate --reset --network development
```

Load exchange with some initial data, orders, trades, cancels etc

```
$ truffle exec scripts/seed-exchange.js
```

Run app locally

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```
$ npm run start
```

SCENARIO

UNICA is a special Token currently held only by User 1.

User 1 will have both UNICA and ETH in the wallet. User 1 deposits 100 ETH and 100 UNICA into the Exchange.

User 2 and User 3 will not have any UNICA tokens.

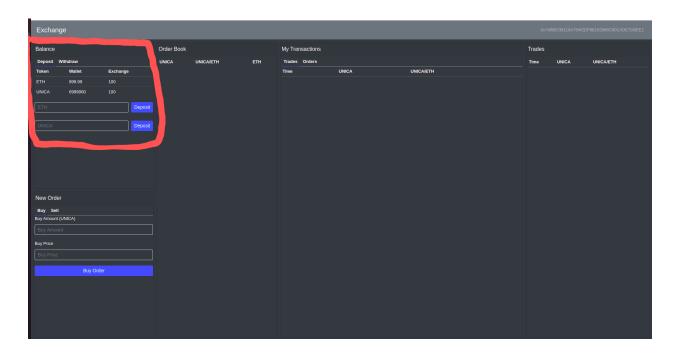User 2 and User 3 each deposit 100 ETH into the exchange.

User 2 wishes to buy a total of 20 UNICA at the rate of 1 ETH per UNICA token. User 2 will place a buy Order.

User 3 wishes to buy a total of 20 UNICA at the rate of 2 ETH per UNICA token. User 3 will place a buy Order.

Now User 1 sees a profitable opportunity by performing a trade with User 3's Buy order. User 1 sells the order. Now, User 1 will receive 20 * 2 ETH into the account. User 3 will receive the 20 UNICA which was requested.

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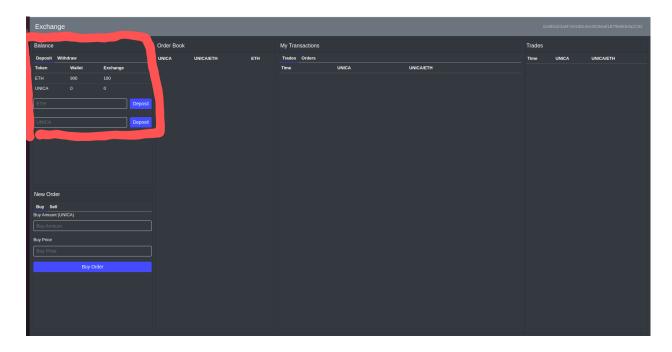
DEMO

USER 1 DEPOSITS 100 ETH and 100 UNICA TO EXCHANGE
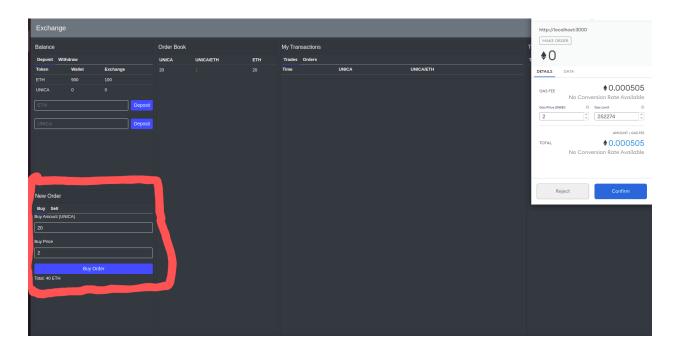

USER 2 DEPOSITS 100 ETH TO EXCHANGE

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USER 3 DEPOSITS 100 ETH TO EXCHANGE

USER 2 PUTS A BUY ORDER , WILLING TO BUY 20 ETH AT THE RATE OF 1 ETH PER UNICA

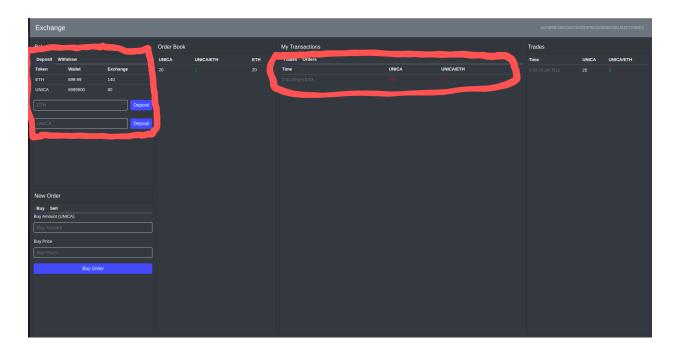# Decentralized Exchange

USER 3 PUTS A BUY ORDER , WILLING TO BUY 20 ETH AT THE RATE OF 2 ETH PER UNICA

USER 1 SELLS USER 3 ORDER

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USER 1 GETS 40 ETH FOR THE TRADE

USER 3 GETS THE REQUESTED 20 UNICA

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Conclusion

Using the Decentralized exchange, users are able to advertise their buy orders and also get their orders fulfilled.