GeoToken
Technical Documentation
V 1.0

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Abstract:

GeoToken is a utility token based on the ERC20 token standard on the Ethereum network.

The Ethereum network is a decentralized network where transactions are verified by a network of participants that reach a consensus. A decentralized network is not owned or controlled by any certain individual or corporation; transactions are verified and published by a combined effort of the participants of the network. The security of the network is established using modern cryptographic computer applications such as proof of work mining. Ethereum is a smart contract platform as well as a digital currency and operates as the fuel for rewarding participants of the network for verifying transactions on the network.

The purpose of GeoToken is to provide users an experience similar to geocaching in GPS technologies, with the addition of the choice to tip the user who shared the location. Users can share any type of location associated with a category and description for other users to discover. Anyone is free to browse and discover the locations of other GeoToken users, they can optionally send a tip in Ethereum to the users Ethereum address that shared the location. GeoTokens are required to be used to share a location, the users GeoToken address is the same public address they can receive tips on in Ethereum.

Deliverables:

Smart Contract: ←Deployed on Ethereum Network on January 1, 2018

Desktop Wallet   ←In development and testing phase. Beta release March 31, 2019

Android Wallet   ←Coming soon, pending Desktop Wallet

Android Dapp: ← Coming soon, pending Android Wallet

User Requirements:

Desktop: Java Runtime Enironment (JRE)

Mobile: Android OS (Coming soon)

Technical Documentation:

Development Software Prerequisites / External Library's:

Web3J   https://github.com/web3j/web3j

Additional Resources & Web APIs:

Infura (node hosting)   https://infura.io/

Coin Market Cap (eth to usd prices)   https://coinmarketcap.com/

Eth Gas Station (current gas prices)   https://www.ethgasstation.info/

Etherscan (Fast transaction info)   https://etherscan.io/

GeoToken Project Development:

Desktop Graphical User Interface:

Main Class: GeoTokenWalletGui

Description: Desktop Java Swing Interface

Dependencies & Coupling: Wallet (see Wallet and additional class descriptions below)

Additional Dependencies: Image files for GUI

Purpose: Desktop user interaction application

Class Summary:

Class Name: Account

Dependencies & Coupling: Credentials (Web3J) & GasStation

Purpose: Manage user's credentials along with utility functions for gas prices for sending transactions, gas prices can be controlled by the user associated with the account.

Class Name: ApiHandler

Sub Classes: EthApiHandler, EterscanApiHandler, GasApiHandler

Purpose: container and base class for handling APIs

Class Name: EthApiHandler

Base Class: ApiHandler

Purpose: Fetch USD or BTC price for ETH

Class Name: EtherscanApiHandler

Base Class: ApiHandler

Purpose: Fetch transaction history

Class Name: GasApiHandler

Base Class: ApiHandler

Purpose: Fetch gas prices based on current gas prices for transactions that are being mined in real time

Class Name: GasStation

Dependencies & Coupling: GasApiHandler

Purpose: Store an instance of GasApiHandler along with utility functions and constants

Class Name: GeoToken

Purpose: Wrapper for smart contract functions. Functions are executed externally via the GeoToken smart contract on the Ethereum virtual machine.

Class Name: Host

Purpose: Manage different hosts for node (infura, local node, testnet)

Class Name: JSONReader

Sub Classes: MultipleJSONReader

Purpose: Used to store data from web APIs into key value pairs

Class Name: MultipleJSONReader

Base Classes: JSONReader

Purpose: Used to store data from web APIs that contain multiple JSON objects

Class Name: Node

Dependencies & Coupling: Web3J, TransactionManager

Purpose: Used to store and retrieve instances of Web3J and TransactionManager.

Class Name: OutgoingEthTransaction

Base Classes: OutgoingTransaction

Purpose: Overwrite send function in OutgoingTransaction to send Ethereum instead of GeoTokens

Class Name: OutgoingTransaction

Sub Classes: OutgoingEthTransaction

Purpose: Base class for sending transactions and confirming they get mined

Class Name: SettingsFileReader

Purpose: Reads api keys from text files

Class Name: Transaction

Purpose: Contains private members and utility functions associated with a single transaction

Class Name: Transactions

Purpose: Container for multiple transactions

Class Name: UnitConverter

Purpose: Convert between units including conversions for eth to usd and btc

Class Name: Wallet

Dependencies & Coupling: Node, Account, GeoToken, Transactions

Purpose: Provides all wallet functionality to graphical user interface

Class Name: WebGetter

Purpose: Reads data from the web, used for web APIs