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MODERNIZATION OF THE OBJECT MARKETPLACE SOFTWARE USING NON-FUNGIBLE TOKENS

Currently, blockchain technology is widely used to identify the owners of things in market systems. For this, NFTs (non-fungible tokens) are used. Such tokens exist in one copy, and the actual data about the owner (wallet address) as well as the history of transactions are stored in the blockchain. The advantage of using the blockchain is the transparency of transactions (any user can track the chain of transactions from the very beginning), immutability and decentralization (all blocks are stored on all computers of network users in chronological order, which reduces the risk of hacker attacks and technical failures).

The problem of implementing a market of things with internal user profiles is the need to perform a large number of requests to match the address of the wallet from the blockchain and a specific user of the system. This significantly increases the client's waiting time. In addition, the blockchain is not designed to generate statistics related to who owns what, which should be one of the functions of the system being developed.

The purpose of the work is to increase the speed of loading information about the owner and allow the formation of statistics. The developed software caches data on who owns what on the server side of the market. But in this case, there is a problem of synchronizing the cache and the real state. To do this, when connecting or disconnecting a wallet, the program receives a list of tokens that are on the connected wallet and marks the user to whom this wallet corresponds in the system as the owner. In addition, for actions outside the platform, the blockchain is monitored and the movement of things is synchronized with cache, regardless of whether the wallet is connected. The cached information is stored in the database, which allows you to work effectively with this data - to make selections and statistics of any complexity, and at the same time we do not deviate from the original idea – information about the owners is stored in the blockchain, the information in the database only repeats the state of the blockchain in form suitable for work.

The developed software is in trial operation, which confirmed the inherent characteristics. The software is implemented on the Node.js platform using the CELO blockchain. The smart contract is implemented in the Solidity language and complies with the ERC-721 interface. Transaction monitoring is implemented using the web3 library. The PostgreSQL relational DBMS is used to store the cached information.