

Chapter 11

PayCrypto Analtcoin Minting Application as Interest to Cryptocurrencies

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ABSTRACT

Blockchain is a distributed ledger. It stores transaction data in the form of a linked list combined with encryption algorithms to enhance the security and integrity of the data in each of the blocks. Any participant of the node can verify the correctness of a transaction and a block is created only after the majority of the participants of the network (51%) agree to the correctness of a transaction. The participants

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reach a consensus on the transactions broadcast and the sequence in which these transactions occurred. At any point of time, all participants have an order of blocks of transactions they have accepted consensus on, and each participant has a set of unprocessed transactions it has in its pool. A block is then selected by one node on which validity of transactions is checked and then it is added to the blockchain. The main focus is to demonstrate the concept of staking cryptocurrencies on blockchains and how decentralized applications can be developed on the Ethereum network to deploy such applications.

INTRODUCTION

In the current fiat currency system, the citizens can submit (stake) their currency to regulated banks to earn some interest. The PayCrypto model tries to mimic the fiat system by leveraging the PoS model that helps validate transactions on a blockchain. This decentralized way of earning rewards for staking currency eliminates the fees required to maintain our transactions, overdraft fees etc., charged by the centralized authorities. The prototype built uses two tokens deployed on a local blockchain to demonstrate the Defimodel. The user can interact with the smart contract using the metamask wallet to stake and un-stake crypto-currencies.

1.1 Blockchain

Blockchain is a distributed ledger. It stores transaction data in the form of a linked list combined with encryption algorithms (currently SHA-256) to enhance the security and integrity of the data in each of the blocks. Each block consists of a set of transactions (A Merkle tree and the root is kept in the block), a pointer to the previous block, and hash of the previous block.

The use of digital signatures implements the message authentication requirement of the security requirements. Only one person can sign but anyone can cross-check and the signature should be associated with a particular file i.e., signature should not be copy pasted from one document to another.

While the proof-of-work takes care of such concerns, proof-of-stake implements all these security requirements without the strength of the security of a blockchain being dependent on the energy consumption (Mining).

1.2 Incentive Mechanisms

Incentive mechanisms make sure users participate in mining. This is done due to the dependency on the number of miners and the strength of the blockchain. The more

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