

Implementation of Blockchain Technology in Online Voting System with Ethereum and Metamask

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ABSTRACT

Nowadays, elections are a method of selecting representatives that is based on justice, integrity, and democratic principles. The voting mechanism allows voters to vote for candidates during the election. The implementation of the blockchain in voting system is very significant. In essence, the voting system can directly affect political science, social science, and economics. Thus, the voting system's idea must respond and be carefully evaluated before being implemented. It is critical to protect voters' votes to preserve based on the integrity and reliability of online voting. However, blockchain is one of the emerging technologies with strong cryptographic foundations enabling applications to leverage these abilities to achieve resilient security solutions. The goal of this proposal is to implement blockchain technology in online voting system. The main objective of this project was to implement the blockchain technology in online voting system with Ethereum and MetaMask. To achieve this main objective, there were three sub objectives need to be address. Firstly, to identify suitable blockchain technology to be implemented in online voting system. Secondly, to develop an online voting system that implemented the chosen blockchain technology and lastly, to submit the vote by Ethereum using MetaMask wallet. When an election is selected, the vote is requested to be submitted then the request is broadcast to a peer-peer network of computers or "nodes". The network is validated the vote using algorithms. After verification, a vote is combined with others to create a "block" of data for the ledger. The new block is added to the blockchain in a way that cannot be changed. As a result, a vote is completed permanently, and the result can be trustworthy to achieve the integrity and reliability with the blockchain technology.

Keywords: Blockchain, Cryptographic, Election, MetaMask, Peer-Peer Network, Voting system