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E-Voting System using Smart Contracts and Blockchain

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ABSTRACT: As the area of use for blockchain technology is rapidly spreading, a digitized democratic voting system might just be the next revolutionary step towards a transparent and trusted electoral system.
This project investigates the possibility of a decentralized voting system and explores the possible challenges regarding privacy, correctness and integrity. Using the Ethereum blockchain and various smart contracts, a prototype was implemented as a proof of concept. The project also contains studies regarding the social- and environmental aspects of the prototype and electronic voting in general. The study concretizes what needs to be improved in order to use a voting system built on blockchain technology. This project also concludes that there is still work to be done in order to use this technology in crucial fields such as voting. And suggests using a private blockchain in order to implement the specified voting system.

KEYWORDS: Blockchain, Smart contracts , Decentralized systems , Digital wallets.

I. INTRODUCTION

The most fundamental aspect of a democracy is the availability for citizens to not only share ideas, opinions, and beliefs but to make their individual voices heard by deciding the collective future by vote. However, for the voting to proceed as intended, there needs to be a transparent and secure process where also the voters knowingly keep their privacy. The challenge is to find a solution that prevents unlawful manipulation of the collected data and achieve desired transparency in the security measures, taken to protect voter privacy and the collected results and therefore democracy itself.

II. PROPOSED METHODOLOGY OF EVOTING

In this current proposed system we shall present how the blockchain technology can overcome, improve and make the e-voting system efficient than ever. Since each country has different laws and implementations, proposing a definitive structure is almost impossible.

1.Admin module:

In this module, admin can add new candidatedetails and can view results and declare the winner.

2. Add candidate module:
In this module , it ensures admin to add a candidate based on the ganache address.

3. getCandidate module:
In this module itretrieves the list of added candidates

4. onlyOnce module:
Ensures that no voter votes with the same address in this module .

5. getCandidateVotes module :

Displays the number of votes for each candidate in this module.

6. getVoteResult module :
In this module ,it displays the vote result based on no of votes

III. DEVELOPING THE BLOCK CHAIN USING SMART CONTRACTS

1.   Ethereum Blockchain :

Blockchains are essentially decentralized, distributed, public ledgers.Each block characteristically contains a cryptographic hash of the previous block to assure there is a standard order to the blocks. This links the blocks and builds symbolically a chain and gives the blockchain two essential properties; a modification of the earlier block will invalidate all the previous, and anyone can verify the whole chain given the first genesis block.
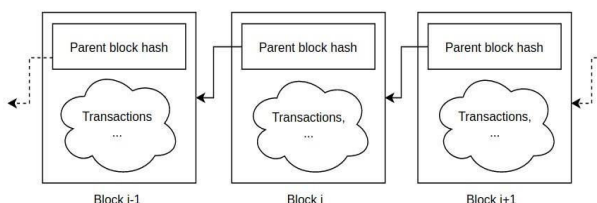
2.   Smart contracts:

A device which implements the conditions of an agreement. Essentially, a user inputs a given amount of currency which yields a specific output; contrary, a user does not input the given amount which yields no output . This is the core idea behind Ethereum. It is basically a software containing rules for negotiating the terms of the contract which govern the behavior of accounts within the Ethereum state. Since the smart contract of Ethereum is implemented on the blockchain, the contract is visible to all the users.

3.   Digital wallets[Metamask]:

An Ethereum Wallet in the Browser which is an extension for accessing Ethereum enabled distributed applications, or decentralized app in your browser! The extension injects the Ethereum web3 API into every website's javascript context, so that dapps can read from the blockchain.
MetaMask also lets the user create and manage their own identities (via private keys, local client wallet and hardware wallets like Trezor™), so when a Dapp wants to perform a transaction and write to the blockchain, the user gets a secure interface to review the transaction, before approving or rejecting it.

IV. SYSTEM OVERVIEW

We consider existing electronic voting systems, blockchain-based and nonblockchain-based, and evaluate their respective feasibility for implementing a national e-voting system . Based on this, we devised a blockchain-based electronic voting system, optimizing for the requirements and considerations identified. In the following subsection, we start by identifying the roles and component for implementing an e-voting smart contract then, we evaluate different blockchain frameworks that can be used to realize and deploy the election smart contracts.
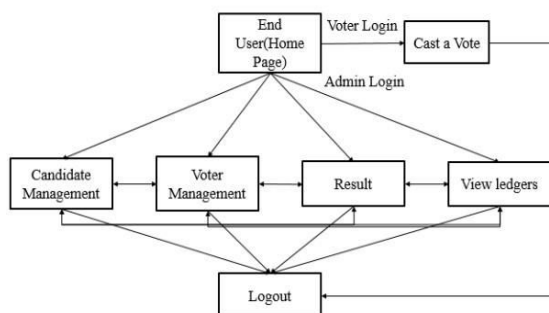.

Fig6: System design

V. CONCLUSION

In this project, we propose that the blockchain is going to be in public verifiable and distributed during a manner that nobody are going to be able to corrupt it. The idea of adapting digital selection systems to create the general public electoral method cheaper, quicker and easier, could be a compelling one in trendy society. Creating the electoral method low cost and fast, normalizes it within the eyes of the voters, removes an explicit power barrier between the elector and therefore the functionary and puts an explicit quantity of pressure on the functionary. It additionally opens the door for a additional direct sort of democracy, permitting voters to precise their can on individual bills and propositions.

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