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Supporting Student Innovation Through Private Decentralized System

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Abstract: *Student Innovation is an integral part of not only the student's overall growth but also of society. Clubs and communities that are located in universities play a vital role in bringing up the like minds together and collectively solving problems. But oftentimes, multiple opinions and choices can lead to conflicts between the members of these clubs that negatively affect their productivity. For this, we intend to provide communities with an interface where proposals from the club members are posted, reviewed by the faculty in charge, and allows the club members to vote anonymously on the proposal they agree with, thus decreasing the possibility of conflict occurrence. This voting system will be powered by a Blockchain system in the Backend, and a simple web interface in the front end to also accommodate non-technical users*

Key Word*: Blockchain. Truffle IDE, Decentralized Network, Solidity, Metamask, EVM.*

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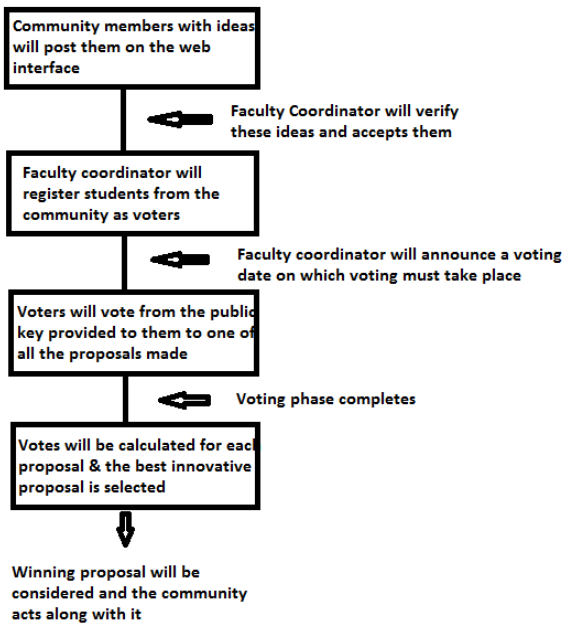
I. Introduction

In today's world, the difference in opinions exists in almost every part of our life. A voting system is believed to be one of the most transparent ways to settle any differences in opinions of people. But how well do we trust the general voting process? For this, we aspire to develop an application with blockchain at its backend and a web interface as its frontend through which students can anonymously and transparently vote on the best proposal made in that club. This provides a Tamper-proof system for proper voting in an organization. It will also reduce the chances of dispute occurrence, the difference in opinions, and disbelief over the voting process.

II. Methodology



Voter Web Interface

In the web interface the user can register themselves by generating a private key and public key for each of the users. The user can Upload their ideas or proposals and also validate them. They can also view the poll results here. ***User Login/Authentication***

For both the users (Chairperson and student) metamask will be able to act as a medium of Authenticator. Since it is impossible to vote or register users without a wallet, metamask account integration is necessary. Therefore metamask will authenticate users so that they can participate in the electing process.

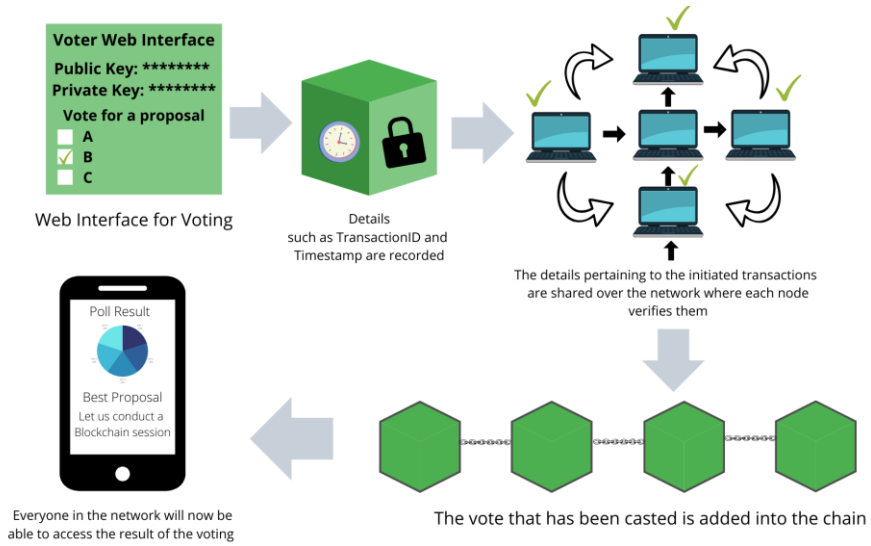
Validating data

Validating data is checking for the timestamp of data entered and also the transaction Id. Here validation of user and data is done with the help of automated minors.

Converting into blocks

After the data gets validated the data is stored in the blocks according to the timestamp of each user. All the blocks in the system are connected with each other in the blockchain through the private and public keys.

Architecture



III. Result

The below interface is what the voters can see when the admin initiates the smart contract. It consists of the proposals, public key of the user and register option.

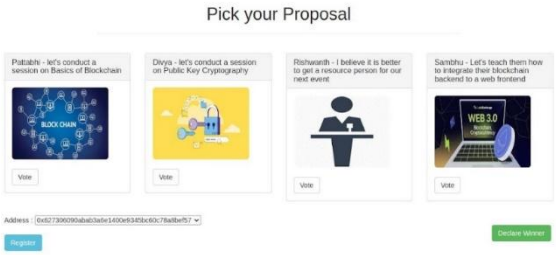


Fig. User Interface for voting process

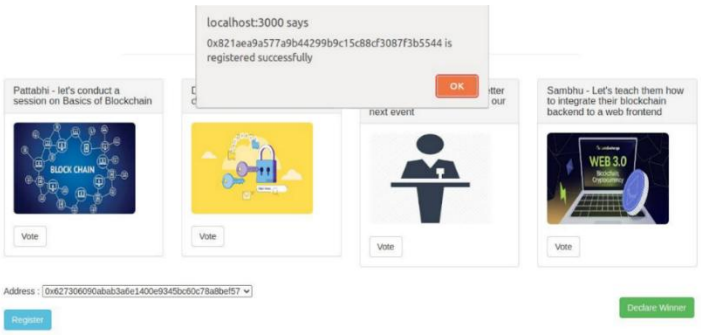


Fig. Above image shows the successful registration of the voter by admin

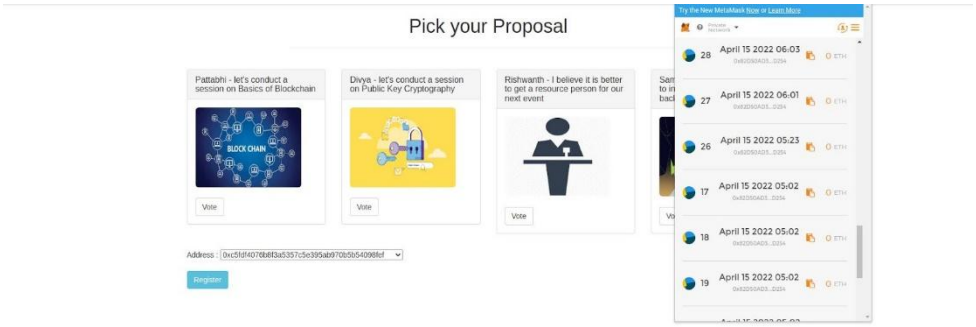


Fig. The above image shows integration of metamask to our blockchain application

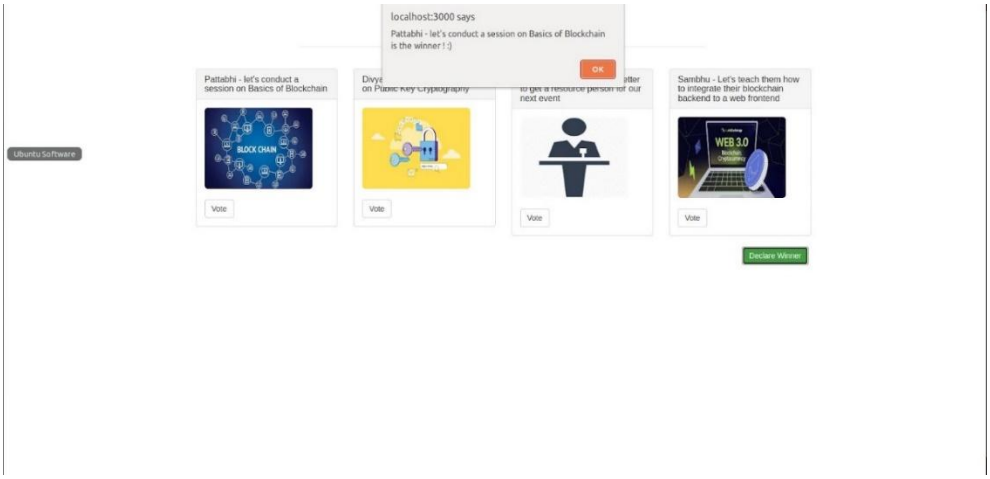


Fig. The Above picture shows the results of sample voting process

IV. Discussion

Blockchain

The first documented design of blockchain was in 2008, and the first open-source implementation was deployed in 2009 as an integral element of Bitcoin, the first decentralized digital currency system to distribute bitcoins through the open-source release of the Bitcoin peer to peer software. Both were put forward by an anonymous entity, known as Satoshi Nakamoto.

Defining Blockchain

The blockchain organizes the list of transactions into a continuous hierarchical chain of blocks, with every block protected cryptographically to ensure the integrity of transactions. Whenever new blocks arrive, they can only be added to the global chain after the successful completion of the decentralized consensus procedure. A blockchain serves as a secure, decentralized and distributed database of transaction logs. For example, consider the following transaction run on a bitcoin network. A wants to send bitcoins to B The transaction is mined and the block is created The block is then broadcasted to all other nodes in the network Then the nodes in the network validate the transaction The block can be added to the global chain, which provides a transparent and tamper-resistant record of transactions The bitcoins are deducted from A's wallet and appended in the wallet of B In a Bitcoin network If client A wants to send some bitcoins to client B, It will create a bitcoin transaction using client A. The transaction has to be approved by miners before it gets committed by the network. To initiate the mining process, the transaction is broadcasted to every node in the network. Those nodes that are miners will collect transactions into a block, verify transactions in the block, and broadcast the block and its verification using a consensus protocol to get approval 14 from the network. When other nodes verify that all transactions contained in the block are valid, the block can be added to the blockchain.

V. Conclusion

The proposed blockchain voting system has great potential to decrease organizational costs, increase voter turnout, improve trust among peers, and improve trust in the voting system. It reduces differences in opinions and potential conflicts. Apart from these benefits, it also eliminates the need to print ballot papers or open polling stations-voters can vote from wherever there is an Internet connection. This helps in faster reporting and publishing of the results.

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