

PREVENTION OF VOTER FRAUD USING BLOCKCHAIN TECHNOLOGY

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Abstract- Block chain's database of transactions is incorruptible, and each record is easily verifiable. E-voting system works as a step towards creating transparent environment for in real time without having permission to edit the same after elections get over. The working of block chains will ensure the votes are maintained and the systems are not rigged by any third party. The secure electronic voting system uses block chain which is a decentralized peer-to-peer transaction ledger. These votes will be counted and the result will then be announced. The result will be announced without knowing who voted for which party.

I. INTRODUCTION

Voting is a way for a group, along with an assembly or an electorate, so one can make a collective choice or explicit an opinion generally following discussions, debates or election campaigns. Democracies elect holders of excessive workplace with the aid of using balloting. Residents of an area represented by an elected reliable are called "constituents", and those constituents who cast a ballot for his or her selected candidate are called "voters". There are distinctive structures for accumulating votes, at the same time as a few of the structures utilized in choice-making also can be used as electoral systems, any which cater for proportional illustration can only be utilized in elections. In smaller organizations, voting can occur in distinctive ways. Formally through ballot to elect others for instance inside a workplace, to elect participants of political institutions or to pick roles for others. Informally balloting could occur as a spoken settlement or as a verbal gesture like a raised hand or electronically.

Electronic voting is regularly seen as a tool for making the electoral system more efficient and for growing believe in its management. Properly implemented, e-voting solutions can boom the security of the ballot, accelerate the processing of outcomes and make voting easier. However, the demanding situations are considerable. If not cautiously deliberate and designed, e-voting can undermine the confidence in the complete electoral system. This coverage paper outlines contextual elements which could have an effect on the fulfillment of e-voting solutions and highlights the significance of taking these completely under consideration before selecting to introduce new voting technologies.

II. PROBLEM STATEMENT

Manual vote casting machine has been deployed for decades in our country. However, in lots of elements of our country human beings can't attend the vote casting due to the fact of numerous reasons. To illustrate, every so often humans might not be of their very own registration place and because of this fact, they can't satisfy their vote casting duties. In order to resolve these problems, there's a want of online election vote casting machine with this maintaining in thoughts that EVM votes tampering troubles also are encountered, so this online election machine will be incorporated with Blockchain Technology to make it tamper proof.

III. LITERATURE REVIEW

1. Adida B., Helios (2008). "Web-based open- audit voting.", in Proceedings of the 17th Conference on Security Symposium, ser. SS'08. Berkeley, CA, USA: USENIX Association, 2008. This paper proposes associated justify an adequate security model and criteria to judge comprehensibility. It additionally describes a web ballot theme, pretty graspable Democracy, show that it satisfies the adequate security model which it's a lot of graspable than Pretty smart Democracy, presently the sole theme that additionally satisfies the planned security model.
2. Chaum, D., Essex, A., Carback, R., Clark, J., Popoveniuc, S., Sherman, A. and Vora, P. (2008). "Scantegrity: End-to-end voter-verifiable optical- scan voting.", IEEE Security Privacy, vol. 6, no. 3, pp. 40-46, May 2008. This paper describes Scantegrity that minimally impacts election procedures and is the first independent E2E verification mechanism that preserves optical scan as the underlying voting system and doesn't interfere with a manual recount.
3. Dalia, K., Ben, R., Peter Y. A, and Feng, H. (2012). "A fair and robust voting system by broadcast.", 5th International Conference on E- voting, 2012. This paper proposes a recovery round to enable the election result to be announced if voters abort and also added a commitment round to ensure fairness. In addition, it also provided a computational security proof of ballot secrecy.
4. Bell, S., Benaloh, J., Byrne, M. D., Debeauvoir, D., Eakin, B., Kortum, P., McBurnett, N., Pereira, O., Stark, P. B., Wallach,

D. S., Fisher, G., Montoya, J., Parker, M. and Winn, M. (2013). "Star-vote: A secure, transparent, auditable, and reliable voting system.", in 2013 Electronic Voting Technology Workshop/Workshop on Trustworthy Elections (EVT/WOTE 13). Washington, D.C.: USENIX Association, 2013. This paper describes the STAR-Vote design, that may preferably be the next-generation electoral system for Travis County and maybe elsewhere.

IV. SYSTEM ANALYSIS

A. Identification of Need

Identification of need is a procedure of figuring out what and how an end-user might anticipate a product to carry out after the deployment at production level. There're additionally nontechnical desires of an end-user or a business client which displays the users' perception of the product and now no longer the real technical workaround, however they're carefully associated with the technical want at times. By imposing a desires identity system, the organization facilitates to make sure the right allocation of belongings to distinct project inside the organization.

- **Identifying Problems**

Identifying capability issues before the start of a project can store the organization great quantities of time and money. Problem evaluation is one of the most critical stages of assignment making plans because this level enables to guide all next evaluation and decision-making. If the project does not develop beyond this level with answers that the organization can implement, the project must not move ahead in its contemporary form.

- **Observations**

The needs for a project are diagnosed after the organization makes observations about the project. Observations are frequently subjective and therefore a person with knowledge about the proposed project must assist to make observations. A proper observer can discover the needs of the project through answering key questions on the project. If the observations think about the challenge itself and the final results of the project, the observations must meet all of the needs of the project.

- **Gathering Information**

Observation and gathering facts represent two techniques. Observations highlight what's needed. On the opposite hand, gathering facts

highlights the techniques had to execute the proposed project. Both observations and the actual gathering of facts must consist of remarks from the institution that in the end will enjoy the finished project.

- **Objectives and Opportunities**

Once the organization has analyzed the desires and diagnosed the objectives, the organization desires to allocate budget to capitalize the project. By efficiently figuring out the desires, an organization can start to allocate assets to pay for the project. Additionally, a business desires to consider the capacity future cash flow of the project. This lets in the business to research potential cost savings to reduce fees and maximize the performance of the project.

- ❖ **Existing System**

In India, earlier than 2004 there has been a paper-based totally balloting system. This is known as Ballot Paper system. Voters needed to visit polling sales space and solid their vote through marking on seal in the front of the image of a candidate for which they desired to solid their votes on ballot paper. Results have been introduced through counting the votes. The most vote gainer was declared as winner. India has populace more than 120 crores, so the ballot paper balloting isn't always plenty reliable, time consuming and really hard to count the vote and there also are issues like replacement of ballot paper containers with duplicate, damage of ballot paper, marking stamp seal for multiple candidates consequently there's a sturdy need to overcome those issues. In order to conquer those issues Electronic Voting Machines were introduced. EVM's are internationally called DRE's (Direct recording Electronic). EVM's are universally utilized in India considering the fact that the overall elections of 2004, whilst ballots had been absolutely out of trend. They were utilized in all of the meeting polls and popular elections of 2009. By the use of EVM's, Votes are effectively recorded and there's no trouble in counting, scalability, accuracy, rapid assertion of results and robustness of system. Main Problem lies in authentication, the person that is vote casting might not be the valid man or woman. Other issues like taking pictures of sales space through political parties, casting of votes through underage people and fraud vote casting can also additionally occur. A man or woman is supplied with the voter id card as a proof of identity, issued by Indian Government. Lots of issues are found in voter id card like name misprinting, missing of name, no clean image on photo id card.

- ❖ **Proposed System**

Several research have been done on the usage of computer technology to enhance elections. These researches inform about the risks of adopting

electronic vote casting system, due to the software challenges, insider threats, community vulnerabilities, and the demanding situations of auditing.

We've proposed to layout the present online vote casting device that is included with the Blockchain technology. The proposed device has the subsequent blessings compared to the present device:

- Users' can vote from everywhere in the international till he own a citizenship of the country.
- The vote casting is saved in the Blockchain which makes it tamper proof.
- As there's no standing in queue for casting vote it'll keep numerous times and lessen the workload.

B. Project Planning

Project Planning is the most crucial issue in growing an undertaking. Its units out the phases, activities and task needed to deliver a project. Initially, the project scope is described and an appropriate strategy for finishing the project is determined. Following this step, the intervals for the diverse tasks necessary to finish the work are indexed and grouped into a piece breakdown structure. Project planning is frequently used to arrange unique regions of a project, consisting of project plans, workloads and the control of groups and individuals. A project plan is a version of the system that the project group intends to follow to understand the project objectives. It brings together some of the crucial elements of this system consisting of its scope, timing and related risks.

C. Project Scheduling

It requires us to comply with a few cautiously laid-out steps, in order, for the agenda to take shape. It is a prepared approach of offering in formation on whilst activities need to be started, how long activities are deliberate to be completed.

There are fundamental principles for project scheduling, such as follows:

- Defined responsibilities

Every challenge that is scheduled is assigned to a particular crew member.

- Defined outcomes

Every challenge that is scheduled should have a described final result for software projects such as a work product.

- Define milestones

Every challenge or organization of responsibilities should be related to a project milestone. A milestone is performed whilst one or extra work products has been reviewed after which approved by the team leader.

V. DATA MODELS & DESCRIPTIONS

- Flow Chart

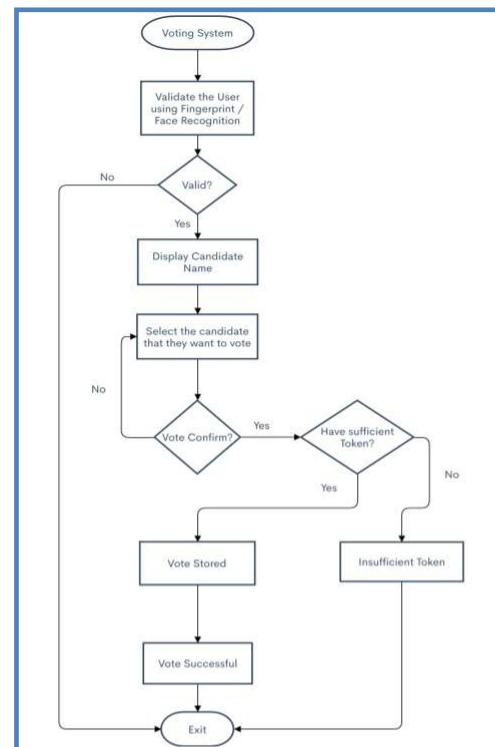


Figure 1: Flowchart

- Entity Relationship Diagram

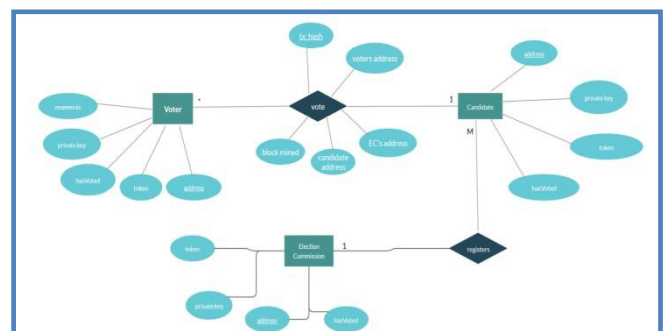


Figure 2: ER Diagram

VI. SOFTWARE REQUIREMENTS

Software	Type	Version
Ganache	Ethereum Blockchain Server	2.4.0
Metamask	Ethereum Wallet	7.7.9
Truffle	Development framework for ETH	5.1.31
Node	JavaScript Runtime	12.17.0
Visual Studio Code	Integrated development environment	1.46
Remix	Solidity's IDE	0.10.1
Windows 10	Operating System	1809

Figure 3: Software Requirements

VII. SYSTEM DESIGN

Design Goals

Design goals are vital properties of the device to be optimized, and which might also additionally have an effect on the general layout of the device. There is a fine line among device layout and requirements. Requirements encompass precise values that ought to be met so as for the product to be proper to the client, while layout desires are houses that the designers attempt to make "as precise as possible", without precise standards for acceptability.

Modularization Details

The project has been divided into many modules wherein for each functionality we've particular modules. Any software incorporates of many systems which includes numerous sub-systems and those sub-systems in addition consists of their sub- systems. So, designing a whole device in a single go comprising of each and every required functionality is a busy work and the method could have many mistakes due to its widespread size.

Effective modular design may be completed if the partitioned modules are separately solvable, modifiable in addition to compliable. Following are the project modules:

- (i) Election Commission: In this module, an entity named Election Commission will be accountable to setup the smart contract and sign-up candidates, parties and start off an election.
- (ii) Election Test: This is the module to check our smart contract in which we use Mocha Framework to carry out unit check on our application.
- (iii) Voter Module: In this module, citizens who've been supplied with the personal ETH wallet will import onto the voting portal using the Metamask extension and cast their vote.

VIII. CONCLUSION

Democracies rely on trusted elections and residents ought to trust the election machine for a sturdy democracy. However conventional paper-primarily based totally elections do now no longer offer trustworthiness. The concept of adapting virtual voting structures to make the general public electoral system cheaper, quicker and easier, is a compelling one in present day society. Making the electoral system reasonably-priced and quick, normalizes it in the eyes of the electorate, gets rid of a sure strength barrier among the voter and the elected official and places a sure quantity of stress at the elected legit. It additionally opens the door for a extra direct form of democracy, permitting electorate to specific their will on man or woman payments and propositions. This project has been evolved to a blockchain-based digital voting machine that makes use of smart contracts to allow stable and cost-green election while making certain voters privacy. It outlines the systems architecture, the design, and a security analysis of the machine.

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- [2] Ayed, Ahmed Ben. "A conceptual secure blockchain-based electronic voting system." International Journal of Network Security & Its Applications 9.3 (2017): 01-09.
- [3] Hanifatunnisa, Rifa, and Budi Rahardjo. "Blockchain based e-voting recording system design." 2017 11th International Conference on Telecommunication Systems Services and Applications (TSSA). IEEE, 2017.
- [4] Yu, Bin, et al. "Platform-independent secure blockchain-based voting system." International Conference on Information Security. Springer, Cham, 2018.

User Interface Design:

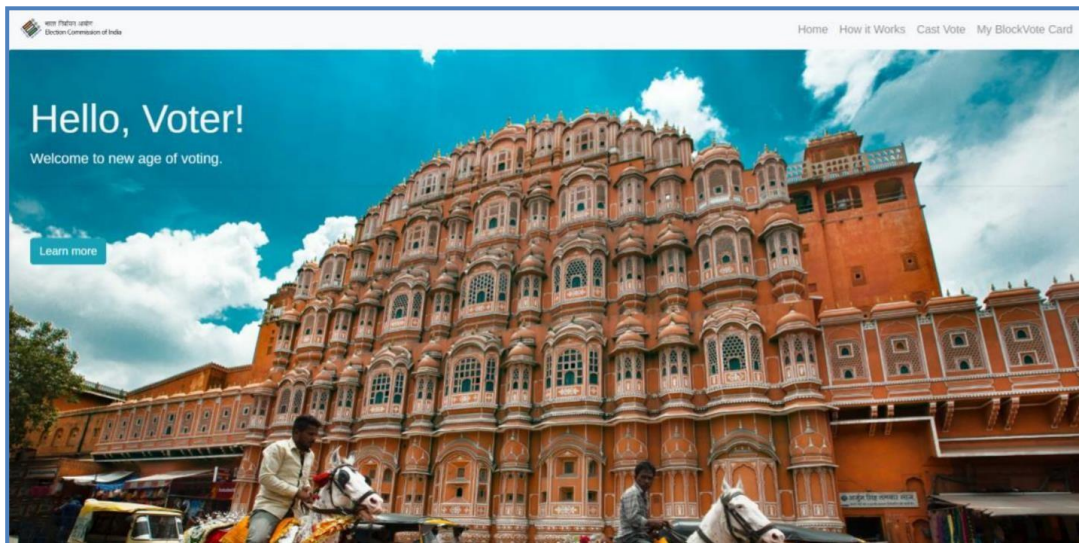


Figure 4: Homepage

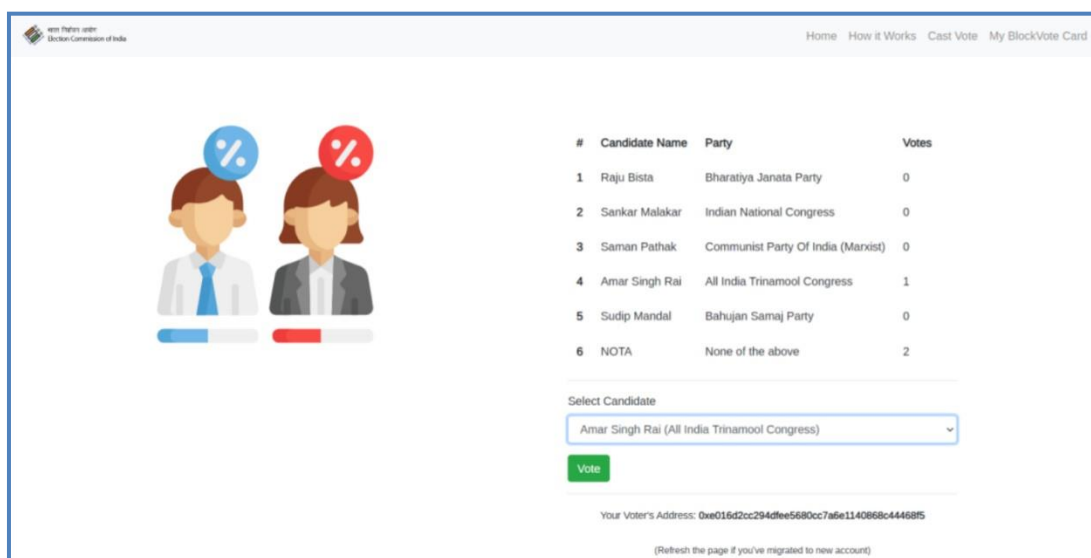


Figure 5: Casting the Vote

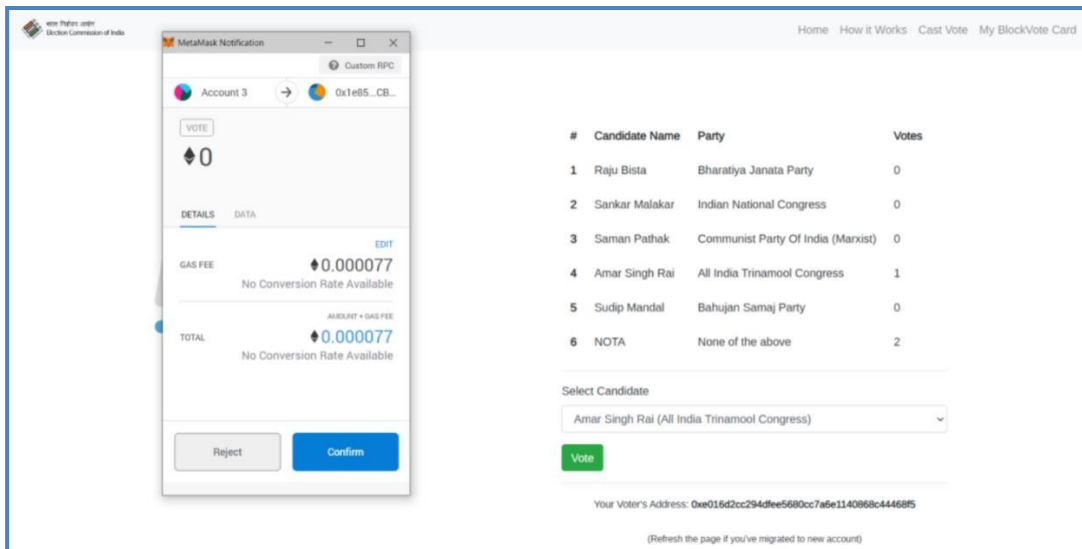


Figure 6: Confirming the transaction to cast vote

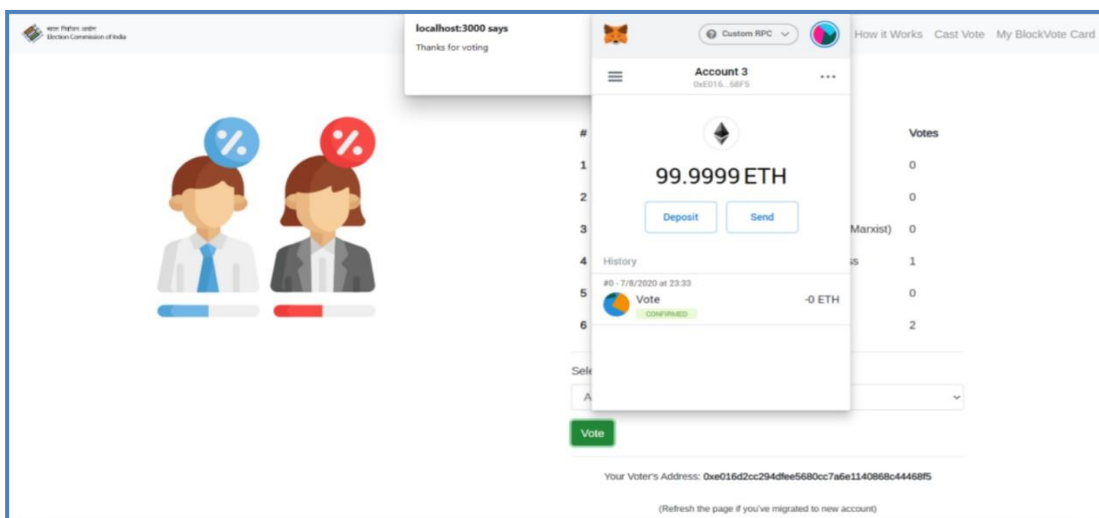


Figure 7: Transaction confirmed by miners

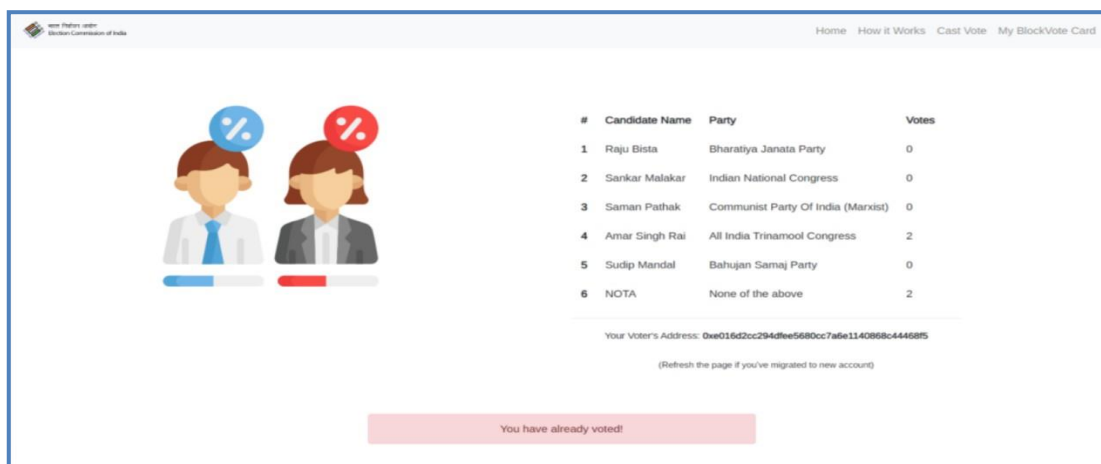


Figure 8: Already Voted Prompt



Figure 9: Customized BlockVote Card

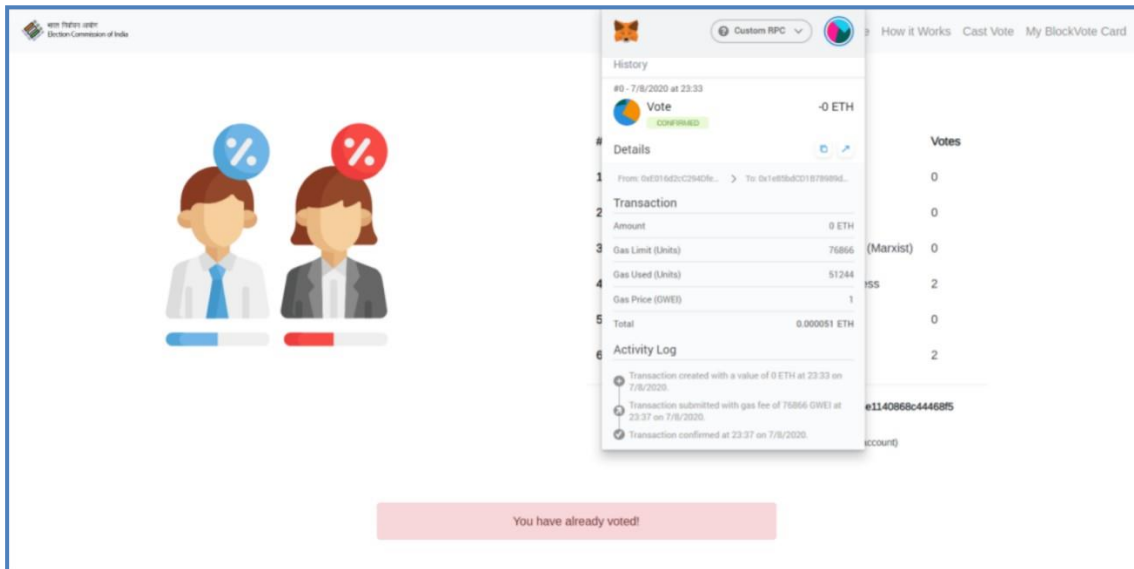


Figure 10: Transaction Confirmed Log