Online Voting System for Organizations

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Abstract - *This paper describes a voting system that is completely automated, unbiased and online for making the voting process easy, more secure and reducing the processing time. The project is divided mainly into three sections, first one is organization registration phase, where the organization that wants to conduct the voting for their organization will be registered by the admin, the second one is voter registration phase of voter done by the organizations and the third one is the actual voting phase where live voting will be conducted. In the organization registration phase, the details of the organization will be registered in a database and a unique ID will be generated for each registered organization. For each organization registered, an environment will be provided to them where they can add the voters, voting details and update the details. In the voting console, each voter will be allowed to access the voting page only after proper authorization. A user will be allowed to vote for a single time only. The choice of voter will be recorded and the count will be incremented respectively.*

*Key Words***:** Authentication, Security, User Interface, Voting System, Website

1. INTRODUCTION

Voting plays a vital role in knowing the opinion about an issue or selecting a representative from a group of people. To provide security, reliability, efficiency, better scalability, lower cost, time minimization, and more convenient, voting is currently shifting from manual paper-based process to automated electronic processes. The term 'online voting' refers to using electronic means in voting and ensures reliability, transparency, and security. Now a day, a wide range of applications of voting includes its use in reality student union elections, passing of legislation in parliament and many more. There are some problems associated with the ancient voting process which we intend to solve, which are mentioned below:

A. *Illegal Voting*
   Illegal voting or Rigging is a common malpractice in the voting process where the supporter of a particular candidate illegally manages to cast votes of genuine voters and deprive them of their voting rights in order to get the results in their favour. Our system will stop this by multi-way authentication such that no forgery will be permitted.

B. *Privacy*
   The anonymity of voters will be preserved and the votes casted will not be linked to the voter and there will be no way of finding the choices selected by the voter.

C. *Verifiability*
   The system will be able to recheck the results in case there is a requirement of rechecking the results.

D. *Availability*
   The system ensures full availability to the voters on the polling time.

2. RELATED WORK

There are 4 phases in this system which are designed in a simple way that any individual can easily understand and use them and they are-

2.1 ORGANIZATION REGISTRATION PHASE

Most of the organizations conduct internal voting for choosing their representatives. This will be the first step for any organization for conducting voting. In this phase, an individual organization will register their details and after complete physical verification by the admin and approval, they will receive their individual dashboards where they can manage the voting details, here the organization can add voters, voting, candidates and update or delete them.

2.2 VOTER REGISTRATION PHASE

This phase is the backbone of the voting system. The complete registration of the voting process is done in this phase. The dashboard is designed in a manner that the organization can easily register the voters, voting details and candidates for different posts. In this phase, the organization will first add its employees which will be the voters and are uniquely identified by their employee number and will be given access to the live voting area when the voting will begin, and then it will be followed by addition of voting details which will include details like start date, time and end date, time, afterward addition of different posts and their candidates will be done.

2.3 VOTING PHASE

This is the phase where voting will happen. This page can only be accessed when the voting is live i.e. after the start time and before the end time specified by the organization. Any voter with proper authentication will be able to access this area and will be given a single chance to vote for his desired candidate and his access to this page will be locked after completion of his voting.

2.4 RESULT DECLARATION PHASE

This is the final phase of voting. After the voting is completed, the organization will publish the result here to be seen by its voters.

3. EXPERIMENTAL RESULTS

The proposed system is implemented and verified over the Local area network. In our experiment, we have registered an organization named ABC. First of admin has registered the organization and the details are stored over the server database. Then ABC Organization has registered its voters which are uniquely identified by their employee number. Then we have created one voting and then added Posts for the voting and candidates for each Post. After completion of this step, we tested the live voting phase for 100 users and manually verified the results with the automated system. And finally, the result phase was generated.

4. SYSTEM REQUIREMENTS

- **SOFTWARE REQUIREMENTS:**

    i.   MongoDB DBMS- MongoDB is a cross-platform document-oriented database management system. It allows combination, extraction, manipulation, and organization of the data in our database. It is platform-independent and can be used with all mainframes like Windows Linux etc. It is fast in performance, stable and provides different servers according to requirements.
    ii. Visual Studio Code- Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux, and macOS. Visual Studio provides an application development environment that can be used with a variety of programming languages including Java, JavaScript, Go, Node.js, etc.
    iii. Testing- HEROKU & mLab.

- **HARDWARE REQUIREMENTS:**

    i.   Microsoft Windows XP Professional /Windows 7 Professional /Windows 10:
    ii. Processor: 800MHz Intel Pentium III or equivalent
    iii. Memory: 512 MB
    iv. Disk space: 750 MB of free disk space

5. CONCLUSIONS

This online voting system will manage the information of the organizations and will manage the complete voting process. By using the unique ID's we implemented the system which will increase the voter's privacy. The employee number will provide a unique identification to each voter so the breach of privacy is get avoided. In future scope, we wish to implement the system for the election system in India. We expect that the implementation of the online voting system will result in an increase in voting percentages.

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