Implementation of authenticated & Secure Online Voting Web Application System

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Abstract: **Consider the conventional voting process first. Voting booths need to be set up in numerous locations around a city or town, which takes a lot of room and labour. On election day, there must be a high level of security. Voter must go to the location where the voting booths are set up. Voters occasionally have to spend a lot of time waiting in line. Once more, it takes a lot of people to volunteer and help voters at the polls. On a voting machine, voting is done manually. The counting of votes is done manually. The results are not displayed for a few days after that. As we can see, the traditional voting system requires a lot of labour, effort, and time to complete.**

We will now create an application named the Online Voting System to address the aforementioned issues. Nowadays, practically everything can be done online, as we are all aware. such as payments, bookings, teaching, data sharing, admissions, and job searches. And the internet is used for a plethora of other tasks. We will therefore advance the current voting mechanism by using the easy access and use of the internet. We are planning to create a highly secure online platform so that the same procedure may be completed quickly and affordably without wasting time, money, or energy.

Index Terms: Voter, Group, Candidate, Web application, Online, Election, Voting, Results, Mobile.

I. INTRODUCTION

This project is set up to allow for the digital conduct of elections. Almost everything may now be done online, including payments, bookings, teaching, data sharing, admissions, and job searches, among other things. Also, a lot of other tasks are being carried out online. We will therefore progress the current voting mechanism due to the ease of access to and use of the internet. The goal of this project is to reduce the amount of time, money, and resources spent by the election committee, participants, and the process itself. taking notes for their studies and, in the event that staff is not present, getting their questions answered online. Main responsibility of this project is to give simple and easy access to election process for both election committee as well as participants. Every step which is required for voting can be performed as it is on this system. Just the difference is that, traditionally, election committee has to setup a venue for participants to cast votes and participants has to visit that venue physically, but here, no one needs to move anywhere. Everything can be performed online from the comfort of home. This application reduces time, energy, affords, and risk of duplicate voting in the overall election process. Also, this project focuses on a system that uses login credentials to unlock the voting system just like in your phone, and it also uses high security email verification method so that no one can vote for someone else, and this system does not require physical presence to cast a vote as the traditional system does.

The process is timeconsuming as well. The entirely web-based system enables people to cast their votes from anywhere in the world.

II. RELATED WORKS

India being a democracy, that too world is largest, still conducts its elections using either Secret Ballet Voting or Electronic Voting Machines (EVM) both of which involve high costs, manual labor and are inefficient. So, the system must be optimized to be made efficient which would not leave room for unwanted means of voting. The current system requires the physical presence of every individual which is inconvenient to many people.

Electronic Voting Machines (EVM) and Hidden Ballet Voting are voting methods that take time and need labour. Voting rights are available to those who are over 18. Voter identification and other information are manually verified, and only after approval is the voter allowed to cast a ballot.

Wherever the election is taking place, the EVMs must be examined and transported to various locations across the nation. It also requires manual security and power. Ballet voting is conducted totally manually, and the counting of the ballots cast in EVMs likewise requires labour and takes a whole day. So, there are numerous ways for the voting and counting to be tainted. As a result, the current system might be greatly improved, made more accessible, and made more effective.

Voting booths need to be set up in numerous locations around a city or town, which takes a lot of room and labour. On election day, there must be a high level of security. Voter must go to the location where the voting booths are set up. Voters occasionally have to spend a lot of time waiting in line. Once more, it takes a lot of people to volunteer and help voters at the polls. 14 On a voting machine, voting is done manually. The counting of votes is done manually. The results are not displayed for a few days after that. As we can see, the traditional voting system requires a lot of labour, effort, and time to complete.

III. PROPOSED METHODOLOGY

The system we are putting out is a remedy that takes care of all the issues raised above. Nowadays, practically everything can be done online, as we are all aware. such as payments, bookings, teaching, data sharing, admissions, and job searches. And the internet is used for a plethora of other tasks. We will therefore advance the current voting mechanism by using the easy access and use of the internet. We are planning to create a highly secure online platform so that the same procedure may be completed quickly and affordably without wasting time, effort, or money.
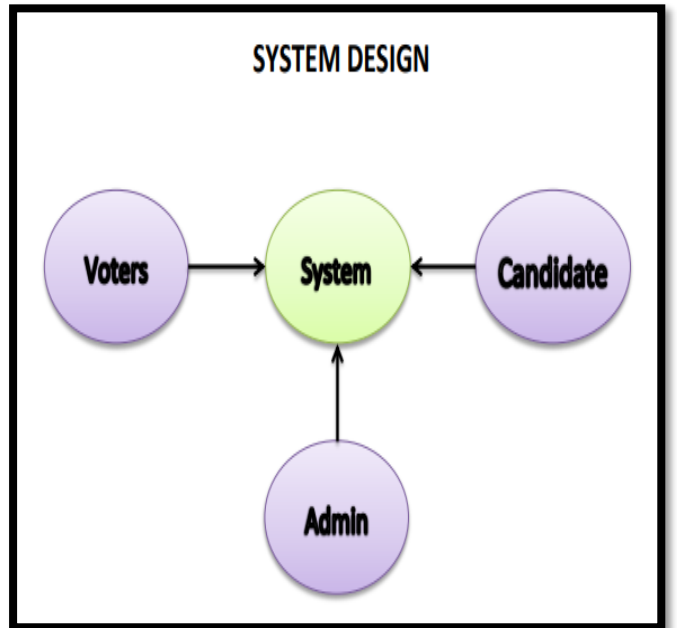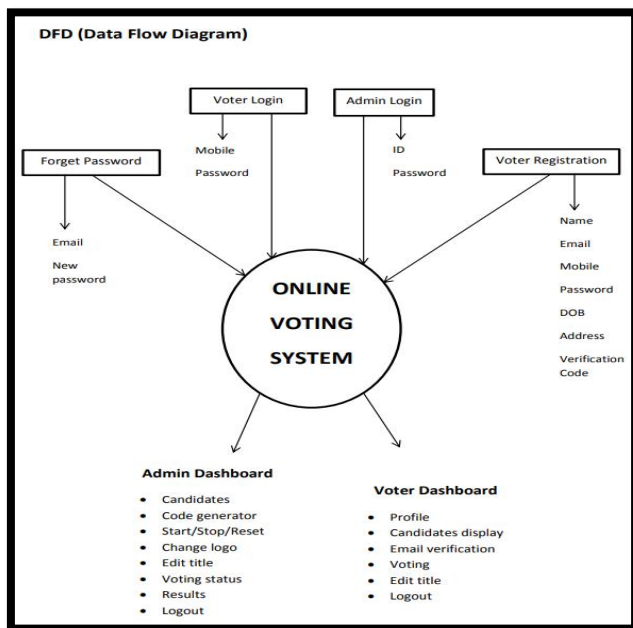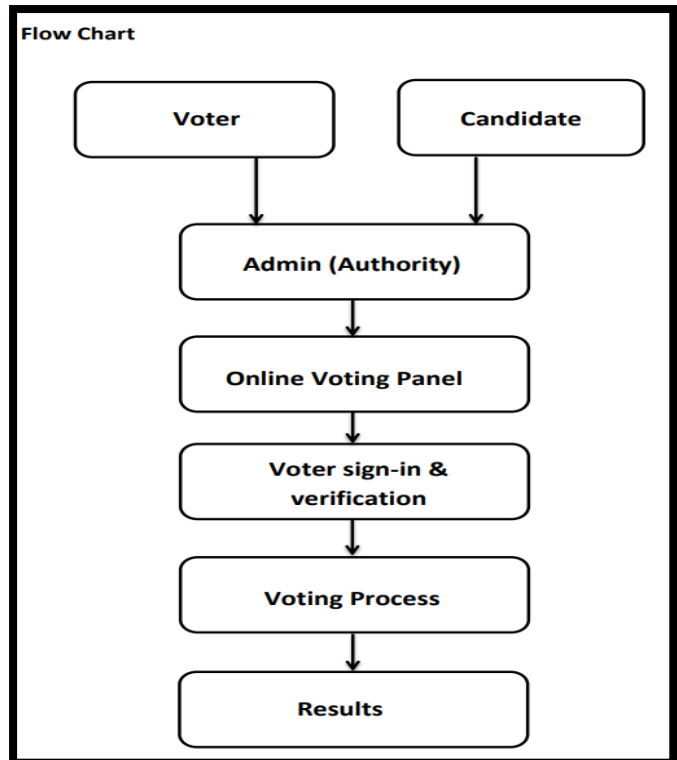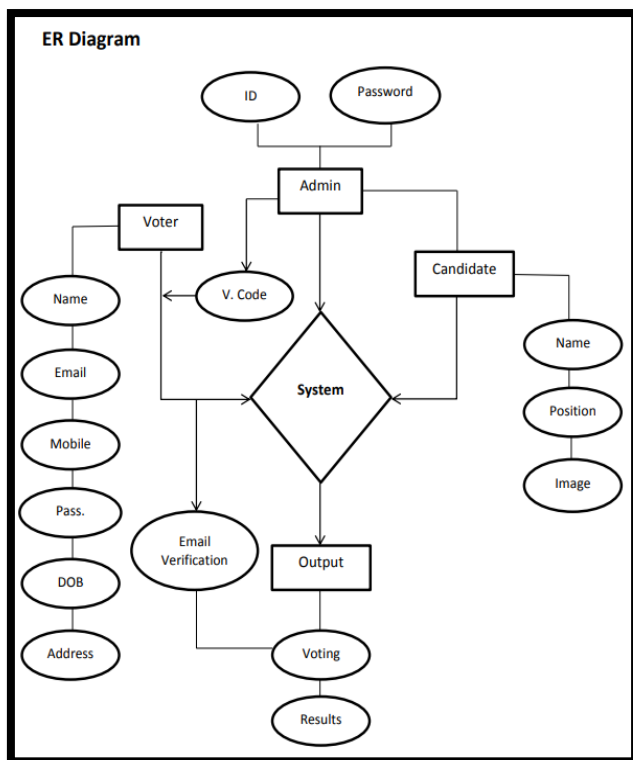
Fig 1. Proposed system.

IV.1 Visual Studio Code

Microsoft created the integrated development environment known as Visual Studio Code for Windows, Linux, and macOS. Debugging support, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git are among the features. The theme, keyboard shortcuts, options, and 17 extensions that offer further functionality can all be changed by users. While Microsoft's releases are private freeware, the majority of Visual Studio Code's source code has been made available on GitHub under the permissive MIT License. Visual Studio Code was rated as the most used development environment tool in the Stack Overflow 2021 Developer Survey, with 70% of 82,000 respondents stating that they use it. On April 29, 2015, Microsoft made its initial announcement of Visual Studio Code at the 2015 Build conference. Soon later, a preview build was made available. The MIT License was applied to the release of Visual Studio Code's source code

on November 18, 2015, and it was made accessible on GitHub. Support for extensions was also declared. The public preview phase of Visual Studio Code ended on April 14, 2016, and it was made available online.

IV.2 XAMPP

The whole name of XAMPP is Cross-platform, Apache server, MariaDB, PHP, and Perl are all represented by the letters X. Open source, free software called XAMPP was created by associates of Apache. The XAMPP software package includes Apache distributions for MariaDB, PHP, Perl, and Apache server. And it functions essentially as a local host or server. Your personal desktop or laptop computer serves as the local server. Before uploading your website to the remote web server or computer, you may simply install this software on your laptop or desktop and test the clients or your website there. You can test MYSQL, PHP, Apache, and Perl projects on your own computer using the XAMPP server software. It can typically be used on any computer running any operating system if it is cross-platform. The most well-known database server is MariaDB, which was created by the MYSQL team. Typically, PHP 19 offers a room for website building. PHP is a scripting language used on servers. The final programming language, Perl, is used to create web applications. What are the definition and main tools of XAMPP? Tools like Apache, MySQL, PHP, and Perl are included with XAMPP. These tools will be seen.

IV.3 Apache

The Apache software foundation presently maintains the Apache server, which was originally created by a group of software developers as open-source free software. If someone uses their browser to request files, photos, or documents, Apache HTTP is a remote server (computer) that will use HTTP servers to deliver such things to clients. This application is mostly used by hosting providers to set up shared hosting and VPS servers for their customers.

IV.4 MySQL

MySQL is an open-source software. It is actually a relational database management system(RDBMS). This SQL stands for Structured Query Language. It is the most popular and best RDBMS used for developing a variety of web-based software applications. With the help of MYSQL, it is possible to organize the information, manage, retrieve and update the data whenever you wish to do.

IV.5 PHP

PHP stands for Hypertext Preprocessor in its entire form. It is a language for server-side scripting that enables you to build dynamic webpages. The majority of software applications created with this language are web-based ones. It is an open source programmed that integrates well with MySQL. The PHP code will really be run on the server, and its HTML code will be shown on the browser side.

IV.6 Perl

Typically, Perl is described as a general-purpose programming language. This Perl language is extremely dynamic and interpretive. Basically, this language is utilized for system administration, GUI creation, and web development. Working with HTML, XML, and other markup languages is possible with Perl. The most recent version of XAMPP includes extra features like Mercury Mail Server, OpenSSL, phpMyAdmin, etc. You are able to build a complete desktop server using the tools listed above.

IV.7 Boostrap

Bootstrap is a web framework that focuses on simplifying the development of informative web pages (as opposed to web apps). The primary purpose of adding it to a web project is to apply Bootstrap's choices of color, size, font and layout to that project. As such, the primary factor is whether the developers in charge find those choices to their liking. Once added to a project, Bootstrap provides basic style definitions for all HTML elements. The result is a uniform appearance for prose, tables and form elements across web browsers. In addition, developers can take advantage of CSS classes defined in Bootstrap to further customize the appearance of their contents. For example, Bootstrap has provisioned for light- and dark-colored tables, page headings, more prominent pull quotes, and text with a highlight.
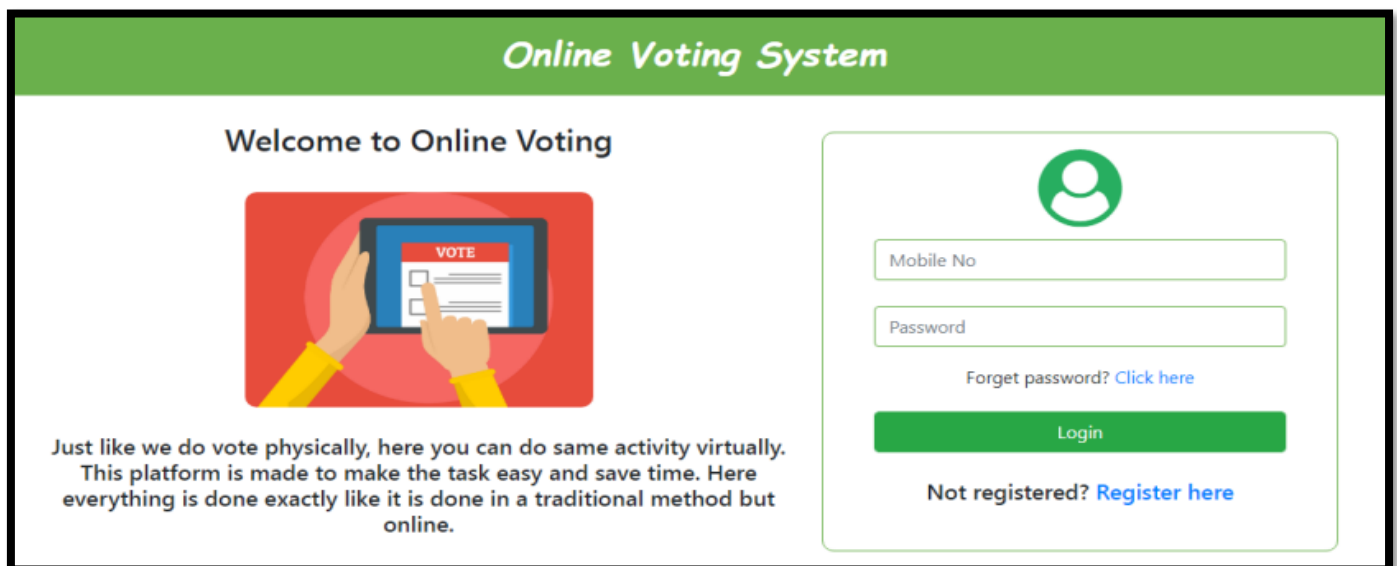
IV.8 jQuery

jQuery's syntax is designed to make it easier to navigate a document, select DOM elements, create animations, handle events, and develop Ajax applications. jQuery also provides capabilities for developers to create plug-ins on top of the JavaScript library. This enables developers to create abstractions for low-level interaction and animation, advanced effects and high-level, theme able widgets. The modular approach to the jQuery library allows the creation of powerful dynamic web pages and Web applications.

IV.9 AJAX

Ajax is not a single technology, but rather a group of technologies. HTML and CSS can be used in combination to mark up and style information. The webpage can then be modified by JavaScript to dynamically display—and allow the user to interact with—the new information. The builtin XMLHttpRequest object, or since 2017 the new "fetch ()" function within JavaScript, is commonly used to execute Ajax on webpages, allowing websites to load content onto the screen without refreshing the page. Ajax is not a new technology, or different language, just existing technologies used in new ways.

V. RESULTS

V.1 Homepage and voter login:

Fig 2. Homepage and voter login.

V.2 Voter Registration & Dashboard (Before election start):

Fig 3. Voter Registration & Dashboard (Before election start)

V.3 Admin Dashboard (Before election start):

Fig 4. Admin Dashboard (Before election start).

V.4 Admin Dashboard (election started):

Fig 5. Admin Dashboard (election started).

V.5 Voter Dashboard (After election start):
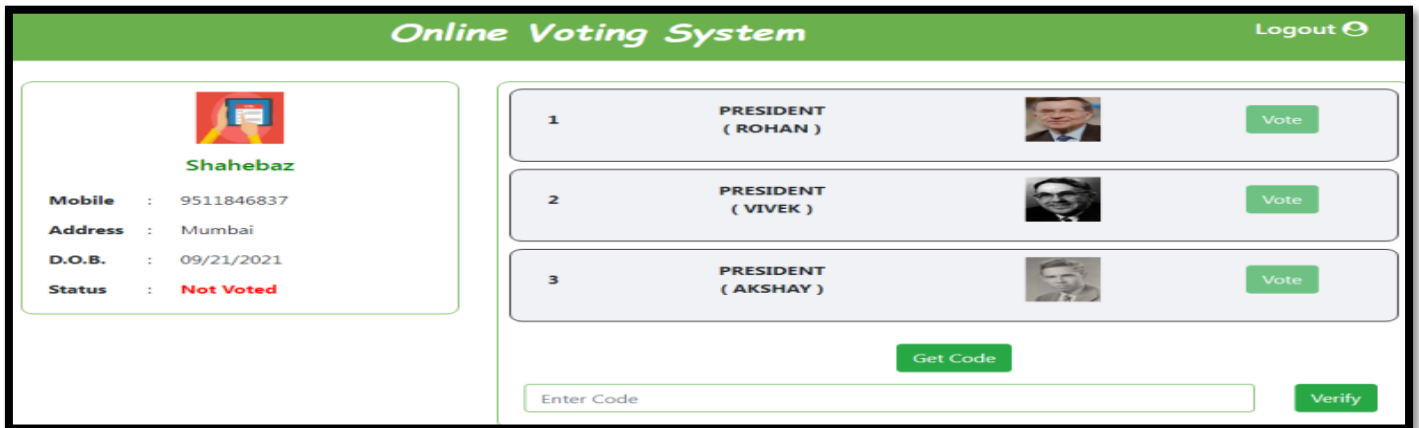
Fig 6. Voter Dashboard (After election start).

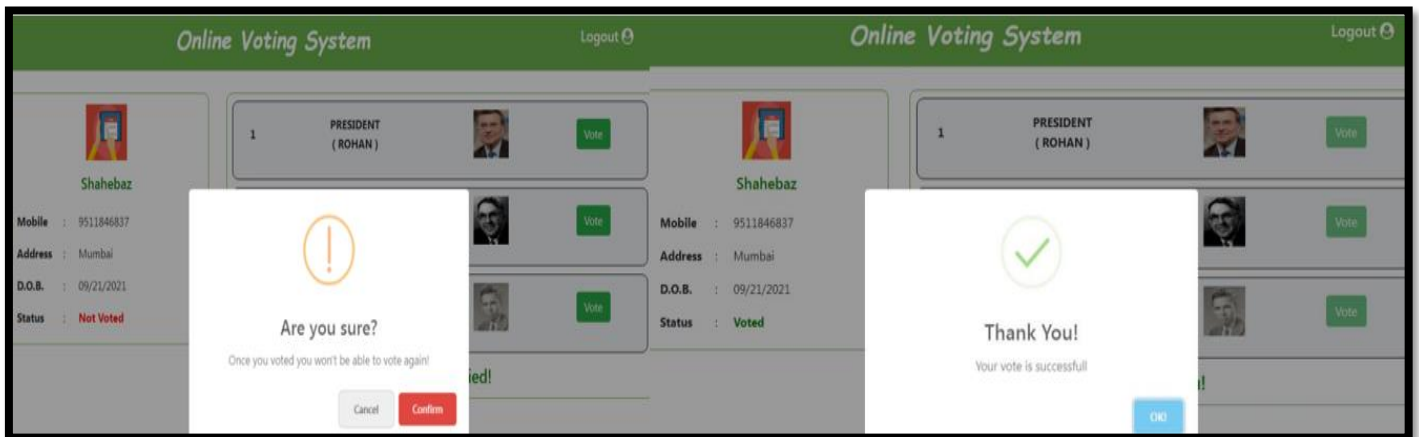**V.6 Voter Dashboard (Voting):**

Fig 7. Voter Dashboard (Voting).
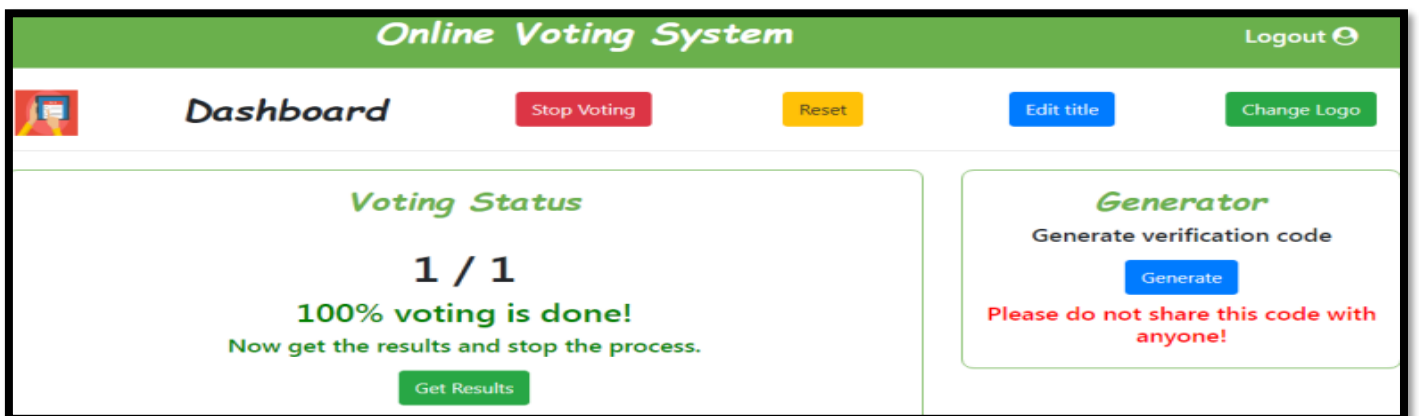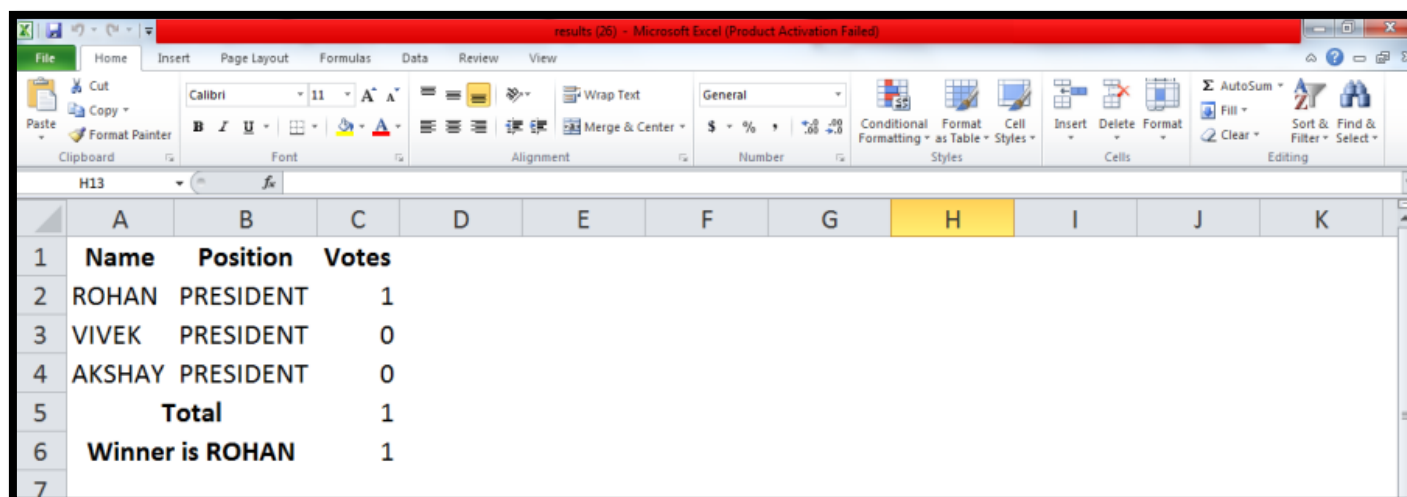
V.7 Admin Dashboard (After voting completion):

Fig 8. Admin Dashboard (After voting completion).

V.8 Admin Dashboard (results in excel sheet).

Fig 9. Admin Dashboard (results in excel sheet)

VII. CONCLUSION

Our new online voting method is therefore far better and simpler to use than previous voting systems, which brings us to our last conclusion. This programmed is able to solve almost all of the issues that we covered in the problem definition section. So, the release of this programmed would open up a lot of prospects for individuals who frequently organize elections for various objectives.

VIII. ACKNOWLEDGMENT

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