

Android Based Voting System Using IOT

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Abstract

Voting for any social issue is essential for modern democratic societies. So, it is becoming very important to make the voting process more easy and efficient. Android based voting should be technically implemented in such a way that ensures that user requirements are met. The proposed system is implemented to allow each and every voter to actively participate in the election process irrespective of the place. This is done by the android application and also through web application. The rapid development in operating system of the mobile phones gives rise to the application development on a large scale. Android based voting will make the voting process very easy and efficient. The aim is to provide convenient, easy and safe way to capture and count the vote. We propose a voting system using android, and in our project-based system, the voter will have to enter their Aadhar ID. The admin makes use of OTP for validation of the user. Then the voter chooses the candidate as per their wish, and after this login the user will be deactivated. Finally, the proposed voting system will be presented with the obtained results.

Keywords: - *IOT, Web Application, Voting System, Android*

INTRODUCTION

Technology is always improving and as time is money, and that's why we need to be able to get as much benefit as we can get from these improvements. The proper

execution of democratic rights has become linked to the availability and reliable functioning of advanced information and communication technology (ICT). While modern societies fully rely on ICT for

business, work and leisure time activities, the use of ICT for democratic decision making is still in its infancy. In fact, the outdated technological concepts for voting have been blamed in part for lost and uncounted votes and could therefore, be responsible for biased political decision making. In such cases, voting becomes very hectic if the process itself takes days. Voting for any social issue is essential for modern democratic societies. So, it is becoming very important to make the voting process easier and efficient. The rapid development in operating system of mobile phones gives rise to application development on a large scale. The main reason behind the tremendous development in android application is that the android is an open source operating system. It means that the software developers can have customization rights. Moreover, the software development kit provides tools to build and run android applications. To help improve the efficiency of voting system, online voting is a really good option. The advancement in mobile devices, wireless and web technologies has given rise to a new application that will make the voting process very easy and efficient. E-voting promises to be a convenient, easy and safe way to capture and count the votes in an election. E-voting means the voting

process in an election by using an electronic device. The android platform is used to develop an e-voting application. A voter may only need to register only once for particular election and that does all, and of course, voter can cast his/her vote without actually have to present at the voting cell. The registration process must be done at Booth application for once then voter is given a facility to vote from his Android mobile phone, irrespective of his/her location. In addition, a service provider android application will be designed for voting purpose. Voter can see the list of applying candidates at the time of voting. Countries all over the world are examining e-voting, for it has some striking advantages over traditional paper voting, including security in casting votes, accuracy of counting and analyzing votes, options to conduct voting in a centralized and decentralized manner, etc. The reasons why e-voting technology has not matured to acceptable levels as they have for business and leisure time activities lies mostly in an inherent lack of trust in electronic equipment and fear of fraud.

IMPLEMENTATION TECHNOLOGIS

The technology selected for implementing Android Based Voting System is PHP/MYSQL. Apache is used as the HTTP server. The development was done

in a 'Windows' environment using Adobe Dreamweaver CS6.

A. Android

Android's source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and proprietary software, including proprietary software required for accessing Google services. Android is popular with technology companies that require a ready-made, low-cost and customizable operating system for high-tech devices. Its open nature has encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users or bring Android to devices originally shipped with other operating systems. At the same time, as Android has no centralized update system most Android devices fail to receive security updates: research in 2015 concluded that almost 90% of Android phones in use had known but unpatched security vulnerabilities due to lack of updates and support. The success of Android has made it a target for patent litigation as part of the so-called "Smartphone" between technology companies. Android is a comprehensive software stack of mobile devices that

includes an operating system, middleware and key application. This rich source of software bunch is used in Mobile Technology through its innovation module of The Android Software Development Kit (SDK). Android can be considered as a unified software package. This software package includes an operating system, middleware and core applications. Android SDK provides some tools and API's which are required to develop Android applications using the programming language of Java. Android is built on open Linux Kernel. This particular software for Mobile Application is made to be open source, thereby giving the opportunity to the developers to introduce and incorporate any technological advancement. Build on custom virtual machine, android gives its users the addition usage and application power, to initiate an interactive and efficient application and operational Software for your phone. It is a mobile operating system (OS), based on the Linux kernel and designed primarily for touch screen mobile devices such as smartphones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. In addition

to touch screen devices, Google has further developed Android TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics.

B. Eclipse

In computer programming, Eclipse is an integrated development environment (IDE). Java application development is supported by many different tools. One of the most powerful and helpful tool is the free *Eclipse* IDE (IDE = Integrated Development Environment). It contains a base workspace and an extensible plug-in system for customizing the environment. Eclipse is written mostly in Java and its primary use is for developing Java applications, but it may also be used to develop applications in other programming languages through the use of plugins, including: Ada, ABAP, C, C++, COBOL, Fortran, Haskell, JavaScript, Julia, Lasso, Lua, NATURAL, Perl, PHP, Prolog, Python, R, Ruby (including Ruby on Rails framework), Rust, Scala, Clojure, Groovy, Scheme, and Erlang. It can also be used to develop packages for the software Mathematica. Development environments include the Eclipse Java development tools

(JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, among others.

C. MySQL

MySQL is an open-source relational database management system (RDBMS) in July 2013, it was the world's second most widely used RDBMS, and the most widely used open-source client-server model RDBMS. It is named after co-founder Michael Widenius's daughter, The MySQL acronym stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Corporation. For proprietary use, several paid editions are available that offer additional functionality.

1) MySQL Admin:

This tool comes from the creators of MySQL, so you can be assured they have a solid understanding of database optimization and stability for power users. There are currently two versions of MySQL Administrator: 1.0 and 1.1. MySQL.com recommends you use 1.1 if

your MySQL installation is 4.0, 4.1 or 5.0. Read more about the MySQL Administrator on MySQL.com's web site.

2) Database:

A database is a structure that comes in two flavors: a flat database and a relational database. A relational database is much more oriented to the human mind and is often preferred over the gabble-de- gook flat database that are just stored on hard drives like a text file. MySQL is a relational database.

3) MySQL Database:

A MySQL database is nothing in itself. Rather a MySQL database is a way of organizing a group of tables. If you were going to create a bunch of different tables that shared a common theme, you would group them into one database to make the management process easier.

4) Creating Database:

Most web hosts do not allow you to create a database directly through a PHP script. Instead they require that you use the PHP/MySQL administration tools on the web host control panel to create these databases. Create a database and assign a new user to this database.

∴ Server - local host ∴ Database - test ∴ Table - example ∴ Username - admin ∴ Password - 1admin.

The server is the name of the server we want to connect to. Because all of our scripts are going to be placed on the server where MySQL is located the correct address is local host. If the MySQL server was on a different machine from where the script was running, then you would need to enter the correct url (ask your web host for specifics on this).

D.PHP

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Group. PHP originally stood for *Personal Home Page*, but it now stands for the recursivebackronym *PHP: Hypertext Preprocessor*. PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management system and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web

server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface(CLI) and can be used to implement standalone graphical applications. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge. The PHP language evolved without a written formal specification or standard until 2014, leaving the canonical PHP interpreter as a de facto standard. Since 2014 work has gone on to create a formal PHP specification

E. JAVA

Java programming language was originally developed by Sun Microsystems which was initiated by James Gosling and released in 1995 as core component of Sun Microsystems' Java platform (Java 1.0 [J2SE]). As of December 2008, the latest release of the Java Standard Edition is 6 (J2SE). With the advancement of Java and its widespread popularity, multiple configurations were built to suite various types of platforms. Ex: J2EE for Enterprise Applications.

Simple: Java is designed to be easy to

learn. If you understand the basic concept of OOP, Java would be easy to master.

Secure: With Java's secure feature, it enables to develop virus-free, tamper-free systems. Authentication techniques are based on public-key encryption.

Architectural-neutral: Java compiler generates an architecture-neutral object file format, which makes the compiled code to be executable on many processors, with the presence of Java runtime system.

High Performance: With the use of Just-In-Time compilers, Java enable high performance.

Distributed: Java is designed for the distributed environment of the internet.

Dynamic: Java is considered to be more dynamic than C or C++ since it is designed to adapt to an evolving environment. Java programs can carry extensive amount of run-time information that can be used to verify and resolve accesses to objects on run-time.

F. APPSERV

App Serv is an "application server, in an n-tier software architecture, serves an API to expose business logic and business processes for use by third-

partyapplications.It is full-featured of Apache, MySQL, PHP, phpMyAdmin.

Package of AppServ are as follows:

- PHP
- MYSQL
- Apache
- PhpMyAdmin

All packages download from Official Binary Release. AppServ objective just make easy to setup. We do not provide anything else more than Official Binary Release package. Because we think the Official Binary Release work better than compile by individual or third-party binary. AppServ can guaranty any package from AppServ can work stable like Official of Apache, PHP, MySQL Release. Objective of AppServ Just Easy to install. You can setup web server, database server in 1 minute. For some question AppServ can be Real Production Web Server or Database Server.

VOTING SYSTEM

A. Existing System

This section explores the current voting system and problems associated with it. The existing system of voting is highly manual, the IEBC has a laid out data capture form that is used to register

residents in their areas. A period for registration is used to set and end on a particular day, such a period is announced to the public using the various mass communication medium including newspaper and radio. During such a period, potential voters are expected to report to these officers in order to registered using paper and pen. Every potential voter fills out a form with details such as location, date of birth among others; such an individual must be verified to be residents of particular area.

The IEBC officers collect filled in data capture forms from officials at the end of the registration period to be taken to the central IEBC officers where data entry clerks are then employed to do entry into database from which a voter register is produced. At the end of this process, voters are registration cards are produced to be issued to voters.

PROBLEMS WITH THE EXISTING SYSTEM

The problems of the existing manual system of voting include among others the following:

Too much paper work: The process involves too much paper work and paper storage which is difficult as papers become bulky with population size.

Expensive and time consuming: The process of collecting data and entering this data into database takes too much time and is expensive to conduct.

Error during data entry: Errors are part of all human beings; it is very unlikely for humans to be 100 percent efficient in data entry.

Loss of registration forms: Some times, registration forms get lost after being filled in with voter's details, in most cases these are difficult to follow-up and therefore many remain unregistered even though they are voting age nationals and interested in exercising their right to vote.

Short time provided to view the voter register: This is a very big problem since not all people have free time during the given short period of time to check and update the voter register.

B. Proposed System

The aim of this work is to design and implement an electronic voting application for the Android platform that will enable people to vote securely from anywhere.

System can maintain the data about the voter like Name, Address, mobile number. Even though the system enables voters to

poll their vote from anywhere, initially the voters should have to provide their Aadhar id number through e-mail/SMS to authenticate themselves. Also one time password (OTP) will be generated and sent to the phone number of the voter. All these information's will be stored in the database. We are maintaining a centralized server in order to receive the selected voter list from the database through internet. This constraint is imposed to ensure that only the genuine person is allowed to vote in the elections. At the time of requesting vote, voter can see list of participants and cast their vote. Then the vote will be considered and voter is automatically logged out.

C. Modules Description

The proposed system has the following modules. They are

- Admin module
- Aadhar creation module
- SMS/MAIL Sending module
- Verification module
- User module

Admin Module

Admin is the super user of this android app. Here Admin is the election commission. Admin can create the aadhar card for the user with related data. During the aadhar card creation a unique aadhar

number is generated for each and every users and it will be send to the candidate (i.e. user) email id and the election commission (admin) have the authority to add the nominees of the election. Election result is calculated systematically and it will be shown by the candidate.

Aadhar Creation Module

By this module the election commission authority will create the aadhar card for the each and every candidate in the nation. A unique aadhar number is generated to the every user and it will be send to the candidate mail id.

SMS/MAIL sending module

In this android app, during the aadhar card creation by the admin (i.e. election commission) aadhar number will be send to the candidate's mail id and during the voting time, OTP(One Time Password) is generated and it will be send to the candidate's mail id and mobile number.

Verification Module

It is the most vital module of this android application software, because by this module forgery during the election time is detected and rectified. The following verification process undergone while vote entries are as follows:

- Each aadhar number will be allowed to cast their vote only once.
- Candidate will be allow to casting their vote only when the candidate's age is greater than or equal to the 18 years.

User Module

User is the people of the nation. So, this module will be used by each and every person of the nation. In this android application software package, user's Aadhar card can be created by the election commission systematically and the user will get the Aadhar number in their mail id. By using that Aadhar number, she/he can enter the polling interface and select the representative of the nation.

REQUIREMENTS& SPECIFICATION

A. Hardware Requirements

Processor	: Pentium P4
Speed	: 2.4GHZ
RAM	: 2 GB
Hard Disk	: 500GB
Monitor	: LCD
Kit	: Keyboard, Mouse
Memory	: 1GB RAM
Smart Phone	: Android (2.3 to 4.2)

B. Software Requirements

Operating System	: Windows7
Front End	: Php
Back End	: App server 2.5.10

Technology Used	: Android 2.2	Plug-in	: ADT plug-in
IDE	: Eclipse Indigo	Tools used	: Android SDK.
Emulators	: AVD		

RESULTS AND DISCUSSION

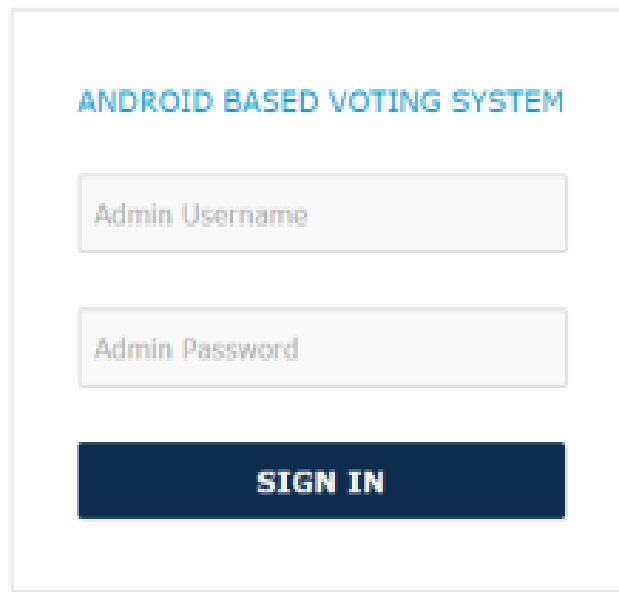


Figure:1 Admin page

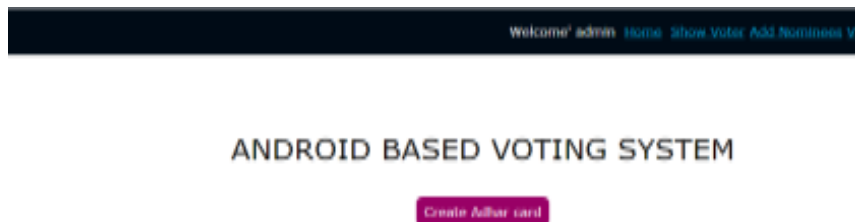


Fig.2 Create Aadhar

Welcome/ admin Home Show Voter Add Nominee Vote Count Sign Out

ANDROID BASED VOTING SYSTEM

Adhar Card Registration From

passport4.jpg

Fig 3. Create Voter

KCET Captive Portal x Fwd: Android Based Voting... x ANDROID BASED VOTING SYST... x ANDROID BASED VOTING SYST... x

bonusidaman.com/Android/votingproject/admin/showvoter.php Search

ANDROID BASED VOTING SYSTEM

DOB	Age	Father Name	Mother Name	Address	Mobile	Email	Adhar Number	Photo
02-04-1994	21	S.VALASINNU	C.SELVI	KARIYAPATTI	8754965577	sugunakerthi@gmail.com	900442842056	
05-08-1994	22	V.JOHN SELVARAJ	J.RAJAKANI	THIRUNELVELI	9790614277	roselineraj5894@gmail.com	341628352314	
01-03-1995	21	S.THAVUTTU RAJAN	T.NAGAKANNI	TUTUCORIN	7708739625	mselvi.be@gmail.com	232098772213	

Firefox automatically sends some data to Mozilla so that we can improve your experience. Choose What I Share

9:33 AM 4/2/2016

Fig.4 Voter Details

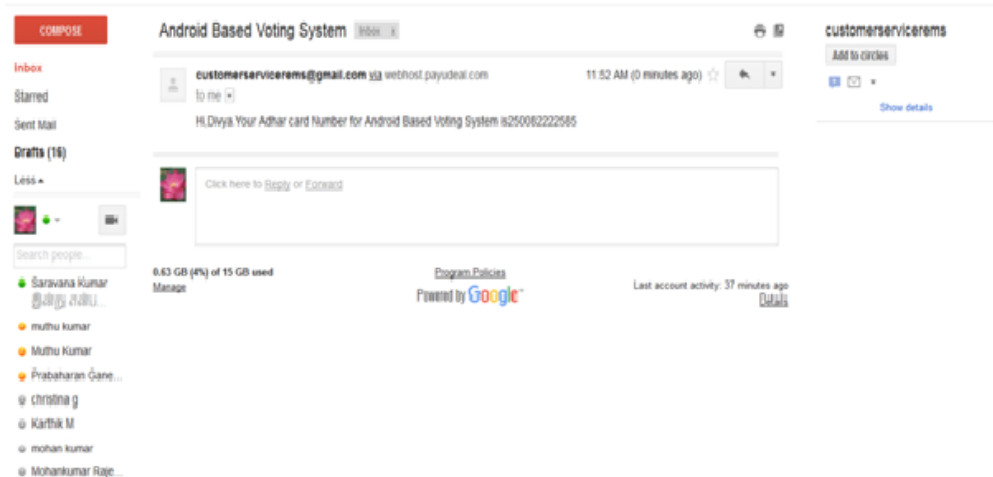


Fig.5 Aadhar Number received by mail

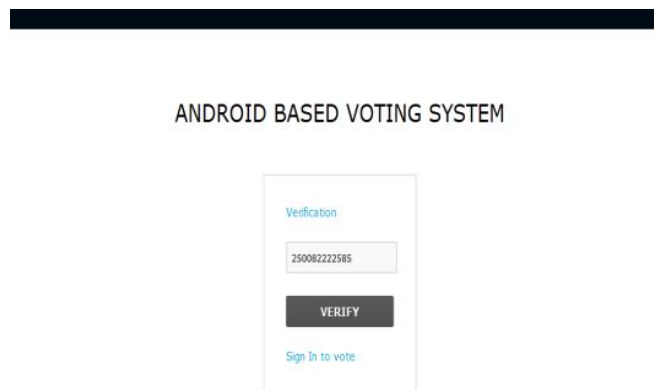


Figure:-6Aadharverification

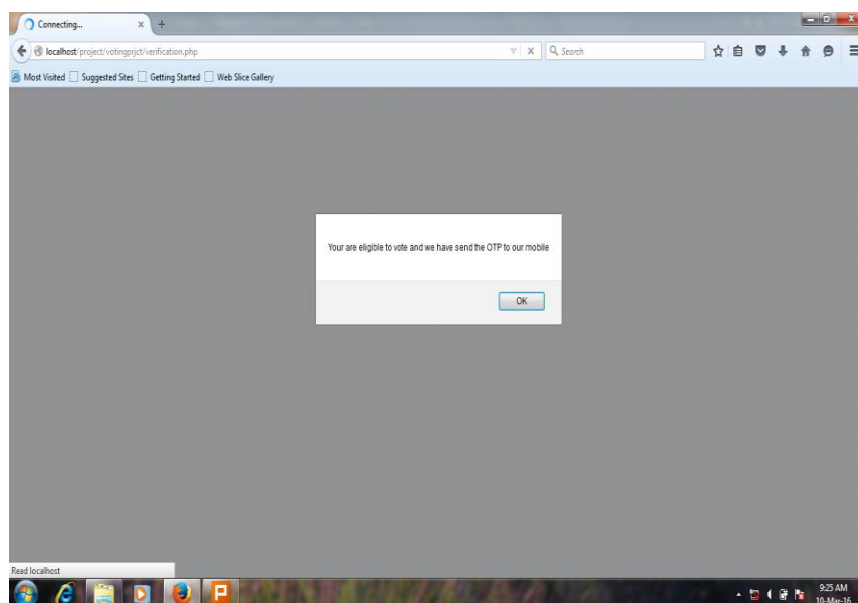


Fig.7 One Time Password

ANDROID BASED VOTING SYSTEM

Sign In to Vote

EB18SR3T

SIGN IN

Fig.8 OTP verification

Click here to cast your ballot

Nominee Name	Nominee Image	Party Name	Party Symbol	
ASHOK		MPRF		Vote
AUGUSTIN		ADEL		Vote
ARAVIND		EMOF		Vote

Figure:-9 Nominees List and vote entry

ANDROID BASED VOTING SYSTEM

Confirm here your ballot

4

Divya

25008222585

Santhosh

GDMK

CONFIRM

Fig.10 Confirmation of vote

ANDROID BASED VOTING SYSTEM

Nominee's Name	Party Name	Result
Santhosh	GDMK	2

Fig.11 Vote Counting

CONCLUSION & FUTURE WORK

This paper focused on the analysis of development of E-voting application on an android platform. The usability of this system is very high if implemented in a real life election process. It will definitely be helpful for the users who wish to vote and the voting process will be made very easy by using this application.

In future we tend to add additional functionality of image validation for the security constraint and uniqueness that will provide very strong security for the confidential information about vote.

REFERENCES

- I. "E-voting on Android System" paper (International Journal of Emerging Technology and Advanced Engineering) prepared by : Kirti Autade, Pallavi Ghadge, Sarika

Kale ,Co-author Prof. S. S. Mujgond, February 2012.

- II. Cesar R. K. Stradiotto and et al Web " E-Voting System Using AndroidPlatform". IJCSI International Journal of Computer Science Issues, 2012.
- III. Sainath Gupta. Passblot: "A usable way of authentication scheme to generate one time passwords".
- IV. Florianopolis, Brazil ,Zotti, A.I. ; Bueno, C.O. ; Bedin, S.P.M. ; Hoeschl, H.C. ; Bueno, T.C.D. ; Oliveira, T.P.S. ; Mirapalheta, V.O., Web 2.0 e- Voting system using android platform: Progress in Informatics and Computing (PIC), 2010 IEEE International Conference: December, 2010.

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- V. Ahmad Alamgir Khan. "Preventing phishing attacks using one timepassword and user machine identification". International Journal of Computer Applications, 2013. Journal of advance studies in computer engineering.
- VI. Sarika Kale KirtiAutade, PallaviGhadge. " E-Voting system based onwebservices". International Journal of Emerging Technology and AdvancedEngineering, 2012.
- VII. "A Modular Voting Architecture ("Frogs")," ShukiBruck, David Jefferson, and Ronald L. Rivest, August 2001.
- VIII. "Comments of Professor Ronald L. Rivest", Caltech/MIT VTP Press Conference,July16,2001.
- IX. B. den Boer and A. Bosselaers."Collisions for the compression functionmd5". Advances in Cryptology", Proc. Eurocrypt'93, LNCS 765, T. Hellseth, Ed., Springer Verlag,194, pp.293- 304.
- X. Vineet Kumar Singh. "Analyzing cryptographic network for secure cloudNetwork". International
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