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# An Approach to Design Android Based Voting System Using Rest API's

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**Abstract**— The advancement in the mobile devices, wireless and web technologies given rise to the new application that will make the voting process very easy and efficient. The E-Voting promises the possibility of convenient, easy and safe way to capture and count the votes in an election. This research project provides the specification and requirements for E-Voting mechanism using an android platform. The E-Voting means the voting process in election by using electronic device.

**Keywords**-Electronic voting, Short Message Service (SMS), Global Positioning System (GPS)

## I. INTRODUCTION

The world is always urging for improvement and growth in terms of technology, that's why we should go parallel with changes from the existing systems, to be able as much as we can get benefit from the new improvements. The purpose of initiating the idea of E-voting is to eliminate the outdated technological concepts which is in use in the present day system for casting the votes. The fact, about using old technology is blamed in part for lost and uncounted votes which could therefore be responsible for biased in picking the wrong

political leaders and change makers which is indirectly affecting our country's growth. [1]

Thus we are keen on introducing E-voting system to overcome the troubles of lost votes and fake votes. Many countries all over the world are examining and observing the concept of E-Voting, for it has many striking advantages over the traditional paper voting mechanism, including security for casting in terms of being accurate in counting and analyzing votes, with options to conduct voting in advance techniques in centralized and decentralized manner.

The reasons why the E-Voting system is still back logged in our country India is simply because of lack of trust and fear of electronic threats, the maturity levels in terms of secured transactions in this country is being a challenge for accepting any new technology in terms of online business, where it requires a lot of personal information to be given out. 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.[2]

While most countries like ours are still conceptualizing and thinking of testing E-Voting systems, on the other hand three cantons

in Switzerland have pioneered the development of E-Voting to its full technological maturity and have taken to the next level.

The E-Voting system comprises of the following features:

1. **OTP : One Time Password**  
Once the user logs in with his respective user credentials he will be asked to verify his account for the security reasons via One Time Password which will be sent on his registered mobile phone number by which he will have the access to his account.[3]
2. **REST API's :**  
REST stands for Representational State Transfer and  
API stands for Application Program Interface  
REST-compliant Web services, in which the primary purpose of the service is to manipulate XML representations of Web resources using a uniform set of stateless operations and Arbitrary Web services, in which the service may expose an arbitrary set of operations.
3. **JSON :**  
JSON stands for JavaScript Object Notation  
JSON is basically an open standard format primarily used to transmit data. JSON is used as input and output for the web service.
4. **Location Tracking:**  
Geo Location tracking is the most advanced technology used to track a person's location in terms of voting to avoid duplication of voting. In order to track the authenticated user, if any foul play is found in terms of location then the admin can block the user from voting.
5. **Aadhaar ID:**  
Based on each Aadhaar ID, a user can have his own login details.

The Android system is linked to the (MS-SQL) database in order, for the voter to vote only one time and if he/she tries to vote again the system will deny him/her.

## II. E-VOTING SYSTEM DESIGN

Objective of the proposed system is to develop a web service for ELECTION COMMISSION OF INDIA where all the public voter card details will be stored and managed in an efficient and easy way. People can register with their Aadhaar card and be able to give votes through their Android devices. Not only they can give votes but also they can view candidate's details with their rating and other background details.

The proposed system will provide services in an efficient way. The major advantage of the system is candidates don't have to step outside of their comfort zones and stand in a queue for casting votes, which will indirectly save a lot of time and bring in efficiency and accuracy in the voting system. [6]

An user can simply login for casting their votes on an android device. The user then gets connected to the voting API through HTTP (Hyper Text Transfer Protocol) connection for sending and receiving the information in JSON format via HTTP connection. E-Voting system will track each and every login with authentication so that no unauthorized access occurs. With every login the system will generate OTP (one time password) and send it to user's mobile phone via SMS gateway in order to authenticate. There will be one admin who will keep record of each and every activity with database maintenance. The admin will start the voting with time duration and people can give cast votes through their mobile phones. The Admin will then add/delete candidate details and upload their profile through FTP connection to server. After the time periods elapsed the system will automatically generate the result and close the voting and people can view the result through website or through their phones.

### HTTP Architecture:

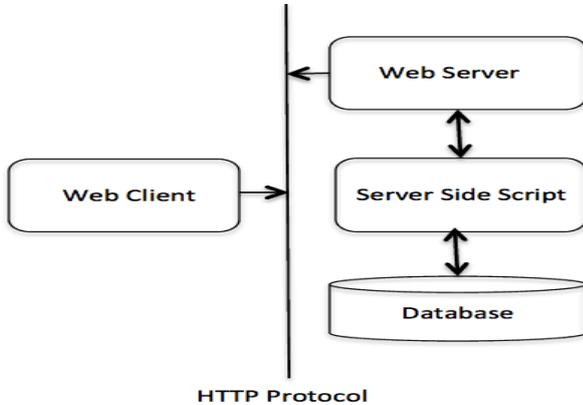


Fig 2.1 Architecture of HTTP

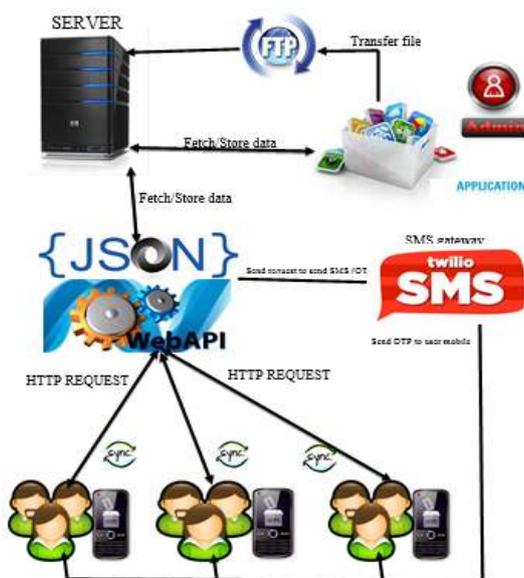


Fig 2.2 Architecture Design

### Response Message:

The E-Tag (entity tag) header field is used to determine if a cached version of the requested resource is identical to the current version of the resource on the server. Content type specifies the Internet media type of the data conveyed by the HTTP message, while Content-Length indicates its length in bytes. The HTTP/1.1 webserver publishes its ability to respond to requests for certain byte ranges of the document by setting the field Accept-Ranges bytes. This is useful, if the client needs to have

only certain portions of a resource sent by the server, which is called byte serving. When Connection: close is sent, it means that the web server will close the TCP connection immediately after the transfer of this response. Most of the header lines are optional. When Content-Length is missing the length is determined in other ways. Chunked transfer encoding uses a chunk size of 0 to mark the end of the content. Identity encoding without Content-Length reads content until the socket is closed. A Content-Encoding like gzip can be used to compress the transmitted data.

### Request Message:

A client request (consisting in this case of the request line and only one header field) is followed by a blank line, so that the request ends with a double newline, each in the form of a carriage return followed by a line feed. The "Host" field distinguishes between various DNS names sharing a single IP address, allowing name-based virtual hosting. While optional in HTTP/1.0, it is mandatory in HTTP/1.1.

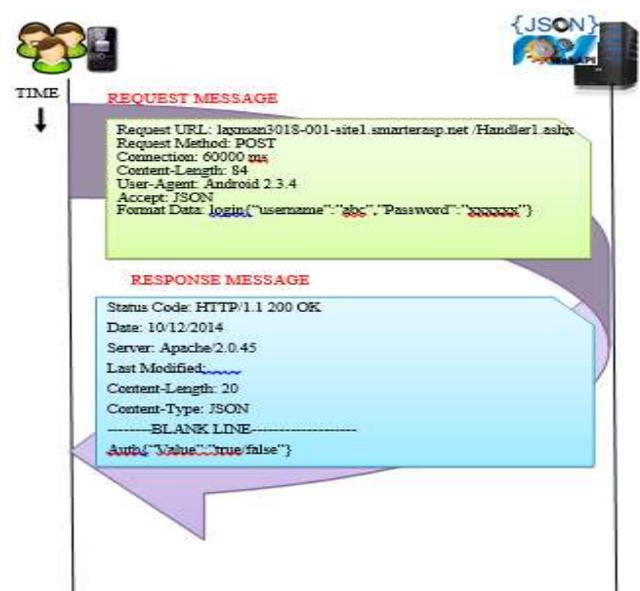


Fig 2.3 Design of HTTP Connection.

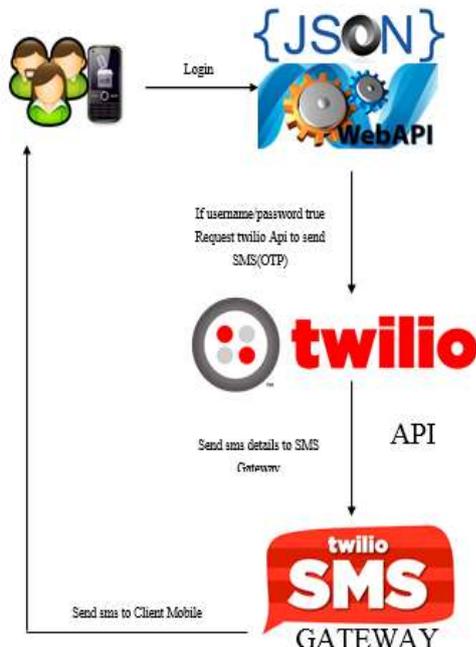


Fig 2.4 Design of SMS Application Program Interface.

### III.E-VOTING SYSTEM SECURITY LEVELS

For the security, a voice recognition technique is used because only the admin knows the correct word to choose and the admin can talk either in English or Arabic. (Google) machine translate is used as a tool for voice recognition. The recorded voice is sent to this machine through the internet, and the machine sends us back a listed text of the right words and the word that have similar syntax of the actual word. After that, the admin must choose the right word only he knows, and then the system connects to the server and get the information from the database in order to know how many votes each candidate has collected. Other level of security that is used in this research is specified for the (database). One of the newest techniques that used is a Barcode Scanner. This technique is a specific type of (QR Code). In order to allow only specific people and authorized people to access, this part holds a specific (QR code). [7]

### IV.REAL TIME TEST RESULT

The system is tested in real time for both (SMS and Internet based method). The results show that the efficiency of the system is depending on the number of voters and the Internet bandwidth as well.

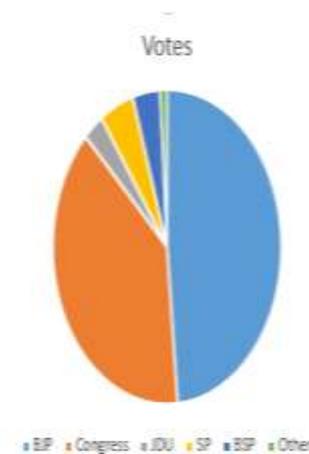


Fig 2.5 E-Voting system real time result.

presents a pie chart of the real time voting process which indicates the vote rate of each candidate. Fig (2.5) E-Voting system real time result. This graphical representation helps us by giving better understanding and realistic view of the political system in terms of real time world and shows the statistical approach for the next ruling party and country's progress.[8]

### V. RELATED WORK

Related work includes the application processing, designing, working model, look and feel of the application and the generation of the application.

The number of parties involved and number of categories involved in the application design, pros and cons of the application being well discussed during the planning phase of the E-Voting system. [9]

Real time experience is shown via screen shots.

Activity	Test case	Input	Expected output	Result
LOGIN	1. Blank Field	No Input	Warning message	Message “enter username/password”
	2. Invalid Username/password	Wrong username/password	Warning message	Message “Wrong username/password”
	3. Correct username/password	Correct username/password	Login and home page appear	Home page appear with welcome message
REGISTER	1. Blank Field	No Input	Warning message	Message “enter your details”
	2. Invalid input	Number in place of string and string in place of no	Warning message	Message “Wrong entry with field indication”
	3. Mobile No	Correct information	Warning message	Message “Mobile no Already registered”
	4. Blocked	Correct Information	Warning Message	Message “You have been Blocked”
	5. Already Registered	Correct Information	Warning Message	Message “You have already registered”
	6. Invalid User	Name, phone no, voter id	Warning Message	Message “You are Not Authorized”
ACCOUNT	1. Get Account Details	No Input	Account details	Successfully get account details
VOTE	1. Already Voted	No Input	Warning Message	Message ”You have already voted”
	2. Not Voted	No Input	Voting Activity Appears	Activity opens with Voting Party Details
	3. Vote Time Over	No Input	Warning Message	Message ”Voting Time Over”
RESULT	1. Result Not Published	No Input	Warning Message	Message ”Result Not Published”



Fig 5.1 Main Activity

As shown in Fig 5.1 the main activity is divided into three parts that is login, register and exit. This page helps a new user to login and register to the E-Voting application.



Fig 5.7 Admin Home

As shown in Fig 5.7 the Admin home page will be a active page, in terms of explosion and people networking.

## VI. CONCLUSION

The objective of the application is to provide the end-user a better voting application using android as platform. The end-user can create their own profile and cast their vote using our application. The end-user can store their details, such as details of the person to whom they have voted. End-user can also view details of the people who are standing for election. The application will maintain details of users such as logs and provides a statistical representation based on the number of active users.

Different protocols are used in our application such as AES (Advanced Encryption Standards) for encrypting the images of party and end-user, HTTP (Hyper Text Transfer Protocol) for user interaction with the web server. Details of the users are stored in the webserver, which is created using JSON application.

Few Advantages of the E-Voting system are as follows:

- User can give votes directly from their mobile from anywhere.
- User can get results directly on mobile.
- User can view candidate details.
- Admin have full control of user including exact location of application accessed from.
- Admin can view user detail, block user to access the app.
- Admin can view no of users online each and every moment.
- Admin can send mail to users.

Limitations for E-Voting System is that only android mobile user can make use of this application and at a time of the login of the user the admin can create only one polling.

## VII. REFERENCES

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