Polling System Using GSM Facility

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Abstract: Voting is the foundation of a democratic system of government, whether the system uses direct or representative governance. In democratic societies, voting is an important tool to collect and reflect people's opinions.In the existing voting method to select a candidate in the election such as presidential election, the assembly election, or local election, electorates go to the designated polling places and have to be identified to cast their votes, and finally voters cast their ballot. Voters should registered on a poll book, this procedure takes the long amount of time consumed on voting and counting of votes. In this paper, an electronic voting scheme using GSM mobile technology is presented. By integrating an electronic voting scheme with the GSM infrastructure, we are able to exploit existing GSM authentication mechanisms and provide enhanced voter authentication and mobility while maintaining voter privacy.

Keyword: Global System For mobile Communication, Authentication, Mobility, Electronic voting systems, mobile networking.

1INTRODUCTION

ELECTIONS allow people to express their opinions and choose their representatives. In democratic societies, voting is an important tool to collect and reflect people's opinions. The election system must be sufficiently robust to withstand a variety of faulty behaviors and comprehensible that voters and candidates can accept the results of an election. [1][2].Due to the importance of the election process, it is thought that it can be represented electronically in a secure manner; this leaded to finding a way to do to grantee this requirements. Electronic voting

developed to achieve requirements of election process with a relative high degree of security and accuracy. E voting is an election system that uses electronic ballots that would allow voters to transmit their voted ballot to election officials over the Internet and it means the casting of a secure and secret electronic ballot that is transmitted to election officials using the Internet. The usage of electronic voting has several benefits and solves many problems that exist in the traditional systems.In the presidential election, the election of member of the national assembly, the head of local government election, and others, a voter can cast vote after going to the designated polling place and checking his identity. This makes man directly to count the ballots and counting of votes to be long. Therefore, this voting is a reason to reduce voting rate since voters always should go to the polling place.

The e voting System must guarantee the following items

• Eligibility and Authentication: Only authorized voters should be able to vote.

• Uniqueness: No voter should be able to vote more than one time.

• Accuracy: Election systems should record the votes correctly.

• Integrity: Votes should not be able to be modified, forged, or deleted without detection.

• Verifiability: It should be possible to verify that all votes have been correctly accounted for in the final election tally, and there should be reliable and demonstrably authentic election records.

• Reliability: Election systems should work robustly, without loss of any votes, even in the face of numerous failures, including failures of voting machines and total loss of Internet communication.

• Secrecy: No one should be able to determine how any individual voted, and voters should not be able to prove how they voted (which would facilitate vote-selling coercion).

• Flexibility: Election equipment should allow for a variety of ballot question formats is compatible with a variety of standard platforms and technologies and be accessible to people with disabilities.

• Convenience: voters should be able to cast votes quickly with minimal equipment or skills.

• Testability: Election systems should be testable so that election officials have confidence that they meet the necessary criteria**.**

• Transparency: Voters should be able to possess a general knowledge and understanding of the voting process.

• Cost-effectiveness: Election systems should be affordable and efficient.

2 TYPES OF E- VOTING

There are many types of E-voting systems; namely poll-site voting, Kiosk voting and remote electronic voting. A brief overview for each type is given in the following section

A. Poll-site Voting

This type of electronic voting takes place when voters personally attend a specific place to cast their votes, usually through electronic devices such as touch screen voting terminals. The identity of the voter is verified with conventional methods (IDs, Passports …etc.). An example of this type can be shown in figure 1.1 (a). The main disadvantage of such system is that the voter should go to dedicated place for voting.

B. Kiosk Voting

Kiosk voting is one of the common voting methods where voting machines would be located away from traditional polling places, in such convenient locations as malls, libraries or schools. The voting platforms would still be under the Control of election officials, and the physical environment could be modified as needed and monitored to address security and privacy concerns, and prevent coercion or other forms of intervention. Kiosk voting terminals pose more challenges than Poll site systems, but most of the challenges could, at least in

Principle, be resolved through extensions of current technology. An example of this type can be shown in figure 1.1 (b).[8]

C. Remote Electronic Voting

This type of electronic voting takes place when voters cast their vote from any location with access to the Internet via mobile telephone, PCs, PDAs, etc. The methods, which can be used to identify the voter, are via digital signature, biometrics, PIN codes, etc. An example of this type can be shown in figure 1.1 (c).

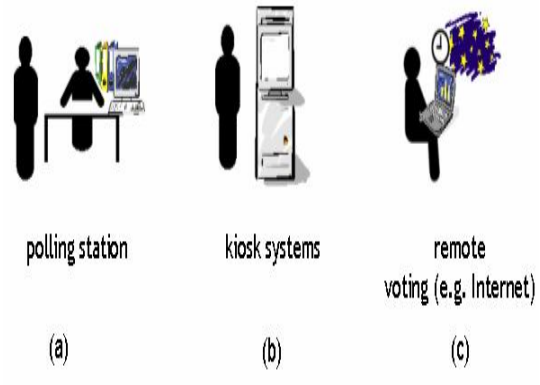

Fig. 1.1: Types of Polling

I want to propose a polling system that allows a voter to cast their vote using a unique mobile id. A voter can cast their vote more easily and conveniently than the existing e-voting machine, within the schedule led time anywhere even when a voter is not able to go to the polling place.

3 CIRCUIT DIAGRAM

The "**POLLING SYSTEM GSM TECHNOLOGY**" uses the Microcontroller Embedded technology, which is programmed according to the required application. It is a combination of **embedded technology** and **GSM technology**. It uses one microcontroller programmed to collect the votes of the voter who votes through mobile id via GSM technology.

- Microcontroller AT89S52
- MAX 232
- LCD 16:2
- GSM Modem(SIM 3000)
- Power Supply

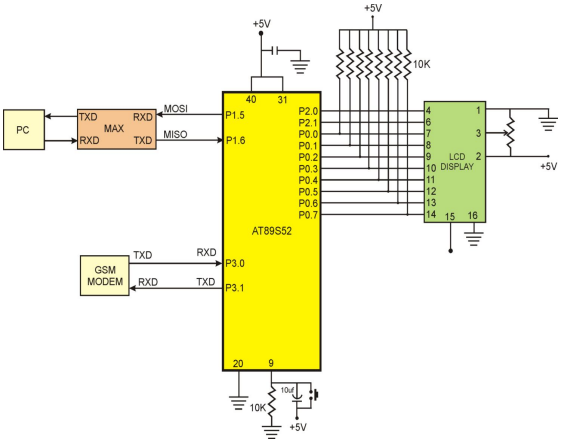

Fig 1.2: Circuit Diagram

Fig shows circuit diagram of system it uses 89S52 microcontroller, which have dual serial communication facility. 16X2 dual line LCD for massage display, and line converter MAX 232, GSM modem. This system uses GSM Technology's modem is connected to the Serial pin RXD (P3.0) & TXD (P3.1) of microcontroller. Port 1.0 (MISO) & P1.1(MOSI) **,** which is connected to personal computer through MAX 232 line driver.This system uses microcontroller and GSM Technology Micro-controller to provide facility to receive message (votes) from the GSM modem and it to the PC, receive voting information from PC, and send it back to GSM modem.

4 OPERATION OF SYSTEM

These systems provide remote voting facility for this purpose each voter have unique mobile id, like a voter id, that identify the voter's identity, that id is provided by Election committee. The voter who uses mobile can caste their votes through their mobile. For these purpose the information of candidates are predefined to voter's , GSM modem has

own number that is known to every voter. When voter caste their votes on the Election Day, for this purpose voter send a message to GSM modem, which contains voter's mobile id and the candidates id which he wants to vote. GSM modem will receive the votes, which is coming from voters mobile.

For example, a voter has id 0033 he cast the vote for a candidate which serial id is 02 than he will send a message to GSM modem that is (0033 02 919981360643).

Election Day to cast their votes, voter will send message to GSM modem, that message contain voter's user id & the serial no of candidate which he wants to vote.GSM modem has unique number that no is known to every voter, when GSM modem will receive message (vote) than send acknowledgement to microcontroller. After receiving acknowledgement from GSM modem MC send AT+CMGR=1 command to GSM modem.

MC will read the message from GSM mode , before receiving message MC will clear the first memory location by using AT+CMGD=1 command to delete the previous data which is stored in the modem, after that AT+CMGF=1 command send to receive that message in text format. MC receives the message, which contains **"REC_UNREAD" 0919981360643, date, time, 0033 02** .MC will only take **voter's mobile no., voter's user id, candidate id** and send it to personal computer. PC receive message from the microcontroller. PC has four database which is shown in fig. 1.3.

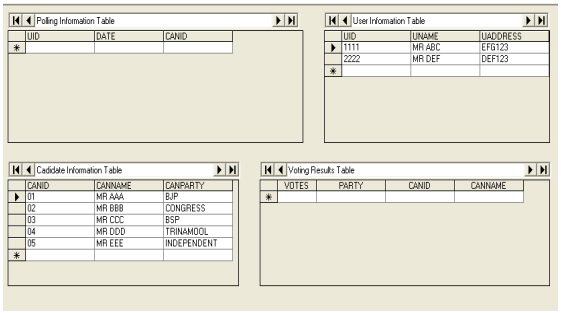

Fig. 1.3: Database Stored In PC

(i) Polling information table, this table contain all the information about polling.

(ii) User information table, this table contains information about voter.

(iii) Candidate information table, this table contains information about candidate.

(iv) Voting result table, this table contain voting result.

PC receives the message from the MC, which contain mobile no. of voter, voter's unique user id, and candidate id, which he wants to vote. PC has a database of all valid user id, PC firstly match the received user id with database of valid user id.

If this is valid voter id than it checks the candidate id and increment, the votes for that particular candidate, PC send the message to MC that contains **"Y, voter's mobile no. ".** Moreover, MC send **"vote successful"** message to user mobile through GSM modem, and same message will display on LCD.If PC receives vote from same user id it sends the message to MC that contain **"R, voter's mobile no. ".** MC transmits **"already voted message"** to user mobile through GSM modem, and same message will display on LCD.

If user id received by PC is invalid than PC send message to MC that contain **"N, voter's mobile no. "** then it transmit "invalid voter id" message to user mobile through GSM modem, and same message will display on LCD.This process repeat until voting is finished, and result is stored on PC.

5 CONCLUSION

E-voting can be considered of the most important internet applications which can effect directly to the people life. My proposal enables a voter to cast his vote using a mobile phone without additionally registering himself for voting in advance and going to a polling place. In addition, proxy vote or double voting is not possible. Any entities except for an e-voting device cannot know the voting result. This system is built using interactively user interfaces. This facility can improve the sharing percentage of voters in any voting system. Security considerations are considered, where there are special security requirements are essentials for such critical application proposed system uses GSM mobile voting scheme, where the GSM authentication infrastructure is used to provide voter authentication and improve voter mobility this scheme also enhances the security and provides more mobility and convenience to voters.

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