Telephone Based Voting Machine

Sahil Gupta and Naveen Goel

Abstract- **The foundation of a strong democracy is an informed and engaged citizenry and what better way to both inform and engage citizens than through the power of today's information and communication technologies? Around the world citizens recognize and hold the benefits of e-Government services which includes online tax filing, renewal of license and benefits claims. For supporting e-democracy governments are initiating strategies and by doing this more number of citizens are involving in this democratic process. This concise addresses the highly official processes of e-democracy-in particular e-voting to offer governments and democratic-based entities worldwide the infrastructures, applications, and services that are necessary to implement and manage reliable, secure e-voting systems. E-voting offers a great level of convenience to the voter, encourages more voters to cast their votes distantly, and increases the likelihood of participation for mobile voters. In modern scenario, Elections has come out to be the necessity for every person. At the day of voting one has to go for voting and only up to 50% people go for it. at higher price. Hence systems for public such as voting through telephone are still not in a very much advanced state. In this one has to dial a toll free number for the voting. In this research, an electronic voting scheme using Mobile technology is presented. This idea is the complete solution for conducting secure election and it help to stop 100% booth capturing.**

Keywords-**DTMF, EVM(Electronic Voting Machine), LCD Display, Mobile Equipment, Microcontroller, Optocoupler.**

I. INTRODUCTION

India is world's largest democracy. Basis of Indian democracy is fundamental right to vote or simply voting in elections. In India, earlier in elections a voter used to cast his vote by using ballot paper. This is time-consuming process and also very much prone to errors. For changing this situation Election scene was completely changed by electronic voting machine. For oing this there will be no more ballot paper, ballot boxes, stamping, etc. an all this will condensed into a simple box called ballot unit of the electronic voting machine [2].

Cell phone based voting machine is able for saving considerable printing stationery and transportation of large volumes of electoral material. It is easy to transport, store, and maintain. It completely reduces the chance of invalid votes. Its reduces polling time, results fewer problems in electoral preparations, law and order, candidate's expenditure, etc. and it is easy and provides accurate counting without any trouble at the counting centre.

Now Mobile technology has attained heights such that every citizen of India possesses a mobile handset at cheaper rates of services. Even NRIs who long to cast votes can avail this advanced technology without taking the pain of coming to Polling- booth with the help of their handy Mobile Equipment (ME). When such a Personal Digital Assistant (PDA) is available, why not using it for time-saving, cost-effective and secured method of voting? So, our objective is intended to allow the people of a country to votes on the day of voting. People are not go to booth but only use telephone. We have used microcontroller at 89C51 to generate a voting system with the help of BC548, DTMF, MCT2E & LCD displaying suitable indications according to the actions taken by the user. If the password entered by the user is correct then the person is allowed to vote his vote.

II. RELATED WORK

Since, Voting is a vital part of the democratic process As such, the efficiency, reliability, and security of the technologies involved are critical. Traditional voting technologies include hand-counted paper ballots. These paper-based systems can result in a number of problems, including:

- Unacceptable percentages of lost stolen or miscounted ballots
- Votes lost through unclear or invalid ballot marks.
- Limited accommodations for people with disabilities.

Today, the development and widespread use of information technologies is changing the way people view voting processes and, ultimately, the way they vote. At the forefront of these new technologies is Electronic Voting Machine (EVM).

There are several benefits of using EVM like reduced cost, increased participation and voting options, greater speed and accuracy placing and tallying votes, greater accessibility for the disabled, flexibility etc.

But EVM can also results in problem like booth capturing. By booth-capturing, if one means, taking away or damaging of ballot boxes or ballot papers, this evil cannot be prevented by the use of EVMs, as EVMs can also be forcibly taken away or damaged by miscreants. Another problem which results is that old age peoples need to be queued, waiting for their turn to vote [3].

By using the Telephone Based Voting Machine these problems can be overcome since in this process of voting there is no chance of booth capturing. It provides 100% prevention from booth capturing and people can cast their vote from anywhere, they need not to come to the voting place and wait for their turn.

Sahil Gupta and Naveen Goel are with Department of Electronics and Communication Engineering, Vaish College Of Engineering, Rohtak, Email: sahil_mait@yahoo.com, ng4u1@rediffmail.com

III. PROPOSED TECHNOLOGY

This cell phone based voting machine consists of microcontroller AT89S52, a DTMF decoder and a memory storage device. DTMF is sent to the microcontroller which is decoded by DTMF decoder and the password is fed with the candidate number. The memory device is used to store the data in case of power failure. In this technology a user can dial the specific number from any landline or mobile phone to cast his/her vote. Once the user is connected to the voting machine he/she can enter his/her password and choice of vote. If he has entered a valid choice and password his vote will be cast with two short duration beeeps. For invalid password/choice long beep will be generated. User is allocated 15 seconds to enter his password and choice. A reset button is provided for resetting the system.

IV. COMPONENTS USED IN THE PROPOSED WORK

A. *Microcontroller*

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pin out. The on-chip flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory. .By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 microcontroller provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry[6]. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset [7].

B. *Phototransistor Optocoupler*

In electronics, an opto-isolator, also called an optocoupler, photocoupler, or optical isolator, is an electronic device designed to transfer electrical signals by utilizing light waves to provide coupling with electrical isolation between its input and output. The main purpose of an opto-isolator is "to prevent high voltages or rapid changes voltages on one side of the circuit from damaging components or distorting transmissions on the other side. The MCT2XXX series optoisolators consist of a GaAs infrared light emitting diode driving a silicon phototransistor in a 6-pin dual in-line package [5].

C. *DTMF Receiver*

The HT9170 series are Dual Tone Multi Frequency (DTMF) receivers integrated with digital decoder and band split filter functions. The HT9170 series tone decoders consist of three band pass filters and two digital decoder circuits to convert a tone (DTMF) signal into digital code output. An operational amplifier is built-in to adjust the input signal. The pre-filter is a band rejection filter which reduces the dialing tone from 350Hz to 400Hz. The low group filter, filters low group frequency signal output whereas the high group filter, filters high group frequency signal output. Each filter output is followed by a zero-crossing detector with Hysteresis. When each signal amplitude at the output exceeds the specified level, it is transferred to full swing logic signal. When input signals are recognized to be effective, DV(Data valid output – when the chip receives a valid tone DTMF signal, the DV goes HIGH otherwise it remains LOW) becomes high, and the correct tone code (DTMF) digit is transferred [1].

D. *LCD Display*

A liquid crystal display is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystal do not emit directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements [4].

V. WORKING

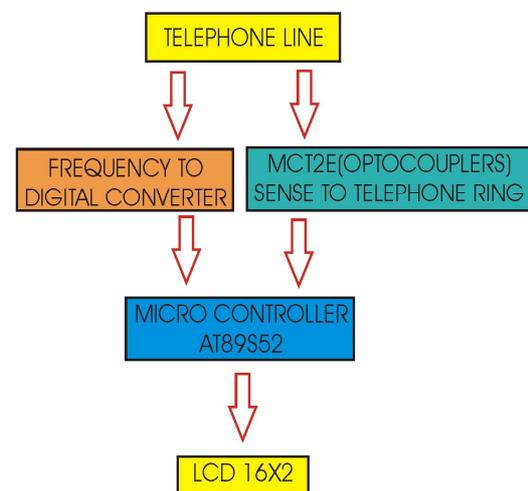In this telephone based voting machine we have 20 voters and 10 candidates of different parties.

Fig. 1 Block diagram of microcontroller based voting machine

A. *Step 1*

We have to fix the circuit in any telephone line.

B. *Step 2*

We have to dial the phone number in which this circuit is fixed.

C. *Step 3*

When the circuit get the third bell IC MCT2E (Optocoupler) pick up the phone, now your dial phone is

connected with voting circuit, then you have to dial your 4 digit code and then party code, after voting placed your phone disconnect, if any wrong entry placed or double code typed your phone automatically disconnect.

D. *Step 4*

In the circuit we have IC 9170(DTMF) it get the pulse of your PHONE input and sends to the microcontroller and then microcontroller get the information and work as the program written.

E. *Step 5*

All the detail display on LCD.

F. *Step 6*

After 20 votes circuit displays the voting details of all party and give the final result.

G. *Extra*

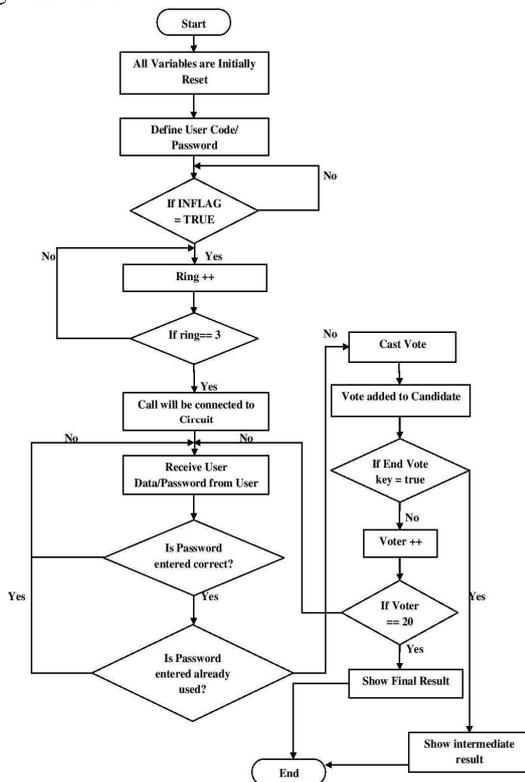We have on push button fixed on the circuit it help us to get instant result.

Fig. 2 Flow chart of the algorithm used for programming

VI. APPLICATIONS

- It can be used to conduct general assembly elections.
- Fast track voting which could be used in small scale elections, like 'resident welfare association',

'panchayat level election' and other society level elections.
- It can be used to conduct opinion polls during annual share holders meeting.
- It is used in various TV serials as for public opinion.

VII.RESULT & CONCLUSION

Cell phone based voting machine is capable of saving considerable printing stationery and transport of large volumes of electoral material. It is easy to transport, store, and maintain. It completely rules out the chance of invalid votes. Its use results in reduction of polling time, resulting in fewer problems in electoral preparations, law and order, candidates' expenditure, etc. and easy and accurate counting without any mischief at the counting centre. Telephone Based Voting Machine provides 100% prevention from booth capturing and people can cast their vote from anywhere, they need not to be come to the voting place and wait for their turn. So, our research is intended to allow the people of a country to votes on the day of voting, by using only the telephone and mobile phones.

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Sahil Gupta:
I did B-Tech from Maharaja Agarsen Institute of Technology, New Delhi with distinction in Electronics & Communication Engineering. I did M-Tech from Vaish College of Engineering in Electronics & Communication Engg. I was the university topper in my M-Tech. I attained green belt in six sigma. I also had a 1 year of experience in R & D department of a consumer durable company.