**ELECTRONIC VOTING MACHINE**

by

Abhishek Verma 16BEC1075

Pranav Vetkar 16BLC1017

Ashish Sahu 16BLC1077

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**Prof. John Sahaya Rani Alex**

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**Vandalur – Kelambakkam Road**

**Chennai – 600127**

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**BONAFIDE CERTIFICATE**

Certified that this project report entitled “**ELECTRONIC VOTING MACHINE”** is a bonafide work of **ABHISHEK VERMA(16BEC1075), ASHISH KUMAR SAHU(16BLC1077)** and **PRANAV VETKAR(16BLC1017)** who carried out the Project work under my supervision and guidance.

**Prof. JOHN SAHAYA RANI ALEX**

Associate Professor

School of Electronics Engineering (SENSE),

VIT University, Chennai

Chennai – 600 127.

**ABSTRACT**

An EVM consists of two units, control unit and balloting unit. The two units are joined by a five-meter cable. Balloting unit facilitates voting by voter via labelled buttons while control unit controls the ballot units, stores voting counts and displays the results on 7 segment LED displays. The controller used in EVMs has its operating program etched permanently in silicon at the time of manufacturing by the manufacturer. No one (including the manufacturer) can change the program once the controller is manufactured.

An EVM can record a maximum of 3840 votes and can cater to a maximum of 64 candidates. There is provision for 16 candidates in a single balloting unit and up to a maximum of 4 units can be connected in parallel. The conventional ballot paper/box method of polling is used if the number of candidates exceeds 64. It is not possible to vote more than once by pressing the button again and again. As soon as a particular button on the balloting unit is pressed, the vote is recorded for that particular candidate and the machine gets locked. Even if one presses that button further or any other button, no further vote will be recorded. This way the EVMs ensure the principle of "one person, one vote".

The control unit is with the presiding officer or a polling officer and the balloting Unit is placed inside the voting compartment. The balloting unit presents the voter with blue buttons (momentary switch) horizontally labelled with corresponding party symbol and candidate names. The Control Unit on the other hand provides the officer in-charge with a "Ballot" marked button to proceed to the next voter, instead of issuing a ballot paper to them. This activates the ballot unit for a single vote from the next voter in queue.The voter has to cast his vote by once pressing the blue button on the balloting unit against the candidate and symbol of his choice.

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**ABHISHEK ASHISH PRANAV**

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1. **INTRODUCTION**

**1.1 OBJECTIVES AND GOALS**

* Design the Electronic Voting Machine.
* Successfully register a vote by a voter.
* Design the most efficient voting machine to ensure fair conduct of elections.
* Design a proper ballot system for securing a proper set of data for elections.
* Design a module to ensure minimum tampering of the election result.

**1.2 BENEFITS**

The cost per EVM was ₹5,500 (equivalent to ₹42,000 or US$640 in 2017) at the time the machines were purchased in 1989–90. The cost was estimated to be ₹10,500 (equivalent to ₹12,000 or US$180 in 2017) per unit as per an additional order issued in 2014. Even though the initial investment was heavy, it has since been expected to save costs of production and printing of crores of ballot papers, their transportation and storage, substantial reduction in the counting staff and the remuneration paid to them. For each national election, it is estimated that about 10,000 tonnes of ballot paper is saved. EVMs are easier to transport compared to ballot boxes as they are lighter, more portable, and come with polypropylene carrying cases. Vote counting is also faster. In places where illiteracy is a factor, illiterate people find EVMs easier than ballot paper system. Bogus voting is greatly reduced as the vote is recorded only once. The unit can store the result in its memory before it is erased manually. The battery is required only to activate the EVMs at the time of polling and counting and as soon as the polling is over, the battery can be switched off. The shelf life of Indian EVMs is estimated at 15 years.

**1.3 FEATURES**

* Secured code and algorithm
* Encrypted ballot module
* Use high end algorithm for calculating the winner
* Microcontroller used is low cost controller named as 8052
* Added Master Key far better Security.

**2 HOME AUTOMATION SYSTEM DESIGN**

**2.1 BLOCK DIAGRAM**

The four main features of the basic block diagram (given below) are

* The Microcontroller used – 8052
* The LCD for Display
* Master Key
* Voting Buttons

**Figure 1. GUI Controller**

Figure 1 shows the GUI controller for EVM. The secondary level block diagram is shown in Figure 2.

**Figure 2: Secondary block diagram with all the components used**

**2.2 HARDWARE ANALYSIS**

The Circuit consists of the power supply, Microcontroller 8052 Chip, LCD, Master Key, Buttons for voting placed upon the Bread board. The power supply powers all the other units with the appropriate voltages. The Microcontroller 8051 will take the input by every voter and keep updating the votes list.

**2.1.1 POWER SUPPLY**

The power supply will be 5V power Supply and the voltage eliminator to supply power to different devices.

**2.1.2 REGISTERING A VOTE**

When the system is initialized it’ll display a basic welcome and won’t register any vote until Master Key is pressed. Here Master Key is meant to be for the officer only to be pressed when the voter is approved to vote and can vote only once to avoid forgery in vote.

The voting system is fool proof till an extent and cannot be tampered with easily.

Voter can vote to any of the 4 contestants he/she pleases to but only once since after every vote master key is needed to be pressed just so that voting stage to intialize

Master Key

8052

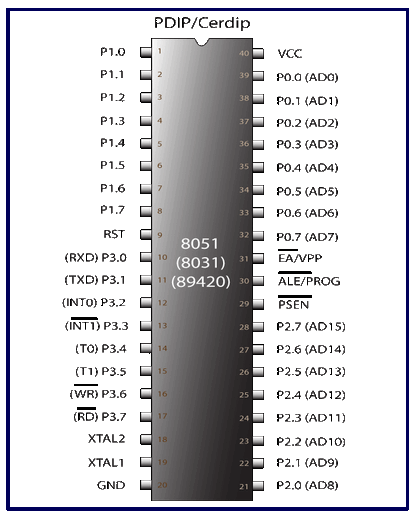
Voting Buttons

**Figure 3: Voting Buttons interfaced with Controller**

Figure 3 explains that the System is in waiting state until master key is pressed. It is used to detect consent of the officer and allows the voter to cast a (only 1) vote.

**2.1.3 MICROCONTROLLER 8052**

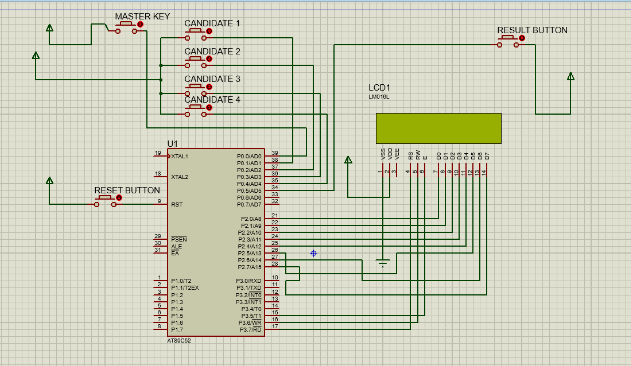
The 8052 is perfect for low-power and super miniature projects. Not only are smaller circuit boards cheaper to make, but they are desirable in many applications; such as in wireless sensor nodes, wearable electronics, and others. The Launchpad of MSP430 is shown in Figure 14.



**Figure 4: 8051**

The Microcontroller will collect the information from the sensors after the outputs from the sensing unit have gone through the Analog to Digital converter chip, and it will be programmed to implement the automation circuit.

**Circuit Diagram**



1. **SOFTWARE IMPLEMENTATION**

The software used is code compose studio

**Program code**

org 000h

MOV R1,#00H

MOV R2,#00h

MOV R3,#00h

MOV R4,#00h

MOV R5,#00h

MOV P0,#0FFh

CLR P0.1

CLR P0.2

CLR P0.3

CLR P0.4

CLR P0.0

CLR P0.5

//SETTING FOR DISPLAY

MOV DPTR,#MYCOM

CW1:CLR A

MOVC A,@A+DPTR

JZ disp

ACALL COMNWRT

ACALL DELAY

INC DPTR

SJMP CW1

Disp:MOV DPTR,#HELL

ACALL SEN\_DATA2

SJMP MASTERL

MasterL:

NOP

JB P0.5,CON //FINAL COUNTING

JB P0.0,Master

SJMP MasterL

NOP

NOP

Master:

NOP

NOP

//SETTING FOR DISPLAY

MOV DPTR,#MYCOM

CC1:CLR A

MOVC A,@A+DPTR

JZ As12

ACALL COMNWRT

ACALL DELAY

INC DPTR

SJMP CC1

AS12:MOV DPTR,#PER

ACALL SEN\_DATA2

SJMP AS1

As1:

NOP

NOP

JB P0.1,CAN1

JB P0.2,CAN2

JB P0.3,CAN3

JB P0.4,CAN4

SJMP As1

CAN1:

ACALL DISPSETT

INC R1

CLR P0.1

CLR P0.0

MOV DPTR,#FST

SJMP SEN\_DATA

CAN2:

ACALL DISPSETT

INC R2

CLR P0.2

CLR P0.0

MOV DPTR,#SEC

SJMP SEN\_DATA

CAN3:

ACALL DISPSETT

INC R3

CLR P0.3

CLR P0.0

MOV DPTR,#THRD

SJMP SEN\_DATA

CAN4:

ACALL DISPSETT

INC R4

CLR P0.4

CLR P0.0

MOV DPTR,#FRTH

SJMP SEN\_DATA

//DISPLAY OF CANDIDATE

SEN\_DATA:

D1: CLR A

MOVC A,@A+DPTR

JZ AGAIN

ACALL DATAWRT

ACALL DELAY

INC DPTR

SJMP D1

AGAIN:

SJMP MASTERL

//FIND MAXIMUM

CON:

MOV 20H,R1

MOV 21H,R2

MOV 22H,R3

MOV 23H,R4

MOV R5,#03H

MOV R0,#20H

MOV 30H,R1

AGAIN2:INC R0

MOV A,@R0

CJNE A,30H,CHK

DJNZ R5,AGAIN2

SJMP FIN

CHK: JC ABC

MOV 30H,A

DJNZ R5,AGAIN2

SJMP FIN

ABC:DJNZ R5,AGAIN2

SJMP FIN

// COMPARE FINAL RESULT

FIN:

MOV DPTR,#MYCOM

C2:CLR A

MOVC A,@A+DPTR

JZ NEX0

ACALL COMNWRT

ACALL DELAY

INC DPTR

SJMP C2

NEX0:MOV A,R1

CJNE A,30H,NEX1

//DSIPLAY

MOV R1,#00H

MOV DPTR,#RES1

ACALL SEN\_DATA2

SJMP NEX1

NEX1:MOV A,R2

CJNE A,30H,NEX2

//DIS

MOV DPTR,#RES2

ACALL SEN\_DATA2

MOV R2,#00H

SJMP NEX2

NEX2:MOV A,R3

CJNE A,30H,NEX3

//DIS

MOV DPTR,#RES3

ACALL SEN\_DATA2

MOV R3,#00H

SJMP NEX3

NEX3:MOV A,R4

CJNE A,30H,NEX4

MOV DPTR,#RES4

ACALL SEN\_DATA2

MOV R4,#00H

SJMP NEX4

NEX4:

//PRINT MAXIMUM VOTE NUMBER

EXIT:SJMP EXIT

SEN\_DATA2:

D11: CLR A

MOVC A,@A+DPTR

JZ AGAIN1

ACALL DATAWRT

ACALL DELAY

INC DPTR

SJMP D11

AGAIN1: ACALL DELAY

RET

COMNWRT: MOV P2,A

CLR P3.7

CLR P3.6

SETB P3.5

ACALL DELAY

CLR P3.5

RET

DATAWRT: MOV P2,A

SETB P3.7

CLR P3.6

SETB P3.5

ACALL DELAY

CLR P3.5

RET

DELAY:NOP

MOV R5,#250

HERE2:MOV R0,#250

HERE:DJNZ R0,HERE

DJNZ R5,HERE2

RET

DISPSETT:

MOV DPTR,#MYCOM

CW121:CLR A

MOVC A,@A+DPTR

JZ OUT

ACALL COMNWRT

ACALL DELAY

INC DPTR

SJMP CW121

OUT:NOP

RET

ORG 300H

MYCOM:DB 38H,0EH,01,06,80H,0;

RES1:DB "C1 WON ",0;

RES2:DB "C2 WON ",0;

RES3:DB "C3 WON ",0;

RES4:DB "C4 WON ",0;

FST:DB "CANDIDATE 1",0;

SEC:DB "CANDIDATE 2",0;

THRD:DB "CANDIDATE 3",0;

FRTH:DB "CANDIDATE 4",0;

HELL:DB "WELCOME",0;

PER:DB "VOTE NOW",0;

END

**4. CONCLUSION AND FUTURE WORK**

**4.1 CONCLUSION**

* The EVM was built and implemented.
* The system is targeted at all the Voters across the country.
* The system implements a fair way of conducting elections.
* The preliminary test results are promising.
  1. **FUTURE WORK**
* Voice recognition system can be implemented
* Integrating modules like Biometrics can provide a higher level of security.
* Integration of GSM or mobile server to send a message as soon as you cast a vote.

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