Solar Electronic Voting Machine Using Arduino

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ABSTRACT

This project describes a microcontroller based Electronic Voting Machine which can be used in real time systems. The system is constructed using Arduino (microcontroller), Voltage Regulator 7805 and its software program is written with assembly language. It is an effective tool for voting, it is a combination of mechanical electromechanical and electronic equipment and is used to display election results and to maintain and produce any audit trial information using LCD display which can be used in real time systems. Solar panel is used as power source.

Keywords: Arduino, LCD display, Solar panel, 4*4 matrix Keypad.

I. INTRODUCTION

An electronic voting system is a voting system in which the election data is recorded, stored and processed primarily as digital information. E-Voting is referred as "electronic voting" and defined as any voting process where an electronic means is used for votes casting and results counting. E-voting is an election system that allows a voter to record their ballots in an electrically secured method. A number of electronic voting systems are used in large applications like optical scanners which read manually marked ballots to entirely electronic touch screen voting systems. Specialized voting systems like DRE (Direct Recording electronic) voting systems, national IDs, the Internet, computer networks, and cellular systems are also used in voting process.

II. PROPOSED SYSTEM

In this method, the details of the voter will get from Aadhar card database. It was a newly developed database which is having all the information about the people. By using this database we took the voter's information will be stored in the personal computer.

At the time of elections, for finger print accessing we use finger sensing module. Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human finger prints. Fingerprint look at the pattern found on a fingertip. There is variety of approaches to fingerprint verification. A greater variety of fingerprint devices are available than any other biometric. Fingerprint verification may be a good choice for in e-voting systems, where the system operates in a controlled environment. It is not surprising that the work-station access application area seems to be based almost exclusively on fingerprints, due to the relatively low cost, small size, and case of integration of fingerprint authentication devices capture the finger vein image and compare or match to database, capture finger vein matched means this person will be valid for polling section and if condition is satisfied automatically, E-Voting machine buttons will be valid for polling section and if condition of his/ her voting process, a "Voting process completed" message will be displayed on the screen. The number of votes is counted by E-Voting machine and the information will be sent to the local electrical administrator.
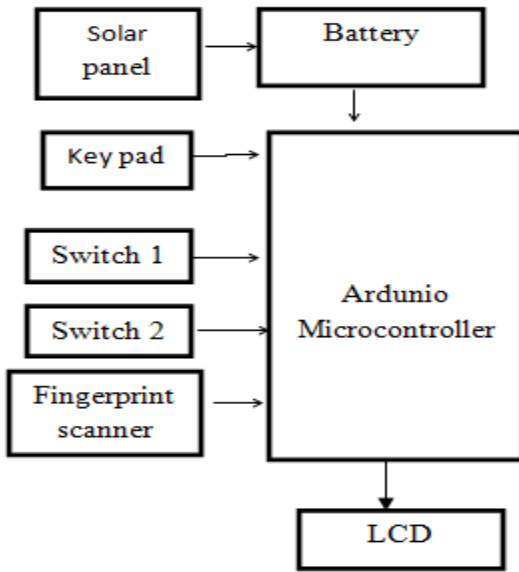
Block diagram:

Figure 1

III. EXPLANATION

In this project battery is get charged through the solar panels. Battery will supplies power to the microcontroller. Microcontroller will monitors the whole operations. It sends the signal given from switches and decide the mode of operation. LCD id used to display the information.

Solar power plays an important role in this project. Finger print scanner is enrollment of the voters authentication and also used for the security purpose. LCD display the results of the voter's authentication. The main objective of this project is to overcome this problem by using solar based system which is renewable energy. Solar power is used a power source in the circuit to reduce dependency on the grid system. This reduces the manpower requirement for voting purpose. It also very environment friendly as it uses a solar power and being digital in nature does not require paper. As it runs on solar power it can be used in different areas.

SOLAR PANEL

Using solar power to produce electricity is not the same as using solar to produce heat. Solar thermal principles are applied to produce hot fluids or air. Photovoltaic principles are used to produce electricity

Battery:

A battery can change chemical energy to electricity by putting certain chemicals in contact with each other in a specific way. Electrons, which aresmall parts of an atoms, will travel from one kind of chemical to another under the right circumstances. When electrons flow, this makes an electrical current that can power something. What a battery does is put the right chemicals in the right relationships, and then puts a wall between them.

Using an Inverter:

An inverter is a device which changes DC power stored in a battery to standard 120/240V AC electricity. Most solar power systems generate DC current which is stored in batteries. Nearly all lighting, appliances, motors, etc.

Arduino:

The Arduino microcontroller is an easy to use yet powerful single board computer that has gained considerable traction in the hobby and professional market. The Arduino is open-source, which means hardware is reasonably priced and development software is free.
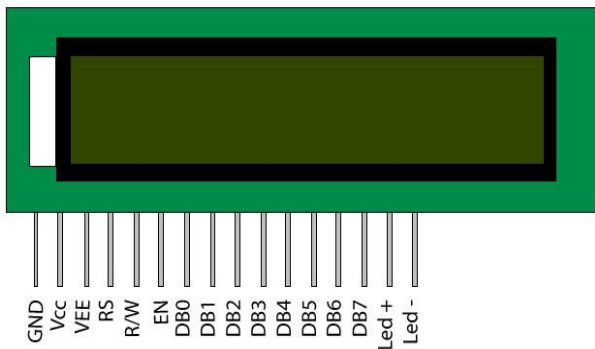

Figure 2

TheArduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers.TheATMEGA328 provides UART TTL (5V) serial communication, which is available on digital pins-0(RX) and Pins-1(TX). A Software serial library allows for serial communication on any of the UNO digital pins. The ATMEGA328 also supports I2C bus.

LCD:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of application. A 16*2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LCD.

Pin diagram:

Figure 3. Pin diagram of LCD

Finger print module:

This is a finger print sensor module with TTL UART interface for direct connection to microcontroller UART or to PC. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person.

Optical biometric finger print reader with great features and can be embedded into a variety of end products, such as access control, attendance, safety deposit box, car door locks.

Feature:

- Integrated image collecting and algorithm chip together, All-in-one.
- Low power consumption, low-cost, small size, excellent performance.

Some Basic components used in power supply:
Capacitors:

Capacitors utilized are utilized to get the immaculate and smoothest DC voltage in which the rectifier is utilized to get through DC voltage which is as a part of the light of the present destiny, from the connector. Capacitors are utilized to get square DC from AC current experience of the present channels so they are used as a touch of parallel to the yield.


Figure 4. Capacitor

Voltage regulators:

The 78XX voltage controller is principally overall utilized controller for voltage controllers. The XX speaks to the voltage of which the voltage of which the voltage controller delivers as the yield to the specific gadget. 7805 will deliver and control the yield voltage of 5V and 7812 will create the yield voltage of 12V.

Voltage regulation
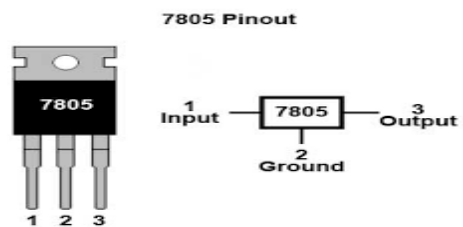
Figure 5.1. 4x4 Matrix Keypad:

4x4 Matrix membrane keypad, this 16 button keypad provides a useful human interface component for microcontroller projects. Convenient adhesive

backing provides a simple way to mount the keypad in a variety of applications. Typically one port pin is required to read a digital input into the controller. When there are a lot of digital input that have to be read, it is not feasible to allocate one pin for each of them

This is 16-button keypad provides a useful human interface component for microcontroller projects. Convenient adhesive backing provides a simple way to mount the keypad in a variety of application.

Figure 5.2. 4x4 matrix keypad

Features:

- Ultra-thin design.
- Adhesive Backing.
- Excellent Price/performance ratio.
- Easy interface to any microcontroller.

Application Ideas:

- Security system.
- Menu selection.
- Data entry for embedded systems.

IV. SOFTWARE DESCRIPTION

ArdunioIDE:

To program the Arduino (influence it to do what you need it to) you additionally utilize the Arduino IDE (IntegratedDevelopment Environment), which is a bit of free programming, that empowers you to program in the dialect that the Arduino gets it. On account of the Arduino the dialect is C. The IDE empowers you to compose a PC program, which is an arrangement of

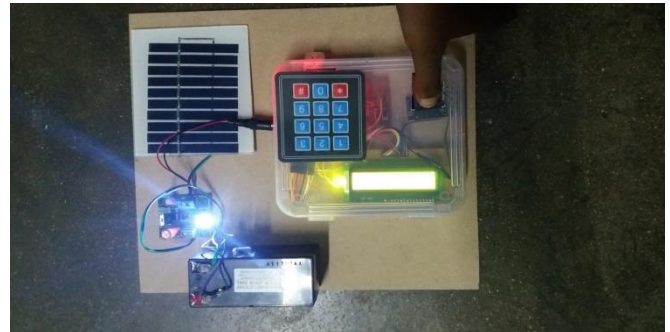well-ordered directions that you at that point transfer to the Arduino.

V. RESULTS

Figure 6. Working of Solar Evm

Figure 7. Place the right thumb of voter authentication

Figure 8. The valid aadhar of a person
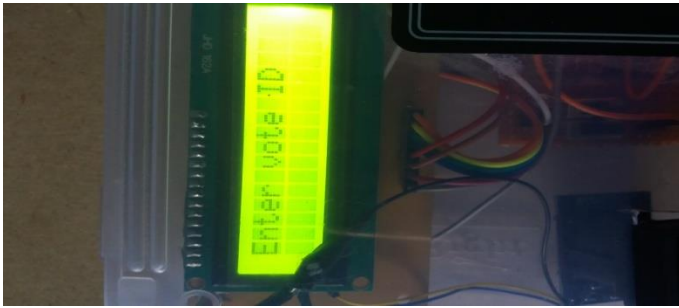

Figure 9. Parties' selection

Figure 10. Select the parties

Figure 11. Parties selection voteis received
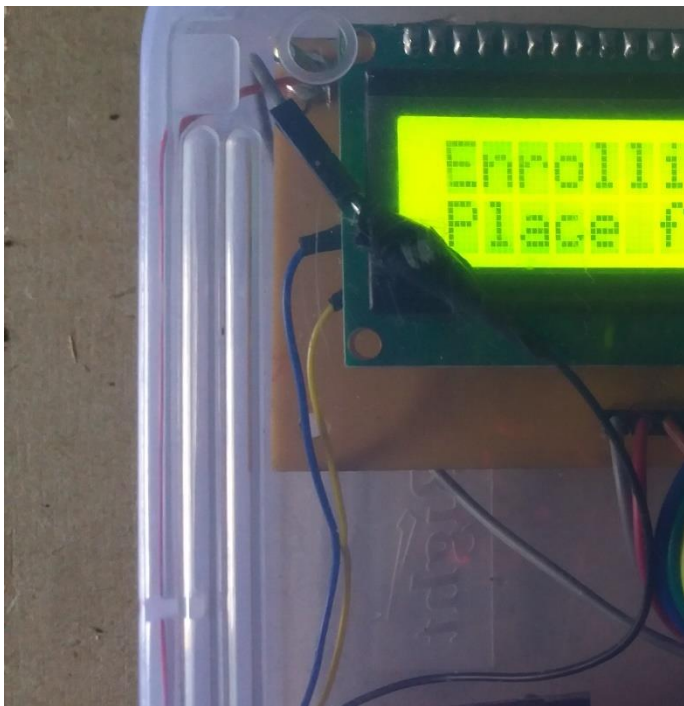

Figure 12. Enrolling mode of 2nd person
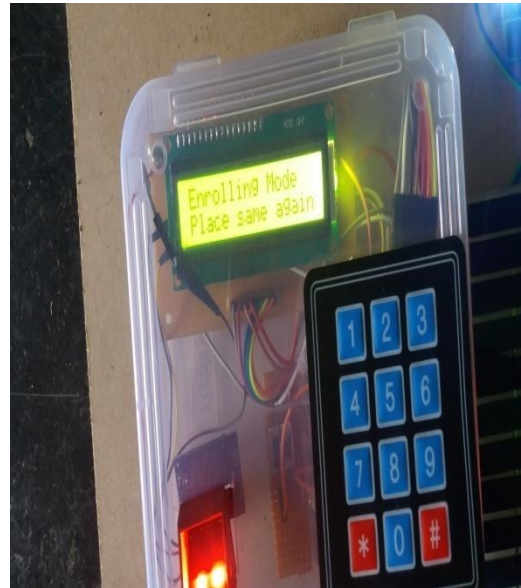

Figure 13. The person keep the finger it display on the screen

Figure 14. The Total vote is received

Figure 15. Final results on LCD

VI. CONCULSION AND FUTURE ENHANCEMENT

CONCLUSION:

The Electronic voting Machine using Finger-print scanner and Hex keypad has been designed successfully. The manpower requirement for voting purposes. The entire set-up is also very environment friendly as it uses solar power and being digital in nature does not require paper. As it runs on solar power it can be used in remote locations where there is no access to electricity.

FUTURE ENCHANCEMENT:

There is a vast scope for future work. Further modifications can be introduced to the system. The system could be automated so that every time a paper has been inserted in the ballot, it reads automatically and increases the count to avoid pressing the button every time a paper has been inserted. And also for stringent security purpose, fingerprint system could be implemented so the system avoids multiple counting by the same person. Moreover, by developing a network base EVM system with the help of internet protocol may avoid people may avoid people to go a distance for the purpose of casting vote, rather they could provide vote in the comfort of their home using the internet service.

APPLICATION:

- Useful in the election.

ADVANTAGE:

- Low power consumption.
- More reliable.
- More compatible.

VII. REFERENCES

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