

## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES SMART VOTING BASED ON RFID AND BIOMETRIC TECHNOLOGY

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### ABSTRACT

Electronic vote casting computing device (EVM) is a system that is used to count ballot and file votes instead of doing it manually utilizing human priceless useful resource to file and depend votes. The quite a lot of problems concerning manual counting of votes that it laborious, faulty and time ingesting. This makes the entire process very inefficient. As balloting is a touchy hassle, mismanagement can effect in problems as giant and challenging as political unrest. The debilitating result that political unrest can finally outcomes in wants no describing. Bangladesh, being a constructing nation cannot come up with the money for to be held up in its monetary progress therefore of mismanagement in elections. However, for vigor starved nation like Bangladesh, the hole between demand and give of electrical power stays big. A just right majority of the men and women are disadvantaged of this normal facility. Over dependency on digital devices for touchy services could now not look like a practicable choice both? However, renewable vigor situated programs can also be the procedure to tackling such task. A solar powered EVM addresses the complete above considerations. This paper discusses in element the design of a sunlight powered EVM prototype which is effective and allows the purchaser a remedy from the laborious act of vote assortment and counting. Additionally, it moreover eliminates the blunders from the approach, on account that it is a digital gadget. Some of the central largest problems of EVM is the security system which includes insider threats, community vulnerability and challenges to auditing. To limit these issues the prototype has been developed with a 3 stage defense encryption.

*Keywords: LPC2148 Microcontroller, RFID Reader, Memory, GPRS Modem, Fingerprint, Solar Panel*

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### I. INTRODUCTION

Vote casting is an approach for a bunch such as an assembly or voters to make a determination or express an opinion, regularly following discussions, debates or election campaigns. Democratic nations choose holders of excessive place of work by balloting. In a democracy, a government is chosen via balloting in an election: a method for an voters to pick, i.E. Select, amongst several candidates for rule. In a consultant democracy vote casting is the method wherein the electorate appoints its representatives in its government. In a direct democracy, voting is the system by means of the voters immediately makes selections, flip bills into legal guidelines, and many others. Like a good majority of the international locations on the earth, Bangladesh follows democracy, making vote casting an fundamental a part of our daily lives. Sadly, unlike the developed countries following democracy, political instability is among the illnesses plaguing this nation, hindering its fiscal development. Two years ago, Bangladesh's started with political term oil when the opposition party protested, traumatic free and reasonable elections.

Even though the outcome of the elections, by the use of balloting, gave the global areas its ruling government social gathering, controversy surrounded the election. As a consequence, the monetary process remains to be having to undergo the brunt in lots of methods. Many experts, reminiscent of the arena financial institution, Bangladesh economic school and many others. Have projected the gross residence product (GDP) to be diminish than 6% which is a ways under the goal of seven.2% for FY 2014. It can be evident that the political instability has contributed to this problem. This nation has suffered elevated political difficulty considering its inception. Vain to assert that election is among the fundamental factors of the nation's political instability, the balloting mechanism being a necessary part of the elections. Votes are cast through residents by way of a balloting approach. A vote casting method contains a set of rules which have to be followed for a vote to be seen legitimate, and the way votes are

counted and aggregated to yield a effect. Considered one of a kind balloting systems has one-of-a-kind types for permitting the man or woman to specific his or her vote. In ranked poll vote casting system, voted order the list of options from most to least favored. In style voting, voters fee each replacement in my opinion on a scale. In plurality balloting voters settle upon just one option, whilst in approval voting they are able to prefer as many as they want.

## II. IMPLEMENTATION

This procedure is used to advance an extremely secured voting laptop through utilizing biometric system i.E., finger print module. On this approach the individual indicates his/her finger print on the finger print module. The microcontroller interfaced to finger print and RFID modules .If finger print and TAG (Aadhaar Card) will investigate the character's small print with that of in the reminiscence. If it matches then it makes it possible for voting through the keypad. If the small print does no longer match or if the man or woman tries to vote a couple of occasions then the microcontroller will mechanically offers an alarm by way of a buzzer. The outcome of balloting shall be routinely up-to-date into the GPRS for on the spot counting and likewise displayed on liquid crystal display. Here we have now carried out a sunlight vigor digital voting laptop; solar power was once used as power supply in the circuit to slash dependency on the grid system. This reduces shrink the manpower requirement for voting purposes. As polling officers aren't required for counting votes.

## III. SYSTEM DESIGN

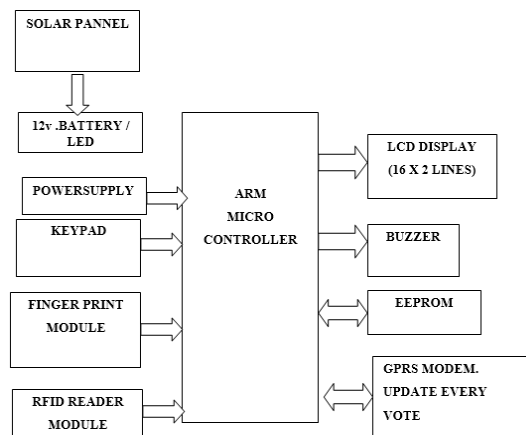


Fig.1. Block diagram

## IV. METHODOLOGY

**Micro Controller:** This section varieties the manage unit of the whole task. This section essentially consists of a Microcontroller with its related circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if wanted) and so on. The Microcontroller types the center of the task in view that it controls the devices being interfaced and communicates with the devices consistent with the application being written.

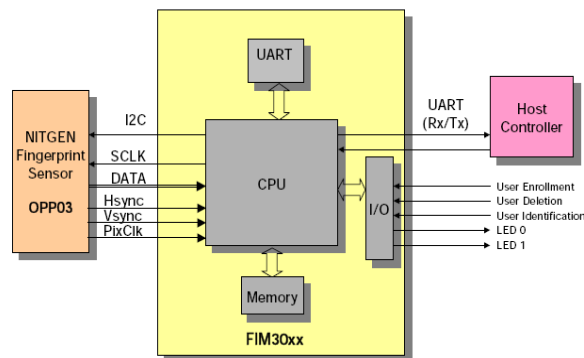
**ARM7TDMI:** ARM is the abbreviation of developed RISC Machines, it is the identify of a category of processors, and is the name of a sort technological know-how too. The RISC instruction set, and associated decode mechanism are so much less complicated than those of difficult guideline Set laptop (CISC) designs.

**Liquid-Crystal display:** Liquid crystal display is a flat panel display, electronic visual show that uses the sunshine modulation homes of liquid crystals. Liquid crystals do not emit gentle straight. Lcds are available to show arbitrary photographs or fixed pix which can be displayed or hidden, such as preset phrases, digits, and seven-section shows as in a digital clock. They use the same basic technology, except that arbitrary pictures are made up of a tremendous quantity of small pixels, even as different shows have higher elements.

**Fingerprint module:** A fingerprint sensor is a digital device used to seize a digital picture of the fingerprint sample. The captured picture is referred to as a are dwelling scan. This live scan is digitally processed to create a biometric template (a group of extracted factors) which is stored and used for matching. FIM 30 has services of fingerprint enrollment, identification, partial and whole deletion and reset in a single board, it does not require reference to a separate pc, thereby offering useful progress atmosphere.

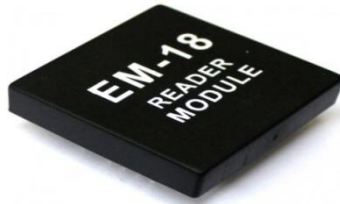
**Features:**

- On-line and off-line fingerprint identification included
- Identification price 1:1 and 1:N; some distance: 1/one hundred.000 y FRR: 1/1.000
- Algorithm and high hardness optical sensor
- It presents excessive attention ratio even to small measurement, wet, dry, calloused fingerprint.
- Quick acquisition of complicated finger types below very nearly any.
- Reminiscence potential for 100 fingerprints
- Memory routine: as much as 2,000 authentications
- Access host can be included via fingerprint or password
- It offers effortless development atmosphere.
- Two verbal exchange ports: RS-232 or host ( on-line applications )
- ASCII protocol
- Provide voltage: 5V
- Small size and potent durability, it has longer existence span.



*Fig .2: Finger print module*

**RFID:** Radio Frequency Identification (RFID) is a silicon chip-founded transponder that communicates by way of radio waves. Radio Frequency Identification is a technology which makes use of tags as an element in an integrated deliver chain resolution set that will evolve over the subsequent a couple of years. RFID tags incorporate a chip which holds a digital product code (EPC) quantity those facets to extra knowledge detailing the contents of the package deal. Readers determine the EPC numbers at a distance, without line-of-sight scanning or involving physical contact. Middleware can perform initial filtering on knowledge from the readers. Functions are evolving to conform with delivery merchandise to mechanically processing transactions centered on RFID science RFID Reader Module, are allso known as interrogators. They convert radio waves lower back from the RFID tag right into a kind that may be handed on to Controllers, which is able to make use of it. RFID tags and readers need to be tuned to the equal frequency so as to keep up a correspondence. RFID techniques use many specific frequencies, but probably the most customary and generally used & supported through our Reader is a hundred twenty five KHz.



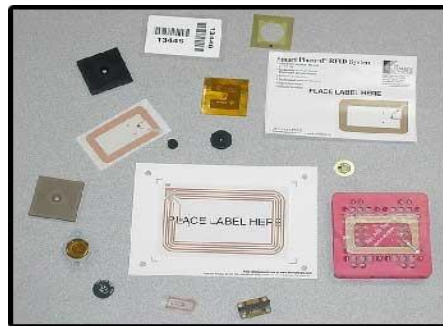
*Fig.3: RFID Reader*

Tags are categorized into two forms headquartered on running energy give fed to it.

- Active Tags
- Passive Tags

Active Tags: These tags have integrated batteries for powering the chip. Energetic Tags are powered with the aid of batteries and both ought to be recharged, have their batteries changed or be disposed of when the batteries fail.

Passive Tags: Passive tags are the tags that should not have batteries and have indefinite life expectations.



*Fig.4: Different types of tags*

**Buzzer:** A buzzer or beeper is a signaling gadget, often digital, more often than not utilized in automobiles, household home equipment reminiscent of microwave ovens, & recreation suggests. The phrase "buzzer" comes from the rasping noise that buzzers made when they were electromechanical contraptions, operated from stepped-down AC line voltage at 50 or 60 cycles. Different sounds more ordinarily used to denote that a button has been pressed are a hoop or a beep. The "Piezoelectric sound components" offered herein operate on a progressive precept making use of traditional oscillation of piezoelectric ceramics. These buzzers are offered in light-weight compact sizes from the smallest diameter of 12mm to colossal Piezo electrical sounders. In in this day and age, piezoelectric sound add-ons are utilized in many ways equivalent to condominium dwelling apparatus, OA equipment, audio equipment telephones, and many others. And they're applied largely, for example, in alarms, audio system, cell ringers, receivers, transmitters, beep sounds, etc.



*Fig.5: Types of Buzzers*

**EEPROM:** EEPROM (also written EEPROM and pronounced e-e-promenade or conveniently e-squared), which stands for Electrically Erasable Programmable learn-handiest memory, is a sort of non-unstable reminiscence used in computer systems and different digital instruments to store small quantity of knowledge that have got to be saved when vigour is removed, e.G., calibration tables or device configuration. When bigger amounts of extra static knowledge are to be saved (similar to in USB flash drives) other reminiscence varieties like flash reminiscence are more cost effective. EEPROMs are realized as arrays of floating-gate transistors. In 1983, Greek American George Perlegos at Intel developed the Intel 2816, which was once built on prior EEPROM technological know-how, but used a thin gate oxide layer so that the chip could erase its own bits without requiring a UV source. Pere Legos and others later left Intel to form Seeq technology, which is used on gadget charge pumps to deliver the high voltage essential for programming EEPROMs.

**GPRS:** GPRS (general packet radio supplier) is a packet-headquartered knowledge bearer carrier for wireless verbal trade offerings that is delivered as a group overlay for GSM, CDMA and TDMA (ANSI-I36) networks. GPRS applies a packet radio principle to modify character data packets in an potent method between GSM cellular stations and outside packet expertise networks.

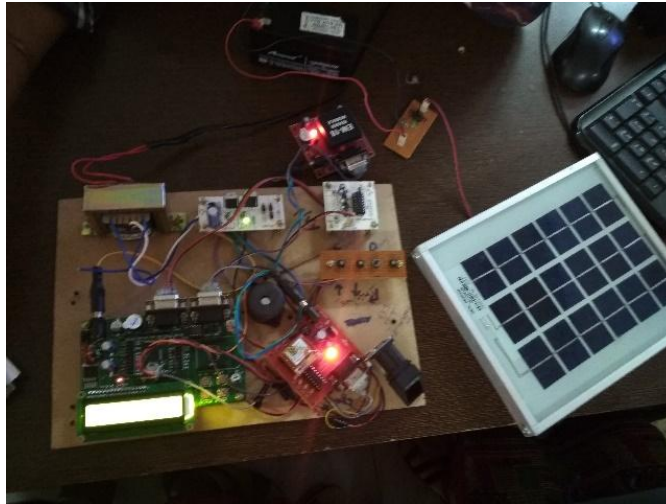


*Fig.6: GPRS module*

Packet switching is the place data is break up into packets which can be transmitted individually and then reassembled at the receiving finish. GPRS helps the sector's primary packet-based internet verbal exchange protocols, web protocol (IP) and X.25, a protocol that is used commonly in Europe. GPRS allows any reward IP or X.25 utility to function over a GSM mobile connection. Mobile networks with GPRS capabilities are Wi-Fi extensions of the web and X.25 networks.

## V. RESULT & DISCUSSION

This system is used to advance an incredibly secured balloting laptop by way of utilizing biometric process i.E., finger print module. In this approach the man or woman indicates his/her finger print on the finger print module. The microcontroller interfaced to finger print and RFID modules. If finger print and TAG (Aadhaar Card) will examine the individual's details with that of within the reminiscence. If it matches then it enables voting by way of the keypad. If the main point does not fit or if the man or woman tries to vote multiple times then the microcontroller will routinely give an alarm by way of a buzzer. The results of voting might be routinely up-to-date into the GPRS for on the spot counting and likewise displayed on liquid crystal display. Right + here we've carried out a solar vigor digital balloting computer. Sunlight vigor was once used as energy source within the circuit to decrease dependency on the grid approach. This reduces scale back the manpower requirement for balloting purposes. As polling officers are usually not required for counting votes.



*Fig 7: System design model of smart voting based on RFID and biometric technology*

## VII. CONCLUSION

The target of the assignment was once to introduce a design of a digital vote casting laptop that makes use of punch card and password safety. A 3 stage password safety was once utilized in a couple of phases. Sunlight energy was used as energy supply within the circuit to reduce dependency on the grid procedure. This reduces decrease the manpower requirement for vote casting purposes. As polling officers aren't required for counting votes. This set-up is also very environment pleasant because it makes use of solar vigor and being digital in nature does no longer require paper. The vote counting is on the spot, consequently decreasing the lengthen in publishing the effect. As it runs on sun energy it may be utilized in remote places the place there is no entry to electrical power. Additionally, because of the balloting mechanism being electronic there's a large reduction in mistakes. As no human element is worried in vote collection and counting, there will be practically no scope for fraudulent undertaking. This may occasionally allow and facilitate a peaceful vote casting atmosphere in the country.

## VIII. FUTURE SCOPE

- On this procedure we will add a timer so that after an exact interval of time, it will routinely get locked.
- We can additionally add iris science for authentication purpose.
- If we use touchy alcohol sensor and steel detector, we can furnish peaceful atmosphere near pooling sales space.

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