



DESIGN AND IMPLEMENTATION OF ATM CARD THEFT DETECTION SYSTEM

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ABSTRACT: Automated Teller Machines (ATM) are well known systems typically used to carry out a variety of personal and business financial transactions. In this project design and implementation of ATM card theft is developed. ATM Card theft and E-Waste has plays very important role in present generation. To overcome this ATM card theft detection system is implemented. By using arduino controller entire system is controlled. In this RFID reader is used to detect the information. RFID reader consists of two wireless cards. One card is used to detect the theft and another card is used as normal card. In the same way SMS is send to the corresponding phone number and location is shared to the corresponding phone number. This system is much easier, reliable and possesses an enhanced security compare to all the other existing system.

KEY WORDS: Automated Teller Machine (ATM), RFID, sensors, monitoring system, security, GSM, GPS, RS-232.

I. INTRODUCTION

The Internet of Things (IoT) is that the network of physical objects or "things" embedded with electronics, software, sensors, and network property, that permits these objects to gather and exchange information. IoT permits objects to be detected and controlled remotely across existing network infrastructure, making opportunities for additional direct integration between the physical world and computer-based systems, and leading to improved efficiency, accuracy and economic profit. "Things," (ATMs) were 1st introduced in 1939. Nowadays, concerning three million units area unit put in worldwide. Because the variety of ATM units increase, the machines area unit susceptible to hacker attacks, fraud, robberies and security breaches. Within the past, the ATM machines main purpose was to deliver cash of bank notes and to debit a corresponding checking account [1].

However, ATM machines have become additional difficult, and that they serve varied functions, so changing into a high priority target to robbers and hackers. Trendy ATM machines are enforced with high-security protection measures. They work beneath advanced systems and networks to perform transactions. The information processed by ATMs area unit sometimes encrypted, however hackers will use discreet hacking devices to hack accounts and withdraw the account's balance. As an alternate, unskilled robbers threaten bank patrons with a weapon to loot their withdrawn cash or account [3].

In this system, it uses diverse sensors which include Passive infrared sensor, pressure sensitive Resistor, Accelerometer. Famous ATMEGA328 microcontroller became used on this system. It senses and video display units the modifications in temperature, pressure and orientation of ATM gadget constantly. In this project we are using buzzer to give signal for corresponding bank and police station. Camera is used to take the continuous video clips. Here DC Motor is used to close the door of the ATM and stepper motor is used for emit gas and bring the theft to unconscious stage.

II. LITERATURE SURVEY

The first ATM in Korea was installed by Korea exchange Bank in 1975, and after installation of ATM by Shinhan

Bank in 1982, the civilian can use the ATM of various banks with Starting of operation of common CD network which is controlled by Korea financial telecommunications & clearings institute. The number of installed ATM machine has shown the trend of increasing continuously with the high increasing ratio in the first half of year 2000s, and gradual increase after the year. Especially external ATM machine has been increased continuously.

The external ATM machine is located in the entrance of kiosk booth and sidewall generally. The security system of those external ATM protects the 1st stage with the signal lamp installed in the machine itself, and covers the others with the open and impact detecting sensors [4]. The impact detecting sensor generates and sends the signal to the security center immediately to protect the ATM machine.

The control center has a rule if the emergency signal is sent and order to dispatch to the agent, the agent shall be the location within 25 minutes at the latest, however the late dispatch due to the lack of responsibility of agent and lack of number of agent and equipment will not be done of proper and rapid reaction for the ATM theft. Therefore, GSM Technology with addition of some more components already mention above which is to suggest in this study is installed in the ATM, the advanced security System can be setup with the rapid reaction implementing in real-time even the theft is happened [6].

Automated Teller Machines (ATM) terminals are designed to facilitate easier withdrawal of money for bank customers. The number of bank transactions happening through ATM terminals nowadays is numerous which establishes the stability of the infrastructure in a great deal. There has been a research to offer several non-financial services along with the regular financial service offerings through ATM terminals but has never got implemented because of the challenges like the increased load on servers, security [7]. Most of the literatures are from the accompanying articles, journals, books and antecedent works of the aforementioned fields. These literatures are again aggregate and use as an advice to the plan of this project. In today's apple as the automation and computerization is accretion day by day and the free systems are accepting abundant popularity. The cyber banking and cyber banking activities has become easier with the accretion of ATM's and on the added duke the crimes on the cyber banking organizations accept been gradually added during accomplished 12 years. A analysis has been declared that the crimes associated. This activity deals with the blockage of ATM robbery and abuse of accident by audition the ATM apparatus at complete time monitoring.

Automated Teller Machine is the system which has been designed to give money instantly to the customers. The existing ATM's typically provide instructions on the display screen that are read by the user for an interactive operation. Having read the instructions the user is able to operate the ATM via the data and information entered in the keypad. Customers need to insert their ATM card provided by their financial institutions into the ATM terminals.

To enable an authentication mechanism, a Personal Identification Number (PIN) is present against all the ATM card numbers. When their authentication is complete, the customer is allowed to select the type of transaction to be made by them - either balance enquiry or instant cash withdrawal. All these transactions now happen in a private network of the bank servers. The ATM Terminals could be extended to numerous other financial related services which could reach the end users at very fast and thus utilize these systems for instant cash withdrawal. This increases the efficiency of utilization of the installed Automated Teller Machines around the world and makes it more accessible to the end users. This makes the entire system usage robust. The main problem involved is in security issue.

III. PROPOSED SYSTEM Functional Block diagram of the proposed system is shown in figure (1) in which the Arduino is interfaced with RFID reader, buzzer, stepper motor, RS-232, GSM, GPS. In this RFID reader is used to detect the information. RFID reader consists of two wireless cards. One card is used to detect the theft and another card is used as normal card. When normal card is scanned then SMS is sent to the corresponding

phone number as “authenticated card is assessed”. When theft card is scanned then doors will be automatically blocked and gives indication using buzzer. In the same way it will send SMS as “your theft card is accessed at” and shares location of that place to the corresponding number. In the same way SMS is sent to the corresponding phone number and location is shared to the corresponding phone number.

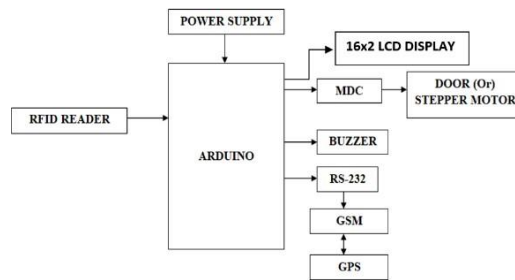


Fig. 1: FUNCTIONAL BLOCK DIAGRAM OF PROPOSED SYSTEM ARDUINO

Arduino is an open-source hardware and software company project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. Arduino board is an open-source platform used to make electronics projects. It consists of both a microcontroller and a part of the software or Integrated Development Environment (IDE) that runs on your PC, used to write & upload computer code to the physical board.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or breadboards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to the use of traditional compiler tool chains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

RFID READER

This technology is a rapidly growing technology. It has the potential to make great economic impacts on many industries and applications. RFID reader consists of an RF module that acts as a transmitter and receiver of radio frequency signal. RFID readers communicate with tags through an RF channel to obtain identifying information. Transmitter consists of an oscillator to create the carrier frequency; a modulator to make impact on data commands upon this carrier signal & a receiver that contains demodulator to extract the data returned. Depending on the type of tag, this communication may be a simple ping or may be a more complex multi-round protocol.

RFID is simple concept. There are two types of RFID Tags such as active tags and passive tags. Passive Tags: - They have no power source of their own, generally operate at a maximum distance of 3 meters or less, and have power only when in communication with an RFID reader. The simplest of these tags is capable of holding something in the range of 64 bits of factory-written unique data; these are called "Class 0" tags. Active Tags: - Active tags have their own power source, can actively and intensively transmit and processing data, and over considerable physical distances. Active tags can communicate with readers 100 meters or more away. Active tags need much less signal from the RFID reader. Active tags are better

BUZZER

A buzzer or beeper is an audio signalling device, which may be mechanical, electro-mechanical or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers. Early devices were based on an electromechanical system identical to an electric bell without the metal.

STEPPER MOTOR

A stepper motor is an electromechanical device which converts electrical pulses into discrete mechanical movements. The shaft or spindle of a stepper motor rotates in discrete step increments when electrical command pulses are applied to it in the proper sequence. The sequence of the applied pulses is directly related to the direction of motor shafts rotation. The speed of the motor shafts rotation is directly related to the frequency of the input pulses and the length of Rotation is directly related to the number of input pulses applied. Here we are placing this stepper motor for leak the gas inside the ATM to bring the thief into unconscious stage.

GSM

Global System for Mobile Communications (GSM) modems are specialized types of modems that operate over subscription based wireless networks, similar to a mobile phone. A GSM modem accepts a Subscriber Identity Module (SIM) card, and basically acts like a mobile phone for a computer. Such a modem can even be a dedicated mobile phone that the computer uses for GSM network capabilities.

LCD Display

LCD is used to display the data. LCD we have used is 16x2 i.e. 16 characters in 1 line, total 2 lines are there. It requires +5V to operate. It is connected to port 2 of microcontroller. It acts as an output to microcontroller. It uses ASCII values to display the character

3.7 RS-232

RS-S232 is a standard protocol used for serial communication, it is used for connecting computer and its peripheral devices to allow serial data exchange between them. As it obtains the voltage for the path used for the data exchange between the devices.

3.8 GPS

The Global Positioning System (GPS) is a U.S. space-based global navigation satellite system. It provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth.

IV. RESULTS

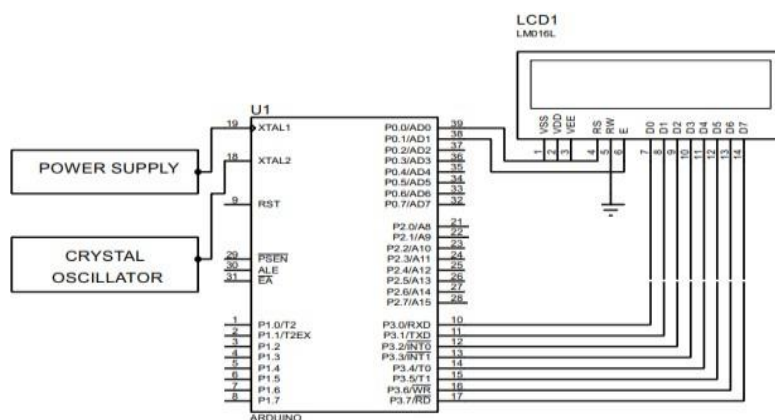


Fig. 2: BASIC CIRCUIT DIAGRAM

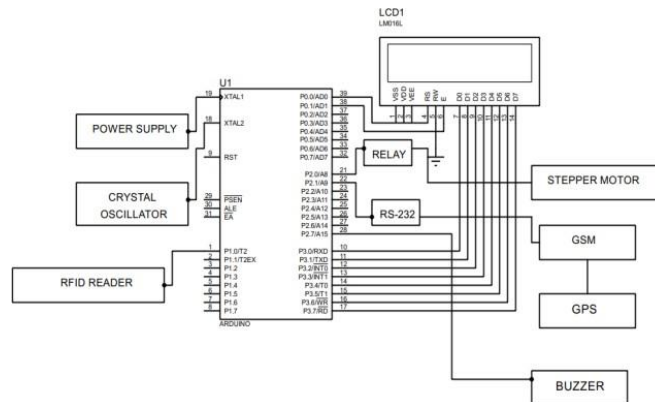


Fig. 3: PROPOSEC SHCEMATIC

V. CONCLUSION

The ATM machine should have a very robust infrastructure in order to withstand all the transactions to take place. It must also be able to withstand from any attacks as it may collapse the entire transactions. This proposed system ensures that the transactions are being encrypted. This increases security by providing the session key which increases the encryption. The system is robust, secure and easily implementable for several issues. It is made more usable as well as convenient for both the end users. The proposed system ensures that the infrastructure available is made more usable and also convenient to the end users.

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