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Iot Based Anti-Theft Protection And Continuous Monitoring System For Atm

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ABSTRACT
Automated Teller Machines (ATMs) security is the field of study that aims at solutions that provide multiple points of protection against physical and electronic theft from ATMs and protecting their installations. The implementation is achieved with the use of Machine-to-Machine (M2M) communications technology. It provides real-time monitoring and control of ATM .
The project helps in providing the real time monitoring of the system. This uses IR, Fire, Vibration sensors with the help of that they will identify the problem and will provide the solution immediately. IR sensor is used to check the availability of cash in the ATM machine. If available cash limit is very low, then the information will be sent to authorized person through IOT. Whenever robbery occurs, Vibration sensor is used to sense vibration and fire sensors senses heat produced from ATM machine and takes necessary action. Once the vibration is sensed, information is passed to controller based master device. Then the DC Motor is used to close the door of ATM. From the project, the ATM robberies can be caught easily. The project also saves our time from the unavailability of cash.

Keywords: ATM, IOT module, Buzzer, Vibration sensor, M2M Communications.

I.INTRODUCTION

The main objective of this project is to provide the security to the ATM machine from theft as well from physical damage. Automated Teller Machines (ATMs) security is the field of study that aims at solutions that provide multiple points of protection against physical damage from ATM machine. Automated Teller Machines (ATM) terminals are designed to facilitate easier 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.

The aim of this paper is to propose an architecture which enables the provisioning of several financial services through ATM terminals which proves to improve the security in case of unauthorized access. IPv6 has been a great revolution in the area of computer networking. The adoption of IPv6 from IPv4 has been quite beneficial. IPv6 allows the flexibility of assigning the logical addresses to all the nodes in the internet which facilitates the communication between every node. The architecture proposed in this paper uses the IPv6 setting. Service offerings like online mobile recharge, online bill payment etc, require a lot of infrastructure and robust security mechanisms. While these are being offered currently through various online services, there is a very good scope of making the use of existing technology with little changes to accomplish in a better way such that the offerings reach out to the general public. The rapid growth in Automatic Teller machines (ATM) has made life easy for the day to day man, but it is not so for operators who manage it. ATMs are not owned by banks; rather they are outsourced to Managed Service Providers (MSPs) from purchasing to maintaining the machines. Several factors like the maintenance, money filling, security and therefore the passive assets within the ATM rooms are responsible for keeping the ATM active. Typically, an ATM site consists of anywhere between 8 to 12 passive assets which include two air conditioners, two light collection boards, Associate in Nursing inverter/UPS, a security camera and a minimum of eight to twelve lightweight bulbs.Currently, since the security and passive assets

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in ATM rooms are managed manually, it ends up in larger physical interaction, that increase the time period and therefore shrinks the gross margin of ATM operators. These MSPs are duty-bound and every ATM site is up as costs of downtime are too high. With rising overheads ATM operators struggle to pass on the cost and so are looking for a reliable remote monitoring solution to revitalize ATM maintenance.

II. EXISTING SYSTEM

In previous projects, many researchers have developed a system for automatic ATM security using 8052 and RF Technology. Almost all systems are wired, but now we have tried the same by the use of wireless. 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

The IR sensor is used to check the availability of cash in the ATM. It will alert the authorized person, if there is in no cash in the ATM.The Fire sensor and Vibration sensor are used to monitor the ATM whether any person try to broke the ATM or not.If any person the try to break the ATM, the ATM will spray the chloroform and also the ATM door will close.The IoT will send the information to the authorized person.

IV. LITERATURE REVIEW

The project deals with prevention of ATM theft from robbery. so overcome the drawback found in existing technology in our society. Whenever robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machine. This system uses ARM controller based embedded system to process real time data collected using the vibration sensor. Once the vibration is sensed the beep sound will occur from the buzzer. DC Motor is used for closing the door of ATM. Stepper motor is used to leak the gas inside the ATM to bring the thief into unconscious stage. Camera is always in processing and sending video continuous to the PC and it will be saved in computer. RTC used to capture the robber occur time and send the robbery occur time with the message to the nearby police station and corresponding bank through the GSM.

V. BLOCK DIAGRAM

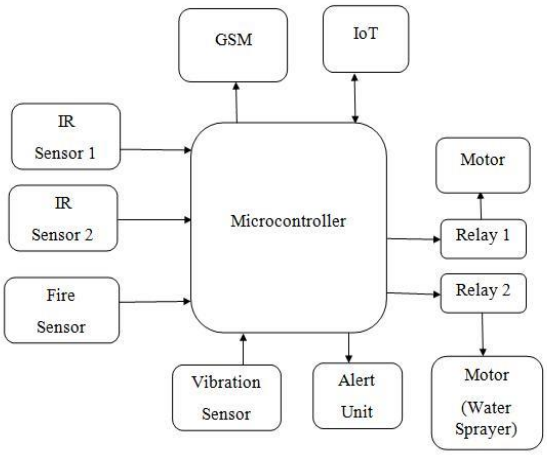

Fig: Block diagram

VI. DESCRIPTION OF BLOCK DIAGRAM

IR TRANSMITTER

IR transmitter is a light emitting diode (LED) which emits infrared radiations. Hence, they are called IR LED's. Even though an IR LED looks like a normal LED, the radiation emitted by it is invisible to the human eye.

There are different type of infrared transmitters depending on their wavelengths, output power and response time. A simple infrared transmitter can be constructed using an infrared LED's current limiting register and a power supply. When operated at a supply of 5V, the IR transmitter consumes about 3 to 5 mA of current. Infrared transmitter can be modulated to produce, a particular frequency of infrared light. The most commonly used modulation is OOK (ON-OFF-KEYING) modulation. IR transmitter can be found in several application. Some application require infrared heat and the best infrared source is infrared transmitter.

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Fig: IR Transmitter

IR RECEIVER

IR receivers are also called infrared sensors as they detect the radiation from an IR transmitter. IR receiver come in the form of photodiodes and photo transmitters. Infrared photodiodes are different from the normal photodiodes as they detect only the infrared radiation. Different type of IR receivers based on the wavelength, voltage, package, etc. When used in an infrared transmitter – receiver combination, the wavelength of the receiver should match with that of the transmitter. The typical infrared receiver circuit using a phototransistor consists of an IR phototransistor, a diode, a MOSFE, a potentiometer and an LED. When the phototransistor receives any infrared radiation, current flow through it and MOSFET turn ON. This is turn lights up the LED which act as a load. The potentiometer is used to control the sensitivity of the phototransistor.

Fig: IR Receiver

FIRE SENSOR:

Fire sensor is the most sensitive to ordinary light that is why its reaction is generally used as fire alarm purposes. This module can detect fire or wavelength in 760 nm to 1100 nm range of lightsource. The sensor and fire should keep a certain distance to avoid high temperature damage to the sensor.If the flame is bigger, test it with farther distance. The detection distance is up to 100 cm.The detection angle is 60 degrees so the flame spectrum is especially sensitive. The Fire sensor can output digital or analog signal. It can be used as a flame alarm or in fire fighting robots

Fig: Fire Sensor

GAS SENSOR

Character

* High sensitivity
* Fast response and resume
* Long life and low cost
* Size is minimum

Application

MQ303A is semiconductor sensor is for smoke detection, It has good sensitivity and fast response to smoke, suitable for portable smoke detector

Fig: Gas Sensor

Vibration Sensor or Piezoelectric Sensor

A Piezoelectric/vibration sensor is a gadget that uses the piezoelectric impact to gauge weight, speeding up, strain or compel by changing over them to an electrical charge. In view of piezoelectric innovation different physical amounts can be measured the most well-known are weight and increasing speed. For weight sensors, a thin layer and a monstrous base is utilized, guaranteeing that a connected weight particularly stacks the components in one heading. For accelerometers, a seismic mass is appended to the precious stone components. The primary contrast in the working rule between these two cases is how strengths are connected to the detecting components. In a weight sensor a thin film is utilized to exchange the drive to the components, while in accelerometers the powers are connected by an appended seismic mass. Sensors often have a tendency to be touchy to more than one physical amount. Weight sensors demonstrate false flag when they are presented to vibrations. Advanced weight sensors subsequently utilize increasing speed remuneration components notwithstanding the weight detecting components. Via painstakingly coordinating those components, the speeding up flag (discharged from the remuneration component) is subtracted from the consolidated flag of weight and increasing speed to infer the genuine weight data. Vibration sensors can likewise be utilized to collect generally squandered vitality from mechanical vibrations. This is expert by utilizing

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piezoelectric materials to change over mechanical strain into usable electrical vitality.

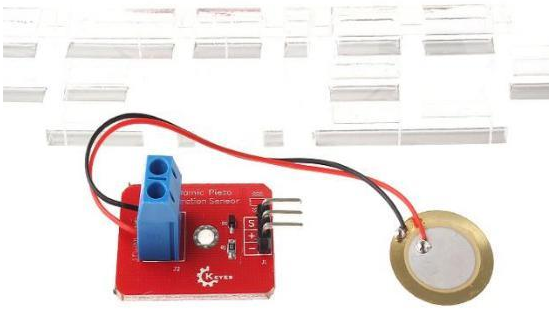

Fig: Vibration Sensor

IOT Module

IoT has evolved from the convergence of wireless technologies, micro-electromechanical systems (MEMS) and the Internet. The concept may also be referred to as the Internet of Everything.The internet of things (IoT) is the internetworking of physical devices,vehicles, buildings and other items embedded with electronics, software, actuators, and network connectivity that enable these objects to collect and exchange data. A thing in the Internet of Things, can be a person with a heart monitor implant, a farm animal with a biochip transponder an automobile that has built-in sensors to alert the user when tire pressure is low -- or any other natural or man-made object that can be assigned an IP address and provided with the ability to transfer data over a network.

Fig: IOT Module

V. METHODOLOGY

The principal ATM was introduced by Korea trade Bank in 1975.In 1982 ATM introduced by Shinhan Bank. In the initially half year of 2000s the quantity of introduced ATM machine demonstrated the pattern of ceaselessly expanding the proportion. External ATM machine has been expanded more. ATM machine is secured by introducing signal light in the machine with affect identifying sensor. To ensure the ATM machine affect recognizing sensor quickly send flag to the security focus. Focus send the flag to the operator Therefore, GSM Technology with expansion of some more segments as of now specify above which is to recommend in this examination is introduced in the ATM, the propelled security System can be setup with the quick response executing in real time even the burglary is happened. The quick development in Automatic Teller machines (ATM) has made life simple for the everyday man, except it is not so for administrators who oversee it. ATMs are not possessed by banks; rather they are outsourced to managed service providers (MSPs) from obtaining to keeping up the machines. A few elements like the support, cash filling, security and consequently the detached resources inside the ATM rooms are in charge of keeping the ATM dynamic. Regularly, an ATM site comprises of anyplace between 8 to 12 inactive resources which incorporate two aeration and cooling systems, two light accumulation sheets, Associate in Nursing inverter/UPS, a security camera and at at least eight to twelve light weight knobs.At present, since the security and latent resources in ATM rooms are overseen physically, it winds up in bigger physical communication, that expansion the day and age and in this manner recoils the gross edge of ATM administrators. These MSPs are compelled by a sense of honor and each ATM site is up as expenses of downtime are too high. With rising overheads ATM administrators battle to pass on the cost as are searching for a dependable remote checking answer for renew ATM support.

VI. INTRODUCTION TO EMBEDDED C

Looking around, we find ourselves to be surrounded by various types of embedded systems. Be it a digital camera or a mobile phone or a washing machine, all of them has some kind of processor functioning inside it. Associated with each processor is the embedded software. If hardware forms the body of an embedded system, embedded processor acts as the brain, and embedded software forms its soul. It is the embedded software which primarily governs the functioning of embedded systems. During infancy years of microprocessor based systems, programs were developed using assemblers and fused into the EPROMs. There used to be no mechanism to find what the program was doing. LEDs, switches, etc. were used to check correct execution of the program. Some ‘very fortunate’ developers had In-circuit Simulators

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(ICEs), but they were too costly and were not quite reliable as well. As time progressed, use of microprocessor-specific assembly-only as the programming language reduced and embedded systems moved onto C as the **embedded programming language** of choice. C is the most widely used programming language for embedded processors/controllers. Assembly is also used but mainly to implement those portions of the code where very high timing accuracy, code size efficiency, etc. are prime requirements.

Initially C was developed by Kernighan and Ritchie to fit into the space of 8K and to write (portable) operating systems. Originally it was implemented on UNIX operating systems. As it was intended for operating systems development, it can manipulate memory addresses. Also, it allowed programmers to write very compact codes. This has given it the reputation as the language of choice for hackers too.

USE OF C IN EMBEDDED SYSTEMS:

It is small and reasonably simpler to learn, understand, program and debug.

C Compilers are available for almost all embedded devices in use today, and there is a large pool of experienced C programmers.

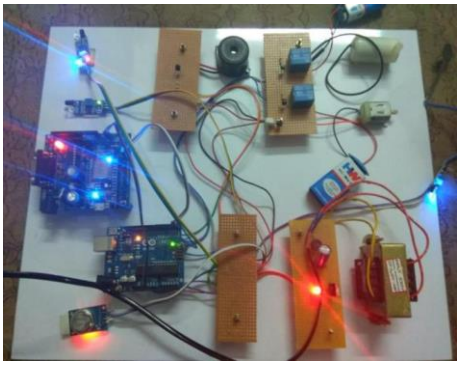
Unlike assembly, C has advantage of processor-independence and is not specific to any particular microprocessor/ microcontroller or any system. This makes it convenient for a user to develop programs that can run on most of the systems.

As C combines functionality of assembly language and features of high level languages, C is treated as a ‘middle-level computer language’ or ‘high level assembly language’

It is fairly efficient

It supports access to I/O and provides ease of management of large embedded projects.

VII. RESULT



VIII. CONCLUSION

Security plays an important role in our day to day life and it is need of the hour for all of us. Due to lack of employment, poverty, some people are forced to involve in Robbery. Burglary in ATM centres is nowadays increasing evidently. So Security to ATM centre is a must, in order to safeguard both human lives and money. Our Design will turn out to be the perfect solution to prevent Robbery in ATM centres. We have reduced the disadvantages and our design ensures security for both human life and money.

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