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ADVANCED ATM CRIME PREVENTION USING WIRELESS SENSOR NETWORK GSM AND RFID

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Abstract-:

Automated teller machines (ATM) these days are extensively used all over the world for withdrawal of cash. A unique card is issued for each user along with the unique code provided to him so that the person may do all his transactions personally without anyone getting known.We have to provide some security systems to prevent the crime if we notice any kind of theft. Hence the implementation of an ATM crime prevention system is necessary. The Idea of Designing and Implementation of our project is born with the observation in our real life incidents happening around us. This project deals with prevention of ATM theft from robbery. Whenever a robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machines. This system uses an 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 an ATM. Stepper motor is used to leak the gas inside the ATM to bring the thief to an unconscious stage. Here the LCD display board used to show the output of the message continuously. This will prevent the robbery and the person involved in robbery can be easily caught. Here, Keil tools are used to implement the idea and results are obtained. Keil tools are also used to run the DC motor and stepper motor for automatic door lock and also leak the gas inside the ATM.

I. Introduction:

In today's technically advanced world, autonomous systems are gaining rapid popularity.As the social computerization and automation has been increased and the ATM and credit card has been installed and spread out to simplify the activity for financial activity, the banking activity has been simplified, however the crime related with financial organization has been increased inproportion to the ratio of spread out of automation and devices.

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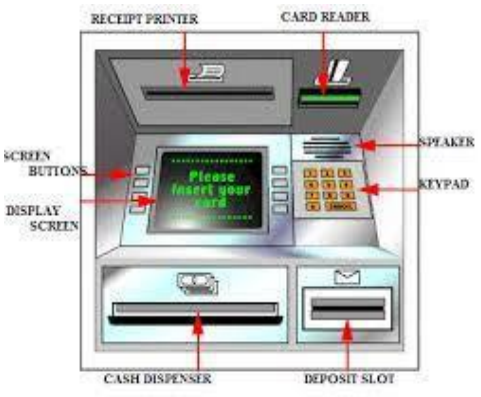

Fig1.ATMInternalStructure

SinceATM'shavebeengettingheftth eserecentdays,ithasbecomeverymuc hnecessary to increase the security of the ATM machines. A single CCTV camera situated at thecorner of the ATM isn't enough to provide much security since it only captures the video footageof what have been going on in the ATM but doesn't take any measures as such the thief is imprison edandhand overtothe law.Since the thief shouldn't escape from the ATM machine, the objective of this project is to handover the culprit to the police by making him stay inside byautomatically closing of the door due to the damage done to the machine and at the same timeinforming the bank and police station about the activities that has been occurring in the ATMcabin.

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II. Literature survey-

EMBEDDED SYSTEMS- An embedded system is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today. Since the embedded system is dedicated to specific tasks, design engineers can optimise it to reduce the size and cost of the product and increase the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale. Physically embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, or the systems

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controlling nuclear power plants. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure.Labeled parts include microprocessor (4), RAM (6), flash memory (7).Embedded systems programming is not like normal PC programming. In many ways, programming for an embedded system is like programming a PC 15 years ago. The hardware for the system is usually chosen to make the device as cheap as possible. Spending an extra dollar a unit in order to make things easier to program can cost millions. Hiring a programmer for an extra month is cheap in comparison. This means the programmer must make do with slow processors and low memory, while at the same time battling a need for efficiency not seen in most PC applications. Below is a list of issues specific to the embedded field History-In the earliest years of computers in the 1930–40s, computers were sometimes dedicated to a single task, but were far too large and expensive for most kinds of tasks performed by embedded computers of today. Over time however, the concept ofprogrammable controllersevolved from traditionalelectromechanical sequencers, via solid state devices, to the use of computer technology.

Tools-Embedded development makes up a small fraction of total programming. There's also a large number of embedded architectures, unlike the PC world where 1 instruction set rules, and the UNIX world where there's only 3 or 4 major ones. This means that the tools are more expensive. It also means that they're lowering featured, and less developed. On a major embedded project, at some point you will almost always find a compiler bug of some sort.Debugging tools are another issue. Since you can't always run general programs on your embedded processor, you can't always run a debugger on it. This makes fixing your program difficult. Special hardware such as JTAG ports can overcome this issue in part. However, if you stop on a breakpoint when your system is controlling real world hardware (such as a motor), permanent equipment damage can occur. As a result, people doing embedded programming quickly become masters at using serial IO channels and error message style debugging.

Resources-

To save costs, embedded systems frequently have the cheapest processors that can do the job. This means your programs need to be written as efficiently as possible. When dealing with large data sets, issues like memory cache misses that never matter in PC programming can hurt you. Normal profilers won't work well, due to the same reason debuggers don't work well.Memory is also an issue. For the same cost savings reasons, embedded systems usually have the least memory they can get away with. That means their algorithms must be memory efficient (unlike in PC programs, you will frequently sacrifice processor time for memory, rather than the reverse). It also means you can't afford to leak memory. These resources either need to be emulated in software, or avoided altogether.

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Real Time Issues-Embedded systems frequently control hardware, and must be able to respond to them in real time. Failure to do so could cause inaccuracy in measurements, or even damage hardware such as motors. This is made even more difficult by the lack of resources available. Almost all embedded systems need to be able to prioritise some tasks over others, and to be able to put off/skip low priority tasks such as UI in favour of high priority tasks like hardware control.

NEED FOR EMBEDDED SYSTEMS- The uses of embedded systems are virtually limitless, because every day new products are introduced to the market that utilises embedded computers in novel ways. In recent years, hardware such as microprocessors, microcontrollers, and FPGA chips have become much cheaper. So when implementing a new form of control, it's wiser to just buy the generic chip and write your own custom software for it. Producing a custom-made chip to handle a particular task or set of tasks costs far more time and money. Many embedded computers even come with extensive libraries, so that "writing your own software" becomes a very trivial task indeed. From an implementation viewpoint, there is a major difference between a computer and an embedded system. Embedded systems are often required to provide Real-Time response. The main elements that make embedded systems unique are its reliability and ease in debugging.

Debugging-Embedded debugging may be performed at different levels, depending on the facilities available. From simplest to most sophisticated they can be roughly grouped areas.Embedded systems often reside in machines that are expected to run continuously for years without errors and in some cases recover by them if an error occurs. Therefore the software is usually developed and tested more carefully than that for personal computers, and unreliable mechanical moving parts such as disk drives, switches or buttons are avoided.

III. Proposed methodology-

The proposed system is placed at the door where the house is to be protected. The Vibration sensor is placed on the ATM which is connected to port 0 11th pin of ARM. When the sensor detects Vibrations, information is given to the microcontroller, and then a lock system using a DC motor which is connected to port 0 17th pin of the ARM controller. Buzzer which is initiated to alert people and send the SMS to preferred persons automatically.

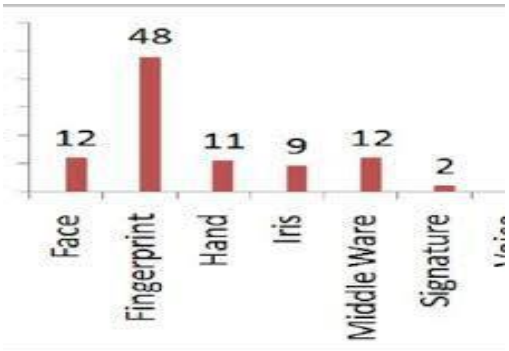

Fig2:ATMfraudattacksandphysicalattacksgraph

If ATM Card is lost and if any one inserted stolen card into ATM same operation executes that buzzer will alert, dc motor close the door and GSM send the SMS to authenticate person. It’s easy to find stolen cards and easy to prevent ATM systems.

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LCD which is used to display the data the status of working, RFID used as ATM card reading module. All input and output modules interfaced to ARM microcontroller by using KIEL developing software.

IV. Simulation results-

Fig3; output of Advanced Crime ATM Prevention method

Our project demonstrates how an automation of ATM crime prevention can be implemented using GSM technology, microcontroller, Vibration sensor, IR sensor, DC motor, buzzer ATM Machines centre. By implementing this project we can easily prevent crime and also we can save our precious time. Besides, using highly advanced Microcontrollers with the help of growing technology, the project can be successfully implemented. Thus the project has been successfully designed and tested.

V. CONCLUSION -

Our aim is to prevent the ATM crime that is happening around the world. As we all know, these days most of the ATMs have been attacked by robbers. From the first ATM being installed in the world till now, ATM has gradually become a target of crimes. With the constantly evolving of reported ATM crime, the ATM industry has begun to pay attention to the safety of ATM, even cardholders. Our project demonstrates how an automation of ATM crime prevention can be implemented using GSM technology, microcontroller, VIBRATION sensor, IR sensor, DC motor, buzzer ATM Machines centre. By implementing this project we can easily prevent crime and also we can save our precious time. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Besides, using highly advanced Microcontrollers with the help of growing technology, the project can be successfully implemented. Thus the project has been successfully designed and tested.

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