A Password-authentication system for the Electronic Protection for Exam Paper Leakages

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Abstract: "Education is simply the soul of a society as it passes from one generation to another "However today, when we read news articles as cited below, we realize that, knowingly or unknowingly this soul , which was once compared to the education by some great philosophers has got irrecoverably corrupted. One of the main cause for this is exam paper leakage. This must be considered seriously and suitable action must be implemented. We propose an electronic protection in order to prevent exam paper leakage. Question papers will be sent to the examination centers in a sealed electronic box, which cannot be opened before the stipulated time. The device will then be sent a message from the base station which will then request for a password to be entered. When the Password and timing matches, the box will open through a motorized mechanism. This will enable the papers to be locked and sealed till the point in time when the papers need to be brought out for the distribution to the students in the examination hall. The box will have a mechanism to detect any sort of unauthorized tampering with the help of box tampering sensor.

Keywords: GSM, Examination Papers, Protection, Password, RFID

Introduction:

Ancient China was the first country in the world that implemented a nationwide standardized test, which was called the imperial examination. The main purpose of this examination was to select for able candidates for specific governmental positions.The imperial examination was established by the Sui Dynasty in 605 AD and was later abolished by the Qing Dynasty1300 years later in 1905. England had adopted this examination system in 1806 to select specific candidates for positions in Her Majesty's Civil Service. This examination system was later applied to education and it started to influence other parts of the world as it became a prominent standard (e.g. regulations to prevent the markers from knowing the identity of candidates), of delivering standardized tests.

Every year during time of examination we will come across News in the newspaper and television about question paper leakages and hence the exam is being postponed / cancelled .Sometimes the information related to question papers leakage will not be known to the universities itself .Hence some students get good ranks by these papers and those students who had worked hard have to compromise with less rank and this factor will have negative effect on the growth of the society .Thus by considering the problems faced by the students and society a plan has to be made to implement a system which will help to stop this malpractice of leaking of the question paper.

Feature of This Project:

• This Project is designed and implemented by GSM and RFID technology.
• To prevent the leakage of examination question papers.

•This project can be used to protect some secret and confidential papers related to our country

Related Research

Today the system which is in wide use involves the practice followed from many years. This involves the sealed boxes containing the question papers which will be distributed to the examination centers. This system involves many disadvantages which may lead to leakage of question papers at various instances while the box is moved from printing location to examination centers. This happens due to easy tampering of sealed boxes and more human interference. The other method which is in use today involves the mailing of the question papers from the university to respective colleges prior to examination. The colleges take the printouts of the question paper and then the examination procedure follows. Even this particular method also involves many disadvantages. The sever breakdown may occur, website may be hacked, and more than 100 colleges should take printouts which involves the threats like power failure, system failure and leakage of the paper. The idea for the proposed system which involves the electronic protection is derived from modern day equipments like automated teller machine (ATM), Electronic lockers and other security enhanced electronic systems. This system involves the integration of certain electronic peripherals that works on the technologies based on RFID,GSM,I2C,UART.

Hardware Equipment required:

MAX 232: It is used for serial communication between microcontroller and GSM modem. It converts CMOS logic levels in to RS232 logic levels. It is bi-directional IC.
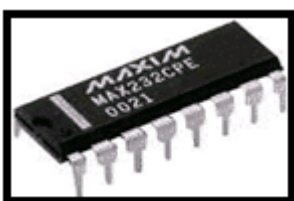
Crystal Oscillator: An external crystal oscillator is used for the completion of 2 machine cycles. The frequency of crystal oscillator is 11.0592MHz.


RPS: Regulated power supply is provided to constant and continuous + 5v. The source of supply is taken from household 230v/ac and converted into +5v using various converters.

Switch Array: An SPST switches are used to accept and reject of goods. The switch is a momentary action switch. It is interfaced with MCU as a input sensor.

Buzzer: It is a transducer device which give alarm when an object is about to search mode. It convert the electrical signal into sound signals.
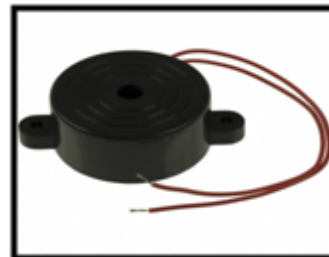
Gsm Modem: Global system for Mobile applications is used to send and receive SMS. Here SIM300 type of modem is used which support tri bands such as 800MHz, 900MHz and 1800MHz. The SIM 300 modem configured with "AT" (ATTENTION) commands.

Relay: It is a switching device works based on electromagnetic principle. It has poles named as NC.

DC Motor: it is an inductive motor which rotates at a 100 RPM. It requires 12v of supply voltage.

RFID: RFID is a generic term for technologies that use radio waves to automatically identify people or objects. There are many methods of identification, the most used is to store a unique serial number that identifies a person or object on a microchip that is attached to an antenna. The combined antenna and microchip are called an "RFID transponder" or "RFID tag" and work in combination with an "RFID reader" (sometimes called an "RFID interrogator"). This system consists of a reader and one or more tags.

LCD: A 16x2 Liquid crystal display unit is used to display the text on screen. It has 16 characters per line and 2 lines. It has font size of 5x7 matrix. It has 16 pins which divided into power supply pins, control pins, data pins.
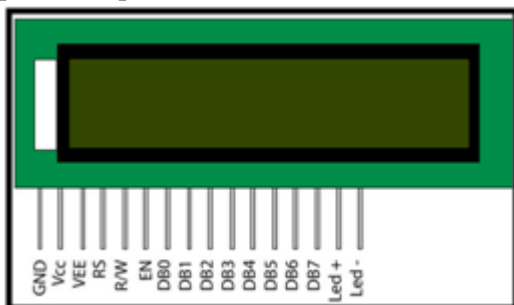
**AT89S52:** It is CMOS 8051 microcontroller unit which is a 40 pin DIP IC. It has 256 bytes of internal RAM, 8KB of In-System flash ROM, 3 – 16 bit timers/counters, 8 – interrupts.

System Methedology

▪ GSM modem is connected to the box containing question papers along with the microcontroller.

▪ University board acts as the Base station.

▪ To open the question paper box, RFID is needed to be swiped with a valid RFID tag and then RFID will compare with EEPROM data such as RFID address, RTC date and time also.

▪ If the comparison is failure , then controller sends "WRONG ACCESS" message to the Base station through GSM modem and If anybody tries to open the box before the pre-defined time with a valid RFID tag also, then controller sends "RULES VIOLATED" message to the Base station through GSM modem.

▪ The password is sent from the Base station to the college at the time of opening the BOX.

▪ If the comparison is success, then the controller is waits for the password. If the person enters the wrong password, then controller sends "PASSWORD MISMATCH" message to the Base station through GSM modem. If the person enters the correct password, then BOX is opened with the help of the stepper motor.

▪ After the exam is finished, the Base station sends "Exam box open/close time and New password" to exam centre . If the BOX is not closed along with answer papers within the specified time given by the university, then controller sends "RULES VIOLATED" message to the Base station through GSM modem.

▪ Light sensor is integrated to the box which Detects unauthorized tampering

Block Diagram:
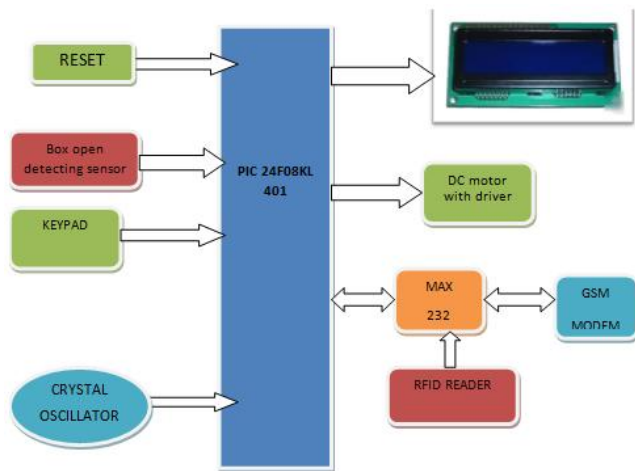
Advantages:

- Provides better security.
- Remote monitoring.
- No need of manual monitoring.

Applications:

- Useful for all colleges.
- Can be used all entrance exams also.

Outcome:

- Exam paper leakage could be avoided to a great extent.
- Complete knowledge of design and implementation of embedded system based on 8051 controllers.
- Knowledge and Implementation of GSM.
- RFID, I2C & UART Technologies.

Conclusion: Concluded Question papers will be sent to the examination centers in a sealed electronic box, which cannot be opened before the stipulated time. The device will then be sent a message from the base station which will then request for a password to be entered. When the Password and timing matches, the box will open through a motorized mechanism. This will enable the papers to be locked and sealed till the point in time when the papers need to be brought out for the distribution to the students in the examination hall. The box will have a mechanism to detect any sort of unauthorized tampering with the help of box tampering sensor.

References:

- Kenneth J Ayala, The 8051 microcontroller, Penram international Publishing Pvt. Ltd., 1997.
- The 8051 Microcontroller and Embedded system using assembly and C by Muhammad Ali Mazidi,Janice gillispie Mazidi,Rowling D McKinlay,Pearson publication ,second edition,2007.
- RFID- 'A guide to radio frequency identification' by V.Daniel Hunt, Albert Puglia, Mike Puglia, Pearson publication.
- http://eforengineers.blogspot.in/2012/12/lcd-interfacing-with-8051-in-8-bit-mode.html
- http://www.yuvaengineers.com/alternative-system-of-education/
- http://iteadurope.com/pm/platform/shield/icomsat/DOC_SIM900_Hardware%20Design_V2.00.pdf
- LED Clock Working DS1302 RTC Interface! « Keith's Electronics Blog.htm
- http://www.keil.com/dd/docs/datashts/philips/p89v51rd2.pdf
- http://www.datasheetcatalog.org/datasheet/SGSThomsonMicroelectronics/mXyzuxsr.pdf
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