RTC BASED IMPLEMENTATION OF RFID AND OTP BASED EXAM PAPER LEAKAGE PROTECTION SYSTEM

G Vijaya Bhai[1],K Swetha[2]
[1,2]Assistant Professor
Department Of ECE
Sree Chaitanya College of Engineering, Karimnagar

Abstract— In this article, the test is the main focus of the educational system. The test's main objective is to find suitable candidates for different positions. There are yearly reports of papers being leaked, leading to the cancellation or postponement of exams. To provide a compact and portable solution, we consequently made the decision to design and install an incredibly safe test paper leakage protection system based on Arduino. In addition, a GSM modem, RFID module, keypad, and electromagnetic lock are used in this system. The university first sends the exam paper to the college in an electronic sealed box called an Electronic Control Box.

The Electronic Control Box was created using the Arduino processor, which has an integrated RTC system for device monitoring. If someone tries to open the box before or after the RFID swipe time period, the system alerts the university administration via a GSM SMS (Short Message Service) stating that "some malfunctioning has taken place with the Electronic Control Box". If the passwords don't match, the person with access will get a notification on his phone. A single buzzer sound will indicate that the password entered is wrong. We can therefore conclude that the exam papers have been tampered with.

Keywords: RTC, GSM, RFID, and microcontroller

I. INTRODUCTION

Education is basically the motivating force of the society. An examination is the assessment planned to measure the skill, knowledge, physical fitness or aptitude and also classification in so many subjects. An exam may be on paper, on the computer, orally, in exam centers, which are conducted to test, calculate or examine the set of skills. Also the main purpose of the examination is to select the capable candidates for different positions

For the students main issues are question paper leakage, who suffer from the postponed or cancellation of the examination. Each and every year we hear news about postponed/cancelled exam due to paper leakages in the newspaper or on television. Sometimes the university itself doesn't know how there is leakage of any information content related to question papers. Hence, some student gets good rank in minimum time and with less effort and those students who really deserve the rank will not score even after hard work and maximum efforts.

This aspect will create negative effect on students and demoralize the growth of society. So we have come up with a compact and portable solution and decided to design and implement an examination paper leakage protection system based on Arduino. Along with the Arduino, GSM modem, RFID module, keypad, LCD and electromagnetic lock are used in this system.

II. RELATED WORK

The practice surveyed from many years. This system contains "the sealed boxes "comprising the exam papers that will be dispersed to the examination centers. This framework includes a lot of restrictions that might lead to exam papers leakage at different instances same time the box is moved from "printing area to examination centers". This happens because of not difficult tampering of sealed boxes and more interference of people. Another technique that is in use today includes the mailing of the exam papers from the university to particular college's former to examination. The colleges take the Xerox of the exam paper and then the examination methodology follows. Significantly this specific strategy also includes lots of limitations. The sever interruption might occur, the website might have a chance to be hacked, and more than 100 colleges must take Xerox that includes the threats such as framework

failure, energy failure, and the paper leakage. The knowledge for the suggested framework that includes the electronic security may be determined from current equipment such as "Electronic lockers, automated teller machine (ATM), and other security improved electronic frameworks". This framework includes the incorporation of specific electronic peripherals that operates on the methodologies depend on GSM, UART, RFID, and I2C [7], [8].

III. EXISTING SYSTEM

In the existing system Survey the question papers are dispersed in fixed boxes. This framework is being taken after since numerous years. The burdens of this framework are it might prompt spillage of question papers at different cases in the voyage of box from printing area to examination focuses. This occurs because of simple altering of fixed boxes and more human impedance. Other strategy includes the e-duplicate of the question papers sent from the college to the universities earlier to examination. The schools take the printouts of the question paper and afterward are disseminated to the examinees impediments.

The site might be hacked, server may likewise breakdown and number of schools needed to take printouts which includes the dangers like power disappointment, framework disappointment and may prompt spillage or issues in conduction of examination. The thought for the proposed framework which includes the electronic insurance is gotten from advanced applications like Electronic lockers in bank, Home security frameworks, office security frameworks and other security upgraded electronic framework.

IV. PROPOSED SYSTEM

The proposed system principle enclose contains the sub boxes which address papers are proposed to be kept. The RFID tag and GSM modem are associated with the container alongside the Arduino.

GSM modem interfaced to Arduino dependably sends the report of exercises to college by means of instant messages. Fundamental issues of students are "exam paper leakage", who endures from the cancellation or postponed of the exam. Every year we gather news something like postponed/ canceled exam because of paper leakages in the daily paper or on TV.

Sometimes the university itself does not recognize how there will be spillage of the data related to exam papers. Therefore, some candidates won't get the rank that put maximum efforts and hard work, and some candidates get the good rank in less time and minimum effort. This perspective will make a negative impact on students and discourage the society's development. Thus we have come up with a convenient and portable result and decided to execute "an examination paper leakage security framework". Together with "the Arduino Mega, keypad, GSM modem, LCD, RFID module, and the electromagnetic lock" would be utilized in this framework. First, the university will send the exam paper to the college in "an electronic sealed box" that will be termed as "Electronic Control Box". This "electronic control box" is an embedded framework, which might have been proposed utilizing "the Arduino Mega" that has inherent RTC to observe "the electronic control box". Whether anybody attempts to unlock the box previous and afterwards the time duration of the RFID swipe the framework communicates to the university powers by sending "a SMS (Short Message Service)" through "Global system for mobile communication (GSM)", which several malfunctioning has taken place with "the Electronic Control Box".

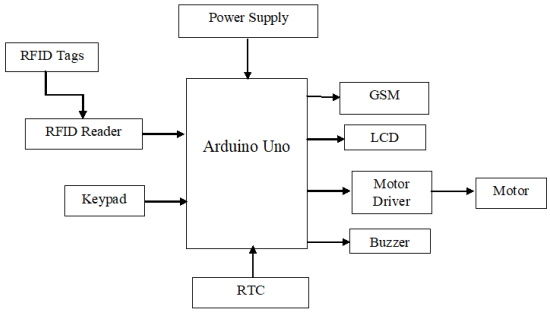

Figure: Proposed Block diagram

RFID(radio frequency identification) it works on the principle of wireless systems, It is made up of two components RFID tags and RFID readers. Where RFID tags are portable chips and RFID readers are mounted on Electronic Concealed Box. The RFID tags are given to the main examiner and the invigilator and there data is stored in

Arduino memory. Whenever a tag is swiped on the reader it detects the tags is valid or not using electromagnetic fields of tags. There are two types of tags active tags and passive tags. Active tags use power from its power storage where as passive tags depend on RFID readers for power. RFID is a best protection layer for this layer because we can manage who can assess the Electronic Concealed Box from RFID.

Arduino UNO module, a microcontroller that has 14 digital pins(D0-D13) and as 6 analog pins(A0-A6). We used Arduino microcontroller for this project because it consumes less power and it's cheaper. We choose Arduino because we don't need any communication from Electronic Concealed Box and Arduino does not have inbuilt communication module so it's cheaper compatible. We use Arduino to basically deals with the receiving the signal from RFID reader and give signal to servo motor and electronic lock to open.

LCD is Liquid Crystal Display. We use 16*2 display, which shows or guides the invigilator to do next step to open the box and print question paper through displaying messages on it.

Motor driver L293D is used in this project which has 16 pins it is used drive motors in this case it is used to drive dc servo motor which controls the locking and unlocking of solenoid lock. This motor driver receives input from Arduino which guides it to perform the function.

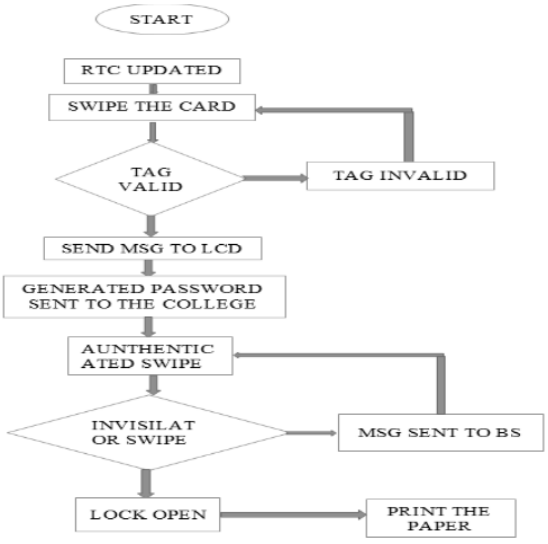

Figure: Flow Chart

V. RESULTS

In this paper microcontroller was used, to perform the various operations the several circuits are designed and interfaced to the microcontroller. The signal received from the GSM module is converted by using TTL logic circuit. The figure shows the experimental setup for GSM based motor control for irrigation system.

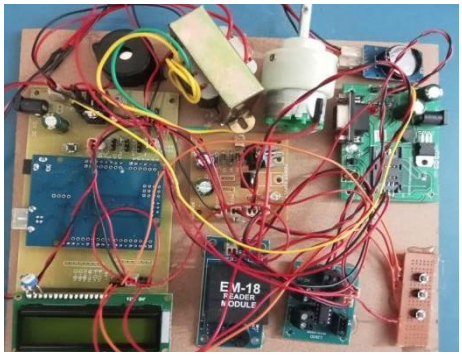

Figure: Hardware Kit

VI. CONCLUSION

The examination paper leaking system's compact and reasonably priced fix was made possible with Arduino. To protect the response sheets before forwarding them to the university administration, this project could be expanded.

It can also be used in several other scenarios when it's important to protect documents or other assets. The Electronic Control Box can be programmed by the embedded system to shut down after the exam is over.

REFERENCES

[1] Tejuswi Y, "RFID based access card for public enrollment and distribution: a research

survey", IEEE Journal on selected areas in communication, Vol.2, No.9, (2013).

[2] Mouli CC, "Embedded System Based Exhaust Fan Control", Lab Experiments–A Journal of Laboratory Experiments, Vol.11, No.3, (2011), pp.200-201.

[3] Nalajala P, "Provide Safety in School Children's Vehicle in Urban Environments using Navigation system", International Journal of Applied Engineering Research, Vol.12, No.13, (2017), pp.3850-3856.

[4] Nagaraja C, Chandra Mouli C, Athavulla S & Bheemalingaiah T, "A Microcontroller Based Programmable Power Supply, Lab Experiments", A Journal of Laboratory Experiments, Vol.10, No.4, (2010), pp.249-253.

[5] Wankhade PP & Dahad SO, "Real time vehicle locking and tracking system using GSM and GPS technology-an anti-theft system", International Journal of Technology and Engineering System (IJTES), Vol.2, No.3. (2011), pp.272-275.

[6] Godavarthi B & Papa RN, "Wireless Sensors Based Data Acquisition System using Smart Mobile Application Internet of things", International Journal of Advanced Trends in Computer Science and Engineering, Vol.5, No.1, (2016), pp.25-29.

[7] Godavarthi B, Nalajala P & Ganapuram V, "Design and implementation of vehicle navigation system in urban environments using internet of things (IoT)", IOP Conference Series: Materials Science and Engineering, Vol.225, No.1, (2017).

[8] Rao NP, Bhavana G & Teja MLR, "RTOS Based Image Recognition & Location Finder Using GPS, GSM and OpenCV", International Advanced Research Journal in Science, Engineering and Technology, Vol.2, No.12, (2015), pp.85-88.

[9] Bhavana G, Mohammad K, Paparao N, "Biomedical sensor based remote monitoring system field of medical and health care", Journal of Advanced research in dynamical and control systems, Vol.9, No.4, (2014), pp.210-219.

[10] Paparao N, Ponna M & Bhavana G, "RFID Based Security for Exam Paper Leakage using Electromagnetic Lock System", International Journal of Pure and Applied Mathematics, Vol.117, No.20, (2017), pp.845-852.

[11]Http://En.Wikipedia.Org/Wiki/Test_(Assessment)

[12] Arm System-On-Chip Architecture, 2/E By Ferber, Pearson Education India, 01-Sep-2001

[13] ARM System Developer's Guide: Designing And Optimizing System, By Andrew Sloss, Dominic Symes, Chris Wright,Morgan Kaufmann, 10-May-2004

[14]Http://Www.Mikroe.Com/Downloads/Get/1215/

[15] Http://Www.Inmotion.Pt/Store/Rfid-Module-Sm13 0-Mifare-(13.56-Mhz)

[16] Paparao N, Ponna M & Bhavana G, "RFID Based Security for Exam Paper Leakage using Electromagnetic Lock System", International Journal of Pure and Applied Mathematics, Vol.117, No.20, (2017), pp.845-852.

[17]Http://Users.Ece.Utexas.Edu/~Valvano/Datasheet s/L293d.Pdf

[18]Http://Www.Positronindia.In/Datasheet/DS_PT00 06.Pdf

[19]Http://Www.Maximintegrated.Com/Products/Inter face/Transceivers/Rs-232

[20]Rfid: Applications, Security And Privacy, By Simon Garfinkel, Beth Rosenberg, Pearson Education India, 01-Sep-2006 [12]Principles And Applications Of GSM By Vijay Kumar Garg, Joseph E. Wilkes, Prentice Hall PTR, 1999