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Two Way Authentication System for Exam Paper Leakage Detection: A Review

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Abstract: ***The idea behind this project is to guard the leak of question papers before the examination and conjointly to maintain the protection of the solution paper till they reach the centre for analysis. An Electronic management Box is made during which the communication papers are going to be placed, and may be opened solely at the precise time of examination once the cross checking of the time. If anyone attempts to open the box before the stipulated time, then a beep sound can come from the buzzer, that is connected to the electronic box. RFID is connected to the electronic management box, that acts as a primary level of authentication.***

Keywords: RFID, Exam paper, Electronic Control box, GSM module, buzzer

I. INTRODUCTION

Education is basically the driving factor behind society's motivation. An examination is a test designed to measure a person's ability, knowledge, fitness, or aptitude in a variety of disciplines. A test can be conducted on paper, on the computer, orally in examination centres to test, calculate, or examine a set of chops. Also the most purpose of the examination is to pick the able campaigners for colorful positions. For the scholars main issues are question paper leakage, that suffer from the held up or cancellation of the examination.

Each and each time we hear news about held up/ cancelled test thanks to paper leakages within the review or on TV. Occasionally the university itself doesn't know how there's leakage of any information content related to question papers. Hence, some pupil gets good rank in minimal time and with lower trouble and those scholars who really earn the rank won't score indeed after hard work and maximum sweats. This aspect will produce negative effect on scholars and demoralize the expansion of society. So we have come up with a compact and movable result and decided to term and apply an test paper leakage and protection system supported Arduino microcontroller. First the question paper involves the academy from University in an electronic sealed box which is named Electronic Control Box. Every time during time of examination we'll encounter News within the review and television about question paper leakages and hence the test is being held up/ cancelled. Occasionally the knowledge associated with question papers leakage will not be known to the seminaries itself. Hence some scholars get good species by these papers and people scholars who had worked hard need to compromise with lower rank and this factor will have negative effect on the expansion of the society. Therefore by considering the issues faced by the scholars and society an idea has got to be made to apply a system which can help to stop leaking of the question paper.

II. LITERATURE SURVEY

A. Nawsheen Promy, Tashfiq Rahman, Sadman Islam, and Saqlain Mahmud Khan, "Automated smart box to alleviate unfair means in public examination"-2020

To put the prototype together, they used a number of components. The entire system was controlled by an Arduino Mega. The GSM module in the box was used to send SMS notifications to the authorities. The motors utilized were servo motors. Sonar and hall sensors have been used. To open the box in the first stage, they'll need a fingerprint password or a four- or six-digit password provided by the authority. MySQL was chosen as the database since it is the most extensively used programming language and is easy to set up. In the database, we have a primary key. A smart box's principal key, for example, is every test center number. Two batteries provide the necessary power for the project. The Arduino, which is designed to control the smart box, is powered by one low voltage battery, while the GSM module is powered by another voltage battery. The user is then prompted to enter their password. The motor turns and opens the box if the user enters the proper password. They used the GSM module to transmit SMS for remote control as well as unlawful opening. In a remote database, the location of the box opening and the time of the box opening are also recorded. By using a remote data base and a front end web page, the administrator will be able to learn all of the details about the box.

B. *Mamilla Sirisha, Neelam Syamala "RFID Based Security for Exam Paper Leakage System"-2019*

The kit is turned on by turning on the power supply.A welcome message appears on the LCD. For proper operation, the kit should be reset. A card must be presented to an RFID reader, which will read the data contained on the card. The prompt requires you to input a mobile phone number to which the OTP should be issued. The prompt instructs you to display the card. If the card is legitimate, an OTP is sent to the specified mobile number. Otherwise, the number will receive a notification indicating that an unlawful action has occurred. The prompt instructs you to display the card. If the card is legitimate, an OTP is sent to the provided mobile phone number. Otherwise, the number will receive a notification indicating that an unlawful action has occurred. The OTP must be entered using the numeric keypad. The lock is opened if the OTP entered is correct. Otherwise, a message about the unlawful access is transmitted to the authorities.

C. *Kimia Tuz Zaman, Wordh Ul Hasan, Monsur Hillas, Abdullah Al Mahfuj Shaan, Khan Afnan Rahad "IOT based question paper delivery box: A Solution towards preventing question paper leakage "-2020*

To avoid leakage, the recommended method was among digitally distribute the inquiries to all of the exam centres. The exam begins after the question sheets are printed. The delivery box is password-protected, and only those with the password can open it. It can only be opened half an hour before the exam begins by the appropriate authorities. The boxes will be automatically locked 20 seconds after they are opened. IR Proximity Sensors, Lasers & LDR, GSM Module, and Servo Motors were all connected for the safety system. An error occurs when the values of any of the sensors change. The GSM Module is then utilised to send the anomaly text to the server and central board, where it is continuously monitored.

D. *A. Z. M. Tahmidul Kabir, Md. Jubaer Islam Khan, Al Mamun Mizan, Nirmal Debnath "Smart System Integration of Question Paper Security System "-2019*

The Arduino system is largely focused on two types of functionality. When the device reaches its destination, all of the specified input must match in order to unlock it. The position will be matched by the correct range of latitude and longitude, as determined by the zone legislation, which will be sent by GPS. The point is taken with a favourable reaction, and the gadget will finally open. The GSM in the device will send an SMS to the proprietor's frequenter ID for each step. The owner also has grand access, which means he or she has the authority to stamp all protocols.

E. *G.Mohammad Abdul Naveed, P.V.Vara Prsada Rao "A Password-authentication system for the Electronic Protection for Exam Paper Leakages" –2019*

In addition to the microcontroller, a GSM modem is linked to the box carrying the question papers. The base station is the university board. A valid RFID marker has to swiped in order to open the question paper box, and RFID will compare EEPROM data such as RFID address, RTC date, and time to unlock the question paper box. Even yet, if a valid RFID marker is used to open the box before the pre-determined time, the controller transmits a rule violation notification to the Base station via GSM modem. When the box is opened, the message is sent from the base station to the council if the comparison fails. However, if the comparison is a success, the regulator is detainments for the word. Word mismatch communication is also sent to the base station via GSM modem by the controller. Nonetheless, the stepper motor is used to open the box. If the participant enters the correct word after the test is completed, the base station sends the test box open/close time and new word to the test centre.

F. *Keerthan K S, Mukesh , Manjunatha G, Karan R Aithal , Dr. K M Sudharshan "Rfid Based Exam Paper Leakage Protection System" -2021*

RFID (Radio frequency identification) it works on the principle of wireless systems, It's made from two factors RFID markers and RFID compendiums. An "Solenoid cinch" may be a locking contrivance, which uses microcontroller or microprocessor to regulate it or take guidance from.

There are 2 sorts of locking system one is fail-open which gets unlock if the facility lost or power is cut-off and other type is close which can remain locked when the facility is lost or stop. Arduino UNO module, a microcontroller that has 14 digital legs (D0-D13) and as 6 analog legs (A0-A6). We use arduino microcontroller for this design because it consumes lower power and it's cheaper.16 * 4 display, which shows or guides the invigilator to open the box and print question paper through displaying dispatches there. Power force we use 5v and 12v.

G. IIT Kanpur India (10th ICCCNT 2019) "RFID based Question paper Protection shield"

Exam papers can be protected in this proposed method by using RFID tags and an electronic password. RFID is a technology that detects and tracks items. The object has been levelled because a tag has been put to it. This tag provides information that is stored electrically. The box will initially ask the user who wants to open the box for a password during the RFID authentication process. So it's good security because only one person knows the password, but if someone figures out the password, he'll need the RFID tag to unlock the box. As a result, if a user enters an incorrect password, our system will deny him the ability to scan his RFID tag. So an unauthorised individual will have no idea how to break down the security system because he will not be familiar with the full system. This is why the password system has remained in the foreground. As a result, once the authorised individual has entered the password correctly, the system will request RFID scanning.

H. Mohd Imran, Azeem Uddin, Farha Rafath, Mohammed Osman, Ayesha Sultana, K. Srikanth "Real Time Application of Advanced Exam Paper Leakage Detection and Alert System with Theft Protection"

The biometric scanner is a key component of this system. The RFID reader checks the authenticity of its tag and loads it into a microcontroller; if the authenticity is equal, it can approach a biometric scanner; otherwise, it will be halted. The code will be delivered to the registered user if the authentication matches. Fingerprint scanners are used to verify a person's identity, whether they are permitted or not. So it's good security because only one person knows the password, but if someone figures out the password, they need the RFID tag to unlock the box. So, if someone tries to enter an incorrect password, our system will not allow him to scan the RFID tag. As a result, an unauthorized individual will have no idea how to break down the security system because he will not be familiar with the full system. This is why the password system has remained in the foreground. As a result, once the authorized user has successfully typed the password, the system will request RFID scanning. The entire system is powered by the battery; if the battery is discharged when opening the box, the entire system will shut off. The solar panel is employed as a backup in the suggested system. The power generated by this solar panel can be used for the system in both emergency and typical situations. The microcontroller appears to be the most important component of this framework, as it automatically processes the essential actions or outcomes of all other devices, and it is the heart of this entire project, which runs on 5V.

III. COMPARISON TABLE

Author and year	Paper title	Remarks
Nawsheen Promy, Tashfiq Rahman, Sadman Islam and Saqlain Mahmud Khan (2020)	Automated smart box to alleviate unfair means in public examination in the context of Bangladesh	The security mechanism is designed in such a way that unlawfully opening the box will be tough. If someone does manage to open the box, the perpetrator will be easily identified and punished. By integrating the remote feature, we've primarily attempted to highlight the fact that whenever a problem occurs, the box is frequently forced open.
Mamilla Sirisha, Neelam Syamala - 2019	"RFID Based Security for Exam Paper Leakage System	The ARM processor- grounded electronics protection for the test paper leakage system was designed and implemented successfully, with the benefits of minimal supplemental interfaces, low power consumption, low cost, and high portability. This design can be expanded to include the answer wastes in order to submit it to university officials.
Kimia Tuz Zaman, Wordh Ul Hasan, Monsur Hillas, Abdullah Al Mahfuj Shaan, Khan Afnan Rahad -2020	IOT based question paper delivery box: A Solution towards preventing question paper leakage	Question papers have become a contentious issue in the country. This design has the potential to affect the outcome of this dilemma. This problem could have had a variety of various outcomes. For example, this could make all examinations electronic, such as the GRE and other competitive examinations, but this would necessitate the digitization of all test centres across India, which would be extremely costly and time-consuming. Other outcomes could involve transferring the query in real time and distributing it to the centres. One centre, however, has over a thousand scholars. Before the test, the first question will be printed and the last question will be blurted.

A. Z. M. Tahmidul Kabir, Md. Jubaer Islam Khan, Al Mamun Mizan, Nirmal Debnath -2019	Smart System Integration of Question Paper Security System	The Arduino-programmed system is largely focused on two types of functions. When the device reaches its destination, all of the specified input must match in order to unlock it. The positions will be matched by the correct range of latitude and longitude, which will be provided via GPS in accordance with the zone rule. The point will be taken if the response is yes, and the device will eventually open. The GSM in the device will send an SMS to the owner's frequenter ID for each step. The owner also has grand access, which means he or she has the authority to stamp all protocols.
Mohammad Abdul Naveed, P.V.Vara Prsada Rao –2019	A Password-authentication system for the Electronic Protection for Exam Paper Leakages	Along with the microcontroller, a GSM modem is linked to the box carrying question papers. Depending on who accesses the box, the university board functions as the base station, and the regulator sends signals to the base station via GSM modems if questions are answered successfully or incorrect passwords are entered.
Keerthan K S, Mukesh , Manjunatha G, Karan R Aithal , Dr. K M Sudharshan -2021	Rfid Based Exam Paper Leakage Protection System	RFID (radio frequency identification) it works on the principle of wireless systems. An "Solenoid cinch" may be a locking contrivance, which uses microcontroller or microprocessor to regulate it or take guidance from. There are 2 sorts of locking system one is fail-open and fail-closed. Arduino UNO module, a microcontroller that has 14 digital legs (D0-D13) and as 6 analog legs (A0-A6). 4. liquid Display, which shows or guides the invigilator to try to to coming step to open the box and print question paper.
IIT Kanpur India (10th ICCCNT 2019)	RFID based Question paper Protection shield	Exam paper leaks have been a source of concern in this country. However, the usage of this RFID system could help the government save time and money. The security issue will be greatly alleviated with the use of this RFID Question paper box. Nobody can enter or access the box unless he has been given permission by the system. To gain access to the box, the user must have an RFID ID and a unique password. The message alert will allow the administrator to be notified of any errors as soon as they occur.
Mohd Imran, Azeem Uddin, Farha Rafath, Mohammed Osman, Ayesha Sultana, K. Srikanth	Real Time Application of Advanced Exam Paper Leakage Detection and Alert System with Theft Protection	The approved and unauthorised individuals are identified, and their whereabouts are tracked. Using biometric authentication technology and a GPS monitoring device, it is possible to reduce the problem of exam paper leaks. In addition, advances in technology have the ability to cut crime rates to some level. Furthermore, this gadget is advantageous and can be utilised to preserve and keep private information and prevent theft in banks, schools, military firms, corporations, and government sectors.

IV. PROPOSED METHODOLOGY

A. Now each day, each system is machine-controlled so on face new challenges within the gift day state of affairs.

B. Automated systems have less manual operations, so as that the flexibleness, reliabilities area unit high and proper .

C. Hence each field prefers machine-controlled management systems particularly within the sector of physics machine-controlled systems do higher performance progressively.

D. The projected hardware style for the system is, the middle of the system is Arduino microcontroller in conjunction with it many parts area unit used like RFID, Fingerprint sensor, are going to be shown on the LCD alphanumeric display , (alphanumeric display), relay, DC motor, buzzer etc. area unit used. Whenever the person wish to open the lock of the examination box there is a 2 level authentication.

E. One individual must be forced to demonstrate his/her authenticity using RFID technology, and when the person displays the RFID tag in front of the RFID reader, the RFID reader will look for a fingerprint, which it will identify and send an acknowledgement to the microcontroller.

F. Here the microcontroller receives the info and checks the authentication.

G. If the authentication is successful then the locker can open and sends the message to the upper authority folks through the assistance of blink server.

V. CONCLUSION

Two way authentication system for exam paper leakage detection will be highly effective to prevent paper leakage in a range of circumstances. This will ensure that the exams go well and that no unethical practices detract from the purpose of assessing a person's knowledge through education. As a result, people will be forced to put their talents and knowledge to use, and only the most competent persons will be able to claim 100% correct outcomes. The time and money squandered in such an occurrence will no longer be a barrier to education, and the perpetrators will be discovered and dealt with in the most reliable way possible. We can expect to build an ideal education system in this way, where pupils rely on their own hardship rather than the leaked question.

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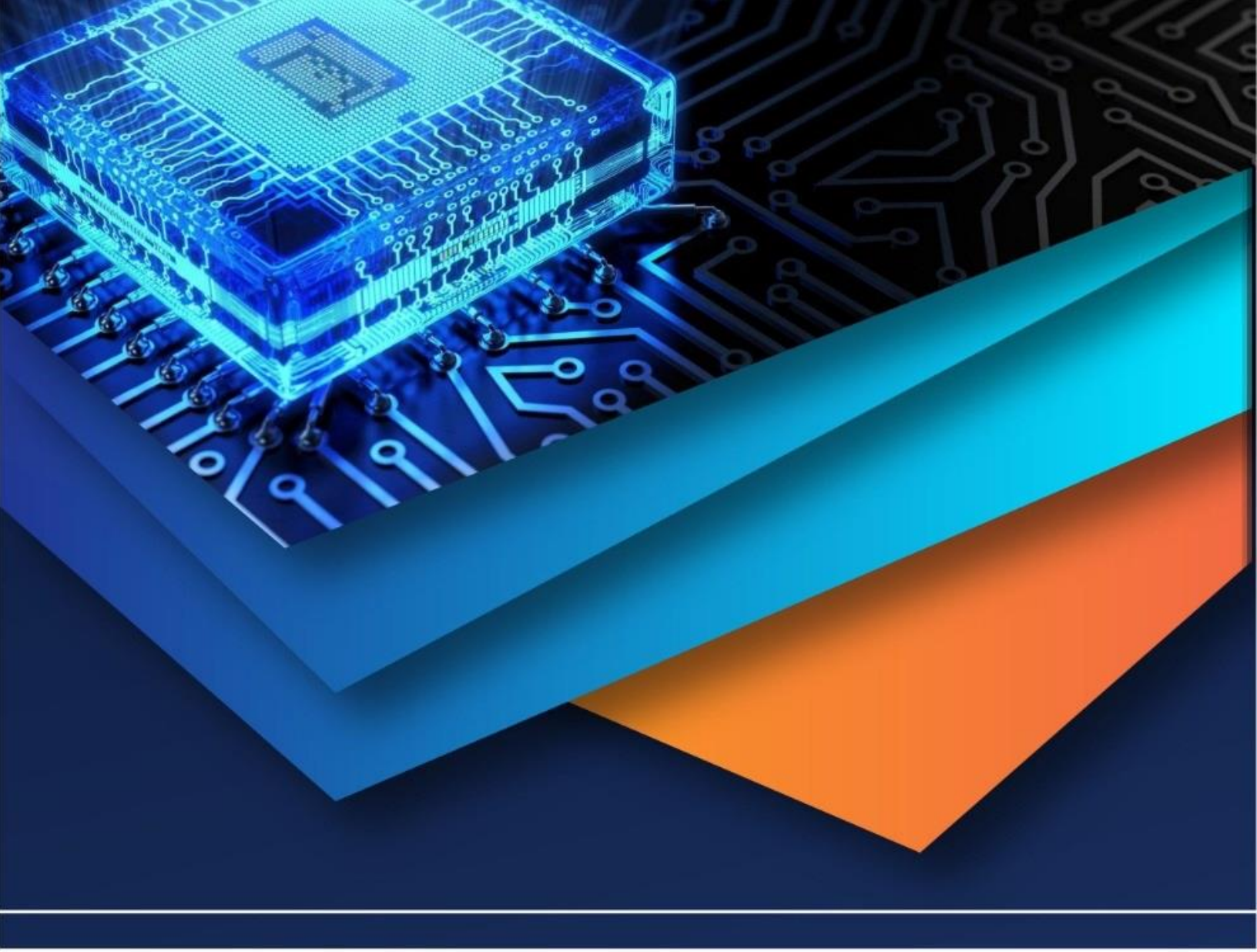

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