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# Secure Password based Security System for Banks

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**Abstract:** ***Security Systems plays a very important role in today's modernized industrialized era. Throughout our life, the hard earned assets and valuables things are expected to be safeguarded under certain security features which meet the inquest of the requisite. It is basically designed in order to avoid the risk of vulnerabilities to our valuable items. So there is a lot of robbery, theft going on in and around the world. So, people fear to keep any of their valuables in their homes. Henceforth, many people prefer to keep it in banks. However, in this insecure world even banks are not too safe enough to satisfy people needs. A common man feels his valuables are secured if there is efficiency in security. Hence the project can give effective security in minimal cost.***

**Keywords:** IOT, Security, Bank systems, Password

## 1. Introduction

Bank locker room security is important for many reasons. One of those reason is it secures precious things like jewels, hard cash, property papers many things which is very difficult to earn hence "Password based Bank Security System" has been designed. This particular security system does not need presence of any human being. The system will be placed at the front door of the locker room area. Most doors are generally manually controlled by the security person employed by the bank with the use of handle locks operated by a key. In this system password will be used. The user will be prompted to enter a password to unlock the door. On successful password entry, the door unlocks for a specified amount of time enabling him/her to store or restore his/her valuables. On the other hand, if the user enters an invalid password then corresponding equivalent message will be displayed. The front door will open only when a authorize person wants to enter with an authorize password. In the locker room area a passive infrared sensor will be mounted with a camera. In case if a person gets enter at the locker room area without any authorize card then a passive infrared sensor is actively waiting for it, which will send a signal to a microcontroller and the microcontroller will take actions, it will switch on the alarms which will inform the local security and second it will take a snapshot of the locker room area. When the process will complete, only then the locker room will be opened. This work proposes the most efficient security system because of security for detecting any unauthorized activity which should not occur in the confidential areas of a bank.

The Internet of things (IoT) is the extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled**.** The definition of the Internet of things has evolved due to real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of Things.

## 2. Literature Survey

Neeraj Khera, Amit Vermaet al [2] proposed a security system that has been designed to prevent illegal entries in the bank locker room area which happens when there are robberies. Now here the issue comes if the robbery happens when there is no such supervised system that will leave some proof of the robbers and the bank and is not able to identify the robbers due to lack of proof. This proposed system will focus on the safety of the bank locker room effectively by detecting and controlling unauthorized motion.

Sugapriya and K. Amsavalli et al [3] proposed system has been given in which we can unlock the door by using pre-decided password. It increases the security level to prevent an unauthorized unlocking done by attacker .First the user combination will be compared with pre recorded password which are stored in the system memory. User can go for certain number of wrong combinations before the system will be temporarily disabled. The door will be unlocked if user combination matches with the password. The same password can be used to lock the door as well.

Aravinth .J, Gokilaprabha .P, Aribhuvaneshwaran .T, Yogeshwaran .R, Mrs. Aiswarya .S et.al [4] has proposed different locker security systems such as GSM and RFID, Pattern Analyzer and Fingerprint methods are overcome by using Bank Locker Security System using IoT. In this proposal, if a person tries to access the locker the signal conditioning unit will be activating the complete circuit and it will be sending the SMS to the authenticated user via GSM. In addition, the camera is kept near to the locker. The person who is trying to access the locker will be captured by the camera and then it will be processed and sends it to the user's Whatsapp account as picture message. If the person in the image is known to the user, he/she can permit the locker to open else if the person in the image is of unknown to the user, he/she can make the locker to be in a closed state. Thus the bank locker will be of highly secured from unknown person.

Meera Mathew, Divya R S et.al [5] has proposed automated identification and access control mechanism that are used for unauthorized access. In earlier days for all high security zones like locker rooms, military sites traditional lock was

used. But this was not that much secured now in advance technology RFID cards are being used, but this also was not that useful due to chance of getting lost of the cards or stolen cards.

## 3. Proposed System

Security is a financial instrument that represents an ownership position in a publicity traded corporation, a creditor relationship with government body or a corporation or rights to ownership as represented by an option. It is also a financial problem many have been trying to solve with more efficient solutions as with time. With the advancement of technology in electronics, there is a miniaturization of the security systems. The problem we are going to tackle in this system is to design a Intruder detection system and password based door locking system.

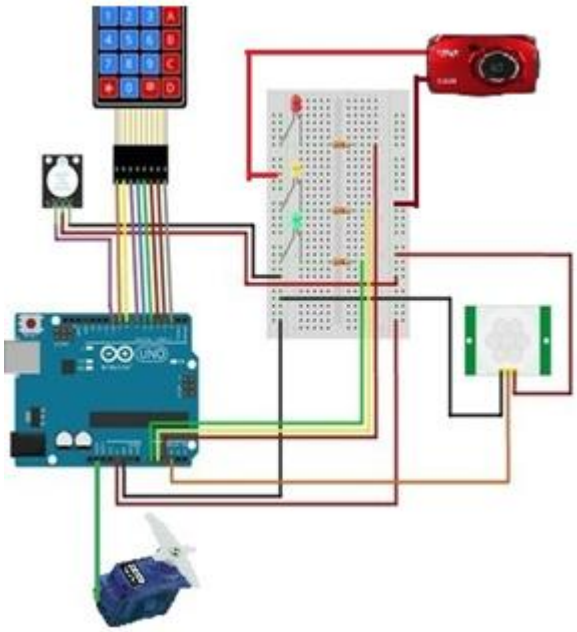

**Figure 3.1:** Architecture of Password based bank security system

Architecture of Password based bank security system consists of ARDUINO MEGA 2560 acts as a controlling unit which monitors the complete security of the bank. The Bank is preconfigured with the password "1234" which has to be entered through the keypad to activate the system and "*" has to be entered to deactivate the system. The 4*4 LCD display interacts with the user and tells the user what state the system is in. When the arduino is powered on the LCD displays "Enter the passkey" asking the user to enter the correct password to activate the system. Once the system is activated all the PIR sensors become active. In this condition when there is an intrusion in any of the locker rooms, the corresponding PIR sensor initiates the arduino to turn on the buzzer and turns the servo motor towards the room. The camera which is mounted on the servo takes the footage of the room that is obtained on our Laptop screen. In this way our bank is completely secured.

And finally, to deactivate the system, the user has to enter "*" through the keypad. In this system we have also included LED strips.

### 3.1 Algorithm

**Step 1**: Read the input from the keypad for password variable.
**Step 2**: Initialize the pass variable to "1234".
**Step3**: Compare the password variable with pass.
**Step 4**: If step 3 is successful, then green LED state goes HIGH and door opens with message "Passkey Accepted".
**Step 5**: If step 3 is not successful RED LED state goes HIGH with the message displaying "Access Denied" and goes to step 1.
**Step 6:** If "*" is pressed then door closes and goes to step 1.

### 3.2 Testing

Software Testing is a process of executing the application with an intent to find any software bugs. It is used to check whether the application met its expectations and all the functionalities of the application is working. The final goal of testing is to check whether the application is behaving in the way it is supposed to under specified conditions. All aspects of the code are examined to check the quality of application. The primary purpose of testing is to detect software failures so that defects may be uncovered and covered. The test cases are designed in such way that scope of finding the bugs is maximum.

#### 3.2.1 Password Testing

**Table 3.1:** Password Testing

| Input | Actual output | Output |
|---|---|---|
| "1234" | Successful | Successful |
| "4567" | Unsuccessful | Unsuccessful |

#### 3.2.2 Motion detection testing

**Table 3.2:** Motion Detection Testing

| Input | Actual output | Output |
|---|---|---|
| Motion detected | Camera captures, led turns HIGH | Camera captures, led turns HIGH |
| Motion not detected | Led state will be LOW | Led state will be LOW |

## 4. Results

Here are the snapshots of the proposed system. The above shows the overall hardware implementation of the proposed system, which allows the bank authority to type the security password if the password matches with the predefined password then the person is considered as a authorized person for entering the bank locker room.

**Figure 4.1:** Hardware implementation of Password Based Bank Security System


**Figure 4.2:** Hardware Implementation to enter a password

**Figure 4.3:** Hardware Implementation of when password is entered

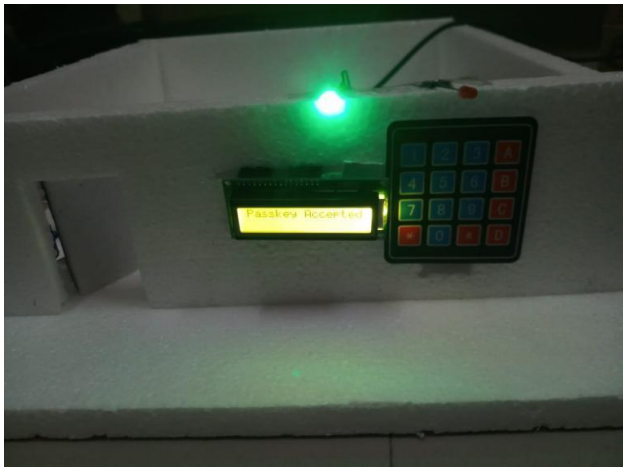


**Figure 4.4:** Hardware implementation when password is accepted

In the Fig 4.2, 4.3, 4.4, The bank authority is prompted to **Enter the password** using the keypad, the password entered by the bank authority is matched with the predefined set password, Consecutively 3 attempts will be given for entering the correct password, failing to enter the correct password then that person will be considered as unauthorized user and photo will be captured and red led starts blinking and alarm will turn on .


**Figure 4.5:** Hardware Implementation when wrong password is entered

The above figure shows, When the password entered by the user is not correct then the buzzer will turn on, red LED glows and display the message as **"Access Denied".**

**Figure 4.6:** Hardware Implementation when motion is detected

This figure shows, if any movement occurs in the system the sensor will detect the movement, camera will capture the picture of surrounding, green LED glows and display the message as "Motion Detected"

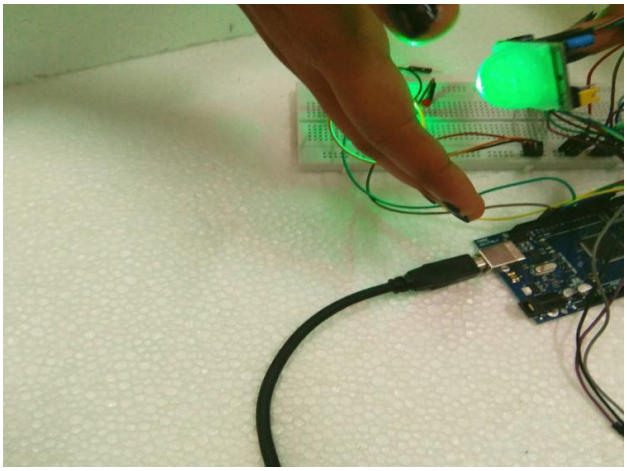

**Figure 4.7:** Photo captured when motion is detected

The above snapshot will show how the photo is captured when the motion is detected by the sensor.

## 5. Conclusion

This work is effective in providing enough security as long as the password is not shared. In future this "Secure password based security system for banks" can be provided maximum security by the above enhancements in order to completely safeguard the bank locker system. Hence, this type of locking system can be used at home at minimal cost to keep his valuable things safely without any worries.

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