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# Intellectual Bank Safe Keeping and Security System

M. Sornalakshmi, B.Suganya
UG Scholar, Department of ECE, Francis Xavier Engineering College, Tirunelveli
Mrs .D.Regi Timna
Assistant Professor, Department of ECE, Francis Xavier Engineering College, Tirunelveli

**Abstract:** In today's modern world, security plays an project is to design and implement a bank locker security system based on fingerprint and GSM technology. This automated banking system as a locker with high security based on GSM technology. It reduces wastage of time for both banker as well as customer and provides advanced security. In this system the user's name, fingerprint and mobile number are enrolled and they used only authentic persons can recover money. If the fingerprint then four digit code will be sent to the authorized person's mobile through GSM modem and the locker door will be opened then, otherwise it will be in locked position and gives an alarm when they mismatch occurs. The sensors will be active during night times to provide security against thefts.

**Keywords**: Fingerprint, GSM, Microcontroller, PIR sensors, Vibration sensor.

## I. INTRODUCTION

In the present scenario, safety has become an essential issue for most of the people. Increase in anti-social activities is a cause of concern as the banks are considered soft targets by criminal. Increasing incidence of crimes against banks has necessitated a Serious look at the security arrangements and guidelines followed by the banks. The prevailing crime scenario demands compatible, efficient and reliable security and safety measures. In order to overcome this type of frauds, authentication of the persons who wants to use the locker is very important. In the ubiquitous network society, where individuals can easily access their information anytime and anywhere, people are also faced with the risk that others can easily access the same information anytime and anywhere.

Currently, passwords, personal identification numbers or identification cards are used for personal identification. However, cards can be stolen, and passwords and numbers can be guessed or forgotten. To provide perfect security and to make our work easier, we are taking the help of two different technologies (i.e) embedded systems and biometrics. Biometrics can be defined as recognizing and identifying a person based on physiological or behavioral characteristics. It includes fingerprint, face, iris, voice, signature, and geometry recognition and verification.

In this project, we provide two level security by fingerprint authentication and GSM. GSM provide one time password which changes for every access and gives high security. By this two level automated security system we cannot only provide security but also save the time of both banker and the customer.

## II. RELATED WORKS

In this section some related works are discussed below. In the most of the banks, the locker systems involve manual clock. The major drawbacks of such manual lock system are lack of security and the waiting time of the customers. This can be overcome by automatic locker system. In our project we are using fingerprint and GSM.

### 2.1 Microcontroller

The AT89S52 is a low power, high performance CMOS 8 bit micro controller. It provides a highly flexible and cost effective solution to many embedded control applications. It has 256 bytes of internal RAM and 32 programmable I/O lines.

**Advantages**

- It has low time required for performing operation. The processor chips are very small and flexibility.
- It is easily to interface additional RAM, ROM and I/O ports.

### 2.2 Fingerprint

In this technology one's finger is the key i.e., one's fingerprints are used as the "PASSWORD" for identification and verification. Fingerprint technology was developed by Fujitsu to help combat the increasing incidence of financial fraud and forgery. Among these biometric traits, fingerprints proves to be one of the best traits providing good mismatch ratio, highly accurate in terms of security and also reliable.

**Advantages**

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- It is highly accurate and has unique and can be never be same for two persons.

**2.3 GSM**

GSM (Global System for Mobile communication) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900MHz or 1800MHz bands. The rarer 400 and 450 MHz frequency bands are assigned in some countries, where these frequencies were previously used for first generation


systems.

**Advantages**

- It has pioneered a low cost, to the network carrier, alternative to voice calls, the short message service which is now supported on other mobile standards as well.

**2.4 PIR Sensors**

A PIR based motion detector is used to sense movement of people, animals, or other objects. They are commonly used in burglar alarms and automatically activated lighting systems. They are called simply "PIR", or sometimes "PID", for "passive infrared detector".

**Advantages**

- These are commonly used in security alarms and automatic lighting applications .It consumes less energy.

**2.5 IR sensors (IR LED pair)**

IN this IR LED pair, one LED is a transmitter IR LED and it will transmit infrared light which is not visible to human eye, and the other LED is a photo diode or IR receiver LED. When a person breaks the infrared beam, it triggers the alarm.

**Advantages**

- Their low power requirements make them suitable for most electronic devices such as laptops, telephone, PDAs.
- They do not require contact with object to for detection.

**2.6 Vibration sensor**

It is a device that uses the piezoelectric effect, to measure changes in pressure, acceleration, temperature, strain, or force by converting them into an electrical charge. The vibration sensor is placed on the locker door. It triggers the alarm when any pressure is applied on the locker to open it forcibly.

**Advantages**

- Pin and spring type: Low cost, ability to respond two out of three axes, no power supply requirement, and ability to switch DC or AC.
- Piezoelectric type: It has resonant frequency of about 170 Hz when there is no weight attached to its free end.

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## III. PROPOSED SYSTEM

### 3.1 Block diagram

The power required to the microcontroller (5V) is given through the power supply. MAX232 interfaces the microcontroller with fingerprint and GSM. Fingerprint and GSM modules are connected to MAX232 using relay. MAX232 converts signals from an RS232 serial port to signals suitable for use in TTL compatible digital logic circuits. This reduces the complexity of the power supply design. This reduces the complexity of the power supply design. The above diagram shows that various components like keypad, sensors, LCD, buzzer are connected to microcontroller. The L293D driver provides thee required power to the motor to open the locker door.

### 3.2 Working

The registration of the users is done by taking the required information of the user. The fingerprints used in authentication are taken and are stored in the database. The primary authentication is done by using fingerprint i.e., the fingerprint is matched with those in the database. The further instructions are given clearly on the LCD display. A onetime password (OTP) is sent to the corresponding mobile number in the data base through GSM service. Enter the OTP through the keypad. The locker can be accessed after all the security checks are passed correctly and the locker door is opened automatically. After the work has been completed if any key is pressed with help of keypad, the locker door will be closed.

### 3.3 SOFTWARE PROGRAM TESTING

The Kiel software is a compiler and debugger use to compile C code, assembly source files, and link and locate object modules and libraries, create HEX files, and debug your target program. The software program is written in c or assembly language and compiled using Kiel software. After compiler operation the hex code is generated and stored in the computer. The hex code of the program is burnt into the AT89S52 by using top win universal programmer.

### ADVANTAGES

- Fully automated system.
- Easy to use and requires no special training or equipment.
- Fingerprint is unique for every person it cannot be imitated or fabricated.
- It gives a high level security.
- No need to remember passwords, or bring any identification cards.

## IV. CONCLUSION

It can be concluded here that the system has been successfully implemented and the aim is achieved without any decisions. A step by step approach is used in designing the microcontroller based system for providing the security to the locker system. This project is mainly aimed at reducing banker's workload. Time is considerably saved by this automated bank locker system as there is no need for any authentication by the bank employee. We can also reduce larceny in banks by providing full security to it. This system can be applied mainly in banks and automatic door opening and locking systems. The limitation is that it can be used for specific purpose only. This concept can be extended further by using voice feedback system.