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RS-485 based Centralized Bank Locker Access System with Fingerprint and OTP Authentication

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Abstract: ***The main goal of this project is to design an Advanced security system for bank locker using Biometric and GSM technology, which provide a secure, authentic and user-friendly mechanism for operating safety lockers. This can be organized in bank, offices and homes. Bank locker is safest place for the valuables. But Present day bank security systems use one finger print sensor for each locker.***

A. The drawbacks of existing system are

1) Manual verification of Customer holding bank lockers

2) Each locker require individual Finger print Sensor and OTP verification unit which increases the cost of each system

In order reduce the cost and difficulties in verification process, we proposed advanced security system for bank lockers using biometric verification and OTP generation at central place and then verification at the locker side. This reduces the cost and make system user friendly

First, the finger print of a person will collected and will be matched with finger print database. If the finger print matches, then four digit code will be generated and sent on authorized person's mobile through GSM modem and by entering the code into locker's keypad ,this will open the locker will be opened . So biometric and GSM security is more advance and secure than conventional system.

Key points: RS-485, ARM Cortex M3-LPC1768, GSM, Fingerprint sensor, Microcontroller 8051, Hexa keypad.

I. INTRODUCTION

Nowadays, safety has become an essential issue for most of the people especially in the rural and urban areas. Some people will try to cheat or steal the property which may endanger the safety of money in the bank, house and office. To overcome the security threat, most of the people will install bunch of locks or alarm system. There are many types of alarm systems available in the market which utilizes different types of sensor.

The sensor can detect different types of changes that occur in the surrounding and the changes will be processed to be given out as an alert according to the pre-set value. By the same time this system may not be good for all the time. In this paper we have implemented safety of the money in the bank locker, house, and office by using Biometric and GSM technology which will be more secure than other systems. The word "biometric" comes from the Greek language and is derived from two words "bio" (life) and "metric" (to measure).

Biometric systems use a person's physical characteristics (like fingerprints, irises or veins), or behavioral characteristics (like voice, handwriting or typing rhythm) to determine their identity and confirmation. Biometric data are highly unique to each individual.. Enrollment and authentication are the two primary processes involved in a biometric security system.

During enrollment process, biometric measurements are captured from a subject and related information from the raw measurements is gleaned by the feature extractor, and this information is stored in the database. During authentication process, biometric information is detected and compared against the database through pattern recognition techniques that involve a feature extractor and a biometric matcher working in cascade.

II. HARDWARE REQUIREMENTS

A. Arm Cortex M3-Lpc1768

The LPC1768 is pin-compatible to the 100-pin. LPC1768 is an ARM Cortex-M3 which is a 32-bit microcontroller designed for embedded applications which consists of high level of integration and low power utilization. The ARM Cortex-M3 CPU uses a Harvard architecture, which has separate memory for data and instruction. The frequency of the operating is in the range of 100MHz. It consists of nested vector interrupt controller(NVIC) which is built in. The memory protection unit consists of eight registers.

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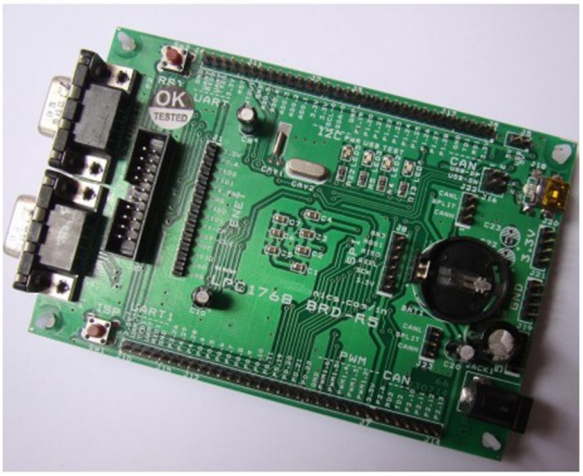


Fig (1): ARM Cortex M3-LPC1768

A. Other Hardwares

1) Fingerprint sensor
2) GSM SIM-900A
3) TTL to RS-485 converter
4) LCD display
5) Hexa keypad
6) Microcontroller 89V51RD2

III. SOFTWARE REQUIREMENTS

A. Keil MicroVision 4.2
B. Flash Magic

IV. BLOCK DIAGRAM

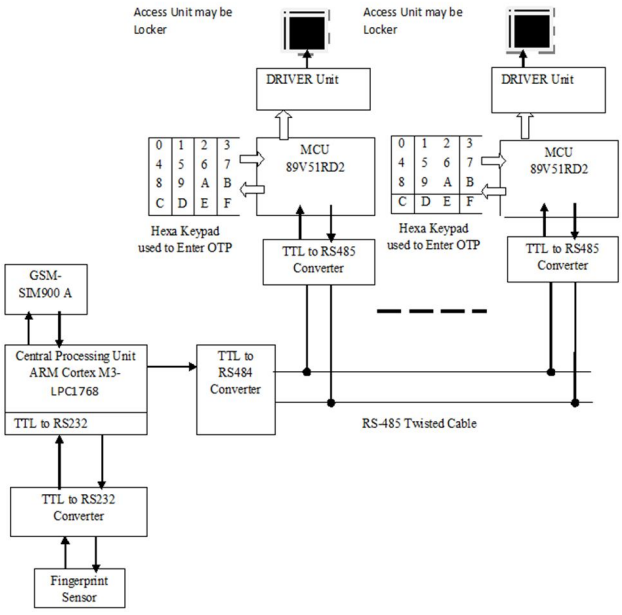


Fig (2): Block Diagram of RS-485 based Centralized Bank Locker Access System with Fingerprint and OTP Authentication

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V. WORKING

The central unit has ARM Cortex M3-LPC1768 MCU which is interfaced with Fingerprint Sensor, GSM SIM-900A and TTL to RS-485 converter. The Fingerprint Sensor is stored with database of Fingerprints with ID number. MCUs communicate with the Fingerprint sensor to capture the current fingerprint placed on sensor and compares with the database. If it finds a matched fingerprint in the database then generates the unique OTP and identifies the ID number and the mobile number to which OTP need to be sent. A SMS is sent to the predefined mobile number with respect to ID number. The generated OTP is sent with prefix of the Node Identification through RS-485 communication protocol

VI. FLOWCHART

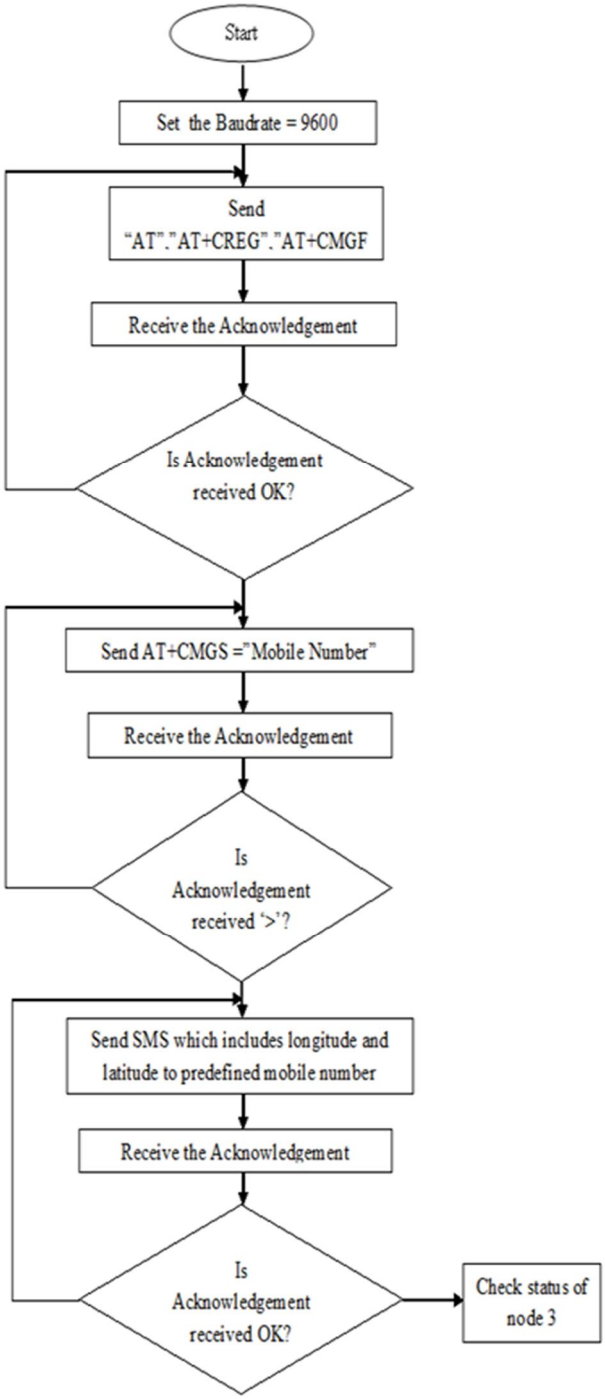


Fig (3): Flowchart

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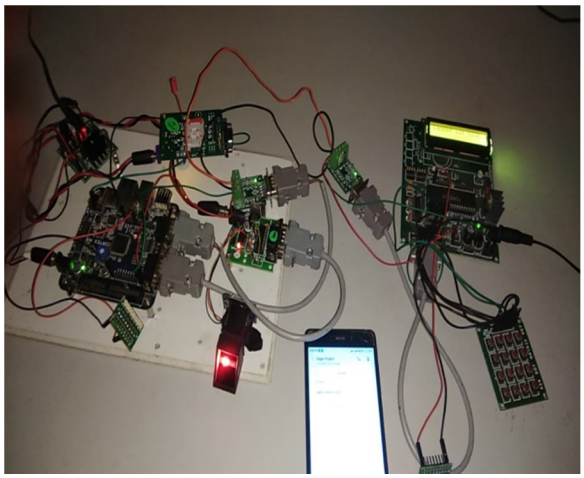


Fig (4): Overall module of the project

VII. ADVANTAGES

A. Efficient way of evacuation of bank.
B. Less time delay and Quick response time.
C. Fully automated system.
D. Robust system, low power requirement.

VIII. CONCLUSION

Finger print and GSM security system will provide higher security than existing system. The design system which when implemented would surely give a very good protection of the lockers curbing theft and making the lockers more reliable. The assurance it will give to the bank customers will force them to use it and hence protect their valuables from theft or any kind of robbery.

IX. AKNOWLEDGEMENT

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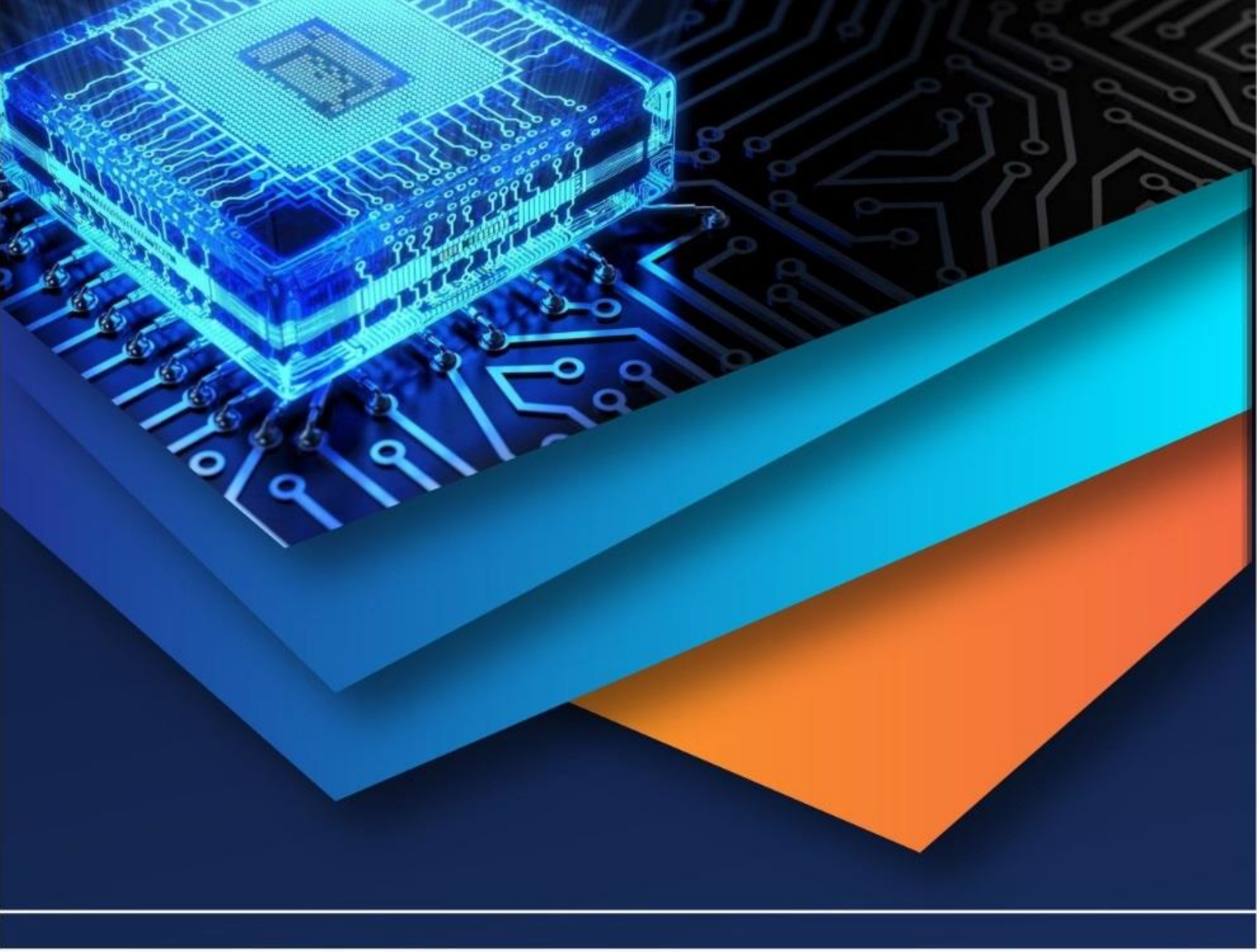
REFERENCES

[1] Sachin S. Malode, Dr. S.B. Patil ,” Highly Secured Locker System Based On Biometric Identification”, International Journal Of Pure and Applied Research In Engineering And Technology ISSN: 2319-507X , IJPRET, 2016; Volume 4 (9): 285-29
[2] A.Aditya Shankar, P.R.K.Sastry, A.L.Vishnu ram.A.Vamsidhar Fingerprint Based Door Locking System International Journal of Engineering and Computer Sciences ISSN:2319-7242, Volume 4 Issue 3 March 2015
[3] Sagar S .Palsodkar , Prof S.B. Patil “Bank Lockers Security System using Biometric and GSM Technology ”SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE) – Volume 2 Issue 4–April 2015
[4] S.A.Engineering College, Chennai, Tamil Nadu, India, ISBN No.978-1-4799-3834-6/14/2014 IEEE.
[5] Raghu Ram.Gangi, Subhramanya Sarma. Gollapud, “Locker Opening And Closing System Using RFID, Fingerprint , Password And GSM” International Journal of Emerging Trends And Technology in Computer Science, Volume 2, Issue 2, March – April 2013

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