BIO-METRIC BASED PRIVATE LOCKER SYSTEM WITH GSM TECHNOLOGY.

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ABSTRACT

The main goal of this project is to design and implement a highly secured and reliable smart bank locker security system based on Bio-metric fingerprint and GSM technology. This can be organized in bank, offices (treasury), schools and homes. In this system only the authentic person can open the lock and collect the important documents, jewelry or money from the lockers. In this security system bio-metric fingerprint and GSM technology systems are used. In our proposed system first the user will enroll his user name and his mobile number, then the person will put finger on finger print module and finger print will be scanned .and stored with fingerprint id. In this way user enrollment process will be completed. User will perform log-in operation. During log-in operation first finger print of authentic person will be scanned. The fingerprint is correct of that particular person then it will allow and display fingerprint is matched and if the fingerprint is not matched of that particular person then it will gives the signal to the buzzer and then message goes to the user that the unauthorized entry is there please check. If the fingerprint is matched then it will gives the signal to do next step to enter the OTP then the authorized person will enter the OTP. Using GSM module the OTP is sent to the registered mobile number. If the OTP is incorrect then it will play buzzer and the system will send the message to the user i.e. the unauthorized person is trying to open the lock so please check it and so on, if all the conditions are matched then the ARM processes the data and correspondingly drives the motor to operate the load i.e. lock will be opened. And camera which is interface to ARM using PC with virtual basic application. The image of the person who uses the locker will be save in the PC. The main advantages of using bio-metric fingerprint and GSM technology is highly secure and reliable locker system than any other locker systems. This system can also create a log containing check in and check out of each user along with basic information.

Keyword : - Fi*ngerprint-module,GSM,ARM processor,OTP,Locker.*

1. INTRODUCTION

In this ever growing field of electronics everything which is manufactured is too compact and easy to handle and to understand. The world is moving towards the automation; day by day as technology is improving new systems are introduced. Lockers are used to keep the money, jewelers, important documents etc. Locker security is most important for the safety of the valuables. There are many cases of bank robbery from the bank lockers. . In today life bank atm centers are also not safe enough as there has been some cases of money robbery from these atms. Taking this in account we have provided a reliable locker access system which provides safe and user friendly operation. In this project we are proposed programming code from arm7 controller embedded because we are more familiar with arm7 controllers and now a day's arm7 controller is demanding. We all know that the security is ours primary job in today world, but most human cannot and the ways to provide security to their confidentially belonging manually. As

today fingerprint based system provides high degree of accuracy in terms security. Therefore, we have decided to introduce a system for locking which is based on the finger print scanning. Our project will provide high degree of security with no manual flaws. Our project basically, is a combination of embedded systems and biometrics. An embedded system is a combination of computer hardware and software, i.e. software is implemented on the hardware which has a key characteristic that it is dedicated for the particular task. Design engineers optimized the size and characteristics of the microcontrollers, the cost of the product also decreased which make it commercial. Basically, embedded system is real time operating system which provides output without delay. In fingerprint locking system there is huge demand of high speed operating systems which is fulfilled by embedded systems.

2. BLOCK DIAGRAM

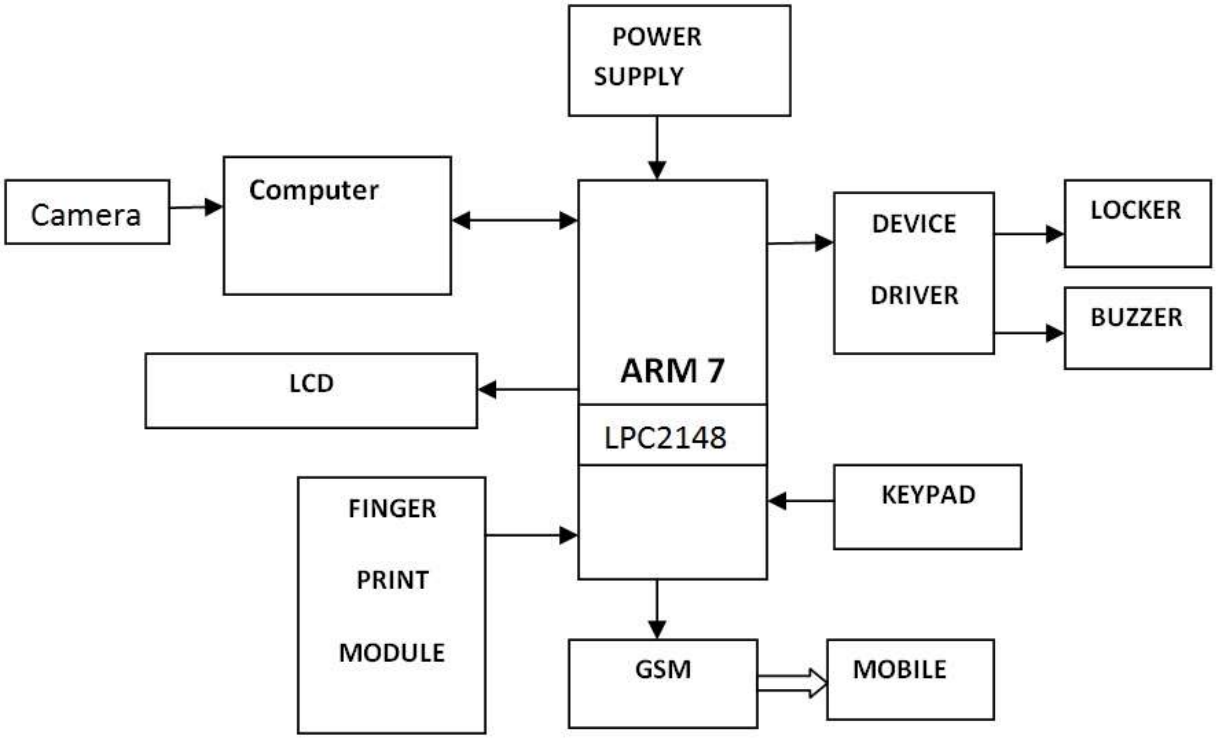


Fig -1: Block Diagram

2.1 LPC2141/42/44/46/48

The LPC2141/42/44/46/48 microcontrollers are based on a 16-bit/32-bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combine the microcontroller with embedded high-speed flash memory ranging from 32 kB to 512 kB. A 128-bit wide memory interface and a unique accelerator architecture enable 32-bit code execution at the maximum clock rate. For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30 with minimal performance penalty. Due to their tiny size and low power consumption, LPC2141/42/44/46/48 are ideal for applications where miniaturization is a key requirement, such as access control and point-of-sale. Serial communications interfaces ranging from a USB 2.0 Full-speed device, multiple UARTs, SPI, SSP to I2C-bus and on-chip SRAM of 8 KB up to 40 KB, make these devices very well suited for communication gateways and protocol converters, soft modems, voice recognition and low end imaging, providing both large buzzer size and high processing power.

2.2 Finger-Print Module

Fingerprints are one of several forms of biometrics, used to recognize persons and verify their identity. The analysis of fingerprints for identical purposes generally requires the similarity of several features of the print pattern. This is a fingerprint sensor module with TTL UART interface. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the someone. The finger print module can directly interface with 3v or 5v Microcontroller.

2.3 GSM

This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily..

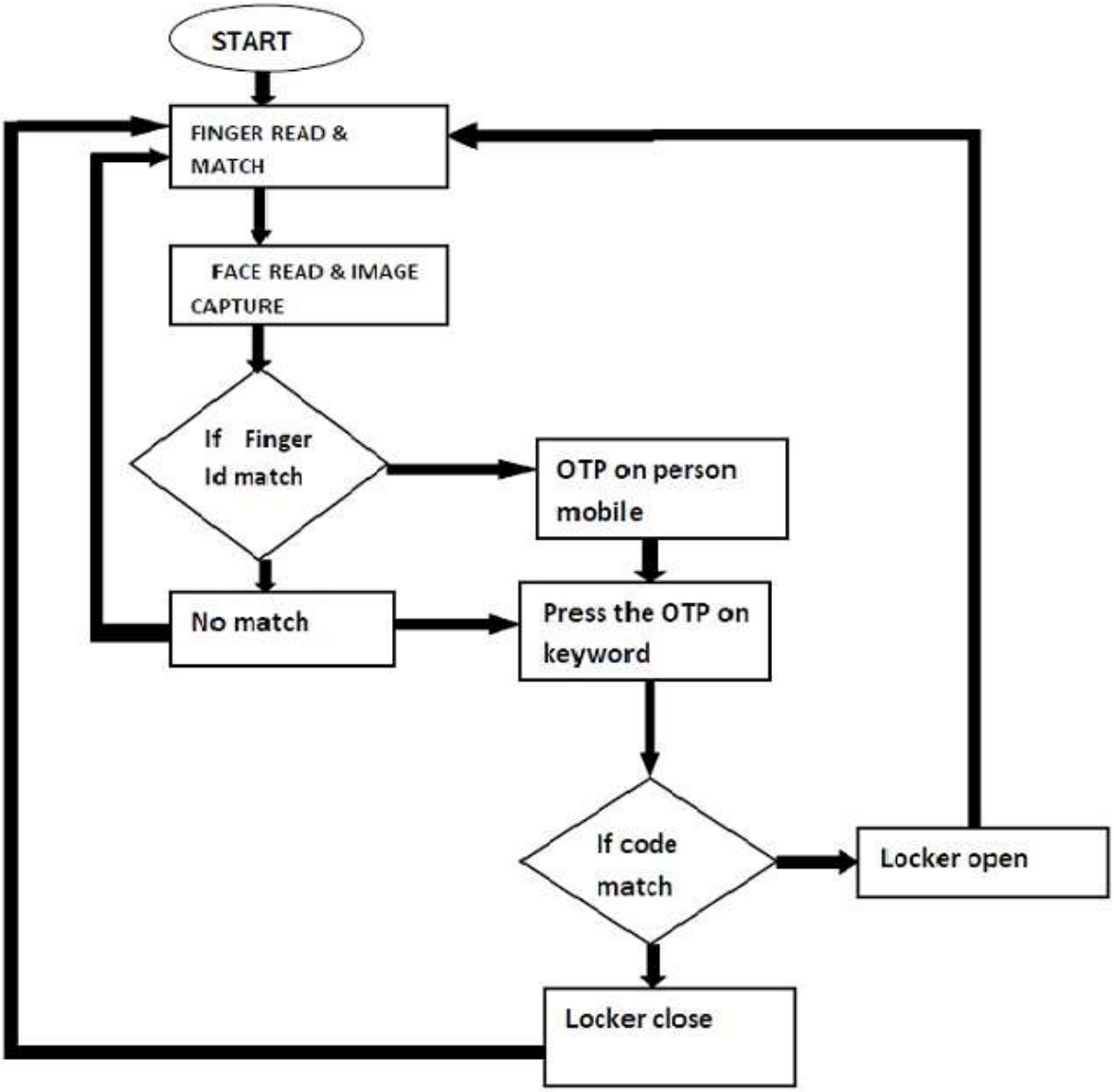
2.4 Keypad

This 16-button keypad provides a useful human interface component for microcontroller projects. Convenient adhesive backing provides a simple way to mount the keypad in a variety of applications.

2.5 LCD 16 x 2

This is a high quality 16 character by 2 line intelligent display module, with back lighting, works with almost any microcontroller.LCD (Liquid Crystal Display) screen is such a display module and a 16x2 LCD module is very commonly used.

3.FLOW CHART



4.SOFTWARE USED

- Keil micro-vision.
- Flash magic.
- Virtual Basic.
- Express PCB.

5.ADVANTAGES

- The most commonly available device.
- Relatively low cost.
- Maintenance of time.

• High accuracy in terms of security.
• Simple to use and require no special training equipment.
• No false intrusion.
• No manual errors.
• Fingerprint is unique for each person it cannot be imitated or fabricated.

6.APPLICATIONS

• Secured offices, Industrial automation.
• Prevent unauthorized access to ATMs, Cellular phones, Smart cards, Desktop PCs.
• Airport security, voter cards, Healthcare, DNA Matching, Time and Attendance.

7. CONCLUSION

A conclusion might elaborate on the importance of the work or suggest applications and extensions. The results can be carried out by testing the system. Various papers are referred to implement the code for this project. The result will be based on the study of all these papers. First reviewed the recently proposed using locker key for banking though they are secured there are some disadvantages. It may be provide incorrect person access the account. So in this we are implementing security system based on bio-metric. This system is secure and less cost it will be a best banking system. Bio-metric and GSM security is provided correct and fast user verification. Because bio-metric cannot be forgotten they are difficult for attackers to forge and for user to repudiate. Fingerprint a unique identification for everyone. He found out someone is try to open his locker. The system has successfully overcome some of the aspects existing with the present technologies, by the use of fingerprint biometric as the authentication technology.

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