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Locker Security System using GSM and Random Password

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Abstract -**The main purpose of this paper is to design and implement advance locker security system. In today's materialistic world, security holds an in dispensable place. There is a need of security in almost every sector of society viz. offices, houses, banks etc. as thefts and robberies are increasing day by day. To overcome this security threat, a security system has been proposed using Controller and GSM technology. This system is basically a controller based access-control system which allows only authorized person to access the locker with GSM technology. This system activates, authenticates and validates the user and then unlocks the door. It is standalone system controller is used to generate random password whereas GSM technology is used to send the password to the authorized person's mobile phone via SMS.**

Index Terms— **Microcontroller, GSM, One time password**

I. INTRODUCTION

In most of the offices and banks lockers are used to secure valuable documents or any valuable thing so Locker security is becoming an important issue in recent days. Nowadays there is demand for more efficient security systems to avoid access of unauthorized persons. In resent system a unique password is set to open locker, which is only known to authorised person. The user uses this password again and again so somebody can hack that password and also if password leaks then it affect security of system. The most of locker systems are based on only mechanical key operations; if key is misplaced or stolen then again it is difficult to maintain security of that locker. There are some security systems based on GSM, Fingerprint and RFID exists. In [2] RFID technology is used to read the customer information whereas GSM technology is used to send the password to the authorized person's mobile phone via SMS. The system in [3] is similar to [2] as it is based on RFID and GSM but only difference is after code conformation of RFID tag password request sent to authorized person, if the person send the password to the microcontroller, which will verify the passwords entered by the key board and received from authenticated mobile phone. If these two passwords are matched the locker will be opened otherwise it will be remain in locked position.

The proposed system is developed to overcome the limitations of above methods. When an authorised person insert locker key that time MC generates random password and send it to user mobile using GSM module. When user enters a password via key pad, the door can be open. If the entered password is correct it displays that "Code is Correct- Access allowed." and if the three times entered password is wrong it gives beep signal and displays "Code is incorrect- Access is denied."

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II. PROPOSED SYSTEM

A. Block Diagram

When an authorized person is standing in front of your bank locker. Then this authorized person insert locker key in the particular locker. That time MC generate random password and send it to user mobile using the GSM module. When user enters this password via keypad, the door can be open. If the entered password is corrected it displays that "code is correct-access allowed" and if the three time entered passwords is wrong it gives beep signal through piezoelectric buzzer and displays "code is incorrect-access is not allowed". In our project motor driver IC use the control DC motor. It has used in 100 RPM. When corrected password is entered the DC motor is rotated in clockwise direction and when DC motor is rotated in anticlockwise direction that time door is closed. Microcontroller to GSM interfacing (sharing) data through the MAX-232 is used because MAX-232 is converted TTL logic into voltage logic.

Random Password Generation

Random password generation is one of the most striking features of the proposed technique. The password to be distributed among authorized user must be random so that the system remains secure. Thus every time a user accesses

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the locker, he/she will get a four digit random number as a password.

A.1 Microcontroller

Low power, high performance, CMOS 8 bit microcontroller with 8KB of ISP flash memory. The device uses Atmel high –density, non volatile memory technology and it is compatible with the industry- standard 80C51 instruction set and pin out.

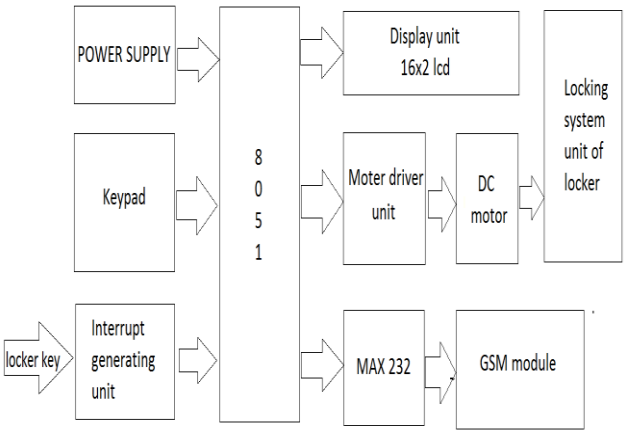


Fig.1. Block Diagram of GSM Based Locker Security System

On-chip flash allows the program memory to be reprogrammed in-system or by a conventional non volatile memory programmer. This powerful microcontroller is suitable for many embedded control application.

A.2 GSM Modem

A GSM modem is a wireless modem that works with a GSM wireless network as shown in Fig 2. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

A GSM modem can be an external unit or a PCMCIA card (also called PC Card). An external GSM modem is connected to a PC through a serial cable, a USB cable, Bluetooth or Infrared. Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

A.3 MAX 232

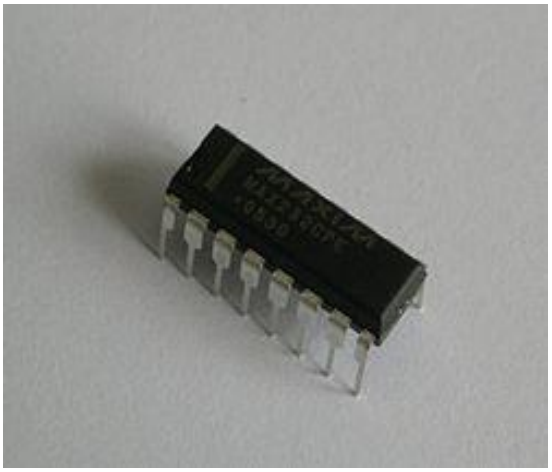
The MAX 232 is an IC, first created in 1987 by Maxim Integrated Products, that converts single from anRS-232 serial port to signals suitable for use in TTL compatible digital logic circuits. The MAX232 is a dual driver/receiver and typically convert the RX, TX, CTS and RTS signals.

GSM modem which works on the RS-232 voltage levels, logic 1 varies from -3 to -15 volts and logic 0 from +3 to +15 volts. The microcontroller which works on TTL logic levels, logic 1 is +5 volts and logic 0 is 0 volts.

B. Software Design

In Fig.4 flowchart is given for designed system

Fig 2: GSM Modem.



B.1 Flowchart:

Step1. Insert Key
Step2.Get password on Authorized Cell phone number
Step3.Enter that password
Step4.Door will open

III. RESULT

The Fig.5 shows the result obtained from this system. In result generated password and authorized person's mobile number are displayed. Every time when key is inserted new password was generated as displayed in Fig.5

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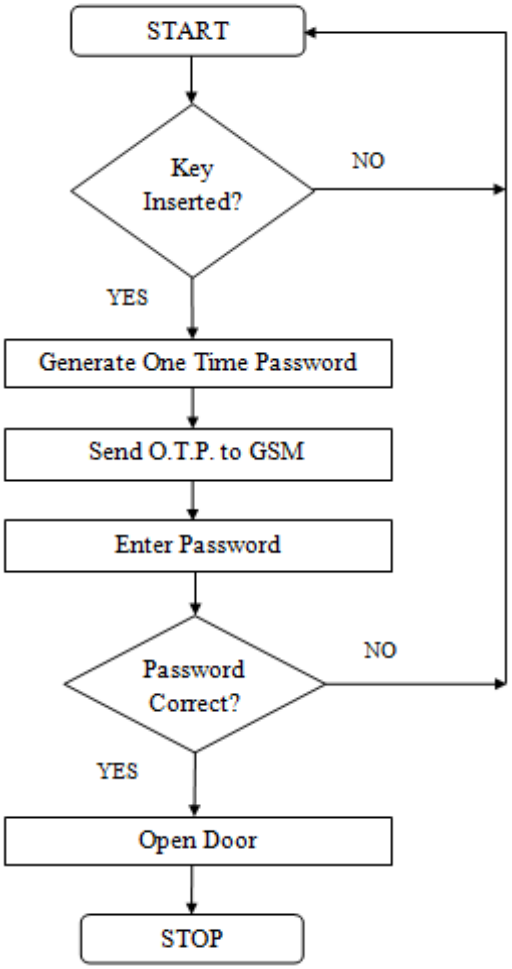

Fig.4: Flowchart of proposed system

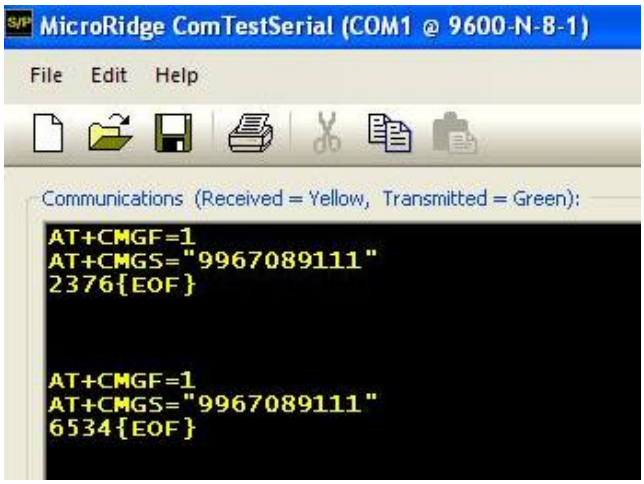

Fig.5: Password displayed on serial communication window

IV.CONCLUSION

In this system as we are sending locker password to only register authorized compared to existing method methods. The system requires less maintenance and installation cost. In future we can overcome limitations that cell phone range problem in lockers area and no availability of battery.

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