Wireless Security System Using GSM Technology

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ABSTRACT
Security is a major concern everywhere as crime is increasing with every passing day and everybody wants to take proper measures to prevent intrusion. A traditional security system gives signal in terms of alarm thereby alerting the intruder or robber. However this paper suggests a GSM (Global System for Mobile Communication) based security system which will generate an automated call notifying owner or the corresponding security services at the time of break in. This system is low cost as it does not make use of any biometric technology and installation is easy as it require less space for installation.

Keywords: GSM, Microcontroller, Motor Driver

I. INTRODUCTION
The security sector is experiencing diversification as it has never seen before. This has brought about the need to review the reliability of already existing systems and look into the possibility of creating better systems that are smarter and more secure. GSM based security system proposed here is an access control system that allows only authorized personnel to enter restricted area or building. This system is best suited for corporate offices, Automated machines (ATM) and home security.

When an authorized user enters a predetermined password via keypad the stepper motor opens the door. At the preset delay time stepper motor operates in reverse direction and locks the door again. On entering the incorrect code three times in a row an automated call is generated thus notifying of intrusion. A microcontroller takes input from the user and a LCD is interfaced with the main controller to show different status when a user gives his corresponding password.

II. PROPOSED SYSTEM
Figure 1 show overall proposed system where the main controller IC obtains a user password from a keypad. If the password is correct then it will permit the access of a valid user by controlling a electromagnetic door lock. For an invalid user the system will trigger alarm and a call will be initiated to the corresponding security service.
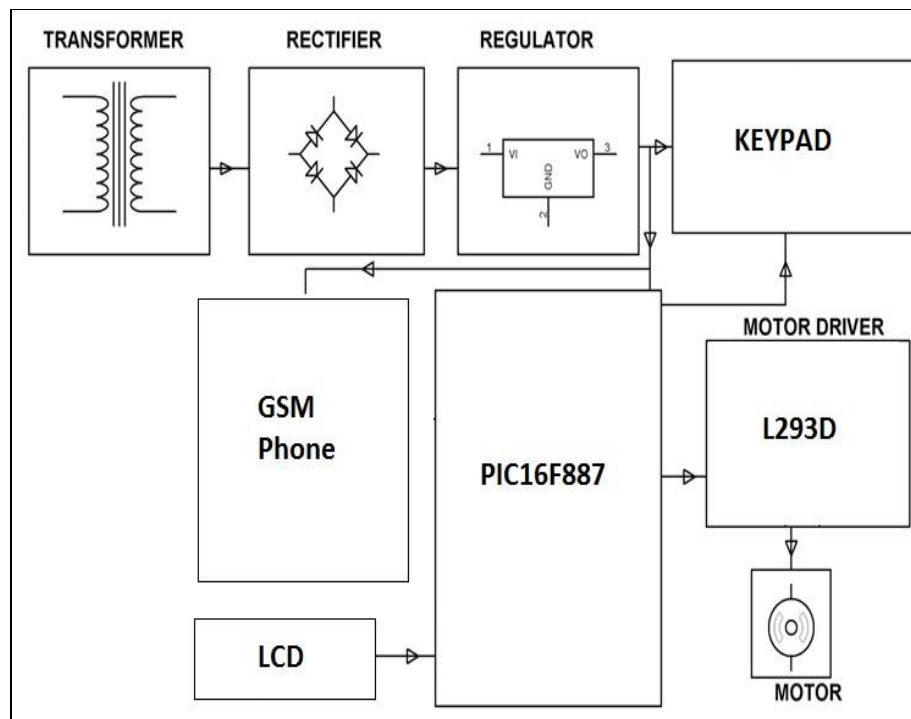
Figure 1. Proposed System

III. HARDWARE DESIGN
3.1   Controller Unit
The control module is built with microcontroller IC. The central controller is Microchip PIC16F887 which is a CMOS FLASH based 8 bit microcontroller. It consists of 35 instructions and has 35 input/output pins. Its power supply voltage is between 2.0-5.5V.

3.2   Display section
The display unit used is a 16x2 (16 characters, 2lines) liquid crystal display (LCD), which can be interfaced with a 8 bit microcontroller. It shows status of the system as user enter correct or incorrect password.

3.3   Motor Driver
L293D is a typical 16 pin motor driver IC which allows DC motor to drive in either direction. For its own operation it needs 5V supply at VCC. For driving the motors it has a separate provision to provide motor supply VSS. The max voltage for VSS is 36v.

3.4   Stepper motor
It is a DC electric motor that converts digital pulses into mechanical shaft rotation. They are used every day in both industrial and commercial applications because of their low cost, high reliability and the ability to operate in almost every environment.

Keypad
In this project a 4x3 keypad is used. A keypad is simply an array of push buttons connected in rows and columns. The key press is scanned by bringing each X row in sequence and detecting a Y column to identify each key in a matrix.
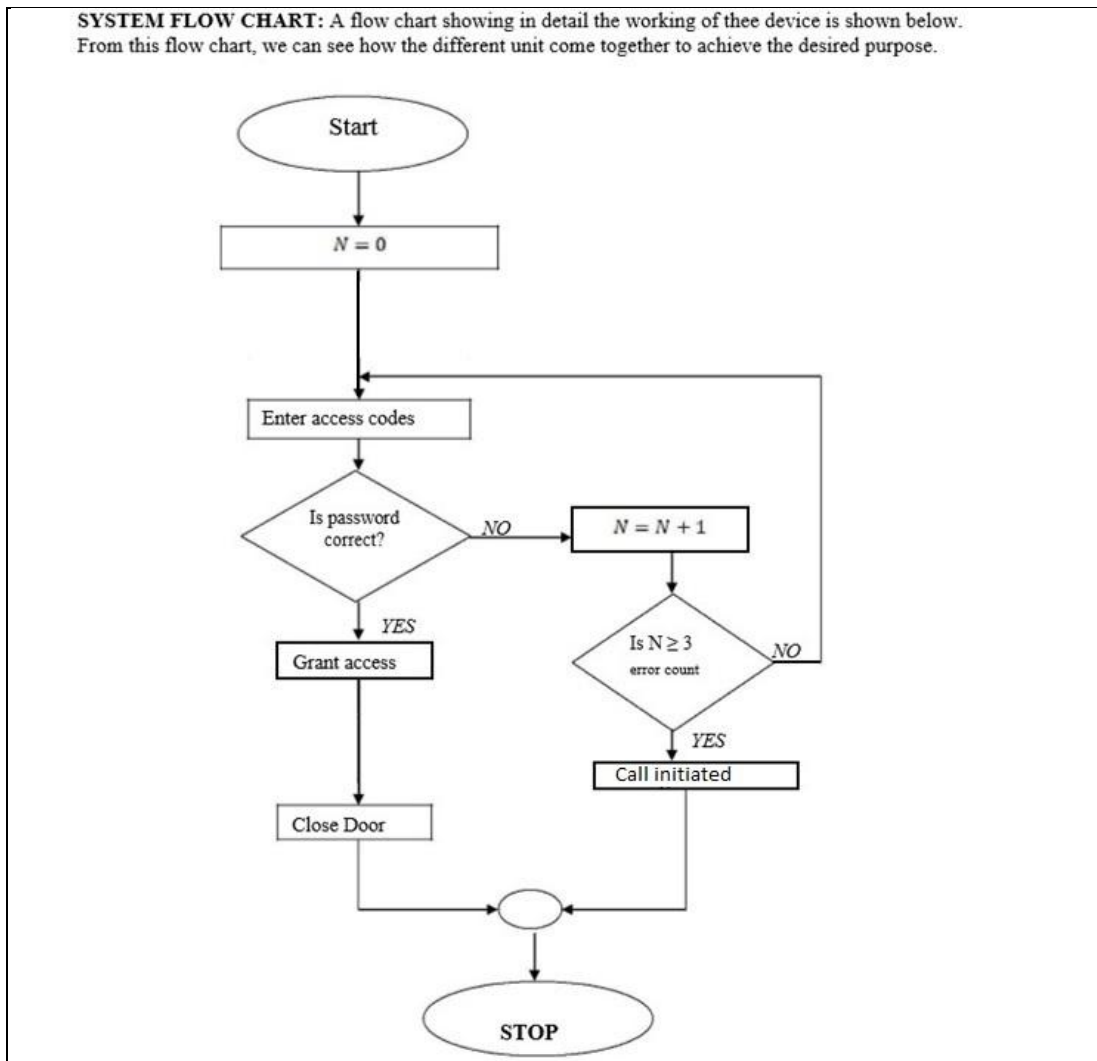
IV.   DESIGN ARCHITECTURE
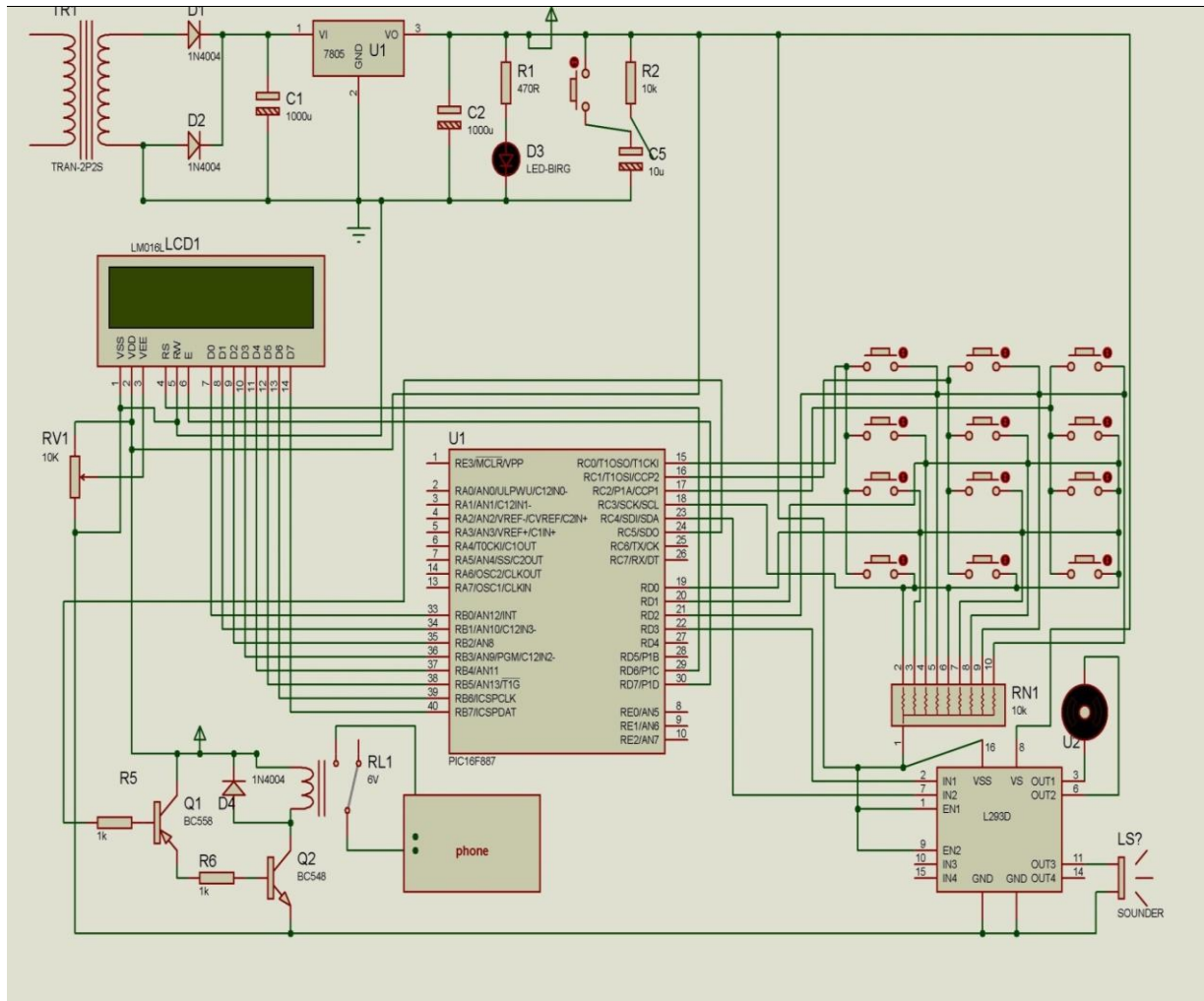
Figure 2 Circuit diagram

V.   FLOW CHART

Figure 3 shows the flow chart of the total system. If the user will enter correct password he will be granted access to the door and the door will lock again after some time. If the password entered is wrong three times in a row a call will be initiated to the corresponding security services.

SYSTEM FLOW CHART: A flow chart showing in detail the working of thee device is shown below. From this flow chart, we can see how the different unit come together to achieve the desired purpose.

Figure 3 Circuit Diagram

VI. CONCLUSION

This paper has presented a functional, low cost and low complexity microcontroller based office control system. It can be further developed with minimal development costs and low operational costs for environment where high degrees of security are required. It is evident that the use of mobile phones with digital circuitry can be used to create a security system since mobile phones in today's world are lot easier to obtain at affordable costs.

VII. ACKNOWLEDGEMENT

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