International Journal of Advanced Technology in Engineering and Science
Vol. No.3, Issue No. 12, December 2015
www.ijates.com
ijates
ISSN 2348 - 7550

DESIGN AND IMPLEMENTATION OF LOW COST HOME SECURITY SYSTEM USING PIC MICROCONTROLLER ANDGSM NETWORK

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AIM

The aim of our work is to reduce the cost of home security system and to provide better security. This device also focus on modernization of the security system keeping in mind the need of the today's generation for better security which they can afford easily.

ABSTRACT

Home security has been a major issue as we can see that crime is increasing and everybody wants to take proper measures to prevent it. It is therefore the purpose of this invention is to provide a security device, which gives immediate notification to the owner on his/her mobile phone.This purpose is accomplished via use of some modules and a controller which activates a GSM (Global System for Mobile) module to send one or more SMS (Short Message Service) to the owner.

KEYWORDS: PIC16F877A Microcontroller , Keypad Matrix ,Lcddisplay ,Stepper Motor ,GSM Module

I. INTRODUCTION

Security systems are important features of a modern Home, but the problem is that the modern security system is quite expensive. So, we make a device which is easily affordable and easy to install. In this device a matrix keypad is used as an input device via which we enter our password which is displayed on LCD,if the entered password is correct than the microcontroller will enable the motor attached to it to open the door and after sometime the door will close automatically. In order to provide extra security we merge a GSM module which sends text messages on his/her mobile phone if somebody enters the wrong password.

II. PRINCIPLE BEHIND THE CIRCUIT

The main component in the circuit is PIC16F877A microcontroller. In this project a 4*4 matrix keypad is used to enter the password. The password which is entered is compared with predefined password.
If the entered password is correct than the system open the door by rotating the motor and display the status of the door in the LCD.If the password is wrong than the door remains closed and display "password is not correct

" and GSM module will send text message to the registered mobile number that "someone tried to open your door".

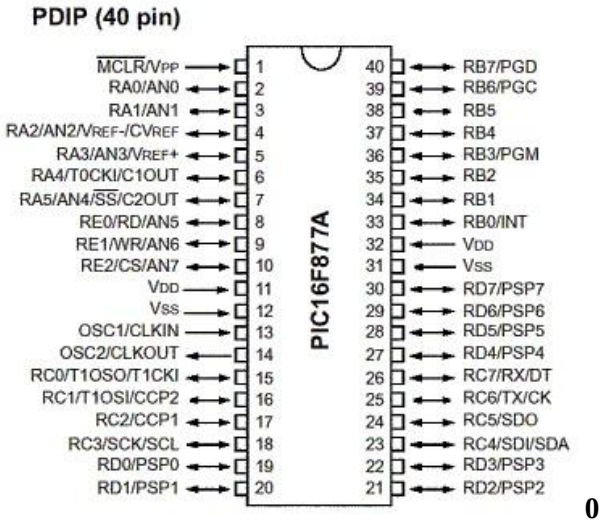

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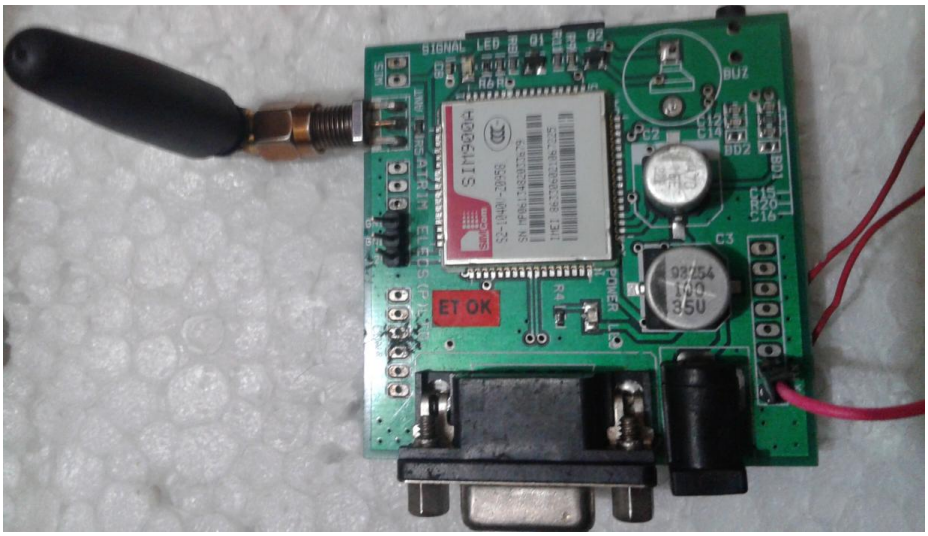
Fig:PIN diagram of PIC16F877A

Microcontroller **PIC16F877A** is one of the PIC Micro Family microcontroller. It uses Flash memory technology so that the data can be erased/write until thousands times.**PIC16F877A** have 40 pin by 33 path of I/O. **PIC16F877A** perfectly fits many uses, from automotive industries and controlling home appliances to industrial instruments, remote sensors, electrical door locks and safety devices. It is also ideal for smart cards as well as for battery supplied devices because of its low consumption. EEPROM memory makes it easier to apply microcontrollers to devices where permanent storage of various parameters is needed (codes for transmitters, motor speed, receiver frequencies, etc.). Low cost, low consumption, easy handling and flexibility make **PIC16F877A**applicable even in areas where microcontrollers had not previously been considered (example: timer functions, interface replacement in larger systems, coprocessor applications, etc.)

III. GSM MODEM

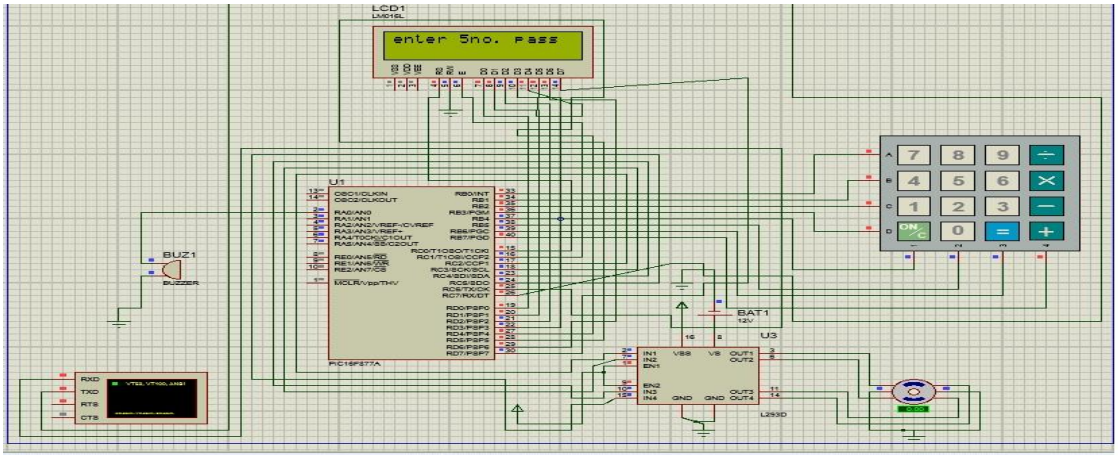


(Fig:-GSM module)

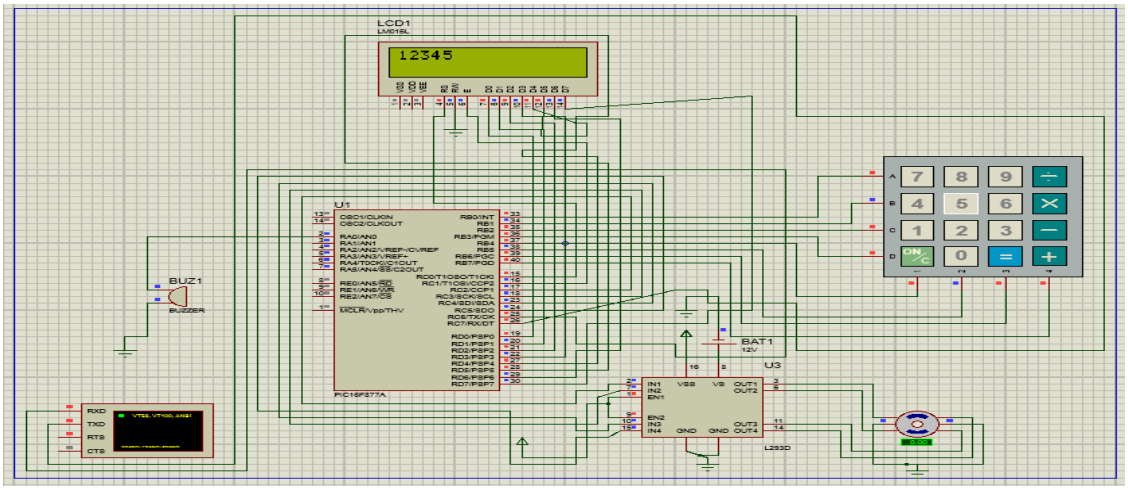
A GSM modem is a device that behaves like an ordinary telephone modem. The difference is that a telephone modem sends data through a phone line while a GSM modem sends data through radio wave. A GSM modem can accept the extended AT commands defined in the GSM standard. With the extended AT commands, youcan do things like sending SMS messages, checking the delivery status, etc, from your PC. Besides, you can use a GSM modem to connect to the Internet just like an ordinary telephone modem.

IV. WORKING

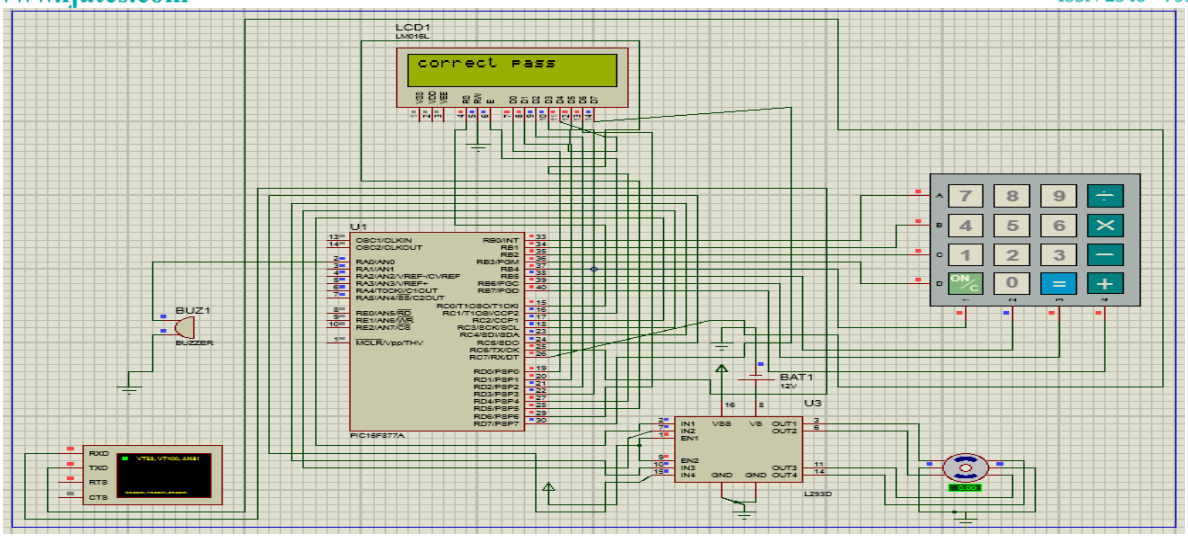
1. When you start the device it will ask you to enter the 5 digit password, which is shown on LCD.

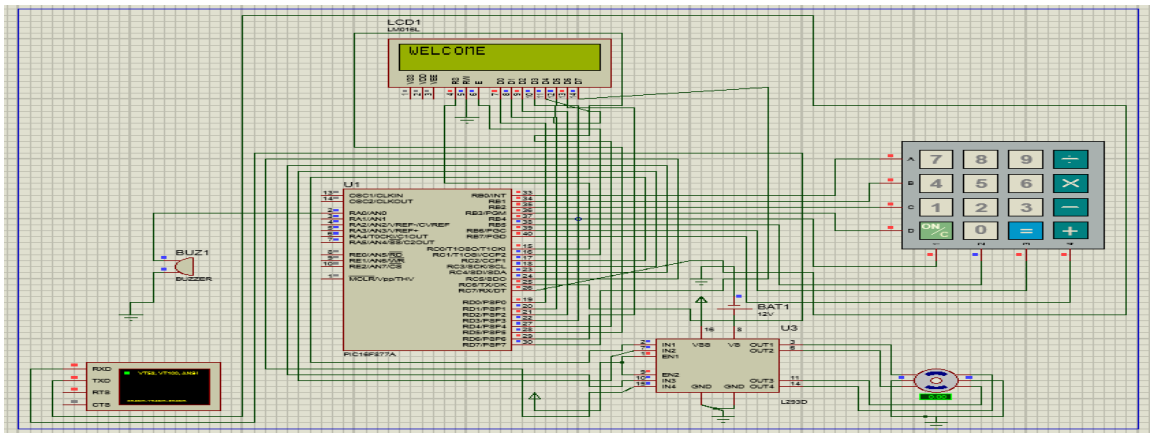


2. Enter the door password via 4*4 matrix keypad.



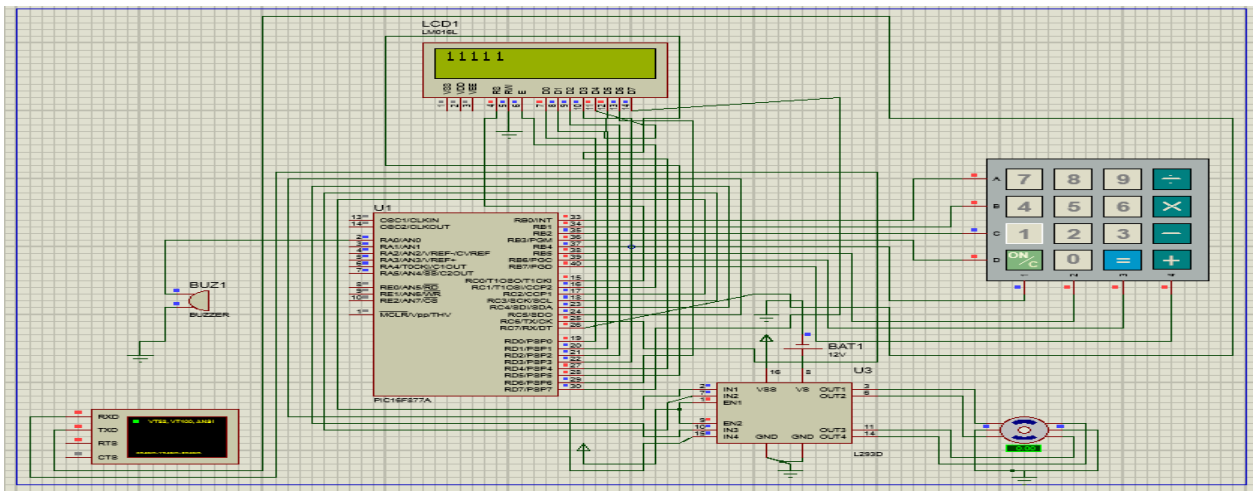
3. If the entered password is correct ,than it confirm that your password is correct and correspondingly send a text message via GSM module to the registered mobile number and open the door with the help of motor .





V. WHEN YOU ENTERED THE WRONG PASSWORD

1. If the entered password is not correct than the LCD confirmed that your password it notcorrectand the GSM module will send a text message to the registered mobile number.



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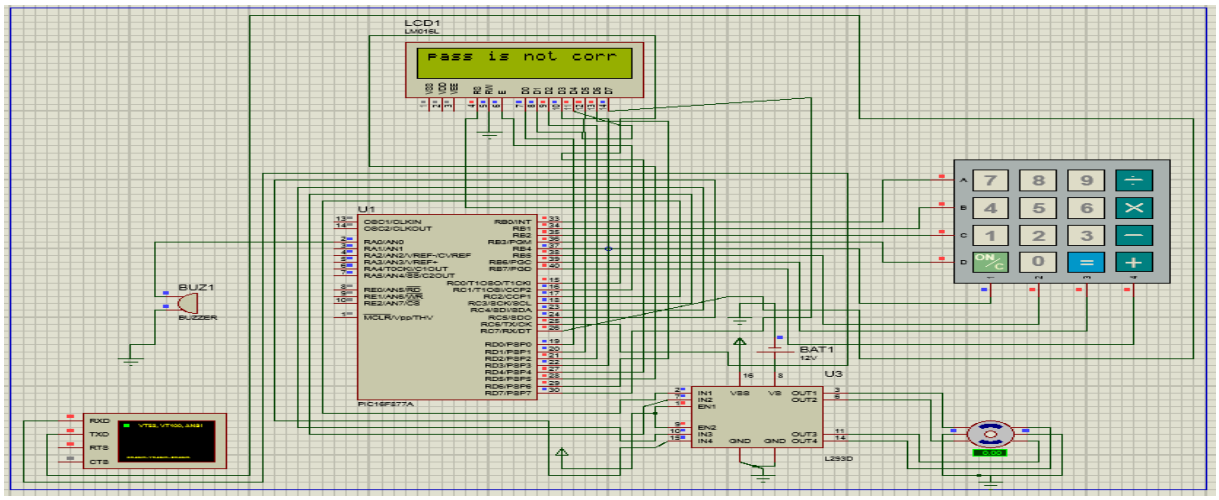
ISSN 2348 - 7550

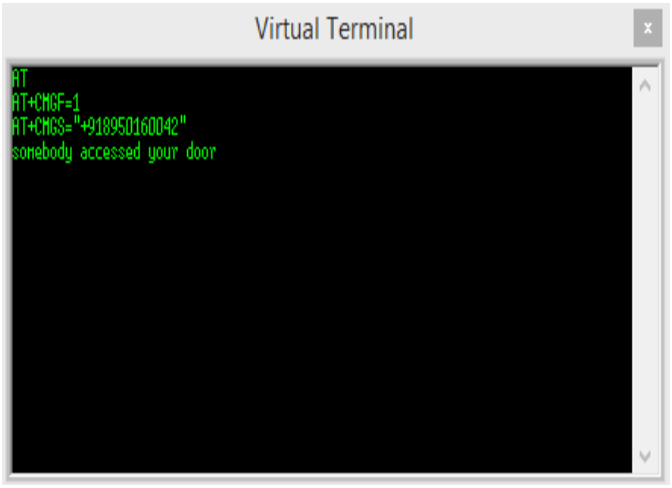


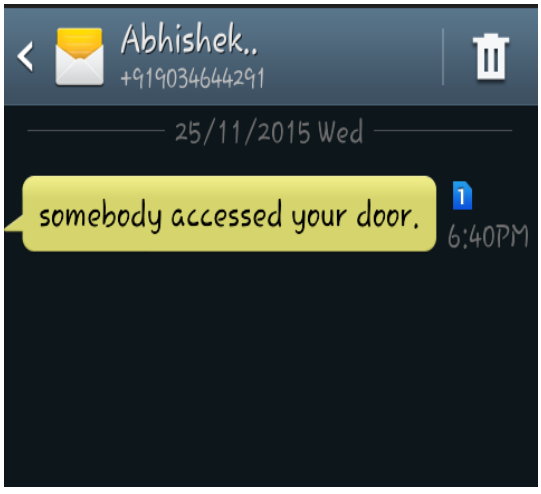
VI. CONCLUSION

With the change in time ,we also need to change our security measures in order to protect our homes from thieves and criminals. So, this device will suit you as it provides advance security to your homes and offices at lower cost.SMS provides an economical and convenient way to alert users of a possible intrusion into the property. The use of mobile handsets as a client device to receive warning messages on implies that the user will not have to carry an additional piece of equipment as most people already have a mobile phone with them most of the time. So this system is safe and cost effective as well.

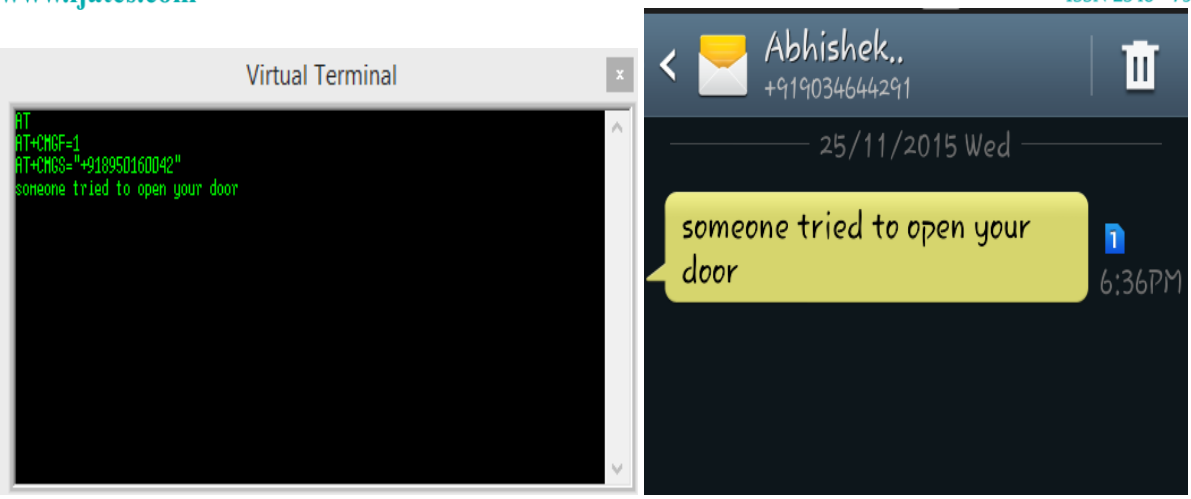
VII. RESULT

As we entered the right password the motor start rotating and opens the door and correspondingly the owner will receivea SMS on his mobile phone.





And when you enter the wrong password than also GSM module will send text message.



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