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PASSWORD BASED DOOR LOCK SYSTEM USING 8051 MICRO-CONTROLLER

Sanket Zanwar[1], Al Atta Musaab[2] , Khan Saif[3],Siddique Sohail[4]
Assistant Professor, Electrical Engineering, EESCOE&T, Aurangabad, Maharashtra, India [1]
Under Graduate Student, Electrical Engineering, EESCOE&T Aurangabad, Maharashtra, India [2, 3, 4]
sanketz95@gmail.com[1], alattasmusaab@gmail.com[2], saifkhan8796@gmail.com[3]

Abstract: The objective of this project is to provide such a security system which is highly secure for Commercial, Residential, Industrial areas, etc. By using an input device an individual user enters a Password if the entered Password is matched with the predetermined Password stored in the data memory of the micro-controller, then the micro-controller sends the input signal for actuating the dc motor drive in a specific direction required for opening of the door. If the entered Password doesn't matched with the predetermined Password then no input signal generates from the micro-controller to activate the dc motor drive. Hence the door remains unlock.

Keywords: *Micro-controller, dc motor drive, 16x2 dot matrix LCD display, 4x4 keypad, power supply, alarm system(Buzzer).*

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I INTRODUCTION

Intel's 8048 micro controller is the first 8 bit microcontroller which is established in 1976. It can perform or control the each and every general operation. The high performance micro controller families such as MCS51, MCS96, were developed because it featured with HMOS technology within it. The MCS51 family of microcontroller 8031, 8051 & 8751 and MCS96 family have 8096, 8097 & 8098.

8051 is the newest 8 bit micro controller from the MCS51 family. It possesses a wide range of versatile application from a simple house hold application to a complicated industrial application.8051 micro controller possess two types of memories one is the program memory while the one is the data memory. Program memory of 8051 micro controller is of 128 bytes. While the other memory which is data memory is of 4000 bytes during fabrication of the chip it is programmed by the manufacturer which is permanently fixed i.e. it cannot be erased or altered by the user.

II LITERATURE REVIEW

Main Components of Password Based Door Lock System Using Micro Controller

(a) Micro Controller 8051:Here in this project we are using an 8-bit Micro-Controller which acts as a brain of our circuit or we can say that it is the Central Processing Unit (C.P.U) of our circuit. We are using Micro-Controller 8051 which has a Program Memory of 2Kbytes (EPROM).This memory is used to store the Predetermined password during the time of installation, which is taken into consideration during the operation to compare the input password with the predetermined password.

Followings are the functions of the Micro-Controller in our project:

- To sense/take the input from the input Keyboard in digital signal form.
- To show the input numbers from the input device (Keyboard) on the output device, i.e. on L.C.D screen in our case.
- To check whether the entered number from the keyboard is right or wrong by comparing with the Predetermined password stored in the EPROM
- To drive the D.C motor drive in either direction by giving the signal to the correct relay.
  (Here two Relays are used.Relay-1 is used to drive the motor in such direction with which the door can be open, this operate when entered password is Correct, whereas Relay-2 is used to block the direction of D.C motor drive or to rotate the Drive in opposite direction to remain the door close state, and this done during the wrong password is encountered.)

- To send the data status of the entered password to the alarm circuit, to give the indication of the encountered password whether it is Correct or Incorrect.

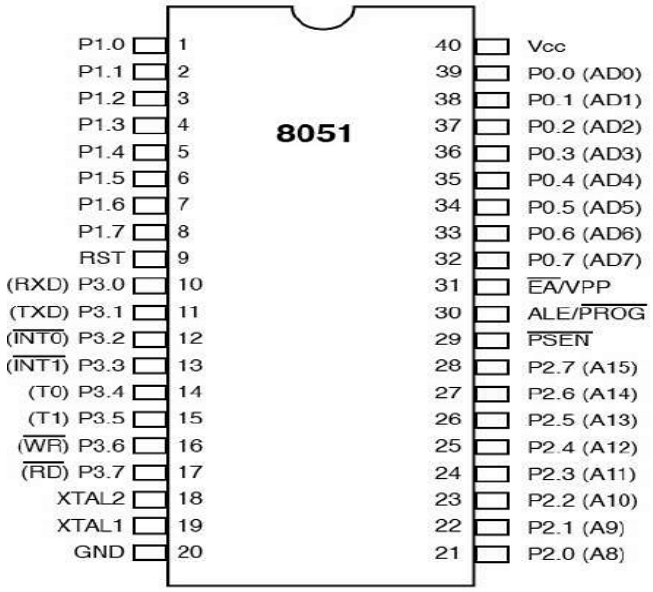

Figure 1: Pin Diagram of 8051 Micro-Controller [1]

(b) L.C.D: Here we are using a 16x2 L.C.D which is a dot matrix Liquid Crystal Display. Its function is to display the alphanumeric symbols to indicate the status message of the circuit. This L.C.D can display the two lines and each line contains 16 characters. This L.C.D contains an internal oscillator circuit to work in synchronization with the controller.

(c) D.C Motor Drive: It is a machine used to convert the electrical energy into mechanical energy. This D.C motor uses a 9V battery as an input through a Switching Relay and rotate to open the door or to lock the door. To interface this D.C motor drive with the Micro Controller we use an L293D I.C.

(d) 4x4 Matrix Keyboard: This keyboard contains a numbers of switches arranged in a matrix format. Each rows and each column are connected to the pins of micro controller. This keyboard contains numbers from 0 to 9, alphabets from A to D, an Enter button and an Escape buttons. These switches are generally a numbers of push buttons. With the help of this Keyboard an individual can enter the password to unlock the door.

(e) Buzzer or any Alarming Circuit: This is a piezoelectric material which converts the electrical signals into the mechanical Vibrations. This vibration amplified into a Buzzing sound which will indicate that the entered password is incorrect. Instead of buzzer we can use many different way of indication, such as notification on mobile phone or smart phone at remote location using a G.S.M technology.

Basic Principle of Operation:

At the time of installation the individual user enters a desired password which is also known as predetermined password. Micro controller stores this password into its program memory. Now after the implementation of this security system at the area of interest, if someone enters a password via keyboard the micro controller will compare the entered password with stored password if it matches with it, then the door will unlock, and if the entered password doesn't match with stored password the door will remain unopened. And if the wrong password is entered above the prescribe limit then an alarm will generate by the alarming circuit.

Advantages of password door lock system

(a) No keys to be lost, stolen or occupied.
(b) Can be lock using keypad.
(c) Automatic door opening.
(d) Indication for unauthorized entry.
(e) No need of any complex components, because it uses common available components.

III CONCLUSION

Thus we have concluded that we can secure our residential places as well as industrial places using 8051 micro controller by just connecting the components to interface and to drive the locking system.

REFERENCES

[1] Mohammed Amanullah, "PASSWORD BAESD DOOR LOCK SYSTEM", IOSRJournal of Electrical and Electronics Engineering, Volume 4, Issue 6, Mar. - Apr. 2013.

[2] Ashish Jadhav, Mahesh Kumbhar, Mahesh Walunjkar, "FEASIBILITY STUDY OF IMPLEMENTATION OF CELL PHONE CONTROLLED, PASSWORD PROTECTED DOOR LOCKING SYSTEM",International Journal of Innovative Research in Computer and Communication Engineering, Vol. 1, Issue 6, August 2013.

[3]Arpita Mishra, Siddharth Sharma, SachinDubey, S.K.Dubey, "PASSWORD BASED SECURITY LOCK SYSTEM", International Journal of Advanced Technology in Engineering and Science, Volume No.02, Issue No. 05, May 2014.