

# ONE TIME PASS LOCK SECURITY SYSTEM

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**Abstract**— There is a major concern for increase in the number of thefts. Security is a prime concern in day to day life. Our project primarily aims at providing high end security system at very reasonable cost thus keeping thieves, burglars and any other dangers at bay. It allows authorized person to access the required area which will be restricted for others. It uses 8-bit microcontroller AT89C51 which is interfaced with other peripherals like LCD Display, Matrix Keypad, Reset Switch. The user needs to specify the unique user ID which has a corresponding unique password. By using this system in our lives, we hope to reduce the security theft concerns from a human's mindset.

**Key words**— AT89C51 MICROCONTROLLER, LCD DISPLAY 16X2, MATRIX KEYPAD, RESET SWITCH.

## I. INTRODUCTION

Millions of thefts are committed every year. According to statistics 66 percent of burglaries are because of residential break-ins. Thus need of security is a cardinal aspect in every human's life. With the advancements in scientific research and Technology related field, human life has become way easier. Advancements in technology has helped us in designing digital lock systems which can be implemented at household level [1]. Password systems are commonly used systems to prevent the burglary from happening. This project conveniently and efficiently reduces the digital security concerns [2].

This project emphasizes on fixing this system at the main door of the restricted area. For instance, if you are in an organization, a unique USER ID will be provided. Each USER ID will be having it's own unique password which will be stored in computer. This system asks the user to enter his unique USER ID. If the USER ID provided matches with the stored USER ID then the system ask the user to enter his unique password allotted by the organization. Once password matches with the stored password, the microcontroller supplies the power to the computer by allowing the user to enter the restricted area and the message 'Processing' will be displayed on LCD display. If the USER ID provided is incorrect, the message "INVALID USER ID" will be displayed on the LCD display.

If the password provided for a specific USER ID is incorrect then the message "PASSWORD FAILED. RE-ENTER PASSWORD" will appear on the LCD display. If the entered password is incorrect for 3 times consecutively, the whole security system blocks. The system will come to normal condition once the security officer presses the "RESET" switch [3].

## II. SYSTEM ARCHITECTURE

The figure below (Fig.1) shows the functional block diagram of the One Time Pass Lock Security System. The 8-bit microcontroller AT89C51 which has a 4Kbytes ROM for the program memory is interfaced with 16X2 LCD, which is used to display the required USER ID and PASSWORD. A 4X4 Keypad is used so that the Password can be entered through it. A Reset switch, interfaced with the microcontroller is used when the user wants to reset the whole system because of incorrect entered Password. The Computer has the stored PASSWORD and USER ID which is compared with the entered USER ID and PASSWORD.

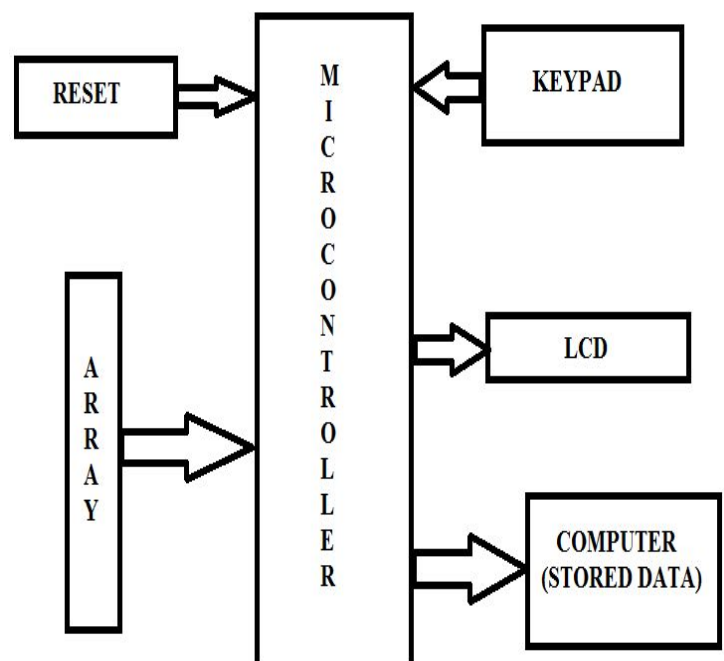


Fig.1 Block Diagram

## III. FUNCTIONING OF SYSTEM

The working is divided among 4 sections.

### A. MICROCONTROLLER:

The AT89C51 is a low-power, high-performance CMOS 8-bit microcomputer with 4K bytes of Flash programmable and erasable read only memory (PEROM). The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C51 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications [4]. The functions of AT89C51 in this project are:

1. The digital input from the keypad is read by the controller.
2. The input data is sent so that the user can read and set the password.
3. The Password is sensed by the Keypad to check whether the password entered was correct /incorrect.

### B. LCD DISPLAY:

The LCD is used for the display purpose. It is a 16char × 2 line LCD. It has a viewing Area of 66 x 16mm, character size of 2.96 x 5.56mm, character pitch of 3.55 x 5.94mm, character font of 5x7 dots and dot size of 0.56 x 0.66mm. It has 96 inbuilt ASCII characters, 92 special characters and 8 custom characters. LCD display is used to show status of encrypted password. Fig.2 shows the output obtained at the Printed Circuit Board.

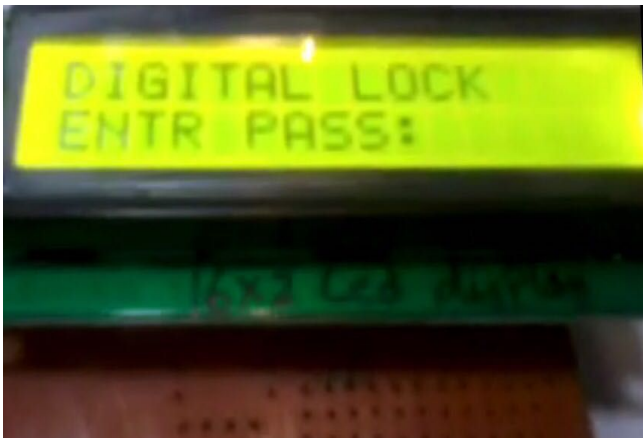


Fig.2 Final Output at LCD Display

### C. MATRIX KEYPAD:

A matrix keypad with the microcontroller is used to reduce the number of port pins required to read a certain number of inputs. The matrix keypad is used because one port pin is required to read a digital input into the controller. The reason for using a 4X4 matrix keypad is because the number of pins that are required to interface a given number of inputs decreases with increase in the order of the matrix.

### D. RESET SWITCH:

RESET switch is interfaced with the AT89C51 microcontroller and is used to bring back the system to

normal condition because the system is blocked of incorrect attempted passwords.

### FLOW-CHART.

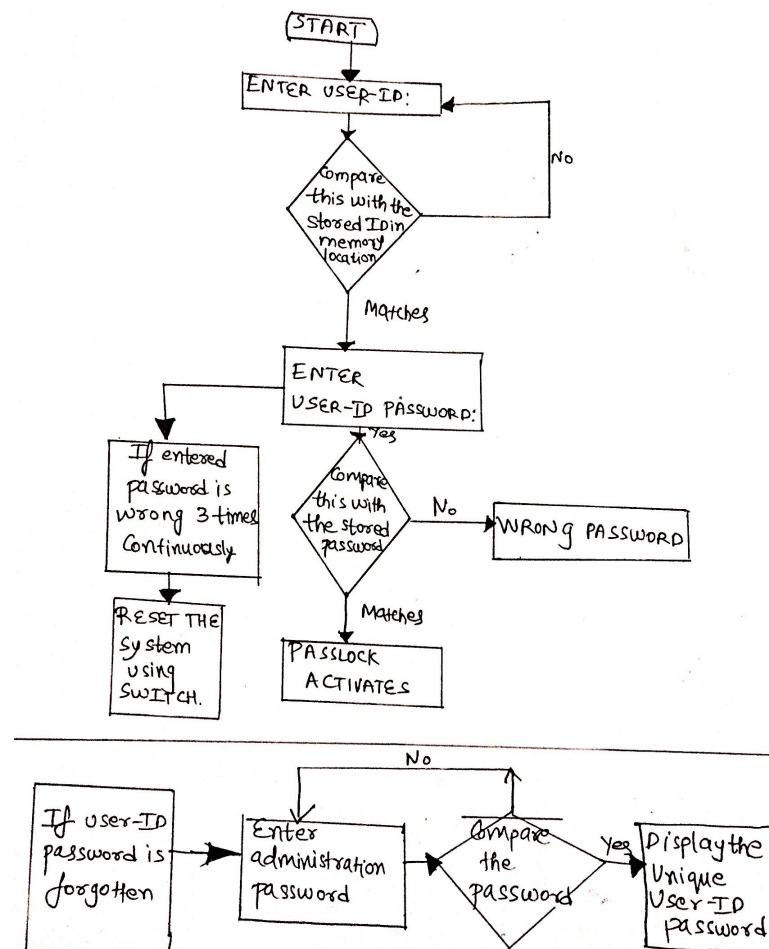


Fig.3 FLOWCHART

### IV. APPLICATION AND FUTURE WORK

1. Can be used in industries to protect non-authorized persons from entering the restricted area.
2. Can be used by common people who forget to take keys as they just have to remember the PASSWORD.
3. Can be used by college rooms to store all important examination papers.
4. Can be used in psychiatric care centers to prevent patients from entering restricted areas.
5. Implementing a two level security system. The first level consists of reading RFID card and comparing it with the RFID database. The restricted door which is magnetic and is equipped with a magnetic switch to provide the alarm during RFID breach.

## V. CONCLUSION

1. This project provides perfect security for restricted zone.
2. The project requires very less power consumption.
3. The microcontroller contains the software program which is accurate and precise.
4. Very less maintenance is required for this project.
5. Security breach can be minimized using a two level system consisting of RFID card and magnetic door alarm.

## REFERENCES

- [1] Technology Intelligent Home: SMS Based Home Security System with Immediate Feedback International Journal Of Advance Research In Science And Engineering <http://www.ijarse.com> IJARSE, Vol. No.2, Issue No.5, May, 2013 ISSN-2319-8354(E).
- [2] [http://www.ijates.com/images/short\\_pdf/1399392619\\_P100-103.pdf](http://www.ijates.com/images/short_pdf/1399392619_P100-103.pdf)
- [3] <http://www.ijettjournal.org/2016/volume-32/number-4/IJETT-V32P235.pdf>
- [4] ATMEL datasheet - AT89C51 microcontroller