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# A Review Paper on Password Based Lock System

[1]Tanmay Punse, [2]Himanshu Rewatkar, [3]Dipali Dhakate, [4]Pooja Sharma, [5]Priyanka Gaurkhede

*[1,2,3,4]Students, [5]Professor*
*Electrical Engineering, Nagpur, India*

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**Abstract**

The password-based door lock system is an advanced electronic security solution designed to enhance access control by using a password instead of traditional physical keys. This system not only improves security but also offers significant user convenience, making it an ideal choice for various applications such as homes, offices, and other facilities where restricted access is necessary. Typically, the system consists of three main components: a keypad for entering the password, a control unit that verifies the entered password, and an electric lock mechanism that is activated once access is granted. To gain entry, users simply enter their password on the keypad. The control unit compares the entered password with the stored one, and if they match, the electric lock mechanism is triggered, allowing the door to unlock. In cases where an incorrect password is entered, the system can trigger an alarm, initiate a time delay before the next attempt, or take additional security measures depending on the system's configuration. This type of door lock system is known for being user-friendly, easy to install, and maintain. Moreover, it offers the flexibility to be customized according to specific security needs, providing an added layer of protection while streamlining access control.

## Introduction

Security is an important concern in our day-to-today life. Everyone wants to be as secure as possible. Nowadays, issues like thefts in banks and homes are common and increasing day by day. Considering this problem, we have come up with a project to design and implement a password-based door lock system for the purpose.

The main idea of this project is a door latch opening with the use of a password entered through a keypad. It works with the use of an 8051 microcontroller as the main component. It is a simple embedded system where the keypad interfaced with the microcontroller is used as an input to enter the password and the LCD is the output that displays the status whether the entered password is correct ornot. There are also rotating motors to control the movement of the door.

## Objectives

The following are the objectives of this project:

To ensure safety in the common places like homes, offices, universities, banks, etc.

To ensure cost effective implementation of the system

Easy storage of the valuable items

Easily accessible especially for physically challenged people to control the door from theirfingertips

Controlling the position of the motors to open or close a door which are controlled andprocessed due to the response of the 8051 microcontrollers
Interfacing the 8051 microcontrollers with the LCD display to show the status of the passwordentered
Interfacing the motors to control the door latch movement according to the status of thepassword entered

**Background And Literature Survey**
A similar project was made by International Research of Scientific Research in Computer Science to provide security in residential areas like homes, banks, offices, etc. They have used an Electronic CodeLock System with 8051 microcontrollers to design and control the door lock system with a unique password. The traditional lock systems using mechanical lock and key mechanism are replaced by newadvanced techniques of locking system. These techniques are an integration of mechanical and electronic devices and highly intelligent. Simulation of the project was performed on PROTEUS and the code was written in Kiel software. Code for the microcontroller to run DC motors IC (L293D) is written. In the simulation the relevant data to the Microcontroller is sent through the keypad. The Microcontroller processed the data and sent the information to the Actuator IC (L293D). The Actuator IC upon receiving information showed response by driving the DC motors. A password- based recognition system can easily perform variation. In the variation the system compares an input password to the enrolled password of a specific user to determine, if they are fromthe same password.

**Need for Password based door lock system**
Nowadays, people want their valuable items to be kept secure as much as possible. Issues like thefts are becoming common. To safeguard the things and solve the problem, we have come up with a solution of constructing a password-based door lock system. This can be implemented in residentialplaces to ensure better safety.

**Organization of the Report**
The remaining chapters of the project report are described as follows:
Chapter 2 contains the hardware implementation of password-based door lock system, methodology, and explains the designing of the project.
Chapter 3 contains the implementation with code analysis. It also explains the software simulation and hardware set up and simulation processes used.
Chapter 4 compiles the results obtained after the project was implemented.
Chapter 5 concludes the report with discussions about the results obtained in the project and their future scopes.

**Hardware Specifications And Design**
This chapter explains the various components of the system and their workings, features of 8051 that are exploited in this project and the methodology adopted for successful implementation.

**Hardware Specifications**
1. 8051 Microcontroller Kit ESA MCB51 V1.03
The ESA MCB51 (Figure 2.1) is a 8051 based single chip MCU trainer. It works with AT89C51ED2 and operates at a frequency of 11.0592 Mhz. It requires a single 5V power supply. The power full on-chip flash monitor provides communication with Keil µVisionDebugger.
The trainer also contains an on board UART to USB converter for ease of connection with a computer. Furthermore, there are push buttons provided for INT0, INT1 and Reset.
These features make the trainer a compatible option to work and interface many other driversand devices with the microcontroller efficiently.

*Figure 1: ESA MCB51 V1.03*

ON-CHIP MEMORY CODE MEMORY: 64K Bytes of flash.DATA MEMORY:
256 Bytes of RAM.
1792 Bytes of XRAM.
2K Bytes of EEPROM.
8051 microcontrollers have 4 I/O ports each of 8-bit, which can be configured as input or output. Hence, 32 input/output pins allow the microcontroller to be connected with the peripheral devices.Port 0:
The P0 (zero) port is characterised by two functions – When the external memory is used then the loweraddress byte (addresses A0- A7) is applied on it, else all bits of this port are configured as input/output.When P0 port is configured as an output then other ports consisting of pins with built-in pull-up resistorconnected by its end to

**Block Diagram**
Figure 2.8 is the schematic representation of the connections made using the above mentioned components in this project.

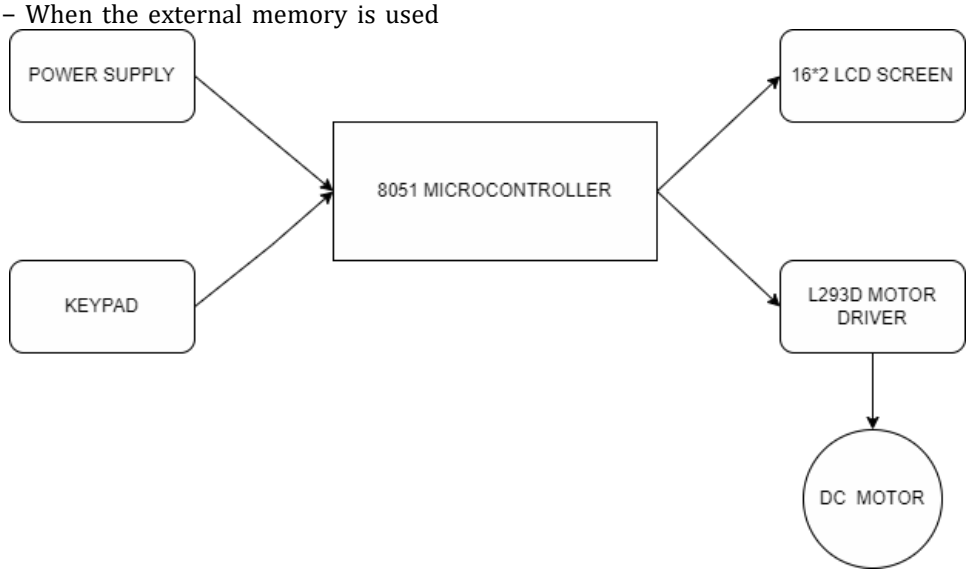
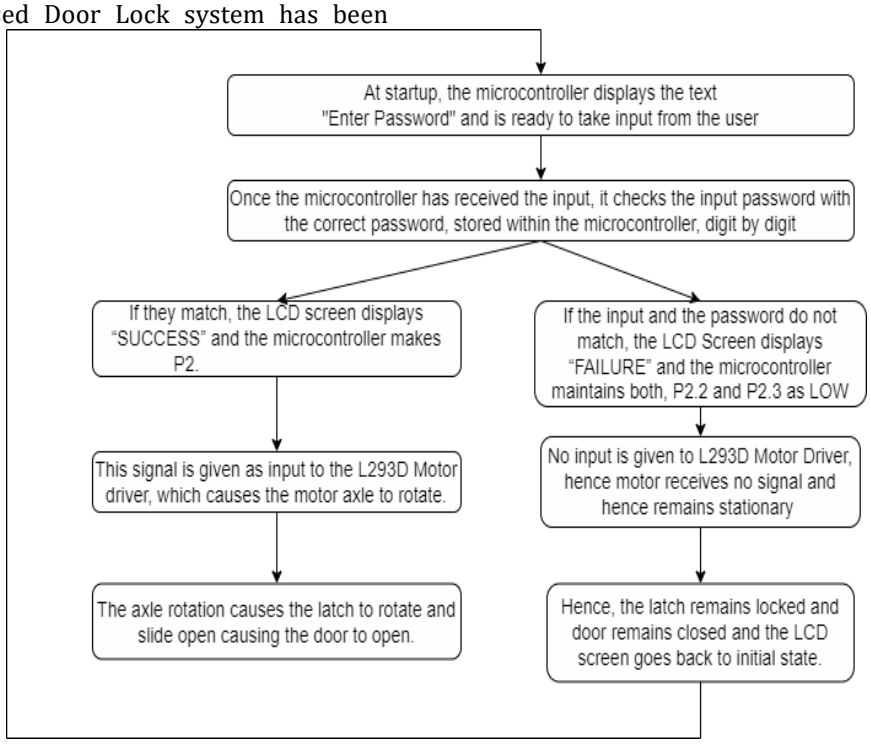



*Figure 2.8: Block Diagram*

**Methodology**
The basic idea of implementation of the Password Based Door Lock system has been demonstrated in the block diagram (Figure 2.9) as depicted below.



**Conclusion**

This chapter concludes the thesis on Precision agriculture system for rice crop and suggests additional functionalities for future implantation.

Our project provides enough security as long as the password isn't shared.

The system comprises a number keypad and that is connected to the 8-bit microcontroller, which continuously monitors the keypad, and opens the door if the entered password is correct, which is stored already and the person is allowed to get in.

As said, the password-based door lock system can be used to providemaximum security in order to satisfy the people's need.

**Future Work**

Can integrate it with the fingerprint scanner.

Can interface it with sensors to detect the accidents occurring and open the door.

Integrating it with the camera in case of burglary in your house.

Ensured in the places of authorized access like bank vault doors.

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