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## IOT Based Password Enabled Door Lock System

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### ABSTRACT

The swift pace of innovation has transformed the globe into a globalized world and has contributed significantly to the protection of lives and property. Nonetheless, technological advancement has resulted in significant progress as well as an increase in crime, including attacks by thieves, vandals, and invaders. As a result, there is an urgent need to improve current security systems in homes, workplaces, and other facilities in order to safeguard people and property. This research paper describes a keypad-based digital door lock security system that will provide total protection for people and property in homes, schools, and workplaces. The proposed solution improves security by avoiding the mechanical key requirement of traditional locks, making them less vulnerable to more common break-in mechanisms such as lock picking. along with Remote Access - A significant advantage of smart locks is the ability to grant remote access to a home or safe and allow multiple users to have access at the same time.

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**Keywords:** IOT, Arduino, Automatic Door Lock

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### 1. Introduction

Smart Technology introduces networking devices and equipment in the house for better quality living. It allows the entire home to be automated and therefore provides comfortable living as well as added benefits for disabled individuals. Traditional locks and keys have been in use for centuries, with relatively little advances or modifications to the original technology. All the existing door locking systems are old-fashioned ways of accessing the system with either a traditional key or some means of RFID (Radio-Frequency Identification) chips.

Existing systems have traditional locks which have remained a fairly reliable method to keep things safe, the advent of the internet has revolutionized the way almost every ordinary object functions. Security is a primary concern for every individual where humans cannot find ways to provide security to their confidential belongings manually. The common targets where unauthorized access takes place are Banks, Financial organization, Government offices and organization, and shops

The existing system faces certain drawbacks like: Lack of Security - The singular reliance on the hardware mechanism of a lock-key system eases manipulating the hardware, Disjointed Integration - Traditional locks fail to integrate with smart home elements, making the need to remember the physical key crucial and Information Silos - The inability to know remotely whether the door is unlocked is a significant drawback to traditional keys.

The present paper aims to present several aspects of the smart door locking system. Keypad security mechanism method is designed for implementing a smart door locking system using Arduino. In the rest of this paper, we find: Section 2 presenting the background and related works. Section 3 describes the smart locking system by analyzing and presenting the system architecture, and Section 4 concludes this paper along with the future scope.

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### 2. Literature Review

This section includes going through three different papers, published in Scopus indexed journal which have been summarized and presented in table 3.1.

**Table 1 –Table of Literature Review.**

<b>Publisher</b>	<b>Title</b>	<b>Summary</b>
<b>IEEE</b>	IoT Enhanced Smart Door Locking System	Using a survey, a project was developed using Arduino kit. The user credentials are validated by the database. If invalid credentials are provided in the application, a buzzer alarm is produced with an SMS alert to the house owner along with a popup warning notification to the user.
<b>Springer</b>	A Study on the IOT Based Smart Door Lock System	This study proposes the Smart Door Lock System based security enhancement plan for the safety issue caused by the physical key used in automation machines, such as ATMs, KIOSKs, and vending machines using mobile application.
<b>IJERT</b>	Password Enabled Door locking system using Arduino and IoT	The password enabled door locking system can be used for households, offices, desk units, etc. The system will check for the validity of the password entered by the user and will unlock only for the authorised users.

### 3. Methodology

Smart locks are electromechanical devices that provide a locking and unlocking mechanism, often supplemental to a traditional lock. The password enabled door locking system can be used for households, offices etc. This system demonstrates a Password-based Door Lock System using Arduino, wherein once the correct code or password is entered, the door is unlocked.

#### 3.1 Requirement Analysis

##### 1. Arduino Uno R3

- Input Voltage Limits –
  - Recommended: 7~12V
- Input/Output (I/O) pins: -0.5V to +5.5V
- Output Current Limits -
- When powered by USB: total of 500mA

##### 2. Solenoid Lock – Lock and unlock the system

##### 3. Buzzer - Makes audible sound in event of 3 wrong PIN attempts.

##### 4. 12 V Battery - Used for the functioning of solenoid lock.

##### 5. 4X4 Keypad - It helps in providing input PIN in the system

#### 3.2 Working

In this study, we propose a digital door lock system comprising two major subsystems: the hardware subsystem and the software subsystem. The software subsystem is written in C++ programming languages and uploaded to the microcontroller, which controls the operation of the hardware subsystem, using the Arduino IDE. The hardware subsystem includes a microprocessor, which aids in transferring information from the code to the different hardware components of the digital door lock. The Arduino Uno microcontroller and the 4x4 matrix keypad are the two primary hardware components utilized in this project.

Through the 4X4 keypad module, the user inputs a four-digit PIN. If the PIN input is right, the system shows the correct PIN and the door opens; otherwise, the system displays the incorrect PIN and the door remains closed. The mechanism waits a few seconds after opening the door before closing it. The buzzer is activated for 5 seconds after three unsuccessful tries, the lock is deactivated for 30 minutes after five incorrect attempts, and the time may be changed by the user.

### 4. Conclusions and future scope

The microcontroller based digital door lock security system using keypad is effective in providing security to lives and properties as long as the PIN is not shared with unauthorised individuals, the microcontroller-based digital door lock security system with keypad is successful in providing security to lives and properties.

The system is easy to use, compact, and affordable. With only a few steps, it's simple to set up. Face detection, fingerprint biometrics or OTP based authentication access could be a useful feature to have when operating the door lock system in order to make it far more secure.

## REFERENCES

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- [1] G K Verma, P. Tripathi, et al. (2010). A Digital Security System with Door Lock System Using RFID Technology, International Journal of Computer Applications (0975 – 8887)Volume 5– No.11, August 2010
- [2] Orji E.Z., NduanyaU.I. ,Oleka C.V. et al. (2019). Microcontroller Based Digital Door Lock Security System Using Keypad, International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS) Volume VIII, Issue I, January 2019, ISSN 2278-2540.
- [3] Anu, Dinesh Bhatia et al. (2014). Smart Door Access System Using Fingerprint Biometric System, Int. J. Medical Engineering and Informatics, Vol. 6, No. 3, 2014.
- [4] K. Karimi,M. Kabrane, O. Hassan, A Badouch, S Krit et. al (2020), Secure Smart Door Lock System based onArduino and Smartphone App Jour of Adv Research in Dynamical & Control Systems, Vol. 12, 01-Special Issue, 2020. ISSN 1943-023X 407