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# *Controlling Door Access Remotely Using an Android Application with Password Authentication*

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***Abstract***

*In this article, we propose a password-based remote controlled door opening system using an Android application. The system allows users to open and close a door remotely using a password that is entered through an Android application. The proposed system provides a convenient and secure way to control access to a door, without the need for physical keys or smart cards. The system is designed to be easy to use, and can be customized to meet the specific needs of different users.*

***Keywords****: - Password-based, Remote control, Door opening, Android application.*

## INTRODUCTION

The use of traditional key locking systems and smart card entry systems for controlling access to doors can be inconvenient and expensive. Keys can be lost or stolen, and smart cards can be easily misplaced or damaged. To overcome these limitations, we propose a password-based remote controlled door opening system using an Android application. The proposed system is designed to provide a convenient and secure way to control access to a door, without the need for physical keys or smart cards.

### Key locking system

The proposed system consists of two parts: a hardware module and an Android application. The hardware module is connected to the door lock and controls the opening and closing of the door. The


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module includes a microcontroller, a Bluetooth module, and a motor driver. The microcontroller is programmed to receive commands from the Android application via Bluetooth and control the motor driver to open or close the door.

**Smart card entry system:**

The Android application is designed to be user-friendly and easy to use. The application allows users to enter a password, which is sent to the hardware module via Bluetooth to open or close the door. The application also includes a user management feature that allows administrators to add or remove users and assign them unique passwords. The application is secured using encryption and authentication techniques to ensure the security of the passwords.

## ANDROID APPLICATION SECURITY SYSTEM

Here this uses an android phone to unlock a room door with the help of Wi-Fi communication. This system of opening the doors is more advanced and it provides security to the user in many of forms such as: By limiting the number of mobiles that are connected to it by using the MAC address of the android devices. It also provides a security by giving the users with a login id and its matching password these details are being stored in the database of the corresponding door circuit and if it matches then the user can login.

### A. OPERATING MODULES

It has three operating modules. And they are as follows,

- Reception Part [PC & Wi-Fi modem]
- Door Circuit [Raspberry Pi, Motor driver, Motor]
- Android Mobile [Door Opener application]

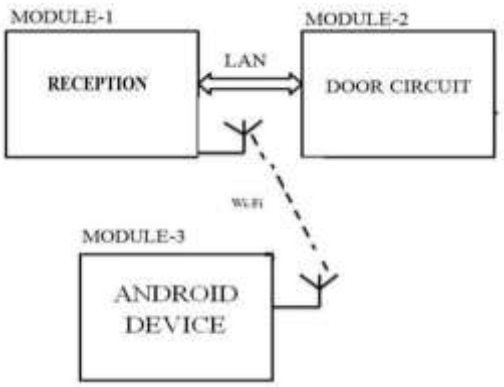


***Fig.1. Operation Modules***

### RECEPTION MODULE

This module includes a PC for monitoring the database and a Wi-Fi modem which transmits and receives data between mobile and door circuit. The accessibility to database is limited/ controlled by password such that on higher personnel can login for viewing details.


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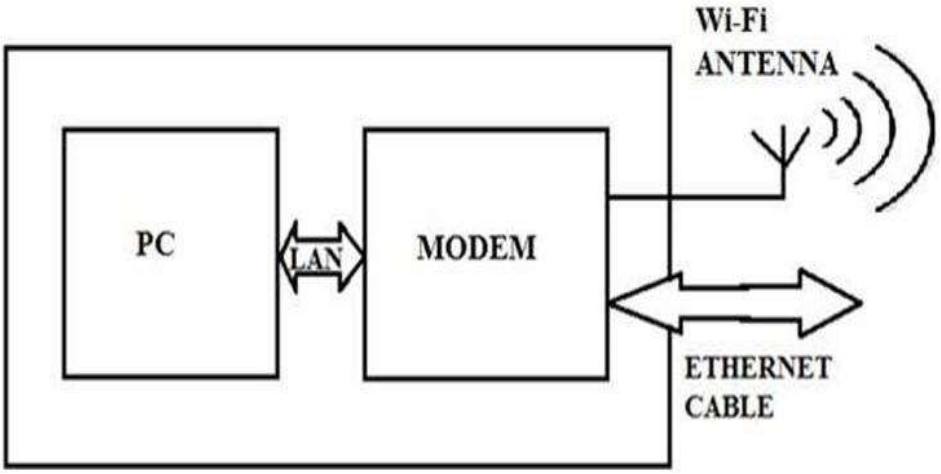


***Fig.2. Reception module***

**A. PC**

The PC is used for displaying all process that are being c arried. It need to be ready with all necessary software supports. It requires following softwares installed :

1. phpmyadmin-for loging into the database of server.

2. filezilla-for making changes in the app at administrator level.

**B. MODEM**

Here I have used TD-W8951 ND modem for transmitting and receiving purposes. The TD-W8951ND connects to an Ethernet LAN or computers via standard Ethernet ports. The ADSL connection is made using ordinary telephone line with standard connectors. Multiple workstations can be networked and connected to the Internet using a single Wide Area Network (WAN) interface and single global IP address. The advanced security enhancements, IP/MAC Filter, Application Filter and URL Filter can help to protect network from potentially devastating intrusions by malicious agents from the outside of the network.

As soon as the guest enters in to the hotel his/her MAC Address of the device must be got and it must be registered to the Wi-Fi device and then he must be provided with the SSID & password for that id so that he can get connected to the Wi-Fi of the hotel. Then he can install the DOOR OPENER application in his android mobile by logging in to the server. Then he can login in to the corresponding room by getting the user name and password from reception. As soon as he gets the user name and password from reception he can move to corresponding room entrance door.


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## 2. DOOR CIRCUIT

In this module there are three components. As soon as commands are received from the mobile through LAN cable to this module, these commands are sent to LAN controller chip of the pi board then it being verified and decoded by the processor. Then the commands are sent to driver circuit for processing the required action and the motor is being driven in either clockwise or anticlockwise as per requirement for locking or unlocking the door.

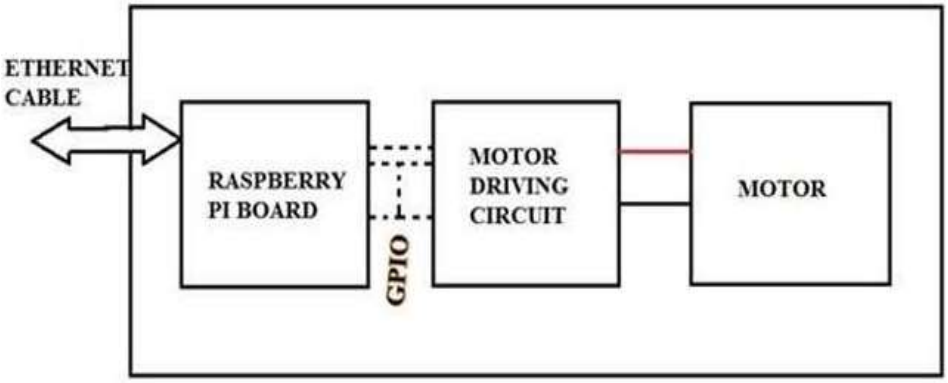


*Fig.3. Door circuit*

**Flow diagram**

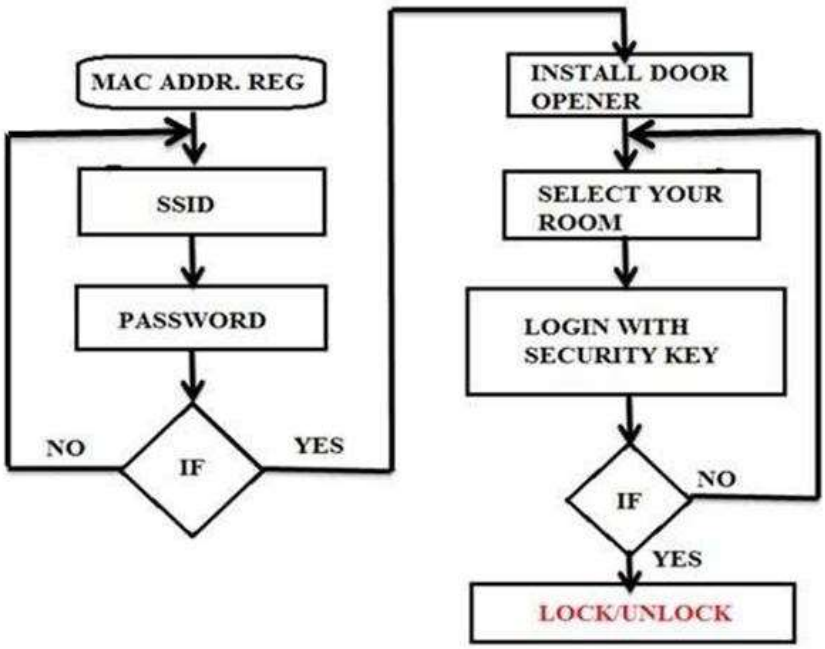


*Fig.4. Flow diagram*


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When the guest reaches the corresponding room he can login in to DOOR OPENER by entering the username and password that is provided by the receptionist. If there are many users for the same room then all will be provided with different user name and password, so that as each user logins for opening/closing the room door he will be registered at the database with the time and date of login and logout.

The above flow chart explains the process that is being carried out.

**RASPBERRY PI**

The Raspberry Pi is a credit-card sized general purpose Linux computer designed and manufactured by the Raspberry Pi Foundation, a non-profit organization dedicated to making computers and programming instruction as accessible as possible to the widest number of people. Although the original mission of the Raspberry Pi was to get inexpensive computers with programming capabilities into the hands of students, the Pi has been embraced by a diverse audience. Tinkers, programmers, and DIYers across the globe have adopted the tiny platform ranging from recreating retro arcade cabinets to controlling robots to setting up cheap but powerful home media devices.

The Pi features a system on a chip setup built around the Broadcom BCM2835 processor (a tiny but fairly powerful mobile processor commonly used in cell phones) that includes a CPU, GPU, audio/video processing, and other functionality all on a low-power chip. Although the Pi is an amazing little device. The Raspberry Pi is not an outright replacement for desktop computer or laptop. It cannot run Windows on it (its ARM-based processor does not support x86/x64 code), although it can run many distributions of Linux including distributions with desktop environments, web browsers, and other elements. The Raspberry Pi is, however, an astoundingly versatile device that packs a lot of hardware into a very inexpensive body and is perfect for hobby electronics, setting up an inexpensive computer for coding/ programming lessons and experiments, etc,.

**CONCLUSION**

In this paper, a clearly growing awareness has been identified in society regarding the general security needs of people. Furthermore, as the purveyance of mobile technologies such as smart phones


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continues to increase, mobile applications will have unique opportunity to target security in a new way. In addition to the design issues, the dynamic nature of the mobile application market results in new applications constantly being released. Throughout the development of DOOR OPENER, competitors with similar products in the space had appeared and highlight the necessity of product differentiation if it is not possible to be the first to market. Even in a relatively peripheral category such as security applications, there are already dozens of applications attempting to address the issue of improving users needs.

Thus with the help of my design it could able to open the doors remotely with the help of android mobiles. This is a useful concept in places where the security needs to open gates quite usually or need to operate a door from a vehicle without needing to get down from it. And also when the person is inside the bedroom and someone knocks the main door then with the help of video monitoring in mobile for right person it can be unlocked. This system can be further enhanced to perform video monitoring of the people at the door and automatic opening of it.

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