

# Nokey: Smart Door Lock System

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**Abstract-** *The Nokey lock consists of a Bluetooth access & Call access method, when the owner is within the range of 500cm-1m of the lock it will identify the mobile device the owner is having and accesses the lock and opens it. The case two when you are not at home and a guest or third party is arriving at your home. So with the help of an application i.e. android or ios we can add access for the device. If the battery of your mobile device is low and you want to open the lock. So the provision has been made that manual patter system is placed so that in case of emergency the lock can be accessed. A situation arise that a guest is arriving at your home and you need to provide access to them immediately. In that case a direct call access provision is made for opening the lock*

**Keywords-** Nokey, Bluetooth, Android

## I. INTRODUCTION

The Nokey is the introduction to the world of home security with background of home automation concept. The topic was struck to us when our own home was lock & we were unable to find the key. As the proverb says “Hunger is the mother of Invention” same thing happened to and as an Electronics and Telecommunication Engineer spontaneously said “we should design a smart lock without key” .As the modern world is digital so the implementing modern technology with the balance of safety was a bit cheeky .But finally the home security with compactness and feasibility was idealized.

## II. EXISTING SECURITY SYSTEM IN MARKET

### 1. Smart Door Lock

A first prototype of a networked power lock controller with an NFC interface, Nowadays cell phone manufacturers have released cell phones equipped with Near Field Communication (*NFC*). In today’s technological world increasing use of mobile payments and user verification with the use of the NFC technology. These trends indicate both the increasing popularity and great potential for increased use of NFC in today’s society. As a result NFC has a huge potential to simplify our everyday tasks, ranging from paying for items to accessing our office or home. This context will focus on using NFC together with a Power over Ethernet (*PoE*)

powered Circuit board and NFC reader to realize a simple system for granting access to open a locked door. One of the purposes of this realization is to explore what services can be realized when such a system is connected to the home/building network and connected to the Internet. A second purpose is to learn how to use network attached devices, as the concept of the Internet of Things is considered by many to be a driving force in the next generation Internet. This project uses very in expensive and low power hardware, as the number of devices is potentially very large and thus in order to minimize the technology’s impact on the environment we must consider how to minimize the power used – while maintaining the desired user functionality. This bachelor’s thesis project made it possible for a PoE powered circuit board containing a MSP430 microcontroller to work along with a NFC reader, which was connected through the Serial Peripheral Interface (*SPI*). We hope that the end result of this project will lead to a simpler life by exploiting this increasingly ubiquitous technology. For example, a homeowner could send a one-time key to a repair person who is coming to fix their sink. Similarly a homeowner could send a key to their neighbor which is valid for two weeks so that their neighbor could come into their home to water the plants while they are away on vacation. Another example is lending your apartment key to a friend while you are out of town.

### Limitations:-

This technology support only High end smart phones therefore building a technology which will be budget oriented will not be achieved.

### 2. Study of August locks which is based on of internet-of-things (IOT)

To realize the vision of Internet-of-Things (IoT), numerousIoT devices have been developed for improving daily lives, in which smart home devices are among the most popular ones. Smart locks rely on smart phones to ease the burden of physical key management and keep tracking the door opening/close status, the security of which have aroused great interests from the security community. As security is of utmost importance for the IoT environment, we try to investigate the security of IoT by examining smart lock security. Specifically, we focus on analyzing the security of

August smart lock. The threat models are illustrated for attacking August smart lock. We then demonstrate several practical attacks based on the threat models toward August smart lock including handshake key leakage, owner account leakage, personal information leakage, and denial-of-service (DoS) attacks. We also propose the corresponding defense methods to counteract these attacks.

### Limitations:-

It is costly hence every one could not afford it.

## III. PROJECT DETAILS

The Nokey lock consists of a Bluetooth access method, when the owner is within the range of 500cm-1m of the lock it will identify the mobile device the owner is having and access the lock and open it. The case two when you are not at home and a guest or third party is arriving at your home. So with the help of an application i.e. android or ios we can add access for the device. If the battery of your mobile device is low and you want to open the lock. So the provision has been made that manual patter system is placed so that in case of emergency the lock can be accessed. A situation arise that a guest is arriving at your home and you need to provide access to them immediately. In that case a direct call access provision is made for opening the lock. No other party cannot directly open the door without the access of following methods mentioned above. Hence the system becomes more secure to hacking. In case if someone tries to break the assembly of the lock system, a solution for that problem is that the system is placed inside the wall which would be enclosed from front end with unbreakable glass and the other sides of the assembly would be covered with walls

## IV. TECHNOLOGY USED AND ACCESSING METHODS

This Security system is embedded system oriented in which a microcontroller PIC16F is used for controlling purpose of the lock system. The accessing method of the lock is based on three inputs. 1) Bluetooth 2) Call Access 3) Manual.

The details of this technique can be given as follows:

- 1) Via paired Bluetooth Device: Here the Lock will have Bluetooth module and user will be paired to that device and hence he/she can access to the door. The pairing of the device with the user is going to be done by an App IOs, Android etc (we are generally going to use android app from play store).

- 2) Via phone call : By interfacing gsm module to the controller the accessing for the user can be made possible , for this the incoming call at receiver side will be at automatic mode so the specific command is going to be detected . By pressing the keys at the transmitter or users side the combination of frequency (Low frequency + High Frequency) of unique frequency level the lock is going to be access
- 3) For e.g.: initially the door is close ( lock is enable ) if user presses the button 1 then combination of unique frequency (low frequency + High frequency ) is going to be transmitted and GSM module at receiver side will detect that signal and door will open (lock will be disable ).
- 4) Via pattern: Actually this is the last option when user doesn't have any of the above option to access the door. The keypad of 4x4 matrixes is going to be use in the system and user can type 4 digit unique code to access the door. The code will be feed to the controller so that only for that typed code it will access

The LCD is also going to be use to indicate that out of all above assessing method which of this is currently being use. So by that instruction as per shown on LCD screen user can access the lock.

## V. BLOCK DIAGRAM

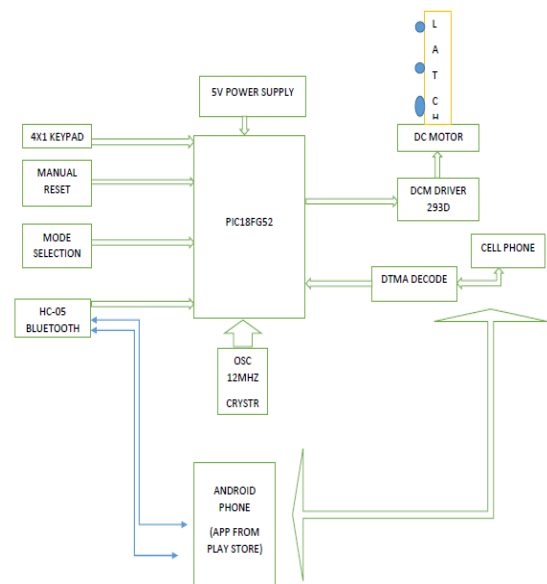


Figure no:-5

## VI. ALGORITHM

1. Start
2. On power supply
3. Initializing Controller.

4. Initializing DC motor.
5. Enable Switch (mode selection enables).
6. Pair the Bluetooth device to mobile phone
7. Enter the proper code on Bluetooth terminal
8. Shaft will rotate if enter code is proper
9. Enter proper 4 digit code on keypad
10. Shaft will rotate if enter code is proper
11. Change the mode using switch
12. Make a Call on phone connected to module
13. Shaft will rotate when call is received
14. End

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## VII. ADVANTAGES

1. Increased Security of the unit
2. Implementation of technology replacing mechanical approach.
3. Robust in nature.
4. User friendly
5. Portable in size
6. Availability & replacibility of parts is good.
7. Cost effective

## VIII. CONCLUSION

With the help of Embedded Technology we were able to design a digital smart lock which would not require a mechanical key to access it, instead it will be accessed by digital methods like Bluetooth , Call access etc. This type of digital implementation will help to improve the security of home with cost effectiveness the system is robust in nature and the reliability factor is much higher. All the error generation aspects are covered in the designing process so that a successful prototype can be implemented. The design is made in a user friendly way so that even a non technical person will be able to operate with grace. Hacking and security constraints are also taken into consideration.

## REFERENCES

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