DCS
Power To Design The Desired

SUMMER
INTERNSHIP

SMART DOOR ACCESS REPORT

2021

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Presentation, inspiration and motivation have always played a key role in the success of any venture.

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ABSTRACT

“Be it ever so humble, there’s no place like home.” “Home is where the heart is.” These well-known expressions indicate that home is somewhere that is both desirable and that exists in the mind’s eye as much as in a particular physical location. Across cultures and over the centuries people of varied means have made homes for themselves and for those they care about. Humans have clearly evolved to be home builders, homemakers, and home-nesters. Dwellings that are recognizable as homes have been found everywhere that archaeologists and anthropologists have looked, representing every era of history and prehistory.

As an ideal that exists in the imagination, and in dreams and wish fulfilments, home carries many and varied symbolic meanings embedded in the physical design of houses and projected onto them by the belief systems within which our lives play out. The landscape, geopolitical location, the people who live with us, and material possessions with which we furnish our home space are essential aspects of the place where we dwell. Complex interactions with all of these elements give definition to home as we see it.

The idea of a smart home is getting attention for the last few years. The key challenges in a smart home are intelligent decision making, secure identification, and authentication of the IoT devices, continuous connectivity, data security, and privacy issues. The existing systems are targeting one or two of these issues whereas a smart home automation system that is not only secure but also has intelligent decision making and analytical abilities is the need of time. Here, we present a novel idea of a smart home that uses a machine learning algorithm (Support Vector Machine) for intelligent decision making and also uses blockchain technology to ensure identification and authentication of the IoT devices. Emerging blockchain technology plays a vital role by providing a reliable, secure, and decentralized mechanism for identification and authentication of the IoT devices used in the proposed home automation system. Moreover, the SVM classifier is applied to classify the status of devices used in the proposed smart home automation system into one of the two categories, i.e., “ON” and “OFF.” This system is based on Raspberry Pi, 5 V relay circuit, and some sensors. A mobile application is developed using the Android platform. Raspberry Pi acting as the server maintains the database of each appliance. The HTTP web interface and apache server are used for communication among the Android app and Raspberry Pi. The proposed idea is tested in the lab and real life to validate its effectiveness and usefulness. It is also ensured that the hardware and technology used in the proposed idea are cheap, easily available, and replicable.

CHAPTER 1
THE PROBLEM STATEMENT

INTRODUCTION :

Today technology has become an important part of human life. It has had a great influence in many aspects in our day to day life and also has improved our environment. The creation of mobile phones and computers have caused many people to rely on technology to improve their way of working and also provide easy ways to use various applications. Home automation system is a computerized and intelligent network of electronic devices designed to monitor and control home appliances. Home automation is the emerging field that has tried to get the attention of most commercial and research fields. Although wired home networks were given importance in the earlier stages of home automation but now as technology is emerging a lot people have started adopting technology to a greater extent. Wired system requires proper planning and construction work is also messy. It is the reason wireless communication has replaced the wired ones. Furthermore the wireless system provides more flexibility and extensibility that is its installation is free from construction works as it requires no cabling cost. Door lock system has been one of the most popular consumer devices replacing many of the conventional locks because of the user convenience and affordable price.

PROBLEM STATEMENT:

In the encryption area, present high-stop RFID buildings have the capability in order to encrypt as well as authenticate the visitors along with amazing methods. Encryption associated with memory obstructs might be recognized in the software program coating, that’s clear for that RFID label. The particular Identified (UID) is usually study-only and several RFID-transponders enable the long term create locking mechanism associated with memory obstructs. This particular will be associated with info ethics nevertheless, obviously, no longer information authentication as well as interpersonal architectural attacks such as cloning, robbing information and so on. Apart from techniques aren't completely guaranteed since the encrypted info tends to be unguaranteed. Consequently, preventing storage prevents encryption, all of us want to use along with information encryption- a decryption solution to set up additional security using my personal encrypt-decrypt-tool permitting personal crucial encryption techniques. In the RFID area, a few functions are also provided complete with unique ID of RFID dependent technique. It's regarded as the most recent technology. However it's not guaranteed through computer virus infection.

OBJECTIVE :

The most commonly used system for locking and unlocking the door is a lock and a physical key. The entire process is a mechanical one. If the key is lost, misplaced or stolen, then the entire locking mechanism has to be replaced. This problem with the physical keys intensifies when it comes to big companies where employees are needed to carry several keys for different doors. Apart from the extra burden, all the keys add to become vulnerable to getting lost. An alternative used for physical keys currently is RFID (Radio-Frequency Identification). There are RFID cards being used as pass keys. The RFID card reader unit is installed near the door. When the card is brought near the reader, it identifies the radio frequency of the card and thus verifies the key. Multiple cards can be paired with the device. But again they are vulnerable to theft or getting lost. It also does not solve the purpose of not carrying a key. To overcome all such problems we propose a solution using a smartphone as a replacement for existing systems.

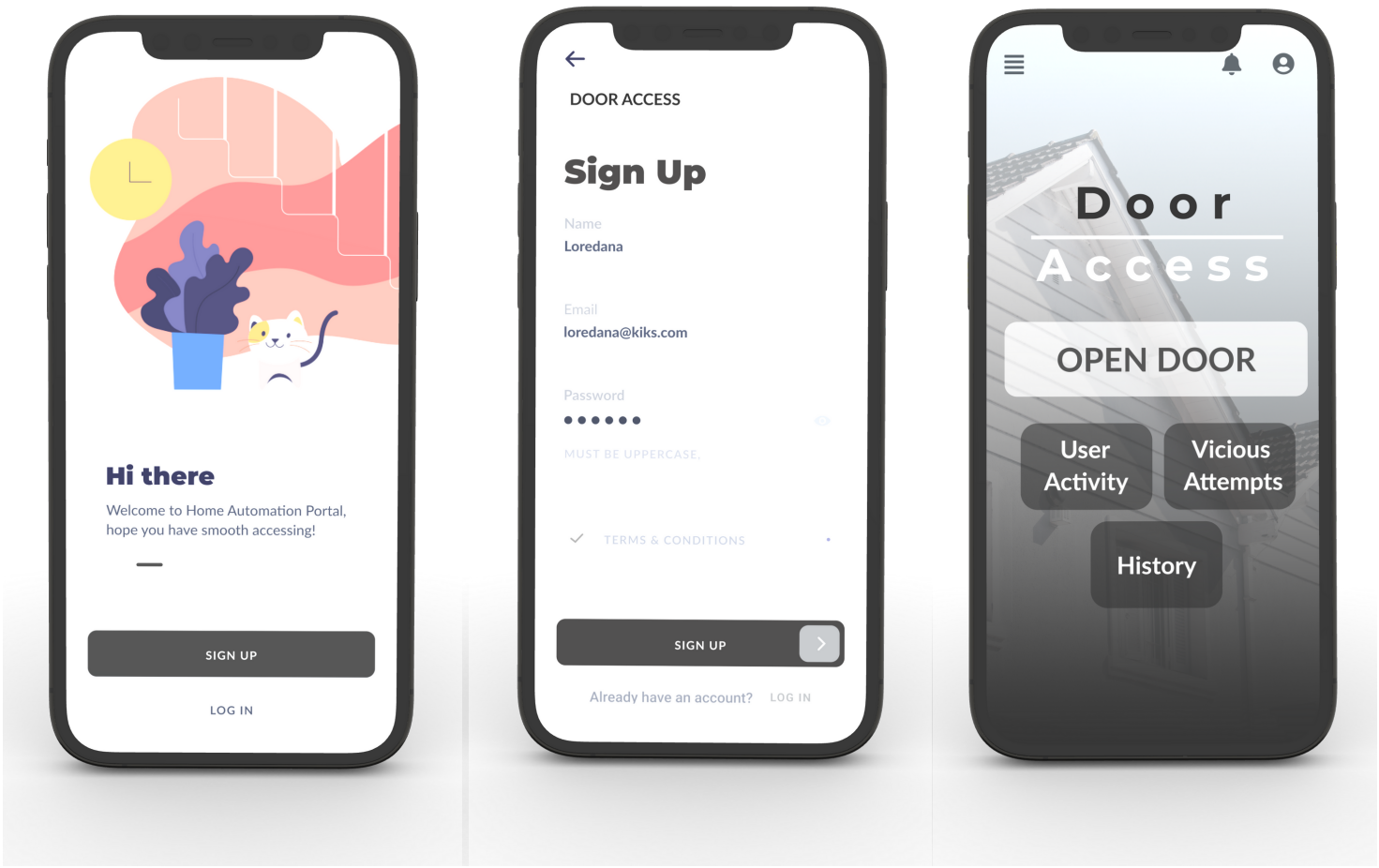
To tackle the above issues, we propose to replace physical keys with digital keys that:

- can easily be distributed to users
- can only be used by the correct user
- can be restricted to a given time or date range
- can be specialized for each user so each key will be unique

PROPOSED SYSTEM:

The purpose of proposing this SMART ACCESS CONTROL is safety . In today's world we want security in almost everything and security with automation is boon to this era. In this project we are showcasing the idea that how we can use RFID tag to open the door .
The idea is, if the password matches then only the system will give access to the door. If there is a mismatch then a warning will be given on the LCD and a warning buzzer will come in action with the sound of ‘beep’ regarding the incorrect password. On an incorrect input , the owner will be notified about the intrusion.

These activities can be monitored on the mobile application and every activity will be recorded in the history as well ,which will let you know who accessed the door .



Then, the following steps will be needed to carry out the process:

- Start the mobile application,
- Register yourself ,
- Enter the predefined password in the mobile application to get access, or to create a new password.
- Get the access to the door by selecting the Lock-Unlock option on the mobile.

PRINCIPLE OPERATION OF OUR PROPOSED SYSTEM:

With this area, the actual strategy utilized in this particular investigation procedure with regard to resolving the issue is mentioned beneath. In the beginning the actual card is actually study 5 Daffodil International University through the readers. The study info is actually encrypted through the encrypted software program which helps you to save towards the impair storage. As an effect, the info from the card can't be taken with an unauthenticated individual. Next to no-one can duplicate the actual card and also the authenticated card owner continues to be within security. Additionally, it assists the actual manager how the info helps you to save within the impair storage along with the correct period. Therefore the manager computes the amount of the actual utilization from the card along with the correct period.

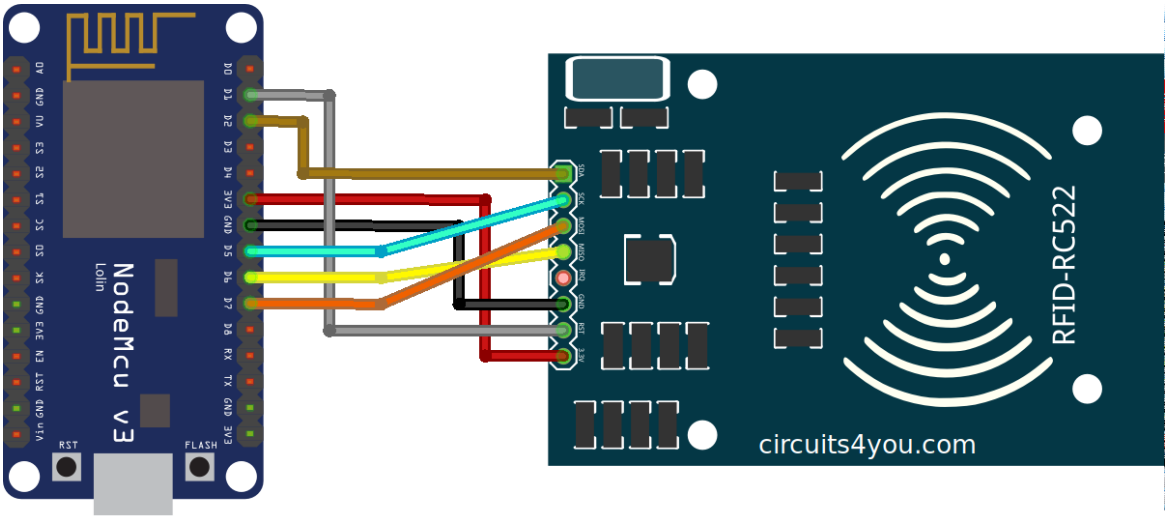
METHODOLOGY:

The principal purpose of this particular dissertation would be to display the actual security problems within RFID cards as well as offset the main issue from the system. As RFID card companies don't actually have strong security options that may save the actual system through card cloning, Robbing info or even other forms associated with interpersonal architectural risks. The problems within RFID card security could be classified into 3 parts-Application coating, Conversation coating as well as Bodily coating. Determine 4shows the actual risks, category. The suggested structures allow for customer aspect encryption within the subsequent beneficial methods to conquer a few fundamental risks associated with RFID security. associated interpersonal architectural episodes. Subsequent upon out of this investigation, the roadmap is going to be created you can use to keep the actual private as well as discretion from the info saved within the card. The procedure runtime can also be much better than current.

CHAPTER 2
THE ANALYSIS

Transmission Of Data

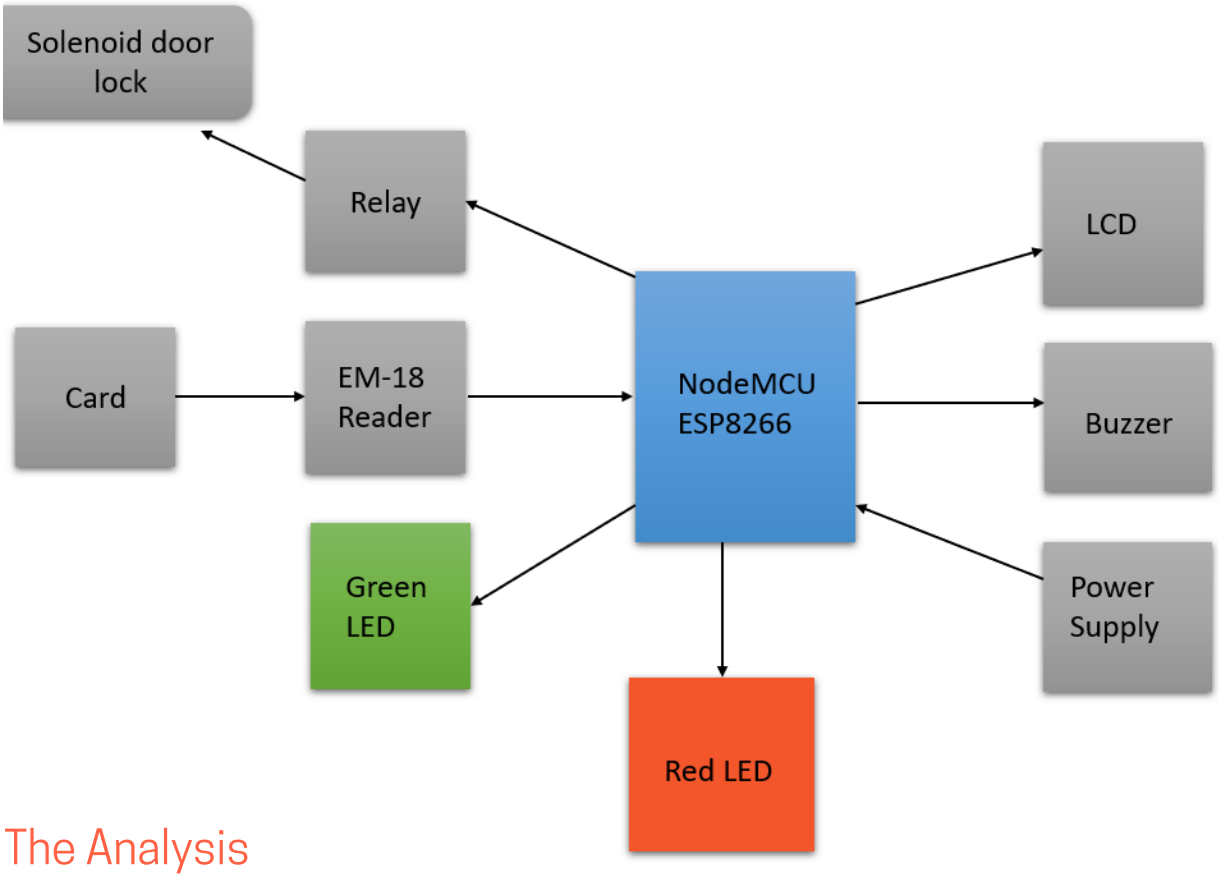
For this, we have done a lot of research about the microcontroller that can be used for effective data transmission and have a long-range and also available in cheap price to make a pocket-friendly budget. So, we finally reach the conclusion that we are using Node MCU- ESP8266 micro-controller. It comes at the price of 218 rupees which is one of the affordable microcontrollers. It has a range of 479 m which is enough for us to transfer the data and connect to the gateway. Microcontroller is used to transfer or receive the data between the cloud and sensors. It will work as an intermediate between cloud and sensors. For optimal utilization in the lowest resources for transmitting data from the microcontroller to cloud, we will be making clusters of received data and will transmit data from controller to cloud through a single channel.



Hardwares To Be Used

- NodeMcu - Esp8266
- Relay
- Led
- Buzzer
- I2C Lcd
- EM18 reader
- 5V/0.5A Black Adapter Charger

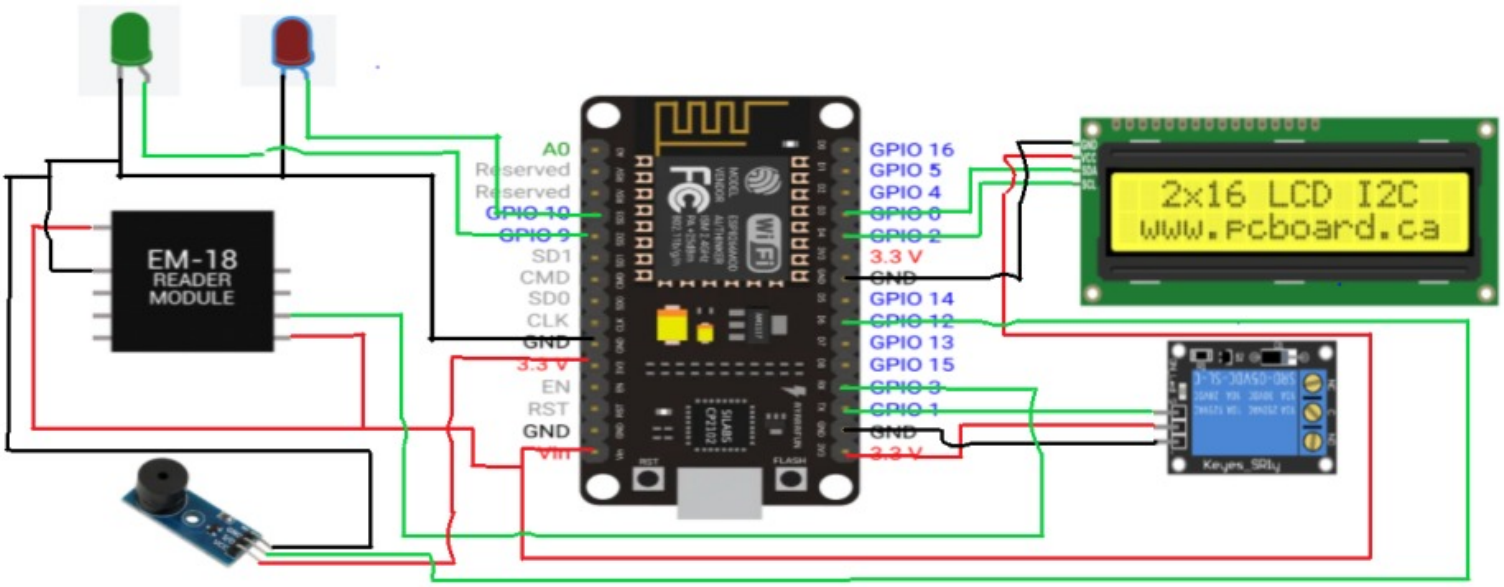
Block Diagram



THE MODEL

Our model's text representation:

The n no. of members of home will have their unique RFID cards which will provide them the access to the door, with a green light on LED. If any intruder tries to access the door, then a buzzer will ring and the keeper/owner will get a notification on their mobile application with the red light on LED. Em-18 Reader is used to read the RFID cards and the power supply is driven from 5v/0.5A black adapter.



POWER SUPPLY

The power supply is the primary source for our system, so we need to find out the cheapest and most suitable, after searching a lot of components we came up with black adapter charger to give power supply to our system components. It has a power range of 5v which is well sufficient for our system. It has input voltage of 100-240V. We will be connecting it to our system through USB cable. By using this method little amount of electricity will be used so it is cost-effective and makes our system environment friendly to some extent.

CHAPTER 3
THE BUDGET

S. No.	Name of Components	Cost(RS)
1.	I2C LCD	175
2.	Relay	20
3.	EM-18 reader with 5 tags	540
4.	Amica NodeMCU	218
5.	Red LED	2
6.	Green LED	2
7.	5V/0.5A Black Adapter Charger	85
8.	Buzzer	33
	Grand Total:-	1075

CHAPTER 4
THE PROPOSAL

Usefullness of the system

- Increase Accessibility Without Compromising Security
- Smart Door automation Are Accessible Via Smartphones
- Simplify Home Security

ADVANTAGES OF USING SMART DOOR HOME AUTOMATION

Somebody can break into your home or you can be locked yourself out while losing the keys. Your wife has to wait outside for long since without the keys.

These are some scenarios every home owner goes through. But with the introduction of smart door locking system, all these concerns will be history. Install a smart door locking system and enjoy the great ease of access like never before.

It is the futuristic technology where you can unlock the door by tapping your smartphone.

Wait, this is not the only benefit you enjoy, here are more convincing reasons to go for smart door locking system.

APPLICATION AND FUTURE SCOPE

The above proposed system can have a large number of applications due to its practicality and its security aspect.
It can be used for doors at Home and Offices, for Industrial doors, for high security Bank vault doors and practically any place where remote controlling is required.

For future scope, the device can be paired with a CCTV module to enhance the security. Additional Face Recognition can be installed.

OUR PROMISES

- **A smart way to unlock any and every door.**

- **Smart door automation promise a more secure way of managing entry to your home but not everyone is comfortable with the idea of going keyless.**

- **Easy to use.**

CONCLUSION

The proposed system allows remote access to lock or unlock the door without physical user interaction. The system fulfils the requirements of supporting autonomous locking device . The system has minimum
requirements for hardware . There maintains proper security of the system. Thus the system proposed is feasible.