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Smart Door Lock System with Multilayer Security

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ABSTRACT:

The main aim of this work is to reduce the incidence of theft by the use of technology. This project is based on Security, so we will use different components to provide more Security. Also, the aim was to develop the product at a cheap cost in available alternatives in the market. This project provides high-level Security and with trust.In this project, we will provide a different kind of Security to secure your house, almirah, and different place wherever you want to use.This project is based on electronics and uses a different type of electronic component to provide Security.In this project we will also use smart notification technology that helps you to keep up-to-date about your privacy.The smart notification sends the notification about your door whenever it is opened or closed by any person.

Also, we use the smart home technology wherein the room light switches turn on when the door will open and turn off when the door closes.

1.1 INTRODUCTION

The automated entryway lock framework is commonly used in a variety of settings, including banks, homes, and offices. The objective of this venture was to give a simple and helpful strategy for opening a front entryway by eliminating the requirement for the older style key.We start by assessing the requirement for such a framework by studying the real-world situation and examining the outcomes. We study the Software Development Life Cycle to set the task targets and execute the plan.

The task has principle parts: Arduino, fingerprint scanner, keypad module, and esp8266 module. The purpose of doing this project is to provide high Security for the door and also for the different type of doors that require high Security.Different type of component is used to achieve the target of security level.This project is made to secure the door by different level of Security like both fingerprint (biometric) and keypad password lock and unlock system.Also, in additional automatic door opening, if the password is right and closed, if no one is detected by the sensor is the door also close automatically when the time limit is exceeded.

The system is also equipped with a buzzer and ESP8266 module used for when someone tries to break or open the door, then it automatically sends the notification to the owner.

COMPONENTS LIST:

COMPONENTS
1- ARDUINO
2. FINGERPRINT SENSOR
3. KEYPAD MODULE
4. LCD DISPLAY
5. SERVOMOTOR
6. JUMPER WIRE
7. LED LIGHT
8. ESP8266 NODE MCU
9. REED SWITCH
10. BUZZER

HARDWARE DETAILS

ARDUINO:

Arduino is an open-source gadget stage that utilizes straightforward equipment and programming to make it simple to utilize. Arduino sheets can convert inputs, such as light from a sensor, a finger on a button, or a Twitter message, into yields, such as turning on an LED, starting an engine, or sharing anything on the internet. By giving a bunch of guidelines to the board's microcontroller, you might instruct it. The Arduino programming

language (in view of Wiring) and the Arduino Software (IDE) (in light of Processing) are utilized to achieve this.
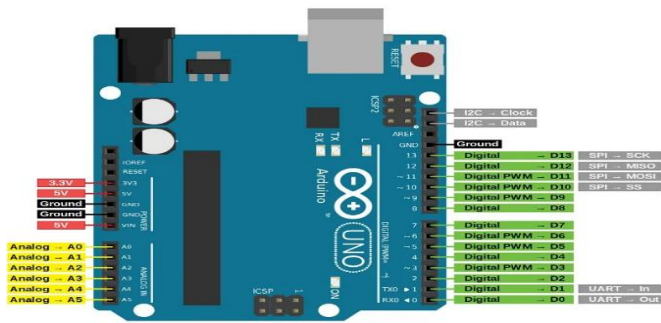

LCD DISPLAY:

A finger impression sensor is a computerized portrayal of the finger impression design caught by an electrical gadget. A live output is the picture that is gathered. This live output is examined carefully to construct a biometric format (an assortment of extricated qualities) that is saved and utilized coordinating.

SERVO MOTOR:-

A servo motor is an electromechanical gadget that utilizes current and voltage to deliver force and speed. A servo motor is essential for a shut circle framework that gives force and speed as coordinated by a servo regulator and is shut by a criticism gadget.
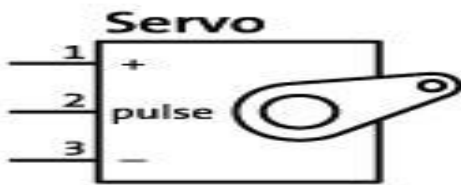

JUMPING WIRE:-

The utilization of jumping wire to interface one part to another part. They are different sort like male to male, male to female,Female to female and so on.

LED LIGHT:-

At the point when current goes through a light-radiating diode (LED), it delivers light. Electrons recombine with electron openings in the semiconductor, delivering energy as photons.

ESP8266 MODULE:

The NodeMCU (Node Microcontroller Unit) is an open-source programming and equipment advancement climate in light of the ESP8266, a minimal expense System-on-a-Chip. The Express assuming that Systems ESP8266 includes every one of the fundamental parts of a PC, including a CPU, RAM, organizing (Wi-Fi), and, surprisingly, an ongoing working framework and SDK. Therefore, it's ideal for an assortment of Internet of Things (IoT) projects.
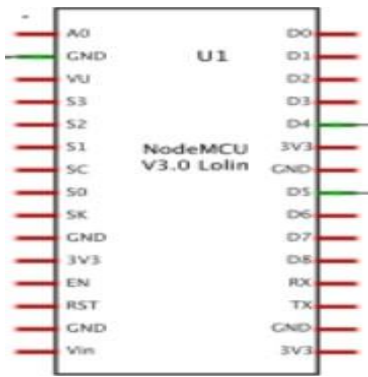
KEYPAD MODULE:

A keypad module is a square or "pad" of buttons that show digits, images, or in sequential order letters. A numeric keypad is a pad that generally contains numbers. In many activities, the 4 x 4 framework keypad is utilized as information. It includes a sum of 16 keys, all of which have the indistinguishable info values.
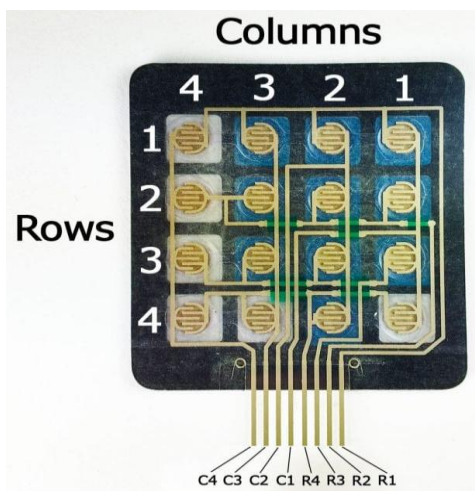

FINGERPRINT SENSOR:

A finger impression sensor is a computerized portrayal of the finger impression design caught by an electrical gadget. A live output is the picture that is gathered. This live output is dissected carefully to fabricate a biometric format (an assortment of separated attributes) that is saved and utilized for coordinating.
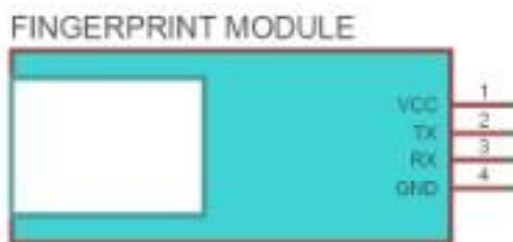

REED SWITCH:

The progression of power in a circuit is constrained by a reed switch, which is an electromagnetic switch. They're comprised of at least two ferrous reeds encased in a little glass tube-like envelope that become polarized and move together or separated when an attractive field is applied to the switch.
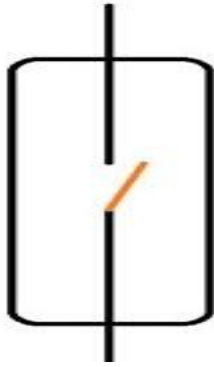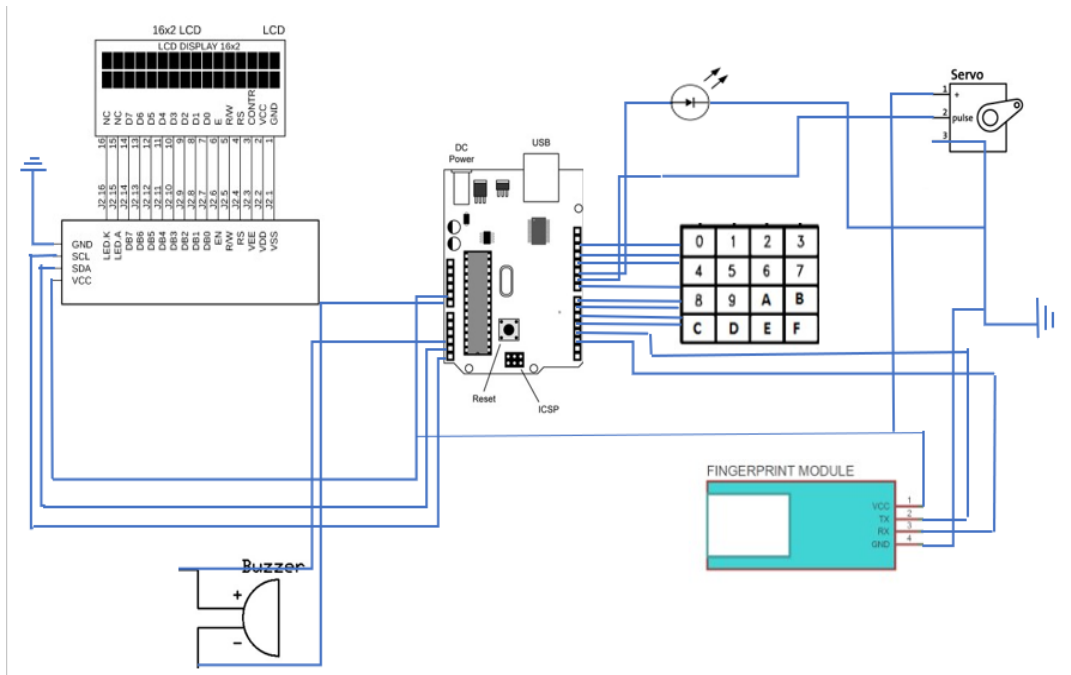
BUZZER:A buzzer is a gadget that changes over audio signal into sound signals. DC voltage is oftentimes used to drive it. It is habitually utilized as a sound gadget in morning timers, PCs, printers, and other electronic gear.
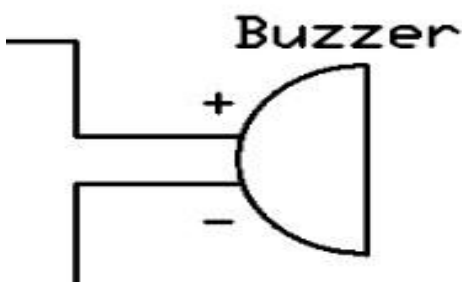
FLOW CHART:
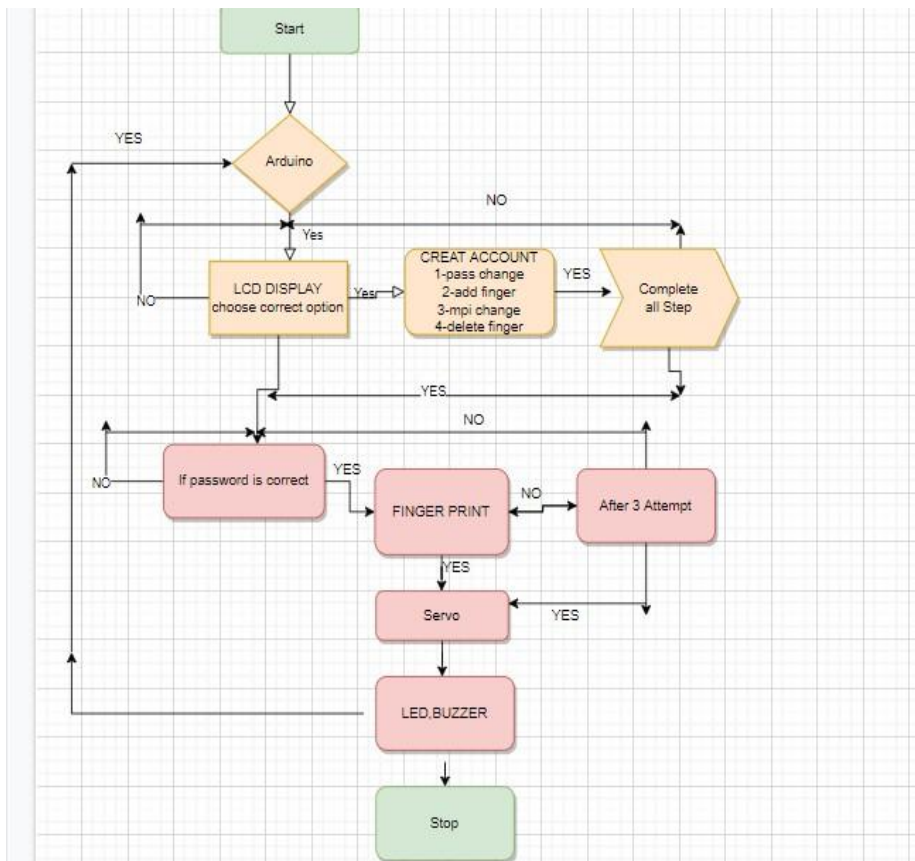
PIN DIAGRAM:

METHODOLOGY:

The basic idea behind the door lock system is to provide Security to our homes. Basically, A user can authenticate himself by providing multiple input data to the sensors so that it can detect and be authorized to only a limited user. Once a user comes, he will be served by multiple things like he can insert the password, and after that system will atomically ask to insert the fingerprint only when the password is correct. Then he will get three chances to enter the fingerprint, and in any event, if he provides the correct one, then he will be able to log in, and if he crosses the limit, then the user will get a message prompt on the LCD display, which will suggest coming back after some time.

Also, a user will facilitate with other things as well like changing password, changing MPI pin, Adding fingerprint, and deleting fingerprint. If a user wants to change the password, then he should know about the MPI pin, and after providing the correct MPI pin, only he can change the password. If a user wants to change the MPI pins, then she needs to know the folder MPI pin. If a user wants to add a new fingerprint, then we should provide an MPI pin, and then he can add his fingerprints easily, but for deleting the fingerprint user does need not give any pin. He just needs to provide the fingerprint with he wanted to delete.

CONCLUSION:-

The "Smart Door Locking System with multilayer security system" is a modern take on the traditional door lock. The innovation generated by the lock system with no more direct touch between the user and the lock is the end of the topic of smart locks utilizing Arduino. This system is both inexpensive and simple to set up. Finally, it was tested to be the project was performing as expected and whether it can be implemented for practical use.Because the Arduino Uno microcontroller is used in this project, the design is simple, and this project may be completed in less time than with other techniques.

 A safe locking/unlocking system based on a keypad and Arduino is proposed in this thesis.The system also contains a feature that allows it to lock itself once a certain time has passed. This technique could be used to keep away from the problem of the conventional keys being stolen or lost in homes, businesses, and organizations.You may also give access to as many people as you want and take it away whenever you want by changing the password.

REFERANCES:-

1- PROTEUS SOFTWARE(componentsearchengine.com)
2- ESP CONNECTION(randomnerdtutorials.com)
3- IFTTT APP
4-IFTTT WEBSITE(ifttt.com)
5-ARDUINO COMPILER(IDE)