

Door lock system using Password and Arduino

Prof. R.K.Moje, C. H. Khadke, T. M. Lohare, V.S.Patil

Electronics & Telecommunication, PDEA's College of Engineering, Manjari(BK), Pune-412307

Abstract—Nowadays we required security from stranger. Hence we can design this type of door lock. In this Venture lets learn howto construct a Watchword based entryway bolt framework by meddle Arduino enter the password using the 4x4 keypad.We moreover interface an LCD show to form enter the password and change the password without encoding Arduino Once more. We are employing a Solenoid bolt which locks and opens the entryways by entering the secret word through the keypad and LCD show is utilized to Send events and messages.With this Extend ready to construct a security framework which works with secret word. In this Project we are building a security framework which works with watchword. But by increment in innovation, modern sort of locks such as electronic locks, savvy locks were concocted and individuals are utilizing them broadly to secure their resources. So, lets utilize the highlights Arduino micro control keyboard to function the Solenoid lock utilizing watchword. You'll coordinated this extend with indeed lockers

Keywords:- Arduino, Relay module, Solenoid lock, 4x4 Matrix Keypad Module

1.INTRODUCTION

Password based Solenoid Using the door lock system Keypad and The Arduino would interact with the Arduino with the 4x4 keypad to enter the combination, creating a combination based door lock system. We also added an LCD screen for easy access and change the password without having to re-code the Arduino. We are employing a Solenoid bolt which locks and opens the entryways by entering the watchword From keyboard and LCD show is utilized Send events and messages.With this Extend we are able construct a security framework which works with watchword. In day nowadays life everything is getting to be straightforward and progressed, already to bolt something we utilized to have a locks, combination locks. due to extend in burglaries and innovation, modern of locks such as electronic locks, sharp locks were planned and people are utilizing them broadly to ensure their resources.

From these couple of a long time Fingerprint as lock, RFID based locks, Keen phone app based locks, Confront acknowledgment locks are trending, Watchword based entryway locks are one of them. So,lets utilize the highlights of Arduino microcontroller and keypad to function the Solenoid lock using secret word. You'll be able coordinated this venture with indeed lockers.

2.COMPOENTS REQUIRED

2.1 Arduino Uno board

This microcontroller depends on the ATmega328P. There are all out of 20 pins (0-19) out of which 6 are simple information sources, 14 are computerized input yield pins(6 pins give PWM voltage) which can like be utilized as broadly useful pins, a ceramic resonator of recurrence 16 MHz, a USB association, a force jack and a reset button. It has a working voltage of 5V. It contains all that expected to help a microcontroller.



2.2 4x4 Matrix Keypad

The 4x4 Network Keypad interfaces is to require the input from the individual. Ready to enter the preset secret word to test the legitimacy of the watchword. On the off chance that the watchword is substantial at that point, the entryway bolt will be opened. In case invalid, the entryway bolt will proceed to be bolted. The 4x4 Matrix Keypad includes 4 rows and 4 columns. There is a transfer that connects every row and column. In our project We will use only the numeric between 0-9 keys along with # to change the password.



2.3 16x2 LCD display with I2C adapter

The I2C 16x2 Arduino LCD Screen is using an I2C communication interface. It is able to display 16x2 characters on 2 lines, white characters on blue background. This show overcomes the disadvantage of LCD 1602 Parallel LCD Show in which you'll squander almost 8 Pins on your Arduino for the show to urge working.



2.4 12v Solenoid lock

The Solenoid bolt indicates a lock for electrical locking and opening.. It is accessible in opening within the control on mode sort, and locking and keeping within the control on mode sort, which can be utilized specifically for circumstances. The control on opening sort empowers opening as it were whereas the solenoid is fueled on.



2.5 Relay module 5v

A 5V hand-off module may be a single or multi-channel hand-off module that works with a moo level trigger voltage of 5V DC. The input voltage can be from any microcontroller or rationale chip that yields a advanced flag.



3. ARDUINO IDE SOFTWARE

The Arduino can be programmed using the Arduino IDE. keypad.h header file is added to the library for the functioning of the keypad.

The ATmega2560 on the arduino mega can be pre-programmed with a bootloader that permits to transfer unused code to it without the utilize of an outside equipment software engineer. Esp8266 Library has to be added to the list of libraries for using the Wi-Fi module.

4. CIRCUIT DIAGRAM

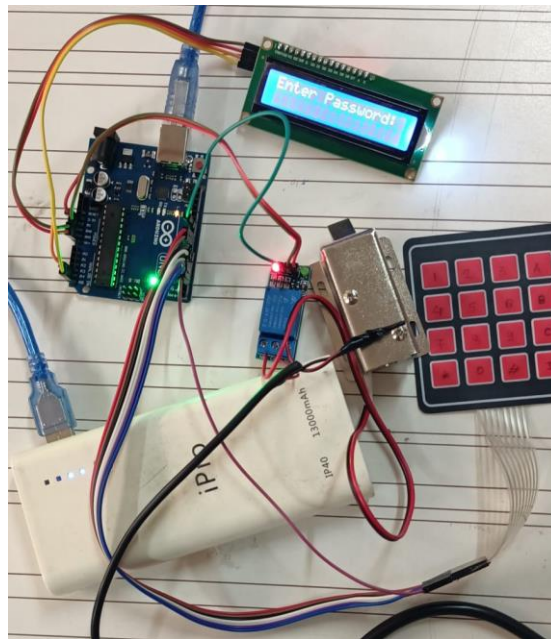


Fig. Circuit Diagram

4.1 Working

As we associated the bolt to transfer in regularly open condition the solenoid bolt is in bolted position when voltage isn't passed through it. When we transfer the code and turn the this DIY watchword entryway bolt gadget, the bolt is still in bolted position till we enter the right password. Through LCD show able to see the status of the bolt and direct you to open the bolt by entering the password. The default watchword is "1234". To enter secret word press * button and enter 1234. Through keypad and to affirm press 'A' button. Here 'A' button is utilize as 'OK' button. So after you enter the right watchword Arduino send the flag to hand-off module and it closes the association making the bolt to open.

You can change the default password to your desired one by pressing # button on keypad. Which first asks you to enter the old password and then to enter the new desired password and confirm by pressing 'A'. Here we added an additional function using A push button, when you click the button the device gets unlock without the password. We can place this button inside the door if you are using for the room.

4.2 BLOCK DIAGRAM

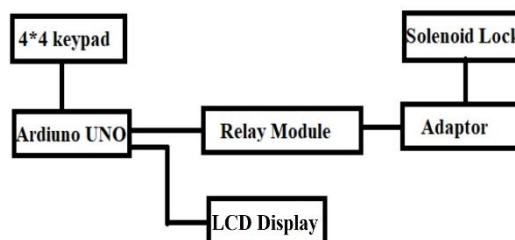


Fig. Block Diagram

Here Arduino Uno board, 4*4 keypad, Relay Module, LCD Display, solenoid Lock, Adaptor, Power Supply. The Arduino's pins are where the wires connect to form a circuit, possibly together with a breadboard/PCB and a few wires. Arduino has many different types of pins, each labeled on the board and used for different functions.

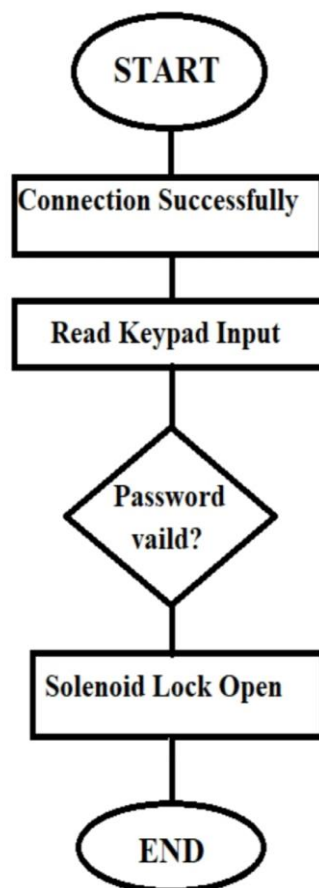
Arduino Uno: Arduino is an opensource gadgets stage based on easy-to-use equipment and computer program. Arduino sheets are able to studied inputs - light on sensor, finger on button or twitter message - and turn it on an yield enacting a engine,turning on an Driven, distributing something online

LCD Display: LCDs (Liquid Crystal Displays) are used in embedded system applications for displaying various parameters and status of the system.16×2 LCD is named so because; it has 16 Columns and 2 Rows.

4*4 Keypad: The 4 x 4 Network Keypad Module may be a non-encoded network keypad comprising of 16 keys in parallel. The keys of each push and column are associated through the pins exterior – stick R1-R4 as labeled adjacent to control the lines, when C1-C4, the columns.

Relay Module: A 5V hand-off module may be a single or multi-channel transfer module that works with a low-level trigger voltage of 5V DC. The input voltage can be from any microcontroller or rationale chip that yields a computerized flag.

4.2 Flowchart



5.FUTURE SCOPE

As long as the password is not shared with anyone, this application can provide perfect security. Users can introduce constraints to the password entry process to make it safer. Also add a fingerprint scanner and a display model to show messages such as whether the door is locked or not. Instead of using a keypad module, can employ smart cards to open doors with the same model. In the future, the proposed system can employ a power supply adaptor instead of a battery for power transfer.

6. CONCLUSION

Result The system is controlled by Arduino. Passwords can be entered from the keyboard. If the password matches the one registered in Arduino, the door will open. The results of the model are as expected. This project provides sufficient security if no password is provided.

This project provides enough security as long as the password is not shared. We have successfully tested our project. The results of the demonstrate were as per our desire. Thus, everybody can manage to shop for such locking framework at least cost to keep his valuable things safe.

6. ACKNOWLEDGMENT

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7. REFERENCES

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