

Smart Locker Safety System Using Arduino UNO

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Abstract - The necessity for safety can be satisfied by making mechanical or electronic locks that can be opened with one or more keys, but many locks are required to lock up a big space. Electronic locks are more valuable than mechanical locks because, as is well known, mechanical locks are heavy, delicate, and dependent on the equipment required to unlock them. Digital technology now serves as the basis for all modern devices. For instance, technology-based identity devices are used to automatically lock or unlock doors. These locking devices are found at the side hedge of the door and are activated by a keypad. They are used to restrict door movement and don't require a key to lock or open the door. This initiative's primary objective is to provide safety in all public and private areas, including houses. A well-known password would be entered by the user in this. A database will be used to store the data. Once the right passcode has been entered, the microcontroller will give the servo motor instructions. A servo motor will be used to unlock the door. Therefore, we require digital technology in order to create an integrated, well-fitting safety system at a reasonable cost.

Index Terms - Digital Technology, Locking Systems, Servomotor, Database.

INTRODUCTION

The door is opened by a servo motor, and an LCD displays the door's state. One of the most modern electronic lock systems employs a password. If the password is incorrect, the door remains closed and the LCD panel shows "WRONG PASSWORD." To provide security, many electronic locks have been introduced. Electric locks employ magnets, solenoids, or motors to apply or remove electricity to operate the lock. It might be quite simple to operate the lock using a switch. The locking mechanism of an electronic lock is activated by the addition or absence of power. A strong password is used as the door unlocking mechanism in a straightforward project dubbed the Password Based Door Lock System Utilising Arduino UNO. Older lock systems, which can be swapped out for more contemporary locking systems, use mechanical locking. Here, using an Arduino UNO, we created an electrical code lock system that controls the load's actuation. The keyboard serves as input for a

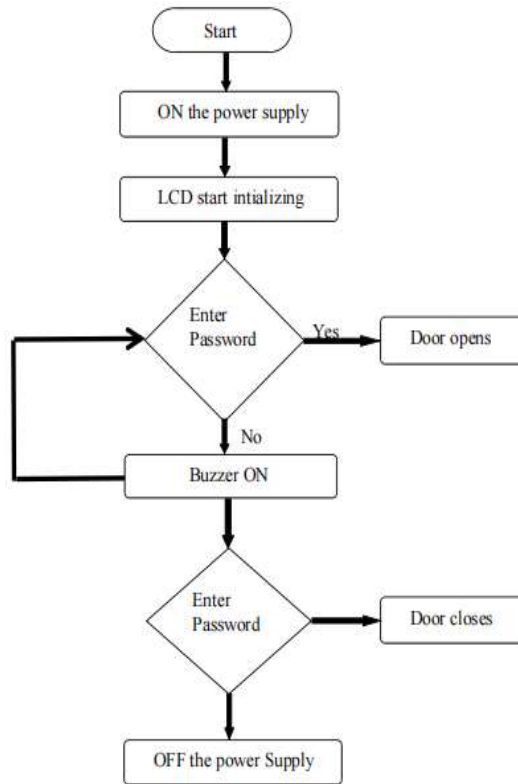
straightforward embedded system that manipulates the output as necessary. This system shows a password-based door lock system using an Arduino UNO. After entering the correct code or password, the door is opened and the concerned person is allowed admission to the secured area. If a different person enters the room, you will be prompted to enter the password again. If the password was wrong, the door would stay locked and the individual would not be able to enter. The main concept behind this project is to unlock a door lock with a keypad password. Additionally, a buzzer will sound repeatedly if the passcode is entered incorrectly. Anytime they wish, the user can modify this password using a keypad. Sending an SMS to the home's owner to alert them of a security violation is the main purpose of the crucial component in the Arduino UNO circuit. 4*4 keypad is used to enter the password. The password that was already known is contrasted with the one that was entered. The system will work as long as the password is accurate.

PROPOSED METHOD

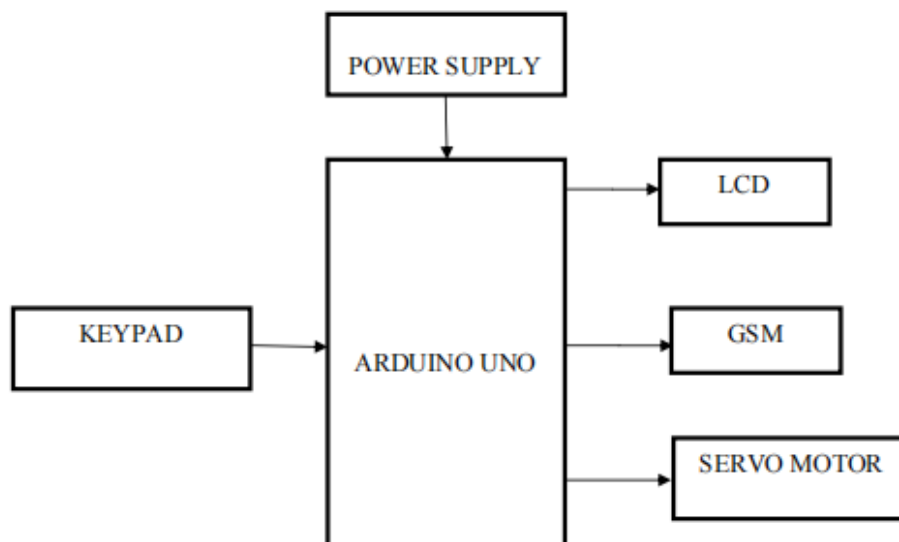
Algorithm

- Step 1:** Gather all of the project prototype's components.
- Step 2:** Connect the parts in accordance with the circuit diagram.
- Step 3:** Turn the power supply ON so that it starts to work.
- Step 4:** The Arduino and GSM module can both get electricity.
- Step 5:** The LCD is turned on and begins initialising.
- Step 6:** The LCD prompts you to "Enter the password."
- Step 7:** The door will open if we supplied the proper password.
- Step 8:** If the door is not opened and the buzzer sounds, a notification is sent to the mobile device via the GSM module.
- Step 9:** Lastly, shut the door. LCD will once more request the password.

Flow Chart



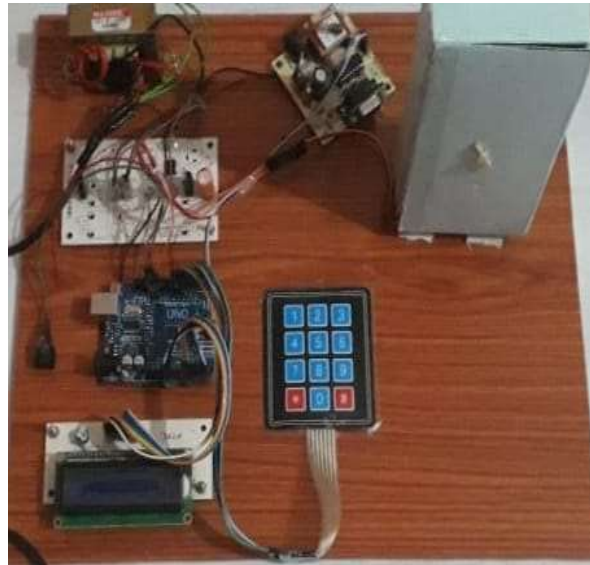
BLOCK DIAGRAM



Here, we developed a load control system that uses an electrical code lock and an Arduino UNO. It is a simple system that acts on the output as needed and accepts the keyboard as input. System displays a password-based door lock system utilising an Arduino UNO, whereby the door is unlocked and the

concerned individual is given entry to the secured area after entering the right code or password. If a different person enters the room, you will be prompted to enter the password again. If the password was wrong, the door would stay locked and the individual would not be able to enter. This project's central idea is the use of a keypad password to release a door lock. The buzzer will also sound repeatedly when the passcode is entered incorrectly.

RESULTS



Project prototype: When compared to pricey entryway locking systems that use retina check, iris scan, and fingerprint scan, this secret key-based entryway locking system may end up being more expensive.



Power supply: When the switch is turned ON, the transformer absorbs the 230v AC electricity and distributes it to the distributor. Using a rectifier, it transforms AC power into DC power.



Sim Moduling Intialization: The Arduino UNO receives 5 volts of DC electricity from the power source, after which the programme code is executed. "GSM Module Intilizing" will appear on the LCD at the time the sim is initialised.



Displaying on LCD to Enter password to opening the door: The LCD will prompt you to input the password to unlock the door when the GSM module has been operational for 30 seconds.



Entering the password in a manual keyboard: Prior to that, we kept a passkey for opening the door on the Arduino Uno Board. We shall provide the inputs with the aid of the keypad.



Display of LCD Invalid Password: The LCD will display "Invalid Password Please check..." and turn on the buzzer when we enter the wrong password, alerting the user to the error.



Display of LCD Enter the Password to Closing the door: As we previously mentioned, the Arduino Uno Board has a passkey that we have saved. When we enter the right password, the door closes.

CONCLUSION

This project provides adequate security as long as the password is kept confidential. The testing of our project was successful. In the long run, this doorway locking technique, which utilises a secret key rather than iris, fingerprint, or retinal scanning, may prove to be less expensive. The model's outcomes confirmed our predictions. As a result, everyone can afford to buy a locking system like this to safeguard their possessions at the lowest cost.

Comparing fingerprint locks to traditional key door locks and other locks, there are various benefits. As a result, thumbprint door locks outperform all expectations in terms of security, usefulness, and speed. Fingerprint reader scanning is the biometric technique that has the most expertise and maturity. The fingerprint method is more precise and economical than the hand method, according to recent biometric studies.

The likelihood of duplicating biometric fingerprint technology is one in a billion. Through the use of a unique feature that cannot be lost, copied, or stolen, biometric security ensures a trustworthy means of user identification. This system is advantageous since it can be utilised in a variety of ways, is relatively economical, and is easy to set up. The clever locking system has a lot of potential. Instead of utilising a traditional key, users will be able to enter the required location using just their mobile smartphone. The system will continue to be developed with an emphasis on becoming more mobile and extensible.

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