

RFID Door Lock System

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Abstract: *This abstract focuses on an RFID door lock system built using Arduino Uno. The system utilizes Radio Frequency Identification (RFID) technology to provide secure access control. The Arduino Uno board acts as the controller, with an RFID reader connected to it. Users are provided with RFID cards containing unique identifiers. When a card is presented to the RFID reader, the Arduino Uno verifies the card's authenticity and grants access if authorized. The system also includes a door lock mechanism that can be controlled by the Arduino Uno. Through programming, different access levels can be assigned to different RFID cards, enabling efficient management of access privileges. The abstract highlights the benefits of this system, including enhanced security, convenience, and efficiency. The integration of Arduino Uno and RFID technology offers a cost-effective solution for implementing a reliable access control system in various environments, such as offices, hotels, and apartments. The abstract emphasizes the significance of this project as it combines emerging technologies to address the need for better access control and security measures. It serves as a concise overview of the RFID door lock system using Arduino Uno, showcasing its capabilities and potential implications in different settings.*

Keywords: Radio Frequency Identification

I. INTRODUCTION

The RFID door lock system is a revolutionary technology that replaces traditional key-based locks, offering a seamless and secure access control solution. RFID, or Radio Frequency Identification, uses electromagnetic fields to automatically identify and track tags attached to objects, such as access cards or key fobs. Authorized individuals can gain entry by simply waving or tapping their RFID card near the reader.

This system brings numerous benefits, including enhanced security. Each RFID card contains a unique identifier, ensuring only authorized individuals can access the designated area. It also offers the ability to grant different access levels for different users, providing better control and monitoring.

Convenience and efficiency are key advantages of the RFID door lock system. Users no longer need to carry multiple keys or memorize combinations. With a quick wave of an RFID card, access is granted instantly, making it ideal for high-traffic areas.

Another significant advantage is the system's audit trail capability. Every time an RFID card is used, the system records the date, time, and user's unique identifier. This feature promotes accountability, enables easy tracking of entry and exit, and enhances security measures.

The RFID door lock system is widely applicable in various settings such as offices, hotels, apartments, and government buildings. It provides a secure, convenient, and efficient access control solution, offering peace of mind to users and facilitating stringent security measures for a wide range of applications.

II. OBJECTIVE AND GOAL

The objective is to develop and deploy an RFID door lock system that enables secure access control to a specific area. The system will utilize RFID technology to allow only authorized individuals to enter, ensuring enhanced security. The goal of this system is to provide a convenient and efficient access solution while minimizing the risk of unauthorized entry. Additionally, the system will be designed to provide audit trails, allowing administrators to monitor and track access events effectively. Overall, the objective is to implement a reliable RFID door lock system that enhances security and provides a seamless access control experience.

III. METHODOLOGY

The methodology for implementing the RFID door lock system entails designing the system architecture, including the selection and placement of RFID readers, tags, and door locks. Unique RFID tags will be assigned to authorized individuals with corresponding access permissions. RFID readers will be installed at entrance points, connected to the central access control system. When a person approaches the door, their RFID tag will be read, verified, and compared with access permissions. If authorized, the door lock will be released. The system will maintain an audit trail of all access events for monitoring and tracking purposes. Regular maintenance will be conducted to ensure system functionality and security, such as firmware updates and user administration.

IV. CIRCUIT DIAGRAM

A good RFID program includes 2 primary elements, the transponder or perhaps a label that is on the item which you want to end up being recognized, along with a transceiver or perhaps readers

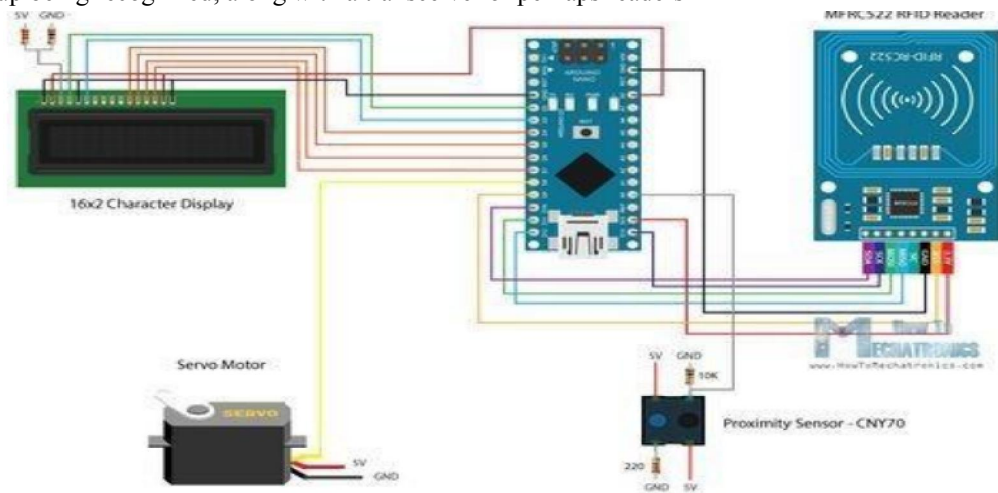


Figure: RFID Security door lock circuit diagram

V. RESULT

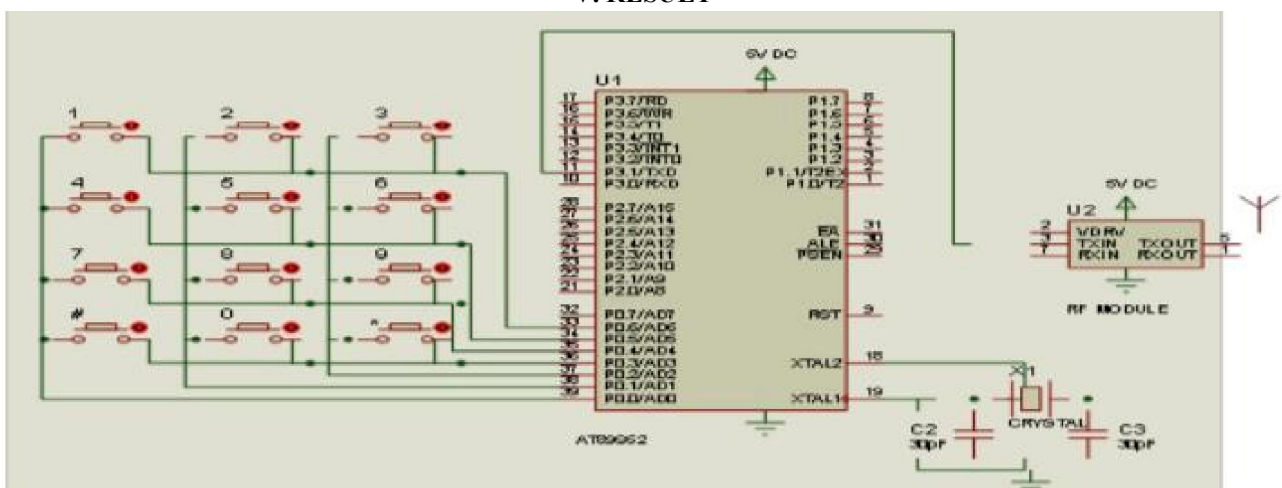


Fig 1: Simulation design (a)

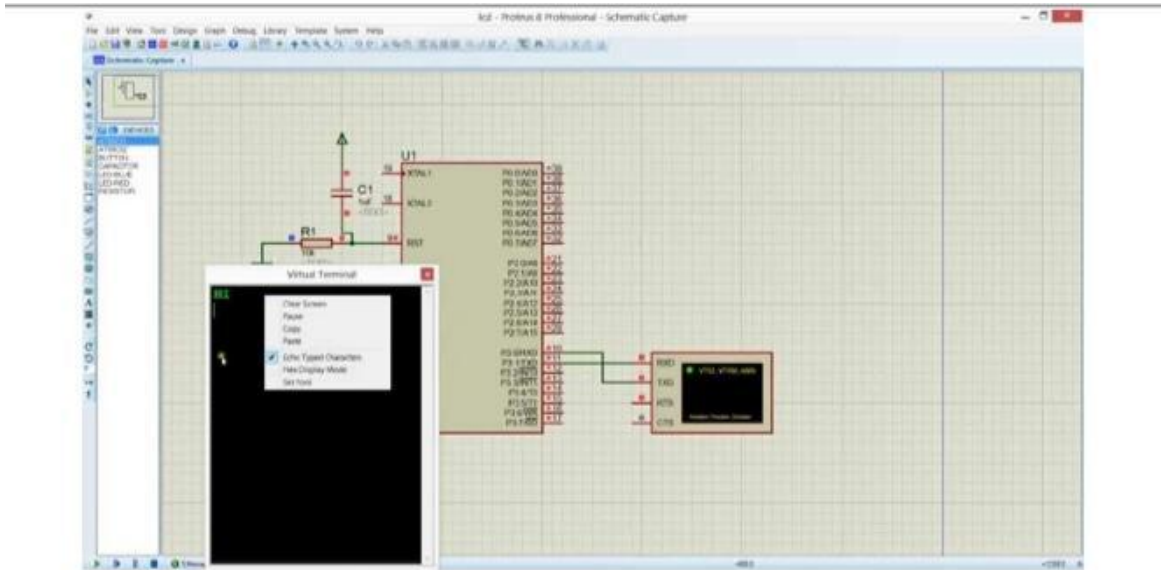


Fig 2: Simulation deign (b)

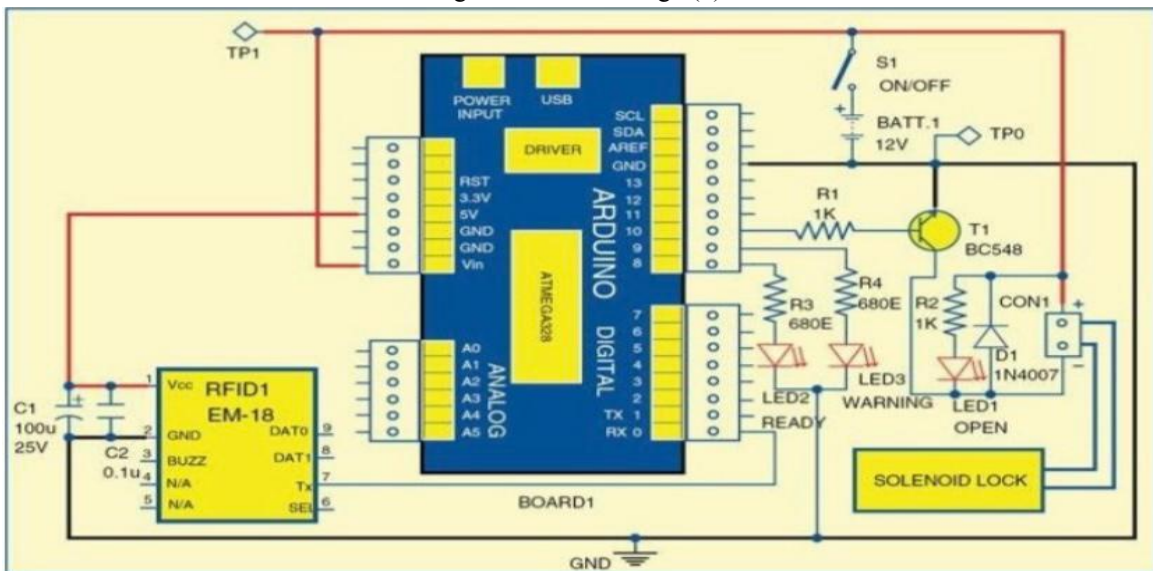


Fig 3 Simulation deign (c)

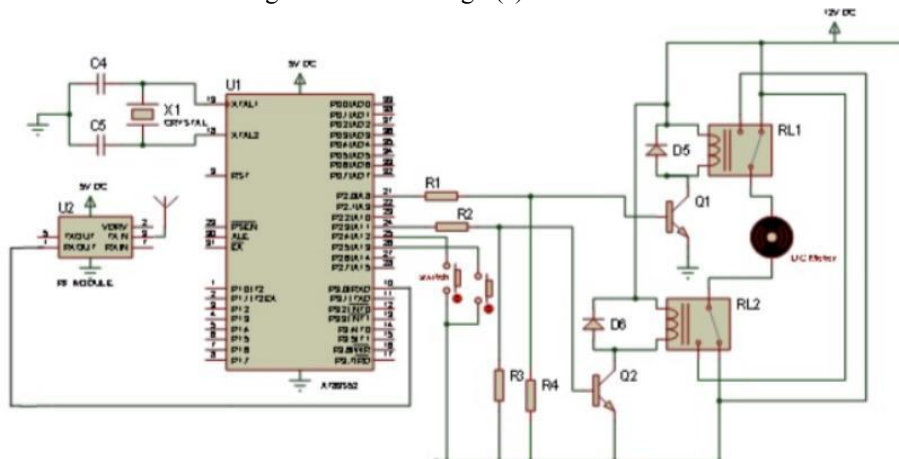


Fig 4 Simulation deign (d)

V. CONCLUSION

Numerous safety systems have been suggested in order to protect RFID buildings towards feasible attacks particularly all of us outlined the various software field from the RFID technologies in addition to a few achievable section of its software. We now have set up powerful protection depending on encryption technique. Apart from all of us attempted to maintain much better procedure runtime. Evaluating the suggested program along with current program, we now have satisfied along with each Guideline for example program authentication protection as well as functional runtime. Regarding protection, the machine is actually fairly guaranteed with regard to eliminating the actual biometric program as well as forerunning the actual procedure at the rear of the actual home windows. Regarding runtime, the actual system's needed period is more preferable compared to current.

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