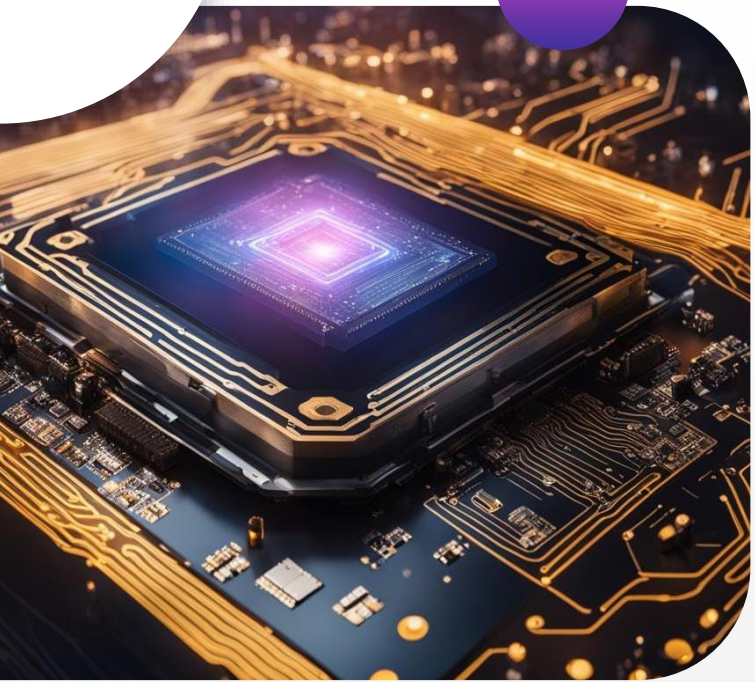

RFID AND KEYPAD BASED DOOR LOCK SYSTEM

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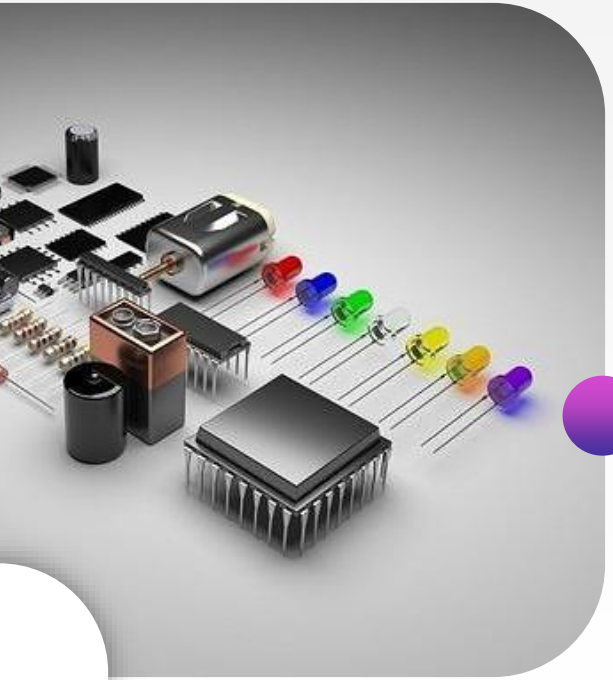
OBJECTIVE

The objective of a Secure door access control via RFID (Radio-Frequency Identification) reader and PIC16F887 is to provide a secure and efficient means of controlling access to a door. The system uses RFID technology to authenticate and authorize individuals, granting or denying access based on their RFID credentials.

INTRODUCTION

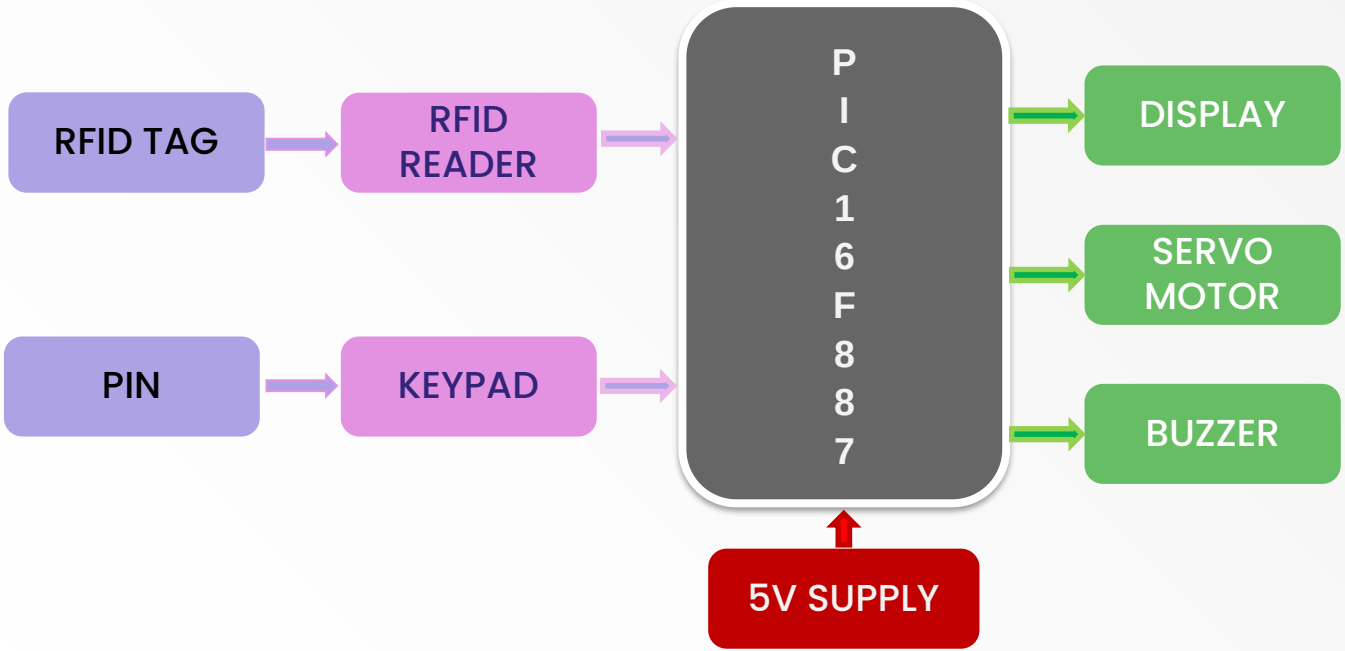
- Introducing our advanced RFID and Keypad-Based Door Lock System, transforming access control with real-time effectiveness.
- Combining the precision of RFID technology with the flexibility of keypad entry, our system guarantees superior security and ease of use.
- Driven by the PIC16F887 microcontroller, it efficiently handles all functions, from scanning RFID tags to verifying keypad PINs.
- Featuring an RFID reader, an LCD display, a keypad, RFID tags, and a buzzer, this system provides robust dual-authentication access.
- Discover the forefront of security with fast and dependable entry options through RFID or PIN, and redefine the standards for contemporary access control solutions.



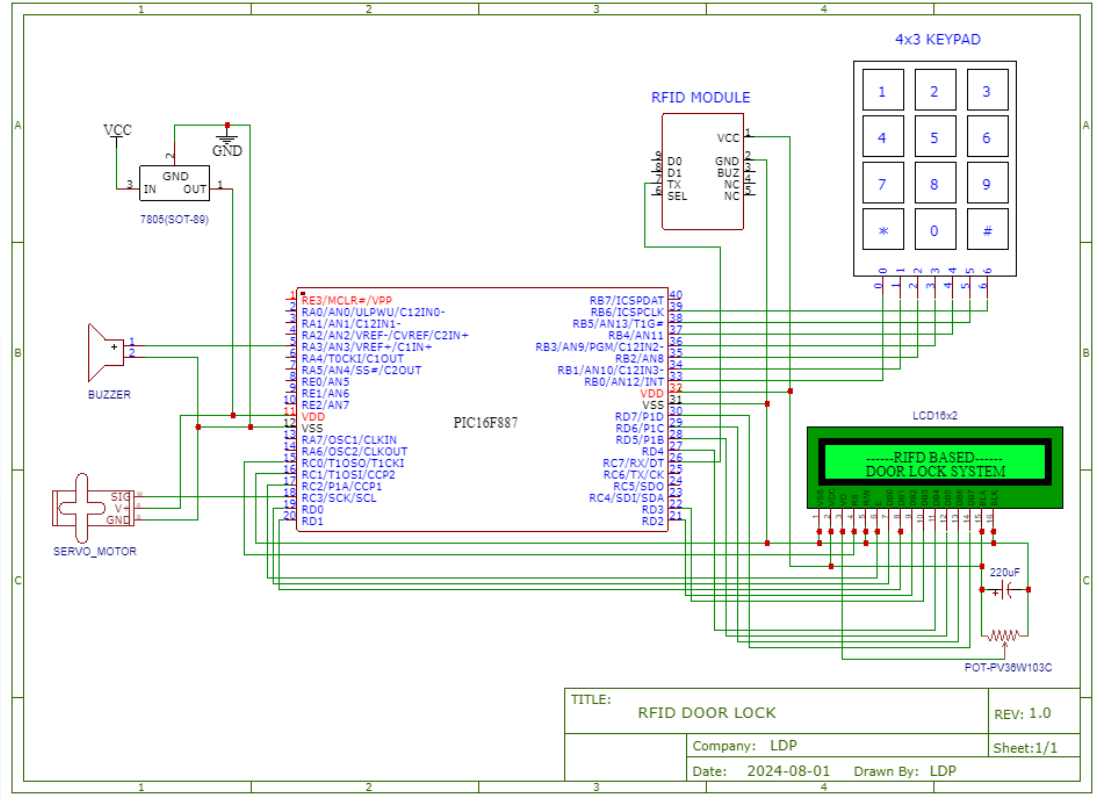
COMPONENTS

- PIC16F887
- RFID Reader
- RFID Tag
- 4x3 Keypad
- LCD Display
- Buzzer
- Servo Motor

BLOCK DIAGRAM



CIRCUIT DIAGRAM



WORKING

System Initialization

- When powered on, the microcontroller initializes the RFID reader, LCD display, keypad, buzzer and servo motor.
- The LCD display shows a welcome message “RFID BASED DOOR LOCK SYSTEM” and indicates that the system is ready for input.

Security and Feedback

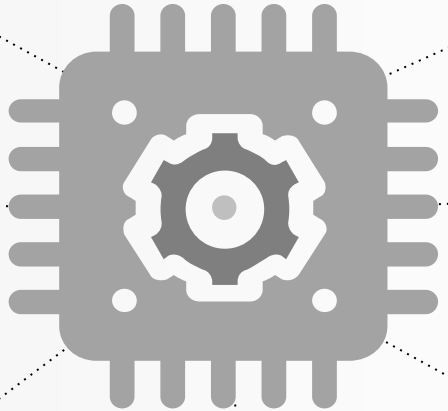
- Security of the system is ensured by the detection of the RFID or input pin. It will verify the input and operate the respected device.
- The LCD and buzzer provide immediate feedback to the user, ensuring clarity on whether access was granted or denied.

IMPORTANT FUNCTIONS

Initializing System

RFID-Based Access

Keypad-Based Access



Detection / Pin Input

Verification

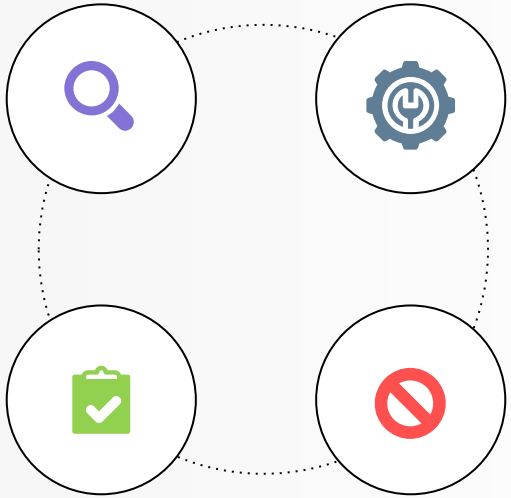
Access Granted

Access Denied

RFID-Based Access:

Detection

When an RFID tag is brought near the RFID reader, the reader scans the tag and sends the unique identifier to the microcontroller.



Verification

The microcontroller checks the received unique ID against a stored list of authorized user IDs.

Access Granted

If the UID matches an authorized tag, the microcontroller activates the door lock mechanism. The LCD displays a message such as “WELCOME ACCESS GRANTED”.

Access Denied

If the UID does not match any authorized tags, the microcontroller keeps the door locked. The LCD displays “SORRY ACCESS DENIED”. The buzzer emits a warning beep.

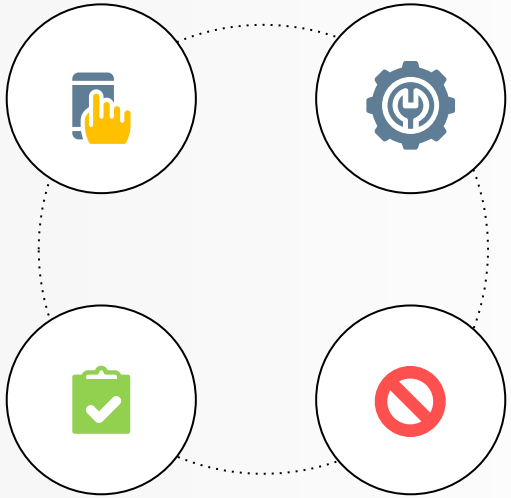
Keypad-Based Access:

Pin Input

Users can enter a “*” key to enter PIN.

Access Granted

If the entered pin matches an authorized pin, the microcontroller activates the door lock mechanism. The LCD displays “WELCOME ACCESS GRANTED”.



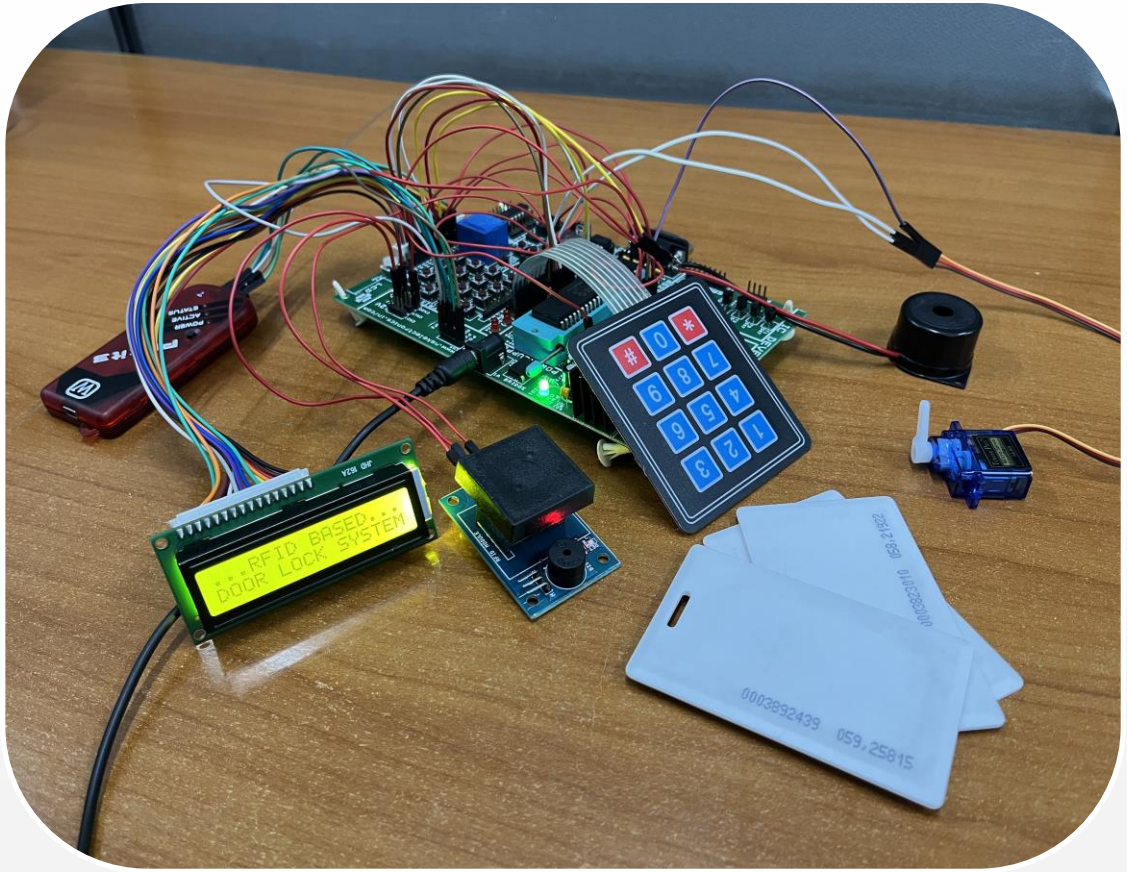
Verification

The microcontroller reads the entered key pin and compares it with stored authorized pins.

Access Denied

If the entered pin is incorrect, the microcontroller keeps the door locked. The LCD displays “SORRY ACCESS DENIED”. The buzzer emits a warning beep

RESULT



APPLICATIONS

Home Security

Enhances security and convenience by using RFID tags to replace traditional keys for home entry.

Office Access Control

Manages employee access to various office areas with RFID tags for streamlined security and monitoring.

Educational Institutions

Controls access to dormitories, labs, and other facilities in schools and universities with RFID cards for students and staff.

Automated Locker Systems

Manages access to lockers in gyms, libraries, or public spaces using RFID technology for efficient and secure locker usage.

THANK YOU