# Analysis of Security System with Door Locking System using RFID Technology

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**Abstract:** In this paper, The RFID Door Lock is a lock that is simple to install and allows the user to easily lock and unlock doors. It will contain a RFID reader/writer and a magnetic door lock for simple use. All the user will need is an RFID tag to be able to unlock and lock the door. A LED will be used to let the user know when the door is in fact locked. The components included in the module are small and compact. Additionally, the door lock is simple and easy to install. It does not require the consumer to disassemble the door or doorframe as the door lock are merely attachments. This is also leaves the consumer with the option of using their original lock and key if they so choose. All in all, this RFID door lock should be a simple and cost effective upgrade to the average consumer's security and convenience.

**Keywords:** RFID, DC Motor, Controlled Robotic System, Door Locking System

## I. INTRODUCTION

At its core, the RFID Door Lock will have 3 inputs and 2 outputs. Power is an important t input and will supply the RFID Door Lock with the necessary voltage and currents to operate. It will be operated with 8.5V supply and will be drawn through an AC adapter. The second input is the RFID Sensor Input. This is w here the RFID tag information will be entering the system. As for the outputs, the Unlock/Lock is where the RFID Door Lock sends the signal whether or not to keep the door locked or unlock the door. These ideas are graphically represented in Figure 1 and Table 1. [1-10].

## II. PROPOSED ARCHITECTURE

The goal of this paper is to create a more convenient way to unlock your door than the traditional key. In the key's place is an RFID tag that will unlock the door by proximity. However, the improvements of this RFID door lock must outweigh the complications of implementation. The list of customer needs (in the Requirements and Specifications section) was constructed with that fundamental goal in mind. The design consists of two components. The first component is the actual door lock that must be installed in the doorframe. This will be controlled by a magnetic lock and will need to be powered. The second component is a relatively small module that you can install anywhere near the door. This module is responsible for the RFID sensing
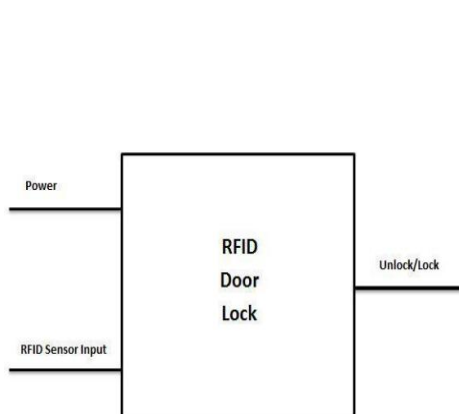


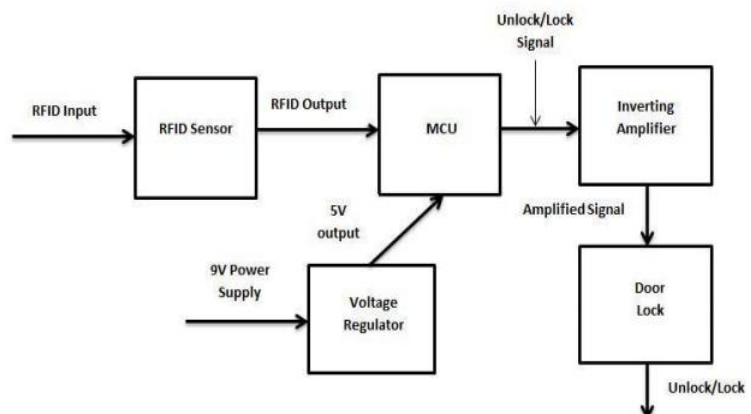Fig 1: Level 0 Block Diagram          Fig 2: Circuit Diagram of Functional Decomposition
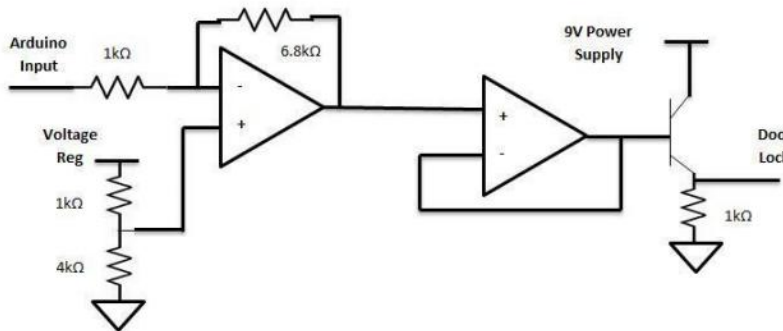
Fig 3: Level 2 Amplifier Block Diagram



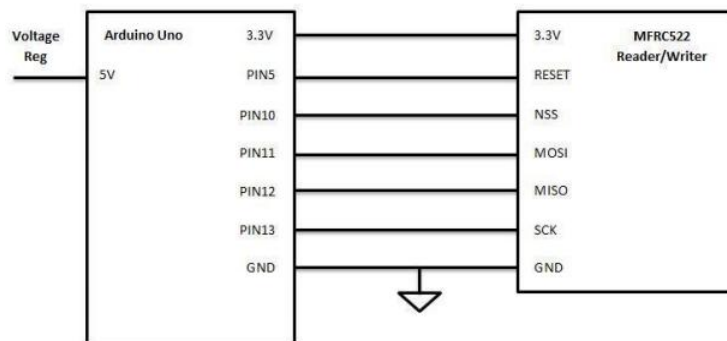Fig 4: Level 2 RFID/Arduino Block Diagram

Table:- Level 0 Functionality Table

| Input | Description | Output | Description |
|---|---|---|---|
| Power | Supplies voltage to the RFID Door Lock and powers it fo r all functions. | Unlock/Lock | Will unlock the door o r remain locked depending on the RFID tag and settings. |
| RFID Sensor Input | Scans for RFID tags a nd unlocks or remains locked dep ending on settings and RFID tag. | | |

## III.      CONCLUSION

In this work, The RFID Door Lock is a very cheap and affordable design that allows convenience and security for users. The design is relatively small and easy enough to install with just a couple of screws. Of course there are additional features that can be added in order to improve the system as a whole. However, it is important to note the cost of the improvement should be taken into consideration. The following are a few ideas that can be implemented without adding much cost to the design as a whole. These are just a few of the ideas for the RFID Door Lock in which improvements can be made to further improve both the security and convenience of the product.

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