RFID SMART DOOR LOCK SECURITY SYSTEM

A Project and Thesis submitted in partial fulfilment of the requirements for the Award of Degree of Bachelor of Science in Electrical and Electronic Engineering

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Certification

This is to certify that this project and thesis entitled "**RFID SMART DOOR LOCK SECURITY**" is done by the following students under my direct supervision and this work has been carried out by them in the laboratories of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in partial fulfilment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering. The presentation of the work was held on October- 2018

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Dedicated to

Our Parents

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LIST OF ABBREVIATIONS

AC	Alternative current
CKT	Circuit
DC	Direct current
GND	Ground
I/O	Input / Output
LCD	Liquid crystal display
LED	Light Emitting diode
PVC	Printed circuit board
PWM	Pulse-width modulation
USB	Universal serial bus
RFID	Radio frequency identification
SPDT	Single Pole Double Throw
SW	Switch
TTL	Time-to-live

ACKNOWLEDGEMENT

Firstly we give thanks to almighty Allah from the bottom of our hearts. We would like to express our sincere gratitude to our honourable, supervisor **Dr. M. Shamsul Alam** Department of Electrical and Electronic Engineering. DIU who inspired us in every moment, we are thankful to him for his continuous encouragement, kind co-operation, and scholastic guidance all along the project work. He has always been extremely generous with his time, knowledge and ideas and allowed us great freedom in this research .We also want to convey our thankfulness to Prof. Dr M. Shamsul Alam Head, Department of Electrical and Electronic Engineering for his help, support and constant encouragement .We express our humble gratitude to all teachers of Department of Electrical and Electronic Engineering for their support in numerous ways throughout this project work. We are also grateful to the authors whose valuable research papers and books we have considered as reference in this project paper. Apart from that, we would like to thank our entire friends for sharing knowledge; information and helping us in making this project a success. And also thanks for lending us some tools and equipment. Finally we would like to thank our parents who have given us tremendous inspirations and supports. Without their mental and financial supports, we would not able to complete our project.

Thanks to all

Authors

ABSTRACT

System at the entrance will only allow the authorized persons to enter the organization. The system can also be installed at various points inside the organization to track the person movement and to restrict their access to sensitive areas in the organization. In such a way, suspicious persons can be caught which will surely improve the security level in the organization.

Radio frequency identification (RFID) is a wireless technology that can be used to develop the access control system. The literature has revealed the use of this technology to automate various processes ranging from industrial sector to home control has reported the use of RFID.

CHAPTER 1
INTRODUCTION

1.1 Introduction

RFID credit cards protection is made to supply help, scalable entry in order to programs, assets as well as providers, and therefore are completely dealt with a protection greeting card supplier. Protection companies tend to be providing their own providers based on the basic design. It's a cellular info program, along with real-time visible show associated with actions, leading to the actual enhancement within effectiveness along with much less human being initiatives within information admittance. RFID is really a increasing era which utilizes stereo surf since the solution to determine devices or even items. To be able to evaluate security as well as private problems, you should provide a fast intro towards the basic aspects of RFID techniques. Because proven within Fig. 1, an ordinary RFID program consists of 1 or even higher RFID labels, the readers, along with a backend device. Each and every label includes the same identification signal. The RFID readers sends enables phase stereo rate of recurrence permanent magnetic issue which powers the actual label. The actual label replay towards the reader's issue as well as help to make assertion associated with it' existence via stereo surf individuals trans-firings it's exact identification information. These details is actually decoded with the readers as well as handed towards the area software program gadget via middleware. The actual middleware simulates being a user interface between your label readers and also the RFID home appliances device. These devices will after that research the actual signal using the information saved within the web host data source or even backend gadget. About this method, in the event that this fits using the data source info, the procedure will successful.
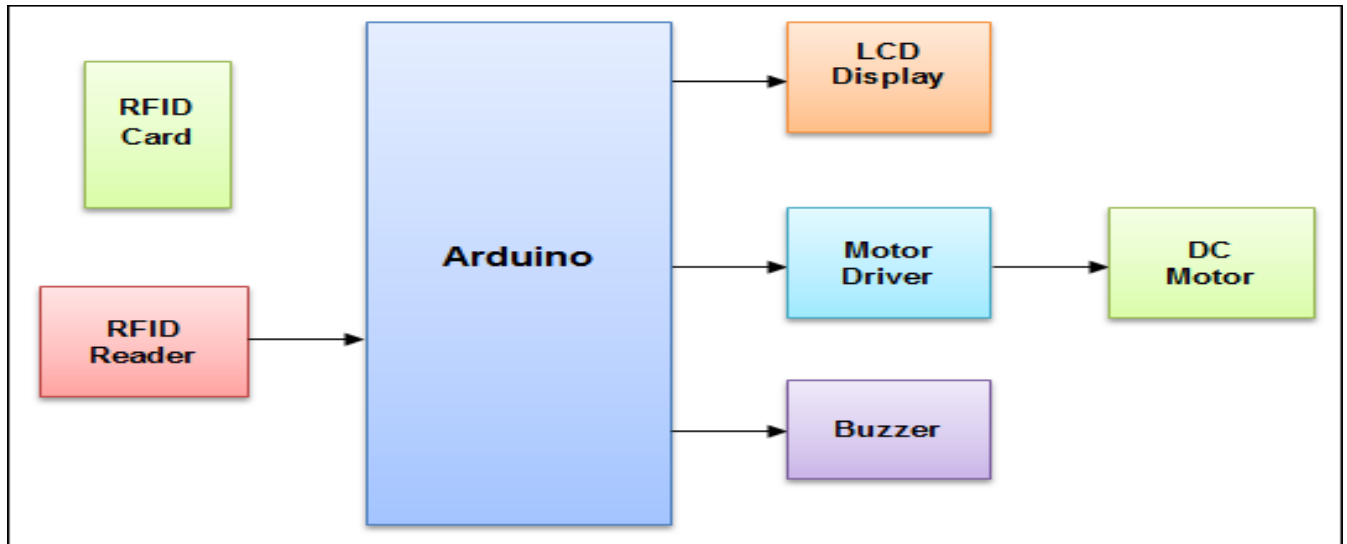
Figure 1.1: Block diagram of RFID smart door lock system

1.2 Problem Statement

In encryption area, present high-stop RFID buildings have the capability in order to encrypt as well as authenticate the info visitors along with amazing methods. Encryption associated with memory obstructs might be recognized in the software program coating, that's clear for that RFID label. The particular Identified (UID) is usually study-only and several RFID-transponders enable the long term create locking mechanism associated with memory obstructs. This particular will make certain associated with info ethics nevertheless, obviously, no longer information authentication as well as interpersonal architectural attacks such as cloning, robbing information and so on. Apart from techniques aren't completely guaranteed since the encrypted info tends to be unguaranteed. Consequently, preventing storage prevent encryption, all of us want to using along with information encryption- decryption solution to set up additional security using my personal encrypt-decrypt-tool permitting personal crucial encryption technique. In RFID area, a few functions also provide completed with fingerprint dependent technique. It's regarded as the most recent technologies. However it's not guaranteed through computer virus an infection. Near the entire program is actually very costly in order to process.

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1.3 Objective

Smart Credit cards tend to be considered to be helpful within supplying information move as well as transporting company inside a handy method, however along with protection functions. The accredit card size plastic material card by having an progress inner digital signal smart cards trend their own use within number of programs which range from entry as well as protection in order to selling. The actual author's project is really a smart card system employed for door being able to access. In purchase in order to unlock the actual door, the actual smart card person should place the actual smart card for that readers in order to confirm it' identification ID code. Unauthorized use of the idea, space or even info is going on every single day. One method to satisfy the requirements associated with protection and also to resolve the issue associated with unauthorized entry is actually utilizing smart card door entry system. The primary goal from the project would be to create a smart card door entry system, to satisfy the fundamental need with regard to Security today. To get this done, the writer is actually to offer the subsequent needs that are produced because mini goals of the project:

- Study and compare the smart card projects done by his senior students.
- Improve/modify the necessary part of the program of card reader that reads the information code from the smart card.
- Apply the implemented card reader program to a simulated door lock / apply the door access feature to the program to realize the project.
- It is used to turn off the device.
- When this switch is on, the green LED will be opened as the door opens
- When this switch is off, the red LEDs are burnt, so the door is locked.
- His switch is therefore used on this device for this purpose.

1.4 Scopes

The current function suggested the conceptual construction which may be built-into the actual RFID Card in order to offset the actual unauthorized utilization of Card. The investigation goal had been in order to incorporate biometric authentication process right into a cut capable RFID

Card. The procedures tend to be split in to 3 phases because proven within Fig. two. Phase 1: Style as well as Manufacturing associated with Label. This particular phase includes the look, calibration, simulation as well as manufacturing from the label antenna, along with a controlled combined attached to the controller. phase2: Fingerprint Coordinating as well as Storage space. This particular phase entails the actual process associated with obtaining, authenticating, Acquiring as well as storage space from the biometric authentication process, frustration printing in this instance. Phase 3: Program Creating as well as Screening. This particular phase involves the actual integration from the numerous stages inside a guaranteed manage device as well as screening from the prototype. However the entire system is actually completely unguaranteed in the management aspect. Therefore current techniques offers held a significant. Weak point for all of us, examining this particular system; we now have additionally observed which improving runtime could be feasible with increased security.

1.5 Methodology

The principal purpose of this particular dissertation would be to display the actual security problems within RFID card as well as offset the main issue from the system. As RFID card companies don't actually have strong security options that may safe the actual system through card cloning, Robbing info or even other forms associated with interpersonal architectural risks. The problems within RFID card security could be classified in to 3 parts-Application coating, Conversation coating as well as Bodily coating. Determine 4shows the actual risks, category. The suggested structures allows for customer aspect encryption within the subsequent beneficial methods to conquer a few fundamental risks associated with RFID security. associated interpersonal architectural episodes. Subsequent upon out of this investigation, the roadmap is going to be created you can use to keep the actual private as well as discretion from the info saved within the card. The procedure runtime can also be much better than current.

1.6 Principle Operation of Our Proposed System

With this area, the actual strategy utilized in this particular investigation procedure with regard to resolving the issue is mentioned beneath. In the beginning the actual card is actually study

through the readers. The study info is actually encrypted through the encrypted software program which info helps you to save towards the impair storage. As an effect, the info from the card can't be taken with an unauthenticated individual. Next to no-one can duplicate the actual card and also the authenticated card owner continues to be within security. Additionally, it assists the actual manager how the info helps you to save within the impair storage along with correct period. Therefore manager computes the amount of the actual utilizes from the card along with correct period. The actions associated with strategy tend to be portrayed the following
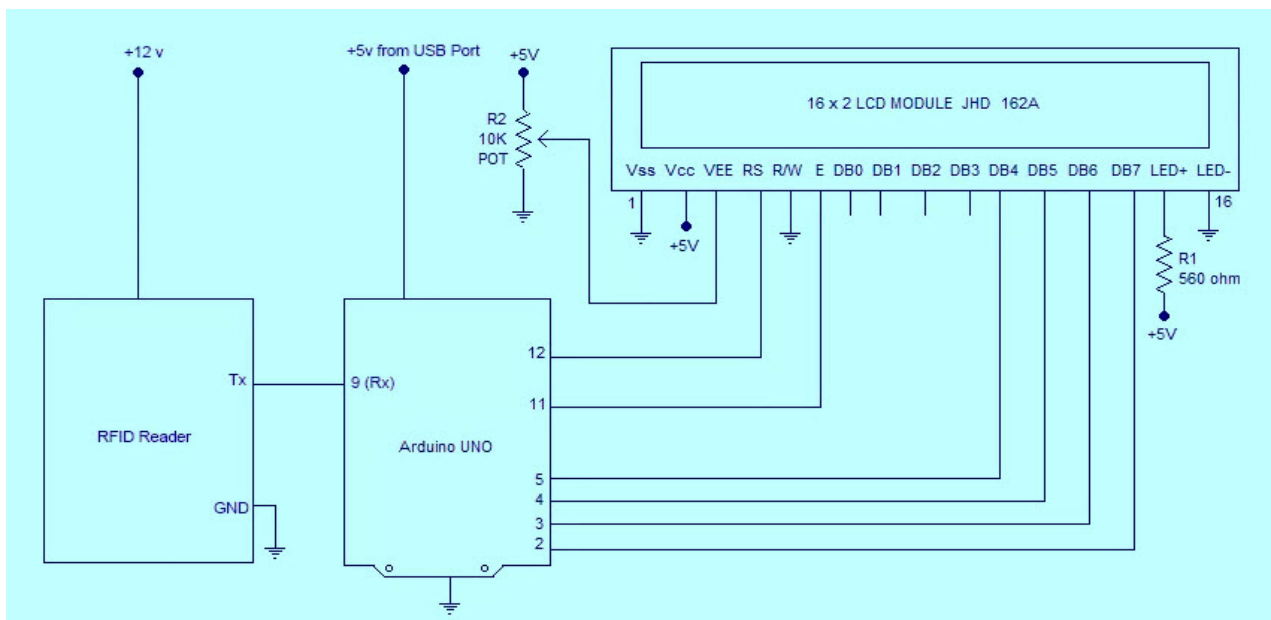
Figure 1.2: The proposed system methodology

1.7 Related Work

The present function suggested the conceptual construction which may be built-into the actual RFID Card in order to offset the actual unauthorized utilization of Card. The study goal had been in order to incorporate biometric authentication procedure right into a cut capable RFID Card. The actual procedures tend to be split in to 3 phases because proven within Fig. two. Phase 1: Style as well as Manufacturing associated with Label. This particular phase includes the look, calibration, simulation as well as manufacturing from the label antenna, along with a controlled

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combined attached to the controller. Stage2: Fingerprint. This particular phase entails the procedure associated with obtaining, authenticating, acquiring as well as storage space from the biometric authentication procedure, hand printing in this instance. Phase 3: Program Creating as well as Screening. This particular phase involves the actual integration from the numerous stages inside a guaranteed manage device as well as screening from the prototype. However the entire program is actually completely unguaranteed in the management aspect. Therefore current techniques offers held a significant weak point for all of us. Examining this technique, we now have additionally observed which improving runtime could be feasible with increased protection.

1.8 Summary

Numerous safety systems have been suggested in order to protect RFID buildings towards feasible attacks. With this investigation, all of us identified the number of problems dealing with RFID Card. 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 with regard to operating 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.

CHAPTER 2
LITERATURE REVIEWS

2.1 Introduction

As stated before, the improvements must outweigh the complications of implementation. There has to be a reason to buy this door lock and replace their own door locks with it. That is why convenience and reliability are the first two customer needs. These are possibly the most important and apply to almost every engineering specification and do not require as much explanation as the other three. One of the more interesting requirements is the hassle-free installation. Of course the door lock will require minor assembly but the process of installation should notbeoverly complicated. The device should be a complex system simplified for the common consumer. Another important feature is the need for failsafe, and overrides. In cases where the owner may lose their keys, the owner of the door lock should not be denied access to the door at any time. There should always be a way in that is only accessible to the customer.

2.2 General block diagram
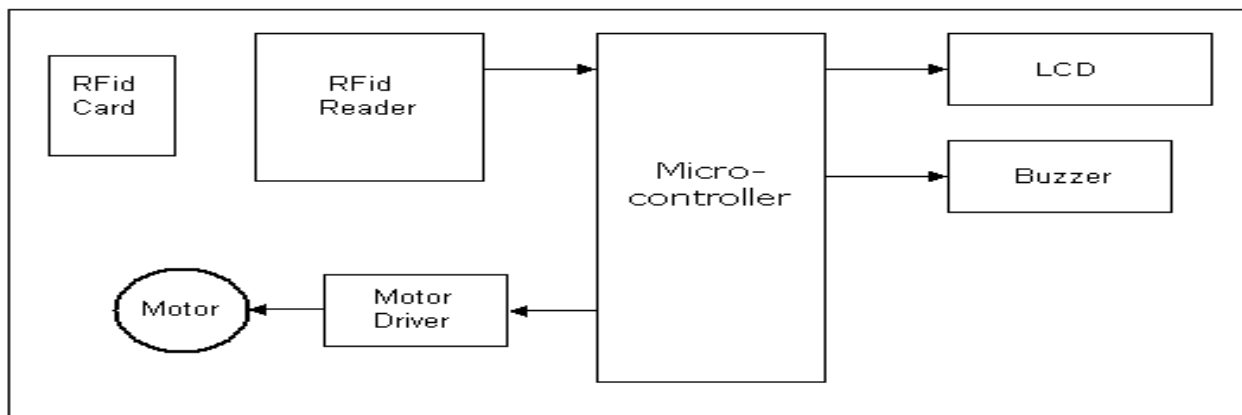
Figure 2.1 General block diagram of RFID security door

2.3 Block Diagram Description:

Radio-frequency identification (RFID) dependent access-control program enables just sanctioned individuals to key in a specific section of a good business. This particular RFID dependent protection program is dependent on mini controller AT89C52 as well as includes the RFID component, the LCD component with regard to exhibiting the actual standing along with a exchange with regard to starting the doorway. You may be acquainted with RFID techniques because observed in entry manage, contactless repayment techniques, item monitoring as well as stock manage, and so on. Essentially, a good RFID program includes 3 elements: a good antenna or even coils, the transceiver (with decoder) along with a transponder (RF tag) in electronic format designed along with distinctive info.

Figure 2.2: A user is trying to open the door by placing an RFID tag near the RFID reader

Fig. 2.2 exhibits an average RFID program. In most RFID program, the actual transponder labels include distinctive determining info. These details is often as small like a solitary binary little bit or perhaps a big variety of pieces symbolizing things like a good identification signal, individual healthcare info or even actually any kind of info that may be saved within electronic binary structure..
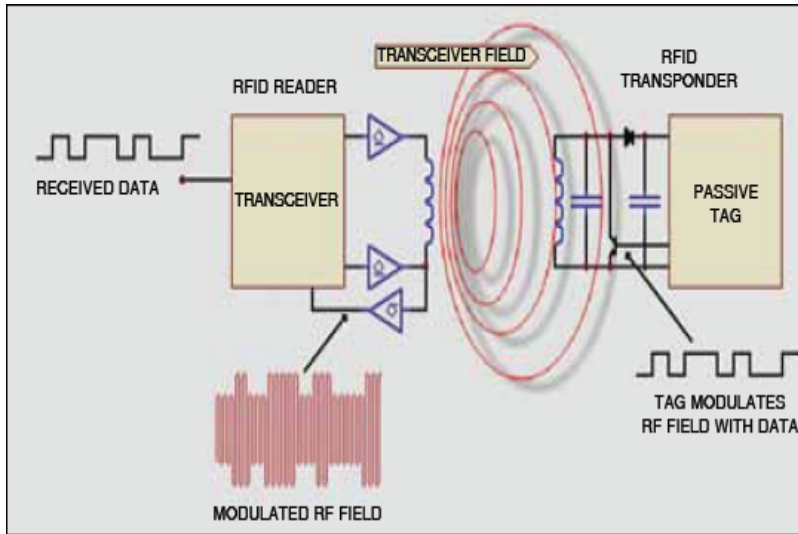
Figure 2.3: A typical RFID system

The RFID transceiver conveys having a unaggressive label. Unaggressive labels don't have any energy supply of their very own as well as rather obtain energy in the event electromagnetic area. Generally, in the centre of every label is really a microchip. Once the label makes its way into the actual produced RF area, with the ability to pull sufficient energy in the area to get into it's inner storage as well as transfer it's saved info. Once the transponder label pulls energy in this manner, the actual resulting conversation from the RF areas leads to the actual voltage in the transceiver antenna in order to decrease within worth. This particular impact is actually utilized through the label in order to connect it's info towards the readers. The label has the capacity to manage the quantity of energy attracted in the area as well as in so doing it may modulate the actual voltage sensed in the transceiver based on the little bit design this wants in order to transfer.

2.4 Circuit Diagram and Work

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.
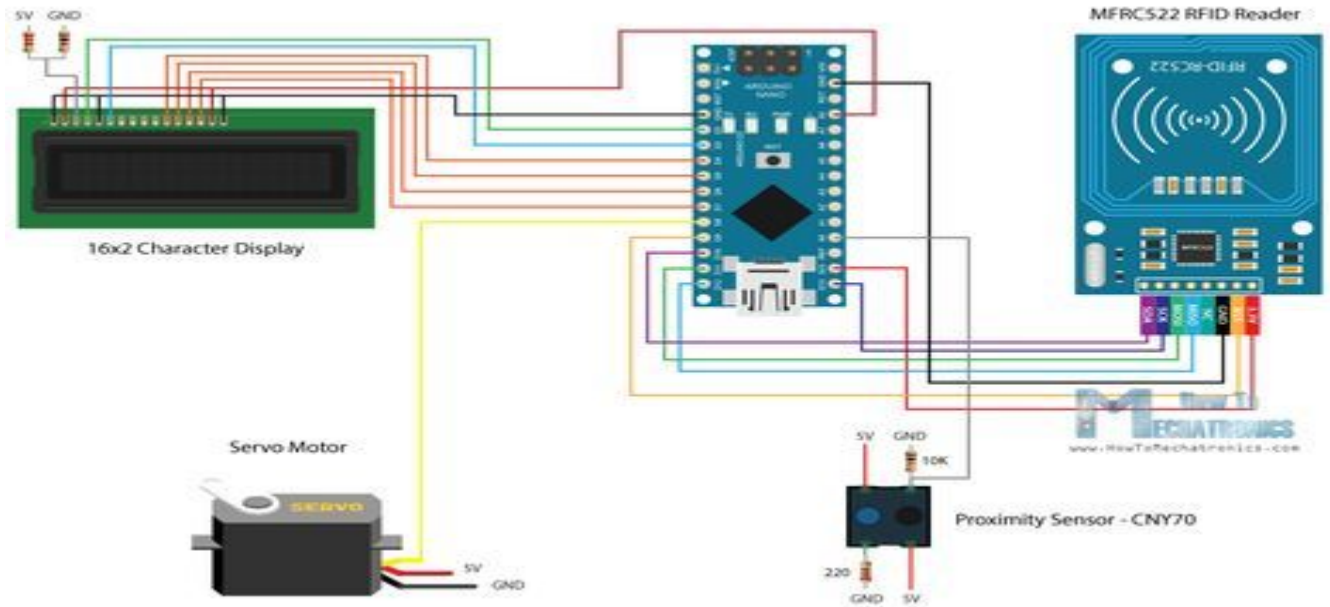
Figure 2.4: RFID Security door lock circuit diagram

2.5 RFID Reader

The RFID reader is really a cellular gadget accustomed to move information with regard to realizing as well as monitoring labels attached to items. The label consists of in electronic format saved info. Some type of labels is actually operated through electromagnetic induction through permanent magnetic areas created close to the reader. RFID reader consists of a good RF component also it functions like a each TEXAS as well as RX associated with stereo frequency indicators. The transmitter of the component consists of a good oscillator to create the actual company frequency. The recipient of the component features a demodulator in order to draw out the actual reverted info as well as retains a good amplifier to aid the actual transmission with regard to digesting. The microprocessor can be used to create the actual manage device, that utilizes a good OPERATING SYSTEM as well as storage of the component filtration system as well as shops the info.

Figure 2.5: RFID Reader

2.6 Adriano UNO

Adriano is dependent on the actual from super loved ones. This includes fourteen electronic I/O hooks. A good Adriano panel consists of 6analogy I/Ps, the USB, the totally reset switch, a good ICSP header the 16 Hz quartz very, along with a energy jack port. This handles everything wished to assistance the actual microcontroller. It's merely attached to some type of computer having a USB cable television.

Figure 2.6: Adriano Uno

11
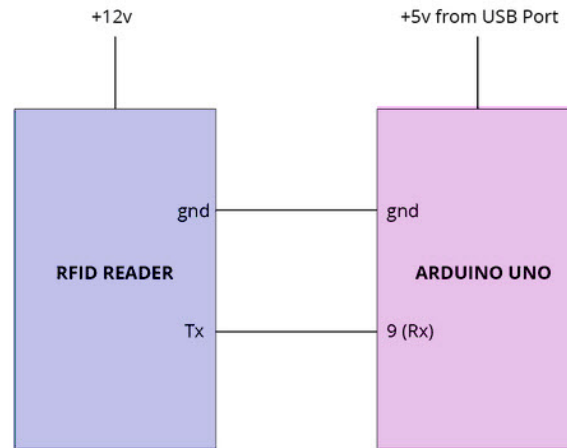
Figure 2.7: Interfacing of RFID with Adriano

RFID provides primarily 2 feasible results, the first is TTL suitable o/p as well as a different one is actually o/p. The TTL suitable o/p pin number could be attached to a good Adriano panel straight. As the result pin number of the RS232 suitable should be transformed in order to TTL utilizing an RS232 in order to TTL converter. The automated doorway locking mechanism program signal diagram utilizing an Adriano is actually proven beneath. This particular signal is principally employed for a good interfacing associated with RFID reader by having an Adriano. This particular task could be improved through hooking up a good to show the actual results. The signal of the task utilizes 3 individual components, specifically the reader, the controller as well as doorway locking mechanism. The place where a reader scans the actual RFID labels, the controller can be used to simply accept the information in the RFID reader as well as manage the actual o/p from the doorway locking mechanism as well as RGB LED.
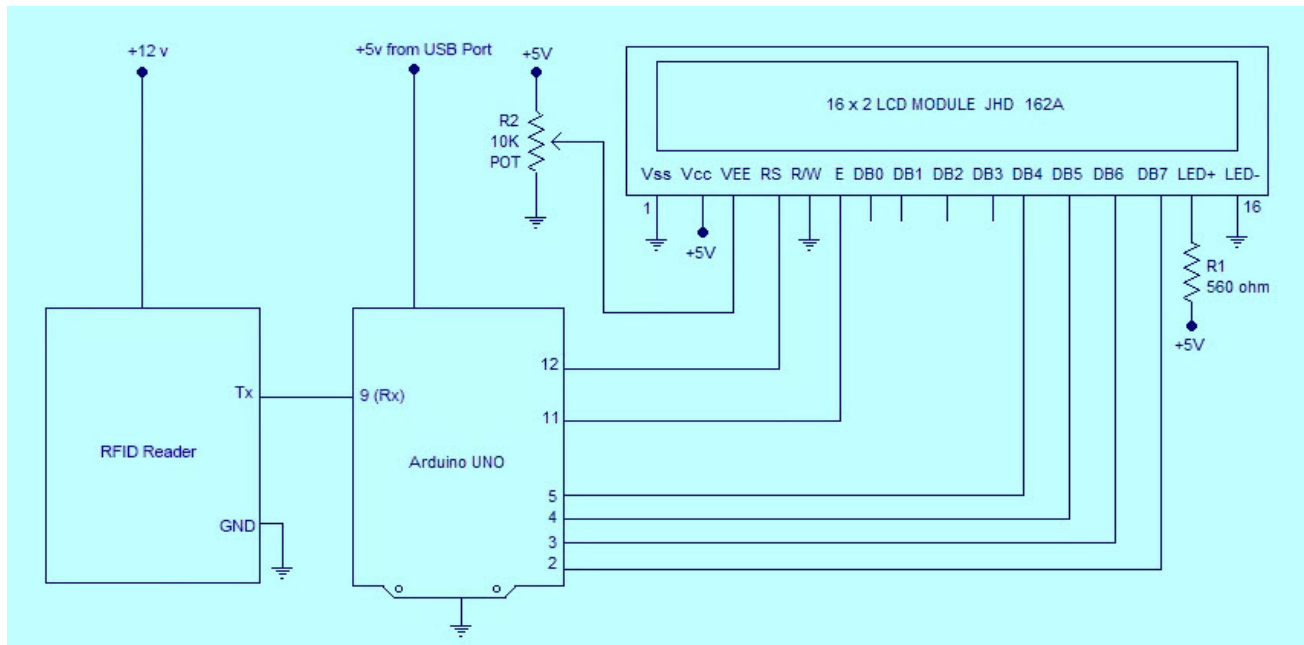
Figure 2.8: RFID card door lock circuit system

The RFID reader is positioned on the exterior from the doorway which is unattached in the controller in complete confidence therefore no-one can steer clear of the protection through busting open up the actual RFID reader as well as attempting to brief signal the actual reader. The controller of the task gets serial info in the RFID reader as well as regulates the actual Door lock and also the LED.

Therefore, this particular is about RFID reader, a good Adriano panel, interfacing associated with RFID reader along with Adriano, RFID greeting card Door Lock Program signal diagram associated with Automated Door Lock Program as well as operating. Hopefully you have obtained a much better knowledge of this particular idea. In addition, any kind of uncertainties concerning this particular idea or even pass word dependent doorway locking program; make sure you provide your own useful recommendations through commenting within the remark area beneath. This is a query for you personally, do you know the reader.
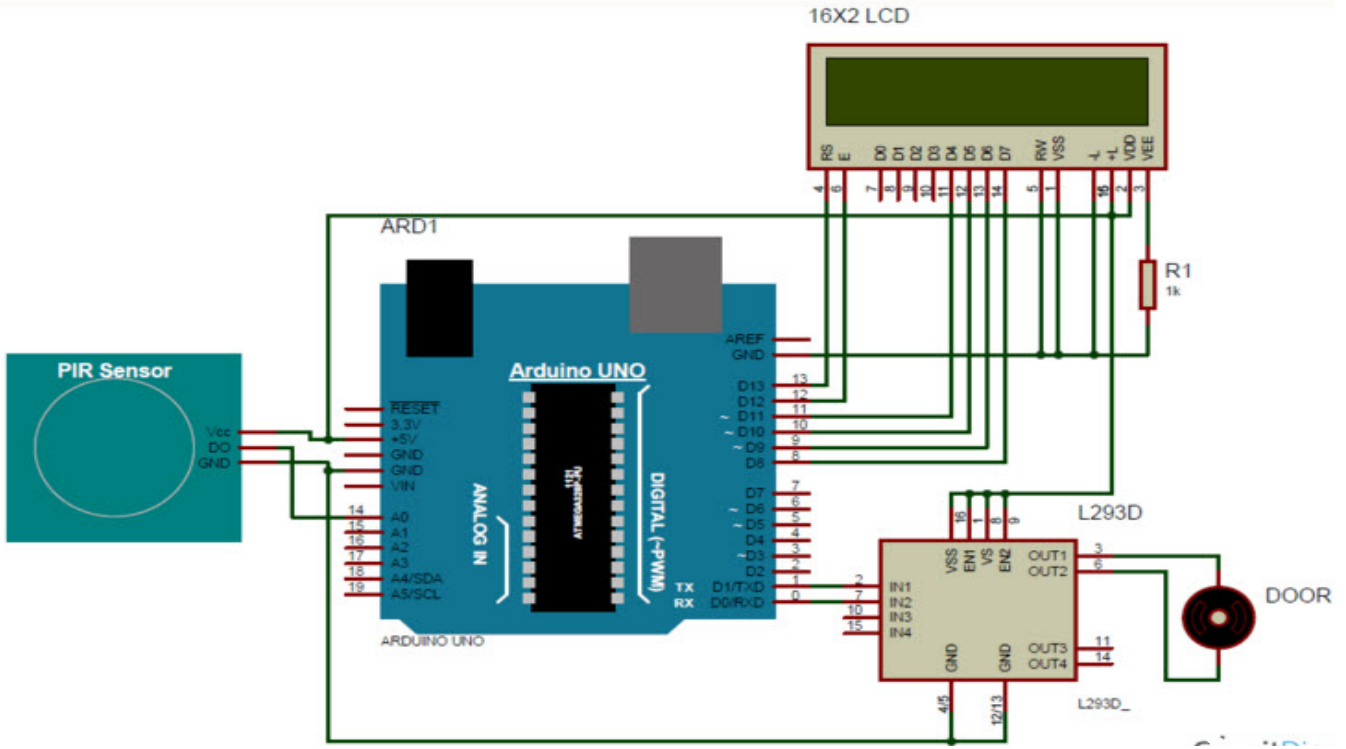
Figure 2.9: Automatic Door Lock System Circuit Diagram

2.7 Why this device is using LCDs

- To see if the device is working.

- To see if the device is using the correct card.

- To check if the device has been used incorrectly or not.

- To see what the device is doing.

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2.8 List of Components used in Circuit

Table 2.1 Components used in circuit

NO	Component Name	Quantity	Used
01	STP Switch	01	Used as the device turn on off
02	LED (Red)	01	If any unknown card is used in the device, then this red LED will burn and the door will not open.
03	LED (Green)	01	When a device is used in a known card, this green LED will burn and the door will open.
04	Buzzer	01	A buzzer is a device which makes a buzzing or beeping noise.
05	Servo motor	01	The used of the device is door open and closed
06	Adriano Pro Mini	01	Adriano pro mini generally works for the program.
06	LCD	01	LCD DISPLAY is commonly used to see when the device is working.
08	Wire	01	To connection
09	Vero Board	01	Circuit Board
10	CD4047BE	01	current to flow in the opposite direction through the panels
11	100k voltage Servo motor	01	Open and closed the door.

1.9 Summary

Here we discuss the details of how a room can be taken by RFID SMART CADR DOOR LOCK SECURITY. By using this technique, we can easily ensure the security of a house. This device can be used with easy and low cost. Here's what every device is doing and what device a device works after it and the work of each device is described.

CHAPTER 3

COMPONENT DESCRIPTION

3.1 Introduction

The Adriano Pro Mini is really a microcontroller panel in line with the ATmega168 datasheet. It's fourteen electronic input/output hooks (of that 6 may be used because PWM outputs), 6 example advices, a good on-board resonator, the totally reset switch, as well as openings with regard to installation pin number headers. The 6 pin number header could be attached to a good FTDI cable television or even Ignite enjoyable large panel to supply USB energy as well as conversation towards the panel. The Adriano Pro Mini is supposed with regard to semi-permanent set up within items or even displays. The panel arrives without having pre-mounted headers, permitting using various kinds associated with fittings or even immediate soldering associated with cables. This includes the actual the least elements (no on-board USB or even pin number headers) to maintain the price lower. It is the ideal choice for any panel you need to depart inlayed inside a task. The Adriano Pro Mini is actually designed while using Adriano Software program (IDE), the Incorporated Improvement Atmosphere typical to any or all the planks.
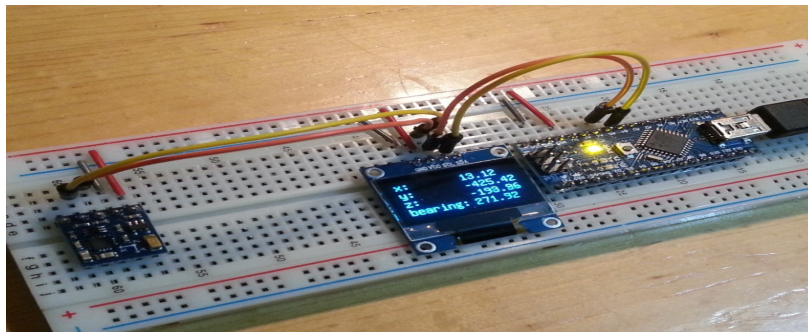
Figure 3.1: Adriano pro minis (a)
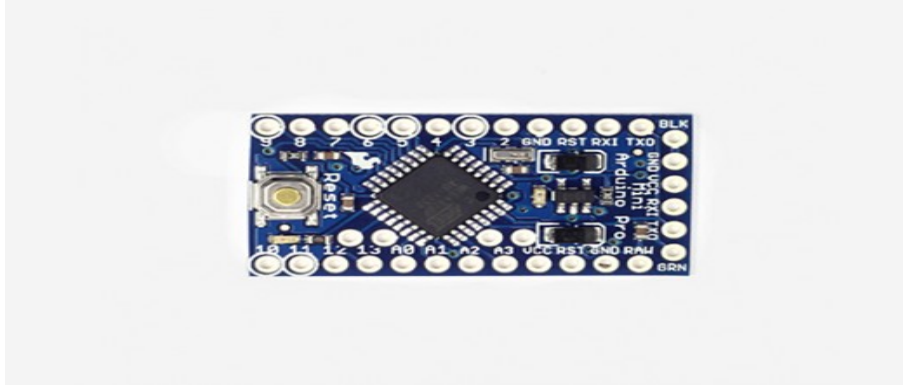
Figure 3.2: Adriano pro mini (b)

3.2 LED (Red), LED (Green) function

- **3.1.1LED (Red):**

  If any unknown card is used in the device, then this red LED will burn and the door will not open.
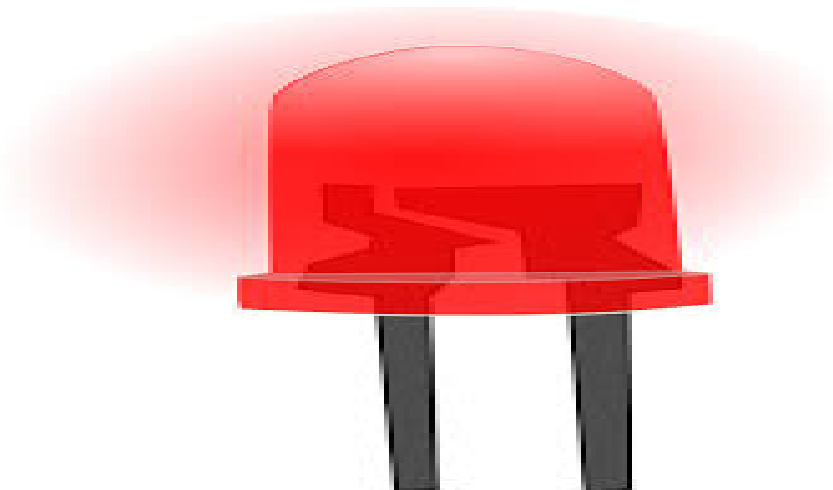
Figure 3.3: LED (Red)

3.2.2 LED (Green):

2) When a device is used in a known card, this green LED will burn and the door will open.

Figure 3.4: LED (Green)

3.3 The wire used on the device

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Figure 3.5: Use of wire (a)

Figure 3.6: Use of the wire (b)

3.4 RFID and Adriano based Automatic Door Lock System

The Fundamental requirement associated with protection could be achieved through creating numerous doorway hair for example mechanised hair or even electric hair. This sort of doorway hair was created along with a number of secrets, however for locking a sizable region numerous hair is required. Usually, conventional hair tends to be large which aren't powerful because they can harm by simply with a couple resources. Within current times each and every gadget utilizes electronic technologies. For instance, identification associated with electronic gadget utilizing symbol, doorway lock program utilizing electronic technologies, automated doorway starting as well as shutting, automated doorway lock techniques, and so on. Such techniques are utilized with regard to managing the actual motion of the doorway without needing a vital.
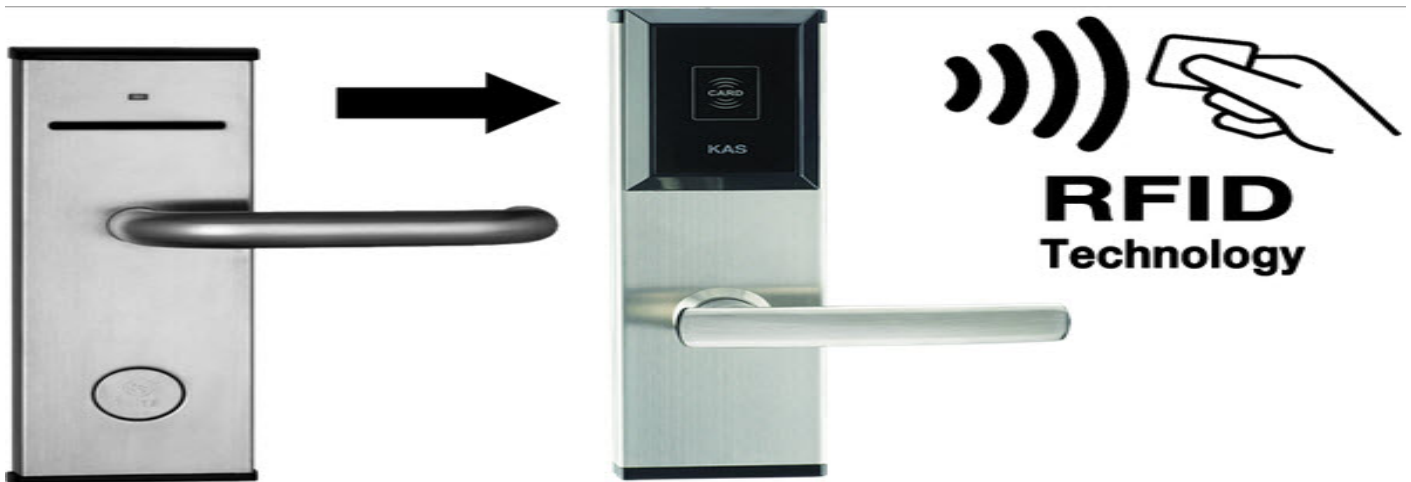
Figure 3.7: RFID based Door Lock System

3.5 RFID Technology use Automatic Door Lock System

The suggested program utilizes a good Adriano panel as well as RFID visitors. Right here, the software utilizes Adriano because it's controller as well as picks up if the doorway is actually jail broke or even secured utilizing ultrasonic sensor &LDR ideals. The Ultrasonic sensor steps the length associated with doorway as well as LDR picks up the actual strength associated with laser beam gentle slipping onto it as well as depending on this chooses in the event that it's secured or even jail broke. This particular document is dependent on inlayed program exactly where microcontroller is actually making use of with regard to security alarm. This technique may run utilizing mobile phone by using Software that people created. This technique would be to put into action microcontroller dependent managed component which gets it's coaching as well as order with regard to mobile phone more than Wireless Bluetooth.

3.6 The function ofRFID &Adriano UNO

Adriano is a microcontroller board based on the at mega family. It consists of 14 digital I/O pins. An Adriano board includes 6ana logs I/O a USB, a reset button, an ICSP header a 16 Hz quartz

crystal, and a power jack. It covers everything desired to support the microcontroller. We will use tags that are based on the MIFARE protocol and the MFRC522 RFID reader, which cost just a couple of dollars.
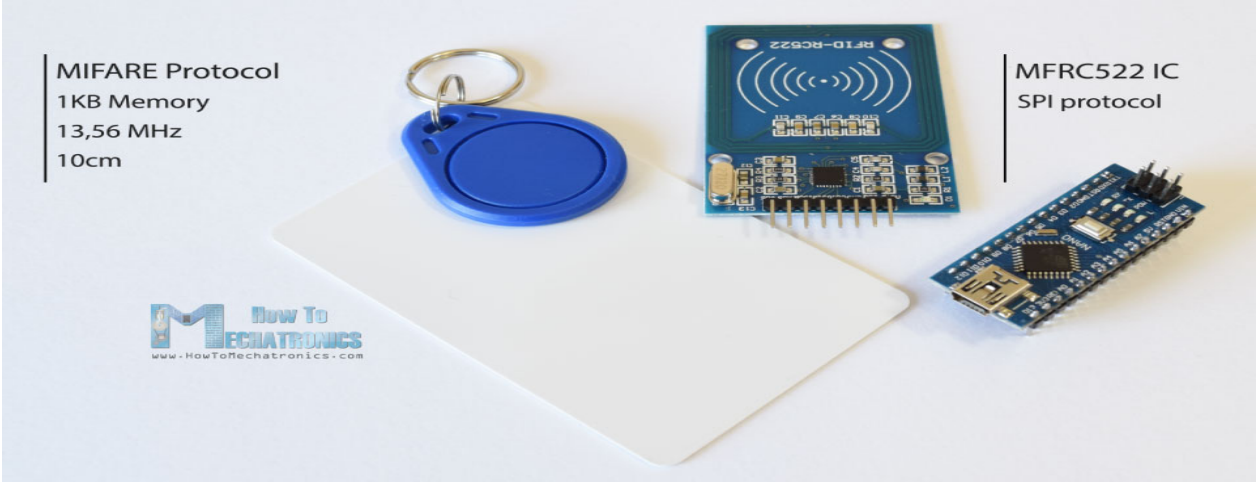
Figure 3.8 RFID card security door lock component

These tags have 1kb of memory and have a microchip that can do arithmetic operations. Their operating frequency is 13.56 MHz and the operating distance is up to 10 cm depending on the geometry of antenna. If we bring one of these tags in front of a light source we can notice the antenna and the microchip that we previously talked about.

Figure 3.9: RFID security door lock unbelted card
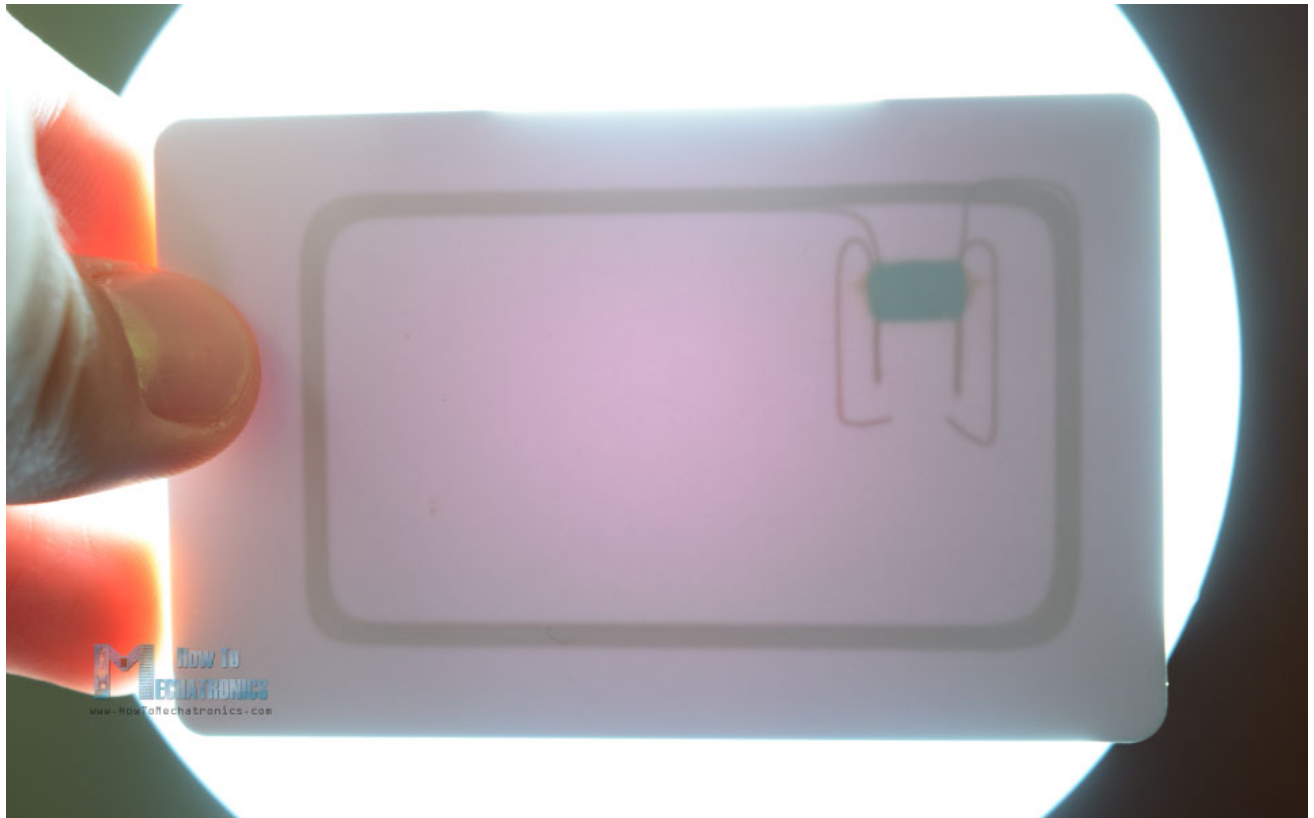
Figure 3.10: RFID baled card

When it comes to RFID reader component, this utilizes the actual SPI process with regard to conversation using the Adriano panel as well as here's exactly how we have to link all of them. Please be aware that people should link the actual VCC from the component in order to 3. 3V as well as when it comes to additional hooks all of us don't need to be concerned because they tend to be 5V understanding.

(PCINT8/XCK0/T0) PB0	1		40	PA0 (ADC0/PCINT0)
(PCINT9/CLKO/T1) PB1	2		39	PA1 (ADC1/PCINT1)
(PCINT10/INT2/AIN0) PB2	3		38	PA2 (ADC2/PCINT2)
(PCINT11/OC0A/AIN1) PB3	4		37	PA3 (ADC3/PCINT3)
(PCINT12/OC0B/$\overline{SS}$) PB4	5		36	PA4 (ADC4/PCINT4)
(PCINT13/ICP3/MOSI) PB5	6		35	PA5 (ADC5/PCINT5)
(PCINT14/OC3A/MISO) PB6	7		34	PA6 (ADC6/PCINT6)
(PCINT15/OC3B/SCK) PB7	8		33	PA7 (ADC7/PCINT7)
$\overline{RESET}$	9		32	AREF
VCC	10		31	GND
GND	11		30	AVCC
XTAL2	12		29	PC7 (TOSC2/PCINT23)
XTAL1	13		28	PC6 (TOSC1/PCINT22)
(PCINT24/RXD0/T3*) PD0	14		27	PC5 (TDI/PCINT21)
(PCINT25/TXD0) PD1	15		26	PC4 (TDO/PCINT20)
(PCINT26/RXD1/INT0) PD2	16		25	PC3 (TMS/PCINT19)
(PCINT27/TXD1/INT1) PD3	17		24	PC2 (TCK/PCINT18)
(PCINT28/XCK1/OC1B) PD4	18		23	PC1 (SDA/PCINT17)
(PCINT29/OC1A) PD5	19		22	PC0 (SCL/PCINT16)
(PCINT30/OC2B/ICP) PD6	20		21	PD7 (OC2A/PCINT31)

Figure 3.11: RFID &Adriano work

3.7 How to Interface RFID Reader to Adriano

Let's first wire the whole thing up. You may observe the circuit diagram given below. Take note of the following stuffs.

Note 1:- Power supply requirement of RFID Readers vary from product to product. The RFID reader I used in this tutorial is a 12 Volts one. There are 5 Volts and 9 Volts versions available in the market.

Note 2:- You may ensure the RFID Reader and RFID Tags are frequency compatible. Generally they are supposed to be 125 kHz. You may ensure this before purchasing them.
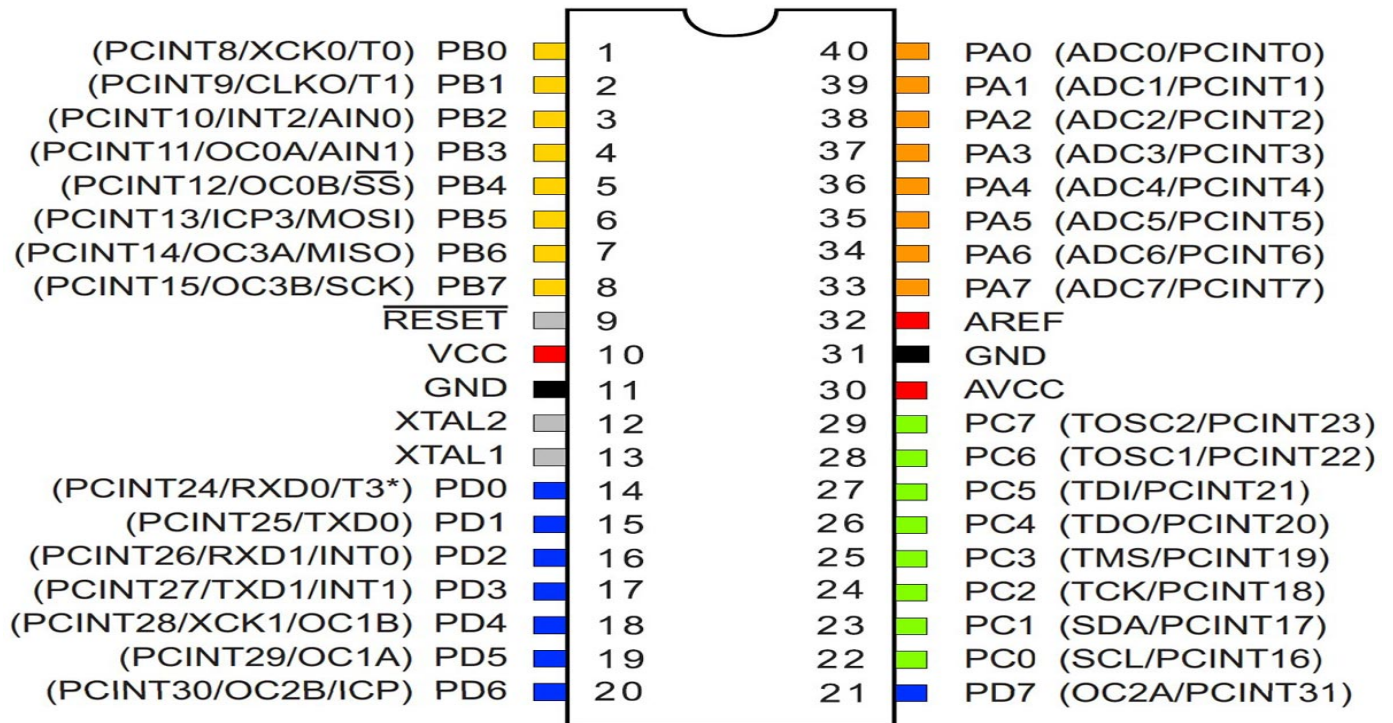
Note 3:- There are two possible outputs from an RFID Reader. One is RS232 compatible output and other one is TTL compatible output. A TTL compatible output pin can be connected directly to Adriano. Whereas an RS232 compatible output must be converted to TTL using an RS232 to TTL converter (You can design this yourself using MAX232 IC).

So that's all! Let's get to circuit diagram!

Make connections as shown. Make sure you connect Ground Pin of RFID reader to Ground Pin of Adriano. I am using the Software Serial Library of Adriano which enables digital pins to be used in serial communication. I have used pin 9 as the Rx of Adriano. (You can also use the hardware Rx pin of Adriano Uno that's pin 0). If you are new to Software .Serial Library, you may read my previous tutorial on interfacing GSM module to Adriano (this article clearly explains how to use Software Serial Library)

3.8 RFID Pin Diagram detail

Table 3.1 RFID pin diagram

Pin Category	Pin Name	Details
Power	Vin, 3.3V, 5V, GND	Vin: Input voltage to Adriano when using an external power source. 5V: Regulated power supply used to power

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		microcontroller and other components on the board. 3.3V: 3.3V supply generated by on-board voltage regulator. Maximum current draw is 50mA. GND: ground pins.
Reset	Reset	Resets the microcontroller.
Ana log , Pins	A0 – A5	Used to provide Ana log , input in the range of 0-5V
Input /Output ins	Digital Pins 0 - 13	Can be used as input or output pins.
Serial	0(Rx), 1(TX)	Used to receive and transmit TTL serial data.
External Interrupts	2, 3	To trigger an interrupt.
PWM	3, 5, 6, 9, 11	Provides 8-bit PWM output.
SPI	10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK)	Used for SPI communication.
Inbuilt LED	13	To turn on the inbuilt LED.
TWI	A4 (SDA), A5 (SCA)	Used for TWI communication.
AREF	AREF	To provide reference voltage for input voltage.

Table 3.2 Adriano Uno Technical Specifications

Microcontroller	ATmega328P– 8 bit AVR family microcontroller
Operating Voltage	5V
Recommended Input Voltage	7-12V
Input Voltage Limits	6-20V
Ana log Input Pins	6 (A0 – A5)
Digital I/O Pins	14 (Out of which 6 provide PWM output)
DC Current on I/O Pins	40 mA
DC Current on 3.3V Pin	50 mA
Flash Memory	32 KB (0.5 KB is used for Boot loader)
SRAM	2 KB
EEPROM	1 KB
Frequency (Clock Speed)	16 MHz
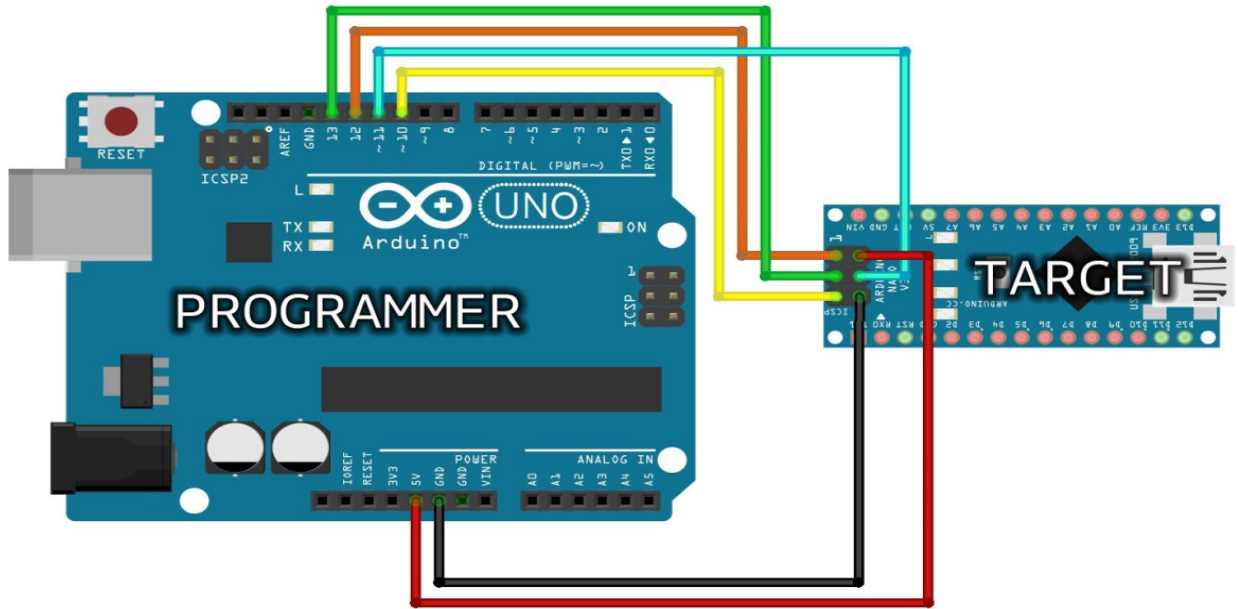
Figure 3.12: Adriano pro mini diagram (a)
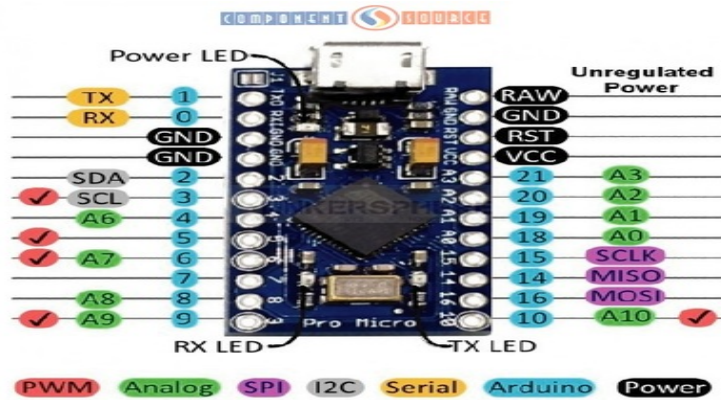
Figure 3.13: Adriano pro mini diagram (b)

3.9 RFID-based door lock open

The RFID reader includes a stereo frequency component, the manage device as well as a good antenna coils that creates higher frequency electromagnetic area. However, the actual label is generally a unaggressive element, that includes simply a good antenna as well as a digital microchip, then when this will get close to the electromagnetic area from the transceiver, because of induction, the voltage is actually produced within its antenna coils which voltage acts because energy for that microchip.
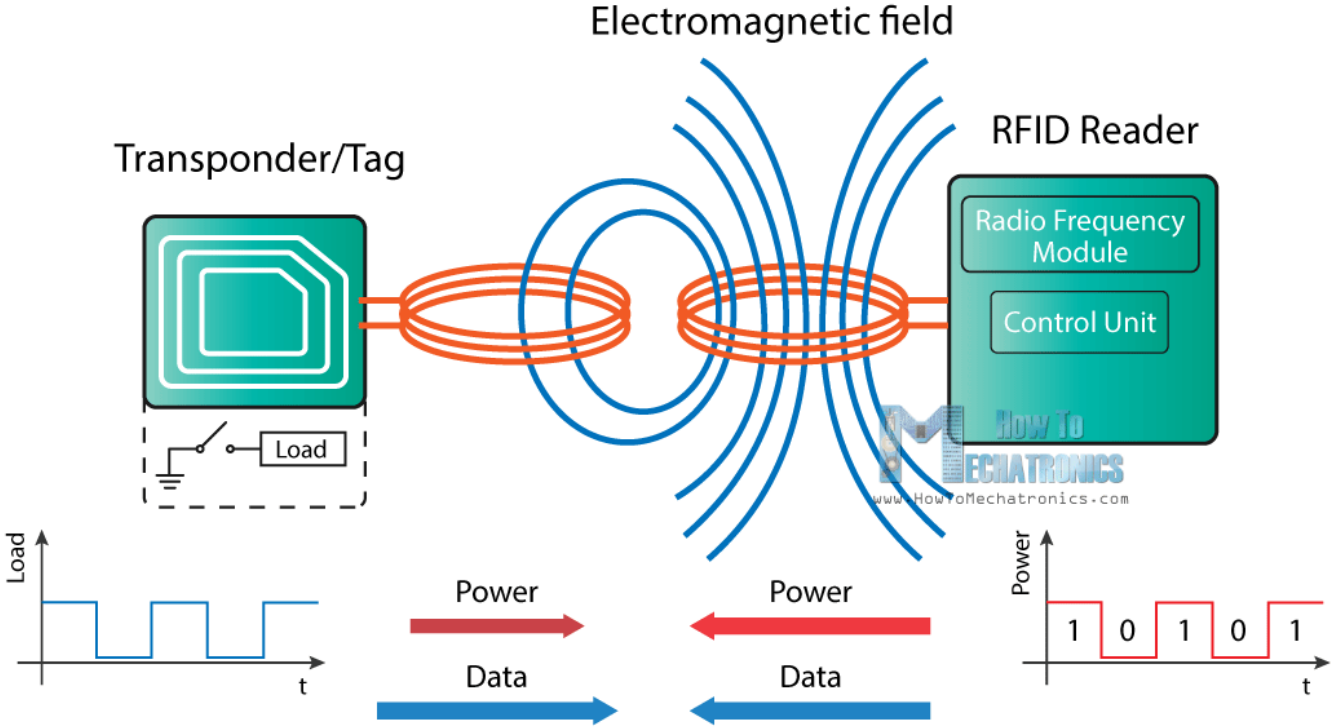
Figure 3.14: RFID based door lock open

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3.10 Buzzer

The electric buzzer was invented in 1831 by Joseph Henry. They were mainly used in early doorbells until they were phased out in the early 1930s in favour of musical chimes, which had a softer tone.

- An electrical device that makes a buzzing noise and is used for signalling.
- A buzzer is a device which makes a buzzing or beeping noise. There are several kinds; the most basic is a piezoelectric buzzer, which is just a flat piece of piezoelectric material with two electrodes.

Figure 3.15: Buzzer

3.11 Function of buzzer

The buzzer or even beeper is definitely an sound signalling gadget, which can be mechanised , electromechanical , or even piezoelectric (pies with regard to short). Standard utilizes associated with buzzers as well as beepers consist of security alarm products , timers , as well as verification associated with person enter like a click or even crucial heart stroke. Earlier products had been depending on a good electromechanical program similar for an electrical bell with no steel gong. Likewise, the exchange might be attached to disrupt its actuating present, leading to the actual connections to hype. Frequently these types of models had been moored to some walls or even roof to make use of this like a sound panel. The term "buzzer" originates from the actual rasping sound which electromechanical buzzers created.

- Alarm clock
- Alarm management
- Klaxon
- Vibrator (mechanical)
- Electric bell
- Joy buzzers
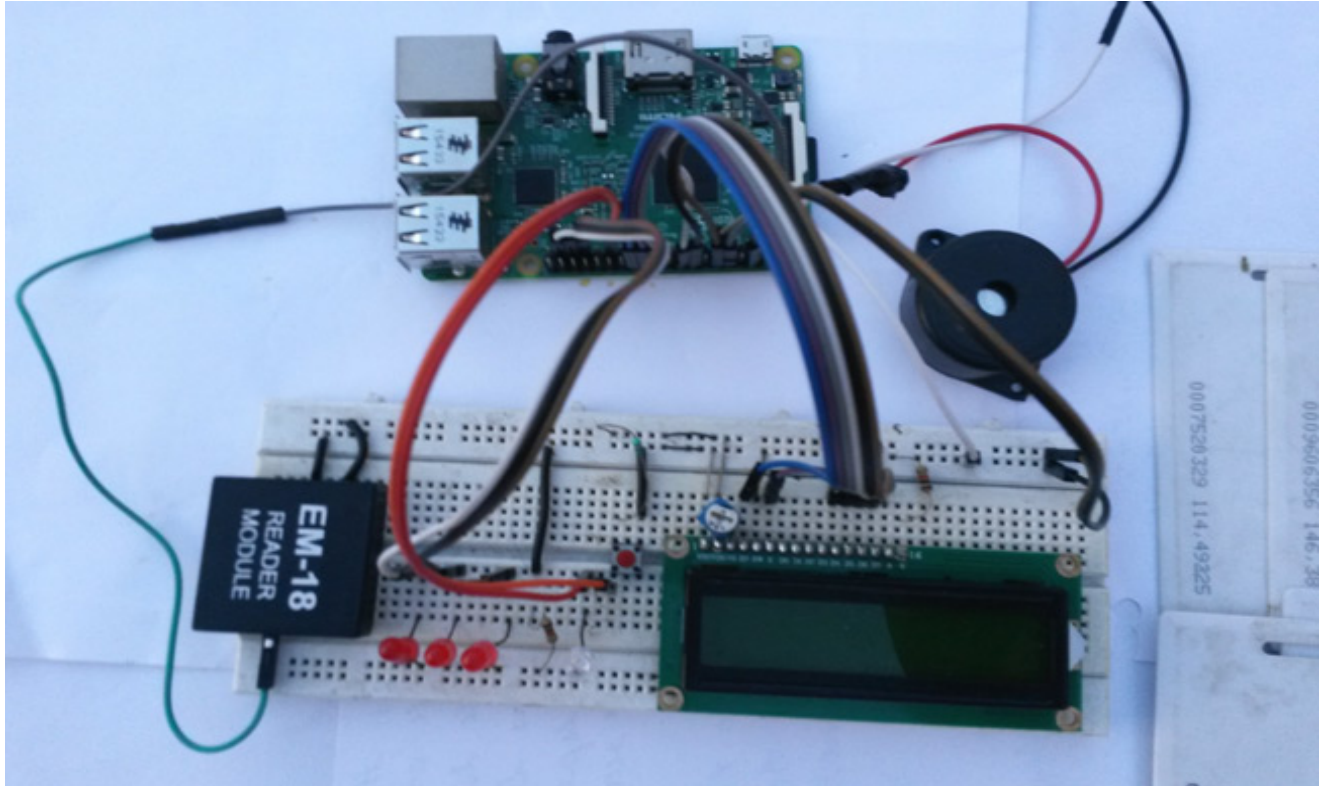
Figure 3.16: Buzzer of function

3.12 What is the purpose of a buzzer in a circuit

A buzzer is a device which makes a buzzing or beeping noise. There are several kinds; the most basic is a piezoelectric buzzer, which is just a flat piece of piezoelectric material with two electrodes. This type of buzzer requires some kind of oscillator (or something more complicated like a microcontroller) to drive it if you apply a DC voltage you will just get a click. They are used in places where you need something that emits an audible tone, but don't care about high-fidelity sound reproduction, like microwave ovens, smoke alarms, and electronic toys. They are cheap and can be very loud without using very much power. They are also very thin, so they can be used in flat objects like "singing" greeting cards.

A piezoelectric element also produces a voltage in response to pressure, so piezoelectric buzzers can also be used as crude pressure sensors or microphones. A similar device, the crystal earpiece, can be used in unpowered crystal radios (now mainly built by hobbyists), because its very high sensitivity means it can be powered by the radio signal itself.

More complex buzzers include the oscillator circuit and the piezoelectric element or speaker in a single package, so all you need to do is apply a voltage and you will get an annoying beeping or buzzing sound. A common brand name for these devices, and sometimes you will hear the word "Son alert" used generically to refer to any kind of modular buzzer or siren.
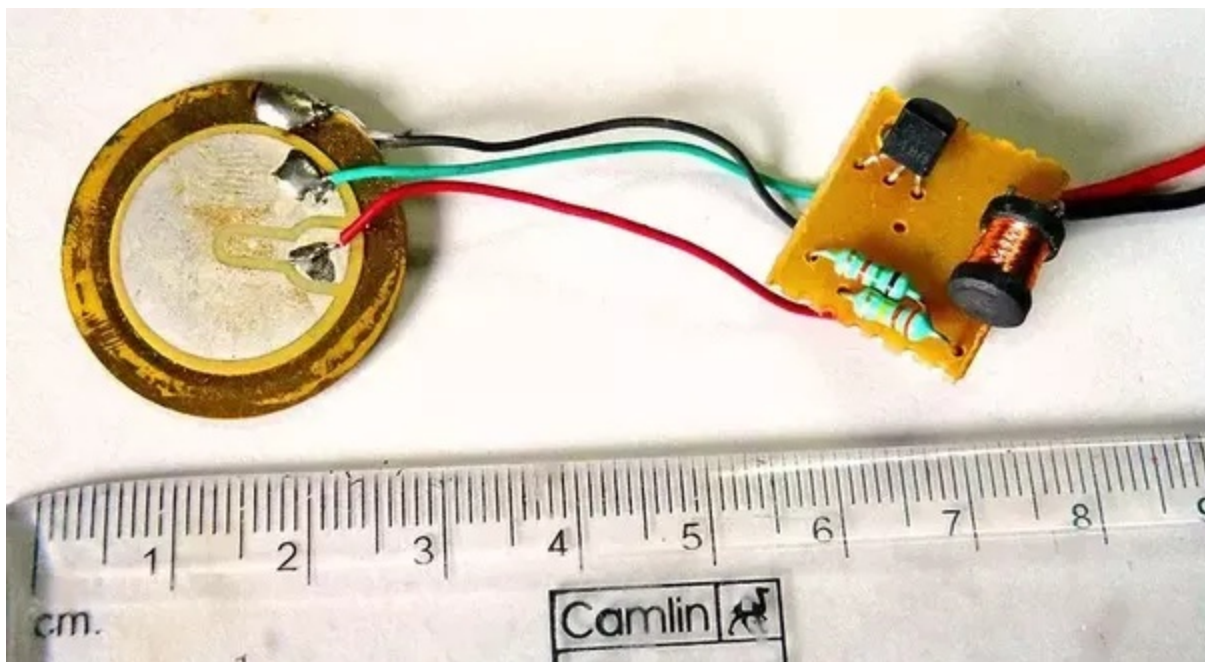

Figure 3.17: Buzzer circuit

3.13 Circuit diagram of Buzzer

There are also electromechanical buzzers, which use a coil and a moving electrical contact. When the coil is energized, the contact is pulled toward the coil, but this breaks the circuit and the contact rapidly moves back to its original position. This makes a loud buzzing sound.
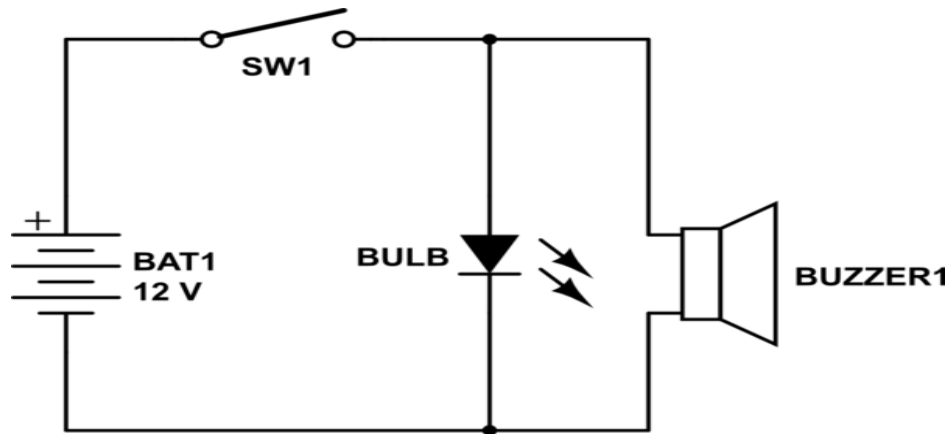
Figure 3.18 Circuit diagram of buzzer

3.14 Why Adriano pro mini is used in this project

The reason why Adriano professional small can be used with this task, if this runs on the incorrect greeting card, after that it's a good home security system that'll be shaken and that's the reason why it's been employed for this You've observed RFID Door Lock System in certain Resorts along with other locations, exactly where a person don't require a crucial in order to uncover the area. You're provided the greeting card and you simply have to place it before the RFID Readers container, and also the lock will get jail broke having a Beep along with a Blink associated with LED. This particular RFID Door Lock could be created very easily at your house. And you will do the installation in a doorway. These types of Door lock is simply electrically working doorway lock that will get open up whenever you utilize a few voltage (typically 12v) this.
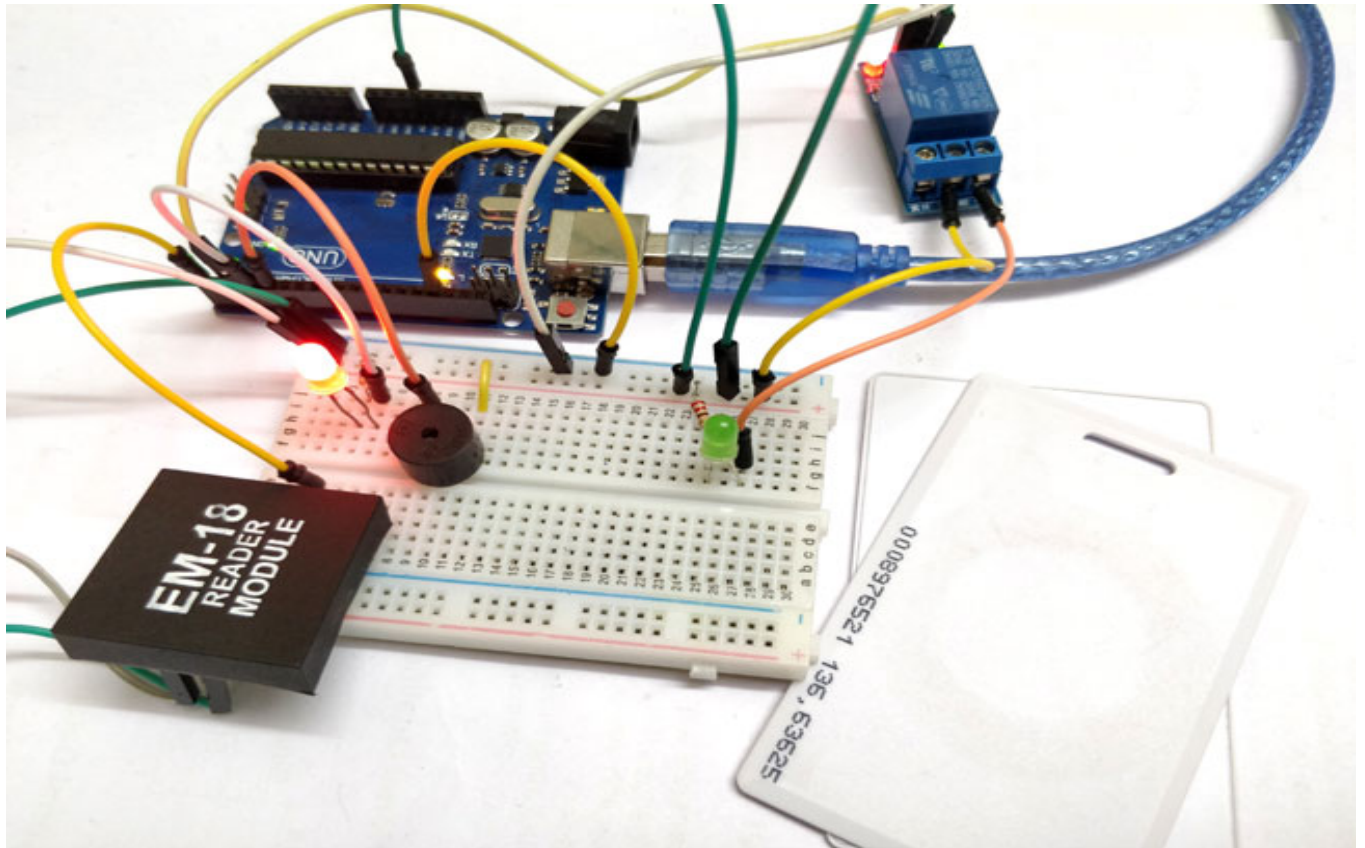
Figure 3.19: Interfacing of Buzzer in the devices

3.15 Servo motor

The servo engines an electric gadget which could drive or even turn a good item along with excellent accuracy. If you wish to turn as well as item from a few particular perspectives or even range, then you definitely make use of servo engine. It's simply comprised of easy engine that tell you servo system. We are able to obtain a high torque servo engine inside a little as well as lightweight deals. Doe in order to these types of functions they're getting used in several programs such as gadget vehicle, REMOTE CONTROL helicopters as well as airplanes, Robotics, Device and so on.

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Servo engines tend to be ranked within kg/cm (kilogram preen teeter) the majority of pastime servo engines tend to be ranked from 3kg/cm or even 6kg/cm or even 12kg/cm. This particular kg/cm lets you know just how much pounds your own servo engine may raise in a specific range. For instance: The 6kg/cm Servo engine will be able to raise 6kg when the fill is actually hanging 1cm from the actual engines base, the higher the length the actual lower the actual pounds transporting capability. The placement of the servo engine is set through electric heartbeat and it is circuitry is positioned near the engine.

Figure 3.20: Servo motor (a)

Figure 3.21: Servo motor

3.16 This little motor is high in efficiency and power

Servo engines happen to be close to for a long period and therefore are found in numerous programs. They're little in dimensions however load up a large strike and therefore are really energy-efficient. These types of functions permit them to become accustomed to run remote-controlled or even radio-controlled gadget vehicles, bots as well as planes. Servo engines will also be utilized in commercial programs, robotics, in-line production, and pharmaceutics as well as   meals   providers. However   how   can   the   small   men   function? The servo circuitry is made correct within the engine device and it has a situation capable base, which often is actually installed having a equipment (as proven below). The engine is actually managed by having an electrical transmission that decides the quantity of motion from the base.
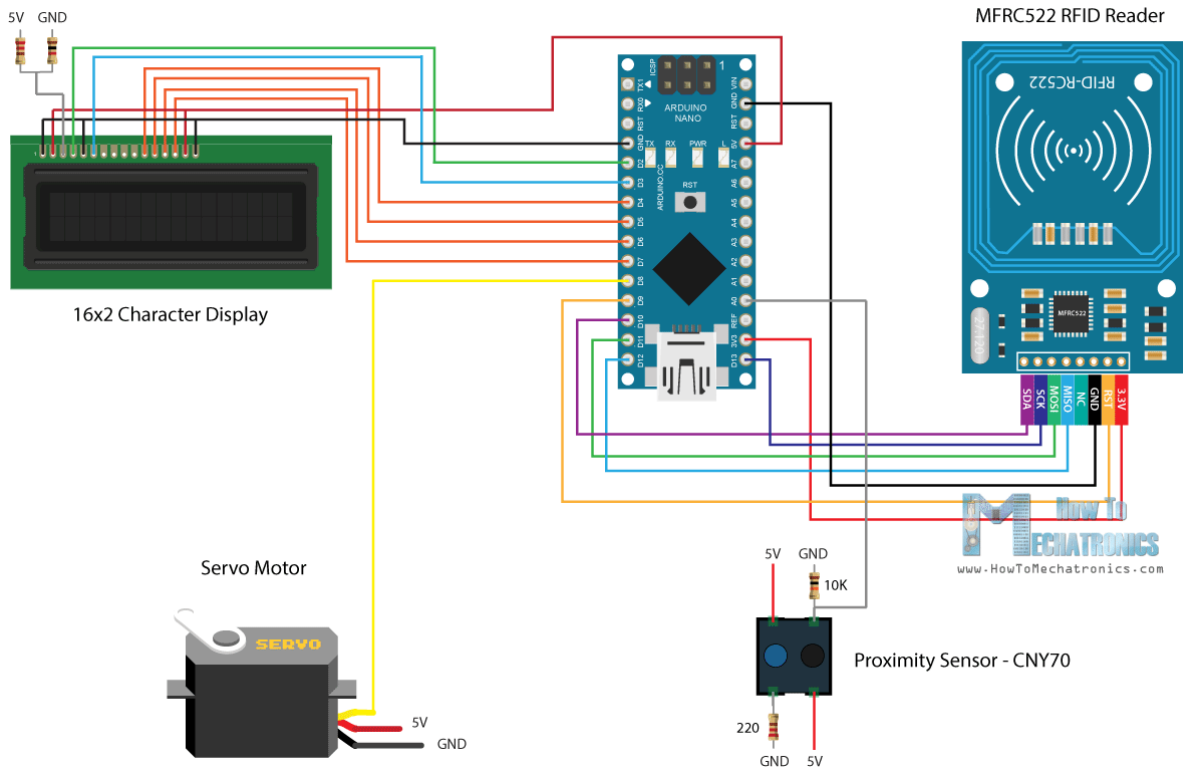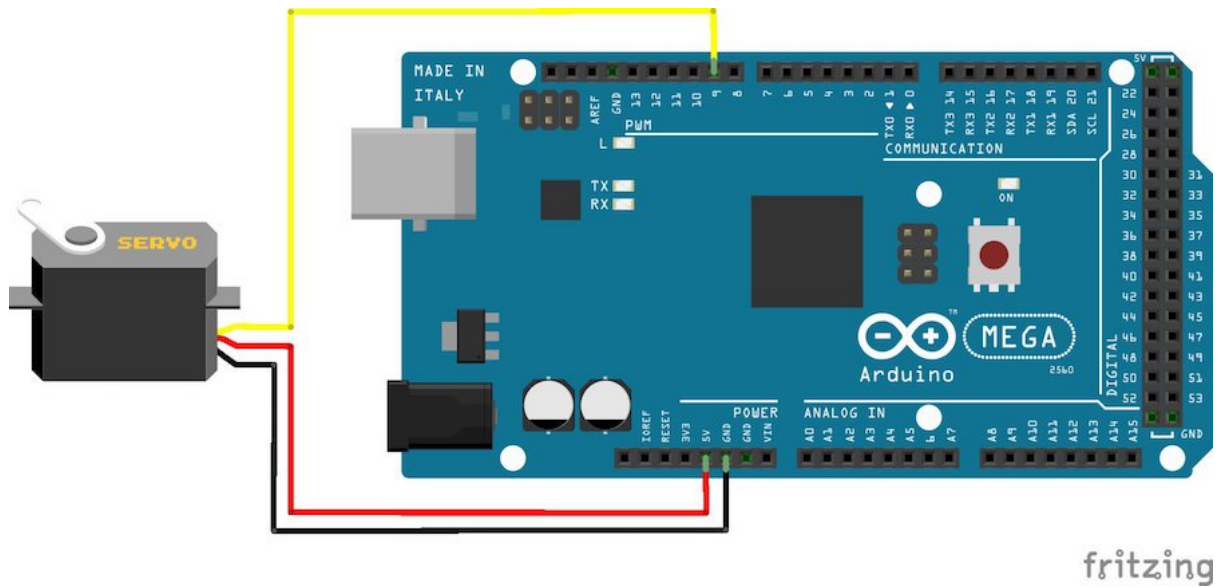
Figure 3.22: Connection diagram of Servo motor

## 3.17 What is the purpose of a buzzer in a circuit

Figure 3.23: HS-322HD Standard Heavy Duty Servo

To completely know how the actual servo functions, you have to have a look underneath the cover. Within there's a fairly easy set-up: a little DC engine, potentiometer, along with a manage signal. The engine is actually connected through things towards the manage steering wheel. Since the engine revolves, the actual potentiometer's opposition modifications, therefore the manage signal may specifically control just how much motion there's as well as by which, path. Once the base from the engine reaches the required placement, energy provided towards the engine is actually halted. The motor's pace is actually proportional towards the distinction in between it's real placement as well as preferred placement. Therefore when the engine is actually close to the preferred placement, it'll change gradually, or else it'll change quick. This really is known as proportional manage. What this means is the actual engine is only going to operate because difficult because essential to work available, an extremely effective small man..

3.18 How is the servo controlled?

Servos are controlled by sending an electrical pulse of variable width, or pulse width modulation (PWM), through the control wire. There is a minimum pulse, a maximum pulse, and a repetition rate. A servo motor can usually only turn 90° in either direction for a total of 180° movement.
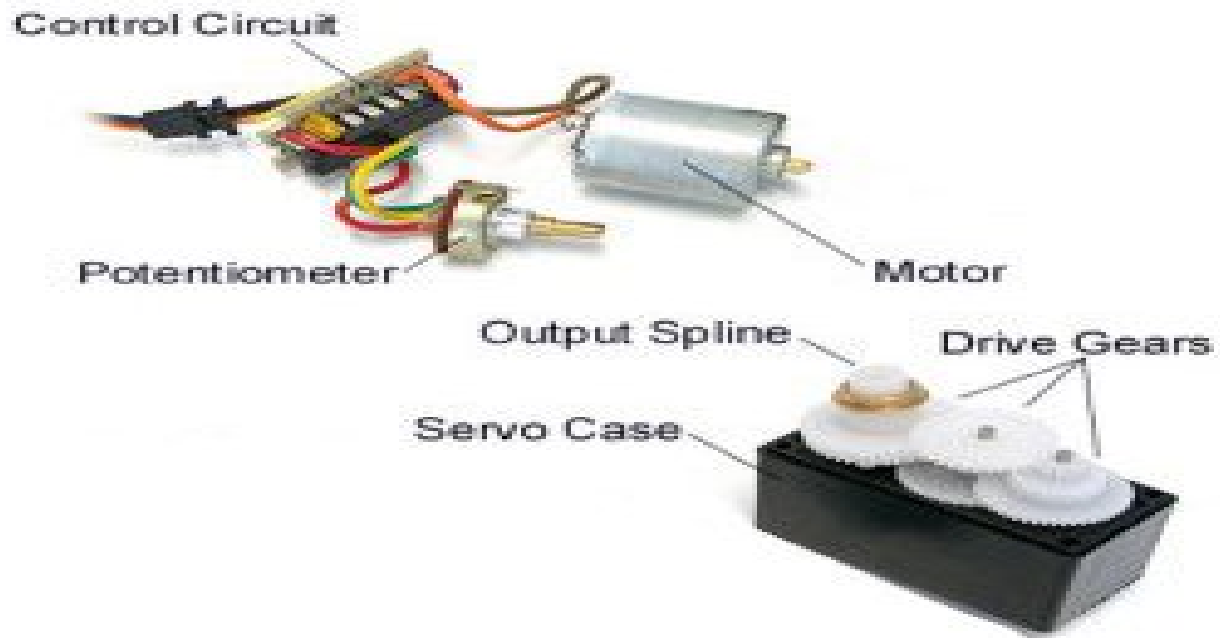
The guts of a

Figure 3.24: Servo motor (L) and an assembled servo (R)

 The servo motor expects to see a pulse every 20 milliseconds (Ms) and the length of the pulse will determine how far the motor turns. For example, a 1.5ms pulse will make the motor turn to the 90° position. Shorter than 1.5ms moves it in the counter clockwise direction toward the 0° position, and any longer than 1.5ms will turn the servo in a clockwise direction toward the 180° position.
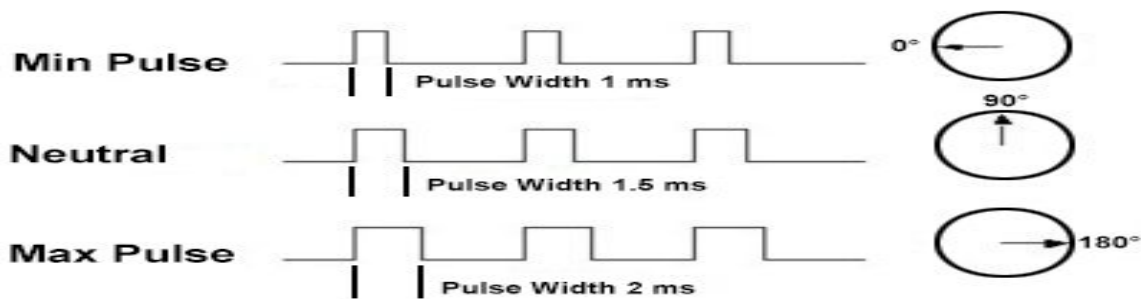
Figure 3.25: Variable Pulse width control servo position

3.19 Why servo motors is used in Adriano pro mini

- Why is the servo motor used in Adriano pro mini, because if the device is open and used to open the door
- If the wrong card is used then the door will not open and red LED will burn. Servo the motor will remain in this position.
- If the correct card is used then the door will open and the green LED will be burnt. In this situation, the Servo motor door will open.

3.20 Servo Motor Applications

Servos are utilized within radio-controlled planes to put manage areas such as elevators, rudders, strolling the automatic robot, or even working grippers. Servo engines tend to be little, possess built-in manage circuitry and also have great energy for his or her dimension. Within meals providers as well as drugs, the various tools are made to supply within harsher conditions, in which the possibility of deterioration is actually higher because of becoming cleaned from higher demands as well as temps frequently to keep rigid cleanliness requirements.

Of course, you don't have to know how a servo works to use one, but as with most electronics, the more you understand, the more doors open for expanded projects and projects' capabilities. Whether you're a hobbyist building robots, an engineer designing industrial systems, or just constantly curious, where will servo motors take you?

3.21 Types of Servo Motors

You will find 2 kinds of servo engines -- AIR CONDITIONING as well as DC. DC servo uses not created for higher present spikes and therefore are generally much better suited to scaled-down programs. In most cases, DC engines tend to be more affordable compared to their own AIR CONDITIONING counterparts. They are additionally servo engines which have been constructed especially for constant rotator, which makes it a good way to obtain your own automatic robot shifting. These people function2 golf ball bearings about the result base with regard to decreased rubbing as well as comfortable access towards the rest-point realignment potentiometer.

3.22 Summary

In this section we described about the component & some tools which are used in this system. The components needed in order to transmit and process the generated electricity are referred to as the balance of system-components. This includes everything from the components which RFID security door used, then the home security of this project. This Project is used to security.

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CHAPTER 4
PERFORMANCE ANALYSIS

4.1 Introduction

The RFID Door Lock is a simple door lock that can be attached to any normal door. It unlocks when the presence of the RFID tag is nearby and locks when it is not detected. There is also a LED that lets the user know when the door is locked and unlocked. It provides the security of a normal door lock without the hassle of keys. The greatest constraint of this project is reliability and security. If this product is not reliable or secure, the product has no purpose. Another constraint is the cost. The door lock's cost should be low enough as to encourage consumers to buy the product. Therefore, the majority of the design may involve software rather than buying actual hardware components. This concern has priority over the cost. This project became difficult with the coding and the amplifying circuit. Since RFIDs are difficult to code, source code from an online site was taken. This code did not include anything about adding an output to the Adriano depending on whether a RFID tag was present, so finding this out was tricky. Once this was figured out, the amplifying circuit was next. The amplifying circuit's problems included the ability to about the current necessary to power the electromagnetic door lock while still keeping the voltage at its highest. In the end, a compromise was made by using a NPN transistor as a current amplifier which dropped the voltage across the door lock. However, this current amplifier was necessary as it is still at a voltage higher than it would have been with insufficient current.

4.2 Description of project

PR25 is definitely an open up supply microcontroller Do-it-yourself package. This particular PICTURE microcontroller dependent task is made to create an inexpensive RFID doorway lock.

This mix the actual functions as well as features associated with PR8 (RFID: Study as well as Display) as well as PR9 (Password Door Security). Whenever RFID label is actually location close to RDIF reader, the actual reader may study RFID label. As well as link with regard to UART as well as Wigand RFID label reader are supplied upon PCB to become prolonged. Apart from, additionally, it may "learn" brand new IDENTITY label. The brand new RFID label preserved may open up the doorway lock with regard to the next time utilized. This particular DO-IT-YOURSELF task additionally offers LCD (2x16 characters) with regard to person to show the actual standing. Buzzer isn't supplied because there's an interior construct buzzer within the RFID label reader.

4.3 Design

This particular effective (200 nanosecond coaching execution) however easy-to-program (only thirty-five solitary term instructions) CMOS FLASH-based 8-bit microcontroller packages Microchip's effective PIC® structures into 40- or even 44-pin bundle and it is up-wards suitable for the actual PIC16C5X, PIC12CXXX as well as PIC16C7X products. Options that come with these devices:

- 256 bytes of EEPROM data memory
- Self, programming
- Comparators
- 8 channels of 10-bit Ana log-to-Digital (A/D)
  Converter
- capture/compare/PWM functions
- synchronous serial port can be configured as either 3-wire Serial Peripheral Interface or the 2-wire Inter-Integrated Circuit bus
- Universal Asynchronous Receiver Transmitter
  (UART

All of these features make it ideal for more advanced level A/D applications in automotive, industrial, appliances and consumer applications.
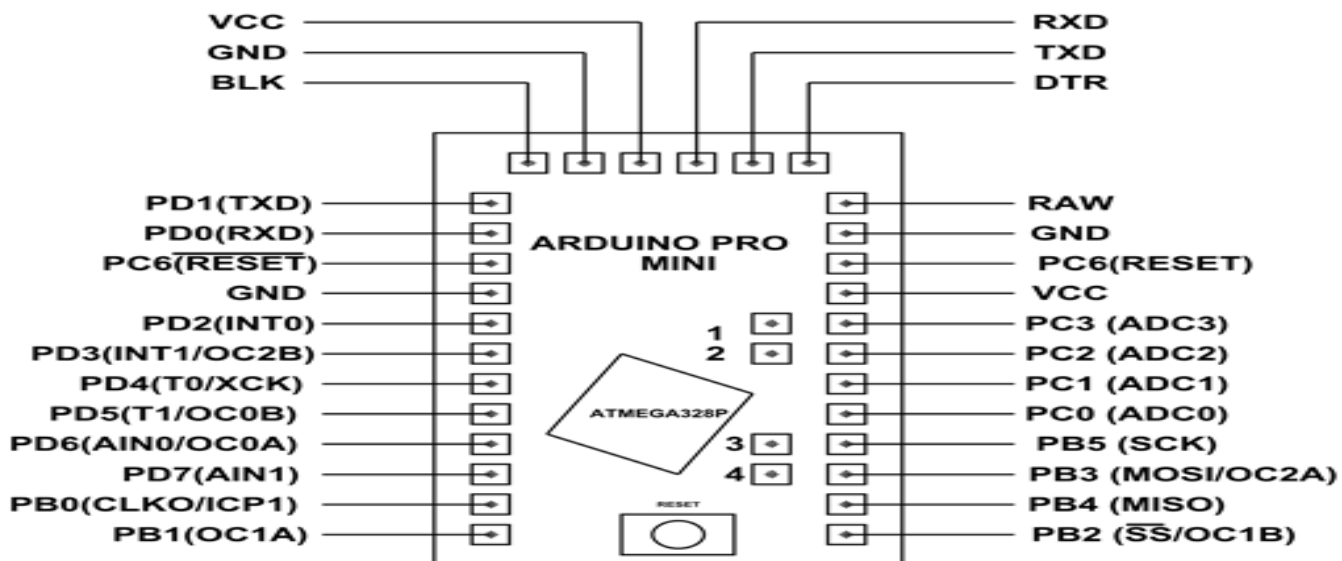
Figure 4.1: Adriano pro mini pin diagram

4.4 Summary

Through this project we can easily ensure the security of a house. After testing the performance analysis of this project, we constructed our RFID card smart door lock system very carefully. In this study of this project we observe that if we replace our component with a high rated component then we can get more energy and by using this project we can ensure the safety of the house.

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CHAPTER 5

DISCUSSION AND RESULT

5.1 DISCUSSION AND RESULT

The program includes a controller COMPUTER that offers the report from the check-in as well as check-out from the person. Person should have RFID label that offers the private information of this specific person. The doorway together with locking program is actually powered through stepper engine. Stepper engine functions because actuator, that has the capacity to open up as well as near the doorway within real-time. The RFID Readers picks up label within real-time as well as open up doorway instantly as well as shuts this once again following a particular period. The RFID regulates the actual starting as well as shutting from the doorway. With this research all of us make use of RFID technologies to supply answer with regard to safe entry of the room whilst maintaining report from the person. All of us utilized unaggressive kind of RFID right here. The unaggressive kinds of RFID tend to be battery-less plus they acquire capacity to run through reader. The main benefits of unaggressive RFID tend to be its economical as well as little in dimensions. Because of over benefits, it's popular through stock monitoring technologies Present antenna technologies assists you to scaled-down in dimensions..

5.2 Calculated output:

They are driving the benefits of the actual; we now have attempted in order to evaluate the benefits as well as diced-vantages associated with various kinds of prior program. The evaluation component is created upon a few essential requirements such as methods for making sure reading through information protection, info seepage likelihood, intricacy, price associated with creating

as well as sustaining, person authentication, delivery period and so on. This technique is principally discharge the actual cloning as well as info robbing risks. In the subsequent relative evaluation, we are able to observe that program is actually easy to use, economical as well as guarantees greater protection compared to obtainable program within RFID greeting card protection program. Drawbacks from the program: (1) Label crash happens whenever numerous labels can be found inside a little region; however because the study period is extremely quick, it's simpler with regard to suppliers to build up techniques which make sure that labels react individually. (2) The business of the program is very costly. (3) This technique doesn't set up safety towards software coating as well as conversation coating risks. (4) With regard to additional protection the machine usually requirements web connection.

Analysing to the previous system, measuring read runtime we took 256 KB, 512 KB,1 MB, 2 MB and 3 MB sizes of data encryption and got 1.9, 3.2, 5.2, 8.2 and 9.2 (sec) respectively. Similarly, for encryption and decryption runtime we got 1.4, 2.2,
4.2, 6.4, 7.8, 1.3, 2.1, 4.2,.6.2 (sec) respectively. Comparing the previous and our proposed system it is seen to be that the proposed system is little bit faster than previous.

5.3 Performance Evaluation

Potential security properties are attainable within simple security proposed designs that are suitable for effectuation in RFID systems. In this research, we mentioned about the RFID, basis, application, advantages, using of RFID, how does it works etc. Protocol for anonymous identification simultaneously attains security against card cloning information theft and skimming of the systems. For this reason we are trying to set up a new system of RFID system by encrypting the information. This works against some social engineering attacks. Release some weak points of the security system. And we make the system effcient because administrator of the system can identify, when the tag and how many times are used by the user. The system has some common characteristics hardware. The information's are read by the Adriano and radio frequency sensor Software. Cool term software for Adriano processing.
Interface 1 and encrypt- decry pt software for encryption and decryption crypt ion algorithm. Since the software's raw code is written by c#, we use the built in encrypt and decrypt function.

5.4 General data Outputs:

Table 5.1 General data output

Pin No	Symbol	Description
01	VSS	Ground(0V)
02	VDD	Power supply(5V)
03	V0	Power supply for LCD driver
04	RS	Register Select Input
05	R/W	Read/Write Signal
06	E	Enable
07	DB0	Data input/output(LSB)
08	DB1	Data input/output(LSB)
09	DB2	Data input/output(LSB)
10	DB3	Data input/output(LSB)
11	DB4	Data input/output(LSB)
12	DB5	Data input/output(LSB)
13	DB6	Data input/output(LSB)
14	DB7	Data input/output(LSB)
15	LED(+)	Anode of LED backlight
16	LED(-)	Cathode of LED backlight

Table 5.2 Function of system component

No	System Component	Role/Functionality
01	Android smart phone	Acts as a user front end
02	Bluetooth Module(HC-05)	Act as connectivity module to transmit data
03	Servo Motor	Act as a rotator to control door lock
04	Display unit	Acts as an output indicators
05	Adriano-UNO	Acts as a CPU for data processing

5.5 Result

Each and every project is never complete as new things are learned further modifications can be done. Thus we have tried to make an automated RFID door lock which will increase the efficiency of the home protection system available. Although there is higher initial cost involved we have tried to make the system cost effective .This is just the beginning, we can add different enhancements to make the system more efficient so that it will work round the year. The RFID smart door lock using this system compared with the system prevalent at present has many advantages. The operator interference is minimal since the system is automated this increases efficiency of the RFID card smart door lock system. Each project will get better than previous one as practice can make us perfect.

5.6 Advantages

Low Cost

RFID chips are electronic devices made in the millions; though costs vary, most run between 7 to 15 cents. The smart card itself need not cost significantly more than a standard photo ID, so managers can issue RFID cards to as many employees as circumstances require. Most of the cost of an RFID system lies in the electronic readers, locks, computers and related software.

Secure Data

The data on an RFID card is readable only with special equipment, keeping the data recorded on the chip secure. Also, the data need only be meaningful to your own organization. You can record a unique employee ID code and other data known only to your company. A lost card

typically conveys little useful information to someone without detailed knowledge of your organization's security.

Data Tracking

Because an employee carries an RFID card with her, a smart-card system records her movements throughout her working day. The computerized system matches the smart card information against its own database, identifies the card holder and logs information into another database. For example, when she enters a locked storeroom with the card, the system notes the person, the date and time, and the activity. In an emergency, the security team can quickly determine if people are still in the building and find their locations. A smart-card-enabled copy machine can automatically deduct copying costs from the cardholder's department account.

Flexibility

With the right equipment, you can reprogram an existing RFID card with new information. For example, if an employee receives a change in security clearance or transfers to a different department, he can get his card updated to reflect his new status. When the company decides to revamp the security system, the department responsible for the cards can revise the data on the cards without needing to issue new ones.

Ease of Use

An RFID card is just as useful in your pocket or clipped to your shirt. Because the RFID system uses radio waves, the card's proximity to the reader triggers the system. Unlike a magnetic stripe card, an RFID smart card doesn't need to make physical contact with the reader. This adds convenience when you're carrying an armload of boxes and want access to a locked room,

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5.7 Disadvantage

Whilst there are lots of advantages in order to such as the RFID doorway lock program in your house, there's also a few main disadvantages to think about too. Whilst RFID doorway lock techniques are usually secure as well as made to notify law enforcement or even additional government bodies in the event that wrong rules tend to be joined a lot of occasions, it's nevertheless feasible that the burglar might be able to access your house via this technique through speculating or even hacking the actual signal. Simply as possible overlook your own secrets and become secured from home, you may also your investment move signal to get into your own RFID admittance program and become secured away. 1 last drawback associated with RFID doorway hair is actually which electrically-powered techniques might not perform correctly regarding an electrical failing. This could depart your own doorway totally secured through the failing, or even it might lead to the doorway not really locking correctly as well as leftover open up. Luckily, the majority of techniques possess electric battery back-up techniques like a fail-safe. There's a reduced energy home security system within RFID doorway hair. The clients have to alter the actual electric batteries over time. After that you'll in no way fulfil this issue. There isn't any an ideal item, however individuals could keep likely to unlimited near to ideal.

5.8 Summary

With this section, all of us talked about regarding RFID wise greeting card protection doorway lock program outcome, computation result, overall performance assessment, common result, desk, benefit, drawback, and so on. Done each one of these problems as well as all of us discovered the outcomes, finally we are able to state that people could complete the work nicely.

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CHAPTER 6

PROGRAM AND SIMULATION

6.1 Simulation

We've worked simulation through this protest software. We have installed these protests in the form of software, and then finish the work of simulation with it.

6.2 Antivirus Information

We did not scan Proteus 8.6 for viruses, adware, spyware or other type of malware. For your own protection it's recommended to have an updated antivirus installed on your computer when downloading and installing programs from soft112.com.

6.3 Proteus Design Suite

Proteus brings together simplicity of use along with effective functions that will help you style, make sure design expert PCBs such as nothing you've seen prior. Along with almost eight hundred microcontroller variations prepared with regard to simulation directly in the schematic, probably the most user-friendly expert PCB design deals available on the market along with a first class form dependent car router incorporated because regular, Proteus Style Collection 8 delivers the entire software program with regard to these days as well as tomorrow's technical engineers.

6.4 About Proteus

It is a software suite containing schematic, simulation as well as RFID designing.

- ISIS is the software used to draw schematics and simulate the circuits in real time. The simulation allows human access during run times, Thus providing real time simulation.
- ARES is used for RFID designing. It has the feature of viewing output in 3D view of the designed PCB along with components.
- The designer can also develop 2D drawings for the product.

3.5 Features

ISIS offers wide selection associated with elements within it's collection. It's resources, transmission machines, dimension as well as evaluation resources such as oscilloscope , voltmeter, ammeter and so on., probes with regard to real-time checking from the guidelines from the signal, changes , shows , lots such as engines as well as lights, under the radar elements such as resistors, capacitors, inductors, transformers, electronic as well as Ana-log Incorporated circuits, semi-conductor changes, relays, microcontrollers, processors, devices and so on. ARES provides RFID creating as much as fourteen internal levels, along with area attach as well as via entire deals. It's inlayed using the feet images associated with various group of elements such as ICs, transistors, headers, fittings along with other under the radar elements. It provides Car redirecting as well as guide redirecting choices towards the RFID Custom. The schematic used the actual ISIS could be straight moved ARES.
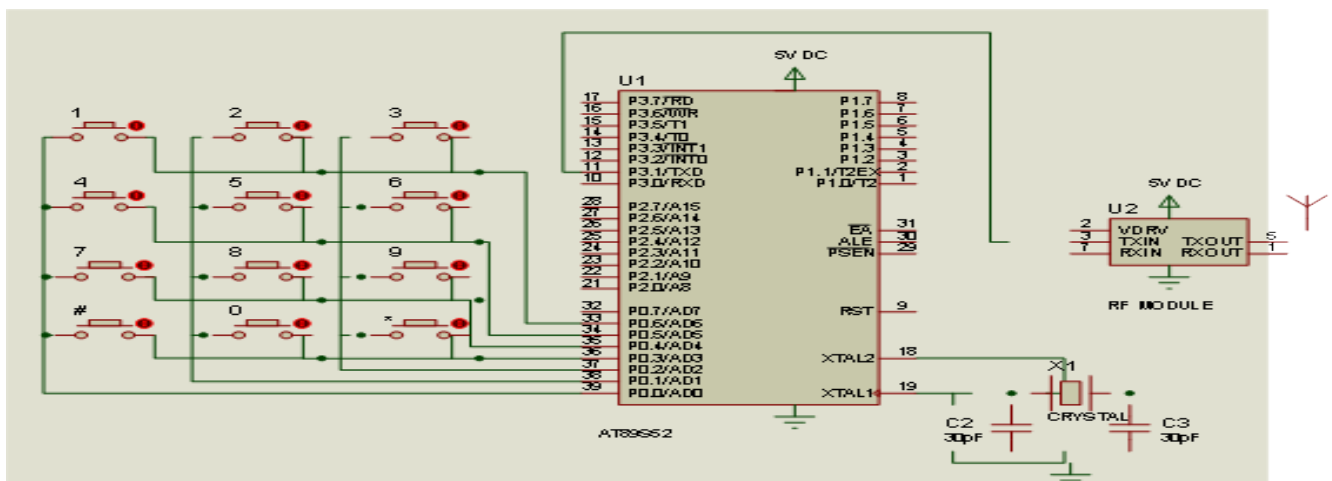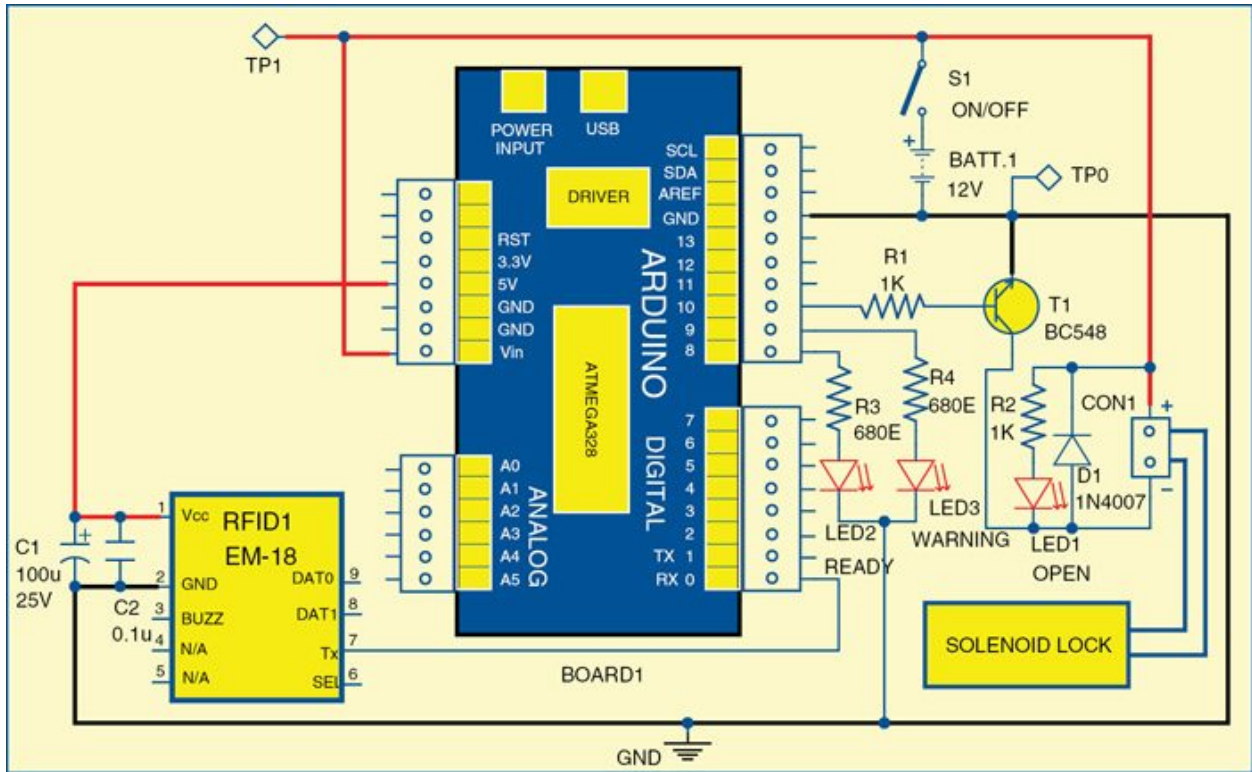

Figure 6.1: Simulation deign (a)

© Daffodil International University
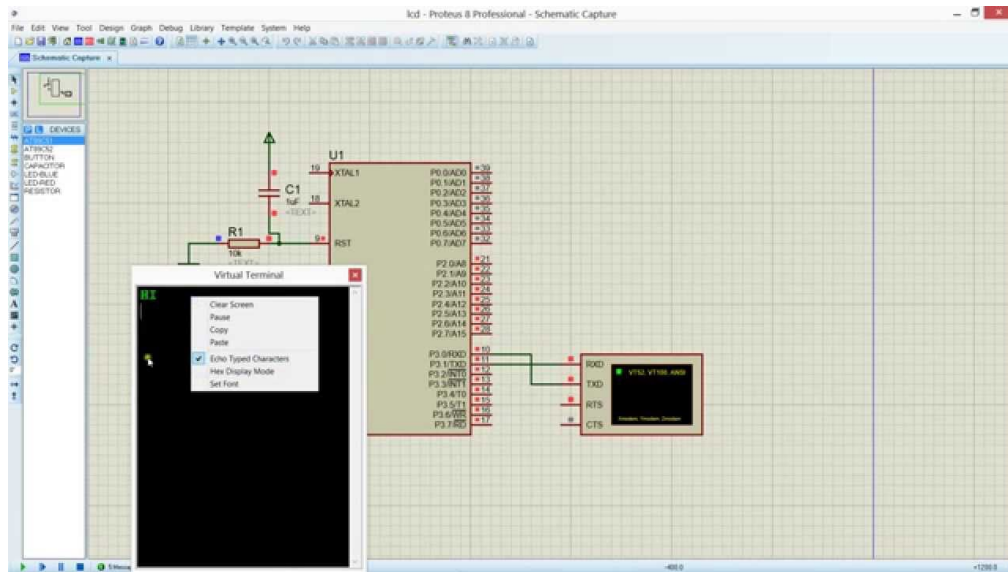
Figure 6.2: Simulation deign (b)

Figure 6.3: Simulation deign (c)

Figure 6.4: Simulation deign (d)

© Daffodil International University
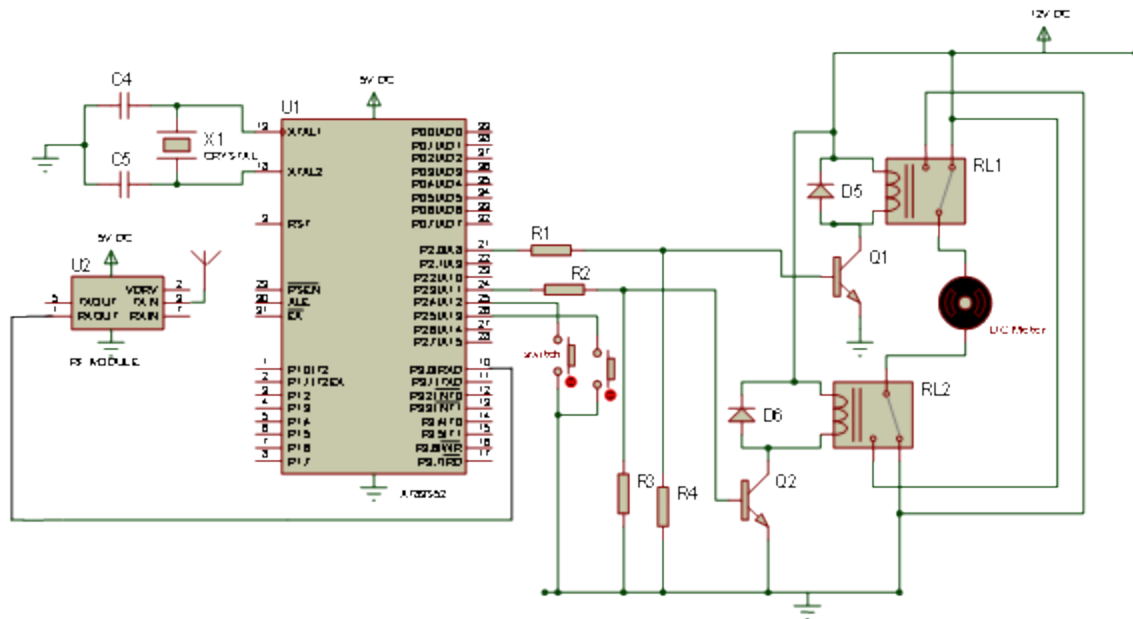
CHAPTER

CONCLUSION

7.1 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.

7.2 Future Work

All of us suggested the conceptual construction to ease the actual problems dealing with RFID greeting card unauthorized using Greeting card particularly. This particular conceiving is going to be completely put in place within software region within our long term investigation, and you will be examined well numerous versed episodes as well as methods. With this brand new idea, all of us make use of RFID greeting card program. However this particular idea can also be feasible to increase the actual permanent magnetic greeting card program. Consequently, wise as well as charge cards program is going to be additionally safe via this particular investigation.

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APPENDIX A

1. #include <LiquidCrystal.h>

2. #include <MFRC522.h>

3. #include <Servo.h>

4. LiquidCrystallcd(8,7,6,5,4,3);

5. Servo ServoA;

6. #define SS_PIN 10

7. #define RST_PIN 9

8. int LEDA=14;

9. int LEDB=15;

10. Char st (20;

11. Void setup() {

12. Lcd,begin(16,2)

13. pinMode(LEDA,OUTPUT);

14. pinMode(LEDB,OUTPUT);

15. ServoA.attach(2);

16. ServoB,write(90);

17. Lcd,print("Welcom to DIU");

18. Lcd,setCursor(0,1);

19. Lcd,print("RFID Door Lock ");

20. Delay(3000);

21. }

22. Void loop ()

23. if(conteudo.subtrin(1)="8D8CC42D"){

24. lcd.print("Come On");

25. lcd.print("Open The Door");

26. digitalWrite(LEDB,HIGH);

27. ServoA.write(-90);

28. delay(3000);

29. digitalWrite(LEDB,LOW);

```
30. ServoA.write(90);
31. }
32. if(conteudo.substring(1)="62FA3F65"){
33. {
34. Lcd,print("No Access");
35. Lcd,print("Door lock");
36. digitalWrite(LEDA,HIGH);
37. delay(1000);
38. digitalWrite(LEDA,LOW);
39. }
40. }
41. Lcd,print("Touch Your Door");
42. Lcd,print("Close The Dood");
43. Delay (1000);
```