

## MULTIPLE SECURITY SYSTEM FOR SAFETY LOCKER OPENING AND CLOSING

A.Sindhu, C.Yuvaraj, M.Sudhakaran

UG Student, Dept.of EEE, Ganadipathy Tulsi's Jain Engineering College, Vellore, India

Assistant Professor, Dept. of EEE, Ganadipathy Tulsi's Jain Engineering College, Vellore, India

Associate Professor, Dept.of EEE, Ganadipathy Tulsi's Jain Engineering College, Vellore, India

### Abstract:

The main purpose of this paper is to design and implement a locker with high security system based on RFID, Voice recognition and GSM technology. which can be organized in bank, secured offices and homes. In this system only authentic person can be recovery money from locker. we have implemented a locker security system based on RFID, Voice recognition and GSM technology containing door locking system which can activate, authentic user and unlock the door in real time for lock resecure access.in general terms, RFID is a means of identifying a person or object using a radio frequency transmission.in other words RFID is an electronic method of exchanging data over radio frequency waves. When the RFID reads an id number, it sends into the microcontroller.We may use password to provide security system to the locker. And also voice should be played from mobile to open or close the locker.

**Keywords :** GSM, RFID, voice recognition, locking system, Keyboard, Microcontroller.

### 1. INTRODUCTION

In today's technically advanced world, autonomous systems are gaining rapid popularity. As the social computerization and automation has been increased and the bank locker system has been installed and spread out to simplify the activity for financial activity, the banking activity has been simplified, however the crime related with financial organization has been increased in proportion to the ratio of spread out of automation and devices. Among the crime for financial organization, the cases of theft and robber have very high proportion of over 90% and the crime for the bank locker has been increased and it is always exposed to the crime. A lot of efforts had been made in the past to improve the level of an automatic lock system to prevent intruders from disengaging it, thereby having access to vital information's available in rooms, offices or military base etc. In trying to achieve safe locks, several methods were used and new methods are also being developed. This has permitted the implementation of both electromechanical and electronic safe locks. Electronic lock system has been able to provide security at low cost and among them is the security lock using card and voice. The high level of burglary and insecurity in the society, makes the mechanical locking system becomes easy to disengage by criminals, therefore a safer and more reliable lock must be developed. The aim of this work is to design and construct a lock system using RFID reader and voice recognition that will provide a better security than using other mechanical locking system. This work will make or bring the issue of burglary and insecurity to a minimum level not only that, the microcontroller based security lock system using RFID card combination will provide reliable and efficient security to the society. Here DC motor is used to open and close the door according to the given input.

## 2.BLOCK DIAGRAM:

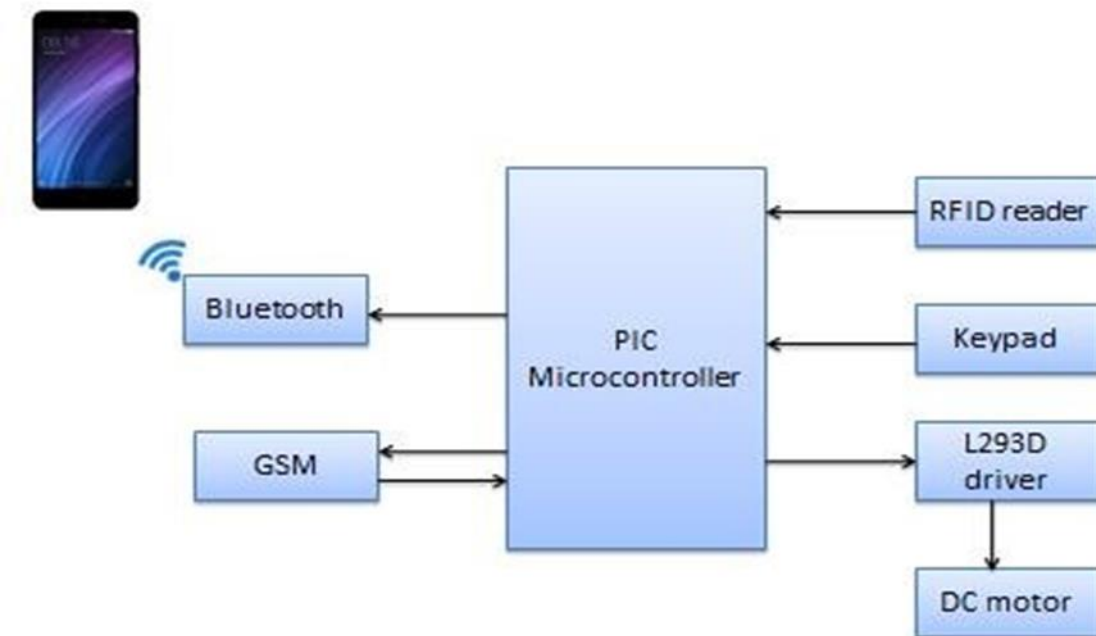


Fig.2. General block diagram

## 3.HARDWARE COMPONENTS:

**A. POWER SUPPLY:** Alternating current (AC) is used for power line transmission and for high power devices like appliances and lights. The characteristics of AC make it ideal for transmission over long lines and for delivering large amounts of power for relatively unregulated uses, such as generating heat and light. Lower power appliances and devices require the closely regulated control of direct current power (DC). As a normal house is supplied with AC, it must be converted to DC for many uses. Use these tips to learn how to make an AC DC converter.

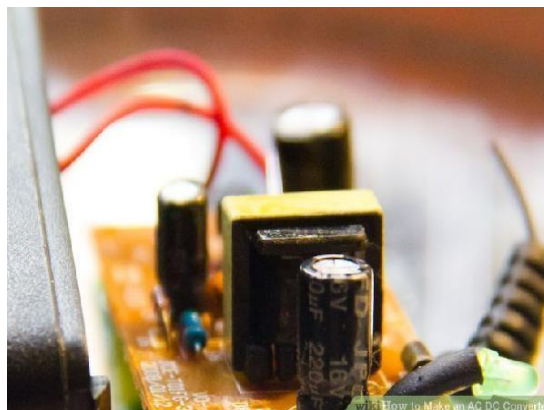


Fig 3.Power Supply

A transformer contains 2 magnetically coupled wire windings. One winding is called the primary. The primary is driven by the main AC supply. The other winding is called the secondary. The secondary serves as the power input to the AC DC converter. This transformer and all of the other items needed to build the AC DC converter are readily available at electronic stores and hobby stores.

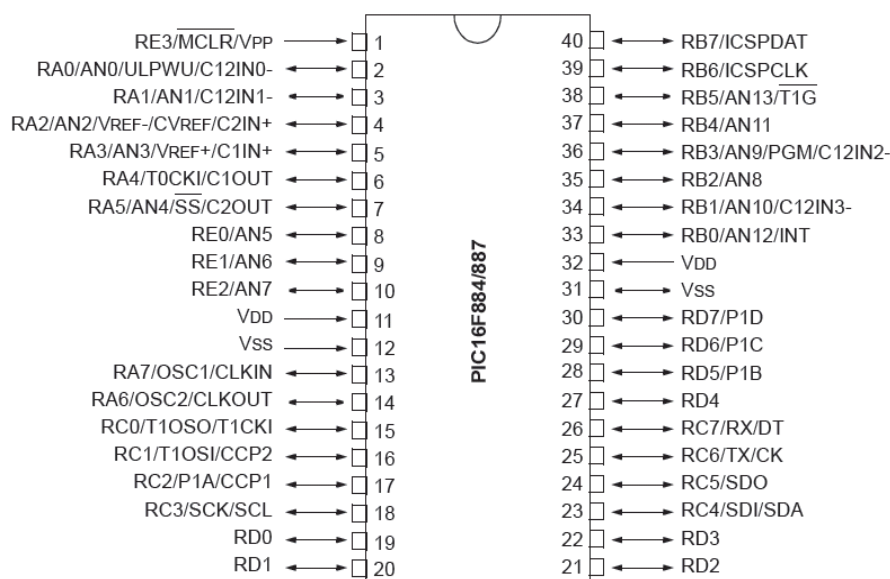
**B. RFID READER:** In general terms, RFID is a means of identifying a person or object using a radio frequency transmission. In other words RFID is an electronic method of exchanging data over radio frequency waves. The technology can be used to identify, track, sort or detect a wide variety of objects. When combined with the right RFID software, a RFID reader can identify objects quicker, more accurately, at a reduced overall cost, and at various points of the object's lifecycle. RFID reader that can help you deliver accurate and reliable reading for any environment.

**C. GSM:** GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands. GSM system was developed as a digital system using time division multiple access (TDMA) technique for communication purpose.

**D. BLUETOOTH MODULES:** The EGBT-04 module will work with supply voltage of 3.1VDC to 4.2VDC. When supplied with 3.3VDC, it will interface directly with the UART port of any microcontroller chip running at 3.3VDC. When used with 5V microcontrollers, The TXD output logic swing of the EGBT-04 still falls within the valid 5V TTL range, hence, can be connected directly to the UART RXD of the 5V microcontroller host. EGBT RXD and inputs, however, are not 5V tolerant, and can be damaged by 5V level logic going in.

**E. DC MOTOR:** A DC motor in simple words is a device that converts electrical energy into mechanical energy. The working principle of a DC motor is that "whenever a current carrying conductor is placed in a magnetic field, it experiences a mechanical force".

### F. Pin Diagram Of Pic16f887



#### **4.SOFTWARE COMPONENTS:**

##### **1. Proteus**

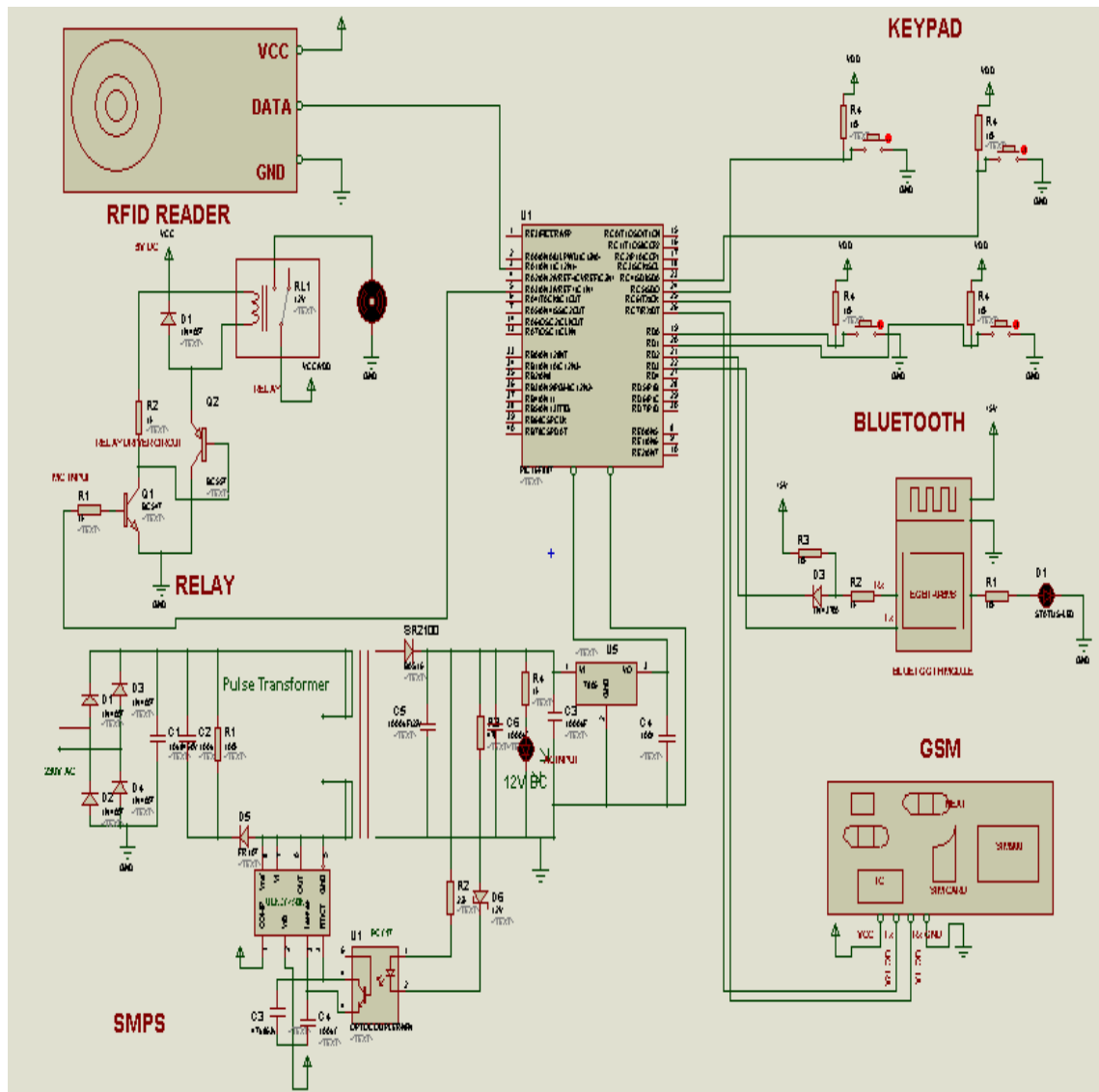
Proteus 7.0 is a Virtual System Modeling (VSM) that combines circuit simulation, animated components and microprocessor models to simulate the complete microcontroller-based designs. This is the perfect tool for engineers to test their microcontroller designs before constructing a physical prototype in real time.

This program allows users to interact with the design using on- screen indicators and/or LED and LCD displays and, if attached to the PC, switches and buttons. One of the main components of Proteus 7.0 is the Circuit Simulation a product that uses a SPICE3f5 analogue simulator kernel combined with an event-driven digital simulator that allow users to utilize any SPICE model by any manufacturer. Proteus VSM comes with extensive debugging features, including breakpoints, single stepping and variable display for a neat design prior to hardware prototyping. In summary, Proteus 7.0 is the program to use when we want to simulate the interaction between software running on a microcontroller and any analog or digital electronic device connected to it.

##### **5.2 CCS Software**

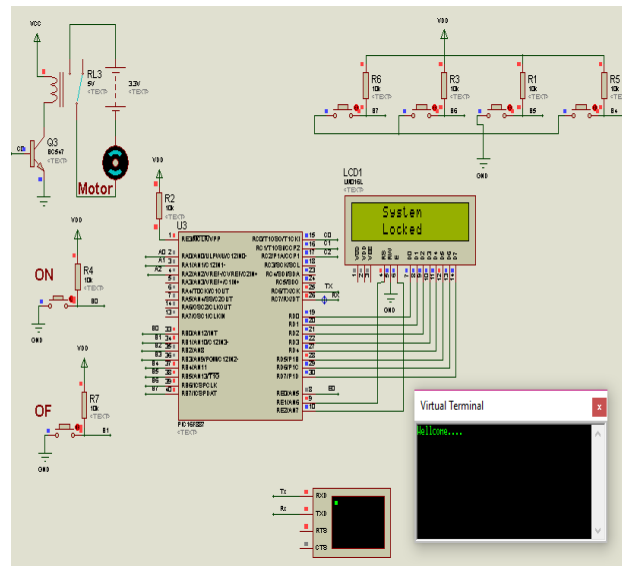
A compiler is a computer program (or set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language, often having a binary form known as object code). The most common reason for wanting to transform source code is to create an executable program. This integrated C development environment gives developers the capability to quickly produce very efficient code from an easily maintainable high level language. Discrete I/O is handled by describing the port characteristics in a PROGRAM. Functions such as INPUT and OUTPUT\_HIGH will properly maintain the tri-state registers.

## 5.CIRCUIT DIAGRAM:

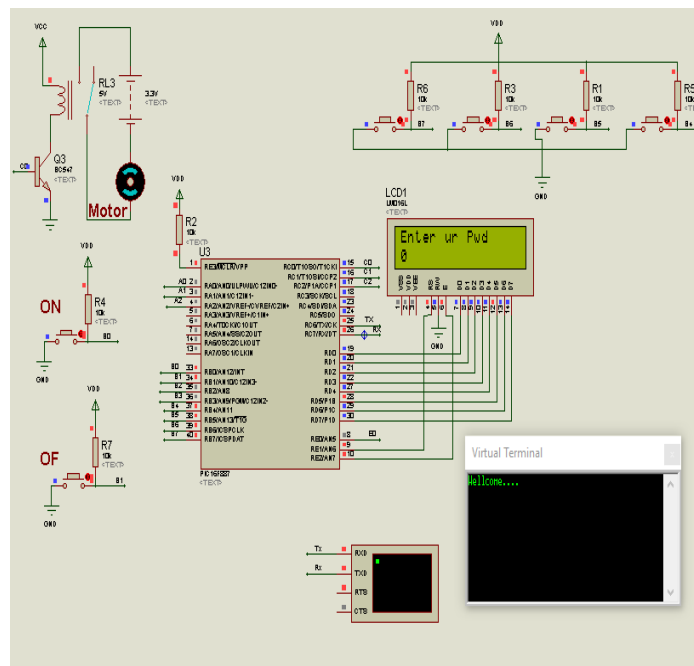


**SIMULATION SETUP: Multiple Security System for Locker**

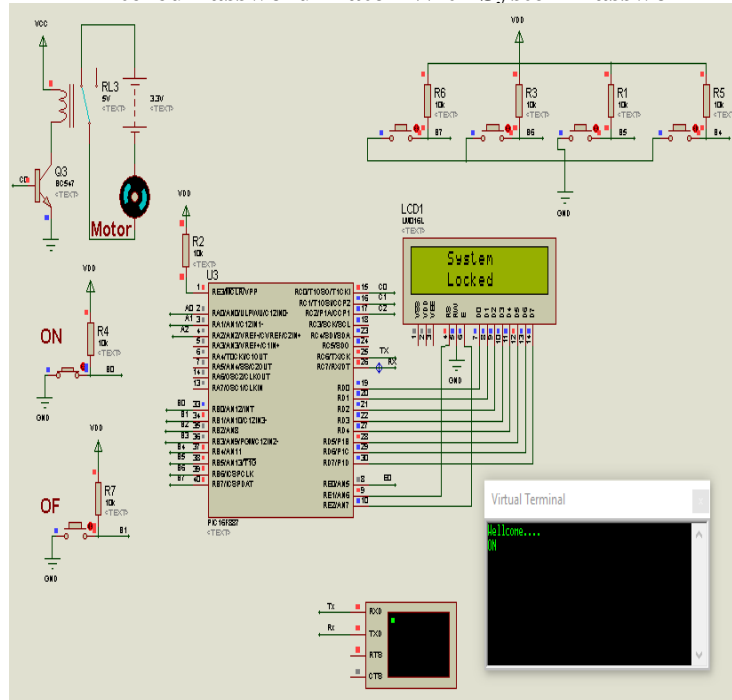
### System in closed Condition



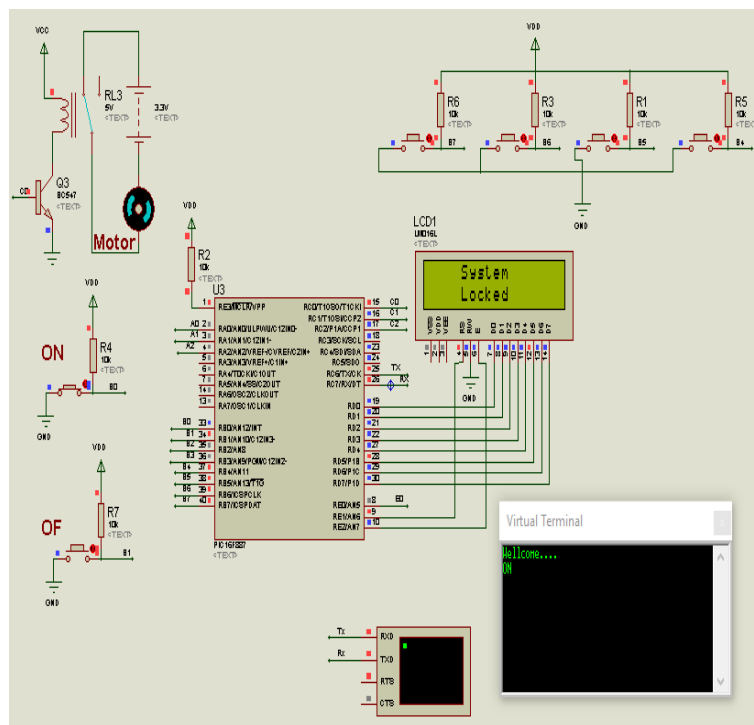
### Entering User Password



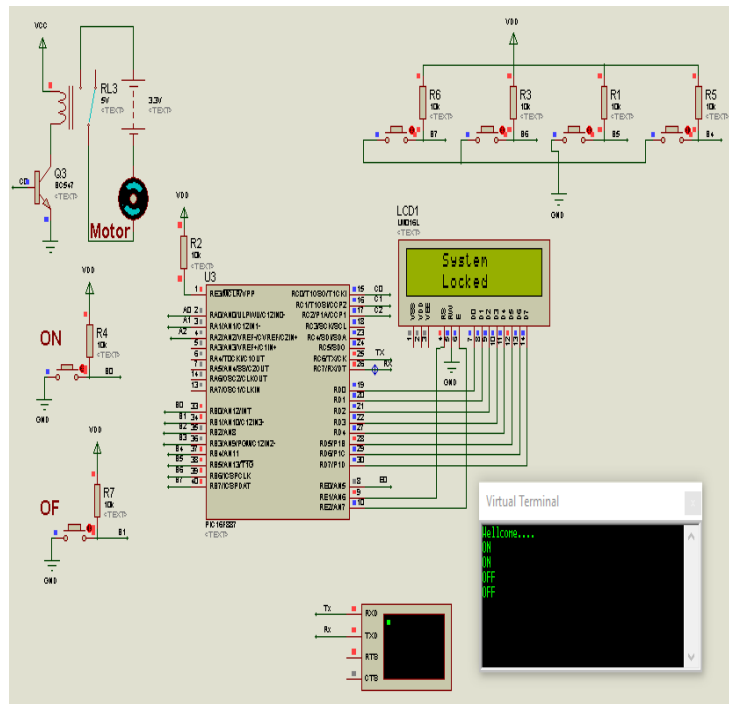
### Entered Password Match With System Passwo



### Locker Opened



## Locker Closed



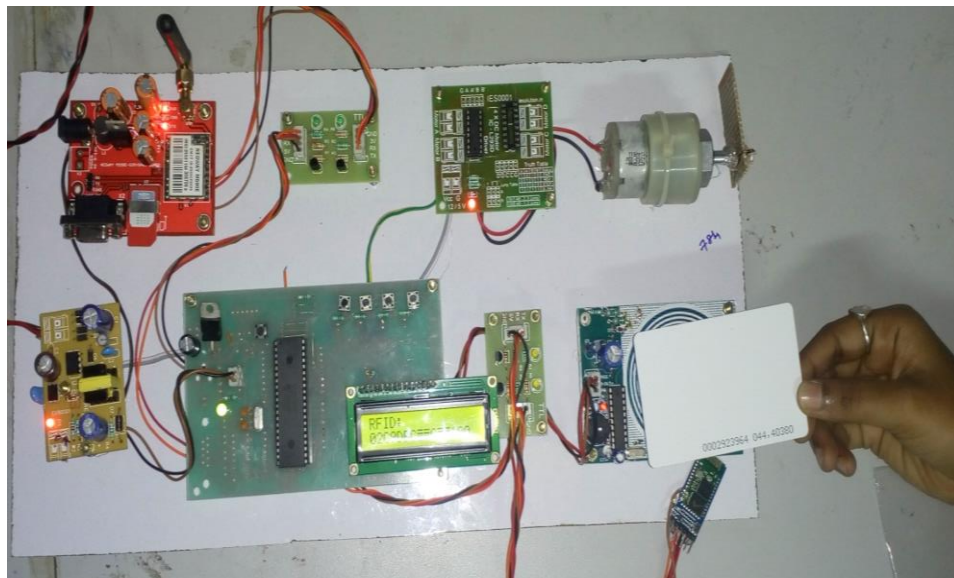


### HARDWARE OUTPUT:



### Experimental Setup:

### RFID

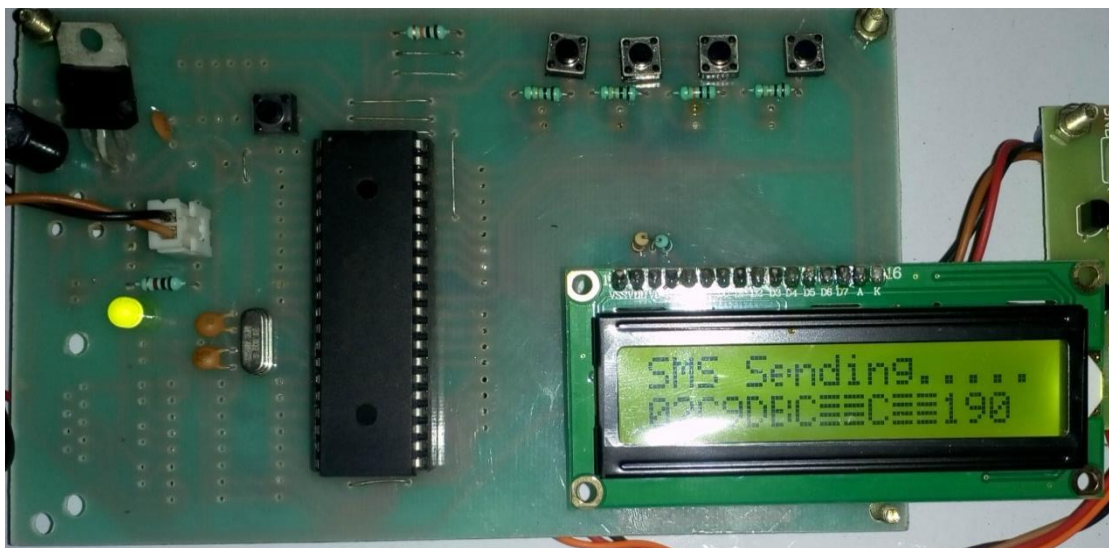


### Detection

When the RFID Tag is placed above the RFID reader and the RFID transmit an Detection Signal to Microcontroller, whenever the Microcontroller detects the RFID signal, it send an OTP to user number through GSM.

### Sending OTP to User

The Microcontroller Generate One Time Password (OTP), whenever the RFID tag is detected and sends the OTP to User mobile number through GSM.



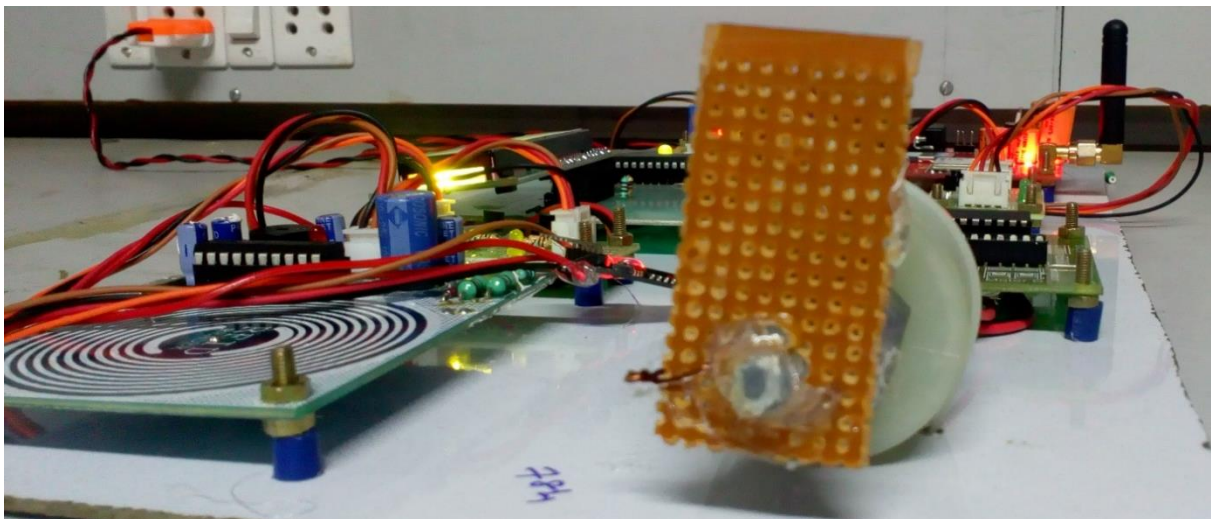
### Password OK



The user Entered Password is Matched with Microcontroller, then it display “pwd ok” in the LCD.

### Voice Command to Open Locker

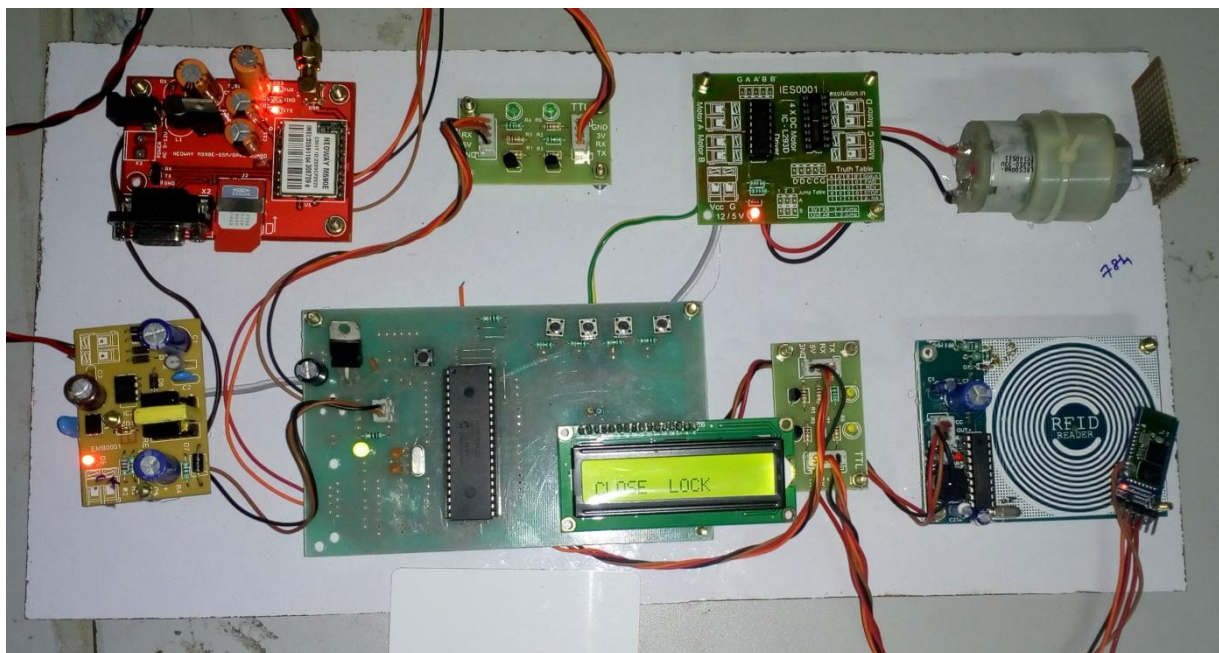
By using the Android Mobile, We can command the voice signal as “LOCK OPEN” to run the motor. Then the DC Shunt Motor will rotate at Anti-Clockwise direction which opens the Locker.





## CONCLUSION

The lock performed as expected. This simple RFID card and Voice recognition lock system using microcontroller and android application can be enhanced by incorporating new means of authentication. This work was designed to describe fully the locking and unlocking of a safe system subject to a selected programmed sequence of input combinations, the sequence



manipulation. The main aim of the project is disturbances and mishandling of the Bank locker is

reported to the Bank Officials and the nearby Police station for taking the immediate action of the theft and the Bank locker will close automatically.

### REFERENCE

- [1].Art Conklin<sup>1</sup>, Glenn Dietrich<sup>2</sup>, Diane Walz<sup>3</sup>, “Password-Based Authentication: A System Perspective”, Proceedings of the 37th Hawaii International Conference on System Sciences –2004.
- [2].Gangi. Raghu Ram, N.Rajesh Babu, “ Tracking objects using RFID and Wireless Sensor Networks” ijesat] International Journal Of Engineering science & Advanced technology Volume-2, Issue-3.
- [3].Hugh Wimberly, Lorie M. Liebrock, “Using Fingerprint Authentication to Reduce System Security: An Empirical Study”, 2011 IEEE Symposium on Security and Privacy.
- [4].Kumar Chaturvedula, “RFID Based Embedded System for Vehicle Tracking and Prevention of Road Accidents”, International Journal of Engineering Research & Technology (IJERT), Vol.1 Issue 6, August –2012.
- [5].Mary Lourde R and Dushyant Khosla,” Fingerprint Identification in Biometric Security Systems”, International Journal of Computer and Electrical Engineering, Vol. 2, No. 5, October, 2010.
- [6].Pramila D. Kamble, Dr.Bharti, W. Gawali, “Fingerprint Verification of ATM Security System by Using Biometric and Hybridization”, International Journal of Scientific and Research Publications, Volume 2, Issue 11, November 2012.
- [7].V. Ramya<sup>1</sup>, B. Palaniappan, V.Sumathi, “Gsm Based Embedded System For Remote Laboratory Safety Monitoring And Alerting”, International Journal of Distributed and Parallel Systems (IJDPS) Vol.3, No.6, November 2012.
- [8].D. Vinod kumar, Prof.M R K Murthy, “Fingerprint Based ATM Security by using ARM7”, IOSR Journal of Electronics and Communication Engineering (IOSRJECE) ISSN: 2278-2834 Volume 2, Issue 5 (Sep-Oct 2012).
- [9].Vishy Karri<sup>1</sup>, Daniel J.S. Lim<sup>2</sup>, “Method and Device to Communicate via SMS After a Security Intrusion”, 1st International Conference on Sensing Technology November 21-23, 2005 Palmerston North, New Zealand.

- [10].Zhang Jinhai, Liu Xinjian, Chen Bo, “The design and implementation of ID Authentication System Based on Fingerprint Identification”, 2011 Fourth International Conference on Intelligent Computation Technology and Automation.