

Bank Locker Security System Based On GSM and RFID

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Abstract :

This paper presents the development and implementation of " bank locker security system basedon RFID and GSM technology" which can be organized in bank, secured offices and homes.In this system only authenticperson can be recovered money from bank locker. We have im plemented a bank locker security system based on RFID and GSM technology containing door locking system using RFID and GSM which can activate, authenticate, and validate the user and unlock the door in real time for bank locker secure access. The main advantage of using passive RFID and GSM is more secure than other systems. This system consists of microcontroller, RFID reader, GSM modem, keyboard, and LCD, in this system The RFID reader reads the id number from passive tag and send to the microcontroller, if the id number is valid then microcontroller send the SMS request to the authenticated person mobile number, for the original password to open the bank locker, if the person send the password to the microcontroller, which will verify the passwords entered by the key board and received from authenticated mobile phone. if these two passwords are matched the locker will be opened otherwise it will be remain in locked position, This system is more secure than other systems because two passwords required for verification. This system also creates a log containing check-in and check out of each user along with basicinformation of use.

Keywords: GSM.RFID, locking system, Keyboard, Microcontroller .

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I. INTRODUCTION

In this present age, safety has becomes an essential issue for most of the people especially in the rural and urban areas.Some people will try to cheat or steal the property which may endanger the safety of money in the bank, house, and office.

To overcome the security threat, a most of people will install bunch of locks or alarm system. There are many types of alarm systems available in the market which utilizes different types of sensor. The sensor can detect different types of changes occur in the surrounding and the changes will be processed to be given out a alert according to the pre-set value. By the same time this system may not be good for all the time. In this paper we have implemented safety of the money in the bank locker, house, and office (treasury) by using RFID and GSM technology which will be more secure than other systems. Radio-frequency identification (RFID)based access-control system allows only authorized persons to open the bank locker with GSM technology. Basically, an

RFID system consists of an antenna or coil, a transceiver (with decoder) and a transponder (RF tag) electronically programmed with unique information. There are many different types of RFID systems in the market. These are categorized on the basis of their frequency ranges. Some of the most commonly used RFID kits are low-frequency (30- 500 kHz), mid-frequency (900 kHz-1500MHz) and highfrequency (2.4-2.5GHz)[1].

The passive tags are lighter and less expensive than the active tags [2]. Global system for mobile communication (GSM) is a globally accepted standard

for digital cellular communication. GSM is a common European mobile telephone standard for a mobile cellular radio system operating at 900 MHz. In the current work,

SIM300 GSM module is used. The SIM300 module is a Triband GSM/GPRS solution in a compact plug-in module featuring an industry-standard interface. It delivers voice,

and fax in a small form factor with low power consumption. [3]. In this paper we have designed and implemented a bank locker security system based on RFID and GSM technology. In this system only an authentic person can recover money from a bank locker with two password protection methods.

Block Diagram:

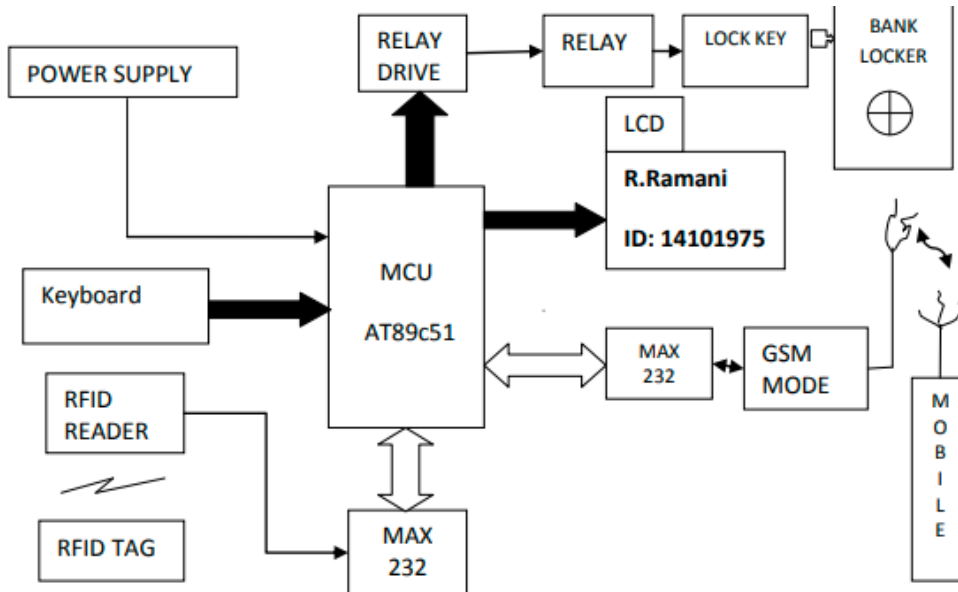


Figure3. Block diagram of Bank locker system based on RFID and GSM technology

Circuit Description :

Power supply:

The power supply section is the important for any electronics circuits. To derive the power supply, the 230V, 50Hz AC mains is stepped down by transformer X1 to deliver a secondary output of 12V, 500 mA. The transformer output is rectified by a full-wave rectifier comprising diodes D1 through D4, filtered by capacitor C1 and regulated by ICs 7812 (IC2) and 7805 (IC3). Capacitor C2 bypasses the ripples present in the regulated supply. LED1 acts as the power indicator and R1 limits the current through LED1.

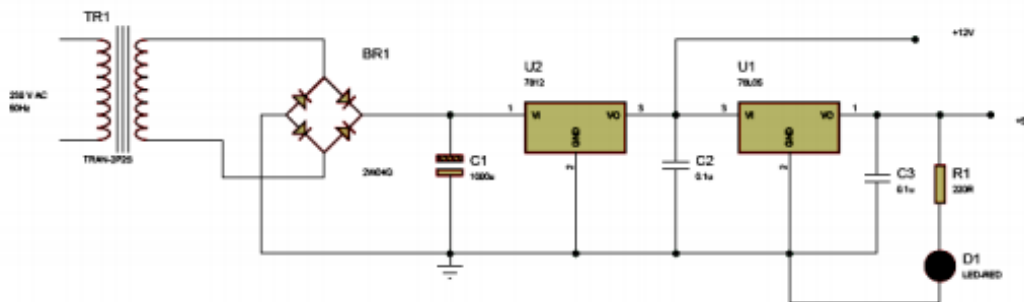


Figure4. Power supply

Circuit Diagram

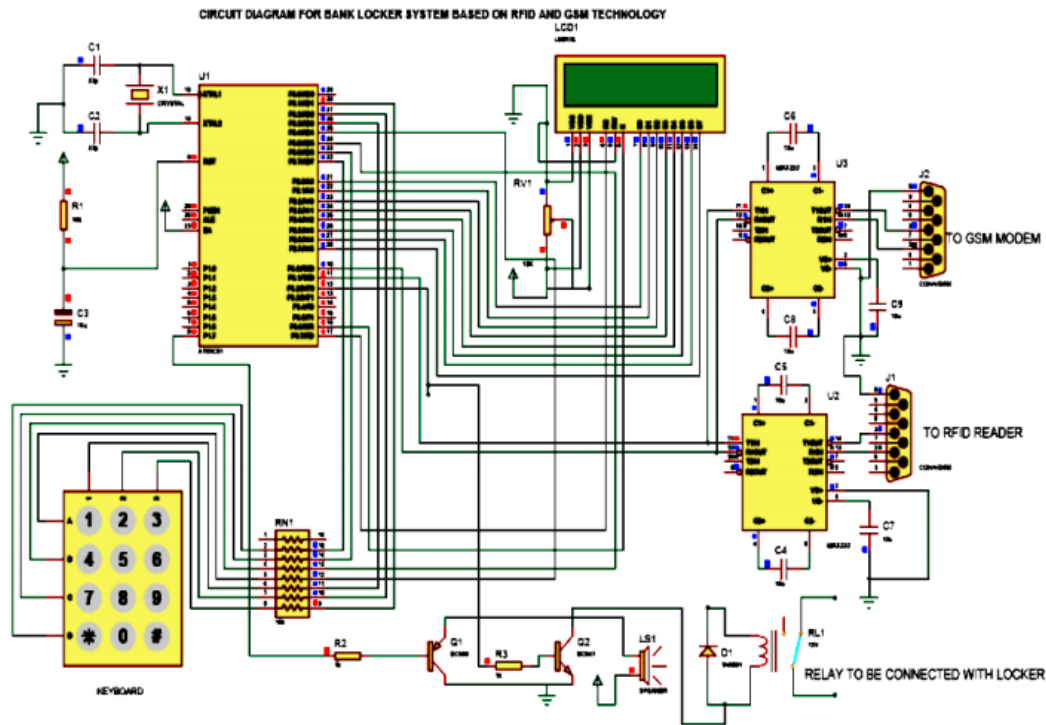


Figure5. Circuit diagram of Bank locker system based on RFID and GSM technology

Working Principal:

Fig.5 shows the circuit of the Bank locker system based on RFID and GSM technology. The compact circuitry is built around Atmel AT89C52 microcontroller. The AT89C52 is a low-power; high performance CMOS 8-bit microcomputer with 8 kB of Flash programmable and erasable read only memory (PEROM). It has 256 bytes of RAM, 32 input/output (I/O) lines, three 16-bit timers/ counters, a six-vector twolevel interrupt architecture, a full-duplex serial port, an onchip oscillator and clock circuitry. The system clock also plays a significant role in operation of the microcontroller. An 11.0592MHz quartz crystal connected to pins 18 and 19 provides basic clock to the microcontroller. Power-on reset is provided by the combination of electrolytic capacitor C3 and resistor R1. Port pins P2.0 through P2.7 of the microcontroller are connected to data port pins D0 through D7 of the LCD, respectively. Port pins P3.7 and P3.6 of the microcontroller are connected to register-select (RS) and enable (E) pins of the LCD, respectively. Read/write R/W pin of the LCD is grounded to enable for write operation. All the data is sent to the LCD in ASCII format for display. Only the commands are sent in hex form. Register-select (RS) signal is used to distinguish between data (RS=1) and command (RS=0). Preset RV1 is used to control the contrast of the LCD. Resistor 10k limits the current through the backlight of the LCD. Port pins P3.0 (RXD) and P3.1 (TXD) of the microcontroller are used to interface with the RFID reader through Max232(1) and GSM Modem are used to interface through Max232(2). When an allowed person having the tag enters the RF field generated by the RFID reader, RF signal is generated by the RFID reader to transmit energy to the tag and retrieve data from the tag. Then the RFID reader communicates through RXD and TXD pins of the microcontroller for further processing. Thus on identifying the authorized person, the authorized person enters the password through keyboard and send to the microcontroller. If the password is correct then the microcontroller send the SMS to the account holder person, account holder again send the password through SMS to the microcontroller. The microcontroller verifies the password and received password through GSM mobile. If this password is correct, the microcontroller provides high signal to port pin P3.2, transistor Q2 drives into saturation, and relay RL1 energizes to open the bank locker. Simultaneously, the LCD shows "access granted" message and send to and port pin P1.7 drives piezo buzzer PZ1 via transistor T1 for aural indication. If the password is not valid, the LCD shows "access denied" and the bank locker doesn't open.

Applications:

- Banks
- Secured offices
- Home
- Jewellery shop

II. Conclusion:

Better scheduling or route planning can enable you handle larger jobs loads within a particular time. Main motto of the accident alert system project is to decrease the chances of losing life in such accident which we can't stop from occurring. Whenever accident is alerted the paramedics are reached to Vehicle tracking system makes better fleet management and which in turn brings large profits. the particular location to increase the chances of life

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