



Security systems operated by RFID technology along with GSM module

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ABSTRACT

In the present era real time security is of prime priority for any organization, corporate institutions, firms and various confederacy agencies. The idea is to design and develop an exhaustive real-time security system that will provide multifarious verification levels for enhanced security. The system uses a series of confirmation phases which includes identification, authentication, access granting and information updating and logging. In this project various components like microcontroller, Radio frequency Identification technology, GSM technology, and access control system will be integrated so as to achieve a real-time security system. This project is more secure than any other security system because the administrator will be provided with the logging information about the access moreover the passwords generated by the microcontroller will be random and hence cannot be tracked thus making the system not possible to hack

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Introduction

There are many security systems subsisting in present epoch. In this project we are designing a security system based on RFID and GSM technology which is far more effective and reliable when compared to existing security systems. When GSM technology is integrated with RFID it provides solutions for long distance communication. RFID system consists of an antenna or coil, a transponder and a transceiver. Transponder consists of passive tags which are programmed with unique information related to user. There are different types of RFID systems available. These are differentiated on the basis of their frequency ranges. Range of some RFID kits varies as low frequency (30 - 500 kHz), mid frequency (900 kHz-1500MHz) and high frequency (2.4-2.5GHz). The RFID technology is used to identify the particular user. This identification is necessary to fetch important details about the user that requests for access. The important details are identification number, name and mobile number. Identification is made by swapping the tags over RFID module. Passive tags will be used in this project because they are more promising and are less complex than active tags. When the tag is swapped, the microcontroller will check for the validity of the tag and if it is valid then the name of the user will be displayed on the LCD screen.

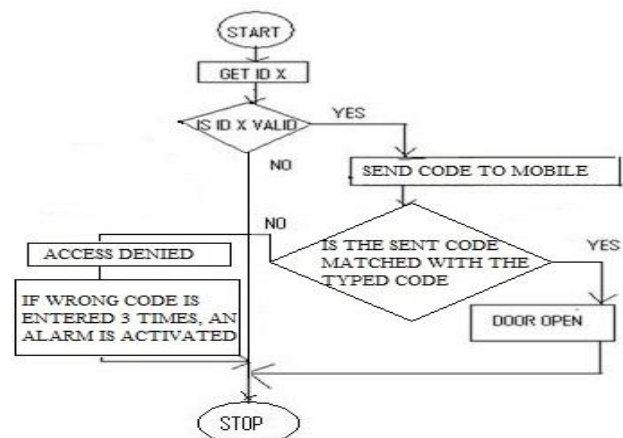
Once the identification is made, the automatically generated random pass code by the microcontroller will be sent to the mobile number associated with the user ID. This pass code will be sent to the user via text message using SMS and GSM technology. After receiving the text message, the user will be required to enter the pass code into the access control system through given keypad. The access control system is an integration of various peripherals that facilitate user-friendliness and acts as user interface. This reads commands/states through the LCD and inputs the pass code using the keypad.

The microcontroller then will verify the pass code it had sent and the entered password by the user. If the codes match, the microcontroller signals the access control system to grant access. At the same time, it sends a text message to the administrator providing information about the access. The information contains the user ID, name, time of access and

status (either it was successful/failure). As soon as the microcontroller signals the access control system to grant access, a gear motor connected to a lock will be driven and opened via an electronic switch(Relay Circuit). A buzzer will activate an alarm if a wrong password is entered three times into the keypad and will jam the system for a particular time. Main components that are integrated to implement this project are:

- RFID Module
- Microcontroller
- GSM Module
- LCD
- Keypad

Flowchart:



Security System based on RFID & GSM Technology

If the RFID Card is bought near the RFID Reader, the reader will detect it as a valid or an invalid card.

If an unauthorised ID Card is brought near the reader, the LCD will show us a message indicating that the card is invalid. Now if the card is valid, it will show a corresponding output at the LCD denoting the presence of an authentic personnel. Next the microcontroller which has stored information about the authentic person sends a random password code to a particular mobile number corresponding to the shown RFID tag.

Now the person which is soughting out an access through the security system is required to type the password (he has recieved on his mobile number) on the given keypad of the security system. Once the code is entered the microcontroller verifies whether the entered code and the sent code are the same. If the combination is valid, access is granted and the motor connected to the relay opens the lock connected to it.

Now if the code entered does not match with the code sent to the authorised persons mobile number, access will be denied and if wrong password is entered three times it will jam the system for sometime and will activate an alarm connected to a buzzer.

Future prospect:

In the present era, we have heard of many electronically operated security systems like the local alarm system, RFID security system etc but none of them offer us full real time security as all of them provide only one verification level of security.

Our idea here is to develop an enhanced security system by integrating RFID Security System with a GSM module to provide full real time security. This task can be attained by providing multifarious verification levels for abounding security meanwhile providing a full feedback to the administrator to keep a check on the personnel who try to access the security system.

Conclusion:

We are planning to make a security system using RFID and a GSM module. We are planning this project to be a cost efficient security system which is both low in power consumption and compact in size. The microcontroller acts as a compere and verifies whether the two passwords which are sent and received by the microcontroller are the same or not. If the passwords are same and match, a motor connected to a lock driven by a relay circuit opens the lock. A buzzer will activate an alarm if a wrong password is entered three times into the keypad and will jam the system for a particular time. *Qazi Sarib and Faizan Mehraj* played a very significant and active role in this paper.

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