ISSN 2277-2685
IJESR/Jan-Mar. 2025/ Vol-15/Issue-1s/41-46
Shaik Juveriya Tasneem *et. al.*, / International Journal of Engineering & Science Research

GSM BASED SMART INFORMATION SYSTEM FOR LOST ATM CARD

[1]Ms. S Manjula, [2]Shaik Juveriya Tasneem, [3]Nellikondi Sravani, [4]Ellavula Pravalika
[1]Associate Professor, Electronics and Communication Engineering,BRECW
[2,3,4] B.Tech Students, Department of Electronics and Communication Engineering,BRECW
manjula.sathineni@slv-edu.in

Abstract
The project aims in designing a security system which is capable of avoiding transactions from lost ATM card. This system makes use of GSM and RFID technology. The ATM card will have an RFID tag inside it. The user of lost ATM card need to send a predefined format SMS to a phone number given by the bank. The bank authorities continuously monitor the ATM transactions and the lost requests from users. Whenever anyone tries to do transaction from a lost ATM card, the location information of the ATM is sent to the user's mobile automatically along with horning an alarm system at ATM center. This helps in catching the culprit.
The controlling device of the whole system is a Microcontroller. GSM modem, Buzzer and RFID reader are interfaced to Microcontroller. The Microcontroller reads the messages from the GSM modem and continuously monitors the input from RFID reader. If both the inputs are same, it automatically sends a predefined message to predefined number along with siren at the buzzer. Also, the location information is displayed on the LCD display.
Keywords: *GSM, ATM, RFID.*

1-Introduction

The project aims in designing a security system which is capable of avoiding transactions from lost ATM card. This system makes use of GSM and RFID technology. The ATM card will have an RFID tag inside it. The user of lost ATM card need to send a predefined format SMS to a phone number given by the bank. The bank authorities continuously monitor the ATM transactions and the lost requests from users. Whenever anyone tries to do transaction from a lost ATM card, the location information of the ATM is sent to the user's mobile automatically along with horning an alarm system at ATM center. This helps in catching the culprit.

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2-Software Requirements

In this chapter we will discuss Software requirements for GSM based Smart Information System for lost ATM Card.

2.1 Embedded Systems

An embedded system is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet

a wide range of end user needs. Embedded systems control many devices in common use today. Embedded systems are controlled by one or more main processing cores that are typically either microcontrollers or digital signal processors (DSP). The key characteristic, however, is being dedicated to handle a particular task, which may require very powerful processors. For example, air traffic control systems may usefully be viewed as embedded, even though they involve mainframe computers and dedicated regional and national networks between airports and radar sites. (Each radar probably includes one or more embedded systems of its own.) In general, "embedded system" is not a strictly definable term, as most systems have some element of extensibility or programmability. For example, handheld computers share some elements with embedded systems such as the operating systems and microprocessors which power them, but they allow different applications to be loaded and peripherals to be connected. Moreover, even systems which don't expose programmability as a primary feature generally need to support software updates. On a continuum from "general purpose" to "embedded", large application systems will have subcomponents at most points even if the system as a whole is "designed to perform one or a few dedicated functions", and is thus appropriate to call "embedded". A modern example of embedded system is shown in fig.

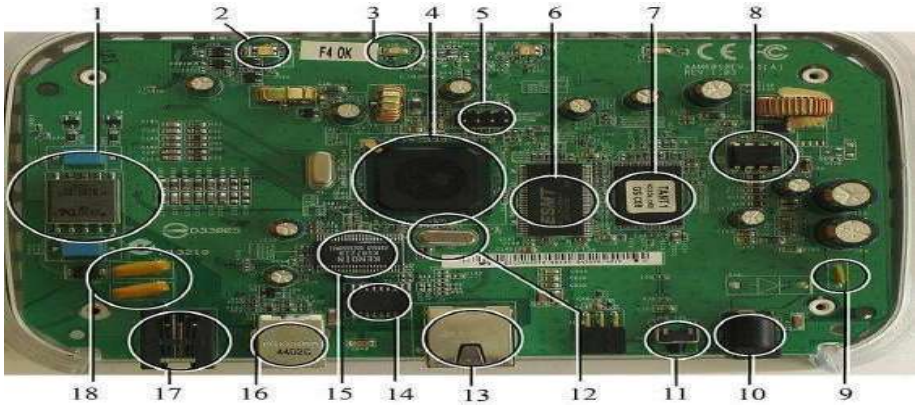


Fig 2.1: A modern example of embedded system

A modern example of embedded system

Labeled parts include microprocessor (4), RAM (6), flash memory (7). Embedded systems programming is not like normal PC programming. In many ways, programming for an embedded system is like programming PC 15 years ago. The hardware for the system is usually chosen to make the device as cheap as possible. Spending an extra dollar a unit in order to make things easier to program can cost millions. Hiring a programmer for an extra month is cheap in comparison. This means the programmer must make do with slow processors and low memory, while at the same time battling a need for efficiency not seen in most PC applications. Below is a list of issues specific to the embedded field.

3-GSM & RFID based Smart Information System

In This Chapter the block diagram of the project and design aspect of independent modules are considered.

3.1 Existing System

A GSM-based smart information system for lost ATM cards integrates a GSM module for cellular communication, enabling users to report lost cards via SMS or a mobile app. Once reported, the system

instantly blocks the card, logs the incident in a central database, and alerts the bank. Optionally, it can track the card's location using GPS. Users receive acknowledgment SMS and can seek assistance through customer support. The system guides users through the replacement process while ensuring data security through encryption and authentication measures.

3.2 Proposed System

This system makes use of GSM and RFID technology. The ATM card will have an RFID tag inside it. The user of lost ATM card need to send a predefined format SMS to transactions and the lost requests from users.

Whenever anyone tries to do transaction from a lost ATM card, the location information of the ATM is sent to the user's mobile automatically along with horning an alarm system at ATM center. This helps in catching the culprit.

Block Diagram

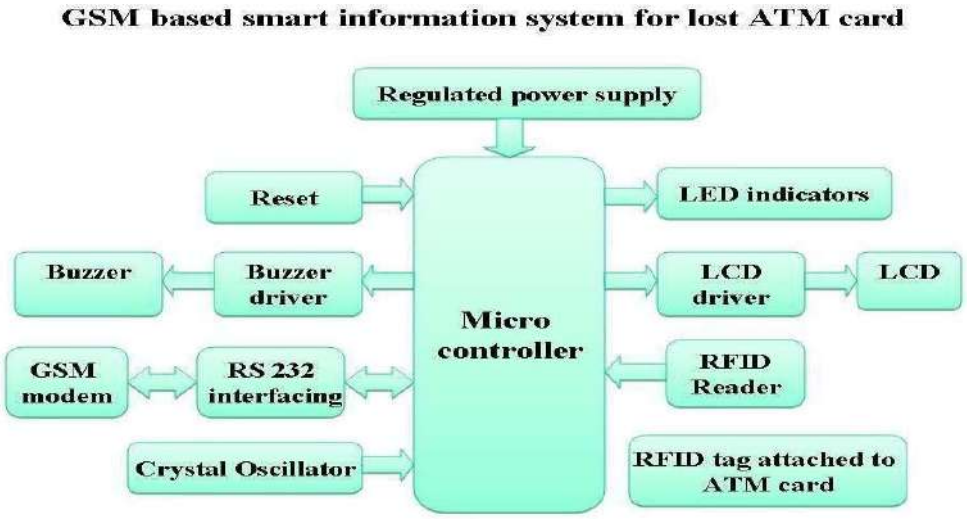


Fig 3.1: Block diagram

MAJOR BLOCKS

1. PIC Microcontroller.
2. Regulated power supply.
3. RF reader
4. RFID tag
5. GSM
6. Buzzer with driver.
7. oscillator &LED Indicators

4-Advantages and Disadvantages

The advantages, disadvantages and applications of the project includes:

4.1 Advantages:

1. Enhanced Security: Prevents unauthorized transactions and protects cardholder information.
2. Real-time Notification: Immediately alerts cardholders of suspicious activity.
3. Location Tracking: Helps track and recover lost or stolen cards.
4. Reduced Financial Loss: Minimizes losses due to fraudulent transactions.
5. Increased Convenience: Allows cardholders to report lost cards and receive updates via SMS.
6. Improved Response Time: Enables banks to respond promptly to security breaches.
7. Scalability: Can be integrated with existing banking systems.

4.2 Disadvantages:

1. Dependence on GSM Network: Requires

reliable GSM coverage.

2. System Complexity: May require additional infrastructure and maintenance.

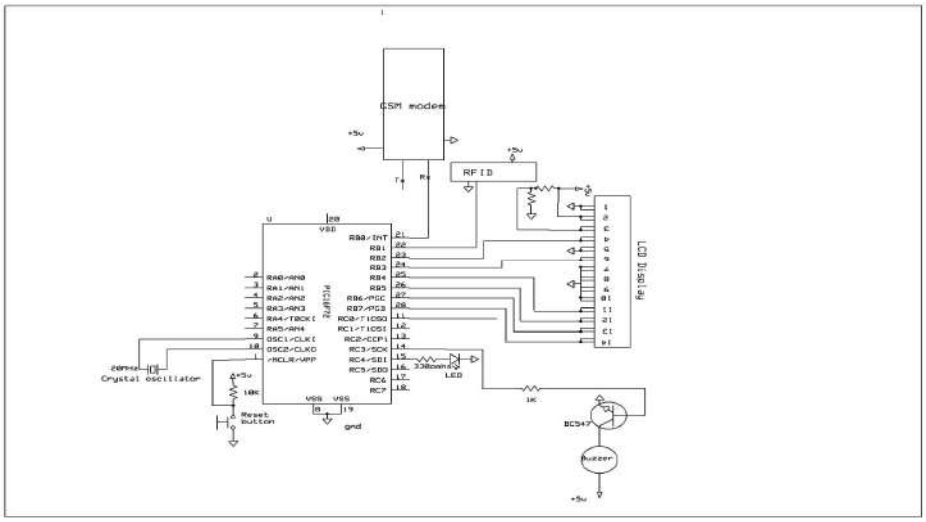
3. Cost: Implementation and maintenance costs may be high.

5-Result and Discussion

In this chapter, we will discuss about the results of the GSM based Smart Information System for lost ATM Card.

Working of GSM-based Smart Information System for Lost ATM Cards: System Components:

1. ATM Card with RFID Tag
2. GSM Modem (SIM900)
3. Microcontroller (PIC16F877A)
4. RFID Reader (EM-18)
5. LCD Display (16x2)



6.Buzzer

System Workflow:

Step 1: Lost Card Reporting

1.Cardholder reports lost card to bank.

2.Bank updates card status in database

Step 2: Card Detection

1.Card holder inserts ATM card into RFID reader.

2.RFID reader detects card and sends signal to microcontroller.

Step 3: Transaction Processing

1.Microcontroller verifies card information.

2.If not valid, sends SMS to cardholder's registered mobile number.

Step 4: Authentication

1.Microcontroller sends transaction details to GSM modem.

2.GSM modem sends SMS to cardholder's registered mobile number.

Step 5: Location Tracking

1.Microcontroller tracks location of lost card.

2.Sends location information to cardholder's registered mobile number. along with Horning the buzzer at the ATM center.

System Operation:

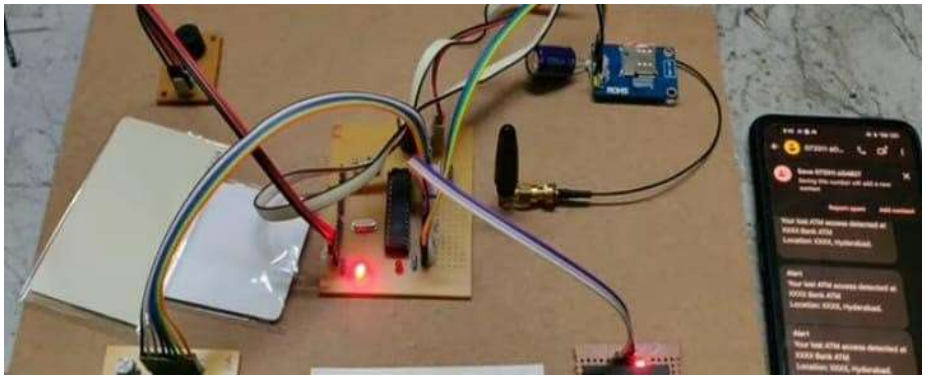
1. Power-on: Microcontroller initializes RFID reader and GSM modem.
2. Card detection: RFID reader detects card and sends signal to microcontroller.
3. Authentication: Microcontroller verifies card information.
4. Transaction processing: Microcontroller sends transaction details to GSM modem.
5. SMS notification: GSM modem sends SMS to cardholder's registered mobile number.
6. Lost card reporting: Microcontroller blocks card and updates database.
7. Location tracking: Microcontroller tracks location of lost card.

System Features:

1. Real-time notification
2. Location tracking
3. Automated card blocking
4. Secure transaction processing
5. Easy card reporting

Output:

The project "**GSM based smart information system for lost ATM card**" was designed in designing a security system which is capable of avoiding transactions from lost ATM card. This system makes use of GSM and RFID technology. The ATM card is going to have a RFID tag inside it. The user of lost ATM card need to send a predefined format SMS to a phone number given by the bank. The bank authorities continuously monitor the ATM transactions and the lost requests from users.



6-Conclusion

The GSM-based Smart Information System for Lost ATM Cards project successfully demonstrates a secure and efficient solution for mitigating ATM card-related fraud and enhancing cardholder convenience. The system's real-time notification, location tracking, and automated card blocking features provide a robust security framework.

The project's scalability, compatibility, and user-friendly interface make it suitable for widespread adoption.

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