

# ATM Security Using TAC

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**Abstract**-ATM is a way to get money easily by using ATM card & PIN but if someone stolen user's ATM card & PIN, it will grant him for money transaction with user's account. So, there is a need to enhance security level in the ATM (Automatic Teller Machine) during the transaction for user's. The existing ATM system are not much secure, as those system based on only PIN which is fixed for each ATM card and the chances of security failure may exist. This system will overcome these problems by designing an ATM using TAC (Transaction Authentication Code) with RFID technology for unique identification of the user. First card holder must register with his cell phone number at the time of registration. When the user's RFID card read by the ATM, he has to enter PIN (Personal Identification Number) then TAC which is a 4 digit code and it is different for every transaction will be reached to the user's mobile phone with the help of GSM modem. The transaction will be done only when the user entered 4 digits TAC. This system will help the user to secure his transaction and prevents the unauthorized usage of the card.

**Keywords:** TAC,GSM Modem, Keypad, LCD, RFID Card and Reader.

## I. INTRODUCTION

The ATM Security using TAC is mainly developed for the prevention of theft of the ATM card and to prevent the unauthorized usage of the card. The additional feature of this project is that no transaction can be done without the knowledge of the respective card holder. The main software's that are using in this project are visual basic and embedded C. The main advantage of this project is to introduce second level of security. Also, the user can access his ATM card remotely if it is used by another known person who can't be fully trusted. This system has already implemented in online shopping, online money transaction, online payments with ATM card. In ATM, RFID card reader is used which detects an active

tag & generates digital signals at particular frequency and send these signals to the microcontroller. The microcontroller receives these digital signals from the RFID reader & check the list of mobile number that has been associated with the card frequency. After this the controller will generate a TAC of four digits. The TAC will be different for each attempts of money transaction. Then random generation of TAC has been done by using embedded C program implemented in microcontroller. The TAC will communicate with the GSM modem and microcontroller will give command to the GSM modem to send the TAC to the particular mobile number. The card holder will receive this TAC as text message on his mobile. The TAC can be entered in the ATM machine using 4\*3 key Pad. If the TAC that has been entered in the ATM machine is wrong the Red LED will glow & Buzzer will ON simultaneously & ATM machine will send message to an authority that someone entered wrong pin on respective account number. If the entered TAC is correct, the user can forward to the next step of transaction. At this the embedded C program in the microcontroller will send commands to continue the transaction and will generate another message on LCD that enter the amount that the user wants to withdraw from the ATM machine. So, the user has to enter the amount to be with drawl using 4\*3 key Pad. Then the ATM machine will continue to next transaction level and completes the process.

## II. OBJECTIVES

The main objective of the system is to reduce the chance of ATM security failure by generating each TAC is randomly. For improved security the whole transaction process is done in the knowledge of the respective card holder. Thus, there is no chance of money transaction without the knowledge of the card holder.

III. THE EXISTING SYSTEM

The existing ATM system uses the ATM card and PIN based system. The ATM system compares the PIN entered with the stored authorization PIN for every ATM users. If PIN is matched, the system authenticates the user and grants access to all the services available via the ATM. User can access several services such as cash withdrawal and deposits, account to account transfers, balance enquiry, top-up purchases and utility bills payment. If there is a mismatch, the user authentication process fails then buzzer will turn on & ATM sends message to bank authority.

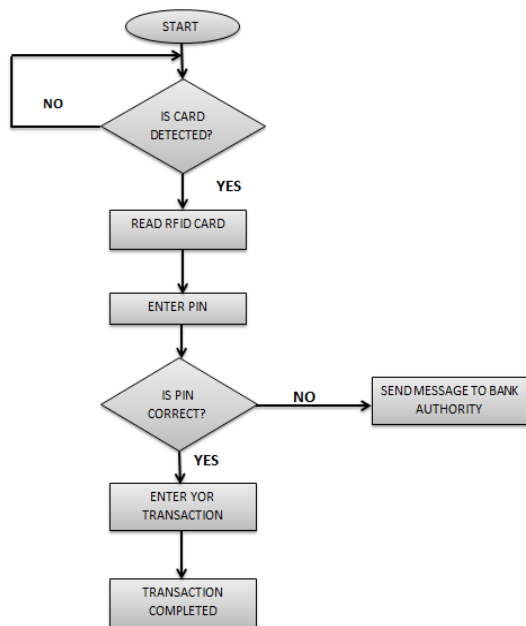


Fig 1: Flow Diagram

Figure1 illustrates the basic flow diagram of the existing ATM system

IV. THE PROPOSED SYSTEM

The proposed system is the improved version of the existed system. It serves the purpose of enhancing security of ATM. We are using the second level authentication in the proposed system. Figure 2 depicts the process of the proposed ATM. Firstly, The RFID reads the ATM card & ask the card holder to enter the PIN. The entry of only PIN is not sufficient to withdraw money by ATM.

If the PIN is correct a message appears on display enter the amount to be withdrawn. After that, we need to enter the TAC also to validate the ATM. If the TAC is correct the user gets permission for accessing all the services of ATM & if TAC is wrong the user denied for access services of ATM.

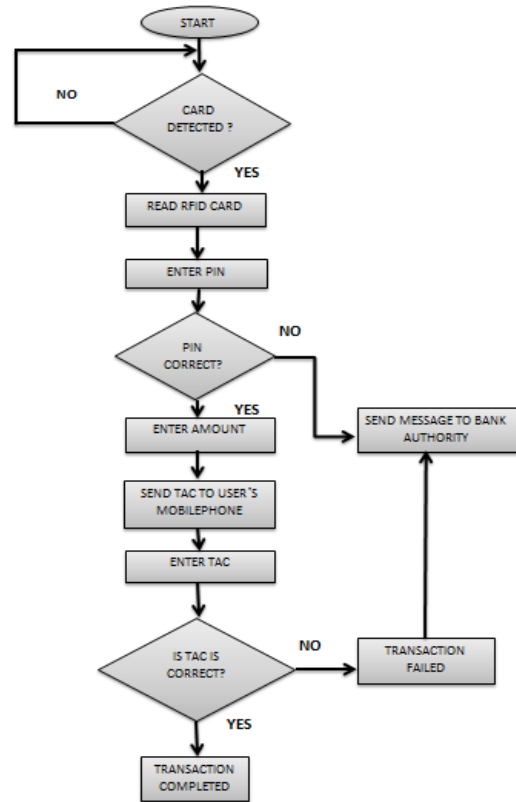


Fig 2: Flow Diagram

Figure2 illustrates the basic flow diagram of the proposed ATM system

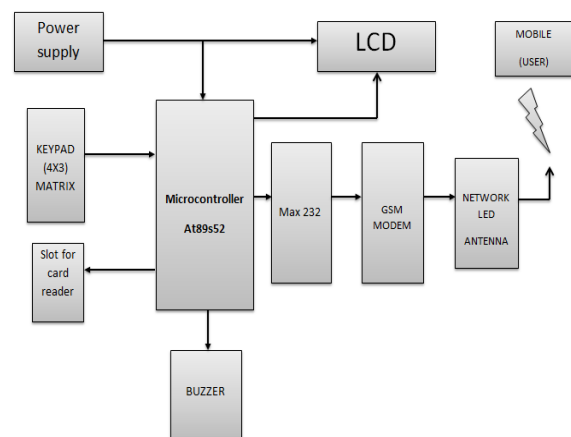


Fig 3: block diagram

Figure3 illustrates the basic block diagram of the model

## V. POWER SUPPLY

All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.

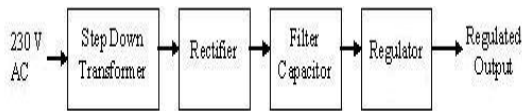


Fig 4: basic power supply

Figure4 illustrates the basic power supply of the model

A 230v, 50Hz single phase AC power supply is given to a step down transformer to get supply. This voltage is converted to DC voltage using a Bridge Rectifier. The converted DC voltage is filtered by a capacitor and then given to voltage regulator to obtain constant 5v supply. This 5v supply is given to all the components in the circuit.

## VI. RFID CARD READER

Radio frequency identification (RFID) is an automatic recognition system employing wireless communication. RFID which are the electronic tags, can be broadly classified into passive and active types of tags. Radiofrequencyidentification (RFID) is uses the wireless electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information in the form of bits. The RFID card reader is used to detects an active tag & generates digital signals at particular frequency and send these signals to the microcontroller.

## VII. MICROCONTROLLER

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller uses 8K bytes of programmable Flash memory.It is a powerful microcontroller& manufactured using Atmel's high-density non-volatile memory technology. The Atmel AT89S52provides a highly-flexible and cost-effective solution to many embedded control applications.The on-chip Flash allows the program memory to be reprogrammed in system. The AT89S52 has following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry.

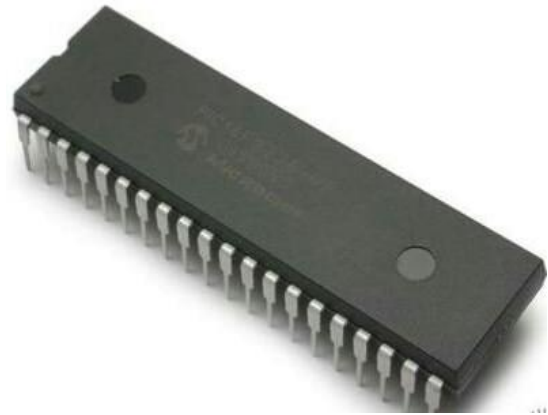


Fig 5 Microcontroller I.C

Figure5 illustrates the MicrocontrollerI.C of the model

## VIII. GSM TECHNOLOGY& EMBEDDED C

A standard GSM modem is used here for the sending and receiving of the message. The range ofGSM modemoperating frequency is 900MHz to 1800MHz.To generate random TAC during the transaction, embedded c coding is used in the microcontroller. Each time the TAC generated will be entirely different from the previous one. The TAC generated in the microcontroller will send to the GSM modem as message and this message is received by the user's mobile as message.



Fig 6 GSM Module

Figure6 illustrates the GSM Module of the model

## IX. LCD

A LCD is a display device used to display information on machines, clocks, railway departure indicators and many other devices. A dot matrix controller converts instructions from a processor into signals which turns on or off lights in the matrix so that the required display is produced. The display consists of a dot matrix of lights arranged in a rectangular configuration such that by switching on or off selected lights, text or graphics can be displayed. The brightness of LCD can be controlled by variable resistor. The main advantage of LCD is that they are thinner & lighter than CRT's. All the functions required for dot matrix liquid crystal display drive are internally provided. The CMOS technology makes the device ideal for application in hand held, portable, hand held & used low power consumption.

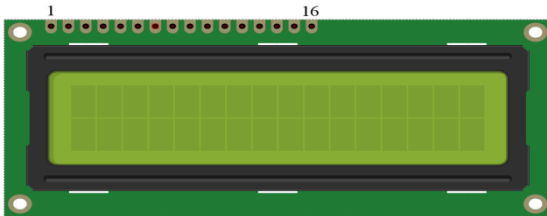


Fig 7 : LCD

Figure 7 illustrates the LCD of the model

## X. LIST OF COMPONENTS

- Microcontroller (at-89s52)
- Dum Card
- Sensor (touch ,infrared sensor)
- Step-down transformer.
- Regulator (7805).
- Diode (in-4007).
- Led.
- Capacitor(27pf,1000uf,10uf, 4.7uf)
- Resistor(1k,10k, 470ohm)
- Transistor (nnp,pnp)
- GSM modem
- Buzzer

## XI.CONCLUSION

The main purpose of the system is to enhance the security level in ATM for user. The project "ATM security using TAC" consist of RFID technology and password authentication using TAC. The propose system designed keeping in mind that

ATM manufacturing companies will be implemented it easily using GSM modem. Due to the GSM high technology the system will be simple, cost-effective and security level will get increase in an ATM transaction, as cell phone number is unique to every user.

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