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GSM Based ATM Money Transaction System

K. Renuka Devi

Dept.of ECE & GITAM for Women, Proddatur, A. P, India.

renuka45229@gmail.com

Abstract: In an era of the digital world, carrying of ATM cards should no more be a restriction to withdraw the money. A simple SIM card would do the needful replacing the necessity of a physical ATM card to access an ATM. When the ATM card holder is out of station or unable to locate his ATM card and if any cash payments are to be done urgently, then he can withdraw the cash himself or by sending any executive on his behalf to the nearest ATM, can insert their SIM card in the machine, type the password and the requisite amount and then the money can be withdrawn without using the ATM card. In short, this project will deliver faster and easier cash withdrawal from the ATM without the use of ATM card.

Keywords: GSM Modem, SIM card, MAX232, Keil Micro version, Embedded C-Language, AT89S52.

I. INTRODUCTION

For the last few decades, ATM'S are becoming very popular and common in money transactions. An easy cash drawing system, Automated Teller Machine (ATM) has become an integral part of our society. Implementing ATMs in Treasury will be an added advantage for the Treasury itself and it will be a convenient cash drawing mechanism for the customers. This is one step forward to the Treasury department in their transforming stages. An Automated Teller Machine (ATM) allows customers to perform banking transactions anywhere and at any time without the need of human teller. By using a debit or ATM card at an ATM, individuals can withdraw cash from checking or savings accounts. With the emerging digital technology, carrying of ATM cards should no more be a restriction to withdraw the money. ATM security system using GSM Module is one of the hot topics in embedded systems industry. Instead of analog services, GSM was developed as a digital system using technology Here we introduce a revolutionary technology i.e., physical ATM card is replaced by the simple SIM card. When the ATM card holder is out of the station the in such conditions in case of any cash payments to be done urgently, this project is used.

II. EXISTING SYSTEM

An Automated Teller Machine (ATM) allows customers to perform banking transactions anywhere and at anytime without the need of human teller. By using a debit or ATM card at an ATM, individuals can withdraw cash from checking or savings accounts make a deposit or transfer money from one account to another or perform other functions. You can also get cash advances using a credit card at an ATM. Individuals should be aware that many banks charge transaction fees – generally ranging from Rs 50-150 per transaction - for using another bank's ATM. The ATM is online with the bank, that is, each transaction will be authorized by the bank on-demand and directly debited from the account's owner.



FIG: ATM(Automated Teller Machine)

An automatic teller machine or ATM allows a bank customer to conduct their banking transactions from almost every other ATM machine in the world. The ATM works as follows. First, the client will insert his/her client card in the ATM and then the ATM will ask for a Personal Identification Number (PIN), if the number is entered incorrectly several times in a row, most ATMs will retain the card as a security precaution to prevent an unauthorised user from working out the PIN by pure guesswork. Once the correct PIN is given, the ATM will ask for the amount of money to be withdrawn. If the amount is available and if the client has enough money on his credit then they said the amount of money will be paid. Whether the amount of money is payable or not, i.e. the ATM has enough cash but could be the case the ATM has no change for that amount, will be also checked. Once the money is offered to the client a countdown is started, i.e. the client has a determined amount of time to pick up the money. If this timeout is over, the money will be collected by the ATM and the transaction will be rolled.

III. PROPOSED SYSTEM

This project will deliver faster, easier cash without any ATM card .when the ATM card holder is out of station the in such conditions in case of any cash payments to be done urgently then he can pay by sending the executive for the nearest ATM and telling him to insert his SIM card in the machine .then a message is been displayed on the cardholder then if he enters the password and the amount the executive can collect the money.

A. BLOCK DIAGRAM

Power supply for the microcontroller is 5V Current signal. This higher current signal is used to drive the motors. L293D contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction.

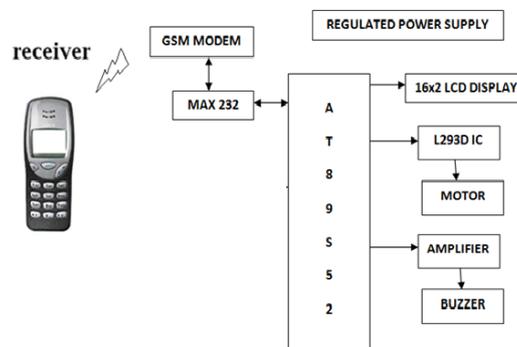


FIG: BLOCK DIAGRAM

B. DESCRIPTION OF BLOCK DIAGRAM

1) *Microcontroller (AT89S52)*: The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8Kbytes of in-system programmable Flash memory. The device is manufactured Using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 microcontroller. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable flash one monolithic chip; the Atmel AT89S52 is a powerful microcontroller, which provides a highly flexible and cost-effective solution to many embedded control applications.

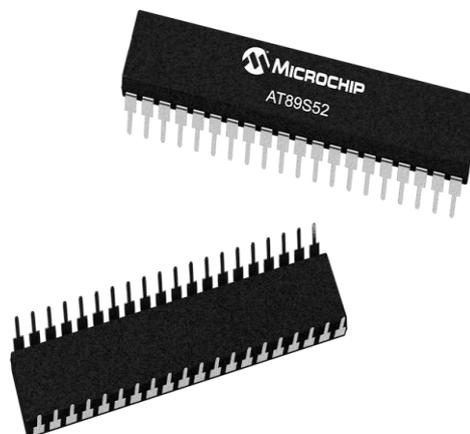


FIG: AT89S52

1) *GSM Modem*: GSM (Global System for Mobile communications) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands. Some countries in the Americas use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands were already allocated. GSM also pioneered a low-cost, to the network carrier, alternative to voice calls, the Short t message service (SMS, also called "text messaging"), which is now supported on other mobile standards as well. Another advantage is that the standard includes one worldwide Emergency telephone number, 112. This makes it easier for international travelers to connect to emergency services without knowing the local emergency number.



FIG: GSM MODEM

2) *L293d IC*: L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive in either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC. Dual H-bridge *Motor Driver integrated circuit (IC)*.



FIG: L293d IC

3) *LCD Display*: A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.



FIG: LCD DISPLAY

4) *Buzzer*: A **buzzer** or **beeper** is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.



FIG: BUZZER

6) *MAX232*: The MAX232 is an integrated circuit first created in 1987 by Maxim Integrated Products that converts signals from a TIA-232 (RS-232) serial port to signals suitable for use in TTL-compatible digital logic circuits. The MAX232 is a dual transmitter / dual receiver that typically is used to convert the RX, TX, CTS, RTS signals. It is helpful to understand what occurs to the voltage levels. When an MAX232 IC receives a TTL level to convert, it changes a TTL logic 0 to between +3 and +15 V and changes TTL logic 1 to between -3 and -15 V, and vice versa for converting from TIA-232 to TTL.



FIG: MAX232

5) *Regulated Power Supply*: A variable regulated power supply, also called a variable bench power supply, is one where you can continuously adjust the output voltage to your requirements. Varying the output of the power supply is the recommended way to test a project after having double checked parts placement against circuit drawings and the parts placement guide. This type of regulation is ideal for having a simple variable bench power supply. Actually, this is quite important because one of the first projects a hobbyist should undertake is the construction of a variable regulated power supply. While a dedicated supply is quite handy e.g. 5V or 12V, it's much handier to have a variable supply on hand, especially for testing.

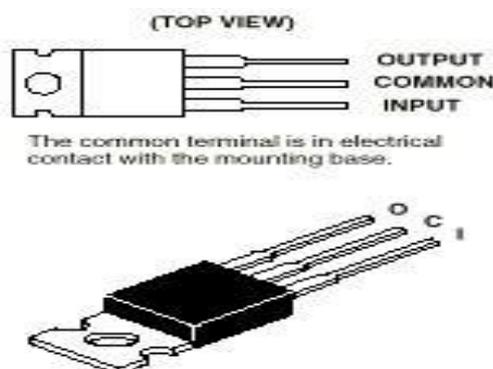


FIG: REGULATOR

8) *DC Motor*: DC motors are configured in many types and sizes, including brushless servo, and gear motor types. A motor consists of a rotor and a permanent magnetic field stator. The magnetic field is maintained using either permanent magnets or electromagnetic windings. DC motors are most commonly used in variable speed and torque. Motion and controls cover a wide range of components that in some way are used to generate and/or control motion.



FIG: DC Motor

IV. SOFTWARE ASPECTS

Embedded systems are designed to do some specific task, rather than be a general-purpose computer for multiple tasks. Some also have real-time performance constraints that must be met, for reason such as safety and usability; others may have low or no performance requirements, allowing the system hardware to be simplified to reduce costs. An embedded system is not always a separate block - very often it is physically built-in to the device it is controlling. The software written for embedded systems is often called firmware and is stored in read-only memory or **Flash memory** chips rather than a disk drive. It often runs with limited computer hardware resources: small or no keyboard, screen, and little memory.

A Keil Software: Keil is an IDE (Integrated Development Environment) which is used to develop an application program, compile and run it. Even the code can debug. It is a simulator where we can check the application code even in the absence of the hardware board. Keil is also a cross compiler. The process of development of the soft code on a processor for a particular application and which can be implemented on the target processor is known as cross development.

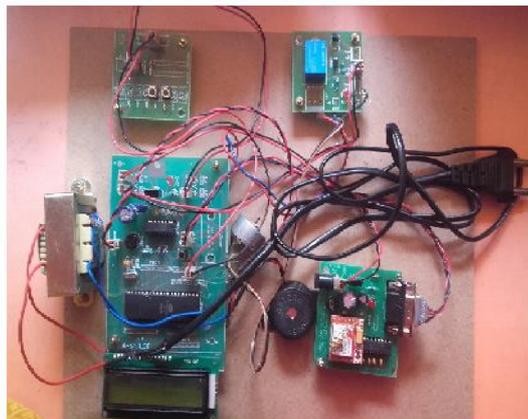
In our design, the main heart of the hardware module is the microcontroller which is the programmable IC. The programming language used for developing the software to the microcontroller is embedded C/Assembly. The KEIL cross compiler is used to edit, compile and debug this program. The micro flash programmer is used for burning the developed code on Keil into the microcontroller chip.

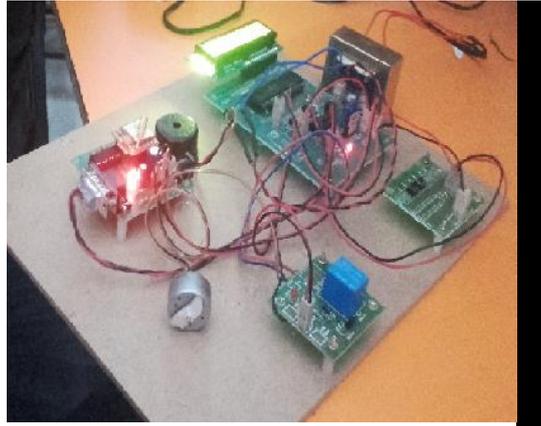
V. ADVANTAGES

- Highly secured
- Easy to use
- High performance
- Deliver faster

VI. RESULT ANALYSIS

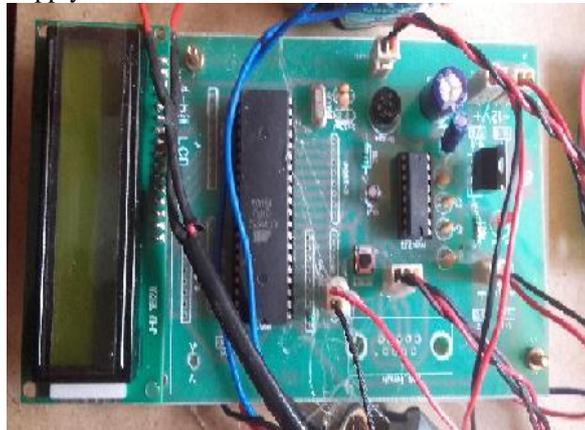
In this section, to convert high voltage to low voltage the step-down transformer is used. The components which we use are DC components. There is a motor to show the indication that cash is withdrawing from the ATM. The 12V battery supply is given to the motors and there is a buzzer with the supply of 5V. To convert some AC components to DC components we use filter followed by the rectifier.





A WORKSTATION:

The AT89S52 Microcontroller is the main part of this project. It is programmed to control the motor driver and DC control motor. The MAX232 is used to the interface of PC and AT89S52 microcontroller. Using software's can monitor in PC. The software's are visual basic and Lab VIEW. Power supply for the microcontroller is 5V.



CONCLUSIONS

Generally, ATM cards made our transactions much easier compared to past days. ATM transaction using SIM card is an upcoming technology, which brings a great change in our life. ATM made our transactions simpler and now without ATM card, it became simpler transactions just by using SIM card.

FUTURE SCOPE

This interesting feature, at present is useful only to made transactions in respect of two persons or two SIM's and in future it can be expanded to choose the persons for transactions from the contacts in our mobiles, in addition to GPS technology.

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