

Differentiated Virtual Passwords, Secret Little Functions and Codebooks for Protecting Users from Password Theft

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Abstract: - *In this Digital world every authentication needs some sort of passwords and it is really a big problem for the users to remember all these passwords and also to secure these from hackers. Even though we have many advanced techniques like finger print, smart card but still they are not providing high level security. This project gives the solutions for all these problems. We propose differentiated virtual password mechanisms in which a user has the freedom to choose a virtual password scheme ranging from weak security to strong security, where a virtual password requires a small amount of human computing to secure users' passwords. The tradeoff is that the stronger the scheme, the more complex the scheme may be. Among the schemes, we have a default method (i.e., traditional password scheme), system recommended functions, user specified functions, user specified programs, and so on. A function/program is used to implement the virtual password concept with a tradeoff of security for complexity requiring a small amount of human computing. We further propose several functions to serve as system recommended functions and provide a security analysis. For user-specified functions, we adopt secret little functions in which security is enhanced by hiding secret functions/algorithms. Unlike the traditional methods to generate the OTP, we are using the real time robust algorithms by using the timers in the microcontroller and the Real Time Clock inside the controller. In this project we generate*

virtual password based on the user selectable character and functions .Each user has one fixed RFID, after authenticating these user has to select character and function .based on these selection the server will generate one password and send it as SMS to user this is one time password. Every time based on these selections user will be received a unique password which can be not be known by any other.

Keywords: - Hacking protection, Virtual Passwords, OTP, RFID, Smart cards & Security.

1. Introduction

A debit card (also known as a bank card or check card) is a plastic payment card that provides the cardholder electronic access to his or her bank account(s) at a financial institution. The card, where accepted, can be used instead of cash when making purchases. Debit cards usually also allow for instant withdrawal of cash, acting as the ATM card for withdrawing cash. Merchants may also offer cash back facilities to customers, where a customer can withdraw cash along with their purchase. A personal identification number (PIN, pronounced "pin") is a numeric password shared between a user and a system that can be used to authenticate the user to the system. Typically, the user is required to provide a non-confidential user identifier or token (the user ID) and a confidential PIN to gain access to the system. Upon receiving the user ID and PIN, the system looks up the PIN based upon the user ID

and compares the looked-up PIN with the received PIN. The user is granted access only when the number entered matches with the number stored in the system. Hence, despite the name, a PIN does not personally identify the user.

This system consists of microcontroller, ARM 7, GSM modem, RFID, keypad, and LCD. In this system user has to store the number then immediately that data is passed to the administrator, if administrator gives acknowledgement is matched then microcontroller sends the password to the authenticated person mobile number then the authenticated person enters the password in the keypad which was received from the microcontroller. if the password is matched then the locker will be opened otherwise the microcontroller sends the warning message to the authenticated person mobile number and it will be remain in locked position, This system is more secure than other systems because two passwords required for verification.

2. Literature Survey

The purpose of this project is to increase the security that customer use the ATM machine. Once user's bank card is lost and the password is stolen, the criminal will draw all cash in the shortest time, which will bring enormous financial losses to customer, so to rectify this problem we are implementing this project. The chip of LPC2148 is used for the core of microprocessor in ARM7.

In [2], one more approach using GSM technology to communicate with the remote devices via SMS is remote metering system, in this paper illustrates a technique for remotely reading electricity meter readings using SMS. Both postpaid and prepaid are feasible to implement using this architecture as SMS based data gathering can be done very quickly and efficiently.

In [3] [4], this paper projected a Zigbee-GSM based Monitoring and Remote Control System. In this systems used both Zigbee and GSM for communicating between user and devices. This system allows user to monitor and control devices in the home through a number of controls, including a Zigbee based remote control. Users may remotely monitor and control their home devices using GSM.

In [5], the most important objective of the paper is to design and develop a highly developed vehicle locking system in the real time situation. The design & development of a theft control system for an automobile, which is being used to prevent/control the theft of a vehicle. This system consists of an embedded system and Global System Mobile communication (GSM) technology. This system developed by Pravada P. Wan hade and Prof. S.O. Dahad, the developed system is installed in the vehicle. The mobile is connected to the microcontroller, which is in turn, connected to the engine. Once, the vehicle is being stolen, the information is being used by the vehicle owner for further processing. The information is passed onto the central processing insurance system which is in the form of the SMS, the microcontroller unit reads the SMS and sends it to the Global Positioning System (GPS) module and says to lock it or to stop the engine immediately. The main concept of this paper vehicle is controlled by GSM and GPS. The designed unit is reliable and efficient system for providing security to the vehicles through GSM, GPS and serial communication.

In this project we proposed the RFID based GSM security system can be implemented easily for secure the ATM machine. In this system the working of these ATM machine is when the customer place on the RFID module when it access the ATM for draw the cash then, the machine wants to RFID of that user's which use the machine. Using one time password, it verify/identify ID and gives accurate result that

if it valid or not valid. In this way we can try to control the crime circle of ATM and do secure it.

3. Existing System

In the existing system, we used the security application only for one purpose and the generation of the OTP was depends upon the random number generation by taking a seed number and add some predefined number to it and generate the OTP. But it is not that much efficient and sometimes the OTP will be repeated. So, to avoid all these drawbacks, we introducing the proposed system that can be applicable to many security scenarios like door opening, ATM access and also to the internet banking.

4. Proposed System

In the proposed system, we are embedding three different security scenarios in a single project. In this project, we are showing the three scenarios like door opening, ATM card accessing and the Net banking access. For all these three applications, we are generating a unique OTP that was calculated using a unique and robust algorithm. The OTP, that generated was robust and will not repeat. Every time the OTP was send to the mobile number by using the GSM modem. The OTP must match, to access any security application.

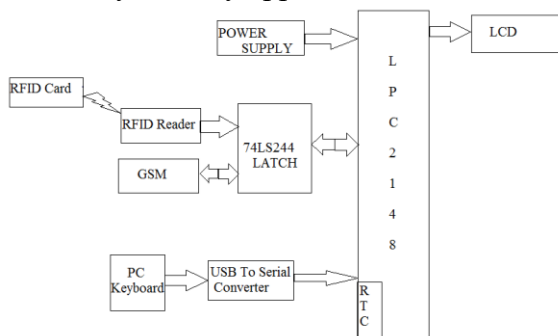


Fig 1: Block Diagram of Proposed System

5. Firmware Implementation

Firmware implementation deals in programming the microcontroller so that it can control the operation of the IC's used in the implementation. In the present work, we have used the Orcad design software for PCB circuit design, the Keil μ v4 software development tool to write and compile the source code, which has been written in the C language. The Flashmagic programmer has been used to write this compile code into the microcontroller.

Software Tools Required

- Orcad
- Keil μ Vision4
- Flash Magic

5.1) Orcad is used for drawing the schematic diagram, it is mentioned above. Keil μ v4, Flashmagic are the two software tools used to program microcontroller. The working of each software tool is explained below in detail.

Programming code description

A compiler for a high level language helps to reduce production time. To program the LPC2148 microcontroller the Keil μ v4 is used. The programming is done in the embedded C language or Assembly language. Keil μ v4 is a suite of executable, open source software development tools for the microcontrollers

hosted on the Windows platform. One of the difficulties of programming microcontrollers is the limited amount of resources the programmer has to deal with. In personal computers resources such as RAM and processing speed are basically limitless when compared to microcontrollers. In contrast, the code on microcontrollers should be as low on resources as possible.

5.2) Keil Compiler

Keil compiler is software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. Keil compiler also supports C language code.

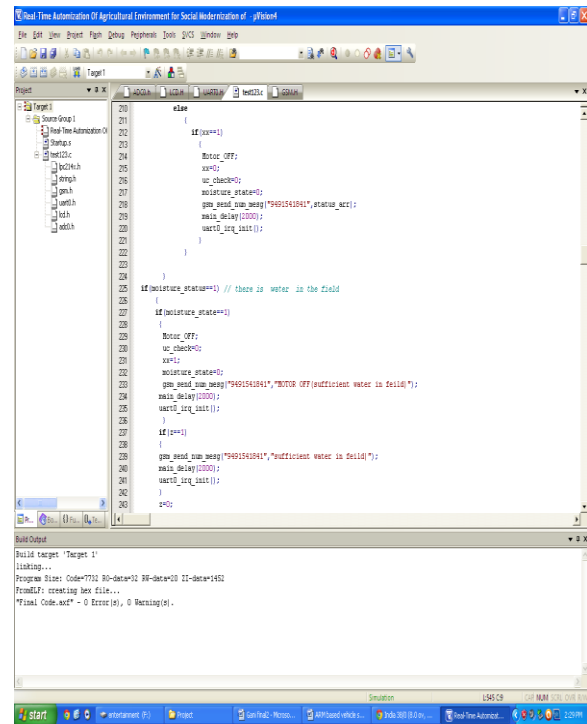


Fig 3: Run process of compiled Code

5.3) Flash magic

Flash Magic is a PC tool for programming flash based microcontrollers from NXP using a serial or Ethernet protocol while in the target hardware. The figures 5.3 and 5.4 below shows how the baud rate is selected for the microcontroller, how are the registers erased before the device is programmed.



Figure 2: Compilation of source Code

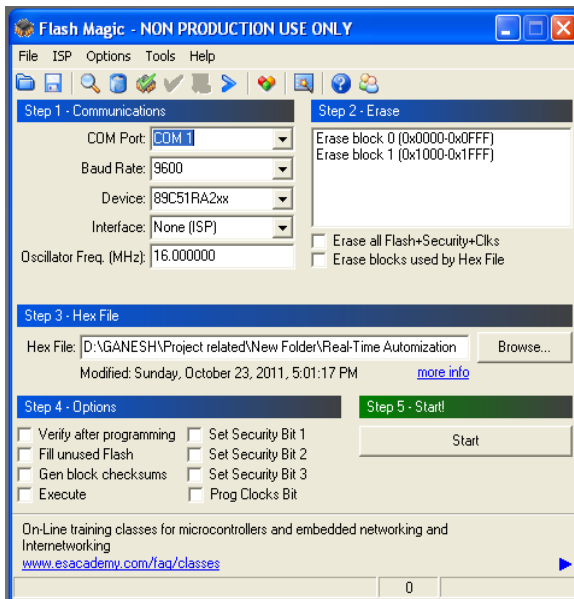


Fig 4: Dumping of the code into Microcontroller

Result analysis: The implementation of Realization of “Differentiated Virtual Passwords, Secret Little Functions, and Codebooks for Protecting Users from Password Theft” is done successfully. The communication is properly done without any interference between different modules in the design. Design is done to meet all the specifications and requirements. Software tools like Keil software to dump the source code into the LPC 2148 – ARM7 have been used to develop the software code before realizing the hardware.

The performance has been verified both in software simulator and hardware design. It can be concluded that the design implemented in the present work provide portability,

flexibility and the data transmission is also done with low power consumption.

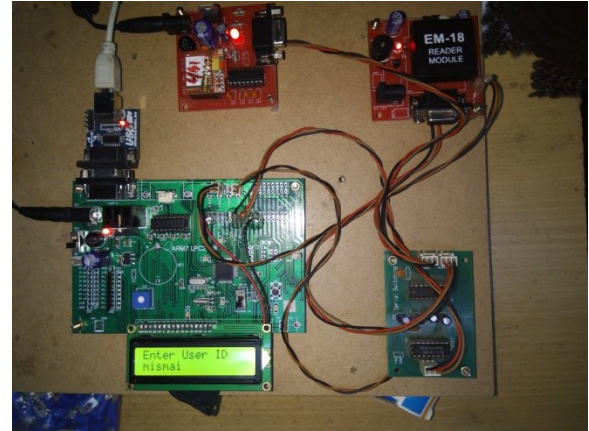


Fig 5: Kit implemented with LPC2148 development Board

CONCLUSION AND FUTURE WORK

The proposed system ensures to develop advanced ATM anti theft system. In this project an advance and cost effective approach for ATM security has been proposed. It can be installed in the ATM at some hidden place so that it cannot be approached by thieves. Proposed system is distinctive in many ways from existing ATM intrusion and theft control systems; already used systems are either very expensive or ineffective from distance. It is reliable, inexpensive and appropriate design.

In future, we can use the Raspberry Pi 3 processor instead of the LPC2148 controller and USB web cameras to take the snapshots. If the card was stolen by anyone and that thief was

trying to access the card, then the processor will trigger the USB camera and send the photograph of that particular person to the web server. By this way we can detect the person who stolen ones RFID card.

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