MULTIPLE ACCOUNT ACCESS USING EMBEDDED SMART CARD

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Abstract: These days, Banking system provides the facility to perform transaction using an ATM card which is linked to respective bank account. The problem with the present ATM system is that if a user has more than one account, he has to carry all the ATM cards associated to his/her accounts. User also has to remember multiple passwords for those ATM cards. Hence to make transactions easy and user friendly we are integrating multiple bank accounts into a single smart card. To provide higher security, we are using OTP (One Time Password) that will help to prevent fraud .It will also avoid trouble of memorizing PIN (Personal Identification Number) for ATM cards. It provides the user higher convenience for accessing multiple accounts. The hardware used is PIC microcontroller. Here the RFID tag acts like a smart card that holds the unique card number.
Keywords: Multiple account access, ATM Cards, Smart card, PIN, OTP

INTRODUCTION

ATM is Automated teller machine which enables us to make transaction from our bank account without actually visiting the bank. ATM card has magnetic strip on it which contains account number. When person enters the card account number is read from the strip and then system asks for PIN (Personal Identification Number) for verification purpose. In today's system every bank provides ATM card linked to the account in the bank. So when a person number of accounts in different banks, he/she has to carry n number of ATM cards. With number of ATM cards comes responsibility to carry them and memorizing their PIN numbers. If ATM card is used in another bank's ATM then person has to bear some transaction fees.

To reduce complexity of different ATM cards and their pin numbers, we are proposing a system where all bank accounts of a user are linked to single RFID card, so there will be no extra charges for using some different bank's ATM because all bank accounts are in same RFID card. RFID card reader uses radio waves to communicate with RFID card. When RFID card comes in range of card reader, system will be aware of all of person's bank accounts using its unique number. After reading the card system generates an OTP (One Time Password) and sends it to mobile number that user has registered. When user enters the correct OTP then system gives list of bank account user has and user has to choose a bank account from which he/she needs to do transaction. After selection of bank, system asks for amount of transaction. If amount entered is valid that is, if it fits in range for transaction amount decided by bank or system then transaction is processed. In this system the OTP is randomly generated, and is different for every transaction user does. This gives more security for transaction and also reduces complexity of memorizing different pin numbers for different ATM cards.

Multiple Cards For Different Bank Accounts

Single Smart Card

Objective:

I.   Development of embedded system based smart card (RFID card) to link multiple bank accounts.

II.   To increase security of transaction using OTP so as to not memorize different PIN's.

III.   To reduce risk of carrying multiple cards using only one RFID card.

LITERATURE SURVEY

In 1930's, Luther George Simjian began building an earlier version of an ATM. But it was not successful .He registered related patents. He came up with the idea of creating a "hole-in-the-wall machine." It would enable bank customers to make financial transactions, without going to the bank.

In the 1967, John Shepherd-Barron created a 24/7 cash dispenser. He first had idea of PIN (Personal Identification Number) .He worked as managing director of De La Rue Instruments. De La Rue are one of the manufactures of cash dispensers. One out of every Five ATM machines is built by De La Rue cash dispenser . If we assume that Shepherd Barron invented the ATM, then the world's first Automatic Teller Machine was installed near London .But he never patented his idea.

Some experts believe that James Goodfellow of Scotland holds the first patent on date of 1966 for a modern ATM, and John D White from US is also credited for invention of the first free standing ATM design. In the year 1967, John Shepherd-Barron invented an ATM and installed it in a Barclays Bank in London. Don Wetzel invented an Made in America ATM in 1968.

ATM system has come a long way in security and user friendly purposes. Earlier ATM's were offline machines. So money cannot be withdrawn automatically. ATM's were not linked to bank accounts. Today bank accounts and ATM cards are linked hence it is easy to withdraw money without visiting bank. To make today's ATM system more secure and reducing trouble of carrying multiple ATM cards for multiple bank accounts we have proposed an idea of linking all of user's bank account to single smart card.

Paper's "Multi Account Embedded ATM Card with Enhanced Security" ,"Universal ATM Card" ,"Multiple Banking System Accessing with Embedded Smart Card ATM by using ARM7 Based RFID & GSM Technology" also states about linking all bank accounts to single card.There are even more advances done in this area to secure transactions of ATM or smart cards.

In the design of an system used for the ATM security in the paper "Secured ATM Transaction System Using Micro Controller" ,the UART mode of communication scanned the data base of the card holder and it generates the message to mobile number which is registered through a GSM module.

In the paper "Anti-Theft ATM Machine" vibration Detection Sensor was used. They used RFID, GSM and micro controller in this system. Mobile devices are introduced in most of the approaches. They are capable of reading RFID tag and they also provides higher computing performance.

EXISTING SYSTEM

In the current system firstly, the user inserts his/her card into the ATM system. Then the system reads the card which is linked to account number of user. Next user enters the PIN which contains four digits for that particular card ,in the next immediate step for the purpose of authentication. If user enters the PIN i incorrectly more than three times then that card will be blocked for some particular time. If the PIN is correct user then selects particular transaction which he/she wants and then he/she can also enquire about balance by selecting option of Balance Enquiry. By selecting withdrawal option User can withdraw money from system, then requested amount will be drawn from ATM. If the entered amount is less than particular limit or more than particular limit set by the bank then it displays that enter valid amount.

Drawbacks of existing system:
1. User has to carry number of ATM cards for different bank accounts.
2. It has less security because PIN can be copied.
3. User has to pay extra charges when transaction is done in different ATM system.
4. User has to memorize PIN number for various ATM cards.

PROPOSED SYSTEM

The proposed system consists of RFID tag and reader, PC and GSM connected to a microcontroller. We are using RFID smart card instead of ATM Card for transaction. User gets ATM card from the bank when account is created. User can merge all his accounts in single smart card with specific unique number.

This system allows user to swipe his/her smart card in the card reader , after reading unique number of card system will request for OTP in the server side. Machine generates OTP and sends it to user's registered mobile number. Then user will type OTP and if it is correct then account will be accessed and it display the list of all banks that the user is having account in. Now the user has to select the bank from which he/she is willing to perform transaction. Request is sent to the corresponding bank through a network after selecting the bank and links it with the server of the bank so that the transaction is processed.
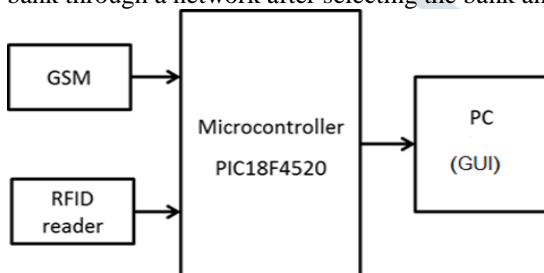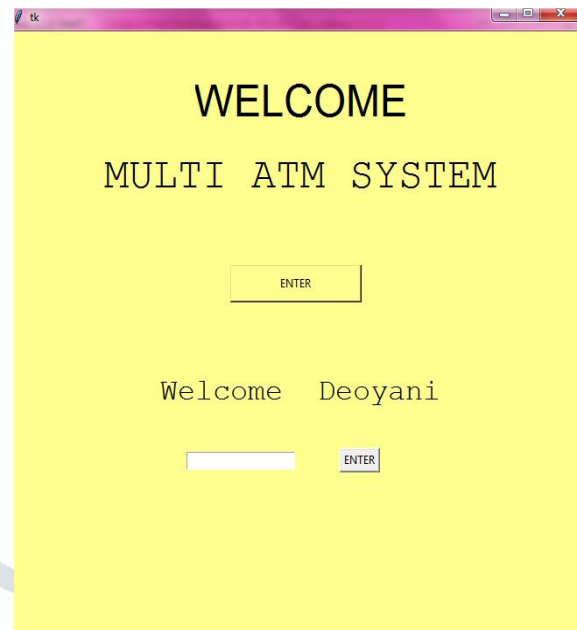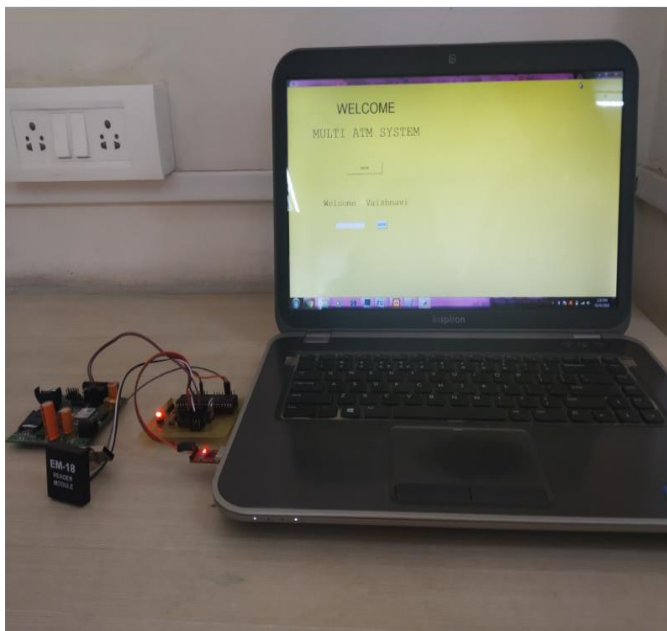

Advantages of proposed system
1. User can carry a single smart card for various accounts.
2. Security system is enhanced.
3. It sends OTP to the registered mobile number giving more security.
4. It is user friendly.

METHODOLOGY

In our project , we have used an RFID card as an ATM card with all accounts of a person linked to it. When smart(RFID) card comes in the range of RFID reader, reader will read 12 characters of RFID card. Microcontroller will receive these 12 characters and will and user's information related to that smart card and display Name of user on computer screen. If card is valid, microcontroller will generate an OTP and send it to GSM and Computer. GSM will send this OTP to registered mobile number of user. When user enters an OTP, computer will verify if its valid. If entered OTP is valid, then access will be Granted. At this point computer will display bank accounts of user with amount he/she has in that account. User can withdraw money from any account. If user withdraws allowable amount, then transaction will be processed.

RESULT:

The results of our project are shown below. Our ATM system will have a following view.

CONCLUSION
Features-

1. Important feature of proposed system is single smart card linked to all of a user's accounts.

2. Use of OTP is another important aspect which increases security of current ATM transaction system.

Limitations-

1. One of the limitation of proposed system is user losing his/her mobile phone, if user loses his mobile phone he/she will not be able to receive OTP and in turn not being able to do transaction.

Future scope-

1. Proposed system can be made more advanced by using fingerprint scanner for   authentication.

2. We can also update this system to overcome limitation stated above. User can update a backup mobile number. So when user's mobile get lost user can replace his/her own mobile number with backup number with permission of the bank.

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