

# Integration of Multi Bank Multi User in Single Card with User Behavior Monitoring Using Face Recognition

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**Abstract**-Currently, banks are looking beyond transaction to the full opportunity on how to manage their customer. Customer can able to access their bank deposit or credit account in order to make transaction such as cash withdrawals, check balances. But most of these systems do not focus on how to manage and keep their customer's data more secured. Customer expectation are how safe and secured their personal information would be. Integration of Multi bank Multi user in a single card and encourage banks that already have similar system to better customer management approach. Here we are developing an application for banking sector particularly for Debit/ATM card section. User can create His account and get ATM card from the bank. He can integrate all his account in other bank can be integrated in this single card with unique PIN number. User face recognized for the verification part. User behavior is monitored by using HMM Model and he can set up a formula based authentication. He can include all his family member account detail also in the same card.

**Keywords**-Multi banking, user behavior, ATM ,HMM Model, PIN.

## I. INTRODUCTION

This paper gives the overview of integration of multibank multi user in single card aims to provide critical information for managing the bank customer more effectively [1]. It also deals with customer expectation are how safe and secured the information would be [3]. Here we are developing an application for banking sector particularly for Debit/ATM card section [5]. An RFID card can be used as a smart ATM card, RFID is considered as exciting and fast-growing technology [2]. It improve the efficiency of Multi banking and transaction is made easier[7].

This concept essentially covers :

Understanding customer needs [1], secure authentication, good service, and effectively managing system.

## II. SCOPE

The objective of this specific application to make the user of various Banks can do their account access and transactions using this solution. [6] They don't need to interact with various websites of each bank. The Admin will add Bank details and can update the existing details of the bank. The Admin will accept or reject registration of a Customer to use this application [2]. The Bank can able to access this site to see the all Customer transactions, Transfer status, etc [7]. He can accept or reject the fund transfer of the Customer. Should provide Response for the queries related to the Customers. The Customers should request for multiple bank account access to the Administrator. He can view the Account related information [5]. The customer should able to transfer amount from one bank to another bank account using the system by providing the Secondary authentication details. Using system The Customer should able to ask Queries to the Bank Admin.

## III. EXISTING SYSTEM

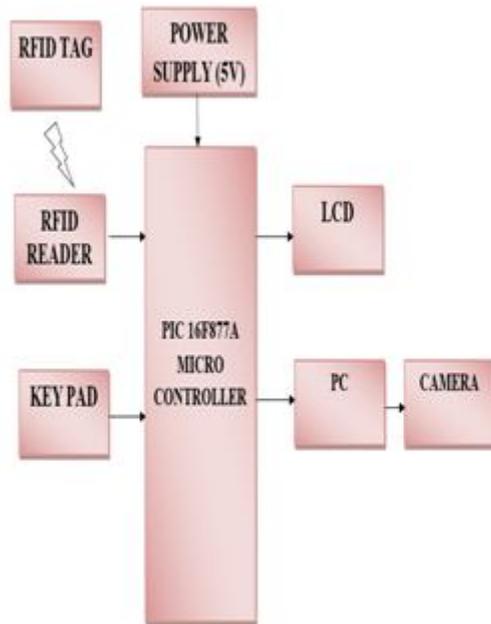
Banks are providing individual card for account holders. It's very difficult to handle Multiple ATM/Debit/Credit cards [1]. Having more card means you have to work harder to manage them. Missing some of the due dates or paying the wrong amount using a wrong card can result in costly late fees [5]. Multiple missed payment can lead to increased interest rates and hurt your credit score. If you start having more cards in a short period of time it can negatively impact your credit report [7].ATM cards are only protected by magnetic card number and a four digit pin number that you set yourself. No other security verification in ATM section [2]

## IV. PROPOSED SYSTEM

The proposed system consists of RFID tag and reader, keypad, camera, PC and display device connected to a microcontroller. We are using RFID smart card as ATM Card for transaction. User can create account and get the ATM card from the bank [5]. User can integrate all his accounts in which

user is having access to bank can be integrated in this single ATM card with specific PIN numbers accordingly. User face is also recognized for the verification part [7]. User behavior is monitored through HMM (Hidden Markov Model) Model. User can include all his family members’ accounts details also in the same card. Four digits PIN number can be entered through Keypad [8]. If the entered PIN number is correct, then camera is automatically on and captures the face of the user and vein sensor is used for verification [7]. After authentication process user can withdraw amount from atm. Server will monitor the user’s frequency of amount (average amount withdrawal) and number of transaction count (normally three transaction times at a time) using HMM model. If any variation is detected during transaction, it will ask to enter security number/formula, which is set by the user at the time of registration. Now the transaction is possible only [6], when the customer will enter the correct code / formula.

**BLOCK DIAGRAM**

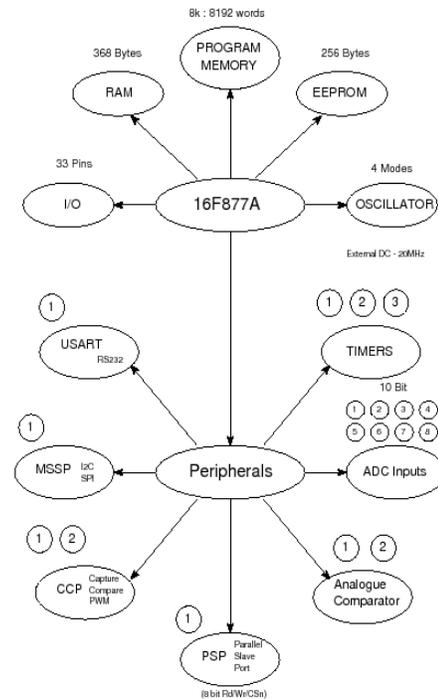


**SOFTWARE PROGRAM TESTING:**

The software program is written in EMBEDDED ‘C’ language and compiled by HI-TECH C compiler using MPLAB IDE software. The compiler is used to convert middle level language into machine level language. After compiler operation the hex code is generated and stored in the computer. The hex is nothing but machine level language understood by the micro controller. The hex code of the program is burnt into the ROM (Flash memory) of PIC16F877A by using PICKIT2 Programmer.

**HARDWARE DESCRIPTION**

**A. PIC16F877A:**



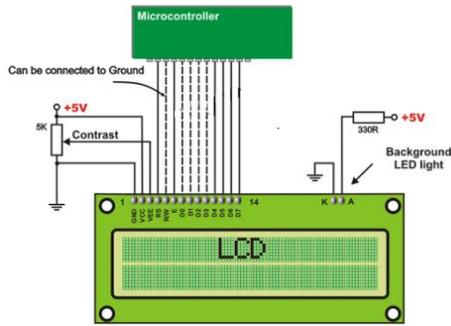
It is High performance RISC CPU machine have 35 simple word instructions. Operating speed of the system :clock input (200MHz), instruction cycle (200nS).Up to 368×8bit of RAM data memory, 256×8 of EEPROM (data memory), 8k×14 of flash memory. Wide operating voltage range (2.0 – 5.56) volts.2 8 bit timer and one 16 bit timer is available.10bit multi-channel A/D converter Synchronous Serial Port with SPI (master code) and I2C (master/slave). 100000 times erase/write cycle enhanced memory.1000000 times we can able to read/write cycle data EEPROM memory.



**B. POWER SUPPLY CIRCUIT**

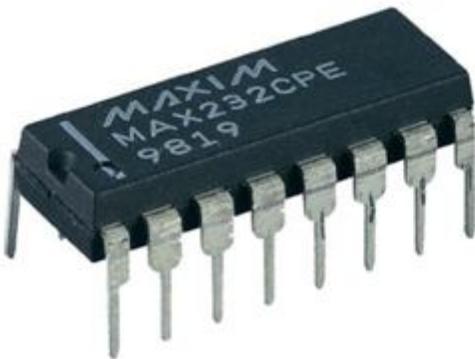
The proposed hardware of our project requires different power supplies max of 5v.The interfacing device will get supply from main microcontroller.

**C. LCD:**



LCD (Liquid Crystal Display) screen is electronic display module and find a range of applications. A 16x2 LCD display is a basic module and is commonly used in various devices and circuits. A 16x2 LCD means it will display 16 characters per line. In this LCD each character are displayed in a 5x7 pixel matrix. This LCD has two registers, namely, Command and Data.

**D. DMAX232**



MAX232 is used to convert TTL into RS232 logic converter used between the microcontroller and the GSM board or PC .Our controller is operated at 5v but interfacing devices are worked with 12 v .so this IC will convert the level of 5v to 12 v for transmitting .

while receiving convert 12v into 5v to the microcontroller. It is helpful to understand what occurs to the voltage level MAX232 has tworeceiver that convert from TTL logic to RS-232 voltage at levels. As a result, only two out of all RS-232 various signals may be converted in each direction. Typically, the first driver pair in MAX232 is used for Transmitter and Receiver signals, and the second one for CTS and RTS signals.

**E. KEYPAD**

On each key pressed on a keypad, the index of the key is passed to user defined function. User is free to define what to be done with the input By using keypad input can be entered.

**F. RFID TAG**



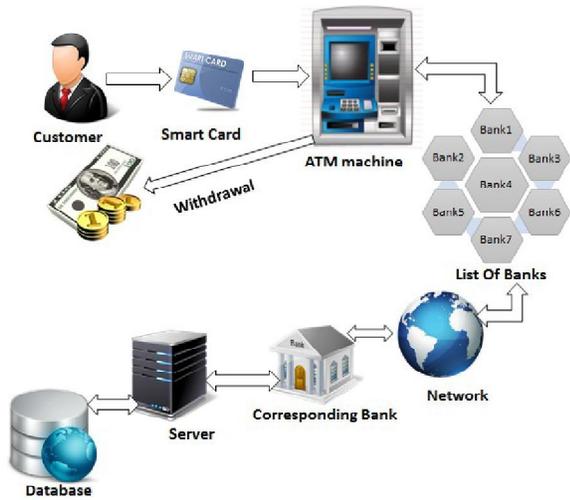
RFID is the Radio Frequency Identification. The antenna picks up signals from the RFID reader /scanner and then returns back signal, with some additional data (like a unique serial number or other customized information). RFID system consist of three types of components: an antenna or coil, a transceiver with decoder and transponder RFID tag it is an electronically programmed with unique information. An RFID reader device can be used to identify information in the RFID tag. The reader has the antenna that emits large radio waves the tag responds by sending back its data.

**G. RFID READER**



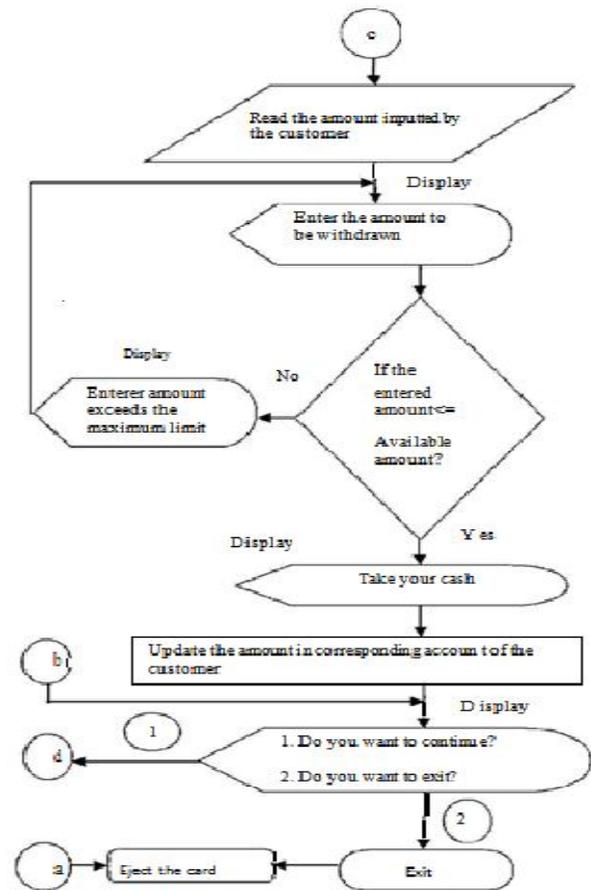
The RFID READER reads the RFID tag and finds the entire information about the user .Each one of the user can able to store their information in the RFID TAG it is more secure than what we are using in the existing system .This method is possible by radio waves it transfer data from TAG to reader .An high frequency signal is necessary make the TAG activate and transmitted through antenna .The signal is an energy which is used to power the TAG it automatically identify and track TAG attached to object.

**H. SYSTEM ARCHITECTURE**



The idea behind this SMART ATM card is that the customers has an advantage of using single ATM card to access different bank accounts instead of having individual card for each bank account and maintaining their pin carrying the cards safely which is a difficult process at present scenario. The technology used in the product of the service is that adding all the user bank accounts to a SMART ATM card. In this the user swipes his smart card in the ATM machine, then it request for authentication in the server side using PIN and Face recognition. After the user is authenticated successfully, then it shows the list of all banks in which user is having account. Now the user can able select the bank from which he is willing to perform transaction. After selecting the bank the request is sent to the selected bank through a network and it allows a links with the banks server for accessing the database of the user so that transaction is processed.

**I. FLOW CHART**



**J. FACE RECOGNITION**

As of additional security we are implementing face recognition as of existing system we are using only personal pin number and magnetic pin number. But in today life we need additional security so we are implementing face recognition to detect user face .In this system user can integrate all his accounts in other banks can be synchronized together in this single card with specific PIN numbers accordingly. User face is also recognized for the verification part. The most advantage of this system is than each and every user must have his own ATM card Other than user no one can able to access their Personal account.

**V. CONCLUSION**

The system we are using for handling multiple accounts here is more efficient than existing system. This Reduces transaction cost of handling multiple accounts of a single user. This make banking system more efficient than the existing system. Using this the users can perform transactions for all his bank Accounts using single smart ATM card with Enhanced security system such as OTP (one time password) and face recognition Thus the user can manage his multiple accounts in various banks with the help of this single smart

card which provides access and reduces the complex of managing more than one ATM card and passwords. This also leads to reduce cost of transaction charges that were on the customers for making transaction and decrease in their production of smart cards for each every account the user has. By implementing this ATM fraud i.e. skimming etc can be avoided.

### FUTURE ENHANCEMENT

Since more than one bank accounts being added, the existing PIN security are not sufficient enough, so we can use a biometric scan in the smart card i.e. multi component card So that the user holds the card such that the face recognition on the biometric scan reader while he swipes the registered card and the image is authenticated at the real time. No one other than the user and their family can use the card. Only if the face matches the user can enter his PIN number otherwise the transaction will not be allowed until the user is authenticated.

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