RFID-BASED SECURE MONEY ACCESS WITH MULTIPLE BANK AFFINITY USING BIOMETRIC AUTHENTICATION

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Abstract: **In these days every person has an individual ATM card for every bank where they maintain multiple accounts. So, handling numerous cards, and remembering the password for every bank account is difficult. Currently, banks are looking for each opportunity to maintain and provide new facilities for their customers. Integrating multiple bank accounts into a single ATM card encourages banks to better customer management.**

Here we are developing an application for the banking sector particularly for the Debit/ATM card section. Users can create their account using the same mobile number, and get an ATM card from the bank. He can integrate all his accounts in other banks into a single card with a unique identification number. We have used an RFID tag as an ATM card, it is considered an existing and fast-growing technology.

We are providing extra security for ATM cards to prevent fraud and ATM theft. The fingerprint of the user is the user as an Authentication. Data of a fingerprint is stored in a database using the enrollment process through the bank. The user must enter the pin code to do the further transaction. The user can withdraw money from the selected account by him previously according to the specific account number.

Keywords: **ATM, Security, Multiple bank affinity, Authentication, Accessibility, Recognition, Authorization.**

1. INTRODUCTION

ATM is an electronic device that provides the user to Perform Transactions without the need for a cashier, or bank teller. ATM Services are popular because of their easiness of banking system. In the olden days, people used to go to the bank for every transaction even for money withdrawals. At present ATM Systems provides two types of Services, the First one provides the user with the money requested and sends a message stating the amount withdrawn from the ATM Machine along with the Account Balance. The Second one is much more advanced and allows the user to deposit the money into his/her bank account or to any bank account desired by them, also Provides Credit Card Payment facilities, and sends a message about the transaction made and the account balance information. The main motive of this project is to satisfy the requirement of the customer. The purpose of ATMs is to support the banking network. ATM is an electronic device that provides the user to perform transactions without the hand of a cashier or bank teller. ATM services are very easy to use and they are well known for their easiness of banking systems today every person maintains an individual ATM card for their respective bank account, maintaining these ATM cards and remembering passwords is quite difficult. The purpose of this project is to design and implement the system test the functionality and maintain the software of an ATM component of a Larger ATM network.

2. PROPOSED SYSTEM

A. Advantages:

1. Users can withdraw money from the nearest ATM Machine rather than going to the Bank for drawing money every time they need it.

2. Smart cards (RFID Tags) are easy to access.

3. A Single card can be used to access multiple accounts.

4. Extra security is provided for the ATMs / Accounts.

B. Methodology:

The idea behind this SMART ATM card is that the customer has the advantage of using a single ATM card to access different bank accounts instead of having an individual card for each bank account and maintaining their pin carrying the cards safely which is a difficult process at the present scenario. The technology used in the product of the service is adding all the user bank accounts to a smart ATM card. The user scans his smart card in the ATM, then it requests authentication on the server side using a PIN. After that the user is authenticated successfully, then it shows the list of all banks in which the user is having an account. Now the user can select the bank from which he is willing to perform the transaction. After selecting the bank, the request is sent to the selected bank through a network and it allows a link with the bank's server for accessing the database of the user so that the transaction is processed. In the proposed multi-account bank affinity card system, autonomous actions are attained by employing NodeMCU. The is the NodeMCU central core part in this system. The NodeMCU has multiple features which enable all the security concerned applications for ATM card issues.

The RFID reader, fingerprint sensor, and Buzzer are the key modules interfaced with the NodeMCU. RFID is an emerging and fast-growing technology. Every RFID system consists of three components: a scanning antenna, a transceiver, and a transponder. It uses radio waves to transmit signals that activate the tag. Every RFID card consists of a unique number that cannot be altered, through which the reader recognizes the valid card. Once the card is placed against the reader, the scanner reads the unique identification number and compares it with the card number provided in the database. We use the MySQL database in our project and it is present in the web server. The database also contains user data, The banks in which the user holds accounts, PIN, and the amount of the user in every bank account. Designing Web applications includes front-end development (user interface) and backend development (the instructions to be executed by the compiler on a server). For the client side, the scripting languages used are HTML and CSS. Since MySQL database supports PHP scripting, we have used PHP language on the server.

The Web page is connected to the server through PHP scripting. If the card placed is valid, then it is stored in the database and the web page is directed to the user details page. The user page consists of 2 options namely 'Go to Accounts' and 'Back to Home page'. If the 'Go to Accounts' option is selected the user is directed to the bank selection page. The user has to provide a pin to select the desired transaction to occur. According to the transaction selected, the user has to enter the amount and the remaining amount after the transaction is updated in the database of that particular bank account. The remaining balance is displayed on the screen after every transaction. To initiate another transaction, the user has to exit the page and insert the card, and again and again, the process takes place. We have also used the Fingerprint module to give extra security to the system.

Using the fingerprint module, we will first enroll the user's fingerprint and store it in the database along with the account details of the user. When the user went to ATM for the transaction, he will use the RFID card to access the accounts and places their finger for authentication. The system compares the enrolled fingerprint in the database with the fingerprint that the user gives at the time of the transaction.
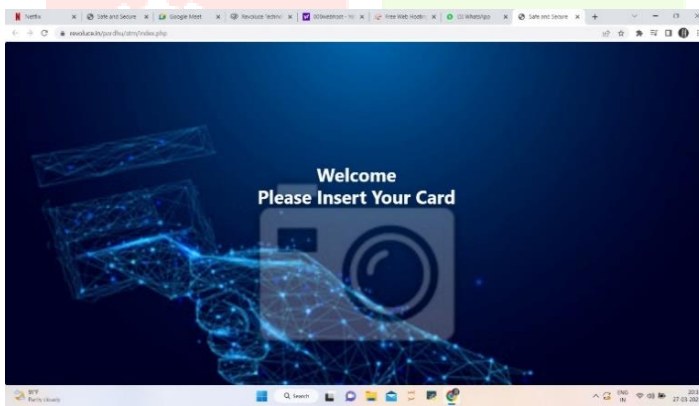
BLOCK DIAGRAM
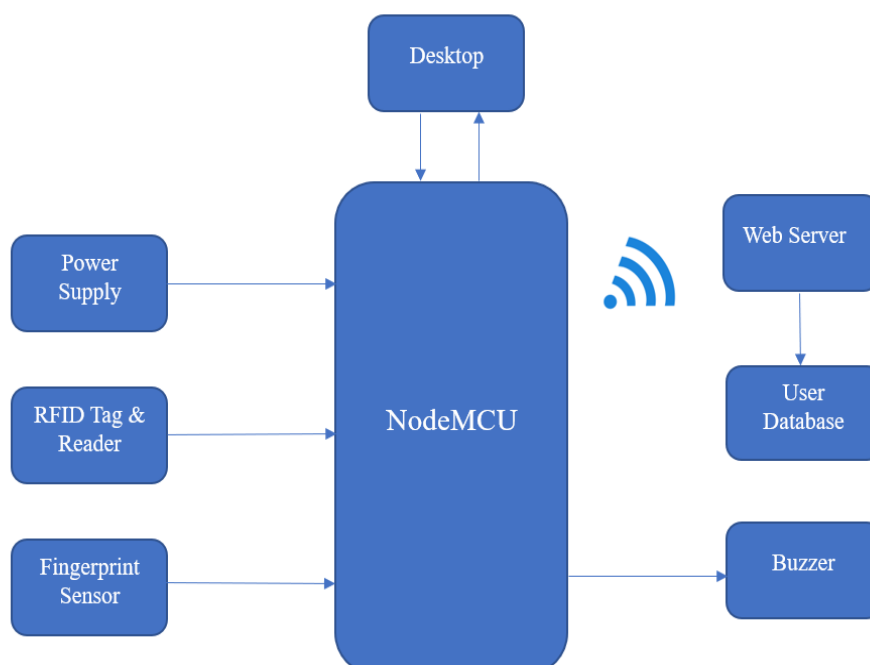
FLOWCHART
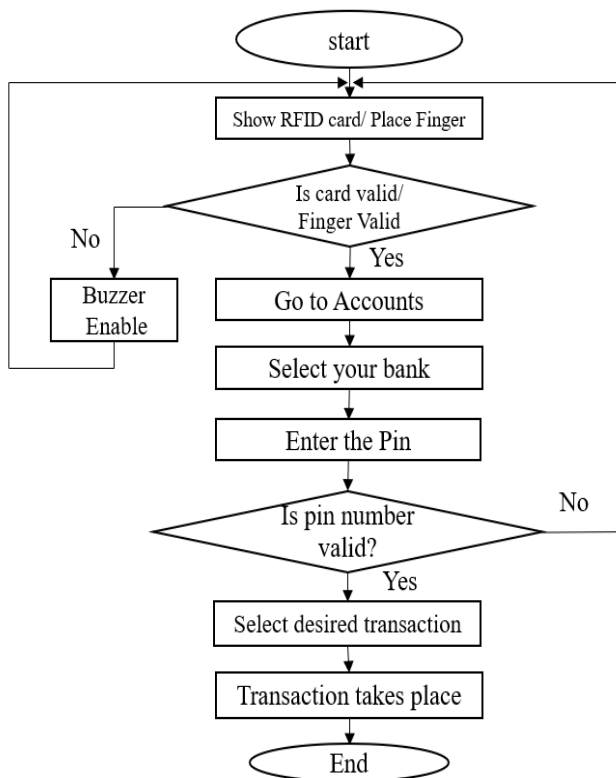
3. RESULT

We successfully created a software-based ATM system for accessing a single bank account using a PC in this project. The languages we used for implementing the front-end pages are HTML, CSS, and PHP. The pages for the web application to access the databases are provided below, and every page is pasted for reference.
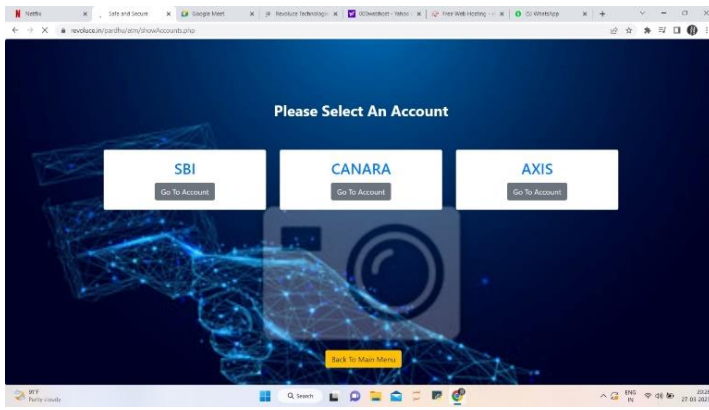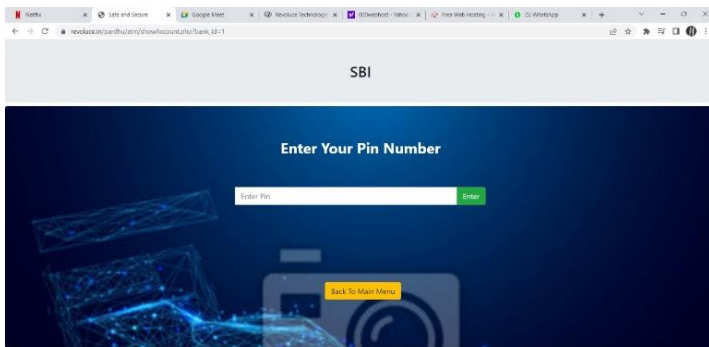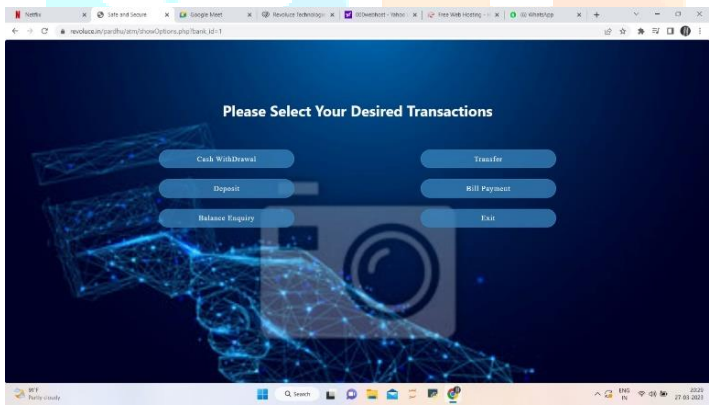
Home page

User details
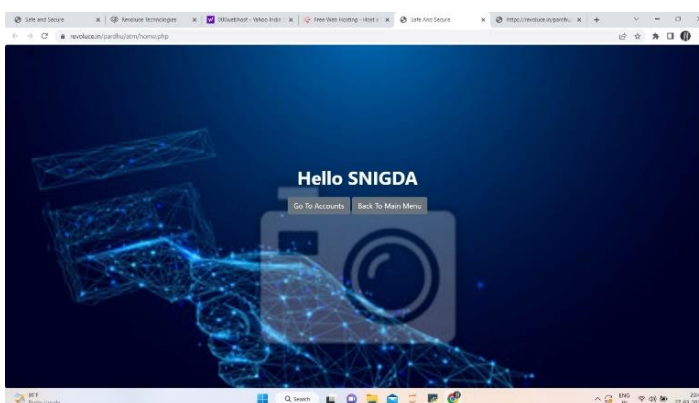
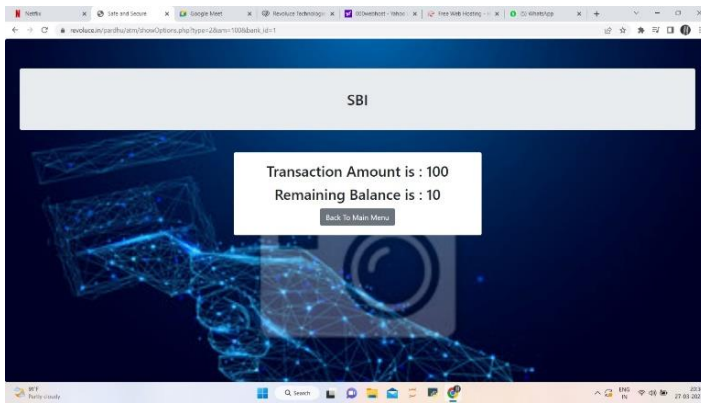**Selection of Bank**

Enter PIN Number

Select Desired Transaction

Enter the Amount for withdrawal/Balance Enquiry

Transaction Successful

Money Deposit

4. CONCLUSION

Thus, a software-based ATM system is implemented by using front-end development. Thus, with the help of a single RFID card, we can access/manage different accounts of various banks which provide simple access and reduce transaction charges. This also reduces the complications of maintaining more cards for accessing each bank account. In this project, Fingerprint authentication provides more security for the users. This system is more convenient as there is no need to remember all the bank account PINs. Fingerprint authentication provides high security to the users and their bank accounts.

5. FUTURE SCOPE

This project can be extended with extra security by adding face recognition as authentication. As security threats are increasing day by day, ATMs and banks need more protection and security to keep money safe. So, this project gives security to the ATMs and makes customers access the ATMs. As fingerprint authentication is used in this project, further face recognition and OTP verification can be added as additional security for ATMs and user account security.

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