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## **Multiple Account Access Using a Single ATM Card**

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**ABSTRACT:** The "Multiple Account Access Using a Single ATM Card" system offers a streamlined solution for users to access multiple bank accounts with a single RFID-enabled ATM card. Built using an Arduino Mega 2560, this system features an LCD, keypad, and RFID reader to allow users to select from multiple linked accounts, such as checking or savings. Upon swiping the RFID card, the LCD prompts the user to choose a bank account via the keypad. After selection, the user can choose to withdraw or deposit funds, with actions confirmed through the LCD display. If a withdrawal is selected, a DC motor simulates unlocking access to funds, while deposits show updated balances. The GSM module is integrated to send transaction alerts, and a buzzer provides audible feedback during interactions, making this system user-friendly and efficient for managing multiple accounts.

#### I. INTRODUCTION

The "Multiple Account Access Using a Single ATM Card" system is an innovative approach aimed at simplifying the banking experience for users with multiple accounts. Traditional ATM systems require separate cards for each account, which can be cumbersome and lead to misplacement or confusion. This new system, using RFID technology, Arduino Mega 2560, an LCD, a keypad, and a GSM module, allows users to access various accounts such as checking and savings from a single card. By swiping the RFID card, users are presented with their available accounts on the LCD, enabling easy selection and management through the keypad. The system also provides secure transaction confirmations, including withdrawal simulations via a DC motor and real-time alerts sent through the GSM module. This solution not only enhances convenience but also offers a more secure and efficient way to manage multiple bank accounts through a single card.

#### **II. EXISTING METHOD**

Traditional ATM systems allow users to access a single bank account, which typically requires separate ATM cards for each account. The process is straightforward, but this method is inconvenient for individuals who manage multiple accounts across different banks. Additionally, it involves using multiple cards, increasing the chances of losing one or forgetting account details. Furthermore, the current systems often lack user-friendly interfaces for quickly switching between accounts, leading to longer transaction times and the need for separate cards to access various types of accounts (e.g., savings, checking).

#### **III. PROPOSED METHOD**

The proposed "Multiple Account Access Using a Single ATM Card" system allows users to access various bank accounts with just one RFID-enabled card. After swiping the RFID card, the system displays the available bank accounts on an LCD screen, allowing the user to choose the desired account through a keypad. Once an account is selected, the system prompts the user to either deposit or withdraw funds, with the option triggering corresponding actions, such as operating a DC motor to simulate unlocking access for withdrawals. This solution streamlines the process of managing multiple accounts, improving security and convenience by eliminating the need for multiple ATM cards.

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#### **IV. LITERATURE REVIEW**

#### **RFID Technology in ATM Systems**

RFID (Radio Frequency Identification) technology has been widely adopted in banking for secure access control. In traditional ATM systems, RFID is used to authenticate users and facilitate seamless transactions. According to Agarwal and Tiwari (2016), RFID-based authentication systems provide enhanced security by enabling contactless card recognition, reducing the risks associated with physical wear and tear of magnetic stripe cards. Integrating RFID into a system for accessing multiple bank accounts enhances both security and user convenience by allowing account selection with a single card swipe.

#### Multi-Account Banking Systems

Managing multiple bank accounts often involves using separate cards for each account, leading to inefficiency and inconvenience. However, innovative banking systems have sought to address this challenge by consolidating access into one card. Per Zhang and Xu (2018), the implementation of multi-account systems allows users to switch between accounts using a single card interface, reducing the risk of card loss and streamlining the user experience. These systems improve banking efficiency and user satisfaction by eliminating the need for multiple cards while maintaining security protocols.

#### **Role of GSM in Secure ATM Transactions**

The integration of GSM modules in ATM systems allows for real-time communication between the ATM and the user, providing transaction alerts and enhancing the security of banking operations. Venkatesh and Rao (2019) demonstrated the effectiveness of GSM technology in ensuring that users are immediately notified of transactions, helping to prevent unauthorized access or fraud. By sending SMS alerts after each transaction, the system gives users an additional layer of security, ensuring that any suspicious activity is quickly identified.

#### **Keypad-Based User Interaction in ATM Systems**

User interaction in ATM systems has evolved to become more intuitive, with keypads playing a crucial role in account management. The keypad allows users to input essential information such as PINs and account selections, making it an integral component of ATM user interfaces. In their study, Patel and Joshi (2017) noted that keypad-based systems provide a reliable and user-friendly method for selecting between multiple accounts. This form of interaction ensures accuracy while maintaining ease of use for individuals unfamiliar with more advanced touch-screen systems.





Fig: Basic Block Diagram of Multiple Account Access Using a Single ATM Card

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#### VI. HARDWARE & SOFTWARE REQUIREMENTS

Software: Embedded C, Arduino IDE Hardware: Power supply Arduino Mega 2560 LCD display Keypad RFID reader RFID cards GSM module Buzzer Motor driver DC motor

#### ADVANTAGES

- Multi-account access
- User-friendly interface
- Improved security
- Easy fund management
- Time efficiency

#### APPLICATIONS

- ATM systems
- Banking automation
- Access control systems
- Personal finance management

#### V. RESULTS



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#### VII. CONCLUSION

In conclusion, the "Multiple Account Access Using a Single ATM Card" system presents a highly efficient and userfriendly solution for managing multiple bank accounts through a single RFID-enabled card. By integrating technologies such as RFID, GSM modules, keypads, and LCD displays, this system simplifies the banking process, enhances security, and reduces the need for multiple cards. It offers users the flexibility to switch between different accounts, perform transactions like deposits and withdrawals, and receive real-time alerts, all while ensuring a seamless and secure experience. This innovative approach addresses the limitations of traditional ATM systems, making it a valuable advancement in modern banking technology.

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