BANK ACCOUNT SYSTEM USING JAVA

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Abstract: Abstract:The Bank Account Management System is a designed to manage user accounts, process transactions (deposit and withdrawals), and maintain transaction history using a text file database. It employs core Java concepts such as Encapsulation and Exception Handling and using swing concepts to ensure security and robustness. The system captures user details, including name, age, phone number, PAN card number, and address. Transactions are logged into a file for future reference, providing a simple yet efficient financial management tool. The Bank Account Management System is a standalone Java application developed to facilitate the management of user accounts and transactions. Its primary function is to allow users to deposit and withdraw funds, while also maintaining a detailed record of their financial activities. The system is designed to provide an intuitive and efficient means of tracking and managing personal finances, making it a useful tool for both individuals and businesses.

Keywords: Java swing concepts,Deposit Withdraw transactions,. Interest Rate, AccountType ,Authentication, PIN/Password

1. INTRODUCTION

Banking systems are essential for secure and efficient financial management. Traditional banking methods require manual handling, which is time-consuming and error prone. This project automates basic banking functions, allowing users to perform transactions, check balance, and review transaction history. The system ensures user data security and provides an easy-to-use interface for smooth operations. Banking systems play a crucial role in modern financial management, serving as the backbone for conducting transactions and storing financial information securely. With the advancement of technology, Traditional banking methods, which rely heavily on manual processes, are not only time-consuming but also prone to human error. This can lead to inaccuracies in financial records, delays in transaction processing, and difficulties in retrieving transaction history**.**

2. LITERATURE SURVEY

[1] Improving User Experience in Bank Account Systems Bharadwaj, Singh, and Agarwal (2023) in their book Improving User Experience.

[2] Client-Server Architecture in Bank Management Dalwadi and Rout (2021) presented a modern approach to bank management systems in their paper *Modern Client-Server Bank Management System* published in the *International Journal of Tech. Innov. Mod. Eng. Sci.*

[3] Multi-Bank Account Integration and Behavior Monitoring The integration of multiple bank accounts into a single interface, with sophisticated user behavior monitoring, was discussed by Suresh, Somasundaram, and Sethukarasi (2017) in their paper *Integration of Multi Bank Account in Single Card with User Behavior.*

[4] Online Banking Systems Acharya (2024) examined the *Online Banking Management System* in the *Tribhuvan University Journal*.

[5] Optimization of Management Accounting in Commercial Banks Zhengjun, Dong, and Du (2021) in their study *Strategies for Optimizing the Application Environment of Management Accounting in Commercial Banks*

3. PROPOSED SYSTEM

Enables deposit, withdrawal, and balance check functionalities.Stores all transactions permanenty in a file database (CSV format). Provides transaction history to track financial activities. Implements exception handling to prevent invalid operations.

MODULES USED

- **User Module**
    - Handles user registration and login
    - Users can upload datasets and view results
- **Account setup**
    - Activates and manages registered users successful
    - Enter accute details account successfully done

- **Deposit & Withdraw Module**
    - Deposit model daily limit fully transaction daily
    - Withdraw daily limit should be 1 lack only
    - Bank Manages both transactions accuratly
- **Transaction history Module**
    - Presents results soored in text file data base
    - Enables the data contenjt format
- **Check balance Module**
    - Displays the accurate results
    - Helps users analyse results based on inputs

TECHNOLOGIES USED

Programming Language: Java
Tools: eclipse Visual Studio Code
Database: File based
Operating System: Windows 10
Frontend: HTML, CSS, swings

SYSTEM ADVANTAGES

- Improved accuracy AND validation & Security
- Real-time Bank account system using Deposit and withdraw , transactions
- User-friendlyinterface (GUI)
- cloud data based using bank account managers

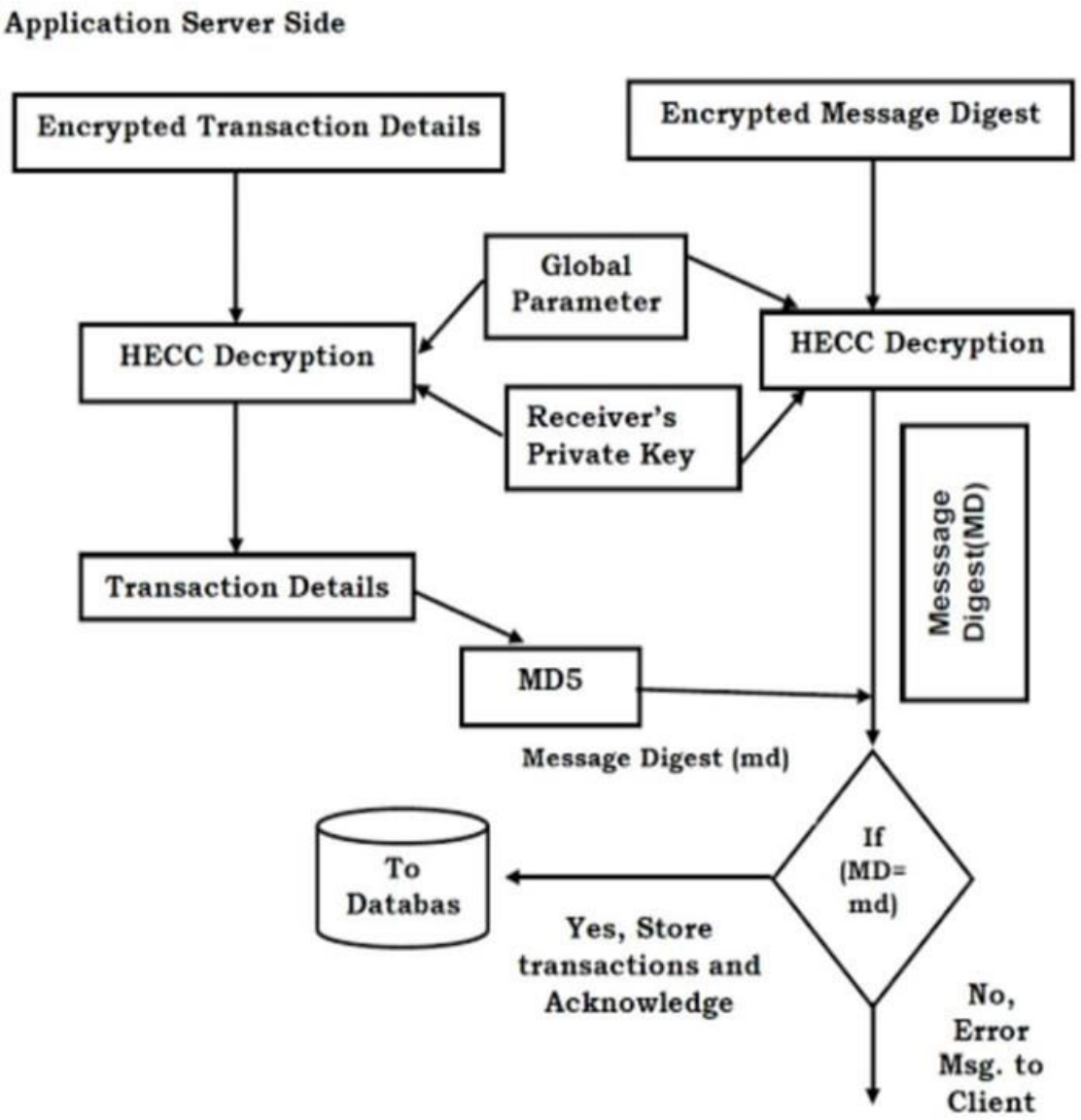
Advantages Of Proposed System

1.Customers Allows customers to open and manage accounts. Allows users to deposit and withdraw funds. Manages customer authentication securely. Provides account information such as balance, transaction history, etc.

2.Stakeholder Identification The stakeholders in a bank account system include:

Customers They need to manage their accounts (check balance,transfer funds, etc.). Bank Staff They perform administrative tasks like managing accounts and resolving issues. ues.

4. ARCHITECTURE

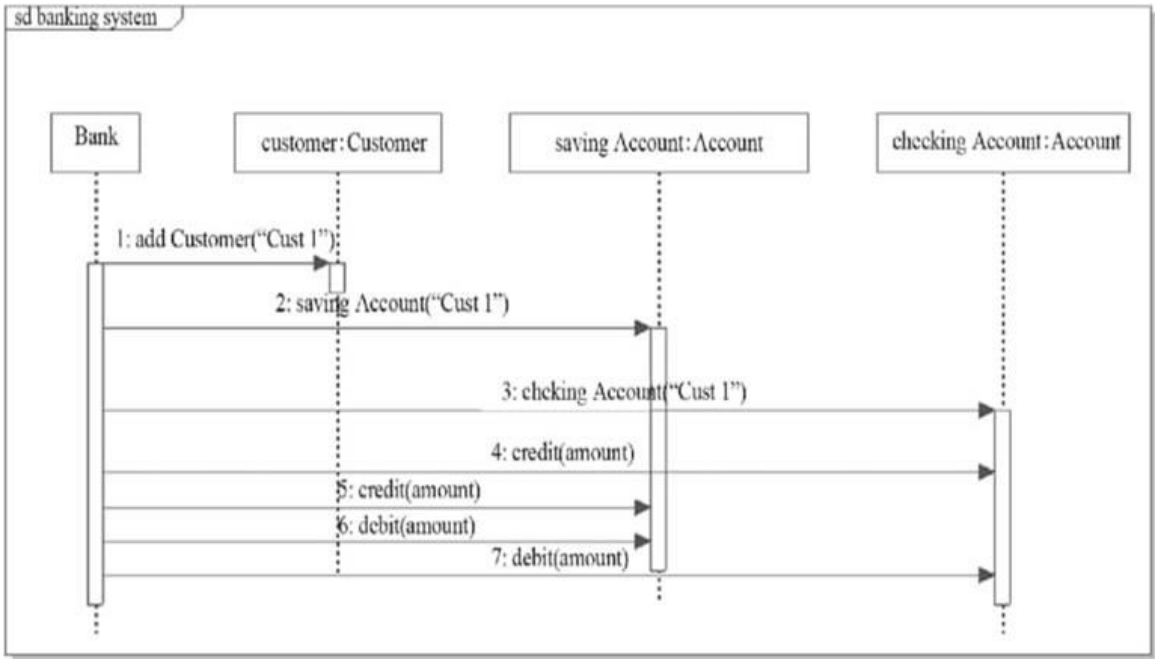


Transaction flow diagram

SEQUENCE DIAGRAM

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event

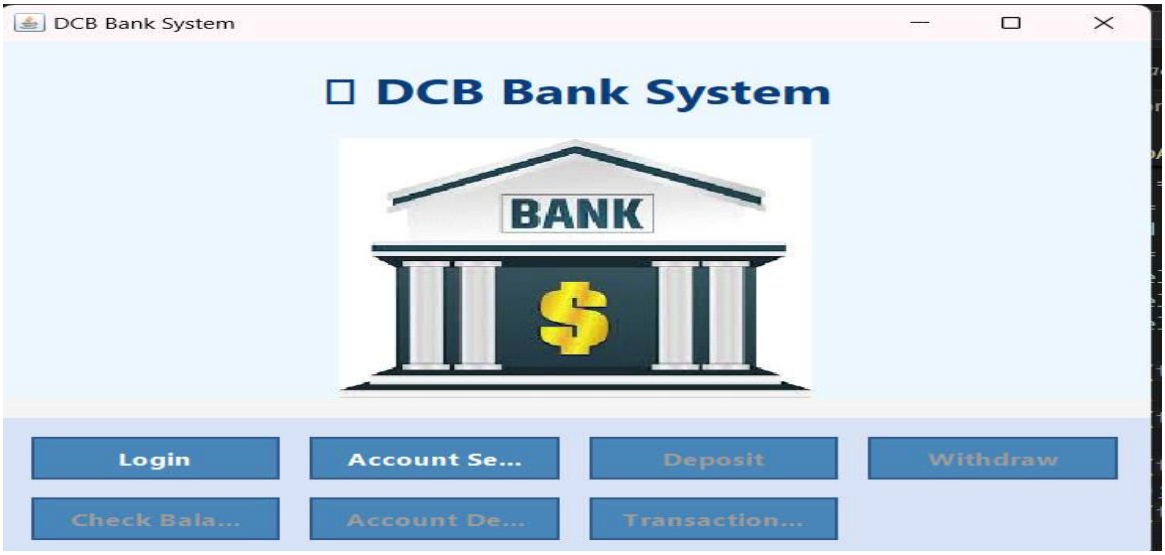
scenarios, and timing diagrams.



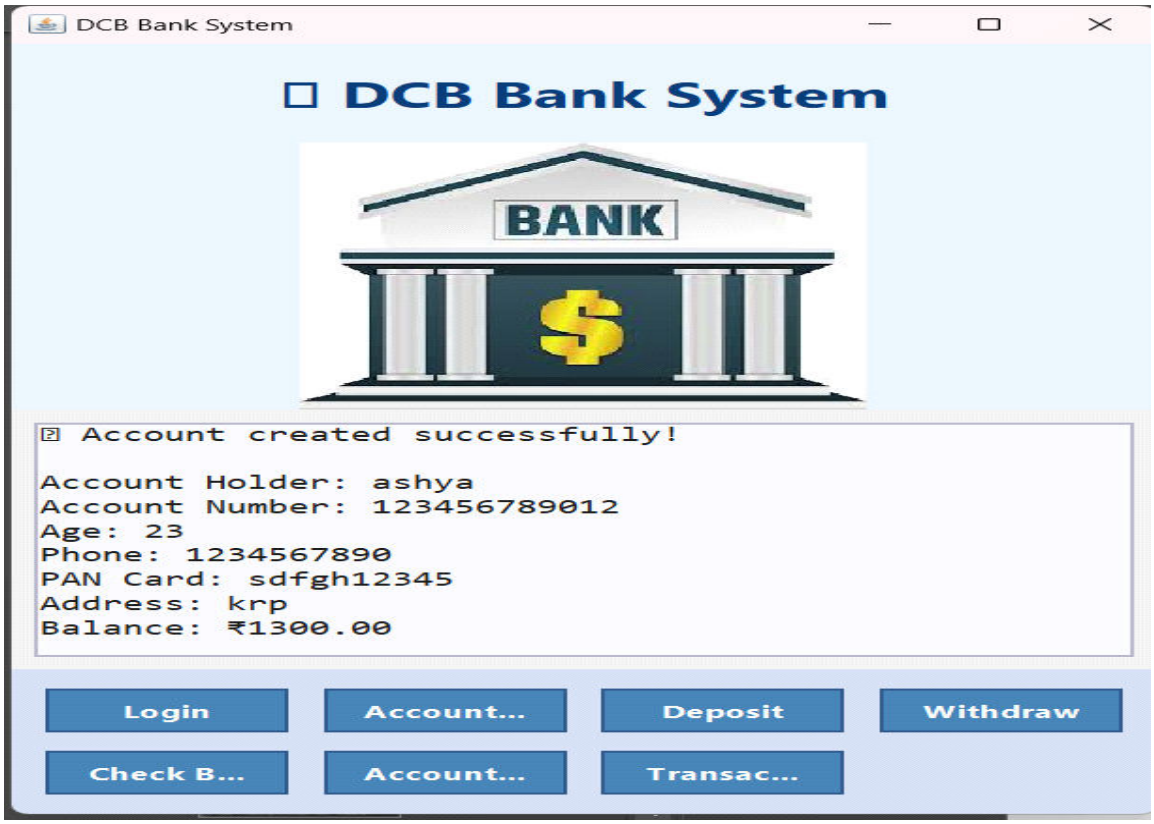
sequence diagram

5. OUTPUT SCREENS

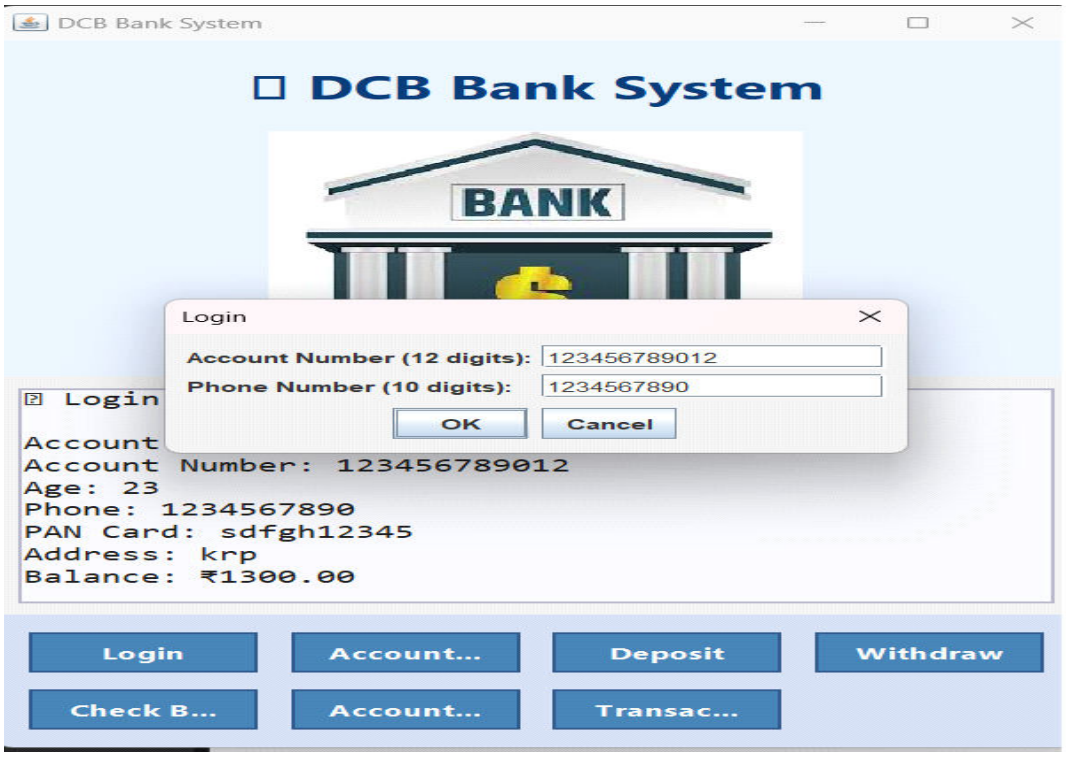
The system features the following GUI screens



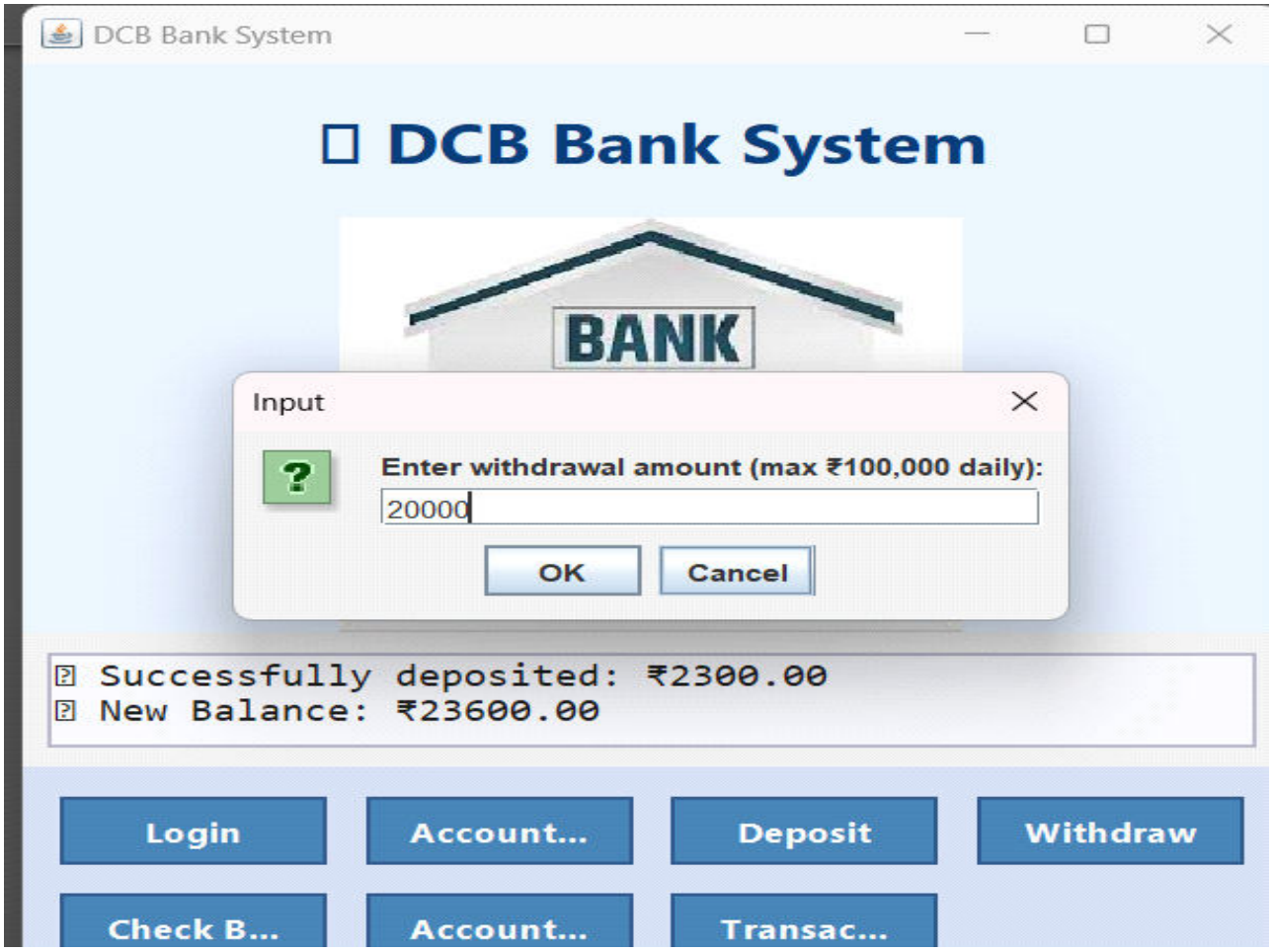
Bank account set up



Account created



Login Account



Deposit Ammount

Withdraw succefully done

Check balance

Account Details

Transactiom History

6. CONCLUSION

The Bank Account Management System provides a simple yet powerful solution for managing personal finances. It enables users to perform basic banking operations securely and efficiently. The implementation of file-based transaction storage ensures data persistence without requiring a complex data base. This project is developed to nurture the needs of a user in a banking sector by embedding all the tasks of transactions taking place in a bank. Future version of this project will still be much enhanced than the current version. Writing and depositing checks are perhaps the most fundamental ways to move money in and out of a checking account. The system is designed to be accessible to individuals without requiring advanced technical knowledge, making it user-friendly for a wide range of users. One of its key strengths is the implementation of file-based transaction storage, which guarantees data persistence while eliminating the need for a complex database structure.

7. FUTURE SCOPE

Future enhancements include To enhance the system, it could be upgraded into a Java Swing or JavaFX application, providing a more interactive and user-friendly graphical interface. Integration with databases would improve data management, offering a robust platform to store and manage large volumes of financial data securely and efficiently. The system should also support multi-user access, enabling different users to manage various accounts, with role-based permissions to ensure proper access control. Security enhancements, such as the implementation of encryption for sensitive data, would protect customer information and ensure compliance with data protection regulations. Additionally, integrating open banking APIs would allow third-party developers to securely access bank data, fostering the development of innovative financial products and services. Leveraging cloud computing would further optimize the system by providing a scalable, secure environment for storing and processing data, thus reducing costs and increasing operational efficiency. Biometric authentication methods, such as fingerprints or facial recognition, would enhance security and streamline user experience by eliminating the need for passwords or PINs.

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