Project Title

Mini-Project Report of

Object Oriented Programming through Java

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1. Problem Statement and Scope

The problem statement for an ATM system in Java using GUI typically involves designing and implementing a program that simulates the functionalities of an ATM Machine just like in real life. Here's a basic outline of the problem statements involved in our project:

Problem Statement:

Design and implement a simple ATM system in Java that allows users to perform various banking transactions.

Functional Requirements:

- **User Authentication:**
  - The system should authenticate users by asking for their account number and PIN (Personal Identification Number).
- **Account Operations:**

  Users should be able to perform operations such as:
  1. Check balance
  2. Withdraw cash
  3. Deposit cash
  4. The system should verify that the user has sufficient balance for withdrawal and transfer operations.

- **Transaction History:**
  - The system should maintain a transaction history for each account, including details such as transaction type, amount, date, and time.
- **Security Features:**
  - Ensure that sensitive information like PINs and account balances are securely stored and processed.
  - Implement encryption and other security measures to protect user data.
- **Error Handling:**
  - The system should handle errors gracefully, providing informative messages to users in case of invalid inputs or transaction failures.
- **User Interface:**
  - Design a simple and intuitive user interface for interacting with the ATM system. This could be a text-based interface for simplicity or a graphical user interface (GUI) for enhanced user experience.

2. Project Synopsis

The Automated Teller Machine System is a Java-based project aimed at simulating the functionalities of a real-world ATM further improvised using GUI.

This project provides a convenient and secure way for bank customers to perform various banking transactions without the need for human intervention.

The ATM System aims to provide users with a secure and efficient platform to perform banking transactions such as balance inquiry, cash withdrawal, cash deposit, and fund transfers. The system should ensure authentication, data security, reliability, and user-friendly interface.

Our main objectives being:

- To develop a user-friendly ATM system that emulates real-world banking operations.
- To implement secure user authentication mechanisms to prevent unauthorized access.
- To provide reliable transaction processing and error handling.
- To maintain transaction logs and ensure data integrity.
- To design a modular and scalable system architecture for future enhancements.

Some of our intended features:

- User Authentication: The system authenticates users based on their account number and PIN.
- Account Operations: Users can check balance, withdraw cash, deposit cash, and transfer funds between accounts.
- Transaction History: The system maintains a transaction history for each account, providing details of all transactions.
- Security Measures: Implementation of encryption and secure data storage to protect sensitive user information.
- Error Handling: Graceful handling of errors with informative messages to users for invalid inputs or transaction failures.
- User Interface: Design of a user-friendly interface, either text-based or graphical, for seamless interaction with the ATM system.

3. Implementation

1. Utilize object-oriented principles to design modular and maintainable code.
2. Implement data structures like SQL Workbench, algorithms and methods for efficient storage and retrieval of data.
3. Employ Java programming language for development.
4. Utilize external libraries or frameworks.
5. Conduct thorough testing to ensure correctness, reliability, and performance of the system.

Things to be shown:

- Source code of the ATM system implemented in Java.
- Documentation including system architecture, class diagrams, and user manual.
- Test cases and test results demonstrating functionality and performance.

Link for source code: -

https://drive.google.com/drive/folders/1kWj23vxwjVuvFdKomAwtq67rBpfRb7M5?usp=sharing

4. Results

After successful implementation, our observations were:

- Desirable output and all of the code, functions, methods and UI integrity works fine.
- Code is able to carry out basic yet intended functions successfully.
- User is able to sign in, sign up depending on if they have an existing account.
- Code is able to accept and store information from user and able to generate pin and account number for user, also storing it for login purposes.
- ATM UI functions properly and shows desirablke output.

5. Conclusion

The Automated Teller Machine (ATM) System project aims to provide users with a secure, efficient, and user-friendly platform for conducting banking transactions. By adhering to the outlined objectives and implementation approach, the project seeks to deliver a robust and reliable ATM system that meets the needs of modern banking customers.

This synopsis outlines the scope, objectives, features, and approach of the ATM System project, providing a comprehensive overview of its design and implementation.

6. References

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