

PF PROJECT REPORT

Project Report: City Bank Management System

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1. Introduction

The City Bank Management System is a console-based banking application developed in C. It provides functionalities for users to create accounts, manage deposits and withdrawals, view account details, and check transaction history. Additionally, it includes a manager login for administrative oversight, enabling account monitoring and management. The project is designed to simulate basic banking operations and introduces concepts of file handling, data security, and menu-driven programming.

2. Objectives

- Provide User Accounts Management: Enable account creation, user login, and secure password storage.
 - Transaction Handling: Facilitate deposits, withdrawals, and maintain a transaction history.
 - Managerial Oversight: Allow a manager to view registered accounts and ensure administrative control.
 - File-based Persistence: Store account and transaction data using file I/O for data retention.
 - Interactive Interface: Create an intuitive menu-driven system for seamless user interaction.
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3. Features

1.Account Creation

- Users can create accounts with unique IDs.
- Collect personal details such as name, password, date of birth, and contact information.

- Automatically initializes the account with a balance of 0.

2. User Login

- Secure user authentication via username and password.
- Redirects to a menu for account-specific actions.

3. Account Management

- View account details (balance, date of birth, contact).
- Modify account name or password.

4. Transactions

- Deposit funds: Increments the account balance.
- Withdraw funds: Deducts from the account balance, ensuring sufficient funds.
- Maintain a transaction history file for deposits and withdrawals.

5. Managerial Controls

- Manager login with a predefined password.

- Access to view all registered accounts and their contact information.

6.Transaction History

- Displays the last 10 transactions for the logged-in user.
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4. Implementation

- Language: The project is implemented in C, leveraging standard libraries like `stdio.h`, `stdlib.h`, and `string.h`.
- File Handling: Persistent storage is achieved through two files:
 - `bank.txt`: Stores account details.
 - `transactions.txt`: Logs transactions.
- Data Structures:
 - `struct bank`: Stores user details and account data.
 - Nested struct data inside `struct bank` for financial information.

- Input Validation: Prevents duplicate IDs, ensures positive transaction amounts, and checks for sufficient balance during withdrawals.
 - Menus and Navigation: Menu-driven interface allows users to perform actions step-by-step.
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5. Code Flow

1. Main Menu: Prompts users to create an account, login, or access the manager login.
 2. Account Operations:
 - Login redirects users to the Account Menu for further actions like deposits, withdrawals, and history checks.
 3. Manager Operations: Allows administrative access to all registered accounts.
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6. File Structure

1. bank.txt:
 - Stores details of all registered accounts in a binary format.

- Ensures secure storage of passwords and financial data.

2.transactions.txt:

- Logs all deposits and withdrawals.
- Used for generating user-specific transaction histories.

7. Challenges Faced

- Data Security: Securely managing user credentials and sensitive financial data.
- File Synchronization: Ensuring consistent reads and writes to files for multiple operations.
- Menu Navigation: Designing a clean and intuitive interface to avoid user confusion.

8. Conclusion

The City Bank Management System successfully demonstrates the implementation of a file-based banking application. It provides core functionalities required in real-world banking systems and integrates essential programming concepts. Future

improvements could include encryption for passwords, enhanced error handling, and a graphical user interface (GUI) for better user experience.

9. Future Enhancements

- 1.Password Encryption: Use hashing algorithms to secure user passwords.
 - 2.GUI Integration: Develop a graphical interface for enhanced usability.
 - 3.Loan Management: Extend functionalities to include loan application and repayment.
 - 4.Multithreading: Improve performance by handling concurrent operations.
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10. References

- Standard C Library Documentation
 - Online resources for file handling and user authentication mechanisms in C
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Attachments

- Source Code
 - Example Test Cases
 - Sample Input/Output
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This report highlights the purpose, design, and implementation of the City Bank Management System. The project serves as a foundational step for developing more complex financial applications.