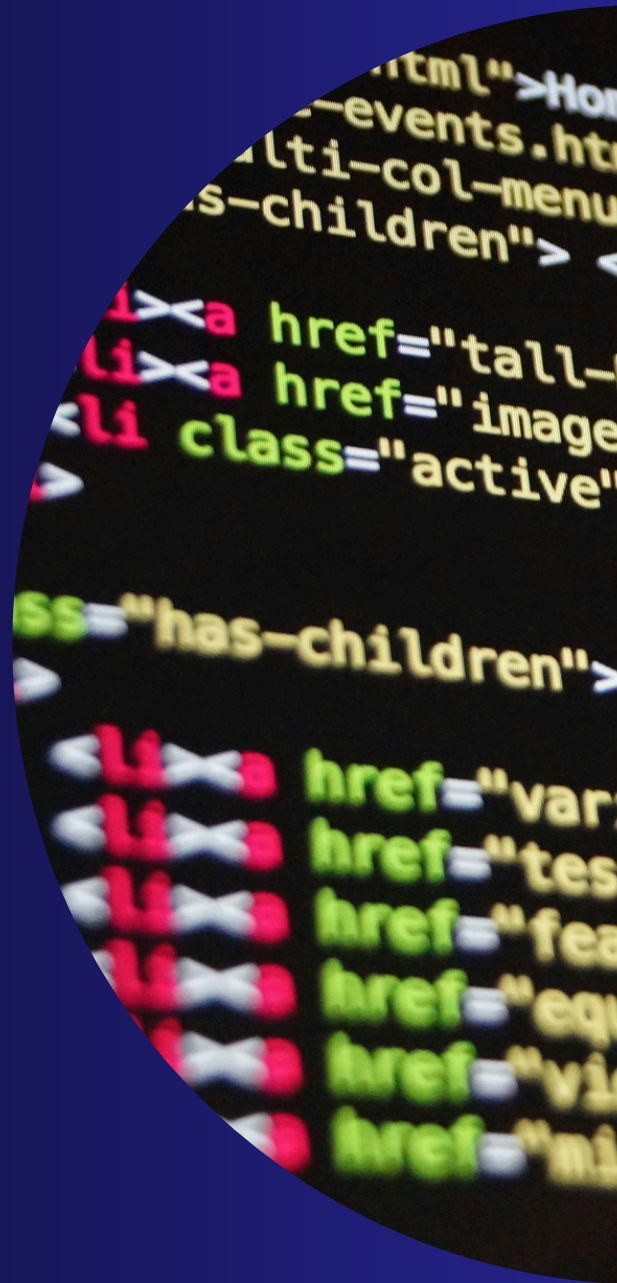


Banking System Report



1. Problem Statement

Develop a simple banking system that allows users to sign up, sign in, deposit, withdraw funds, and inquire about their balance. The system should handle multiple account types and securely store user information.

2. Solution Overview

The banking system consists of two main classes: access for handling user account management (sign up and sign in) and balance for managing financial transactions (deposit, withdrawal, and balance inquiry). User data is stored in a file (data.txt), ensuring that user information persists across sessions.

- access Class: Manages user information and login credentials.
 - signup(): Collects user details and stores them in data.txt.

- `signin()`: Verifies user credentials from `data.txt` and loads user data.
- `getAmount()`: Returns the current balance of the user.
- `updateAmount(int change)`: Updates the user's balance and saves the changes to `data.txt`.
- **balance Class**: Manages transactions for a signed-in user.
 - `deposit()`: Adds a specified amount to the user's balance.
 - `withdraw()`: Deducts a specified amount from the user's balance if sufficient funds are available.
 - `showBalance()`: Displays the current balance.

The main menu allows users to sign up, sign in, or exit the application. Upon signing in, users can deposit or withdraw funds, inquire about their balance, or log out.

3. Challenges and Resolutions

Challenge: Managing user data securely and ensuring that updates to user balances are accurately reflected.

Resolution: A temporary file (temp.txt) is used to update user data. This file replaces data.txt after the update to ensure that changes are atomic and consistent.

Challenge: Handling concurrent accesses and updates to data.txt which could lead to data corruption.

Resolution: This prototype does not handle concurrency. In a real-world scenario, implementing file locking or using a database would be necessary.

Challenge: Ensuring input validation and error handling.

Resolution: Basic error handling is implemented, but further validation (e.g., ensuring numeric input for income and amount) should be added to improve robustness.

Usage

Main Menu:

1. Signup: Enter details to create a new account.
2. Signin: Log in to an existing account.
3. Exit: Close the application.

Transaction Menu (after signing in):

1. Deposit: Enter the amount to deposit.
2. Withdraw: Enter the amount to withdraw.
3. Balance Inquiry: Display the current balance.
4. Logout: Log out of the account.