Secure Banking System - Python Project Summary

Project Overview:

This is a secure console-based banking system built using Python. It allows users to create accounts, deposit, withdraw, and check balances, with all data securely stored in a JSON file for persistence.

Key Features:

- Account creation with password protection

- Deposit and withdrawal functionality

- Balance check and account details view

- Data persistence using JSON file

- Basic authentication for security

Code Breakdown:

1. Imports:

- json: for saving/loading account data

- os: to check file existence

2. Data File:

- 'bank_accounts.json' is used to store account details

3. BankAccount Class:

- Stores account number, name, password, and balance

- Methods: deposit(), withdraw(), display_balance(), display_account_details()

- to_dict() and from_dict() handle JSON serialization

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4. File Functions:

- load_accounts(): loads accounts from JSON file

- save_accounts(): saves updated accounts back to file

5. Authentication:

- authenticate(): verifies password before accessing an account

6. Menu System:

- Option 1: Create Account

- Option 2: Deposit

- Option 3: Withdraw

- Option 4: Check Balance

- Option 5: Account Details

- Option 6: Exit

Suggested Improvements:

- Encrypt passwords using hashing libraries (e.g., bcrypt)

- Add GUI using Tkinter or PyQt

- Include account transaction history

- Add admin interface for managing all accounts

Project Benefits:

- Demonstrates object-oriented programming

- Shows file handling and data persistence

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- Introduces basic authentication and user input validation

- A great starting point for building a real-world banking app