

# Java Refresher Simple CLI Banking System

## Project Overview

The Simple CLI Banking System is a Java-based command-line interface application that allows users to perform basic banking operations, including logging in, checking balance, withdrawing money, depositing money, and transferring funds to other valid users.

## Key Features

### User Authentication

- Users must log in with a valid user id (eg bank name + number: OLA2008934859) and password.

### Account Information

- Users can view their account balance.

### Withdrawal

- Users can withdraw a specified amount from their account.

### Deposit

- Users can deposit a specified amount into their account.

### Fund Transfer

- Users can transfer funds to another valid user by specifying the recipient's username and the amount to transfer.

## Technical Implementation

### Language

- The project will be implemented in Java.

## Data Storage

- Utilize a simple file-based storage system for user account information.
- Each user's data (username, password, balance) can be stored in a text file/Csv or something (Lets not do proper database).

## User Interface

- Implement a command-line interface for user interaction.
- Use text-based menus for navigation and user input.

## Security

- Implement secure password storage using hashing algorithms (e.g., SHA-256).
- Ensure that sensitive information is handled securely.

## Error Handling

- Implement proper error handling for invalid user input, insufficient funds, etc.

## Usage Example

### Login

```
$ java SimpleBankingCLI
Welcome to the Simple Banking System!
Enter your username: OLA6969420
Enter your password: *****
Logged in successfully!
```

### View Balance

```
$ java SimpleBankingCLI
...
Choose an option:
1. View Balance
2. Withdraw
3. Deposit
4. Transfer Funds
5. Exit
Enter your choice: 1
Your current balance: $500.00
```

## Withdraw Money

```
...
Enter your choice: 2
Enter the amount to withdraw: $100.00
Withdrawal successful. Your new balance: $400.00
```

## Deposit

```
...
Enter your choice: 3
Enter the amount to deposit: $200.00
Deposit successful. Your new balance: $600.00
```

## Transfer Funds

```
...
Enter your choice: 4
Enter the recipient's username: recipient456
Enter the amount to transfer: $50.00
Transfer successful. Your new balance: $550.00
```

## Conclusion

The Simple CLI Banking System is designed to provide a user-friendly command-line interface for basic banking operations. It uses a simple file-based storage system to keep the project lightweight and suitable for small-scale use. The implementation focuses on security, error handling, and a clear user interface to enhance the overall user experience. Good refresher for going back to college

## Requirements

1. Object-Oriented Concepts (Inheritance, Polymorphism, Encapsulation)
2. File I/O (Read/Write user account information)
3. Exception Handling
4. Security (Password hashing, Sensitive data handling)
5. Collections Framework (For managing user accounts or transactions)
6. User Interface (Command-line interface using Scanner)
7. Date and Time API
8. Testing (JUnit for unit testing)

9. Logging (Using logging framework e.g., SLF4J and Logback)
10. Design Patterns (e.g., Singleton, Factory, Observer)
11. Enums (Representing constant values)
12. Input Validation
13. Command-Line Argument Processing (Consider using Apache Commons CLI)
14. Concurrency (If applicable)
15. Dependency Management (Using Maven or Gradle)
16. Code Documentation (JavaDoc comments)
17. Code Style and Formatting (Consistent code style, Auto formatting)
18. Serialization (For storing and retrieving object states)
19. User Experience (UX) Considerations (User-friendly interface)