

# Banking System Implementation in Java

The goal of this assignment is to deepen your understanding of *Java collections* (ArrayList, Stack, and Queue) by implementing a simple banking system. You will create a program that manages customers, their transactions, and the order of service using these data structures.

## Requirements

- **Customer Class:**
  - Create a *Customer* class with the following attributes:
    - name (String)
    - accountNumber (String)
    - balance (double)
  - Include methods to:
    - Get customer details (name, account number, balance).
    - Deposit and withdraw money from the balance.
- **Bank Class:**
  - Create a *Bank* class that contains:
    - An ArrayList<Customer> to store all customers.
    - A Queue<Customer> to manage customers waiting for service.
    - A Stack<String> to keep track of transaction history.
  - Include methods to:
    - Add a customer to the bank.
    - Serve the next customer in the queue.
    - Deposit money for a customer.
    - Withdraw money for a customer.
    - Display transaction history.
- **Main Class:**
  - Create a *BankingSystem* class with a main method that:
    - Instantiates the Bank class.
    - Allows the user to add customers, serve customers, deposit and withdraw money, and view transaction history through a simple text-based menu.

## Functional Requirements

The program should allow users to perform the following actions:

- Add a new customer with name and initial balance.
- Serve the next customer in line.
- Deposit money into a customer's account.
- Withdraw money from a customer's account.
- Display transaction history for served customers.
- Exit the program.

## Example Menu

```
Welcome to the Banking System!
1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit
Please choose an option (1-6):
```

## Output

When you run this program, you will see output like:

```
Welcome to the Banking System!
1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit
Please choose an option (1-6): 1

Enter customer name: Alice
Enter initial balance: 1000.0
Customer Alice added with account number AC001.

Welcome to the Banking System!
1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit
Please choose an option (1-6): 1

Enter customer name: Bob
Enter initial balance: 500.0
Customer Bob added with account number AC002.

Welcome to the Banking System!
1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit
```

Please choose an option (1-6): 2

Serving customer: Alice

Transaction recorded: Served Alice.

Welcome to the Banking System!

1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit

Please choose an option (1-6): 3

Enter account number to deposit money: AC001

Enter amount to deposit: 200.0

Deposited 200.0 to Alice's account.

Transaction recorded: Deposited 200.0 to Alice.

Welcome to the Banking System!

1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit

Please choose an option (1-6): 4

Enter account number to withdraw money: AC001

Enter amount to withdraw: 150.0

Withdrew 150.0 from Alice's account.

Transaction recorded: Withdrew 150.0 from Alice.

Welcome to the Banking System!

1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit

Please choose an option (1-6): 2

Serving customer: Bob

Transaction recorded: Served Bob.

Welcome to the Banking System!

1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit

Please choose an option (1-6): 5

Transaction History:

- Served Alice.
- Deposited 200.0 to Alice.
- Withdrew 150.0 from Alice.
- Served Bob.

Welcome to the Banking System!

1. Add Customer
2. Serve Customer
3. Deposit Money
4. Withdraw Money
5. Show Transaction History
6. Exit

Please choose an option (1-6): 6

Thank you for using the Banking System! Goodbye!