JAVA PROJECTS4

4.Online Banking Application

Description: Create an online banking application with features like account management, fund transfers, transaction history, and account balance inquiry

1.Account class

```
import java.util.ArrayList;

import java.util.List;


public class Account {

   private int accountNumber;

   private String accountHolder;

   private double balance;

   private List<Transaction> transactions;


   public Account(int accountNumber, String accountHolder, double initialBalance) {

      this.accountNumber = accountNumber;

      this.accountHolder = accountHolder;

      this.balance = initialBalance;

      this.transactions = new ArrayList<>();

   }


   public int getAccountNumber() {

      return accountNumber;

   }


   public String getAccountHolder() {

      return accountHolder;

   }
```

```
    public double getBalance() {
        return balance;
    }

    public void deposit(double amount) {
        balance += amount;
        transactions.add(new Transaction("Deposit", amount));
    }

    public boolean withdraw(double amount) {
        if (balance >= amount) {
            balance -= amount;
            transactions.add(new Transaction("Withdrawal", amount));
            return true;
        } else {
            System.out.println("Insufficient funds.");
            return false;
        }
    }

    public boolean transfer(Account toAccount, double amount) {
        if (withdraw(amount)) {
            toAccount.deposit(amount);
            transactions.add(new Transaction("Transfer to " + toAccount.getAccountNumber(),
amount));
            toAccount.addTransaction(new Transaction("Transfer from " + accountNumber,
amount));
            return true;
        } else {
            return false;
```

```
        }
    }

    public void addTransaction(Transaction transaction) {
        transactions.add(transaction);
    }

    public List<Transaction> getTransactionHistory() {
        return transactions;
    }

    @Override
    public String toString() {
        return "Account Number: " + accountNumber + ", Account Holder: " + accountHolder + ",
Balance: $" + balance;
    }
}
```

2.Transaction class

```
public class Transaction {
    private String type;
    private double amount;

    public Transaction(String type, double amount) {
        this.type = type;
        this.amount = amount;
    }

    public String getType() {
        return type;
    }
```

```
    public double getAmount() {
        return amount;
    }

    @Override
    public String toString() {
        return "Transaction Type: " + type + ", Amount: $" + amount;
    }
}
```

3.Bank class

```
import java.util.ArrayList;
import java.util.List;

public class Bank {
    private List<Account> accounts;

    public Bank() {
        accounts = new ArrayList<>();
    }

    public void addAccount(Account account) {
        accounts.add(account);
    }

    public Account findAccountByNumber(int accountNumber) {
        for (Account account : accounts) {
            if (account.getAccountNumber() == accountNumber) {
                return account;
```

```
            }
        }
        return null;
    }

    public void listAccounts() {
        for (Account account : accounts) {
            System.out.println(account);
        }
    }
}
```

4.Main class

```
public class Main {
    public static void main(String[] args) {
        // Create a bank
        Bank bank = new Bank();

        // Add accounts to the bank
        Account account1 = new Account(1001, "Alice", 5000.00);
        Account account2 = new Account(1002, "Bob", 3000.00);
        bank.addAccount(account1);
        bank.addAccount(account2);

        // List accounts
        System.out.println("Accounts in the bank:");
        bank.listAccounts();

        // Deposit money
        account1.deposit(1500);
```

```
        System.out.println("\nAfter depositing $1500 to Alice's account:");
        System.out.println(account1);

        // Withdraw money
        account2.withdraw(500);
        System.out.println("\nAfter withdrawing $500 from Bob's account:");
        System.out.println(account2);

        // Transfer money
        account1.transfer(account2, 2000);
        System.out.println("\nAfter transferring $2000 from Alice's account to Bob's account:");
        System.out.println(account1);
        System.out.println(account2);

        // Transaction history
        System.out.println("\nTransaction history for Alice's account:");
        for (Transaction transaction : account1.getTransactionHistory()) {
            System.out.println(transaction);
        }

        System.out.println("\nTransaction history for Bob's account:");
        for (Transaction transaction : account2.getTransactionHistory()) {
            System.out.println(transaction);
        }
    }
}
```

OUTPUT:

```
Accounts in the bank:
Account Number: 1001, Account Holder: Alice, Balance: $5000.0
```

Account Number: 1002, Account Holder: Bob, Balance: $3000.0

After depositing $1500 to Alice's account:

Account Number: 1001, Account Holder: Alice, Balance: $6500.0

After withdrawing $500 from Bob's account:

Account Number: 1002, Account Holder: Bob, Balance: $2500.0

After transferring $2000 from Alice's account to Bob's account:

Account Number: 1001, Account Holder: Alice, Balance: $4500.0

Account Number: 1002, Account Holder: Bob, Balance: $4500.0

Transaction history for Alice's account:

Transaction Type: Deposit, Amount: $1500.0

Transaction Type: Transfer to 1002, Amount: $2000.0

Transaction history for Bob's account:

Transaction Type: Withdrawal, Amount: $500.0

Transaction Type: Transfer from 1001, Amount: $2000.0