Project 1: SIMULATE THE BASIC FUCTION OF ATM MACHINE

**Project Title** : SIMULATE THE BASIC FUCTION OF ATM MACHINE

**Problem Statement :** To develop a simulation of a basic ATM machine that allows users to perform essential banking operations. The simulation should provide a user-friendly interface to interact with the ATM and support core functionalities such as checking account balance, withdrawing funds, and depositing funds,Change pin,Transaction history.

**COMMENTS:**

**ACCOUNT BALANCE INQUIRY:**

* “After authentication, users can check their account balance. This feature should display the current balance clearly and promptly, providing users with up-to-date information on their finances.”

**FUNDS WITHDRAWAL:**

* “Users can request to withdraw a specified amount. The system should verify that the requested amount does not exceed the available balance and that it adheres to any daily withdrawal limits.”
* “Include error handling for cases where users attempt to withdraw more than their balance or enter invalid amounts.”

**FUNDS DEPOSIT:**

* “Users can deposit funds into their account. The system should accept deposit amounts and update the account balance accordingly.”
* “Ensure that deposit transactions are processed accurately and that users are notified of successful deposits.”

**PIN CHANGE PROCESS:**

* “The PIN change process involves verifying the current PIN, entering a new PIN, and confirming the new PIN. This ensures that the user is authorized to make the change and that the new PIN is correctly set.”

**FETCHING TRANSACTION HISTORY:**

* “// When the user requests their transaction history, retrieve the most recent transactions from the stored data. Limit the number of transactions displayed to a manageable number, such as the last 10 transactions.”
* “// Provide options for users to view more transactions or navigate through their transaction history if the list exceeds the default display limit.

**CODE:**

import java.util.ArrayList;

import java.util.List;

import java.util.Scanner;

public class ATM {

private static class Account {

private int pin;

private double balance;

private List<String> transactionHistory;

public Account(int pin, double initialBalance) {

this.pin = pin;

this.balance = initialBalance;

this.transactionHistory = new ArrayList<>();

this.transactionHistory.add("Initial deposit: $" + initialBalance);

}

public boolean validatePin(int pin) {

return this.pin == pin;

}

public void changePin(int newPin) {

this.pin = newPin;

}

public double getBalance() {

return balance;

}

public void deposit(double amount) {

this.balance += amount;

this.transactionHistory.add("Deposited: $" + amount);

}

public boolean withdraw(double amount) {

if (amount > balance) {

System.out.println("Insufficient funds.");

return false;

}

this.balance -= amount;

this.transactionHistory.add("Withdrew: $" + amount);

return true;

}

public void printTransactionHistory() {

System.out.println("Transaction History:");

for (String transaction : transactionHistory) {

System.out.println(transaction);

}

}

}

private static Account account;

private static Scanner scanner = new Scanner(System.in);

public static void main(String[] args) {

account = new Account(1234, 1000.00); // Initial PIN is 1234 and initial balance is $1000

while (true) {

System.out.println("\nATM Menu:");

System.out.println("1. Balance Inquiry");

System.out.println("2. Cash Withdrawal");

System.out.println("3. Cash Deposit");

System.out.println("4. Change PIN");

System.out.println("5. Transaction History");

System.out.println("6. Exit");

System.out.print("Please select an option: ");

int choice = scanner.nextInt();

switch (choice) {

case 1:

balanceInquiry();

break;

case 2:

cashWithdrawal();

break;

case 3:

cashDeposit();

break;

case 4:

changePin();

break;

case 5:

transactionHistory();

break;

case 6:

System.out.println("Thank you for using our ATM.");

System.exit(0);

break;

default:

System.out.println("Invalid choice. Please try again.");

}

}

}

private static void balanceInquiry() {

System.out.println("Your balance is: $" + account.getBalance());

}

private static void cashWithdrawal() {

System.out.print("Enter the amount to withdraw: $");

double amount = scanner.nextDouble();

if (account.withdraw(amount)) {

System.out.println("Withdrawal successful.");

}

}

private static void cashDeposit() {

System.out.print("Enter the amount to deposit: $");

double amount = scanner.nextDouble();

account.deposit(amount);

System.out.println("Deposit successful.");

}

private static void changePin() {

System.out.print("Enter your current PIN: ");

int currentPin = scanner.nextInt();

if (account.validatePin(currentPin)) {

System.out.print("Enter your new PIN: ");

int newPin = scanner.nextInt();

account.changePin(newPin);

System.out.println("PIN changed successfully.");

} else {

System.out.println("Invalid PIN.");

}

}

private static void transactionHistory() {

account.printTransactionHistory();

}

}

**SAMPLE OUTPUT:**

ATM Menu:

1. Balance Inquiry

2. Cash Withdrawal

3. Cash Deposit

4. Change PIN

5. Transaction History

6. Exit

Please select an option: