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import java.util.*;

import java.io.*;

class User {
    private String name;
    private String cardNumber;
    private double balance;
    private int pin;

    User(String name, String cardNumber, double balance, int pin) {
        this.name = name;
        this.cardNumber = cardNumber;
        this.balance = balance;
        this.pin = pin;
    }

    public String getName() {
        return name;
    }

    public String getCardNumber() {
        return cardNumber;
    }

    public double getBalance() {
        return balance;
    }

    public int getPin() {
        return pin;
    }

    public void deposit(double amount) {
        balance = balance + amount;
    }

    public void withdraw(double amount) {
        balance = balance - amount;
    }
}

class ATM {
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private User u;
private User[] users = new User[100];
private String adminPassword;
private int numberOfUsers = 0;
private File file;

ATM(String adminPassword) throws IOException{
    this.adminPassword = adminPassword;
    file = new File("users.txt");
    if (!file.exists()) {
        file.createNewFile();
    } else {

        try (Scanner scanner = new Scanner(file)) {
            while (scanner.hasNextLine()) {
                String line = scanner.nextLine();
                String[] parts = line.split(",");
                String name = parts[0];
                String cardNumber = parts[1];
                double balance = Double.parseDouble(parts[2]);
                int pin = Integer.parseInt(parts[3]);
                users[numberOfUsers++] = new User(name, cardNumber, balance,
pin);
            }
        }
    }
}

public User getUser(String cardNumber) {
    for (int i = 0; i < numberOfUsers; i++) {
        if (users[i].getCardNumber().equals(cardNumber)) {
            return users[i];
        }
    }
    return null;
}

public boolean authenticatePin(String cardNumber, int pin) {
    User user = getUser(cardNumber);
    if (user != null && user.getPin() == pin) {
        return true;
    }
}

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        return false;
    }

    public void deposit(String cardNumber, double amount) {
        User user = getUser(cardNumber);
        if (user != null) {
            user.deposit(amount);
        }
    }

    public void withdraw(String cardNumber, double amount) {
        User user = getUser(cardNumber);
        if (user != null) {
            user.withdraw(amount);
        }
    }

    public boolean isAdmin(String password) {
        return password.equals(adminPassword);
    }

    public void createUser(String name, String cardNumber, double amount, int
pin) throws IOException {
        if(numberOfUsers<100){
            users[numberOfUsers] = new User(name, cardNumber, amount, pin);
            numberOfUsers++;

            try (FileWriter writer = new FileWriter(file, true)) {
                writer.write(name + "," + cardNumber + "," + amount + ","
+ pin + "\n");
                writer.close();
            }
        }
    }

    public double checkBalance(String cardNumber) {
        User user = getUser(cardNumber);
        if (user != null) {
            user.getBalance();
        }
        return user.getBalance();
    }

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    }

    public void deleteUser(String cardNumber)throws IOException {
        for (int i = 0; i < numberOfUsers; i++) {
            if (users[i].getCardNumber().equals(cardNumber)) {
                users[i] = null;
                for (int j = i; j < numberOfUsers - 1; j++) {
                    users[j] = users[j + 1];
                }
                users[numberOfUsers - 1] = null;
                numberOfUsers--;
                saveUserData();
                break;
            }
        }
    }

    public User[] getUsers() {
        return Arrays.copyOf(users, numberOfUsers);
    }

    public void saveUserData()throws IOException{
        FileWriter writer = new FileWriter("users.txt", false);
        for(int i= 0;i<numberOfUsers;i++){
            User user = users[i];
            if(user != null){
                writer.write(user.getName()+","+user.getCardNumber()+","+user.get
Balance()+","+user.getPin()+"\n");
            }
        }
        writer.close();
    }
}

class Admin {
    private ATM atm;

    Admin(ATM atm) {
        this.atm = atm;
    }

    public void createNewUser(String name, String cardNumber, double amount, int
pin)throws IOException {
        atm.createUser(name, cardNumber, amount, pin);
    }
}

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        System.out.println("Enter Balance: ");
        double balance = ab.nextDouble();
        System.out.println("Set Pin: ");
        int pin = ab.nextInt();
        try{
            atm.createUser(name, cardNumber, balance, pin);
            System.out.println("User created successfully");
        } catch (IOException e) {
            System.out.println("Error: " + e.getMessage());
        }
        break;
    case 2:
        ab.nextLine();
        System.out.println("Enter the Card Number You want to
Delete");

        cardNumber = ab.nextLine();
        try{
            atm.deleteUser(cardNumber);
            System.out.println("User Deleted Successfully");
        }
        catch(IOException e){
            System.out.println("Error: "+e);
        }
        break;
    case 3:
        User[] users = atm.getUsers();
        for (User user:users) {
            if (users != null) {
                System.out.println("Name: " + user.getName());
                System.out.println("Card Number: " +
user.getCardNumber());

                System.out.println("Balance: " +
user.getBalance());

                System.out.println("PIN: " + user.getPin());
                System.out.println();
            }
        }
        break;
    case 4:
        ab.nextLine();
        System.out.print("Enter Card Number: ");
        cardNumber = ab.nextLine();
        balance = atm.checkBalance(cardNumber);

        System.out.println("Current balance: " + balance);

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        System.out.println();
        break;
        case 5:
            System.out.println("Logging Out.....");

            return;
        default:
            System.out.println("Invalid Option.....");
    }

}

}
}else {
    System.out.println("Incorrect Password . Please Try Again...");
}
}else if(mode.equalsIgnoreCase("U")){
    System.out.println("You have Chosen User Mode");
    while(true){

        System.out.println("What Would you want to do");
        System.out.println("1.Withdraw Funds");
        System.out.println("2.Deposit Funds");
        System.out.println("3.Check Current Balance");
        System.out.println("4.Exit");
        System.out.println();
        System.out.print("Enter Choice : ");
        int choice1 = ab.nextInt();
        System.out.println();
        switch(choice1){
            case 1:
                ab.nextLine();
                System.out.println("Enter your Card Number");
                String cardNumber = ab.next();
                System.out.println("Enter Your Pin");
                int pin = ab.nextInt();
                if(atm.authenticatePin(cardNumber, pin)){
                    while(true){
                        System.out.print("Enter amount You want to Withdraw: ");
                        double amount = ab.nextDouble();

                        atm.withdraw(cardNumber,amount);
                        System.out.println("Withdrawal Successfully Done");
                        atm.saveUserData();

                        break;
                    }
                }
            }
        }
    }
}

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    }
}
else{
    System.out.println("Invalid Pin");
}
break;
case 2:
ab.nextLine();
System.out.println("Enter the Card Number");
cardNumber = ab.nextLine();
System.out.println("Enter Your Pin");
pin = ab.nextInt();
if(atm.authenticatePin(cardNumber, pin)){
    while(true){
        System.out.println("Enter amount you Want to Deposit");
        double amount = ab.nextDouble();
        atm.deposit(cardNumber, amount);
        System.out.println("Amount Deposited Successfully");
        atm.saveUserData();
        break;
    }
}
else{
    System.out.println("Invalid Pin");
}
break;
case 3:
ab.nextLine();
System.out.println("Enter Your card Number");
cardNumber = ab.nextLine();
System.out.println("Enter Your Pin");
pin = ab.nextInt();
if(atm.authenticatePin(cardNumber, pin)){
    while(true){
        double balance = atm.checkBalance(cardNumber);
        System.out.println("Current Balance :"+balance);
        System.out.println();
        break;
    }
}
else{
    System.out.println("Invalid Pin");
}
break;
case 4:

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        System.out.println("Exiting The User Mode.....");
        System.out.println("*****Thanks For Using the ATM*****");
        return;
        default :
        System.out.println("Invalid Option");
        break;

    }

}

}else {
    System.out.println("Invalid Mode Entered ....");
}
ab.close();
}
}
```