Banking System – Project Execution

Description :-

The Banking System is a console-based Java application that simulates real-world banking operations. It features secure login, Savings and Current account support, PIN authentication, transaction management, loan processing, interest calculation, fraud detection, and a full admin control panel. The system uses object-oriented programming principles and stores data permanently using serialized .dat files. It provides a fully functional banking workflow replicating real banking functions.

Key Features :-

• PIN-based secure login system
• Savings & Current accounts
• Deposit, withdrawal, transfer functions
• ATM withdrawal with limits & service charges
• Transaction history & mini statement
• Loan system with EMI calculation & prepayment
• Fraud detection for high-value activities
• Admin panel for account control, reports, and interest
• Monthly interest credit for Savings accounts
• Permanent storage using .dat files

What This Project Demonstrates :-

• Real-world banking workflow simulation
• Object-Oriented Programming (OOP) practices
• File handling and data persistence techniques
• Secure transaction and authentication handling
• Loan amortization & EMI logic implementation
• Console UI design with clear menu-driven navigation

Execution Output Screenshots :-

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=== Enhanced Console Bank System ===

Main Menu:
1. Create Account
2. Login
3. Admin Panel
4. Compute Credit Score for an account (admin)
0. Exit
Choice: 1

--- Create Account ---
Holder Name: Dhaval Soni
Type: 1. SAVINGS  2. CURRENT
Choice: 1
Set 4-digit PIN: 5678
Initial deposit: 10000
Account created! Account No: ACC17631538348312957
Card: 2109624204452483 CVV:448 Exp:11/29
```

```
Main Menu:
1. Create Account
2. Login
3. Admin Panel
4. Compute Credit Score for an account (admin)
0. Exit
Choice: 2

--- Login ---
Account No: ACC17631538348312957
Enter PIN: 5678
Welcome, Dhaval Soni (ACC17631538348312957)

--- Account Menu (ACC17631538348312957) ---
1. Deposit
2. Withdraw (ATM)
3. Transfer to another account
4. Check Balance
5. Mini Statement (last 5)
6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 1
Amount to deposit: 20000
Confirm PIN: 5678
Deposited ?20000.00. New balance: ?30000.00
```

```
--- Account Menu (ACC17631538348312957) ---
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8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 2
Amount to withdraw: 5000
OTP (demo) sent: 579102
Enter OTP: 579102
Enter PIN: 5678
Withdrew ?5000.00 (fee ?10.00). New balance: ?24990.00
```

```
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10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 5

--- Mini Statement (last 5) ---
2025-11-15 02:27:14 | c7b9025b | DEPOSIT | ?10000.00 | Bal: ?10000.00
    Initial deposit
2025-11-15 02:28:06 | 3ae366fd | DEPOSIT | ?20000.00 | Bal: ?30000.00
    Cash deposit
2025-11-15 02:28:32 | 171a0e2e | WITHDRAW | ?5000.00 | Bal: ?24990.00
    ATM withdrawal (fee ?10.0)
2025-11-15 02:28:32 | c1b49a20 | FEE | ?10.00 | Bal: ?24990.00
    ATM fee
```

```
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4. Check Balance
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7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 6
Showing 1 - 4 of 4
1) 2025-11-15 02:27:14 | c7b9025b | DEPOSIT | ?10000.00 | Bal: ?10000.00
   Initial deposit
2) 2025-11-15 02:28:06 | 3ae366fd | DEPOSIT | ?20000.00 | Bal: ?30000.00
   Cash deposit
3) 2025-11-15 02:28:32 | 171a0e2e | WITHDRAW | ?5000.00 | Bal: ?24990.00
   ATM withdrawal (fee ?10.0)
4) 2025-11-15 02:28:32 | c1b49a20 | FEE | ?10.00 | Bal: ?24990.00
   ATM fee
Commands: n (next), p (prev), q (quit)
n
No more pages.
```

```
--- Account Menu (ACC17631538348312957) ---
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3. Transfer to another account
4. Check Balance
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10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 7

--- Apply Loan ---
Loan type (personal/home/education): home
Principal amount: 100000000
Annual rate (e.g., 10.5): 10
Tenure months: 180
Loan home disbursed. EMI: ?1074605.12 for 180 months. LoanID: 443992f1-e3ab-4893-84c5-b3d0a0d10e75
```

```
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4. Check Balance
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8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 8
LoanID: 443992f1-e3ab-4893-84c5-b3d0a0d10e75 | Type: home | Principal: ?100000000.00 | Rate: 10.00% | Tenure: 180 mo | Outstandin
g: ?100000000.00 | Active: true

--- Account Menu (ACC17631538348312957) ---
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6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 9
LoanID: 443992f1-e3ab-4893-84c5-b3d0a0d10e75 | Type: home | Principal: ?100000000.00 | Rate: 10.00% | Tenure: 180 mo | Outstandin
g: ?100000000.00 | Active: true
Enter LoanID to repay: 443992f1-e3ab-4893-84c5-b3d0a0d10e75
Choose: 1) Pay EMI  2) Prepay (custom amount)
1
EMI paid. Principal: ?241271.78 Interest: ?833333.33 Remaining outstanding: ?99758728.22
```

```
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4. Check Balance
5. Mini Statement (last 5)
6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 10
Enter current PIN: 5678
Enter new PIN: 0909
Confirm new PIN: 0909
PIN changed successfully.

--- Account Menu (ACC17631538348312957) ---
1. Deposit
2. Withdraw (ATM)
3. Transfer to another account
4. Check Balance
5. Mini Statement (last 5)
6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 11
Export: 1) CSV full  2) TXT summary
1
Exported CSV: statement_ACC17631538348312957_202511.csv
```

```
--- Account Menu (ACC17631538348312957) ---
1. Deposit
2. Withdraw (ATM)
3. Transfer to another account
4. Check Balance
5. Mini Statement (last 5)
6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 12
Card Number: 2109624204452483
CVV: 448 Expiry: 11/29

--- Account Menu (ACC17631538348312957) ---
1. Deposit
2. Withdraw (ATM)
3. Transfer to another account
4. Check Balance
5. Mini Statement (last 5)
6. Full Transactions (paginated)
7. Apply Loan
8. View Loans
9. Repay Loan / Prepayment
10. Change PIN
11. Export Statement (csv / txt)
12. Show Card Info
0. Logout
Choice: 0
Logged out.
```

```
Main Menu:
1. Create Account
2. Login
3. Admin Panel
4. Compute Credit Score for an account (admin)
0. Exit
Choice: 4
Account No: ACC17631538348312957
Credit score for ACC17631538348312957 is 42/100

Main Menu:
1. Create Account
2. Login
3. Admin Panel
4. Compute Credit Score for an account (admin)
0. Exit
Choice: 0
Bye!
```