

## Case Study(3): ATM

**Name:** Bobba Ruthvik

**Roll number:** CS19B007

### Individual Constraints Achieved:

1. Defined denominations to notes.
2. Set Limit to transactions.
3. Set an ATM cash limit.
4. Different Bank card charge processing fee(Only Bank no. 1 is excluded from charges, for more clarity refer Storage.java).
5. In the Transfer section added International money transfer including taxes.

### Common Constraints Achieved:

1. Encryption and Decryption of password for Manager class using random generated key method.
2. 2 Step verification using OTP for Banking Option.
3. Account to account transfer with IFSC code verification(Made Case Sensitive Deliberately since it's a ATM)
4. A PIN change option included in PIN Generation option.
5. Displays information using FILE HANDLING.

### Description:

- An ATM using account number instead of card having 4 features:
  - a. Withdraw
  - b. Balance enquiry
  - c. Transfer
  - d. Pin Generation
- Bank has 4 customers initially and can be expanded by the Manager.
- A 4 digit pin similar to an ATM pin.
- Limit of Rs. 2,00,000 per run time (set by bank) and individual transaction limit of Rs. 40,000.
- Transactions above Rs. 10,000 require OTP.
- Maximum limit of 2 transactions per customer per run time.
- Can check last transaction time also(From Manager side).

## Additional Features:

- Password("abc123")(5 trial) protected system for the Manager.
- File Handling to store customer data in a system in the form of a file.
- Made sure the Main code contains exactly 2 lines of code to hide all other data.
- International transfer charges and denominations during transactions also included.
- Emergency PIN enquiry(For Manager), using decryption(not giving direct access).

## Test Cases:

- **TRANSFER OTP FOR ( $\geq$ Rs. 10,000) AND DENOMINATIONS**

Enter 1 if you are a customer, 2 for manager system any other to exit

1

Welcome to ABC ATM services

Please enter your account number: 67890

Hello BOOM McCONDOR

PLEASE CHOOSE "BANKING" FOR CASH "WITHDRAWALS"

1. BANKING

2. BALANCE INQ

3. TRANSFER

4. PIN GENERATION

1

ENTER ANY NUMBER BETWEEN 10 AND 99

For eg. "25"

12

IS THE NUMBER DISPLAYED ON THE SCREEN ?

1. YES

2. NO

1

ABC Bank

Please enter your PIN: 1023

ABC Bank

1. FROM CURRENT

2. FROM SAVING

2

Please enter amount: 10500

1. YES

2. NO

1

/\*\*\*\* BOOM McCONDOR's MOBILE INTERFACE \*\*\*\*/

Mobile number: 8900622945

OTP: 1953

Message sent on: 08:09:22 pm

Check OTP on Your Registered Mobile No. If Received, Press Continue.

1. CONTINUE

2. RESEND OTP

3. CANCEL

1

Please Enter 4 Digits OTP Received Over SMS:

1953

1. CONTINUE

2. CANCEL

1

ISSUED AMOUNT:  $(5) * \text{Rs.}2000 + (1) * \text{Rs.}500 = \text{Rs.}10500$

Remaining balance:  $\text{Rs.}29500.0 - \text{Rs.}10(\text{service tax}) = \text{Rs.}29490.0$

THANK YOU FOR USING ABC BANK.

TRANSACTION COMPLETE.

Enter 1 if you are a customer, 2 for manager system any other to exit

7

Process finished with exit code 0

- **TRANSFER AND INTERNATIONAL CHARGES.**

Enter 1 if you are a customer, 2 for manager system any other to exit

1

Welcome to ABC ATM services

Please enter your account number: 67890

Hello BOOM McCONDOR

PLEASE CHOOSE "BANKING" FOR CASH "WITHDRAWALS"

1. BANKING

2. BALANCE INQ

3. TRANSFER

4. PIN GENERATION

3

ENTER ANY NUMBER BETWEEN 10 AND 99

For eg. "25"

12

IS THE NUMBER DISPLAYED ON THE SCREEN ?

1. YES

2. NO

1

ABC Bank

Please enter your PIN: 1023

ABC Bank

1. CREDIT

2. SAVINGS

2

ENTER ACCOUNT NUMBER TO TRANSFER

10001

RE-ENTER ACCOUNT NUMBER TO TRANSFER

10001

ENTER IFSC CODE

BOAUS102201

NOTE: INTERNATIONAL TRANSFER, CHARGES INVOLVED

\$1 = Rs.75

ENTER AMOUNT TO TRANSFER(\$): 20

INTERNATIONAL SERVICE CHARGES: Rs.11.25

TRANSFER SUCCESSFUL.

Enter 1 if you are a customer, 2 for manager system any other to exit

7

Process finished with exit code 0

- **Pin change and balance enquiry**

Enter 1 if you are a customer, 2 for manager system any other to exit

1

Welcome to ABC ATM services

Please enter your account number: 12345

Hello BILLY STUMPS

PLEASE CHOOSE "BANKING" FOR CASH "WITHDRAWALS"

1. BANKING
2. BALANCE INQ
3. TRANSFER
4. PIN GENERATION

4

ENTER ACCOUNT NUMBER: 12345

Dear Customer, Would you like to change your PIN? PIN shall be delivered to your registered mobile number.

1. CONFIRM
2. CANCEL

1

Enter new PIN: 1234

Re-enter new PIN: 1234

PIN generation is successful

You will receive you PIN shortly through registered mobile number.

/\*\*\*\* BILLY STUMPS's MOBILE INTERFACE \*\*\*\*/

Mobile number: 7923639264

ABC Banks PIN Changed to 1234 for Account Number 12345.

Message sent at: 08:40:07 pm

Enter 1 if you are a customer, 2 for manager system any other to exit

1

Welcome to ABC ATM services

Please enter your account number: 12345

Hello BILLY STUMPS

PLEASE CHOOSE "BANKING" FOR CASH "WITHDRAWALS"

1. BANKING
2. BALANCE INQ
3. TRANSFER

#### 4. PIN GENERATION

2

ENTER ANY NUMBER BETWEEN 10 AND 99

For eg. "25"

12

IS THE NUMBER DISPLAYED ON THE SCREEN ?

1. YES

2. NO

1

ABC Bank

Please enter your PIN: 1234

ABC Bank

1. CREDIT

2. SAVINGS

2

AVAILABLE BALANCE: 50000.0

Enter 1 if you are a customer, 2 for manager system any other to exit

5

Process finished with exit code 0

- **Adding account and pin generation.**

Enter 1 if you are a customer, 2 for manager system any other to exit

2

/\*\*\*\* MANAGER'S COMPUTER \*\*\*\*\*/

Username: ABC Bank Manager

Password: abc123

Enter 1 to add accounts, 2 to get customer details and 3 for emergency pin enquiry

1

Enter customer's full name: JAMES COMMER

Enter customer's account number: 10200

Enter account type:

1. Current

2. Savings

1

Enter balance: 60000

Enter mobile number: 9491613590

Enter 1 if you are a customer, 2 for manager system any other to exit

1

Welcome to ABC ATM services

Please enter your account number: 10200

Hello JAMES COMMER

PLEASE CHOOSE "BANKING" FOR CASH "WITHDRAWALS"

1. BANKING
2. BALANCE INQ
3. TRANSFER
4. PIN GENERATION

4

ENTER ACCOUNT NUMBER: 10200

Dear Customer, ABC Bank appreciates, you for the Green Initiative. PIN shall be delivered to your registered mobile number.

1. CONFIRM
2. CANCEL

1

PIN generation is successful

You will receive you PIN shortly through registered mobile number.

Please change your PIN without which you will not be allowed to do any transaction.

/\*\*\*\* JAMES COMMER's MOBILE INTERFACE \*\*\*\*/

Mobile number: 9491613590

ABC Banks PIN Changed to 2698 for Account Number 10200.

Message sent at: 08:48:28 pm

Enter 1 if you are a customer, 2 for manager system any other to exit

8

Process finished with exit code 0

- **Getting customer details in a file and get (PIN) in emergency cases using decryption.**

Enter 1 if you are a customer, 2 for manager system any other to exit

2

/\*\*\*\* MANAGER'S COMPUTER \*\*\*\*/

Username: ABC Bank Manager

Password: abc123

Enter 1 to add accounts, 2 to get customer details and 3 for emergency pin enquiry

2

Saved in file named CustomerData.txt

Enter 1 if you are a customer, 2 for manager system any other to exit

2

/\*\*\*\* MANAGER'S COMPUTER \*\*\*\*/

Username: ABC Bank Manager

Password: abc123

Enter 1 to add accounts, 2 to get customer details and 3 for emergency pin enquiry

3

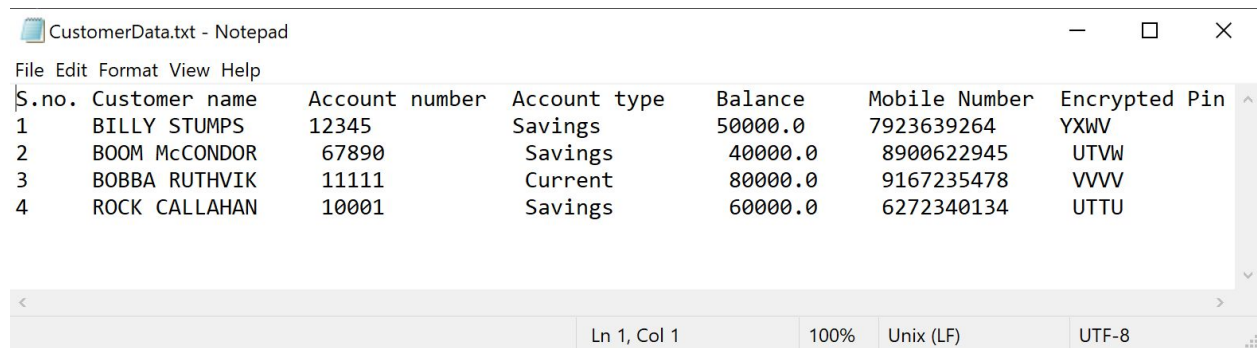
Enter account number: 12345

User PIN: 5432

Enter 1 if you are a customer, 2 for manager system any other to exit

5

Process finished with exit code 0



The screenshot shows a Notepad window with the title 'CustomerData.txt - Notepad'. The window contains a table with 7 columns: S.no., Customer name, Account number, Account type, Balance, Mobile Number, and Encrypted Pin. The table has 4 rows of data. The status bar at the bottom indicates 'Ln 1, Col 1', '100%', 'Unix (LF)', and 'UTF-8'.

S.no.	Customer name	Account number	Account type	Balance	Mobile Number	Encrypted Pin
1	BILLY STUMPS	12345	Savings	50000.0	7923639264	YXWV
2	BOOM McCONDOR	67890	Savings	40000.0	8900622945	UTVW
3	BOBBA RUTHVIK	11111	Current	80000.0	9167235478	VVVV
4	ROCK CALLAHAN	10001	Savings	60000.0	6272340134	UTTU