Banking System

Create a Banking System with below details

1. Account opening availability for new customers. Accounts can be of 3 types:
   a. Saving Account
   b. Current Account
   c. Loan Account
2. User shall be able to see the status and details of the account any day and any time which includes:
   a. Personal Details
   b. Account Details (Of all the Accounts)
   c. Transaction Details
3. Properties of Saving Account:
   a. 6% interest every year. Interest will be calculated and added to account on the last day of each month.
   b. NRV(Net Relationship Value) is fixed to 100000 per month. Rs 1000 is charged if NRV falls below minimum level and will be calculated on a pro rata basis.
   c. Minimum amount needed to open an account is Rs 10000
   d. An atm card will be allotted to each saving bank account with 16 digit card number, expiry date and CVV Number
   e. There is no minimum age limit to open Saving account
   f. Transaction limits
      i. Users can withdraw a maximum of 5 times in a month using an ATM Card. After that, users will be charged Rs 500 for each transaction. In 1 transaction user can withdraw maximum Rs 20000
      ii. In case of direct transaction, there is no limit on the number of transactions
      iii. Maximum of Rs 50000 can be withdrawn in a day (including both direct and ATM transactions)
4. Properties of Current Account
   a. No Interest
   b. NRV(Net Relationship Value) is fixed to 500000 per month. Rs 5000 is charged if NRV falls below minimum level and will be calculated on a pro rata basis.
   c. Minimum amount needed to open an account is Rs 100000
   d. There is minimum age limit of 18 Years to open Current account
   e. Transaction limits
      i. There is a transaction charge for each transaction which is 0.5% of transactional value. Maximum charge per transaction is Rs 500
      ii. No Limit on transaction
      iii. Per month at least 3 transaction should happen, else Rs 500 penalty will be charged

5. Properties of Loan Account
    a. User can avail below loans:
        i. Home Loan (Interest : 7%)
        ii. Car Loan (Interest : 8%)
        iii. Personal Loan (Interest : 12%)
        iv. Business Loan (Interest : 15%)
    b. Interest is compounded half yearly.
    c. Customers should either have a Saving or Current account in the same bank to open a Loan Account.
    d. There is minimum age limit of 25 Years to open Loan account
    e. The bank can only give 40% of total deposits as loan.
    f. Minimum duration of loan account should be 2 yea rs.
    g. Minimum amount to take a loan is 5,00,000
    h. The Customer can repay loan in non uniform installments by depositing lump sum amount not exceeding 10% of total loan amount.
6. System should have all necessary fields for a Customer to open an account (like Name, email, phone number, address etc).
7. System should expose all necessary methods which can be used to carry out all the bank transactions with the conditions in point 1 to 5. It should also expose other bank related methods like print Passbook, get Monthly Profit/Loss, get total loan amount etc.
8. Use below logic to assign customer id to user:
    Consider the following series:
    A := 1
    B := A*2 + 2
    C := B*2 + 3 and so on...
    System should take the First Name of the user as Input and find the number based on the above calculation. Example if Name is "ABCDEF", the system computes the sum of the numbers corresponding to all the letters in the string (i.e., A + B + C + D + E + F), as given by the above series.
9. System should contain a method where if input is an account number, returns the first name of the customer (shortest string of letters) corresponding to it based on logic given in point 7.

Note:
1. No need to create any database and UI components. Use classes, methods and data structures to solve this problem.
2. It is advisable to write well structured code.
3. Make necessary assumptions when required.