Project Problem Definition

For this project I will be required to design at least 6 classes including but not limited to: savings, saving transactions, checking, checking transactions, investments, and investment transactions. I will be required to implement them together to build one banking system.

1) Class one is the savings account. It requires variables such as account number (primary key), last name, first name, address, email, phone, balance, date, transaction ID, interest rate, and total amount.

For this class I will need to implement 2 transaction types. Withdrawal (balance is decreased in the savings account by the amount withdrawn), and Interest Calculation done on the first of each month (New Balance = current balance + current balance * interest rate).

2) Class two is savings transactions. It requires variables such as transaction ID, transaction type, transaction date, transaction amount, last name, first name, and phone.

For this class I will need to implement 2 transaction types: Deposit (balance increased in the savings table by the amount deposited), Transfer (balance is decreased in the savings account by the amount transferred but increased in the account transferred to by the same amount)

3) Class three is the checking account. It requires variables such as account number (primary key), last name, first name, address, email, phone, balance, date, and transaction ID.

For this class I will need to implement 1 transaction type. Withdrawal (balance is decreased in the checking account by the amount withdrawn).

4) Class four is the checking transactions. It requires variables such as transaction ID, transaction type, transaction date, transaction amount, last name, first name, and phone.

For this class I will need to implement 2 transaction types: Deposit (balance increased in the checking table by the amount deposited), Transfer (balance is decreased in the checking account by the amount transferred but increased in the account transferred to by the same amount)

5) Class five is the investments account. It requires variables such as account number (primary key), last name, first name, address, email, phone, balance, date, transaction ID, interest rate, total amount.

For this class I will need to implement 2 transaction types. Withdrawal (balance is decreased in the investments account by the amount withdrawn, also only available after one year past deposit), and Interest Calculation done on the first of each month (New Balance = current balance + current balance * interest rate).

6) Class six is the investments transactions. It requires variables such as transaction ID, transaction type, transaction date, transaction amount, last name, first name, and phone.

For this class I will need to implement 2 transaction types: Deposit (balance increased in the investments table by the amount deposited), Transfer (balance is decreased in the investments account by the amount transferred but increased in the account transferred to by the same amount, also only available one year after deposit).

7) Create a login and logout system for the bank.

8) Create an insert, update, display, delete, and search operation for each of the three accounts.

9) For each day print out the summaries for all of the accounts. This includes all the transactions and interest accrued.

Word problem format

Imagine you are a software developer tasked with creating a new banking system for a modern bank. The bank's vision is to offer its customers a comprehensive set of financial services, encompassing savings accounts, checking accounts, and investment accounts.

For the savings account, the bank requires a unique account number for each customer, along with storing personal details such as last name, first name, address, email, and phone number. The account should also maintain a balance and an associated interest rate. Two types of transactions are permitted: withdrawals and monthly interest

calculations. Withdrawals will reduce the account balance, while interest will be calculated on the first of each month, adding the interest earned to the current balance.

A separate savings transactions class will record each transaction, capturing details like transaction type (deposit or transfer), date, amount, and customer details.

The checking account operates similarly to the savings account but without interest calculations. Only withdrawals are allowed, which decrease the account balance. Similarly, the checking transactions class records deposits and transfers, along with transaction details.

The investments account provides customers an option to invest their money. It shares similarities with the savings account but has a one-year lock-in period for withdrawals and transfers. Monthly interest is calculated, and a separate investments transactions class records transactions with the same one-year lock-in restrictions.

A login system is essential for the bank's security. Implementing a secure login and logout mechanism allows only authorized bank employees to access the banking system.

For managing account and transaction data, the banking system should support CRUD operations: insert (add a new account or transaction), update (modify existing details), display (show details), delete (remove an account or transaction), and search (find specific account or transaction details).

Lastly, the bank wants to generate daily summaries for all accounts. These summaries should include a record of all transactions made during the day and the interest accrued for savings and investments accounts.

Your task is to design and implement this banking system, ensuring it's user-friendly, secure, and efficient. Consider both the needs of bank employees and customers when designing the system's user interface and functionalities. As you work through this project, think about the security of the login system, handling potential errors or exceptions, calculating monthly interest, managing transactions during the one-year lock-in period for investments, and designing an intuitive user interface for performing CRUD operations and generating daily summaries.