Assignment #3

Due: 11/05 23:59 KST

Introduction:

In this assignment, you will be working with C++ to apply fundamental Object-Oriented Programming (OOP) principles. OOP is a programming paradigm that utilizes objects and classes to model and solve real-world problems. You will create a simple program that models a "Bank Account" using classes. The purpose of this exercise is to reinforce your understanding of classes, objects, constructors, and member functions in C++.

Assignment: Bank Account Class

Question 1:

Create a C++ class named "BankAccount" to represent a bank account. The class should have the following private members:

- Account Number (an integer)
- Account Holder's Name (a string)
- Balance (a double)

Write a constructor that initializes these members.

Question 2:

Create member functions for the "BankAccount" class as follows:

- **Deposit(double amount):** Adds the specified amount to the balance.
- **Withdraw(double amount):** Subtracts the specified amount from the balance.
- **DisplayAccountDetails():** Displays the account number, account holder's name, and balance.
- **Transfer(BankAccount& toAccount, double amount):** Transfers the specified amount from the current account to the target account. Implement appropriate checks to ensure a valid transfer.

- **CalculateInterest(int years):** calculates and adds interest to the account's balance. Assume a fixed interest rate of 3% per year. The function should take the number of years as a parameter and calculate the final balance.

Question 3:

Create two instances of the "BankAccount" class, one for "Alice" with an initial balance of $1000 and another for "Bob" with an initial balance of $500. Perform the following operations:

- Deposit $200 into Alice's account.
- Withdraw $100 from Bob's account.
- Display the account details for both Alice and Bob.
- Transfer $300 from Alice's account to Bob's account.
- Calculate and display the final balance for Alice and Bob after 5 years of interest.

The output should be as follows:

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Alice's Account Details:
Account Number: 12345
Account Holder's Name: Alice
Balance: $1200

Bob's Account Details:
Account Number: 54321
Account Holder's Name: Bob
Balance: $400

After 5 years of interest:
Alice's Final Account Details:
Account Number: 12345
Account Holder's Name: Alice
Balance: $1043.35

Bob's Final Account Details:
Account Number: 54321
Account Holder's Name: Bob
Balance: $811.492
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