Account

Design a class named Account that contains:

- A private int data field named id for the account (default 0).
- A private double data field named balance for the account (default 0).
- A private double data field named annualInterestRate that stores the current interest rate (default 0). Assume that all accounts have the same interest rate.
- A private Date data field named dateCreated that stores the date when the account was created.
- A no-arg constructor that creates a default account.
- A constructor that creates an account with the specified id and initial balance.
- The accessor and mutator methods for id, balance, and annualInterestRate.
- The accessor method for dateCreated.
- A method named getMonthlyInterestRate() that returns the monthly interest rate.
- A method named getMonthlyInterest() that returns the monthly interest.
- A method named withdraw that withdraws a specified amount from the account.
- A method named deposit that deposits a specified amount to the account.

(Hint: The method getMonthlyInterest() is to return monthly interest, not the interest rate. Monthly interest is balance * monthlyInterestRate. monthlyInterestRate is annualInterestRate / 12. Note annualInterestRate is a percentage, for example 4.5%. You need to divide it by 100.)

Write a test program that creates an Account object with an account ID of 1122, a balance of $20,000, and an annual interest rate of 4.5%. Use the withdraw method to withdraw $2,500, use the deposit method to deposit $3,000, and print the balance, the monthly interest, and the date when this account was created.

Subclasses of Account

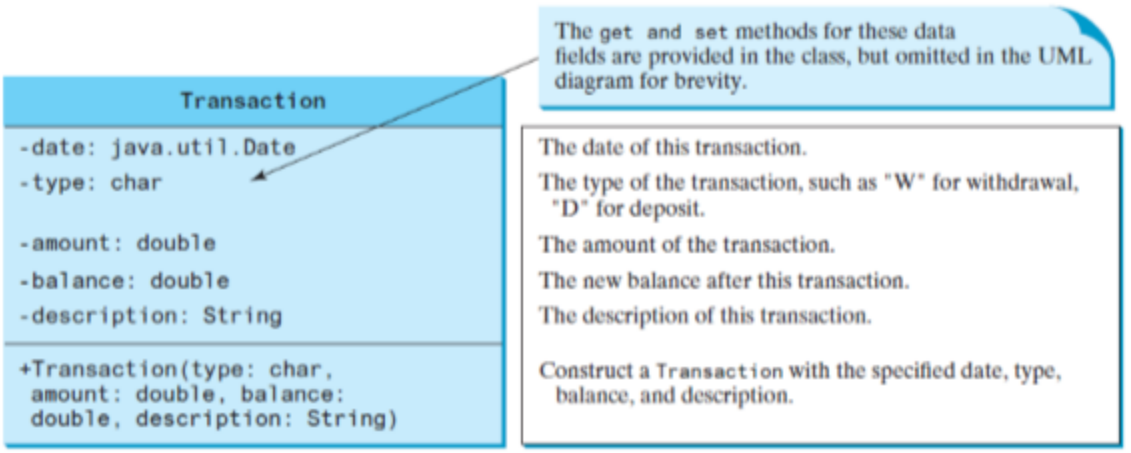
In previous exercise, the Account class was defined to model a bank account. An account has the properties account number, balance, annual interest rate, and date created, and methods to deposit and withdraw funds. Create two subclasses for checking and saving accounts. A checking account has an overdraft limit, but a savings account cannot be overdrawn.

Write a test program that creates objects of Account, SavingsAccount, and CheckingAccount and invokes their toString() methods.

Account with Transactions

An Account class was specified in previous exercises. Design a new Account class as follows:

- Add a new data field name of the String type to store the name of the customer.
- Add a new constructor that constructs an account with the specified name, id, and balance.
- Add a new data field named transactions whose type is ArrayList that stores the transaction for the accounts. Each transaction is an instance of the Transaction class, which is defined as shown in Figure:



- Modify the withdraw and deposit methods to add a transaction to the transactions array list.

Write a test program that creates an Account with annual interest rate 1.5%, balance 1000, id 1122, and name George. Deposit $30, $40, and $50 to the account and withdraw $5, $4, and $2 from the account. Print an account summary that shows the account holder name, interest rate, balance, and all transactions.