Practice Problem

Implement a `BankAccount` class.

- `BankAccounts` should have
  - an account number
  - a balance
  - both of these should be accessible to other classes only indirectly through the constructor and other methods

- Include the methods:
  - `deposit`, which is passed an amount to deposit. (If a negative amount is passed, deposit 0)
  - `withdrawal`, which is passed an amount to remove, and returns the amount actually removed
  - `getBalance`, which returns the current balance
  - a constructor to initialize the fields
  - a `toString` method to obtain a `String` representation
  - an `equals` method to compare this account with another for equality
public class BankAccount {
    private int accountNumber;
    private double balance;

    /* constructor */
    public BankAccount(int initialAccountNumber,
            double initialBalance) {
        accountNumber = initialAccountNumber;
        balance = initialBalance;
    }

    /* accessor method */
    public double getBalance() {
        return balance;
    }

    public void deposit(double amount) {
        if (amount > 0)
            balance += amount;
    }

    public double withdrawal(double amountToWithdraw) {
        double amountWithdrawn;
        if (amountToWithdraw > balance) {
            amountWithdrawn = balance;
            balance = 0;
        } else {
            amountWithdrawn = amountToWithdraw;
            balance = balance - amountWithdrawn;
        }
        return amountWithdrawn;
    }

    public String toString() {
        return "account: " + accountNumber + ", balance: " + balance;
    }

    public boolean equals(BankAccount other) {
        return accountNumber == other.accountNumber &&
                balance == other.balance;
    }
}

Is this ok?
...
BankAccount charlie = new BankAccount(1234, 315.20);
System.out.println("charlie's balance is: " + charlie.balance);
Is this ok?

...  

BankAccount charlie = new BankAccount(1234, 315.20);
System.out.println("charlie's balance is: "+charlie.balance);

No

► balance is private
► use getBalance instead

Use This Instead

...

BankAccount charlie = new BankAccount(1234, 315.20);

/* compiler error: */
/* System.out.println("charlie's balance is: "+ charlie.balance); */
/* ok */
System.out.println("charlie's balance is: "+charlie.getBalance());

A Little Bit More

We Add

Transaction Fee

public class BankAccountV2 {
    public static final double TRANSACTION_FEE=3.0;
    private int accountNumber;
    private double balance;

    New Methods

    public void depositATM(double amount) {
        deposit(amount-TRANSACTION_FEE);
    }

    public double withdrawalATM(double amountToWithdraw) {
        return withdrawal(amountToWithdraw+TRANSACTION_FEE);
    }
}